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UNITED STATES DISTRICT COURT

SOUTHERN DISTRICT OF CALIFORNIA

VIRGINIA DUNCAN, RICHARD LEWIS, PATRICK LOVETTE, DAVID MARGUGLIO, CHRISTOPHER WADDELL, CALIFORNIA RIFLE & PISTOL ASSOCIATION, INCORPORATED, a California corporation,

Plaintiffs,

v.

XAVIER BECERRA, in his official capacity as Attorney General of the State of California; and DOES 1-10,

Defendants.

Case No: 17-cv-1017-BEN-JLB

EXHIBITS H-V TO THE DECLARATION OF ANNA M. BARVIR IN SUPPORT OF PLAINTIFFS' MOTION FOR PRELIMINARY INJUNCTION

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EXHIBIT H

THE HISTORY OF FIREARM MAGAZINES AND MAGAZINE PROHIBITIONS

*David B. Kopel**

I. INTRODUCTION

In recent years, the prohibition of firearms magazines has become an important topic of law and policy debate. This article details the history of magazines and of magazine prohibition. The article then applies the historical facts to the methodologies of leading cases that have looked to history to analyze the constitutionality of gun control laws.

Because ten rounds is an oft-proposed figure for magazine bans, Part II of the article provides the story of such magazines from the sixteenth century onward. Although some people think that multi-shot guns did not appear until Samuel Colt invented the revolver in the 1830s, multi-shot guns predate Colonel Colt by over two centuries.[1]

Especially because the Supreme Court's decision in *District of Columbia v. Heller*[2] considers whether arms are "in common use" and are "typically possessed by law-abiding citizens for lawful purposes,"[3] the article also pays attention to whether and when particular guns and their magazines achieved mass-market success in the United States. The first time a rifle with more than ten rounds of ammunition did so was in 1866,[4] and the first time a

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[1] *See* Clayton E. Cramer & Joseph Edward Olson, *Pistols, Crime, and Public Safety in Early America*, 44 WILLAMETTE L. REV. 699, 716 (2008).

[2] District of Columbia v. Heller, 554 U.S. 570 (2008).

[3] *Id.* at 624–25, 627.

[4] *See infra* notes 50–55 and accompanying text.

handgun did so was in 1935.[5]

The detailed history of various firearms and their magazines stops in 1979—a year which is somewhat ancient in terms of the current gun control debate. Back in 1979, revolvers still far outsold semiautomatic handguns.[6] No one was trying to ban so-called assault weapons,[7] although such guns were already well established in the market.[8]

For the post-1979 period, Part II briefly explains how technological improvements in recent decades have fostered the continuing popularity of magazines holding more than ten rounds

Part III of the article describes the history of magazine prohibition in the United States. Such prohibitions are of recent vintage, with an important exception: during prohibition, Michigan, Rhode Island, and the District of Columbia banned some arms that could hold more than a certain number of rounds; Ohio required a special license for such guns.[9] The Michigan and Rhode Island bans were repealed decades ago; the Ohio licensing law was repealed in 2014, having previously been modified and interpreted so that it banned no magazines.[10] The District of Columbia ban, however, remains in force today, with some revisions.[11]

The Supreme Court's Second Amendment decisions in *District of Columbia v. Heller* and *McDonald v. Chicago*[12] paid careful

[5] *See infra* notes 102–03 and accompanying text.

[6] The U.S. manufacturing figures were compiled by the Bureau of Alcohol, Tobacco & Firearms. Although they were public documents, they were not made widely available in the 1970s. The following are the full-year production data by U.S. manufacturers. The figures do not include production for sale to the military. 1973: 452,232 pistols, 1,170,966 revolvers; 1974: 399,011 pistols, 1,495,861 revolvers; 1975: 455,267 pistols, 1,425,833 revolvers; 1976: 468,638 pistols, 1,425,407 revolvers; 1977: 440,387 pistols, 1,423,984 revolvers; 1978: 499,257 pistols, 1,458,013 revolvers; 1979: 637,067 pistols, 1,531,362 revolvers; 1980: 785,105 pistols, 1,586,149 revolvers. *Statistical Tabulation of Firearms Manufactured in the United States—and Firearms Exported—as Reported Yearly by Bureau of Alcohol, Tobacco and Firearms on ATF Form 4483-A*, AM. FIREARMS INDUSTRY (Nov. 1981) at 28–29.

[7] *See* David B. Kopel, *The Great Gun Control War of the Twentieth Century—and Its Lessons for Gun Laws Today*, 39 FORDHAM URB. L.J. 1527, 1578–79 (2012) (beginning of "assault weapon" issue in the mid- and late 1980s); L. Ingram, *Restricting of Assault-Type Guns Okd by Assembly Unit*, L.A. TIMES, Apr. 9, 1985, at 3.

[8] Below, this article describes many models of semi-automatic rifles introduced since 1927. *See infra* notes 82–101 and accompanying text. All of them have been labeled an "assault weapon" by one or more proposed bills. *See, e.g.*, LEGAL CMTY. AGAINST VIOLENCE, BANNING ASSAULT WEAPONS—A LEGAL PRIMER FOR STATE AND LOCAL ACTION 59–60 (2004), *available at* http://smartgunlaws.org/wp-content/uploads/2012/05/Banning_Assault_Weapons_A_Legal_Primer_8.05_entire.pdf (proposing a model assault weapons law).

[9] *See infra* notes 129–30, 134, 140 and accompanying text.

[10] *See infra* notes 131–33, 135–39 and accompanying text.

[11] *See infra* notes 140–45 and accompanying text.

[12] McDonald v. City of Chi., 561 U.S. 742 (2010).

attention to history. Several post-*Heller* lower court opinions in Second Amendment cases have also examined history as part of their consideration of the constitutionality of gun control statutes. Part IV of this article examines the legality of magazine bans according to the various historical standards that courts have employed.

II. THE HISTORY OF MAGAZINES HOLDING MORE THAN TEN ROUNDS

In *District of Columbia v. Heller*, the Supreme Court ruled that the District of Columbia's handgun ban was unconstitutional partly because handguns are in "common use."[13] The Second Amendment protects arms that are "typically possessed by law-abiding citizens for lawful purposes."[14]

Magazines of more than ten rounds are older than the United States.[15] Box magazines date from 1862.[16] In terms of large-scale commercial success, rifle magazines of more than ten rounds had become popular by the time the Fourteenth Amendment was being ratified.[17] Handgun magazines of more than ten rounds would become popular in the 1930s.[18]

A. Why Consumers Have Always Sought to Avoid Having to Reload During Defensive Gun Use

When a firearm being used for defense is out of ammunition, the defender no longer has a functional firearm. The Second Amendment, of course, guarantees the right to an *operable* firearm.[19] As the *Heller* Court explained, the Council of the District of Columbia could not require that lawfully-possessed guns be kept in an inoperable status (locked or disassembled) in the home, because doing so negates their utility with respect to "the core lawful purpose of self-defense."[20]

When the defender is reloading, the defender is especially vulnerable to attack. When ammunition is low but not exhausted (e.g., two or three rounds remaining), that may be insufficient to

[13] District of Columbia v. Heller, 554 U.S. 570, 627–29 (2008).
[14] *Id.* at 625.
[15] *See infra* notes 21–24 and accompanying text.
[16] *See infra* note 65 and accompanying text.
[17] *See infra* notes 43–55, 172–73 and accompanying text.
[18] *See infra* notes 102–03 and accompanying text.
[19] *See Heller*, 554 U.S. at 630, 635 (declaring the District of Columbia's requirement that all firearms in the home be "rendered and kept inoperable at all times" as unconstitutional).
[20] *Id.*

deter or control the threat, especially if the threat is posed by more than one criminal. If the victim is attacked by a gang of four large people, and a few shots cause the attackers to pause, the victim needs enough reserve ammunition in the firearm to make the attackers worry that even if they rush the victim all at once, the victim will have enough ammunition to knock each attacker down. When guns are fired defensively, it is unusual for a single hit to immediately disable an attacker.

Accordingly, from the outset of firearms manufacturing, one constant goal has been to design firearms able to fire more rounds without reloading.

To this end, manufacturers have experimented with various designs of firearms and magazines for centuries. While not all of these experiments were successful in terms of mass sales, they indicated the directions where firearms development was proceeding. The first experiments to gain widespread commercial success in the United States came around the middle of the nineteenth century.

B. Magazines of Greater than Ten Rounds are More than Four Hundred Years Old

The first known firearm that was able to fire more than ten rounds without reloading was a sixteen-shooter created around 1580, using "superposed" loads (each round stacked on top of the other).[21] Multi-shot guns continued to develop in the next two centuries, with such guns first issued to the British army in 1658.[22] One early design was the eleven-round "Defence Gun," patented in 1718 by lawyer and inventor James Puckle.[23] It used eleven preloaded cylinders; each pull of the trigger fired one cylinder.[24]

As with First Amendment technology (such as televisions or websites), the Second Amendment is not limited to the technology that existed in 1791.[25] The *Heller* Court properly described such an asserted limit as "bordering on the frivolous."[26] But even if *Heller*

[21] *See* LEWIS WINANT, FIREARMS CURIOSA 168–70 (2009); *A 16-Shot Wheel Lock*, AMERICA'S 1ST FREEDOM (June 2014), http://www.nrapublications.org/index.php/17739/a-16-shot-wheel-lock/ (NRA member magazine).

[22] Cramer & Olson, *supra* note 1, at 716.

[23] *Id.* at 716 & n.94.

[24] *See id.* at 716–17; *This Day in History: May 15, 1718*, HISTORY, http://www.historychannel.com.au/classroom/day-in-history/600/defence-rapid-fire-gun-patented (last visited Feb. 21, 2015).

[25] *Heller*, 544 U.S. at 582.

[26] *Id.* ("Some have made the argument, bordering on the frivolous, that only those arms in

had created such a rule, magazines of more than ten rounds are older than the Second Amendment.

At the time that the Second Amendment was being ratified, the state of the art for multi-shot guns was the Girandoni air rifle, with a twenty-two-shot magazine capacity.[27] Meriwether Lewis carried a Girandoni on the Lewis and Clark expedition.[28] At the time, air guns were ballistically equal to powder guns in terms of bullet size and velocity.[29] The .46 and .49 caliber Girandoni rifles were invented around 1779 for use in European armies and were employed by elite units.[30] One shot could penetrate a one-inch thick wood plank or take down an elk.[31]

C. The Nineteenth Century Saw Broad Commercial Success for Magazines Holding More than Ten Rounds

Firearm technology progressed rapidly in the 1800s. Manufacturers were constantly attempting to produce reliable firearms with greater ammunition capacities for consumers. One notable step came in 1821 with the introduction of the Jennings multi-shot flintlock rifle, which, borrowing the superposed projectile design from centuries before, could fire twelve shots before reloading.[32]

Around the same time, pistol technology also advanced to permit more than ten shots being fired without reloading. "Pepperbox"

existence in the 18th century are protected by the Second Amendment. We do not interpret constitutional rights that way. Just as the First Amendment protects modern forms of communications, and the Fourth Amendment applies to modern forms of search, the Second Amendment extends, prima facie, to all instruments that constitute bearable arms, even those that were not in existence at the time of the founding." (citations omitted)).

[27] JIM SUPICA ET AL., TREASURES OF THE NRA NATIONAL FIREARMS MUSEUM 31 (2013).

[28] JIM GARRY, WEAPONS OF THE LEWIS & CLARK EXPEDITION 94 (2012).

[29] JOHN L. PLASTER, THE HISTORY OF SNIPING AND SHARPSHOOTING 69–70 (2008).

[30] *See* SUPICA ET AL., *supra* note 27, at 31.

[31] *Id.* The Lewis and Clark gun is on display at the National Rifle Association's Sporting Arms Museum in Springfield, Missouri. Mark Yost, *The Story of Guns in America*, WALL ST. J., Sept. 3, 2014, at D5.

[32] NORM FLAYDERMAN, FLAYDERMAN'S GUIDE TO ANTIQUE AMERICAN FIREARMS AND THEIR VALUES 683 (9th ed. 2007) [hereinafter FLAYDERMAN'S GUIDE]. According to James S. Hutchins, historian emeritus at the National Museum of American History, Smithsonian Institution, Mr. Flayderman has been a "revered expert in antique American arms and a vast range of other Americana for half a century . . . ." James S. Hutchins, *Foreword* to NORM FLAYDERMAN, THE BOWIE KNIFE: UNSHEATHING THE AMERICAN LEGEND 7 (2004). Mr. Flayderman has been appointed as historical consultant to the U.S. Army Museum, U.S. Marine Corps Museum, and the State of Connecticut's historic weapons collections. Andrea Valluzzo, *E. Norman Flayderman, 84; Antique Arms Expert*, ANTIQUES & ARTS WKLY. (July 2, 2013), http://test.antiquesandthearts.com/node/185567#.VMvRAGjF8YM.

pistols began to be produced in America in the 1830s.[33] These pistols had multiple barrels that would fire sequentially.[34] While the most common configurations were five or six shots,[35] some models had twelve independently-firing barrels,[36] and there were even models with eighteen or twenty-four independently-firing barrels.[37] Pepperboxes were commercially successful and it took a number of years for Samuel Colt's revolvers (also invented in the 1830s) to surpass them in the marketplace.[38]

The 1830s through the 1850s saw a number of different firearm designs intended to increase ammunition capacity. In 1838, the Bennett and Haviland Rifle was invented; it was a rifle version of the pepperbox, with twelve individual chambers that were manually rotated after each shot.[39] This would bring a new chamber, preloaded with powder and shot, into the breach, ready to be fired.[40] Alexander Hall and Colonel Parry W. Porter each created rifles with capacities greater than ten in the 1850s.[41] Hall's design had a fifteen-shot rotating cylinder (similar to a revolver), while Porter's design used a thirty-eight-shot canister magazine.[42]

The great breakthrough, however, began with a collaboration of Daniel Wesson (of Smith and Wesson) and Oliver Winchester. They produced the first metallic cartridge—containing the gunpowder, primer, and ammunition in a metallic case similar to modern ammunition.[43] Furthermore, they invented a firearms mechanism that was well suited to the new metallic cartridge: the lever

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[33] JACK DUNLAP, AMERICAN BRITISH & CONTINENTAL PEPPERBOX FIREARMS 16 (1964).

[34] LEWIS WINANT, PEPPERBOX FIREARMS 7 (1952).

[35] *See, e.g.*, *Pocektsize Allen and Thurber Pepperbox Revolver*, ANTIQUE ARMS, http://aaawt.com/html/firearms/f102.html (last visited Feb. 21, 2015).

[36] DOE RUN LEAD COMPANY'S MUSEUM, CATALOGUE OF CONTENTS 66 (1912).

[37] DUNLAP, *supra* note 33, at 148–49, 167 (describing three European eighteen-shot models and one twenty-four-shot model); SUPICA ET AL., *supra* note 27, at 33 (describing the Marietta eighteen-shot model); WINANT, *supra* note 21, at 249–50 (describing a twenty-four-shot pepperbox).

[38] WINANT, *supra* note 34, at 28.

[39] FLAYDERMAN'S GUIDE, *supra* note 32, at 711.

[40] *See id.*

[41] *Id.* at 713, 716.

[42] *Id.* The Porter Rifle was said to be able to fire up to sixty shots per minute. Mary Moran, *P.W. Porter, Inventor of the Porter Rifle*, DEAD MEMPHIS TALKING (April 18, 2014), http://deadmemphistalking.blogspot.com/2014/04/pw-porter-inventor-of-porter-rifle.html (reprinting an article from New York Post). About 1250 of these guns were produced. S.P. Fjestad, *What's It Worth? The Porter Rifle*, FIELD & STREAM, http://www.fieldandstream.com/articles/guns/rifles/2009/01/whats-it-worth-porter-rifle (last visited Feb. 21, 2015).

[43] *See* FLAYDERMAN'S GUIDE, *supra* note 32, at 303 ("The self-contained cartridge was a special type, the hollowed out conical bullet containing the powder, and backed by the primer."); HAROLD F. WILLIAMSON, WINCHESTER: THE GUN THAT WON THE WEST 26–27 (1952).

action.[44] Their company, the Volcanic Repeating Arms Company, introduced the lever action rifle in 1855.[45] This rifle had up to a thirty-round tubular magazine under the barrel that was operated by manipulating a lever on the bottom of the stock.[46] The lever-action allowed a shooter to quickly expel spent cartridges and ready the firearm for additional shots.[47] An 1859 advertisement bragged that the guns could be loaded and fire thirty shots in less than a minute.[48] In 1862, the Volcanic evolved into the sixteen-round Henry lever action rifle, lauded for its defensive utility.[49]

The Henry rifle further evolved into the Winchester repeating rifle, and the market for these firearms greatly expanded with the first gun produced under the Winchester name.[50] Winchester touted the Model 1866 for defense against "sudden attack either from robbers or Indians."[51] According to advertising, the M1866 "can . . . be fired thirty times a minute,"[52] or with seventeen in the magazine and one in the chamber, "eighteen charges, which can be fired in nine seconds."[53] The gun was a particularly big seller in the American West.[54] There were over 170,000 Model 1866s produced.[55]

Next came the Winchester M1873, "[t]he gun that won the West."[56] The Winchester M1873 and then the M1892 were lever actions holding ten to eleven rounds in tubular magazines.[57] There were over 720,000 copies of the Winchester 1873 made from 1873 to

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[44] *See Smith & Wesson History*, SMITH & WESSON, http://www.smith-wesson.com/webapp/wcs/stores/servlet/Category4_750001_750051_757941_-1_757938_757812_image (last visited Feb. 21, 2015).

[45] FLAYDERMAN'S GUIDE, *supra* note 32, at 304.

[46] *Id.* at 303; WILLIAMSON, *supra* note 43, at 13.

[47] WILLIAMSON, *supra* note 43, at 25. Oliver Winchester had an ownership interest in Volcanic and acquired the company in 1857. FLAYDERMAN'S GUIDE, *supra* note 32, at 300.

[48] WILLIAMSON, *supra* note 43, at 25.

[49] *See Id.*, at 28–31; Joseph Bilby, *The Guns of 1864*, AM. RIFLEMAN (May 5, 2014), http://www.americanrifleman.org/articles/2014/5/5/the-guns-of-1864/. About 14,000 Henry rifles were sold in 1860–66. FLAYDERMAN'S GUIDE, *supra* note 32, at 305. The Henry Rifle is still in production today. *See About Henry Repeating*, HENRY, http://www.henryrifles.com/about-henry-repeating/ (last visited Feb. 21, 2015).

[50] *See* WILLIAMSON, *supra* note 43, at 49.

[51] R.L. WILSON, WINCHESTER: AN AMERICAN LEGEND 32 (1991).

[52] WILLIAMSON, *supra* note 43, at 49.

[53] LOUIS A. GARAVAGLIA & CHARLES G. WORMAN, FIREARMS OF THE AMERICAN WEST 1866–1894, at 128 (1985). The Winchester Model 1866 was produced until 1898. FLAYDERMAN'S GUIDE, *supra* note 32, at 306.

[54] WILSON, *supra* note 51, at 34.

[55] FLAYDERMAN'S GUIDE, *supra* note 32, at 306.

[56] *Model 1873 Short Rifle*, WINCHESTER REPEATING ARMS, http://www.winchesterguns.com/products/catalog/detail.asp?family=027C&mid=534200 (last visited Feb. 21, 2015).

[57] *Id.*

1919.[58] Over a million of the M1892 were manufactured from 1892 to 1941.[59] The Italian company Uberti, which specializes in high-quality reproductions of western firearms, produces reproductions of all of the above Winchesters today.[60] Another iconic rifle of the latter nineteenth century was the pump action Colt Lightning rifle, with a fifteen-round capacity.[61]

Manufactured in Maine, the Evans Repeating Rifle came on the market in 1873.[62] The innovative rotary helical magazine in the buttstock held thirty-four rounds.[63] It was commercially successful for a while, although not at Winchester's or Colt's levels. Over 12,000 copies were produced.[64]

Meanwhile, the first handgun to use a detachable box magazine was the ten-round Jarre harmonica pistol, patented in 1862.[65] In the 1890s, the box magazine would become common for handguns.[66]

Pin-fire revolvers with capacities of up to twenty or twenty-one entered the market in the 1850s;[67] they were produced for the next half-century, but were significantly more popular in Europe than in America.[68] For revolvers with other firing mechanisms, there were some models with more than seventeen rounds.[69] The twenty-round Josselyn belt-fed chain pistol was introduced in 1866, and various other chain pistols had even greater capacity.[70] Chain pistols did not win much market share, perhaps in part because the large

[58] FLAYDERMAN'S GUIDE, *supra* note 32, at 307. The Model 1873 was Pa Cartwright's gun on the 1959 to 1973 television series *Bonanza*. SUPICA ET AL., *supra* note 27, at 108.

[59] FLAYDERMAN'S GUIDE, *supra* note 32, at 311. The Model 1892 was John Wayne's gun in many movies. SUPICA ET AL., *supra* note 27, at 109.

[60] 2014 STANDARD CATALOG OF FIREARMS: THE COLLECTOR'S PRICE & REFERENCE GUIDE, 1237 (Jerry Lee ed., 2013). The 1995 edition of this annually-published guide was relied on by the court in *Kirkland v. District of Columbia*, 70 F.3d 629, 635 n.3 (D.C. Cir. 1995).

[61] The original Colt held up to fifteen rounds in calibers of .32–.20, .38–.40, and .44–.40. FLAYDERMAN'S GUIDE, *supra* note 32, at 122. Uberti currently produces a modern replica of the Colt Lightning, medium frame model, of which 89,000 were produced between 1884 and 1902. *Id.*

[62] *Id.* at 694.

[63] DWIGHT B. DEMERITT, JR., MAINE MADE GUNS & THEIR MAKERS 293–95 (rev. ed. 1997); FLAYDERMAN'S GUIDE, *supra* note 32, at 694. A later iteration of the rifle held twenty-five or twenty-eight rounds in the buttstock. DEMERITT, *supra,* at 301. The American Society of Arms Collectors endorses the Demeritt book as "the definitive work for historians and collectors" of Maine guns. DEMERITT, *supra*, at vi.

[64] FLAYDERMAN'S GUIDE, *supra* note 32, at 694.

[65] WINANT, *supra* note 21, at 244–45. The magazine stuck out horizontally from the side of the firing chamber, making the handgun difficult to carry in a holster, which perhaps explains why the gun never had mass success. SUPICA ET AL., *supra* note 27, at 33.

[66] *See infra* notes 72–77 and accompanying text.

[67] SUPICA ET AL., *supra* note 27, at 48–49; WINANT, *supra* note 21, at 67–70.

[68] SUPICA ET AL., *supra* note 27, at 49.

[69] *See, e.g.*, WINANT, *supra* note 21, at 62–63, 207–08.

[70] *Id.* at 204, 206.

dangling chain was such an impediment to carrying the gun.[71]

The semiautomatic firearm and its detachable box magazine were invented before the turn of the century. It was the latest success in the centuries-old effort to improve the reliability and capacity of multi-shot guns.

In 1896, Germany's Mauser introduced the C96 "broomhandle" pistol, which remained in production until the late 1930s, selling nearly a million to civilians worldwide.[72] The most common configuration was in ten-round capacity, but there were a variety of models with capacities as low as six or as high as twenty.[73] The latter was the Cone Hammer pistol, with twenty-round box magazine.[74]

The Luger semiautomatic pistol was brought to the market in 1899 (although it is commonly known as the "1900").[75] Through many variants, it was very popular for both civilians and the military markets, and remained in production for nearly a century.[76] The most common magazines were seven or eight rounds, but there was also a thirty-two-round drum magazine.[77]

D. Manufacturers in the Twentieth Century Continued the Trend of Increasing Ammunition Capacity and Reliability for Civilian Firearms.

The twentieth century saw improvements on the designs pioneered in the 1800s and expanding popularity for firearms with more than ten rounds.

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[71] *See id.* at 205.

[72] JOHN W. BREATHED, JR. & JOSEPH J. SCHROEDER, JR., SYSTEM MAUSER, A PICTORIAL HISTORY OF THE MODEL 1896 SELF-LOADING PISTOL 272 (1967) (production of 1,150,000, of which "almost a million" were sold on the commercial, non-military market); *see* John Elliot, *A Sweeping History of the Mauser C96 Broomhandle Pistol*, GUNS.COM (Jan. 26, 2012), http://www.guns.com/2012/01/26/a-sweeping-history-of-the-mauser-c96-broomhandle-pistol/.

[73] 2014 STANDARD CATALOG OF FIREARMS, *supra* note 60, at 708–09.

[74] *Id.*; BREATHED & SCHROEDER, *supra* note 72, at 23, 30–31, 38–39, 54–55. At least between 1896 and 1905, Mauser's direct sales to the United States were small. *Id.* at 266–67.

Spain's Astra brought out its own versions of the Mauser, with several models having twenty-round magazines starting in 1928. *Id.* at 208. But these do not appear to have had much distribution in the United States. *Id.* at 266–67.

[75] *See* 2014 STANDARD CATALOG OF FIREARMS, *supra* note 60, at 650.

[76] Among the many models was the 1906 American Eagle. *Id.* at 653. George Luger's invention was licensed to many companies, including Mauser (Germany) and Vickers (England). *Id.* at 657–58. The gun was never manufactured under Luger's own name. *See id.* at 650–62.

[77] JEAN-NOËL MOURET, PISTOLS AND REVOLVERS 126–27 (1993); SUPICA ET AL., *supra* note 27, at 86.

Since the late 1890s, the Savage Arms Company has been one of the classic American firearms manufacturers.[78] In 1911, the company introduced their bolt-action Model 1911, a twenty-shot repeater with a tubular magazine in .22 short caliber.[79] The rifle was popular for boys and for shooting galleries.[80]

By the 1930s, American manufacturers such as Remington, Marlin, and Winchester were producing many tubular magazine rifles in .22 caliber.[81] These firearms are classic rifles for "plinking" (casual target shooting), especially popular for young people. Based on firearms catalogues from 1936 to 1971, there are over twenty such firearms models from major American manufacturers with magazines of sixteen to thirty rounds in one or more of the calibers.[82]

In 1927, the Auto Ordinance Company introduced their

[78] *See Savage Arms History*, SAVAGE ARMS, http://www.savagearms.com/history/ (last visited Feb. 21, 2015).

[79] JIM PERKINS, AMERICAN BOYS' RIFLES 1890–1945, at 191 (1976).

[80] *Id.* Similarly, the Remington Model 12B Gallery Special was introduced in 1910, with an optional extended magazine that held twenty-five .22 shorts. ROY MARCOT, REMINGTON, "AMERICA'S OLDEST GUN MAKER" 149 (James W. Bequette & Joel J. Hutchcroft eds. 1998).

[81] *See, e.g.*, 2014 STANDARD CATALOG OF FIREARMS, *supra* note 60, at 687–88, 870, 1343.

[82] Models listed in the 1936 *Shooter's Bible* include; Remington Model 34 bolt action, Remington Model 121 slide action, Remington Model 341 bolt action, Stevens No. 71 slide action, Savage Model 5 bolt action, Stevens Model 76 semiauto, Stevens-Springfield Model 86 bolt action, Winchester Model 62 slide action, and Winchester Model 61 slide action. STOGER ARMS CORP., SHOOTER'S BIBLE, 1936, at 108–09, 112, 123–24, 126–27, 140 (photo. reprint 1974).

Some additional models include: Stevens Model 87 bolt action, Remington 550 semiauto, Mossberg Model 46B bolt action, Mossberg Model 46M bolt action, Winchester Model 74 semiautomatic, Marlin 39 A lever action, and Marlin Model 81 DL bolt action. BOB BROWNELL, 2 THE GUNSMITHS MART, 1949–1950, at 212, 214, 216, 218, 221 (2011) (reprinting article from *Hunting & Fishing*, Oct. 1948).

The 1959 annual edition of the *Shooter's Bible* adds the semiautomatic Savage Model 6 to the above list. STOGER ARMS CORP., SHOOTER'S BIBLE, 1959, at 103 (1959). For some of the models previously mentioned, see *id.* at 80, 87, 91, 101.

Histories of Savage and Stevens firearms include the following not listed above: Stevens No. 66 bolt action, Stevens Model 46 bolt action, Model 1914 slide action, Savage Model 29 slide action, Savage Model 29 G slide action. JAY KIMMEL, SAVAGE AND STEVENS ARMS COLLECTOR'S HISTORY 35 (1990); BILL WEST, SAVAGE AND STEVENS ARMS, at 11—12, 13—8, 14—44, 15—10, 16—10 (1971). Savage purchased Stevens in 1920. *Savage Arms History*, s*upra* note 78.

For use of the *Shooter's Bible* by the courts, see United States v. Olson, No. 94-30387, 1995 U.S. App. LEXIS 36973, at *1–2 (9th Cir. Dec. 15, 1995) (stating that the book was properly used as a source for a Bureau of Alcohol, Tobacco, and Firearms agent's expert opinion); United States v. Fisher, 353 F.2d 396, 399 (5th Cir. 1965) (Gewin, J., dissenting) (considering information in the book to determine whether the evidence relied on by the trial court was sufficient to justify the trial court's holding); Potter v. United States, 167 Ct. Cl. 28, 48 n.1 (Ct. Cl. 1964) (citing the book for the history of Gabilondo firearms); United States v. Precise Imports Corp., 458 F.2d 1376, 1377 (C.C.P.A. 1972) (reviewing the record produced at the trial court, which included pages from the 1967 edition of the book).

semiautomatic rifle that used thirty-round magazines.[83] These rifles are still in production today.[84]

The M-1 carbine was invented for the citizen solider of World War II.[85] Thereafter, the M-1 carbine became and has remained a popular rifle for civilians in America.[86] The U.S. government's Civilian Marksmanship Program, created by Congress, put nearly a quarter million of these guns into the hands of law-abiding American citizens starting in 1963, at steeply-discounted prices.[87] Partly using surplus government parts, the Plainfield Machine Company, Iver Johnson, and more than a dozen other companies cumulatively manufactured over 200,000 for the civilian market, starting in the late 1950s.[88] The standard magazines are fifteen and thirty rounds.[89]

The most popular rifle in American history is the AR-15 platform, a semiautomatic rifle with standard magazines of twenty or thirty rounds.[90] The AR-15 was brought to the market in 1963, with a

[83] 2014 STANDARD CATALOG OF FIREARMS, *supra* note 60, at 84; *T1-C*, THOMPSON, www.auto-ordnance.com//firearms/thompson-t1-c.asp (last visited Feb. 21, 2015).

[84] *See T1-C*, *supra* note 83.

[85] *See* BRUCE N. CANFIELD, BRUCE CANFIELD'S COMPLETE GUIDE TO THE M1 GARAND AND THE M1 CARBINE 163 (1999).

[86] *See id.* at 163, 279 (noting high desirability and demand for the firearm after the war ended); *see also* Joseph P. Tartaro, *The Great Assault Weapon Hoax*, 20 U. DAYTON L. REV. 619, 622 (1995) ("[T]he M1 carbine [is] beloved by millions of war veterans, collectors, and recreational shooters.").

[87] CANFIELD, *supra* note 85, at 163; LARRY L. RUTH, 2 WAR BABY! COMES HOME: THE U.S. CALIBER .30 CARBINE 575 (R. Blake Stevens ed., 1993); *About the CMP*, CIV. MARKSMANSHIP PROGRAM, http://thecmp.org/about/ (last visited Feb. 21, 2015).

[88] *See* CANFIELD, *supra* note 85, at 163, 279 (noting the large quantity of surplus carbine parts and that firms created commercial carbines using these parts in the 1950s and 1960s). The largest producers were Plainfield's 112,000 from 1962 to 1978 and Iver Johnson's 96,700 from 1978 to 1992. *Post WWII Commercially Manufactured M1 Carbines (U.S.A.): Iver Johnson Arms*, M1CARBINESINC.COM, http://www.m1carbinesinc.com/carbine_ij.html (last visited Feb. 21, 2015); *Post WWII Commercially Manufactured M1 Carbines (U.S.A.): Plainfield Machine Co., Inc.*, M1CARBINESINC.COM., http://www.m1carbinesinc.com/carbine_plainfield.html (last visited Feb. 21, 2015). The U.S. Government sold 240,000 of its own surplus in 1963 into the Civilian Marksmanship Program. CANFIELD, *supra* note 85, at 163. Thereafter, the program (then known as "DCM"—Director of Civilian Marksmanship) sold M1s to Americans from the supply of World War II M1 carbines that had been exported to allied nations and subsequently returned to the United States when the allied nation switched to a newer type of rifle. *See* RUTH, *supra* note 87, at 575, 723. As of 2014, the Civilian Marksmanship Program's supply of carbines for sale has been exhausted. *M1 Carbine*, CIV. MARKSMANSHIP PROGRAM, http://www.thecmp.org/Sales/carbine.htm (last visited Feb. 21, 2015).

[89] RUTH, *supra* note 87, at 575.

[90] *See* NICHOLAS J. JOHNSON, DAVID B. KOPEL, GEORGE A. MOCSARY & MICHAEL P. O'SHEA, FIREARMS LAW AND THE SECOND AMENDMENT: REGULATION, RIGHTS, AND POLICY 12, 809 (2012) (noting the wide range of uses for the gun and its popularity). The "AR" stands for "ArmaLite Rifle." *Modern Sporting Rifle Facts*, NAT'L SHOOTING SPORTS FOUND., http://www.nssf.org/msr/facts.cfm (last visited Feb. 21, 2015). ArmaLite did the initial design work on

then-standard magazine of twenty; the thirty-round standard magazine was developed a few years later.[91] The 1994 Supreme Court case *Staples v. United States*[92] described the AR-15 as "the civilian version of the military's M–16 rifle," and noted that many parts are interchangeable between the two guns.[93] The crucial distinction, explained the Court, is that the AR-15 is like all other semiautomatic firearms in that it can fire "only one shot with each pull of the trigger."[94] The Court pointed out that semiautomatic firearms "traditionally have been widely accepted as lawful possessions."[95] So legally speaking, the semiautomatic AR-15 is the opposite of the M-16 machine gun: "[C]ertain categories of guns—no doubt including the machineguns, sawed-off shotguns, and artillery pieces that Congress has subjected to regulation— . . . have the same quasi-suspect character we attributed to owning hand grenades . . . . But . . . guns falling outside those categories traditionally have been widely accepted as lawful possessions . . . ."[96]

By 1969, the AR-15 faced competition from the Armalite-180 (twenty-round optional magazine), the J&R 68 carbine (thirty rounds), and the Eagle Apache carbine (thirty rounds).[97]

Springfield Armory brought out the M1A semiautomatic rifle in 1974, with a twenty-round detachable box magazine.[98] The next year, the Ruger Mini-14 rifle was introduced, with manufacturer-supplied standard five, ten, or twenty-round detachable magazines.[99] Both the M1A and the Mini-14 are very popular to this day.[100]

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the AR-15 before selling the rights to Colt's. ARMALITE, INC., A HISTORICAL REVIEW OF ARMALITE 3 (Jan. 4, 2010), *available at* http://www.armalite.com/images/Library%5CHistory.pdf.

[91] PATRICK SWEENEY, THE GUN DIGEST BOOK OF THE AR-15, at 104 (2005). About this time, the Cetme-Sport semiauto rifle with an optional twenty-round detachable box mag magazine came on the market. GUN DIGEST 1968, at 335 (John T. Amber ed., 22nd Anniversary Deluxe ed. 1967).

[92] Staples v. United States, 511 U.S. 600 (1994).

[93] *Id.* at 603.

[94] *Id.* at 602 n.1, 603.

[95] *See id.* at 612.

[96] *See id.* at 611–12.

[97] *See* GUN DIGEST 1970, at 294 (John T. Amber ed., 24th Anniversary Deluxe ed. 1969).

[98] *See* 2014 STANDARD CATALOG OF FIREARMS, *supra* note 60, at 1102 (noting the twenty-round box magazine); *M1A Series*, SPRINGFIELD ARMORY, http://www.springfield-armory.com/m1a-series/ (last visited Feb. 21, 2015).

[99] 2014 STANDARD CATALOG OF FIREARMS, *supra* note 60, at 1173.

[100] *See* M1A Scout, *What is an M1A Rifle*, M1A RIFLES (July 2, 2009), http://www.m1arifles.com/tag/m14/; Shawn Skipper, *8 Things You Might Not Know About the Ruger Mini-14*, DAILY CALLER (June 3, 2014), http://dailycaller.com/2014/06/03/8-things-you-might-not-know-

By 1979, all of the above guns were challenged in the American market by high-quality European imports such as the Belgian FN-FAL Competition rifle (optional twenty-round magazine), the German Heckler & Koch HK-91 and HK-93 rifles (twenty rounds), the Swiss SIG AMT rifle (twenty rounds), and the Finnish Valmet M-71S rifle (thirty rounds).[101]

Citizen firearms with detachable magazines holding more than ten rounds were not limited to rifles, however. In 1935, Browning introduced the Hi-Power pistol.[102] This handgun was sold with a thirteen-round detachable magazine and is still in production.[103]

In Europe, more so than in America, Browning had to compete against the Spanish Gabilondo twenty-round Plus Ultra, introduced in 1925.[104] Spain's Arostegui, Eulogio brought out the Azul—a semiautomatic with standard magazines of ten, twenty and thirty—in 1935.[105]

Browning's first notable American competition came with the 1964 introduction of the Plainfield Machine Company's "Enforcer," a pistol version of the M1 carbine with a thirty-round magazine.[106]

A tremendous commercial success was the Beretta model 92, a nine millimeter pistol with a sixteen-round magazine, which entered the market in 1976.[107] In various configurations (currently the Beretta 92F) the Beretta is one of the most popular of all modern handguns.[108] Browning introduced another popular handgun in 1977, the fourteen-round BDA (Browning Double Action).[109] Also coming on the market at this time were European handguns such as Austria's L.E.S. P-18 (eighteen rounds) and

about-the-ruger-mini-14/. Another gun introduced in 1976 also used magazines larger than fifteen. The Bingham company (from Norcross, Georgia) brought out the PPS 50 and AK-22, .22 caliber rifles with detachable magazines of fifty or twenty-nine rounds. 2014 STANDARD CATALOG OF FIREARMS, *supra* note 60, at 163. The PPS-50 is currently manufactured by Mitchell's Mausers. *See PPS-50/22*, MITCHELL'S MOUSERS, http://www.mauser.org/pps-50-22/ (last visited Feb. 21, 2015). That the gun is still in production four decades later is impressive, but the PPS-50 never became an all-American favorite as did the M1, AR-15, M1A and the Mini-14.

[101] GUN DIGEST 1980, at 319–21 (Ken Warner ed., 34th Anniversary Deluxe ed. 1979). Also on the market were the Commando Arms carbine (five, fifteen, thirty or ninety rounds), and the Wilkinson Terry carbine (thirty-one rounds). *Id.* at 319, 322.

[102] 2014 STANDARD CATALOG OF FIREARMS, *supra* note 60, at 182.

[103] *Id.* at 432–33.

[104] *See id*. at 465.

[105] *Id*. at 72; BREATHED & SCHROEDER, *supra* note 74, at 216–17.

[106] *See* GUN DIGEST 1965, at 229 (John T. Amber eds., 19th Anniversary Deluxe ed. 1964).

[107] 2014 STANDARD CATALOG OF FIREARMS, *supra* note 60, at 121.

[108] *Id*. at 122. In 1985 the M9 version of this pistol became the standard U.S. military issue sidearm. *Id.* at 124.

[109] *Id*. at 184.

Germany's Heckler & Koch VP 70Z (also eighteen rounds).[110]

E. Magazines After 1979

We end this story in 1979, when Jimmy Carter was President,[111] the Bee Gees bestrode the AM radio Top 40,[112] Gaston Glock was manufacturing curtain rods in his garage,[113] Americans were watching *Love Boat* on broadcast television,[114] and people on the cutting edge of technology were adopting VisiCalc, the first spreadsheet program, run from huge floppy discs.[115]

Long before 1979, magazines of more than ten rounds had been well established in the mainstream of American gun ownership. Indeed, they had been so established before almost everyone alive in 1979 was born.

After 1979, technological improvements continued to foster the popularity of magazines holding more than ten rounds. First of all, there were improvements across the board in manufacturing, so that magazine springs became more reliable, particularly for magazines holding up to thirty rounds. This greatly reduced the risk of a misfeed. Reliability was also enhanced by improvements in shaping the magazines' "lips"—the angled wings at the top of the magazine which guide the next round of ammunition into the firing chamber.[116]

Magazines of all sizes benefited from increasing use of plastic polymers in manufacturing.[117] Today, many magazine walls are

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[110] *See* GUN DIGEST 1980, *supra* note 101, at 297–98. L.E.S. was the American partner of Austria's Steyr. The following courts have relied on one of the annual issues of GUN DIGEST: Sturm, Ruger & Co. v. Arcadia Mach. & Tool, Inc., No. CV 85-8459 MRP, 1988 U.S. Dist. LEXIS 16451, at *3–4 (C.D. Cal. Nov. 4, 1988); A. Uberti & C. v. Leonardo, 892 P.2d 1354, 1364 (Ariz. 1995) (discussing how the inclusion of the defendant's guns in the *Gun Digest* established that defendant had sufficient minimum contacts with the state to satisfy personal jurisdiction); Couplin v. State, 378 A.2d 197, 202 n.2 (Md. Ct. Spec. App. 1977); Citizens for a Safer Cmty. v. City of Rochester, 627 N.Y.S.2d 193, 203 n.5 (Sup. Ct. 1994).

[111] JULIAN E. ZELIZER, JIMMY CARTER 3 (2010).

[112] *See* DAVID N. MEYER, THE BEE GEES: THE BIOGRAPHY 213–14 (2013).

[113] PAUL M. BARRETT, GLOCK: THE RISE OF AMERICA'S GUN 13–16 (2012).

[114] GAVIN MACLEOD & MARK DAGOSTINO, THIS IS YOUR CAPTAIN SPEAKING: MY FANTASTIC VOYAGE THROUGH HOLLYWOOD, FAITH & LIFE 138–39 (2013).

[115] *See, e.g.*, BOB DENTON, THE PC PIONEERS 97–100 (2d ed. 2014); ROBERT E. WILLIAMS & BRUCE J. TAYLOR, THE POWER OF: VISICALC (1981) (advising how to properly use the VisiCalc system and providing practice exercises on the system).

[116] *See generally* David Tong, *The Care, Feeding and Reliability of Semi-Automatic Pistols*, CHUCKHAWKS.COM, http://www.chuckhawks.com/care_reliability_autopistols.htm (last visited Feb. 21, 2015).

[117] *See, e.g.*, Tim Lau, *AR15/M16 Magazine Drop Test: Plastic Vs. Aluminum*, MODERN SERVICE WEAPONS, (Dec. 9, 2012), http://modernserviceweapons.com/?p=1072 (comparing the performance of plastic and aluminum magazines).

made from plastic, rather than metal. Closer tolerances in manufacturing, lower costs, and increased durability have all improved magazine quality and reliability.

Likewise, the vast majority of magazines today have a removable baseplate (also known as a "foot plate").[118] Removal of the baseplate allows the magazine to be disassembled for cleaning (e.g., removal of gunpowder residue) or repair (e.g., replacing a worn-out spring).[119] The existence of a removable baseplate also makes it possible for consumers to add after-market extenders to a magazine.[120] These extenders may simply increase the grip length (to better fit a particular consumer's hands), and they may also increase capacity by one, two, or three rounds.[121] Thus, a consumer with a ten-round factory magazine can add a two-rounder extender to create a twelve-round magazine.

Most importantly, the double-stack magazine was perfected. In some box magazines, the ammunition is contained in a single column.[122] In the double-stack magazine, there are two columns of ammunition, side-by-side and touching.[123] When the gun is used, the magazine will first reload a round from column A, then a round from column B, then from column A, and so on.[124]

The practical effect is this: for a handgun, a single stack magazine of seventeen rounds would stick out far below the bottom of the grip, making the gun unwieldy for carrying and holstering. With a double-stack configuration, a seventeen-round magazine can fit inside a standard full-sized handgun grip. The practical limitation of grip size (the size of the human hand) means that relatively larger capacity magazines are possible for relatively smaller cartridges. Thus, a double-stack magazine for the midsize nine millimeter round might hold up to twenty or twenty-one rounds, whereas a double-stack for the thicker .45 ACP cartridge would hold

[118] Michael Shain, Expert Report and Opinion at 5–6, Cooke v. Hickenlooper, No. 13-cv-01300-MSK-MJW (D. Colo. Aug. 1, 2013), available at http://coloradoguncase.org/Shain-report.pdf. Kopel is counsel for the Colorado Sheriffs who are the plaintiffs in this case, which is currently on appeal to the Tenth Circuit.

[119] *See* Mike Wood, *3 Simple Keys to Cleaning Your Pistol Magazines*, POLICEONE.COM, July 11, 2014, http://www.policeone.com/Officer-Safety/articles/7358758-3-simple-keys-to-cleaning-your-pistol-magazines/.

[120] Michael Shain, Expert Report and Opinion at 5–7, *Cooke*, No. 13-cv-01300-MSK-MJW.

[121] *See, e.g.*, *Magazine Adapters*, TOP GUN SUPPLY, http://www.topgunsupply.com/gun-accessories-for-sale/magazine-adapters.html (last visited Feb. 19, 2014) (selling magazine adapters that increase capacity and/or increase grip length).

[122] *Magazines, Clips, and Speedloaders*, FIREARMS ADVANTAGE, http://www.firearmsadvantage.com/magazines_clips_speedloaders.html (last visited Feb. 21, 2015).

[123] *Id.*

[124] *Id.*

no more than fifteen.

III. THE HISTORY OF AMMUNITION CAPACITY BANS

An important factor in the consideration of the constitutionality of firearms laws is whether they are traditional and longstanding. For example, the *Heller* Court pointed out that "[f]ew laws in the history of our Nation have come close to the severe restriction of the District's handgun ban."[125] The handgun ban was contrasted with "longstanding" guns controls, such as those prohibiting gun possession by felons or the mentally ill.[126] Following *Heller*, the Tenth Circuit has explained that Second Amendment cases must consider "the rarity of state enactments in determining whether they are constitutionally permissible."[127]

At the time the Second Amendment was adopted, there were no laws restricting ammunition capacity. This was not because all guns were single-shot. As detailed above, multi-shot guns predate the Second Amendment by about two hundred years, and Lewis and Clark carried a powerful twenty-two-round gun on their famous expedition.[128]

The first laws that restricted magazine capacity were enacted during the prohibition era, nearly a century and a half after the Second Amendment was adopted, and over half a century after the adoption of the Fourteenth Amendment. In 1927, Michigan prohibited "any machine gun or firearm which can be fired more than sixteen times without reloading."[129] Also in 1927, Rhode Island banned "any weapon which shoots more than twelve shots semi-automatically without re-loading."[130]

The Michigan ban was repealed in 1959.[131] That same year, the

[125] District of Columbia v. Heller, 554 U.S. 570, 629 (2008).

[126] *Id.* at 626, 629.

[127] Kerr v. Hickenlooper, 744 F.3d 1156, 1178 (10th Cir. 2014).

[128] *See supra* notes 21–31 and accompanying text.

[129] Act of June 2, 1927, No. 373, § 3, 1927 Mich. Public Acts 887, 888 (repealed 1959) ("It shall be unlawful within this state to manufacture, sell, offer for sale, or possess any machine gun or firearm which can be fired more than sixteen times without reloading . . . ."). In 1931, the provision was consolidated into section 224 of the Michigan Code.

[130] Act of Apr. 22, 1927, ch. 1052, §§ 1, 4, 1927 R.I. Acts & Resolves 256, 256–57 (amended 1959).

[131] Under the 1959 revision: "Any person who shall manufacture, sell, offer for sale or possess any machine gun or firearm which shoots or is designed to shoot automatically more than 1 shot without manual reloading, by a single function of the trigger . . . shall be guilty of a felony . . . ." Act of July 16, 1959, No. 175, sec. 1, § 224, 1959 Mich. Pub. Acts 249, 250. Michigan's current statute on machine guns contains very similar language. *See* MICH. COMP. LAWS SERV. § 750.224 (LexisNexis 2014) ("A person shall not manufacture, sell, offer

Rhode Island law was changed to fourteen shots, and .22 caliber rimfire guns were excluded.[132] The Rhode Island ammunition capacity law was fully repealed in 1975.[133]

The two statutes applied only to firearms, with Rhode Island only for semiautomatics. Neither statute covered a magazine that was not inserted in a firearm.

In 1933, Ohio began requiring a special permit for the possession or sale of a semiautomatic firearm with an ammunition capacity of greater than eighteen rounds.[134] In 1971, during a recodification of the state criminal code, an exemption for .22 caliber was added, and for other calibers the limit was raised to thirty-two or more rounds.[135]

Significantly, the Ohio statute was interpreted to not ban the sale of any magazine or any gun, but to forbid the simultaneous purchase of a magazine and a compatible gun.[136] (Of course purchase was allowed if one has the special permit.)[137] With or without the permit, one could buy a sixty-round magazine in Ohio.[138] The licensing law was fully repealed in 2014.[139]

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for sale or possess . . . [a] machine gun or firearm that shoots or is designed to shoot automatically more than 1 shot without manual reloading, by a single function of the trigger.").

[132] Firearms Act, ch. 75, secs. 11-47-2, -8, 1959 R.I. Acts & Resolves 260, 260, 263 (amended 1975).

[133] This was accomplished by changing the Firearms Act's definition of "Machine gun" to mirror the federal definition:

> [A]ny weapon which shoots, is designed to shoot, or can be readily restored to shoot, automatically more than one shot, without manual reloading, by a single function of the trigger. The term shall also include the frame or receiver of any such weapon, any combination of parts designed and intended for use in converting a weapon into a machinegun, and any combination of parts from which a machinegun can be assembled if such parts are in the possession or under the control of a person.

Firearms Act, ch. 278, sec. 1, § 11-47-2, 1975 R.I Pub. Laws 738, 738–39, 742 (amended 1989). Rhode Island's definition of machine gun was changed again in 1989. Act of July 10, 1989, ch. 542, sec. 7, § 11-47-2, 1989 R.I. Pub. Laws. 1371, 1375–76 (codified at R.I. GEN. LAWS ANN. § 11-47-2 (West 2014)).

[134] Act of Apr. 8, 1933, No. 166, sec. 1, §§ 12819-3, -4, 1933 Ohio Laws 189, 189 (amended 1972).

[135] Act of Dec. 22, 1972, No. 511, sec. 1, § 2923.11, 1972 Ohio Laws 1866, 1963; OHIO REV. CODE ANN. § 2923.11 (LexisNexis 2014).

[136] *Ohio: Disclaimer*, BUDSGUNSHOP.COM (July. 11, 2014), http://www.budsgunshop.com/catalog/feeds/state_reg/ohio_restrictions.pdf.

[137] OHIO REV. CODE ANN. § 2923.17.

[138] *See*, *e.g.*, *Surefire 60-Round High-Capacity Magazine MAG5-60,* GANDER MTN., http://www.gandermountain.com/modperl/product/details.cgi?pdesc=SureFire-60-Round-High-Capacity-Magazine-MAG5-60&i=447625 (last visited Feb. 21, 2015) (allowing online customers to arrange for pick-up of a SureFire 60-Round High-Capacity Magazine at any of nine Ohio stores).

[139] H.R. 234, 2013–2014 Leg., 130th Sess. § 2 (Ohio 2014) (enacted) (repealing relevant definition statute, and taking effect Mar. 23, 2015).

The only longstanding statute banning magazines is found in the District of Columbia. In 1932, Congress passed a District of Columbia law prohibiting the possession of a firearm that "shoots automatically or semiautomatically more than twelve shots without reloading."[140] In contrast, when Congress enacted the National Firearms Act of 1934 to impose stringent regulations on machine guns, it chose to impose no restrictions on magazines.[141] When the District of Columbia achieved home rule in 1975,[142] the district council did not choose to repeal the law but instead promptly enacted the bans on handguns and on self-defense with any gun in the home,[143] which were later ruled unconstitutional by the Supreme Court in *Heller*.[144] The District of Columbia interpreted the magazine law so that it outlawed all detachable magazines and all semiautomatic handguns.[145] The District stands alone in its historical restriction of magazines.

The only widespread restriction on magazine capacity came in 1994 when Congress enacted a ban on new magazines holding more than ten rounds.[146] The law was in effect until 2004, at which point Congress allowed it to sunset.[147] The effects of this law were studied extensively in a series of U.S. Department of Justice reports authored by Doctor Christopher Koper and two others. The final report, issued in 2004, concluded: "there has been no discernible reduction in the lethality and injuriousness of gun violence, based on indicators like the percentage of gun crimes resulting in death or the share of gunfire incidents resulting in injury . . . ."[148] Further,

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[140] Act of July 8, 1932, Pub. L. No. 72-275, §§ 1, 8, 47 Stat. 650, 650, 652.

[141] National Firearms Act, Pub. L. 73-474, 48 Stat. 1236 (1934).

[142] *D.C. Home Rule*, COUNCIL D.C., http://dccouncil.us/pages/dc-home-rule (last visited Feb. 21, 2015).

[143] *See* Firearms Control Regulations Act of 1975, No. 1-142, § 201, 23 D.C. Reg. 1091, 1097 (July 23, 1976).

[144] *See supra* notes 13–14, 19–20 and accompanying text.

[145] *See* VIVIAN S. CHU, DC GUN LAWS AND PROPOSED AMENDMENTS 5–6 (2011) ("Prior to Heller, the DC Code's definition of 'machine gun' included 'any firearm, which shoots, is designed to shoot or can be readily converted to shoot . . . semiautomatically, more than 12 shots without manual reloading.' By virtue of this broad definition, any semiautomatic weapon that could shoot more than 12 shots without manual reloading, whether pistol, rifle, or shotgun, was deemed a 'machine gun,' and prohibited from being registered. It appears that under the District's old definition, registration of a pistol was largely limited to revolvers." (quoting D.C. Code § 7-2501.01(10) (LexisNexis 2008))).

[146] Violent Crime Control and Law Enforcement Act of 1994, Pub. L. 103-322, § 110103(a)–(b), 108 Stat. 1796, 1998–99.

[147] § 110105, 108 Stat. at 2000.

[148] CHRISTOPHER S. KOPER ET AL., AN UPDATED ASSESSMENT OF THE FEDERAL ASSAULT WEAPONS BAN: IMPACTS ON GUN MARKETS AND GUN VIOLENCE, 1994–2003, at 96 (2004), *available at* https://www.ncjrs.gov/pdffiles1/nij/grants/204431.pdf.

"the ban has not yet reduced the use of [such magazines] in crime . . . ."[149] Doctor Koper noted also that state-level firearm bans have not had an impact on crime.[150]

In the modern era, only a few states have enacted magazine restrictions, starting with New Jersey's 1990 ban on magazines over fifteen rounds.[151] That ban applies only to detachable box magazines for semiautomatic firearms.[152] A couple years later, Hawaii banned handgun magazines over twenty rounds, and later reduced that to ten.[153] Maryland in 1994 banned the sale or manufacture of magazines over twenty rounds; the ban did not affect possession, loans, acquisition, or importation.[154] The Maryland limit was reduced to ten in 2013.[155]

In 1999 California banned the sale of magazines over ten rounds but allowed grandfathered possession, and New York did the same in 2000.[156] (Currently, large capacity magazine bans in Colorado, Connecticut, and Massachusetts also have grandfather provisions, while New Jersey, the District of Columbia, and Hawaii do not.)[157] In 2013 New York removed grandfathering and reduced the limit to seven.[158] The seven-round limit was suspended shortly thereafter, since there are no seven-round magazines available for many guns.[159] Instead, the legislature forbade owners of ten-round magazines to load more than seven rounds.[160] This restriction was

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[149] *Id.* at 2.

[150] *Id.* at 81 n.95.

[151] Act of May 30, 1990, ch. 32, §§ 2C:39-1(y), -3(j), 1990 N.J. Laws 217, 221, 235 (codified at N.J. STAT. ANN. § 2C:39-1(y), -3(j) (West 2014)).

[152] § 2C:39-1(y). There is an exemption for certain competitive target shooters. *Id.* § 2C:39-3(j).

[153] Act of June 29, 1992, ch. 286, sec. 3. § 134-8, 1992 Haw. Sess. Laws 740, 742 (codified at HAW. REV. STAT. ANN. § 134-8 (LexisNexis 2014)).

[154] Act of May 26, 1994, ch. 456, § 36H-5, 1994 Md. Laws 2119, 2165 (amended 2013).

[155] *See* Firearm Safety Act of 2013, ch. 427, § 4-305, 2013 Md. Laws 4195, 4210 (codified at MD. CODE. ANN., CRIM. LAW § 4-305 (LexisNexis 2014)).

[156] *See* Act of July 19, 1999, ch. 129, sec. 3, § 12020(a)(2), (c)(25), 1999 Cal. Stat. 1781, 1785, 1793 (repealed 2012); Act of Aug. 8, 2000, ch. 189, sec. 11, § 265.02(8), 2000 N.Y. Laws 2788, 2793 (amended 2013).

[157] *Large Capacity Ammunition Magazines Policy Summary*, L. CENTER TO PREVENT GUN VIOLENCE (May 31, 2013), http://smartgunlaws.org/large-capacity-ammunition-magazines-policy-summary/; *see supra* notes 158, 165 and accompanying text.

[158] Act of Jan. 15, 2013, ch. 1, secs. 38, 46-a, §§ 265.00.23, 265.36, 2013 N.Y. Laws 1, 16, 19 (codified at N.Y. PENAL LAW § 265.36 (McKinney 2014)).

[159] Freeman Klopott, *Cuomo's 7-Bullet Limit to Be Suspended Indefinitely, Skelos Says*, BLOOMBERG (Mar. 24, 2013), http://www.bloomberg.com/news/2013-03-25/cuomo-s-7-bullet-limit-to-be-suspended-indefinitely-skelos-says.html.

[160] PENAL §§ 265.36–.37; OFFICE OF DIV. COUNSEL, GUIDE TO THE NEW YORK SAFE ACT FOR MEMBERS OF THE DIVISION OF STATE POLICE 7, 9 (2013), *available at* http://www.nypdcea.org/pdfs/NYSP_Safe_Act_Field_Guide.pdf.

declared to violate the Second Amendment in a federal district court decision.[161] New York City outlaws rifle or shotgun magazines holding more than five rounds.[162]

Also in 2013, Colorado enacted a ban on magazines over fifteen rounds,[163] and Connecticut did the same for magazines over ten.[164] Both statutes allowed current owners to retain possession.[165]

Finally, one state has followed Ohio's former approach of magazine licensing, rather than prohibition. In 1994, Massachusetts began requiring that possession and additional acquisitions of magazines over ten rounds be allowed only for citizens who have a "Class A" firearms license—which most Massachusetts gun owners have.[166]

IV. WHAT DOES THE HISTORY MEAN?

Given the history above, what does modern legal doctrine say about the permissibility of outlawing magazines, as in the so-called SAFE Act's ban on possession of magazines of more than ten rounds and loading more than seven rounds in a magazine, or New York City's ban on long gun magazines of more than five rounds? What about bans in other states of more than ten rounds (Maryland, Connecticut, the District of Columbia, California, and Hawaii for handguns only) or more than fifteen rounds (New Jersey and Colorado)?

This Part analyzes these questions in light of Second Amendment

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[161] N.Y. State Rifle & Pistol Ass'n v. Cuomo, 990 F. Supp. 2d 349, 372–73 (W.D.N.Y. 2013).

[162] N.Y.C., N.Y., ADMIN. CODE § 10-306(b) (2015).

[163] Act of Mar. 20, 2013, ch. 48, sec. 1, §§ 18-12-301(2)(a)(I), -302(1), 2013 Colo. Sess. Laws 144, 144–45 (codified at COLO. REV. STAT. § 18-12-302(1) (2014)).

[164] Act of April 4, 2013, P.A. 13-3, § 23, 2013 Conn. Acts 47, 66 (Reg. Sess.) (codified at CONN. GEN. STAT. ANN. § 53-202w (West 2015)).

[165] COLO. REV. STAT. § 18-12-302(2) (permitting a person to maintain possession of a banned magazine if he/she owned it prior to the effective date of the law and maintained "continuous possession" thereafter); CONN GEN. STAT. §§ 53-202w(e)(4), 53-202x(a)(1) (permitting a person to maintain possession of a banned magazine if he/she possessed it prior to the effective date of the law and declared it to the government).

[166] MASS. GEN. LAWS ANN. ch. 140 §§ 121, 131(a) (West 2014) (allowing possession and acquisition of magazines manufactured before Sept. 1994 by anyone with a Class A license); Matt Carroll, *Snapshot: Gun Licenses Per 1,000, 2012*, BOSTON.COM, (Jan. 24, 2013), http://www.boston.com/yourtown/specials/snapshot/massachusetts_snapshot_gun_licenses_2012 (showing the prevalence of Class A licenses in Massachusetts). A 2014 bill enacted in Massachusetts eliminated the lower category of "Class B" firearms licenses, so presumably all licensed firearms owners in Massachusetts will be able to acquire magazines of more than ten rounds, albeit only magazines manufactured before 1995. Act of Aug. 11, 2014, ch. 284, 2014 Mass. Acts, *available at* https://malegislature.gov/Laws/SessionLaws/Acts/2014/Chapter284.

precedents from the *Heller* Court and from subsequent cases that have relied at least in part on history and tradition in judging Second Amendment cases.

A. The Crucial Years: 1789–1791 and 1866–1868

For original meaning of the Second Amendment, the most important times are when the Second Amendment was created and when the Fourteenth Amendment was created, since a core purpose of the latter amendment was to make the individual's Second Amendment right enforceable against state and local government.[167] Congress sent the Second Amendment to the states for ratification in 1789, and ratification was completed in 1791.[168] The Fourteenth Amendment was passed by Congress in 1866, and ratification by the states was completed in 1868.[169]

1. Magazines in 1789–1791 and 1866–1868

As of 1789 to 1791, multi-shot magazines had existed for two centuries, and a variety of models had come and gone.[170] The state-of-the-art gun between 1789 and 1791 was the twenty- or twenty-two-shot Girandoni air rifle, powerful enough to take down an elk with a single shot.[171]

By the time that the Fourteenth Amendment was introduced in Congress, firearms with magazines of over ten or fifteen rounds had been around for decades.[172] The best of these was the sixteen-shot Henry Rifle, introduced in 1861 with a fifteen-round magazine.[173] The Henry Rifle was commercially successful, but Winchester Model 1866, with its seventeen-round magazine, was massively successful.[174] So by the time ratification of the Fourteenth Amendment was completed in 1868, it was solidly established that firearms with seventeen-round magazines were in common use.

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[167] *See, e.g.*, Ezell v. City of Chi., 651 F.3d 684, 702–03 (7th Cir. 2011).

[168] JOHNSON, KOPEL, MOCSARY & O'SHEA, *supra* note 90, at 218.

[169] *Id.* at 299.

[170] *See supra* Part II.B.

[171] *See supra* notes 27–31 and accompanying text.

[172] *See supra* notes 32–35 and accompanying text..

[173] RICHARD C. RATTENBURY, A LEGACY IN ARMS: AMERICAN FIREARM MANUFACTURE, DESIGN, AND ARTISTRY, 1800–1900, at 135 (2014); *see supra* note 49 and accompanying text.

[174] CLIFFORD R. CADWELL, GUNS OF THE LINCOLN COUNTY WAR 50 (2009); RATTENBURY, *supra* note 173, at 136; *supra* notes 55–55 and accompanying text.

2. Magazine Prohibitions in 1789–1791 and 1866–1868

From the colonial period to the dawn of American independence on July 4, 1776, and through the ratification of the Fourteenth Amendment, there were no prohibitions on magazines. Indeed, the first magazine prohibition did not appear until the alcohol prohibition era in 1927.[175] Thus, the historical evidence of the key periods for original meaning strongly suggests that magazine bans are unconstitutional.

B. "Typically Possessed by Law-Abiding Citizens for Lawful Purposes" or "Dangerous and Unusual"?

The Supreme Court's *Heller* decision distinguished two broad types of arms. Some arms, such as handguns, are "typically possessed by law-abiding citizens for lawful purposes."[176] These arms are also described by the Court as being "in common use."[177] In contrast, some other arms are "dangerous and unusual."[178] Examples provided by the Court were short-barreled shotguns or machine guns.[179] The common, typical, arms possessed by law-abiding citizens are protected by the Second Amendment; the "dangerous and unusual" arms are not protected.[180] By definition, "unusual" arms are not "in common use" or "typically possessed by law-abiding citizens for lawful purposes."[181]

The *Heller* Court did not expressly mandate that historical analysis be used when deciding whether an arm is typical or common or "dangerous and unusual." The *Heller* Court approvingly quoted the 1939 Supreme Court decision *United States v. Miller*,[182] which had described the original meaning of the Second Amendment as protecting individually-owned firearms that were "in common use at the time."[183] The *Miller* Court's 1939 decision did not extend Second Amendment protection to sawed-off

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[175] *See supra* notes 129–30 and accompanying text; s*ee also* Act of June 2, 1927, No. 372, § 3, 1927 Mich. Public Acts 887, 888–89 (repealed 1959) (regulating the possession of and carrying of certain firearms that were capable of firing sixteen shots without reloading).

[176] *See id.* at 625, 629 (majority opinion).

[177] *Id.* at 627 (quoting United States v. Miller, 307 U.S. 174, 179 (1939)).

[178] *Heller*, 554 U.S. at 627.

[179] *See id.* at 625, 627.

[180] *See id.* at 627.

[181] *See id.*

[182] *Id.* (quoting *Miller*, 307 U.S. at 179).

[183] *Heller*, 554 U.S. at 627 (quoting *Miller*, 307 U.S. at 179) (internal quotation marks omitted).

shotguns;[184] as *Heller* explained *Miller*, the *Miller* principle was that sawed-off shotguns are dangerous and unusual.[185]

To be precise, *Miller* did not formally rule that short shotguns are *not* Second Amendment arms; the Court simply reversed and remanded the district court's decision granting criminal defendant Miller's motion to quash his indictment.[186] The Supreme Court said that the suitability of sawed-off shotguns as Second Amendment arms was not a fact that was subject to "judicial notice."[187] Presumably the federal district court in Arkansas could have taken up the remanded case and then received evidence regarding what sawed-off shotguns are used for and how common they are. But Miller and his co-defendant Frank Layton had disappeared long before the case was decided by the Supreme Court.[188]

Regardless, subsequent courts, including the court in *Heller*, read *Miller* as affirmatively stating that sawed-off shotguns are not protected by the Second Amendment.[189]

Even though *Heller*'s "common" or "typical" versus "dangerous and unusual" dichotomy seems primarily concerned with contemporary uses of a given type of arm, history can still be useful. As detailed in Part II, magazines of more than ten rounds have been very commonly possessed in the United States since 1862.[190] Common sense tells us that the small percentage of the population who are violent gun criminals is not remotely large enough to explain the massive market for magazines of more than ten rounds that has existed since the mid-nineteenth century. We have more than a century and a half of history showing such magazines to be owned by many millions of law-abiding Americans.[191]

Thus, a court which today ruled that such magazines are "dangerous and unusual" would seem to have some burden of explaining how such magazines, after a century and a half of being

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[184] *Miller*, 307 U.S. at 178.

[185] *Heller*, 554 U.S. at 625.

[186] *Miller,* 307 U.S. at 177, 183.

[187] *Id.* at 178. "Judicial notice" is when courts rely on facts that are not in the record of the case, but which are indisputably true. FED. R. EVID. 201. For example, they may be a subject of common knowledge (e.g., that in Arkansas, the sun is never visible in the sky at midnight) or can be ascertained from indisputable sources (e.g., that a particular section of the Code of Federal Regulations contains certain language). *See id.*

[188] Brian L. Frye, *The Peculiar Story of* United States v. Miller, 3 N.Y.U J.L. & LIBERTY 48, 65–68 (2008). *The Peculiar Story of* United States v. Miller was cited by the Court in *Heller*. *Heller*, 554 U.S. at 623.

[189] *Heller,* 554 U.S. at 621–22.

[190] *See supra* Part II.

[191] *See supra* Part II.

"in common use" and "typically possessed by law-abiding citizens for lawful purposes," became "dangerous and unusual" in the twenty-first century.

This is not possible. Today, magazines of more than ten rounds are more common than ever before.[192] They comprise about forty-seven percent of magazines currently possessed by Americans today.[193] The AR-15 rifle (introduced in 1963) is the most popular rifle in American history, with sales of several million;[194] its standard magazines are twenty or thirty rounds.[195]

C. "Longstanding" Controls Versus "Few Laws in the History of Our Nation"

Just as *Heller* distinguishes types of arms (common or typical versus dangerous and unusual), *Heller* distinguishes types of arms-control laws. One type of arms controls are "longstanding," and these are "presumptively lawful."[196] Examples listed by *Heller* are bans on gun possession "by felons and the mentally ill," bans on carrying guns "in sensitive places such as schools and government buildings," and "conditions and qualifications on the commercial sale of arms."[197]

The *Heller* Court highlighted the unusual nature of the District of Columbia anti-gun laws:

> Few laws in the history of our Nation have come close to the severe restriction of the District's handgun ban. And some of those few have been struck down. In *Nunn v. State*, the Georgia Supreme Court struck down a prohibition on carrying pistols openly (even though it upheld a prohibition on carrying concealed weapons). In *Andrews v. State*, the Tennessee Supreme Court likewise held that a statute that forbade openly carrying a pistol "publicly or privately, without regard to time or place, or circumstances," violated

[192] *See* Fyock v. City of Sunnyvale, No. C-13-5807-RMW, 2014 U.S. Dist. LEXIS 29722, at *13 (N.D. Cal. Mar. 5, 2014) (agreeing with and incorporating affidavit from plaintiffs' expert that "whatever the actual number of such magazines in United States consumers' hands is, it is in the tens-of-millions, even under the most conservative estimates.").

[193] *Id.* ("Plaintiffs cite statistics showing that magazines having a capacity to accept more than ten rounds make up approximately 47 percent of all magazines owned.").

[194] PATRICK SWEENEY, THE GUN DIGEST BOOK OF THE AR-15, at 14 (2005); *see* Meghan Lisson, *Run on Guns: AR-15s Sales Soar*, CNBC (Apr. 25, 2013), http://www.cnbc.com/id/100673826.

[195] SWEENEY, *supra* note 194, at 99.

[196] District of Columbia v. Heller, 554 U.S. 570, 626, 627 n.26 (2008).

[197] *Id.* at 626–27.

> the state constitutional provision (which the court equated with the Second Amendment). That was so even though the statute did not restrict the carrying of long guns.[198]

What was the history that led the Court to declare the handgun prohibition to be "unusual"—that is, to be the opposite of a traditional gun control that was presumptively constitutional? The District of Columbia handgun ban was enacted in 1975 and took effect in 1976.[199] Chicago enacted a similar ban in 1982, and a half-dozen Chicago suburbs followed suit during the 1980s.[200] In 1837, the Georgia legislature had enacted a handgun ban, but that was ruled unconstitutional on Second Amendment grounds by the unanimous Georgia Supreme Court in 1846.[201] In 1982 and 2005, San Francisco enacted handgun bans, but they were both ruled unlawful because of their plain violation of the California state preemption statute, which forbids localities to outlaw firearms which are permitted under state law.[202]

These are the facts under which the Supreme Court declared handgun bans to be suspiciously rare in America's history—at the other end of the spectrum from the presumptively constitutional "longstanding" controls.

The 1975 District of Columbia handgun ban was thirty-three years old when the Supreme Court decided *Heller* in 2008. This suggests that thirty-three years is not sufficient for a gun control to be considered "longstanding."

As detailed in Part III, the first of today's magazine bans was enacted by New Jersey in 1990, at fifteen rounds.[203] The first state-level ten-round ban did not take effect until California passed such

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[198] *Id.* at 629 (citations omitted) (citing Nunn v. State, 1 Ga. 243, 251 (1846); Andrews v. State, 50 Tenn. 165, 187 (1871)); *see also Heller*, 554 U.S. at 629 ("A statute which, under the pretence of regulating, amounts to a destruction of the right, or which requires arms to be so borne as to render them wholly useless for the purpose of defence, would be clearly unconstitutional . . . ." (quoting State v. Reid, 1 Ala. 612, 616–17 (1840)) (internal quotation marks omitted)).

[199] Edward D. Jones, III, *The District of Columbia's "Firearms Control Regulations Act of 1975": The Toughest Handgun Control Law in the United States—Or Is It?*, 455 ANNALS AM. ACAD. POL. & SOC. SCI. 138, 139 (1981).

[200] *See* McDonald v. City of Chi., 561 U.S. 742, 749 (2010); Steve Chapman, *Chicago's Pointless Handgun Ban: City Gun Ordinances Proved to Be a Failure*, CHI. TRIB., Mar. 4, 2010, at C21.

[201] *Nunn*, 1 Ga. at 246, 251. The *Heller* Court cited this case with approval. *Heller*, 554 U.S. at 612.

[202] Fiscal v. City & Cnty. of S.F., 70 Cal. Rptr. 3d 324, 326, 341–42 (Ct. App. 2008); Doe v. City & Cnty. of S.F., 186 Cal Rptr. 380, 381 (Ct. App. 1982).

[203] *See supra* note 151–52 and accompanying text.

a law in 2000.[204] These statutes, and other post-1990 magazine bans, would not qualify as "longstanding."

Previously, three states and the District of Columbia had enacted some magazine restrictions during the alcohol prohibition era.[205] The District of Columbia ban, with modifications, is still in effect.[206] The Michigan and Rhode Island bans were repealed long ago.[207] The Ohio special licensing statute allowed the free purchase of any magazine, but required a permit to insert a magazine of thirty-two rounds or more into a firearm; the permit requirement was repealed in 2014.[208] It is indisputable in the modern United States that magazines of up to thirty rounds for rifles and up to twenty rounds for handguns are standard equipment for many popular firearms.

Several post-*Heller* lower courts have conducted in-depth examinations of the history of particular gun control laws. The next Part examines each of those cases and then applies their methodology to the historical facts of bans on magazines of more than five, seven, ten, and fifteen rounds.

D. Lower-Court Decisions Applying History

1. *Ezell v. City of Chicago*

After *McDonald v. City of Chicago* made it clear that the Second Amendment applies to municipal governments, the Chicago City Council relegalized handgun possession and outlawed all target ranges within city limits.[209] Assessing the constitutionality of the ban, the Seventh Circuit used a two-step test, similar to analysis that is sometimes used in First Amendment cases: (1) Is the activity or item within the scope of the Second Amendment, as historically understood? If the answer is "no," then the restrictive law does not violate the Second Amendment.[210] (2) If the answer to the first question is "yes," then the court will apply some form of the heightened scrutiny. The intensity of the scrutiny will depend on how close the restriction comes to affecting the core right of armed self-defense.[211]

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[204] *See supra* note 156 and accompanying text.
[205] *See supra* notes 129–30, 134, 140 and accompanying text.
[206] *See supra* notes 140–45 and accompanying text.
[207] *See supra* notes 131, 133 and accompanying text.
[208] *See supra* notes 135–39 and accompanying text.
[209] Ezell v. City of Chi., 651 F.3d 684, 690–91 (7th Cir. 2011).
[210] *Id.* at 702–03.
[211] *Id.* at 703.

So the *Ezell* court began the step-one analysis by considering whether target practice was historically considered part of the Second Amendment right.[212] Chicago had argued to the contrary, listing some eighteenth- and nineteenth-century state statutes and municipal ordinances restricting firearms discharge within city limits.[213] The Seventh Circuit found almost all of the listed ordinances to be irrelevant.[214] Many of them did not ban firearms discharge but simply required a permit.[215] Others were plainly concerned with fire prevention, an issue that would not be a problem at a properly-designed modern range.[216] Thus:

> Only two—a Baltimore statute from 1826 and an Ohio statute from 1831—flatly prohibited the discharge of firearms based on concerns unrelated to fire suppression, in contrast to the other regulatory laws we have mentioned. This falls far short of establishing that target practice is wholly outside the Second Amendment as it was understood when incorporated as a limitation on the States.[217]

So according to the Seventh Circuit, the historical example of repressive laws in one state and one city are insufficient to support the inference that the repressed activity is outside the scope of the Second Amendment.[218] The historical basis of restrictions that would affect magazines over fifteen rounds is nearly as thin: two states with statutes enacted in 1927, and later repealed, plus the District of Columbia's 1932 law.[219] As for imposing a ban for guns with magazines of more than ten rounds (or seven or five), there is *no* historical basis.

Thus, under the *Ezell* analysis, bans on magazines infringe the Second Amendment right as it was historically understood, and such bans must be analyzed under heightened scrutiny.

2. *United States v. Rene E.*

In 2009, the First Circuit heard a Second Amendment challenge

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[212] *Id.* at 704.
[213] *Id.* at 705–06.
[214] *Id.*
[215] *Id.* at 705.
[216] *Id.* at 706.
[217] *Id.* (quoting District of Columbia v. Heller, 554 U.S. 570, 632 (2008)); *see also Heller*, 554 U.S. at 632 ("[W]e would not stake our interpretation of the Second Amendment upon a single law . . . that contradicts the overwhelming weight of other evidence . . . .").
[218] *See Ezell*, 652 F.3d at 706.
[219] *See supra* notes 131, 133, 140 and accompanying text.

to a federal statute that restricted, but did not ban, handgun possession by juveniles.[220] The federal statute was enacted in 1994,[221] and so of course was not "longstanding."[222] The First Circuit looked at the history of state laws restricting juvenile handgun possession, to see if they were longstanding.[223]

The First Circuit found state or local restrictions on handgun transfers to juveniles and judicial decisions upholding such restrictions from Georgia (1911 case), Tennessee (1878 case),[224] Pennsylvania (1881 case),[225] Indiana (1884 case),[226] Kentucky (1888 case),[227] Alabama (1858 case),[228] Illinois (1917 case upholding a Chicago ordinance),[229] Kansas (1883 case allowing tort liability for transfer), and Minnesota (1918 case allowing tort liability for transfer).[230]

Thus, the First Circuit was able to point to six state statutes, all of them enacted well over a century previously.[231] They were buttressed by one municipal ordinance and two cases allowing tort liability, both of these being nearly a century old.[232]

The history of magazine restrictions is considerably weaker than that of the juvenile handgun statutes analyzed in *Rene E.* There were six statutes on juveniles, all of which were enacted before 1890, and one of which predated the Civil War.[233] This is much more than the pair of state statutes on magazines dating from the late 1920s.

The *Rene E.* case does not attempt to quantify how many state statutes are necessary for a gun control to be longstanding; however, we can say that magazine restrictions fall well short of the historical foundation that the First Circuit relied on to uphold juvenile handgun restrictions.

While *Rene E.* and *Ezell* both used history, the particular way that they used it was different. For *Rene E.*, history was mixed in

[220] 18 U.S.C. § 922(x)(2)–(3) (2013); United States v. Rene E., 583 F.3d 8, 16 (1st Cir. 2009).
[221] *Rene E.*, 583 F.3d at 12.
[222] *Id.*
[223] *Id.* at 14–15.
[224] State v. Callicutt, 69 Tenn. 714, 716–17 (1878).
[225] McMillan v. Steele, 119 A. 721, 722 (Pa. 1923).
[226] State v. Allen, 94 Ind. 441, 441 (1884).
[227] Tankersly v. Commonwealth, 9 S.W. 702, 703 (Ky. 1888).
[228] Coleman v. State, 32 Ala. 581, 582–83 (1858).
[229] Biffer v. Chicago, 116 N.E. 182, 184 (Ill. 1917).
[230] Schmidt v. Capital Candy Co., 166 N.W. 502, 503–04 (Minn. 1918).
[231] United States v. Rene E., 583 F.3d 8, 14–15 (1st Cir. 2009).
[232] *Id.*
[233] *Id.*

with substantive analysis of the modern federal statute, which the First Circuit praised for its "narrow scope" and "important exceptions."[234]

For *Ezell*, history was just the first step. *Ezell* used history to determine that the range ban was not presumptively lawful; once that question was answered, *Ezell* proceeded to analyze the ban under heightened scrutiny.[235]

3. *Heller II*

a. Majority Opinion

In the 2008 case *District of Columbia v. Heller*, the Supreme Court ruled that two District of Columbia ordinances violated the Second Amendment: the handgun ban and the ban on the requirement that any firearm in the home be kept locked or disassembled and thus unusable for self-defense.[236] Further, the District of Columbia required a permit to carry a gun anywhere (even from room to room in one's home)[237] and permits were never granted; the Court ordered that plaintiff Dick Heller be granted a permit.[238]

The Council of the District of Columbia responded by repealing all three of the unconstitutional ordinances and enacting the most severe gun control system in the United States.[239] Dick Heller and several other plaintiffs challenged the new ordinances in the case known as *Heller II*.[240]

Using the two-step test, the District of Columbia Circuit majority first examined whether any of the challenged provisions were "longstanding."[241] If so, then the provision would be held as not violating the Second Amendment right, with no further analysis needed.[242]

Regarding handgun registration, the majority identified statutes from New York (1911), Illinois (1881), Georgia (1910), Oregon

[234] *Id.* at 11–16 ("[T]his law, with its narrow scope and its exceptions, does not offend the Second Amendment."). Exceptions include farm and ranch work as well as target shooting or other activities under parental supervision. 18 U.S.C. § 922(x)(3)(A)(i)–(ii) (2013).

[235] Ezell v. City of Chi., 651 F.3d 684, 706 (7th Cir. 2011).

[236] District of Columbia v. Heller, 554 U.S. 570, 635 (2008).

[237] *Id.* at 574–75.

[238] *Id.* at 635.

[239] *See* Heller v. District of Columbia (*Heller II*), 670 F.3d 1244, 1248–49 (D.C. Cir. 2011).

[240] *Id.* at 1247.

[241] *Id.* at 1252–53.

[242] *See id.* at 1252.

(1917), and Michigan (1927).[243] In addition, some jurisdictions required handgun buyers to provide information about themselves to retailers, but did not require that the retailer deliver the information to the government: California (1917), Territory of Hawaii (1927), and the District of Columbia (1932).[244] So "[i]n sum, the basic requirement to register a handgun is longstanding in American law, accepted for a century in diverse states and cities and now applicable to more than one fourth of the nation by population."[245]

The requirement that the government be provided with some basic information about persons acquiring handguns, in a manner that was "self-evidently de minimis" was therefore constitutional.[246] Seven states, with laws originating between 1881 and 1927, were apparently sufficiently numerous and "diverse" to qualify as "longstanding."

However, although de minimis registration of handguns was longstanding, many of the new District of Columbia requirements went beyond traditional de minimis systems.[247] Further, "[t]hese early registration requirements, however, applied with only a few exceptions solely to handguns—that is, pistols and revolvers—and not to long guns. Consequently, we hold the basic registration requirements are constitutional only as applied to handguns. With respect to long guns they are novel, not historic."[248] So the case was remanded to the district court for further fact-finding, since the District of Columbia government had provided the court with almost no information about whether the novel requirements passed heightened scrutiny by being narrowly tailored.[249]

The case had come to the District of Columbia Circuit following cross motions for summary judgment.[250] While the circuit court decided that the novel registration requirements needed a more complete factual record, the panel also decided that the record contained enough information for a ruling on the merits of the District's ban on various semiautomatic rifles, which the district council labeled "assault weapons," and on the District's ban on

[243] *Id.* at 1253–54.
[244] *See id.* at 1254.
[245] *Id.* The court listed seven states that today have handgun registration laws. *Id.* at n.*.
[246] *Id.* at 1254–55.
[247] *Id.* at 1255.
[248] *Id.*
[249] *See id.* at 1247.
[250] *See id.*

magazines holding more than ten rounds.[251]

The District of Columbia Circuit majority stated "[w]e are not aware of evidence that prohibitions on either semi-automatic rifles or large-capacity magazines are longstanding and thereby deserving of a presumption of validity."[252] In a footnote, the majority cited the 1927 Michigan magazine statute and the 1932 District of Columbia ordinance detailed in Part III of this article.[253] There is no reason to think that the majority's determination on this point would change if the 1927 Rhode Island statute had also been cited.

Importantly, the majority did not suggest that the magazine bans enacted in 1990 or thereafter had any relevance to whether magazine bans are "longstanding."

Accordingly, the majority proceeded to analyze the rifle and magazine bans. The majority provided two paragraphs of explanation of why the rifle ban passed intermediate scrutiny and one paragraph on why the magazine ban did so.[254]

Discussion of whether intermediate scrutiny was the correct standard, or whether magazine bans pass intermediate scrutiny, is beyond the scope of this article. However, it does seem to appear that the District of Columbia Circuit would have acted more prudently by remanding the case for fact-finding in the district court. To support the ban, the panel majority could only point to legislative testimony by a gun-prohibition lobbyist and by the District of Columbia police chief, plus a Department of Justice report on the 1994 to 2004 federal ban on such magazines.[255] Notably, the panel majority did not address the report's finding that a ten-year nationwide ban had led to no discernible reduction in homicides, injuries, or the number of shots fired in crimes.[256]

b. Dissent

A forceful dissent by Judge Brett Kavanaugh critiqued the majority's application of intermediate scrutiny.[257] He argued that

[251] *Id.* at 1246, 1260, 1264.
[252] *Id.* at 1260.
[253] *Id.* at 1260 n.*.
[254] *Id.* at 1262–64.
[255] *Id.* at 1263–64.
[256] KOPER EL AL., *supra* note 148, at 92.
[257] *Heller II*, 670 F.3d at 1285 (Kavanaugh, J., dissenting) ("A ban on a class of arms is not an 'incidental' regulation. It is equivalent to a ban on a category of speech. Such restrictions on core enumerated constitutional protections are *not* subjected to mere intermediate scrutiny review. The majority opinion here is in uncharted territory in suggesting that intermediate scrutiny can apply to an outright ban on possession of a class of weapons that have not

the majority's approach was necessarily incorrect, because its logic on banning semiautomatic rifles would allow a ban on all semiautomatic handguns—which constitute the vast majority of handguns produced today.[258]

More fundamentally, he argued that *Heller* does not tell courts to use tiered scrutiny to assess gun control laws.[259] Rather, *Heller* looks to history and tradition.[260] So gun controls that are well-grounded in history and tradition are constitutional; gun control laws which are not so grounded are unconstitutional.[261]

Using the standard of history and tradition, Judge Kavanaugh argued that the entire District of Columbia registration scheme was unconstitutional.[262] Regarding de minimis handgun registration, the statutes cited by the majority were mostly record-keeping requirements for gun dealers, not centralized information collection by the government.[263] The novel and much more onerous requirements of the District of Columbia registration system for all guns had no basis in history and tradition.[264] For all firearms, any registration system beyond dealer record-keeping requirements was unconstitutional.[265]

Judge Kavanaugh examined the history of semiautomatic rifles and found them to be in common use for over a century and thus protected by the Second Amendment from prohibition.[266] He did not have similar information on magazines and thus urged that the magazine issue be remanded for fact-finding.[267] In light of the evidence on magazines that has been presented subsequent to the 2011 *Heller II* decision, Judge Kavanaugh's methodology

traditionally been banned.").

[258] *Id.* at 1285–86.

[259] *See id.* at 1282.

[260] *Id.* ("*Heller* was resolved in favor of categoricalism—with the categories defined by text, history, and tradition—and against balancing tests such as strict or intermediate scrutiny or reasonableness.").

[261] *See id.*

[262] *Id.* at 1286.

[263] *See id.* at 1292–93.

[264] *Id.* at 1294.

[265] *See id.*

[266] *See id.* at 1287 (citing JOHNSON, KOPEL, MOCSARY & O'SHEA, *supra* note 90, at 11).

[267] *Heller II*, 670 F.3d at 1296 n.20 (Kavanaugh, J., dissenting) ("The D.C. ban on magazines of more than 10 rounds requires analysis in the first instance by the District Court. In order to apply *Heller*'s test to this prohibition, we must know whether magazines with more than 10 rounds have traditionally been banned and are not in common use. The parties here did not brief that question in much detail. Evidence presented to the District Court on the history and prevalence of magazines of more than 10 rounds would be helpful to the proper disposition of that issue under the *Heller* test. Therefore, I would remand to the District Court for analysis of that issue.").

straightforwardly leads to the conclusion that the District of Columbia magazine ban is unconstitutional.[268] The *Heller II* majority rightly recognized that magazine bans are not "longstanding,"[269] and this article has demonstrated that magazines of more than ten rounds have been a common part of the American tradition of firearms ownership since before the ratification of the Fourteenth Amendment in 1868.

4. *Silvester v. Harris*

Another decision carefully employing historical analysis is *Silvester v. Harris*,[270] from the United States District Court for the Eastern District of California.

A California statute requires that firearms purchasers wait ten days before they can take their gun home from the store.[271] In California, background checks on firearms buyers are sometimes completed within minutes and sometimes can take a week or longer.[272] Senior District Judge Anthony Ishii (appointed to the federal court in 1997 by President Clinton)[273] ruled the waiting period unconstitutional, to the extent that the waiting period lasted longer than the time required to complete the background check on a given buyer.[274]

Like the Seventh Circuit in *Ezell*, Judge Ishii looked to 1791 and 1868 as the crucial periods.[275]

California Attorney General Kamala Harris had directed the court to a book arguing that between 1790 and 1840 many Americans might have to travel for several days in order to buy a gun, so there was a de facto waiting period between the time a person decided to buy a gun and when a person could take possession of the gun.[276] Judge Ishii held this irrelevant; the court's job was to consider the legality of government regulations that

[268] *See* Lindsay Colvin, Note, *History, Heller, and High-Capacity Magazines: What Is the Proper Standard of Review for Second Amendment Challenges?*, 41 FORDHAM URB. L.J. 1041, 1075–80 (2014).

[269] *Heller II*, 670 F.3d at 1260.

[270] Silvester v. Harris, No. 1:11–CV–2137 AWI SAB, 2014 U.S. Dist. LEXIS 118284 (E.D. Cal. Aug. 25, 2014).

[271] CAL. PENAL CODE §§ 26815(a), 27540(a) (West 2014).

[272] *Silvester*, 2014 U.S. Dist. LEXIS 118284, at *82.

[273] *Chief District Court Judge Anthony W. Ishii*, U.S. DIST. COURT: E. DIST. OF CAL., http://www.caed.uscourts.gov/caed/staticOther/page_630.htm (last visited Feb. 21, 2015).

[274] *Silvester*, 2014 U.S. Dist. LEXIS 118284, at *101–02.

[275] *Compare id.* at *30, *with* Ezell v. City of Chi., 651 F.3d 684, 702–03 (7th Cir. 2011).

[276] *Silvester*, 2014 U.S. Dist. LEXIS 118284, at *8–9.

might impede the exercise of a constitutional right and the book provided no evidence that government-imposed waiting periods for firearm purchases existed between 1790 and 1840.[277]

Another book explained that the first waiting period law was proposed in 1923—a one-day waiting period for handguns.[278] The law was adopted in California and eventually by eight other states.[279] This too was irrelevant, ruled the court, because it had nothing to do with 1791 or 1868.[280]

The court explained that "[i]t is Defendant's burden to show that the 10–day waiting period either falls outside the scope of Second Amendment protections as historically understood or fits within one of several categories of longstanding regulations that are presumptively lawful."[281]

The complete absence of evidence of waiting periods in 1791 and 1868 eliminated the first possibility.[282] What about the question of whether waiting periods were "longstanding regulations that are presumptively lawful"? The answer to this question is not confined to 1791 and 1868.

The court explained that "the concept of a 'longstanding and presumptively lawful regulation' is that the regulation has long been accepted and is rooted in history."[283] California's 1923 statute did not come close. Besides that, the California wait was only one day and only for retail handguns.[284] Not until 1975 was the number of days extended to double digits and not until 1991 to long guns.[285] Consistent with the unusual nature of waiting periods, only ten states and the District of Columbia today have a waiting period for at least some firearms.[286]

Thus, the court concluded that the plaintiffs' challenge had passed step one of the two-step test,[287] and the court proceeded to apply heightened scrutiny.[288] The court stated that it did not have to decide whether to use strict or intermediate scrutiny.[289] The

[277] *See id.* at *9–10, *78.
[278] *Id.* at *11.
[279] *Id.*
[280] *Id.* at *11–12.
[281] *Id.* at *75.
[282] *Id.* at *75–76.
[283] *Id.* at *78 (citations omitted).
[284] *Id.* at *79.
[285] *Id.*
[286] *Id.* at *30.
[287] *Id.* at *75–76.
[288] *Id.* at *80.
[289] *Id.*

waiting period statute failed intermediate scrutiny, as applied to persons who already possessed a firearm (based on state registration data), and who passed the background check when purchasing an additional firearm.[290] Therefore, *a fortiori*, the statute would fail strict scrutiny. The court gave the state legislature 180 days to revise the statute so as to eliminate the post-background-check waiting period for persons who already have a gun.[291] The plaintiffs had not challenged the waiting period as applied to first-time gun buyers, nor as to persons who had not yet passed the background check.[292]

V. CONCLUSION

Rifle magazines holding more than ten or fifteen rounds have been common in the United States since the mid-nineteenth century.[293] Handgun magazines over ten rounds have been common since 1935, and handgun magazines over fifteen have been common since the mid-1960s.[294]

Magazine prohibition has historically been rare. There is *no* historical basis for a magazine limit of ten rounds or lower. As for prohibitions with higher limits, there are only two examples, both of them from 1927, the outer edge of what courts have considered to be examples of state statutes that may be considered "longstanding": Michigan (enacted 1927, repealed 1959), Rhode Island (enacted 1927, loosened 1959, repealed 1975).[295] Ohio formerly required a special permit to actually insert a magazine above a certain size into a firearm but never banned sales.[296] (The original limit was eighteen rounds or more and later was thirty-two rounds or more.)[297] As is often the case, the District of Columbia is the *sui generis* outlier, with its 1932 restriction still in effect today, with some modifications.[298]

Of all the courts that have examined history when ruling on gun control issues, no court has ever held that laws of two or three states plus one city are sufficient to establish a gun law as being

[290] *Id.* at *90–91, 96–97.
[291] *Id.* at *101–03.
[292] *See id.* at *23–25.
[293] *See supra* notes 43–64 and accompanying text.
[294] *See supra* notes 102–06 and accompanying text.
[295] *See supra* notes 130, 132–33 and accompanying text.
[296] *See supra* notes 136–39 and accompanying text.
[297] *See supra* notes 134–35 and accompanying text.
[298] *See supra* notes 140–45 and accompanying text.

"longstanding" or part of American history and tradition. To the contrary, ammunition capacity limits are far outside the norm of the traditional exercise and regulation of Second Amendment rights. Not until California in 1999 did any state set a magazine limit as low as ten.[299]

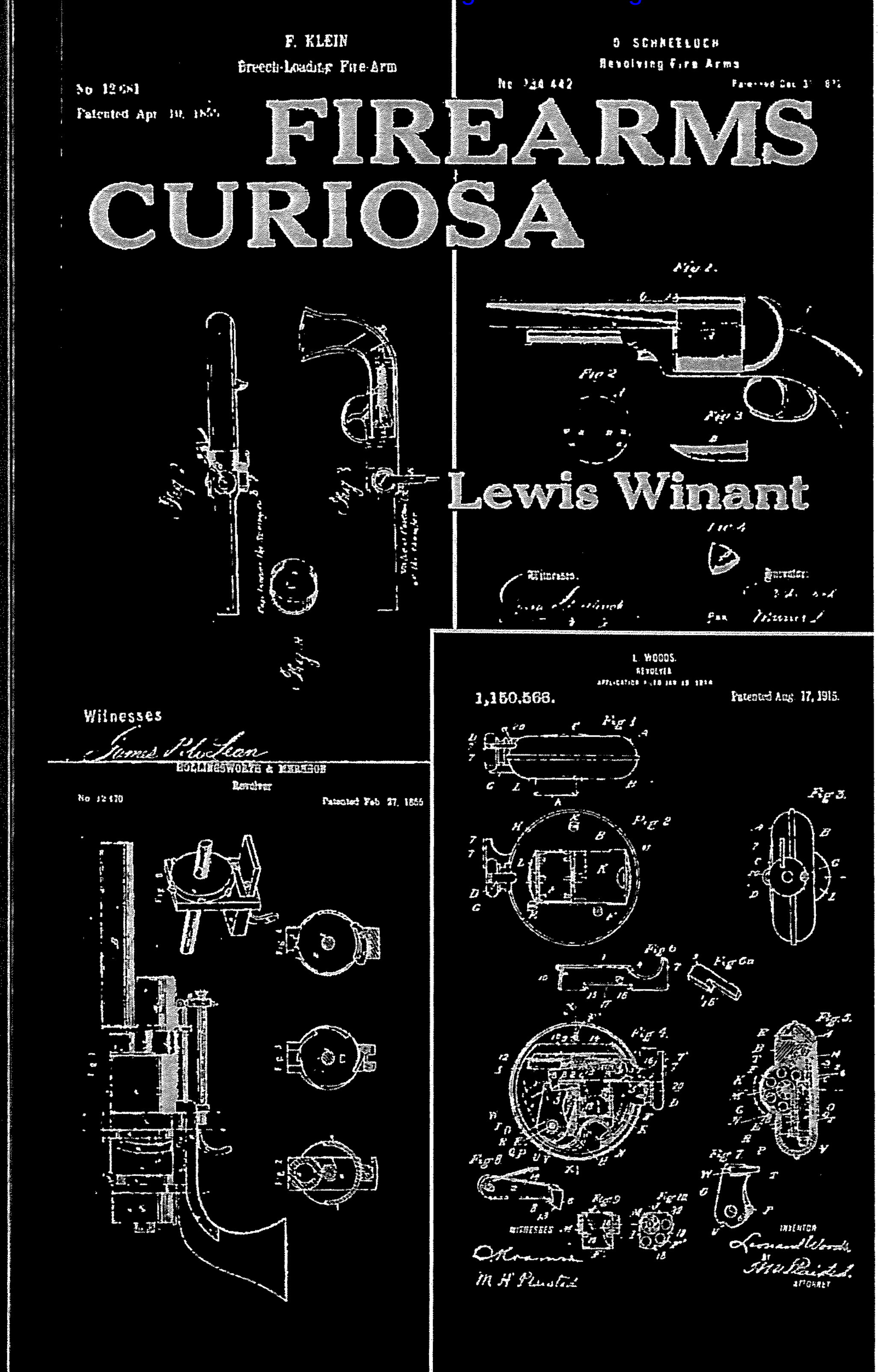
What does this mean for modern legal analysis? Under judicial methods which hew closely to history and tradition, the historical absence (of limits of ten or less) or the extreme rarity (limits of fifteen or less) would be sufficient for any such modern limit to be ruled unconstitutional. Owning such magazines is very long-established manner in which the right to arms has historically been exercised in America.

Other courts perform a two-step test. Challengers to magazine limit laws should always pass step one, since magazine limits are not "longstanding."

As for step two—review under some form of heightened scrutiny—the Supreme Court taught in *Heller* that when the "severe restriction" of a "ban" has support from "[f]ew laws in the history of our Nation," the law's constitutionality is very doubtful. This was true for the prohibition of handguns, and it is also true for the prohibition of magazines holding more than five, seven, ten, or fifteen rounds.

[299] *See supra* note 156 and accompanying text.

EXHIBIT I


F. KLEIN
Breech-Loading Fire-Arm
Revolving Fire Arms
FIREARMS
CURIOSA
Lewis Winant
Witnesses
Revolver
L. WOODS.
REVOLVER.
1,150,568.
Patented Aug. 17, 1915.
WITNESSES
INVENTOR
ATTORNEY

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Lewis Winant

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solid rather than a perforated bullet somewhere in a series of superposed loads so as to stop the Roman candle effect and to permit resumption of firing by means of another lock.

A very rare and fine German piece is shown in figure 193. This most remarkable gun is capable of doing everything we assume Mr. Cardiff's double-lock gun may have been capable of doing, and it appears to antedate Mr. Cardiff's patent. No maker's name is on it, but the Nuremberg mark is clear.

As illustration 193 shows, there are two locks, the forward being a conventional wheel lock, and the rear an unusual combination wheel lock-matchlock. There is but one trigger.

The gun may be used as a single-shot, employing the rear lock only, or it may be charged with sixteen superposed loads so that the first pull of the trigger will release the wheel on the forward lock and fire nine Roman candle charges, a second pull will release the wheel on the rear lock and set off six more such charges, and finally a third pull will fire the one remaining shot.

A safety catch which prevents movement of the wheel on the rear lock at the first trigger pull must be released, after the first series of nine shots, before the second series of six shots can be discharged. To fire the final shot by the third trigger pull it is necessary either again to span the wheel of the rear lock, or to use the match ignition.

The trigger is connected to the forward lock by a wire running through the frame. When the trigger is pulled the priming powder is ignited and fire goes from the pan directly through a touch hole to the foremost powder charge. If the gun be properly loaded the first shot will be followed by eight more self-acting and unpreventable discharges going off in quick succession.

The ignition of the first of the six shots in the second series requires that a train of priming powder be laid from the pan of the rear lock to a touch hole located some six or more inches frontward. A tube is provided that runs under the lockplate and along the barrel. This tube is detachable so it may be readily filled with the flash powder and is held to the barrel by a clip.

After the firing of both series of Roman candle shots the gun remains a loaded single-shot weapon. For the final shot the pan of the rear lock must be reprimed, and a sliding gate between the pan and a rearmost touch hole moved aside. The shot may

193. and 194. Wheel lock gun/ Frank E. Bivens, Jr. collection.

then be set off either by the matchlock or the wheel lock. Whether pressure on the trigger will send the spanned wheel spinning or move a lighted match into the pan, depends on how a lever on the side of the lock is set.

A close-up of the remarkable rear lock is shown in figure 194.

No original bullets for this gun exist, but charges such as were used in the Chambers gun, or even combustible cartridges such as were used in the Danish espingoles, could be successfully used in it. As in the Kesling gun (which along with the espingoles and the Chambers guns will be described shortly) the first bullet to be loaded would be solid. The seventh and sixteenth bullets, in order of loading, would also be solid.

It is perhaps well to depart at this time from a chronological order, so the espingole cartridges may be described. The espingoles were multiple barrel weapons used by Danish military forces, chiefly the Navy. An early report made in 1842 by the Chief of Naval Ordnance of Denmark reported that the guns could not be used freehand, and went on to say, ". . . the espingole must have a support and may thus be used only at places adapted for the purpose . . ." and ". . . when ignition has taken place the shooting cannot be stopped. The loading of the espingole can be performed only by trained people; it must be executed with the greatest care, requires a lot of appliances, takes up much time, and consequently cannot be done during a battle." Improvements were made, the early smooth bore barrels were later rifled, and the espingoles were kept in use in quantity for another thirty years. The novelty of these guns was in their combustible paper cartridges. Each cartridge had its bullet with a hole bored longitudinally through the center. This hole contained a slow burning fuse. When the fuse in the foremost cartridge was lighted by the operator, the charge would shortly explode and at the same time ignite the fuse in the next cartridge. From then on the explosions were automatic. The intervals between shots which gave the operator time to take aim were determined by the burning speed of the train of slow burning powder, or fuse.

The two important improvements in the espingole, the rifling of the barrels and the fully developed cartridges, came about 1850.

Figure 195 reproduces illustration #332 from Thierbach's

EXHIBIT J

44 Willamette L. Rev. 699

Willamette Law Review
Summer 2008

Article

Clayton E. Cramer [1] Joseph Edward Olson [2]

PISTOLS, CRIME, AND PUBLIC: SAFETY IN EARLY AMERICA

There is a vigorous debate under way about the scope of the Second Amendment. What are the limits of that right? What "arms" does it protect? Does it protect an individual right to possess and perhaps to carry firearms? The District of Columbia, in its attempt to defend its 1976 gun control law, has argued that the widespread possession of handguns ("pistols") represents an especially serious public safety hazard, and that even if arguendo, the Second Amendment protects an individual right, it would not extend to pistols, which the District of Columbia characterizes as "uniquely dangerous weapons" that present "unique dangers to innocent persons." [3]

This paper examines what was likely the Framer's original public meaning of the Bill of Rights provision that protects "the right of the people to keep and bear arms," with no apparent limitations concerning handguns. We do so by examining what the history of pistols in early America tells us about foreseeable technological developments.

I. Guns, Arms, Fire-Arms, Pistols: Some Definitions

A few definitions are appropriate because there have been a few subtle changes in the meaning of some of the terms over the last two centuries. "Gun" had a more restricted meaning in the eighteenth century than it does today, referring in some contexts to privately owned cannon, [4] but most often to what today we call long guns: ***700** weapons designed to be fired with two hands with either smoothbore or rifled barrels. The smoothbore weapons included fowling pieces, blunderbusses, and muskets, all of which could--and often did-- fire either shot or lead balls. The only real distinction between a fowling piece and a musket was that muskets were of larger caliber and were intended for more powerful charges of gunpowder, thus being capable of firing a lead ball that would be deadly at a greater distance. Blunderbusses, [5] with their characteristic belled muzzles, were short-range antipersonnel weapons that put an enormous quantity of shot in a broad pattern--the "assault weapon" of their day in terms of lethality and the number of persons that they could kill or wound.

TABULAR OR GRAPHIC MATERIAL SET FORTH AT THIS POINT IS NOT DISPLAYABLE
Eighteenth Century Blunderbuss [6]

That "gun" did not include "pistol" [7] is demonstrated by the number of statutes that include both "gun" and "pistol" on a list of arms. For example, Colonial statutes requiring churchgoers to be armed in South Carolina (1743) [8] and Georgia (1770) [9] distinguish between "a gun" and a pair of pistols. Perkin & Coutty of Philadelphia advertised in 1781 that they made firearms "in all its ***701** branches, where gentlemen may be supplied with Guns and Pistols of the neatest

Decade	Pistol or Pistols cases	Sampled	Criminal Misuse	Stolen	Accidental Death	Lawful Use
1670s	16	16	12	1	1	0
1680s	38	5	4	0	0	0
1690s	80	8	3	1	2	0
1700s	11	11	9	0	0	1
1710s	58	6	5	1	0	0
1720s	113	12	7	3	0	1
1730s	185	10	6	1	0	0
1740s	135	10	7	1	0	0
1750s	139	10	8	1	0	1
1760s	128	10	6	2	0	0
1770s	286	10	7	3	0	0
1780s	336	10	5	3	0	1
Totals	1525	118	79	17	3	4
%		7.74%	66.95%	14.41%	2.54%	3.39%
Projected			1020.97	219.7	38.77	51.69
std. dev.			2.39	1.08	0.62	0.49
Years covered 116						
Incidents/Year			8.8	1.89	0.33	0.45

***716 V. Technology Marches Onward**

One argument for treating the Second Amendment's protection as obsolete is that the technology of firearms has advanced so dramatically since 1791--a modern pistol provides so much destructive potential--that the Framers, were they present today, would recognize the absurdity of allowing ordinary law-abiding persons to possess or carry such a weapon. Alternatively, those with a mirthful spirit suggest that the Second Amendment should protect only the type of weapons available in 1791 when the states ratified the Second Amendment.

It is certainly true that firearms technology has advanced since 1791--but not as much as some would like to think. Repeating, magazine-fed firearms date back to at least the 1600s; [89] concealable "pepperbox" handguns capable of firing five to seven shots without reloading were in use by the end of the eighteenth century; [90] and there are some indications that multibarrel handguns were in development as early as the seventeenth century. [91] Several multibarrel repeating firearms survive from the late seventeenth century, and at least one six shot flint-lock pistol survives from the first half of the eighteenth century. [92] Additionally, some British soldiers were issued magazine-fed repeating guns as early as 1658. [93]

For example, in 1718 (seventy-one years before the drafting of the American Bill of Rights) the "Puckle Gun" was patented in England. [94] It was a repeating firearm from which multiple individual ***717** shots could be discharged without physically reloading the gun. The tripod-mounted flintlock revolver had a barrel 2 feet, 9 inches long and a bore of 1.2 inches. [95] It was fitted with a removable "pre-loaded" cylinder that held eleven charges and was rotated by hand. Each shot required an independent decision to fire and a separate pull of the trigger. Several examples were manufactured and, in a demonstration at the Royal Woolrich Armory, the gun fired sixty-three shots in seven minutes in a rainfall. [96] This rate of nine shots per minute was three times quicker than the fastest musket of the time, which also could not fire reliably in the rain. Further increasing its firepower, the gun could be loaded to throw either one large or sixteen small Musquet Balls at every discharge.

In March 1722, the Daily Courant carried an advertisement for "Several sizes in Brass and Iron of Mr. Puckle's Gun, called a Defence. . . . at the Workshop thereof, in White-Cross-Alley, Middle Moorfields." [97] Although Puckle made strenuous efforts to market the gun, raising a company for this purpose in 1721, he was unable to acquire sufficient investors or a military contract. He did, however, prove that a repeating firearm was within the reach of inventors.

In 1776, Captain Patrick Ferguson was more successful than Puckle, gaining both a British patent and a military contract for his breech-loading rifle. Ferguson's design built on the 1704 work of Isaac de la Chaumette and the 1720 designs of John Warsop. [98] The goal was in sight seventy years before the hardware was produced. The Ferguson rifle saw its first action in the Revolutionary War. Ferguson, now a Major, lead a small corps of riflemen armed with his invention. The rifles were use with great success until the Battle of Brandywine in 1778, during which Ferguson was seriously wounded. Without the inventor in command, the test ended and the unit was ***718** soon merged into the regular infantry. [99] Thus, breech-loading, repeating rifles were more than just imaginable in 1791.

The next development in repeating firearms would take place in pistols.

TABULAR OR GRAPHIC MATERIAL SET FORTH AT THIS POINT IS NOT DISPLAYABLE

An Allen & Thurber Pepperbox, Early Nineteenth Century [100]

The development of the percussion ignition system in 1816 encouraged further development of the pepperbox by making revolving handguns more practical--the concept of a repeating handgun was certainly known in 1791, if still unrefined. Even the development of the modern revolver by Samuel Colt did not suddenly render the pepperbox obsolete; Americans continued to use pepperboxes for self-defense for several decades after Colt's invention, [101] and there are indications from medico-legal texts published as late as 1895 that pepperboxes were not just curiosities. [102]

***719** Even with respect to single shot pistols, the technological advance is less dramatic than it first appears. Pocket pistols of the Revolutionary-era were often surprisingly compact, such as this example owned by Paul Revere.

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Paul Revere's Pocket Pistol [103]

Being so compact, those who were expecting trouble might carry two, four, or even six single shot pistols on their belt. This was such a sufficiently common practice that pistols were often sold (or stolen) in pairs [104] -- sometimes as a "case of pistols" or a "brace of pistols." [105] ***720** The phrase "brace of pistols" frequently appears in eighteenth century documents to describe this solution to the single shot problem. [106]

A criminal carrying six single-shot pistols in his pockets and on his belt in 1791 would admittedly not be as quick to fire those six shots as his 2008 counterpart using a modern revolver or semiautomatic pistol. However, most often, pistols induce compliance or deter attack without being discharged, and when fired, three shots are usually sufficient even with a modern handgun. [107] A modern pistol shooter can discharge three accurate shots in about three seconds. His 1791 equivalent might accurately fire three bullets in about ten seconds (with the extra time coming from the need to draw three times). As a practical matter, the often decisive first shot can be discharged in virtually equal time. [108] This is hardly an order of magnitude enhancement in the ability of handguns to discharge bullets and cause damage.

On the other side of the equation, advances in medical, communication, and protective technology have more than kept pace with the improvement in handgun technology. Any abdominal wound in 1791 was nearly a guarantee of death from peritonitis. Improvements in surgical technique and the ability to rapidly move a ***721** victim to a hospital have also dramatically improved the chances of surviving gunshots. [109]

It is clear that the goal of multi-shot firearms was on the mind of gunsmiths, inventors, and shooters in 1791. Rudimentary repeating firearms existed, as did magazine-fed firearms. Faster, more secure and weather-resistant ignition technology

EXHIBIT K

WEAPONS *of the* LEWIS & CLARK EXPEDITION

JIM GARRY

Also by Jim Garry

This Ol' Drought Ain't Broke Us Yet (But We're All Bent Pretty Bad): Stories of the American West (New York, 1992)

The First Liar Never Has a Chance: Curly, Jack, and Bill (and Other Characters of the Hills, Brush, and Plains) (New York, 1994)

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CHAPTER 6

Air Rifle

The image that leaps to mind for most people when they hear the term "air rifle" is a Daisy BB gun, which leads to thinking that Meriwether Lewis had brought a toy along to impress the Indians. It did impress the Indians, but not as a toy. At the beginning of the nineteenth century there were many people who were not happy with gunpowder and the firearms it produced. These were not antigun people. They were gun designers and manufacturers who were displeased with many of the characteristics of gunpowder, such as cost, the fouling problems associated with dirty burning, the fact that powder often varied from batch to batch, and the fact that it might not work at all in wet or even damp weather. Then there was the fact that gunpowder produced so much smoke when a weapon was fired that the shooter's vision was often obscured too much to see whether he had hit his mark. Some of these people thought compressed air offered a viable alternative.

As the eighteenth century gave way to the nineteenth, there were many gunsmiths in Europe producing compressed air weapons powerful enough to use for big game hunting or as military weapons. Air rifles had a number of advantages. Though not silent, they were much quieter than firearms. The noise they produced was a low-frequency pop that was hard to recognize or to pinpoint if one couldn't see the shooter. And compressed air doesn't smoke when an air gun is fired. Armies of the day fought at close range with massed troops. After the first couple of volleys the field was so obscured that aiming was difficult at best.

A musket had to be reloaded—powder, ball, and priming—for each shot. That added up to about four shots a minute. An air rifle with 750 pounds-per-square-inch of air pressure in its air cylinder could be discharged twenty to forty times before losing power.

It did take some time and effort to pump up a cylinder. With a hand pump, up to 1,500 strokes might be required to fully charge a cylinder; not a problem for a hunter, but potentially a problem for a soldier. Armies solved this problem by using larger multicylinder cart pumps and by supplying air riflemen with several air cylinders. The Austrian army equipped its air rifle companies with enough air cylinders and balls for four to five hundred shots per soldier, this at a time when most armies issued twenty to a hundred rounds per man.[1]

Why didn't armies convert from firearms to air rifles? Some accounts point to the Napoleonic Wars between 1796 and 1815. The French, so the stories go, didn't have the manufacturing technology to produce air rifles. Napoleon, on the other hand, was facing Austrian troops armed with high-quality repeating air rifles. These troops had a much higher rate of fire, and sans smoke it was more accurate. There are stories that Napoleon had captured air riflemen shot as terrorists, making it hard to recruit men for the air rifle companies. Research and development therefore slowed, and the weapons became very exclusive, expensive, and therefore limited in manufacture and in use. In the meantime, firearm technology improved throughout the nineteenth century, ending with the metallic cartridge and smokeless powder. So the firearm won the competition.

There is some evidence to support the above-mentioned stories. In 1802, during a lull in the Napoleonic Wars, Col. Thomas Thornton traveled in France and spent some time with Gen. Edouard Mortier, the future *maréchal* of France. Thornton wrote:

> One day in particular, General Mortier, in speaking of air guns, recalled to the recollection of some officers in the company a circumstance which happened after the retreat of the enemy, but where I cannot precisely call to mind. He said, "do you remember when I

[1]Wolff, *Air Guns*, 29.

> had ordered the cannon to cease firing that an orderly sergeant who was standing close to us leaped up very high into the air and then fell down? We supposed, at first, that he was in a fit, and we were greatly astonished to find him dead, as nothing had been heard to injure him. On his being undressed, however, a ball was found to have struck him, which must have been shot from an air-gun in the adjoining field and aimed at us." "Yes," replied one of the officers, "I remember it well, and I think we had a fortunate escape." They then stated, that on account of this treachery they hung all of that corps that fell into their hands, considering them not as soldiers but as assassins, and never after gave any quarter. They acknowledged, at the same time, that they lost many fine men by that corps of Austrians, which they stated consist of about five hundred men.[2]

Thornton's book may well be the origin of the tales of the Austrians' inability to recruit or keep men in air rifle companies, resulting in the guns going out of service. Some other sources, in particular Fred Baer, point to the delicacy of air rifle mechanisms and the difficulty of building air cylinders that could stand up to the high pressures needed as more likely reasons for most armies not using them. The Austrians did use repeating air rifles against both the Turks and the French, but Baer indicates only the numbers used, the trouble the army had acquiring enough air cylinders, apparently due to the difficulty of constructing reliable ones, and their final resting places in magazines and arsenals as troops were equipped with flintlocks.[3]

W. H. B. Smith, who quotes Thornton extensively, goes on to state that a Hauptman Halla wrote in 1890:

> The fact that this remarkable weapon nevertheless did not remain in use and was removed as expendable supply to the fortress of Olmutz in 1815 was due not only to the changed tactical principles, but chiefly to the circumstance that there were no adequately trained riflesmiths available to take care of the delicate component parts of the locks and valves, and therefore the percentage of unusable air rifles shown in the reports was frighteningly high.[4]

---

[2] From Thomas Thornton, *A Sporting Tour Through France in the Year 1802*, 2:59. Quoted in Smith's *Gas, Air and Spring Guns of the World*, 25.

[3] Fred Barer, "Napoleon Was Not Afraid of It," in Held, *Arms and Armor Annual*, 1:250.

[4] [first name not given] Halla, *Bulletins of the Military Archives for the Year 1890*. Quoted in Smith, *Gas, Air and Spring Guns of the World*, 30.

This would suggest that the air rifles were considered good and viable weapons and not retired from service until they had been in use for twenty-five years. There is the added fact that in 1815 the Napoleonic Wars ended at Waterloo and the Austrian army was in a position to give up some of its arms as part of the army was discharged. Smith goes on to write:

> The Austrians treated the development as a real secret weapon. A special shop was set up for Girandoni and workers were specially selected and sworn to secrecy about equivalent to that required for an H-Bomb "Q" clearance today.
>
> It should be mentioned in passing that the Girandoni pattern was produced by other makers on contract. Then, even as now, Austria was a hotbed of small gunmakers who were good at duplication.[5]

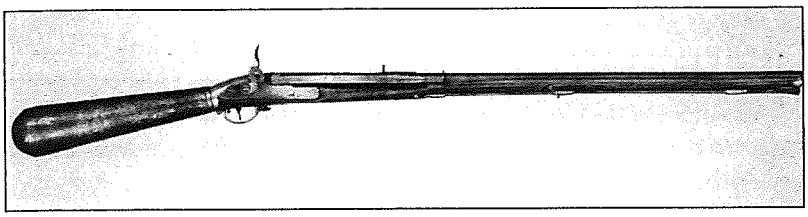
Smith seems to contradict himself in the above paragraphs. Austria wasn't going to keep a weapon secret by giving the design to a number of different manufacturing firms, most of which were in foreign countries. The Girandoni design was consciously spread to various German principalities and to Switzerland and England by the Austrian government. That strongly suggests that there was no attempt to keep the weapon secret. From any of those countries the design and quite possibly a weapon itself could easily have found its way to the United States.

The Girandoni air rifles represented a technology that teased generals and sportsmen alike. Lewis was one of the teased. For an expedition such as the one on which he was embarking, an air rifle such as a Girandoni would serve well as a way to impress the various tribes with the power of the United States. A rifle that needed no gunpowder was likely to impress tribes who had to trade for expensive and scarce gunpowder. And the weapon could serve as a backup if the Corps lost its gunpowder. So Meriwether Lewis, somehow, somewhere, acquired one.

Lewis's air rifle enters the Expedition journals on the day Lewis began recording the journey.

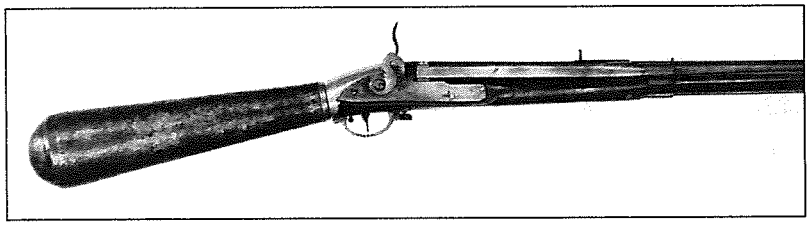
> went on shore and being invited on by some of the gentlemen present to try my *airgun* which I purchased brought it on shore charged it

[5]Smith, *Gas, Air and Spring Guns of the World*, 30.



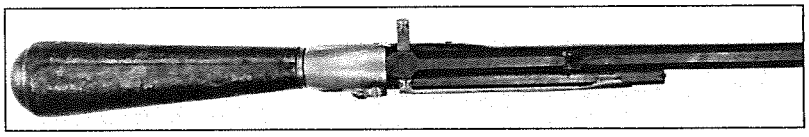
GIRANDONI AIR RIFLE (RIGHT SIDE VIEW)

Notice that there is no frizzen and pan in front of the hammer. The hammer sets the air charge for the trigger to release; there is no need for spark of fire. Also note that the butt stock is metal; it is the air cylinder for the weapon, holding air compressed to about 750 psi. *Courtesy Michael F. Carrick.*



GIRANDONI AIR RIFLE (RIGHT SIDE CLOSE-UP)

This view shows the metal butt stock and the tubal magazine in front of the hammer more clearly. *Courtesy Michael F. Carrick.*



GIRANDONI AIR RIFLE (TOP VIEW)

In this view one can see the magazine tube on the right, in front of the hammer. The breech block sticks out on the left. *Courtesy Michael F. Carrick.*

> and fired myself seven times fifty five yards with pretty good success; after which a Mr. Blaze Cenas being unacquainted with the management of the gun suffered her to discharge herself accidently the ball passed through the hat of a woman about 40 yards distanc cuting her temple about the fourth of the diameter of the ball; shee feel instantly and the blood gusing from her temple we were all in the greatest consternation supposed she was dead by [but] in a minute she revived to our enespressable satisfaction, and by examination we found the wound by no means mortal or even dangerous.
>
> *Lewis, August 30, 1803*[6]

There is an obvious question. How did Lewis find a man west of Pittsburgh who was "unacquainted with the management of the gun?" In 1803, guns were a part of life that far west. One possible answer is that Lewis's air gun was somehow different from the guns to which men along the Ohio River were accustomed. The Corps of Discovery's journals aren't much help. The next time the air gun is mentioned is almost a year later, when, on August 3, 1804, an entry makes a typical allusion to the air gun, saying simply that Lewis had fired it "a few times" for the Otos with whom they were visiting.

On his way down the Ohio, Lewis wrote that he spent some time with Col. Thomas Rodney, on his way from Delaware to the lower Mississippi. On September 8, 1803, Rodney wrote a bit more about the meeting:

> Visited Captain Lewess barge. He shewed us his air gun which fired 22 times at one charge. He shewed us the mode of charging her and then loaded with 12 balls which he intended to fire one at a time; but she by some means lost the whole charge of air at the first fire. He charged her again and then she fired twice. He then found the cause and in some measure prevented the airs escaping, and then she fired seven times; but when in perfect order she fires 22 times in a minute. All the balls are put at once into a short side barrel and are then droped into the chamber of the gun one at a time by moving a spring; and when the triger is pulled just so much air escapes out of the bag which forms the britch [breech] of the gun serves for one ball. It is a curious piece of workmanship not easily discribed and therefore I omit attempting it.[7]

---

[6]Moulton, *Journals of the Lewis and Clark Expedition*, 2:65.
[7]Rodney, *A Journey through the West*, 50, 62.

This helps to visualize Lewis's air rifle but also presents a problem. It contradicts all we knew about that particular air gun before Michael Carrick published the above passage in "Meriwether Lewis's Air Gun," his paper on Rodney's description of Lewis's air gun, in 2002. Will Rogers once said that it wasn't what we don't know that gets us in trouble, "it's all the things we know that just ain't so." For the last quarter century, historians looking into Lewis's air gun have all fallen into the trap of circular reasoning.[8]

The loop of misunderstanding began in 1977, when Henry M. Stewart, Jr., published a paper revealing that he'd found, in Isaiah Lukens's estate papers, evidence of the disposition of Lewis's air rifle. Lukens, a Philadelphia clockmaker and gunsmith, died in 1846. In January of 1847 his estate was auctioned off. Item 95 in the auction catalogue states: "1 large do [air gun] made for and used by Messrs Lewis & Clark in their exploring expedition. A *great curiosity*."[9]

There is no record of who purchased item 95, so the trail turns cold from there and the circular reasoning begins.

Lukens, perhaps best known in his own day as a clock maker (he made the clock for the tower of Independence Hall), was also a maker of air guns. He had perfected a valve for air guns that solved their greatest problem, decreased air pressure after each shot. His guns were considered some of the finest of the period. And he moved in the same Philadelphia circles Lewis was moving in during the spring and summer of 1803. So, the logic said, since Lukens had the air gun in 1846 and since the estate sale said it was "made for" Lewis and Clark, it must have been one of his that Lewis had bought and either returned to him after the expedition or that Lukens reacquired after Lewis's death. Suddenly, the older question of what the air gun was seemed to be solved. The logic worked; everyone was satisfied. The gun must have been made by Lukens.

---

[8] The author pleads guilty to this as well. The original of this chapter, written before Carrick's article, is currently in the circular file.

[9] "A Great Curiosity," Discovering Lewis and Clark, http://lewis-clark.org/content/content-article.asp?ArticleID=1826.

Various researchers have suggested that Lukens made eight air guns during the period leading up to Lewis's time in Philadelphia. Four, perhaps five, of them are still extant. So, after Stewart found that Lewis's air gun still existed in 1846, and everyone interested settled on the gun being a Lukens, experts began to examine the possible guns. And there the journals enter the story again. On June 10, 1805 Lewis wrote, "The day being fair and fine we dryed all our baggage and merchandize. Shields renewed the main Spring of my air gun."[10] Experts examined the surviving Lukens air guns, looking for nonoriginal parts. And they found them.

The Virginia Military Institute (VMI) has a good collection of air guns, two of which are Lukens air guns from the late eighteenth or early nineteenth century. All of the known Lukens air guns are, as one would expect from a maker of fine clocks, elegant and refined, inside and out. They look like Pennsylvania rifles except that they have no pans and frizzens. The hammers are the beautiful serpentine design we associate with the Pennsylvania Rifles. All but one. That one, in the VMI collection, has a more robust, double-neck hammer of the type associated with military weapons. The mainspring too is crude, the kind of work a good blacksmith might do if he was working without a decent shop. Lewis had brought along a number of spare locks and parts from Harper's Ferry. Within a few months of Lewis's leaving there, the Harper's Ferry Arsenal was producing the Model 1803 Rifle with double-neck hammers. All the pieces fit. The VMI gun, it was assumed, must be the one Lewis took to the Pacific and back.

The puzzle was seemingly solved on the eve of the expedition's bicentennial. Then Michael Carrick published his paper on the Thomas Rodney description of Lewis's air rifle. The flaw in the train of logic was suddenly clear. Everyone had assumed that because Lukens ended up with the gun, he had made it. But if Lukens made the gun Thomas Rodney described, not only is it lost to us, it is radically different from any of the surviving Lukens air

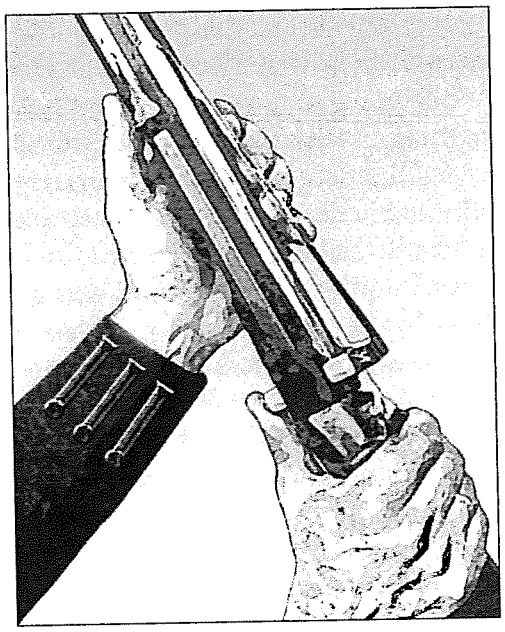
[10]Moulton, *Journals of the Lewis and Clark Expedition*, 4:275.

guns. All of his that remain are single-shot muzzle loaders. Rodney describes a repeating weapon. There were a number of designs for repeating air guns at the beginning of the nineteenth century. But Rodney's account strongly suggests the type designed by G. C. Girandoni (a.k.a. Girardoni or Girardony) for the Austrian army.

Europe was not politically stable during the eighteenth and early nineteenth centuries. Austria fought wars against the Ottoman Empire, the Holy Roman Empire (and following its demise, Prussia), various powers in Italy and the Low Countries, and a whole series with France following the French Revolution and the rise of Napoleon. One result of all those wars was a large and well-financed military. Girandoni designed weapons for the Austrian military during the last quarter of the eighteenth century. His experiments with a repeating flintlock resulted in the loss of his left hand when a malfunction caused a test weapon to explode while he was firing it. He had better luck when he adapted the system to a repeating air rifle in the late 1770s. The result was the Model 1780. That weapon was improved, and the Model 1799 was the weapon that supposedly so upset Napoleon. It is unclear whether Girandoni was the lead manufacturer once he finished the design work. The fact that there were clearly many makers in Austria, Russia, Switzerland, England, and various German principalities using his design points to him as primarily an innovator that others then manufactured.[11]

A few of Girandoni's repeating air rifles have survived, and they are striking-looking weapons, with full-length forearms, very high, prominent hammers, and leather-covered metal stocks. On a Girandoni, as on many air guns of the time, the stock is the gun's air reservoir and detaches from the breech so it can be pumped up. It took five hundred to a thousand strokes of a hand pump to fill the air chamber to about 750 psi, but the gun can then be fired twenty to forty times. (The Austrian army supplied a larger pump mounted on a cart to facilitate refilling the air reservoirs.) Along the right side of the gun barrel, immediately

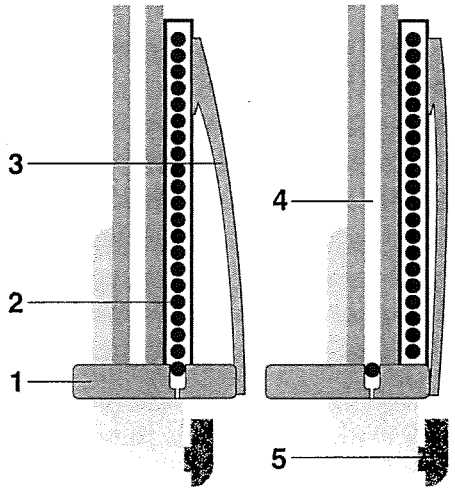
[11] Smith, *Gas, Air and Spring Guns of the World*, 28–30.



LOADING THE GIRANDONI AIR RIFLE
This shows a soldier loading the rifle by pushing the breech block to the right with his thumb. This must be done while holding the rifle vertically, as the balls feed down the magazine by gravity. *Courtesy Michael F. Carrick.*

in front of the hammer, is a tube about a foot long and about a half inch in diameter, capable of holding about twenty rifle balls. The front of the tube is gated, and a leaf spring, attached just behind the gate, runs slightly more than the length of the tube along its right side. There is a sliding breech block that sticks out on both sides of the weapon. The right side of the block closes the back of the tube magazine, its right edge in contact with the magazine's leaf spring. The left side projects from the weapon roughly an inch and a half to two inches.

When the rifleman pushes that block to the right, it moves against the spring and places a funnel-shaped hole in the block over the end of the magazine. The hole is large enough in the front for a ball to enter and too small in the back for the ball to fall through—but large enough for air to pass. By holding the rifle muzzle up the shooter allows gravity to drop a ball into the breechblock's hole. When the block is then released from the



SCHEMATIC OF THE GIRANDONI AIR RIFLE
(1) breech block; (2) magazine (filled with balls); (3) leaf spring; (4) barrel; (5) hammer. By pushing the breech block to the right while holding the rifle in a barrel-up position, the leaf spring is displaced to the right and a ball falls into the breechblock. Releasing the block, the leaf spring pushes the block back, positioning the ball in line with the barrel and the air cylinder to the rear. *Courtesy Michael F. Carrick.*

left, the leaf spring forces the block back to the left and the hole containing the ball is moved back in line with the rifle barrel. The shooter then cocks the hammer and air is released from the reservoir into a chamber between the stock and the breech block until the pressure in the two chambers is equalized. Then the reservoir valve closes. (The failure of this valve from something as insignificant as a bit of dirt could easily explain the problem of the weapon when Lewis was demonstrating it to Thomas Rodney.) Pulling the trigger then opens the valve at the front of the forward air chamber, and the air pressure sends the ball down the barrel at a speed of several hundred feet per second.

Lewis's first journal entry does state that he had purchased the air gun, but neither that or any evidence has surfaced to explain exactly where or when he acquired it. There is no other good evidence for Girandoni-style air rifles having made it to the United States by the beginning of the nineteenth century. Since so many different manufacturers in so many different countries were producing the weapons, it is easy to imagine them being

traded widely and without great comment during the more than twenty years from the weapon's introduction in 1780 until Lewis headed west. Interestingly enough, Lewis's penultimate journal entry also mentions the air rifle and another shooting accident as well. On that day, after being shot by Cruzatte, Lewis assumed that he and Cruzatte had been attacked by a party of Indians, and he called out to Cruzatte, who failed to respond. He made his way back to the river and called to his men to aid him in his attempt to save Cruzatte from the supposed Indian attack. The ball that wounded Lewis had passed through both cheeks of his buttocks, and Lewis found:

> my wounds became so painfull and my thye so stiff that I could scarcely get on; in short I was compelled to halt and ordered the men to proceed and if they found themselves overpowered by numbers to retreat in order keeping up a fire. I now got back to the perogue as well as I could and prepared myself with a pistol my rifle and air-gun being determined as retreat was impracticable to sell my life as deerly as possible.
>
> *Lewis, August 11, 1806*[12]

If Lewis's air gun was capable of firing twenty shots in a minute, his defense would likely have been as effective as it was heroic. As events unfolded, the men returned with Cruzatte, who at least pretended bafflement, claiming he had never fired his rifle. Lewis had the ball that wounded him, one of the same caliber as the short rifle Cruzatte carried. Lewis was sure he had been shot accidentally by his one-eyed, nearsighted companion, but, somewhat uncharacteristically, he dropped the matter.

In between those incidents of April 1803 and August 1806, the air rifle is mentioned twenty times. In sixteen of those instances the air rifle was shot as a demonstration to impress various tribes. Since not every journalist mentions these performances on the same days, it seems reasonable to assume the weapon might have been fired more often than that. It may be that it became such a routine piece of equipment to the Corps that the writers didn't

[12]Moulton, *Journals of the Lewis and Clark Expedition*, 8:155.

deem it necessary to note its every use. For instance, neither Sergeant Gass nor Private Whitehouse ever mentions it. The various tribes all seem to have had the same reaction to the air rifle. Most of the journals describe the tribes as astonished or surprised. On January 24, 1806, Lewis wrote his longest report on the Indians' reaction to the air gun. "My Air-gun also astonishes them very much, they cannot comprehend it's shooting so often and without powder; and think that it is *great medicine* which comprehends every thing that is to them incomprehensible."[13] The line "shooting so often" seems to support the idea that Lewis had a repeating air rifle such as a Girandoni type.

The final mention of the air rifle in the journals is undated. After returning to St. Louis, some of Clark's notes refer to the air rifle being boxed for shipment back East.[14] Then, as the trackers say, the trail goes cold. But rather than turn away, it is useful to look at one last piece of evidence. Isaiah Lukens's estate papers say that the air gun was not only carried by Lewis but made for him as well. By whom? Based on whose design? Did Lewis acquire the designs for a Girandoni and take them to Pennsylvania and have one made for the trip? Did Lukens, after all, make Lewis's air gun, but not from his standard model? Or did the writer of the estate sale brochure make a small literary error and add "made for" to "used"? Had Lukens only acquired it after Lewis's death? Did he want it because of where it had been or because he wanted to study the unusual design? Or . . . ?

The Corps of Discovery's expedition was one of the best documented of the period, but there are many questions about it that are probably unanswerable two hundred years later. What exactly Lewis's air gun was may well be one of those questions. But historians should be wary of the word "never."

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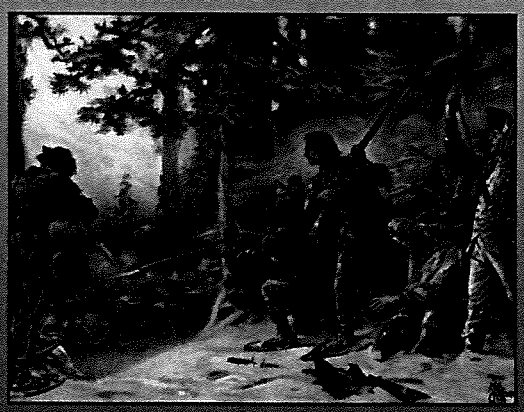
[13]Ibid., 6:233.
[14]Ibid., 8:419.

EXHIBIT L

THE HISTORY OF SNIPING AND SHARPSHOOTING



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Air Rifle Sharpshooters

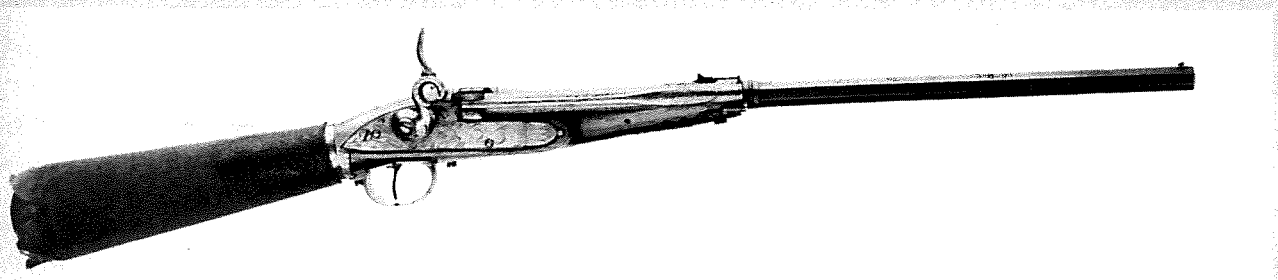
When French General Edouard-Adolphe-Casimir-Joseph Mortier paused during an 1800 battle in Austria, he was surprised to see "an orderly sergeant who was standing close to us leap up very high into the air and then fall down. We supposed, at first," he recalled, "that he was in a fit, and we were greatly astonished to find him dead, as nothing had been heard or seen to injure him. On his being undressed, however, a ball was found to have struck him, which must have been shot from an air-gun in the adjoining field. . . . [We] lost many fine men by that corps of Austrians."

"That corps of Austrians" Mortier cited were specially trained Tyrolean sharpshooters, armed with the most novel secret weapon of the 18th century, the Austrian Model 1779 *Repetierwindbuchse* (repeater wind rifle). Think of it—*smokeless, almost silent, yet lethal at 100 yards.* "On account of this treachery," reported General Mortier, his troops "hung all that corps that fell into their hands, considering them not as soldiers but assassins, and never gave them any quarter."

This amazing sharpshooter's air rifle had come to the attention of Austrian Emperor Joseph II in 1779, who had it tested by Field Marshal Franz Moritz. Convinced of the air rifle's superiority, the emperor summoned its inventor, Italian gunmaker Bartholomeo Girandoni, to Vienna to produce it under the utmost secrecy.

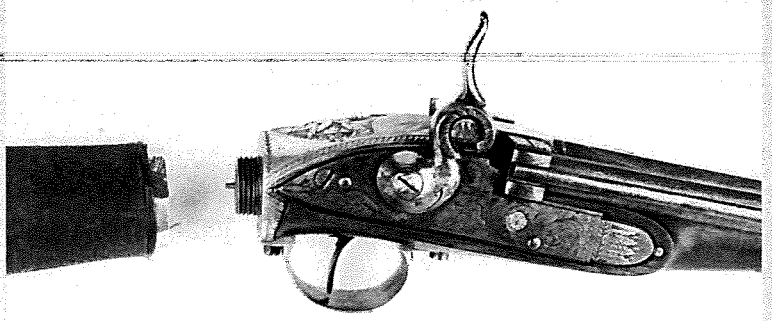
Instead of a tiny pellet, Girandoni's air rifle fired an 11.5mm ball, approximately .45 caliber, with sufficient power to penetrate a 1-inch board at 100 yards. At a time when the only repeating firearms were double-barrels, and even smoothbores fired just two to three rounds per minute, the Girandoni rifle could get off 20 shots in a half minute without reloading. Some 49 inches long and weighing nearly 10 pounds, it was similar in size and weight to a conventional musket. Its 32-inch wrought-iron barrel's rifling rotated the ball once in 26.25 inches.

The rifle's compressed air was contained in its detachable stock, actually a leather-covered metal reservoir or flask, which held air sufficient for about 30 shots. Using a small hand pump, the sharpshooter could refill his flask, with 600 pumps achieving a pressure of 60 atmospheres and projectile velocity of perhaps 500 feet per second. Considerably more pressure was yielded from a wagon-mounted compressor, capable of 150 atmospheres and generating a more lethal 900 feet per second. (At this higher pressure, however, the flasks occasionally burst, sometimes causing serious injuries.) Under ideal conditions,



The remarkable Girandoni air rifle, an Austrian sharpshooter's weapon and an arm for the Lewis and Clark Expedition. (Courtesy of the West Point Museum.)

each air rifle sharpshooter had two or three flasks, with runners bringing him reloads from the nearby wagon, which held 2,000 preloaded flasks. The sharpshooter carried reload lead balls in 20-round tubular speedloaders.



The Girandoni's leather-covered butt contained a detachable flask filled with compressed air. (Courtesy of the West Point Museum.)

A few years ago, the dean of American airguns, Dr. Robert D. Beeman, fired tests with a custom replica Girandoni air rifle and found that its 210-grain ball attained a muzzle velocity of 750 feet per second. Ballistically, this is comparable to a modern .38 Special or .45 Colt Auto pistol projectile—which is, indeed, potentially lethal at 100 yards. An 18th-century test of a similar air rifle firing 120-grain balls yielded an even faster 900 feet per second. Running this data through my Sierra Exterior Ballistics software, I found that the bullet drop at 100 yards exceeded 2 feet—meaning, as Beeman had concluded and 18th-century literature suggested, the maximum range was no more than perhaps 100 yards.

Despite its limited range, the Girandoni air rifle was originally issued only to select riflemen from Austria's fusilier regiment, but rough handling and improper maintenance caused frequent malfunctions. Thus, Emperor Joseph had his secret weapons redistributed to specially trained Tyrolean sharpshooters who better understood how to care for these rather delicate instruments.

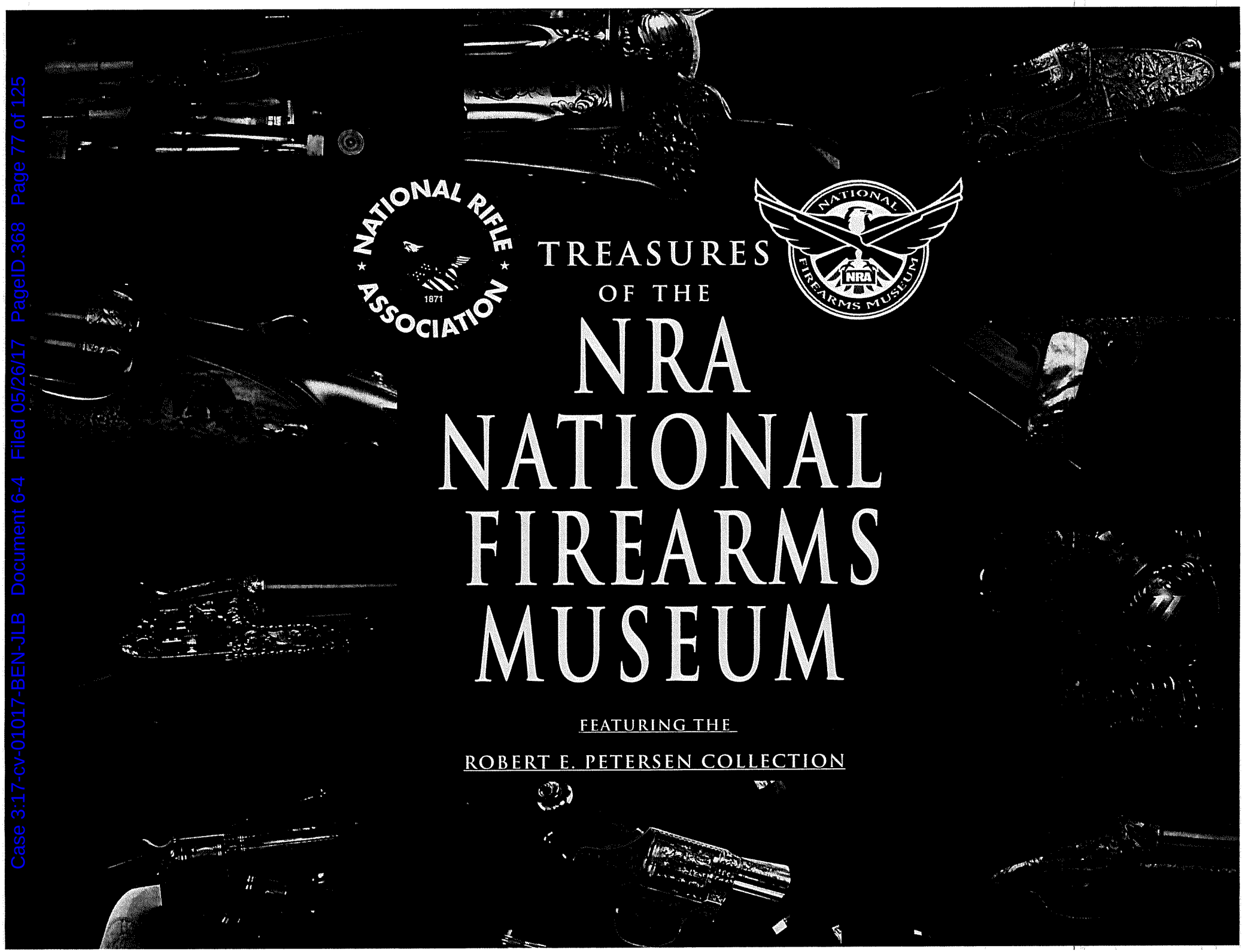
During Austria's 1788–89 War against Turkey and a 1790 fight with Prussia, the Girandoni air rifle was used extensively and proved itself in combat, offering a high rate of fire, reasonable accuracy, and lethality, without generating gun smoke or muzzle blast. One Tyrolean sharpshooter report noted, "These weapons were really accurate and effective."

Despite these benefits, however, the air rifles could not stand up to field use, with the repeater feed breaking down and leather seals failing. In 1801, the Tyrolean sharpshooters' commander complained that of his 500 air rifles, only 101 were usable. Soon afterward, the worn-out airguns were withdrawn and replaced by conventional rifles.

A few Girandoni air rifles made their way to America, where one ended up in the hands of Captain Meriwether Lewis. He carried it westward with his Corps of Discovery in 1803–05 and fired a number of demonstrations for Indians along the way, never failing to amaze them when he pumped off 20 lethal lead balls in just 30 seconds.

Captain William Clark wrote in his *Field Notes* that the Girandoni demonstrations "astonished [the Sioux Indians] very much," while the Snake Indians were "surprised and astonished." Perhaps, as Dr. Beeman has suggested, these firepower demonstrations deterred the Indians from attacking the Lewis and Clark Expedition. Dr. Beeman today owns an authentic Girandoni air rifle tentatively identified as being the very one Captain Lewis fired those many years ago.

EXHIBIT M



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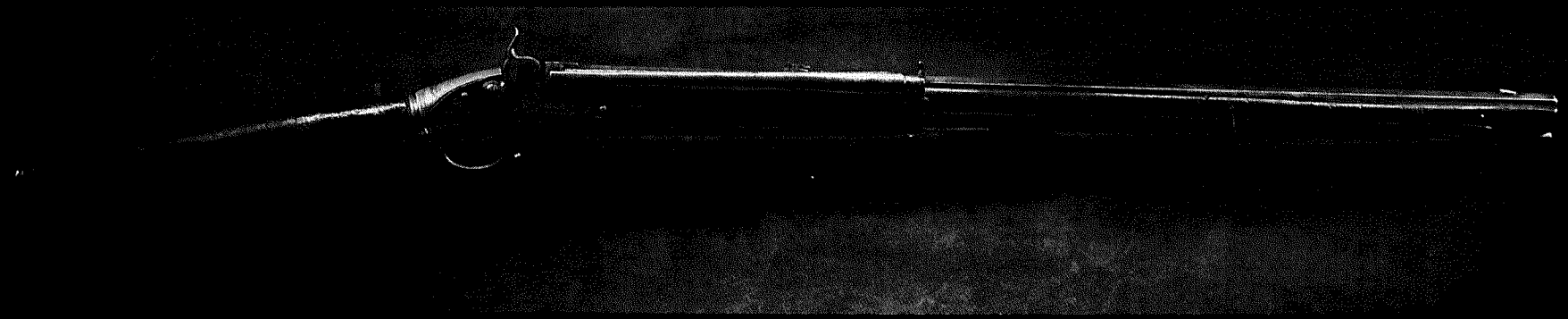

Girandoni Repeating Air Rifle, as carried by Lewis and Clark - .49 caliber - circa 1795 - 22-shot repeating air rifle, built by Bartolomeo Girandoni, who originally supplied similar air rifles to the Austrian army around 1790. As originally issued, each Girandoni air rifle had three detachable air reservoirs, each requiring about 1,500 strokes of a separate pump to completely pressurize the reservoir. Once filled to operating pressure (about 800 psi), the air rifle could fire up to 70 shots before the reservoir needed to be replaced. A hollow metal tube on the side of the barrel held up to 22 lead balls that could be fed one at a time to the firing chamber by a simple sideways push of a plunger. At a distance of 50 feet, this rifle is capable of placing 10 shots into a group the size of a quarter, and could penetrate a 1-inch wood plank or bring down an elk. *Donated by Michael Carrick*

Painting: ***Lewis and Clark on the Lower Columbia*** (28 × 24 in (71.1 × 61 cm)) by Charles Marion Russell 1905.

EXHIBIT N

Girandoni air rifle

From Wikipedia, the free encyclopedia

The **Girardoni air rifle** was an airgun designed by Tyrolian inventor Bartholomäus Girardoni circa 1779. The weapon was also known as the Windbüchse ("wind rifle" in German). One of the rifle's more famous associations is its use on the Lewis and Clark Expedition to explore and map the western part of North America in the early 1800s.

Contents

Girardoni air rifle

Girardoni system Austrian repeating air rifle, circa 1795, believed to have been taken on the Lewis and Clark Expedition

Type	Air rifle
Place of origin	Holy Roman Empire
Service history	
In service	1780–1815
Used by	Austrian Empire United States (Lewis and Clark)
Production history	
Designer	Bartholomäus Girardoni
Designed	1779 or 1780
Specifications	
Weight	4.5 kg (9.9 lb)
Length	120 cm (3.9 ft)
Caliber	.46
Feed system	20/21 round vertical hopper
Sights	Iron

History and use

The Girardoni air rifle was in service with the Austrian army from 1780 to around 1815. The advantages of a high rate of fire, no smoke from propellants, and low muzzle report granted it initial acceptance, but it was eventually removed from service for several reasons. While the detachable air reservoir was capable of around 30 shots it took nearly 1,500 strokes of a hand pump to fill those reservoirs. Later, a wagon-mounted pump was provided. The reservoirs, made from hammered sheet iron held together with rivets and sealed by brazing, proved very difficult to manufacture using the techniques of the period and were always in short supply.

In addition, the weapon was very delicate and a small break in the reservoir could make it inoperable. Finally, it was very different from any other weapon of the time and any soldier using it needed to be highly trained.

The Lewis and Clark Expedition used the rifle in the demonstrations that they performed for nearly every Native American tribe they encountered on the expedition.[1][2]

Design and capabilities

The rifle was 4 ft (1.2 m) long and weighed 10 lb (4.5 kg), about the same basic size and weight as other muskets of the time. It fired a .46 caliber ball [3] (caliber is contested, original sources such as Dolleczek [4] describe the caliber as 13mm (.51cal)) and it had a tubular, gravity-fed magazine with a capacity of 20 balls. This gravity

000257
EXHIBIT N

operated design was such that the rifle had to be pointed upwards in order to drop each ball into the breech block. Unlike its contemporary, muzzle-loading muskets, which required the rifleman to stand up to reload with powder and ball, the shooter could reload a ball from the magazine by holding the rifle vertically while lying on his back and operating the ball delivery mechanism. The rifleman then could roll back into position to fire, allowing the rifleman to keep a "low profile". Contemporary regulations of 1788 required that each rifleman, in addition to the rifle itself, be equipped with three compressed air reservoirs (two spare and one attached to the rifle), cleaning stick, hand pump, lead ladle, and 100 lead balls, 1 in the chamber, 19 in the magazine built into the rifle and the remaining 80 in four tin tubes. Equipment not carried attached to the rifle was held in a special leather knapsack. It was also necessary to keep the leather gaskets of the reservoir moist in order to maintain a good seal and prevent leakage.[5]

Recreation of an Austrian Girardoni system Accoutrements Bag, including spare air flasks, air pump, wrenches, bullet mold and ladle

The air reservoir was in the club-shaped butt. With a full air reservoir, the Girardoni air rifle had the capacity to shoot 30 shots at useful pressure. These balls were effective to approximately 125 yd (114 m) on a full air reservoir. The power declined as the air reservoir was emptied.[6]

Importance

The Girardoni air rifle was an important first. It was the first repeating rifle of any kind to see military service. It was one of the first uses of a tubular magazine.

See also

- Weapons of the Austro-Hungarian Empire

Wikimedia Commons has media related to Girandoni air rifle.

Footnotes

1. Wier, S.K. (2005). "The Firearms of the Lewis and Clark Expedition" (http://www.westernexplorers.us/Firearms_of_Lewis_and_Clark.pdf) (PDF). p. 12. Retrieved March 12, 2013.
2. Girandoni air rifle as used by Lewis and Clark. A National Firearms Museum Treasure Gun. (https://www.youtube.com/watch?v=-pqFyKh-rUI) at YouTube
3. The Beeman article on Girardoni air rifles in the sources section and an article in the German gun magazine Visier (issue 1/2007, page 141) claim the caliber was actually .463" (11.75 mm).
4. Die Entwicklung der Handfeuerwaffen im österreichischen Heere, 1896, Anton Dolleczek
5. A letter detailing regulations, "Signed, Vienna, 24th January 1788"; reproduced in Baker, G; Currie, C. The Austrian Army Repeating Air Rifle 2nd Ed., 2007.
6. Military writer August Haller claimed in an 1891 treatise Die österreichische Militär-Repetier-Windbüchse that the first ten shots would be effective to about 150 paces, the next ten shots up to 120-125 paces, the next ten out to 100 paces, and then the remaining air pressure in the reservoir would be too low.

Sources

- Beeman's History on Austrian Large Bore Airguns (http://www.beemans.net/images/Austrian%20airguns.htm)
- I Benemeriti Di Cortina D'Ampezzo (http://staff.sunrise.it/polovalboite/giacomel/benemeriti1.htm)

- Die Windbüchse (http://www.braunschweiger-feldkorps.de/windbuechse.htm)
- [1] (https://www.youtube.com/watch?v=2dZLeEUE940) (original 1780 example)
- Girandoni air rifle as used by Lewis and Clark. A National Firearms Museum Treasure Gun. (https://www.youtube.com/watch?v=-pqFyKh-rUI)

Retrieved from "https://en.wikipedia.org/w/index.php?title=Girandoni_air_rifle&oldid=772658177"

Categories: Air guns | Italian inventions | 1779 introductions

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EXHIBIT O

The Leading Reference for Antique American Arms

FLAYDERMAN'S GUIDE TO ANTIQUE AMERICAN FIREARMS ...and their values

Norm Flayderman

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ABOUT THE COVER

Representing the newer end of the contents spectrum, the Colt Model 1911 pistol has become a sought-after collectible, and continues in use by military units, law enforcement personnel and private citizens.

The Model 1911 autoloading 45-caliber pistol was adopted in 1911, and Colt's first deliveries were made to Springfield Armory in early January 1912. Subsequently the Model 1911, with numerous modifications, has compiled an enviable service record with total production (to 1970) of over three million units, with most going to military contracts.

Author Norm Flayderman acquired the illustrated M-1911, frames and drawing from the Winchester Gun Museum in the mid-1970s when the museum contents were moved to the Buffalo Bill Museum in Cody, Wyoming. The Flayderman letter documenting the details of the acquisitions appears in the background, as does a letter from the Winchester Gun Museum, and is the sort of provenance that collectors value greatly. *(Courtesy Little John's Auction Service)*

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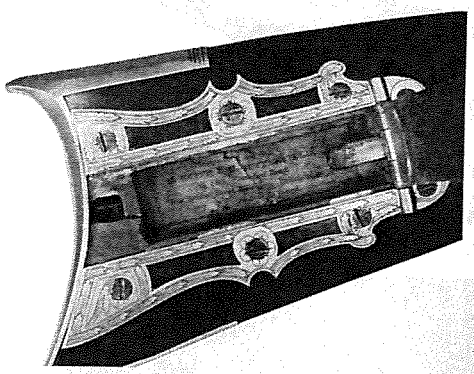
Edited by Ken Ramage

Printed in the United States of America

Hall's Patent Breech-Loading Flintlock Sporting Rifle

12-009

12-009.2



Hall's Patent Breech-Loading Flintlock Sporting Rifle Made by John H. Hall, Portland, Maine, c. 1811-1818. Quantity unknown; estimated under 150.

Although no two of these highly desirable rifles are identical, they do retain close similarities in many features. The specimen illustrated is typical of the type most often encountered. The breechblock pivots upward for loading and is released by a lever device protruding through the bottom of the stock. Calibers vary from approximately 32 to 52. Octagon barrels have been recorded from 29" to 35". The slender, full stocks are usually encountered of curly maple wood; brass patchboxes, which are found on most specimens, are of an identical pattern (as shown).

Most (but not all) specimens recorded are marked on the top of the breechblock JOHN H./HALL/PATENT. Numbers (believed serials) are found on most specimens on the breechblock as are various initials believed those of factory workmen.

Earlier types than that shown, with unique or evolutionary features, are worth premium values (*See also Chapter IX-A, Model 1819 U.S. Breech-Loading Rifle*):

12-009 Values—Good **$6,500** Fine **$17,500**

Variant Hall's Patent Breech-Loading Sporting Rifles. Other unusual variations of early Hall sporting rifles are possible to encounter (see also Hall pistol 6B-029). A unique double-barrel, half- stock specimen is described and illustrated by C.W. Sawyer in his pioneering work *Our Rifles*, 1920 (q.v.) with side-by-side octagon barrels and double side-by-side breech-blocks. Variants of Hall sporting rifles are known with brass barrels and/or brass breech-blocks. All display differences and are extremely rare. Hall even advertised his breech-loading sporter as a "fowling piece" (smooth-bore Hall Patent shotguns as yet unknown). Illustrated is a Hall's Patent breech-loading, half-stock original percussion sporting rifle; marked in bold, fancy script "H. KEITH PHILADELPHIA" on its octagon barrel. The well-proportioned stock fitted with a fancy brass patchbox, elegantly engraved with an American eagle, shield and ribbon, with motto, filling its lid. A unique feature is the maker's original printed label yet intact within the patchbox: "**Manufactured and sold by H. Keith and B. Butterfield**" with street address, Philadelphia. Other examples by Keith known in flintlock. Values of variant Hall Patent sporting breech-loaders, made by Hall in Portland, Maine or other listed American makers, and of commensurate quality, are estimated to be values in the high four to low five-figure range.

12-009.2

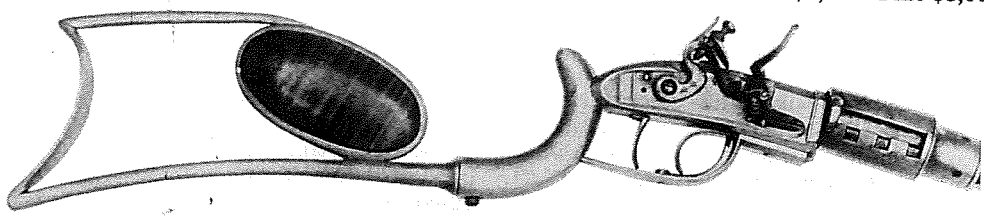
Jennings All Metal Breech-Loading Flintlock Rifle

Jennings All Metal Breech-Loading Flintlock Rifle. Invented by Isaiah Jennings, New York City, 1818 and likely made by him also. Quantity limited. (See also 9B-009 Repeating flintlock.)

Specimens viewed and recorded, although varying in dimensions and quality, do have common features of removable barrel that takes-down by quarter twist to load at breech as well as to shorten overall length for portability; integal made skeleton type stock. Varying barrel lengths, calibers (some smooth bore).

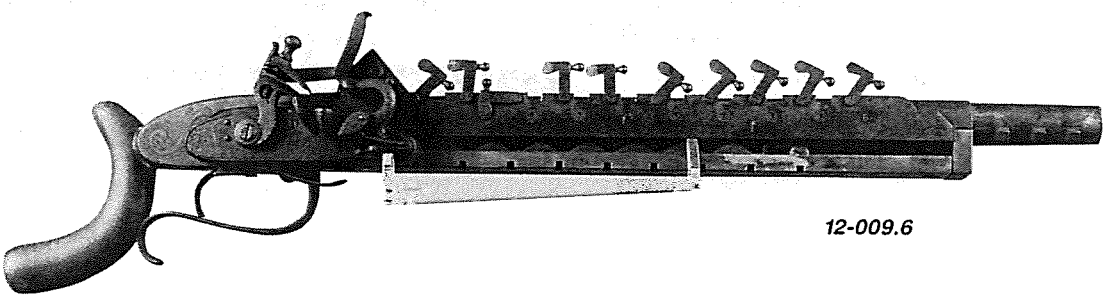
Markings vary: JENNINGS on lock and INVENTED BY ISAIAH JENNINGS APR 11, 1818 viewed on some examples. Rare:

12-009.5 Values—Good **$4,500** Fine **$8,000**



12-009.5

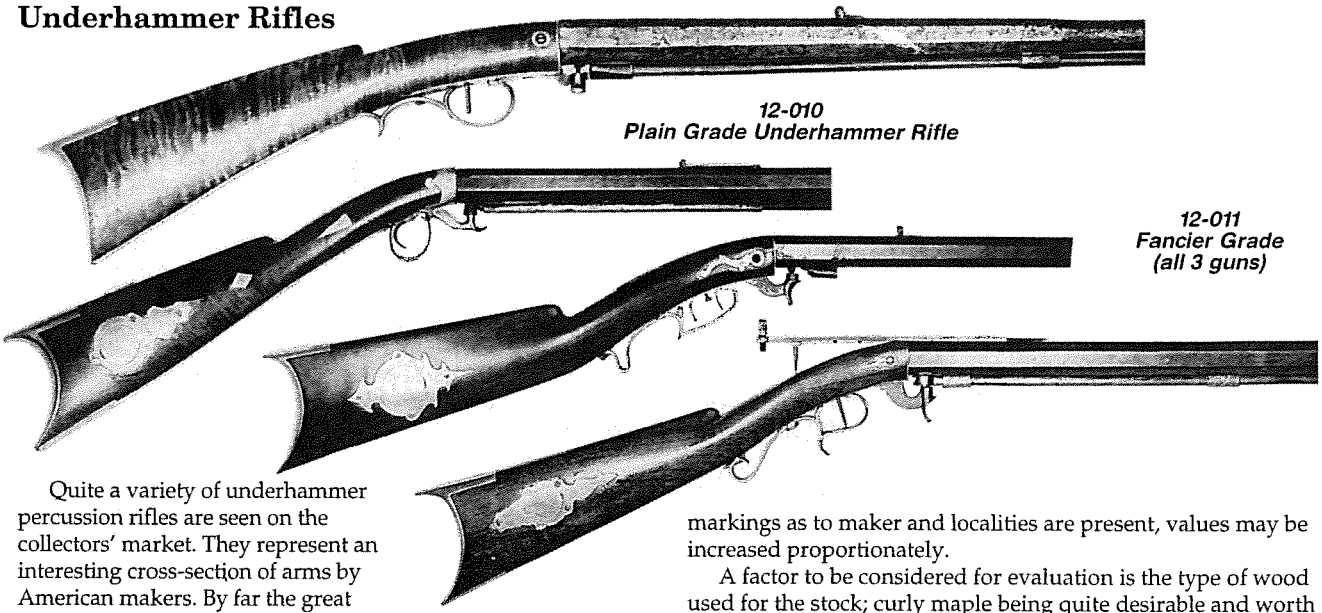
Jennings All-Metal, Muzzleloading Multi-Shot Flintlock Rifle



12-009.6

Isaiah Jennings All-Metal Muzzleloading Flintlock Repeating Rifle. Invented and patented by Isaiah Jennings of New York City, 1821. Quantity unknown; extremely rare. Illustrated here is a twelve-shot specimen; a three-shot variant similar in appearance is illustrated and described in C.W. Sawyer's *Our Rifles, 1800-1920*. All brass construction, skeleton-type shoulder stock (identical to above) that is easily removable; the 21-inch octagon barrel is also quickly removable by merely loosening the thumbscrew at the breech and twisting. Lock marked I.JENNINGS. The multi-shot rifle illustrated takes twelve individual, superposed loads of powder and ball, one on top of the other, and is fitted with twelve individual touchholes, each with a swivel cover which also act to position and align the lock as it slides from its forward position towards the rear to align the shots in reverse order. 21-inch octagon brass barrel; rifled 44 caliber bore. (See also Ellis-Jennings Repeating Flintlock Military Rifles 9B-009/010 purchased under contract by U.S. Government, 1829.) Value for these rarities indeterminate; estimates in mid- to high five-figure range would not be inordinate.
12-009.6

Underhammer Rifles



12-010
Plain Grade Underhammer Rifle

12-011
Fancier Grade
(all 3 guns)

Quite a variety of underhammer percussion rifles are seen on the collectors' market. They represent an interesting cross-section of arms by American makers. By far the great majority of underhammers were made in New England, although certainly all Eastern states are well represented as is California; these latter worth a premium. Underhammers are found in a wider range of sizes than almost any other American rifle. Quite a few are seen in lightweight "boys" or "buggy" sizes with correspondingly smaller proportions and dimensions while others increase to massive 20-pound and 25-pound bench rest match target rifles made by some of the era's most noted riflesmiths, e.g., Billinghurst and Brockway. Specimens illustrated here are the most typical of those encountered. Underhammers run the gamut in quality from primitive, awkward, unmarked specimens to those displaying the very highest quality of workmanship and possessing pleasing, artistic qualities.

As the underhammer mechanism was more simply fashioned than the full side lock type, their manufacture was obviously attempted by not a few unskilled craftsmen and gunsmiths—or more likely, blacksmiths! Thus, quite a few primitive appearing specimens are to be seen. If identifiable markings as to maker and localities are present, values may be increased proportionately.

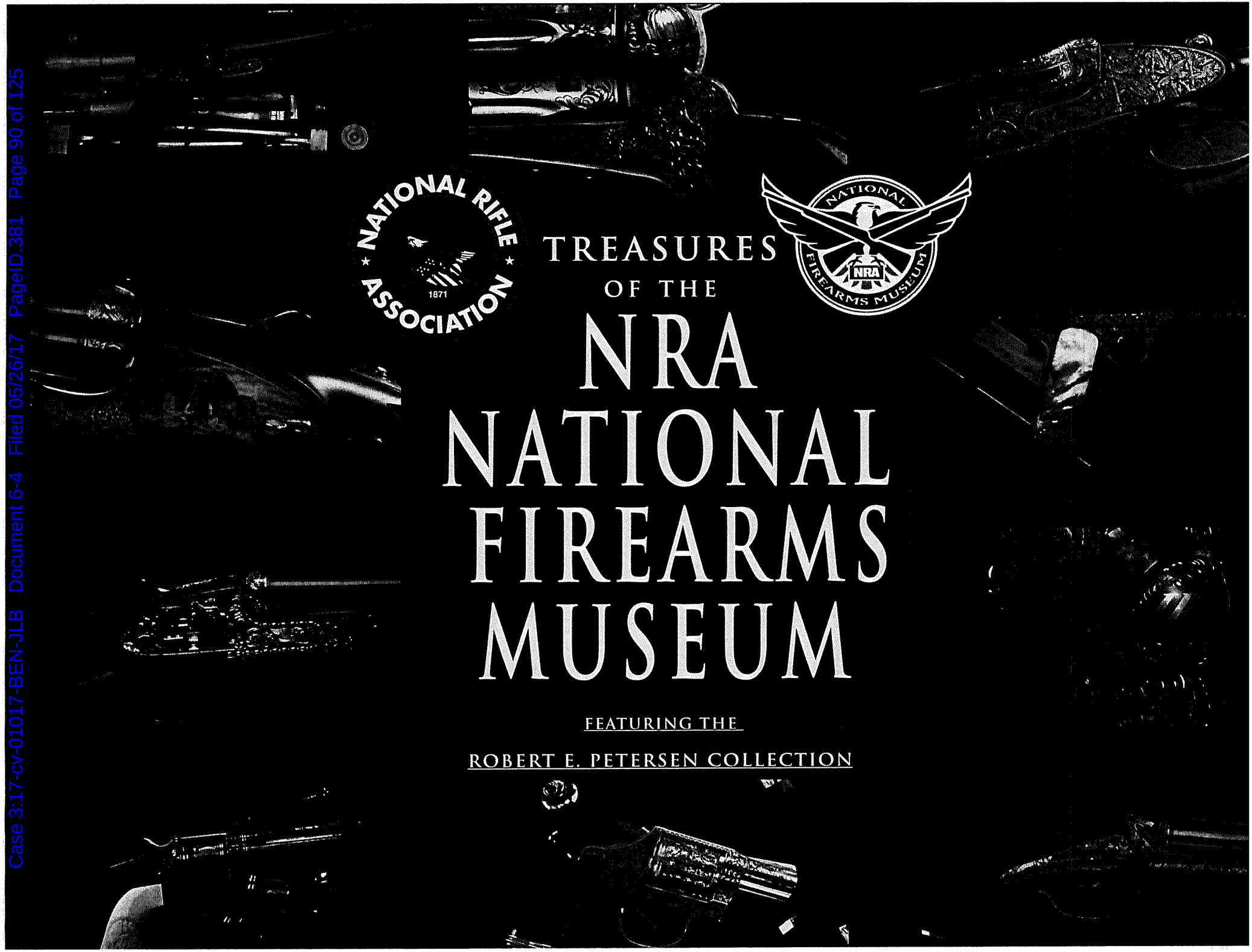
A factor to be considered for evaluation is the type of wood used for the stock; curly maple being quite desirable and worth a premium and is in equally stronger demand.

Undoubtedly one of the most prolific makers was Nicanor Kendall of Windsor, Vermont. Judging by the specimens seen over the years, he turned out a notable number of underhammers in varying degrees of quality circa 1830s to 1840s. Another well-known maker of this type was David H. Hilliard of Cornish, New Hampshire. The reader is referred to Chapter VII, American Percussion Pistols (Section E) for further information about the principle and use of the underhammer, and to the classic work on the subject, *Underhammer Guns*, by Herschel C. Logan.

The specimens illustrated here are all of the off-hand size and weight. Heavy bench rest match type underhammer rifles are classed and evaluated in the "Bench Rest Rifles" section of this chapter.

Plain grade underhammer rifle usually brass mounted; made without patchbox, plain walnut or maple stock (curly maple worth 10 percent to 20 percent premium on this type):
12-010 Values—Good **$300-600** Fine **$500-900**

EXHIBIT P



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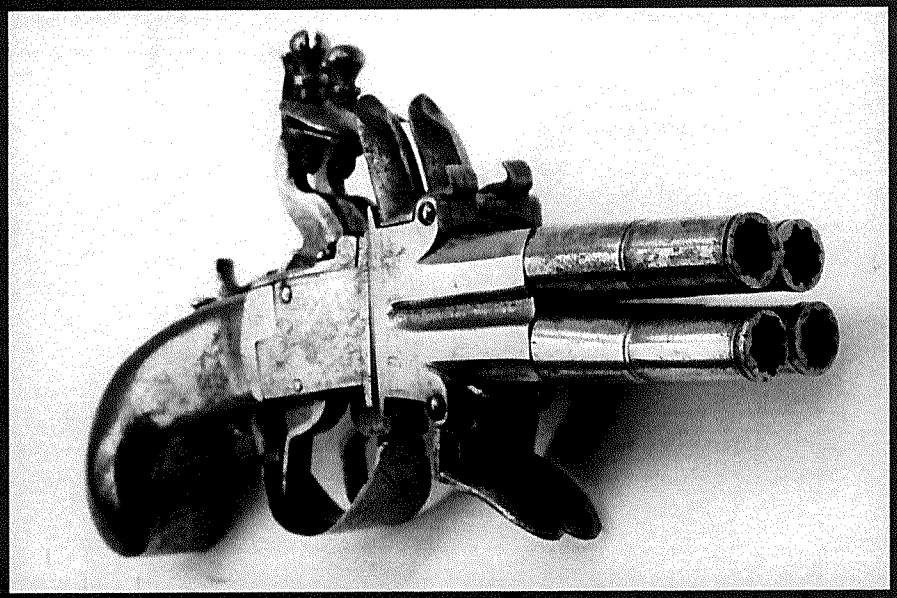
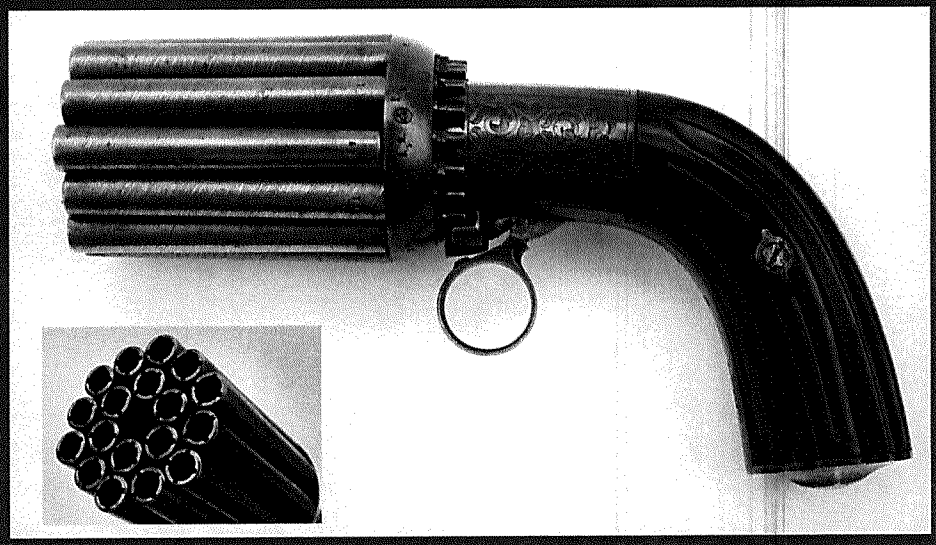


Four barrel flintlock pistol – This European pistol, ca. 1810-30, took 9mm lead balls. After the first two barrels were fired, the barrel cluster could swivel to bring two more shots into battery. *Petersen Gallery*

Jarre harmonica pistol – A European alternative to the revolver, this ten-shot 9mm percussion handgun, ca. 1860-70, advanced a fresh shot under the hammer by sliding the charge bar. *Petersen Gallery*

Deleaxhe Apache Knuckleduster – This triple threat weapon combined a 7mm pinfire revolver and a folding blade with a grip that served as brass knuckles. Made in Europe in the late 19th century, it is named after the Parisian Apache street gangs of that era rather than the American tribe. This one varies from usual configuration with longer fixed knucks rather than folding, and in the position of the bayonet. *Petersen Gallery*



Mariette 18 shot pepperbox – The pepperbox repeater was a contemporary of the Colt revolver, and its major competitor in the 1840s and 1850s. Made in both America and Europe, most pepperboxes held four to six shots in a cluster of rotating barrels that advanced to a fresh charge with each pull of the trigger. This is a rare high capacity 18 shot .32 caliber model. *Petersen Gallery*

EXHIBIT Q

AMERICAN BRITISH & CONTINENTAL

PEPPERBOX FIREARMS

JACK DUNLAP

Library of Congress Catalog Card No. 64-24121

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CHAPTER 11
Pepperboxes of Continental Europe

THE PEPPERBOXES of Continental Europe range from very ordinary to very elaborate and beautifully made pieces. Some were cheaply made to be sold at a low price. Others, especially those made by the top makers of France and Belgium, were works of art that sold at high prices. These sometimes have gold inlaid frames and barrels and may even have gold inlaid screw heads. Belgium has produced many of the poorest and cheapest guns ever made, but Belgium has also produced some of the finest weapons — including pepperboxes — ever manufactured.

Of all the Continental pepperboxes those marked "Mariette Brevete" are probably the most common. These were forerunners of the ring-trigger under-hammer pepperboxes to which J. R. Cooper of England claimed patent rights and produced in equal profusion.

Judging from the numbers that have survived, the pepperbox marked "Mariette Brevete" were obviously produced in great quantity. In fact, they were produced in such quantity that the maker should have attained fame in their making. Yet there is very little known about Mariette and his activities as a gunsmith. The definition of the French word "Brevete" in its noun form is: Patentee or patent; the verb form is: to patent or to license. A likely theory is, therefore, that Mariette licensed many makers to produce his patented pepperbox. That Mariette was not a gunsmith but merely the patentee is also a plausable answer.

The many forms in which the Mariette pepperbox is found leads to the conclusion that various makers participated in their production.

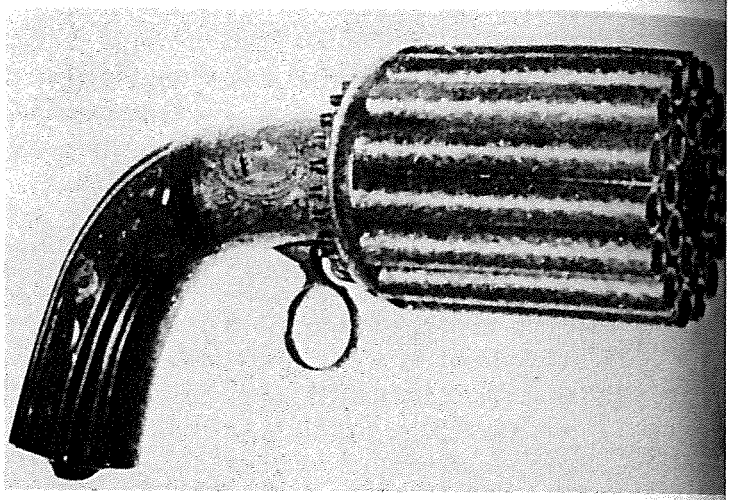

FIG. 1 – (Paul Mitchell Collection.)

These various shapes and forms, although basically similar, tend to make up a very colorful collection. Like the British bar hammer pepperbox, the exceptionally large and the very small size are the least common. The six-shot, ranging in overall length of from 7 to 8 inches, is the type most frequently encountered. The 4-shot, although not as common as the 6-shot, appears much more often than does the 5 or the 8-shot. A Mariette pepperbox with a barrel group in excess of eight is extremely scarce.

The 24-shot Mariette pictured in Figure 1 is from the material gathered by Mr. Winant before his death. The only information available is that it was, at the time the photo was taken, in the Paul Mitchell collection.

The barrels of the 18-shot pepperbox pictured in Figure 2 are arranged in a circle, the vents leading straight to the outer barrels and curving to the inner barrels. Successive trigger pulls

will fire two outer barrels and then one inner barrel.

The three Mariettes pictured in Figure 3 are of exceptionally fine quality. The bottom gun is of an unusual size for a Mariette. Top gun is 7⅞ inches overall, 2⅞ inch barrels, 8-shot .31 caliber. The middle gun is a piece of outstanding quality; 7 inches overall, 2½ inch barrels, 4-shot of .36 caliber. Bottom gun: 5 inches overall, 2⅜ inch barrels, 4-shot .22 caliber.

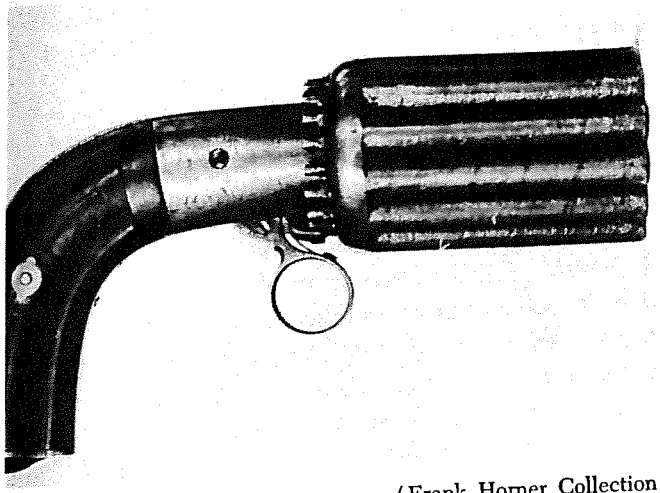

FIG. 2 – (Frank Horner Collection)

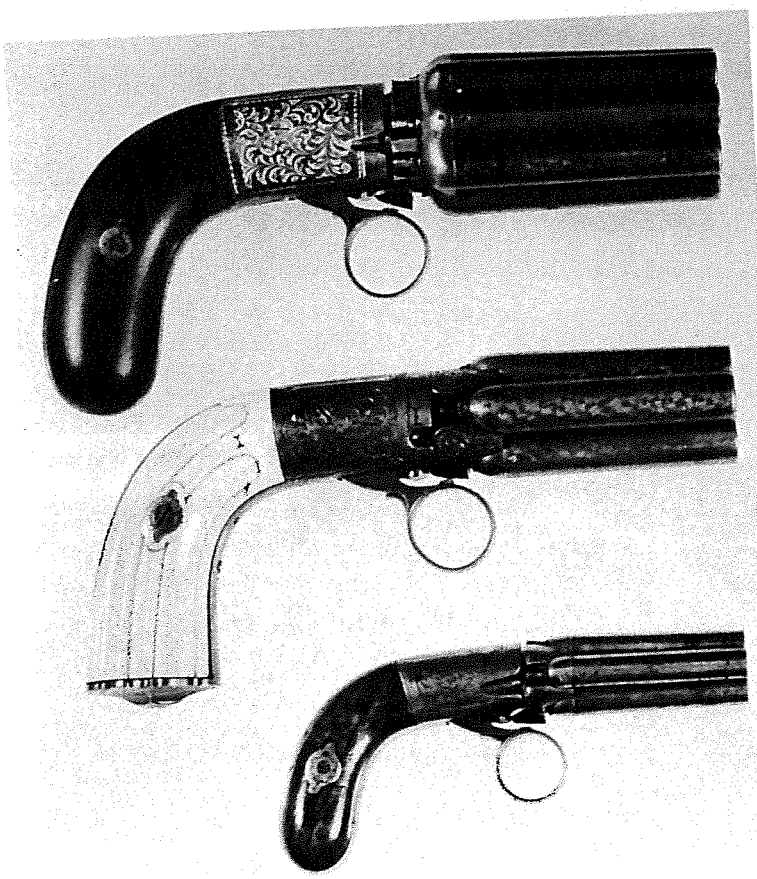

FIG. 3 – (Harry Mann Collection.)

The pepperbox pictured in Figure 4 has a Mariette type mechanism, but is unlike a Mariette in that the barrel group is bored and milled from a single piece of metal. In addition, it has a simple, but very effective method of feeding caps to the nipples. A tube, removable for reloading, is mounted at the inside of the butt plate and runs up through the inside of the side plate and connects with an opening in the breech block. A spring controlled lever, mounted on the left side of the breech-block and manually operated, opens and closes this opening to allow caps to be fed to the nipples. With the exception of Belgian proof marks, this piece is unmarked. 6¾ inches overall, 3 inch barrel group, 6-shot of about .28 caliber.

FIG. 4 – Mariette with capping device. (Frank Horner Collection)

The pepperbox pictured in Figure 5 is of the ring-trigger under-hammer type but is not marked Mariette Brevete. Marked "EONTAINE & LORON BTES. i VERSAILLES" on top of the frame, and "LORON" on two of the nipple partitions. This piece was probably produced before the filing of the Mariette patent, for Loron is known to have operated prior to 1836, the usually accepted date of the Mariette patent. The grips are of ebony carved in high relief. The

a one-sixth turn of the cylinder, the opposite button rises and the pin indexes the barrel group at the proper position for firing. After the barrel group has completed a full rotation, it must be turned in the opposite direction for the next six shots. The overall length is 7⅞ inches with a 3¾ inch barrel group of about .40 caliber.

Figure 63 shows a double-action German Reform Pistol chambered for the .25 ACP cartridge. The four barrels are in a vertical block. After the top barrel is fired, another pull on the trigger lifts the block and fires the cartridge in the second barrel. As the second barrel is fired, gas escapes from it through a small hole in the first barrel and ejects the shell from that barrel. The empty case from barrel two is ejected when barrel three is fired, and barrel three is cleared when the lowest barrel is fired. It is necessary to remove the case from the lowest barrel with a rod when the barrel block is removed for reloading. There is a safety lock on the left of the frame. The Reform is extremely thin and flat and has been a popular weapon on the Continent to carry in evening clothes.

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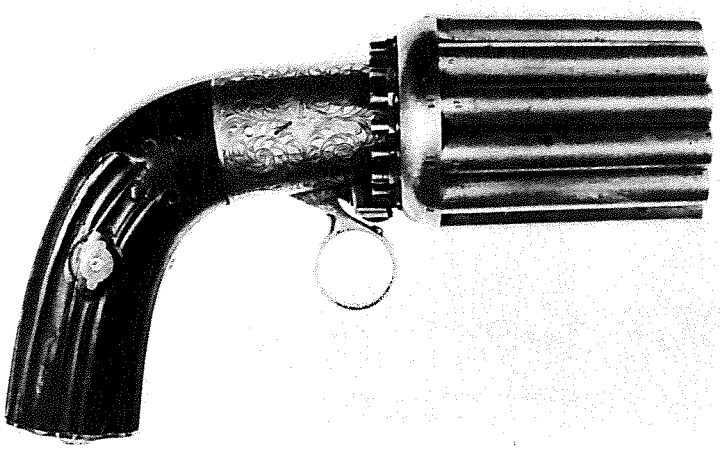


FIG.64 – Marked "Herman Brevete" on top tang. 18-shot, 12 barrels in outer circle–6 in inner circle. Successive trigger pulls fire two outer barrels and one inner barrel. 9⅜ inches overall, .31 caliber weight approximately 4 pounds.
(Dr. J. Otto Lottes Collection.)

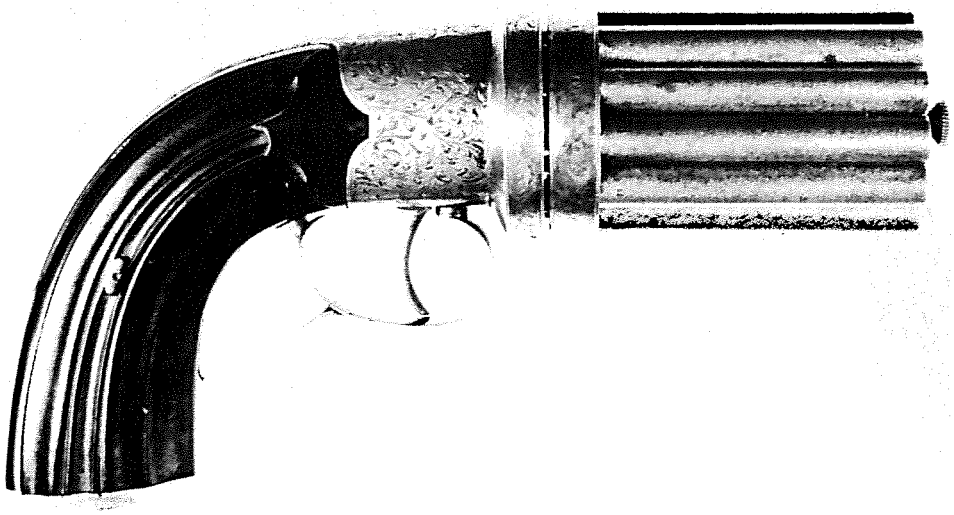
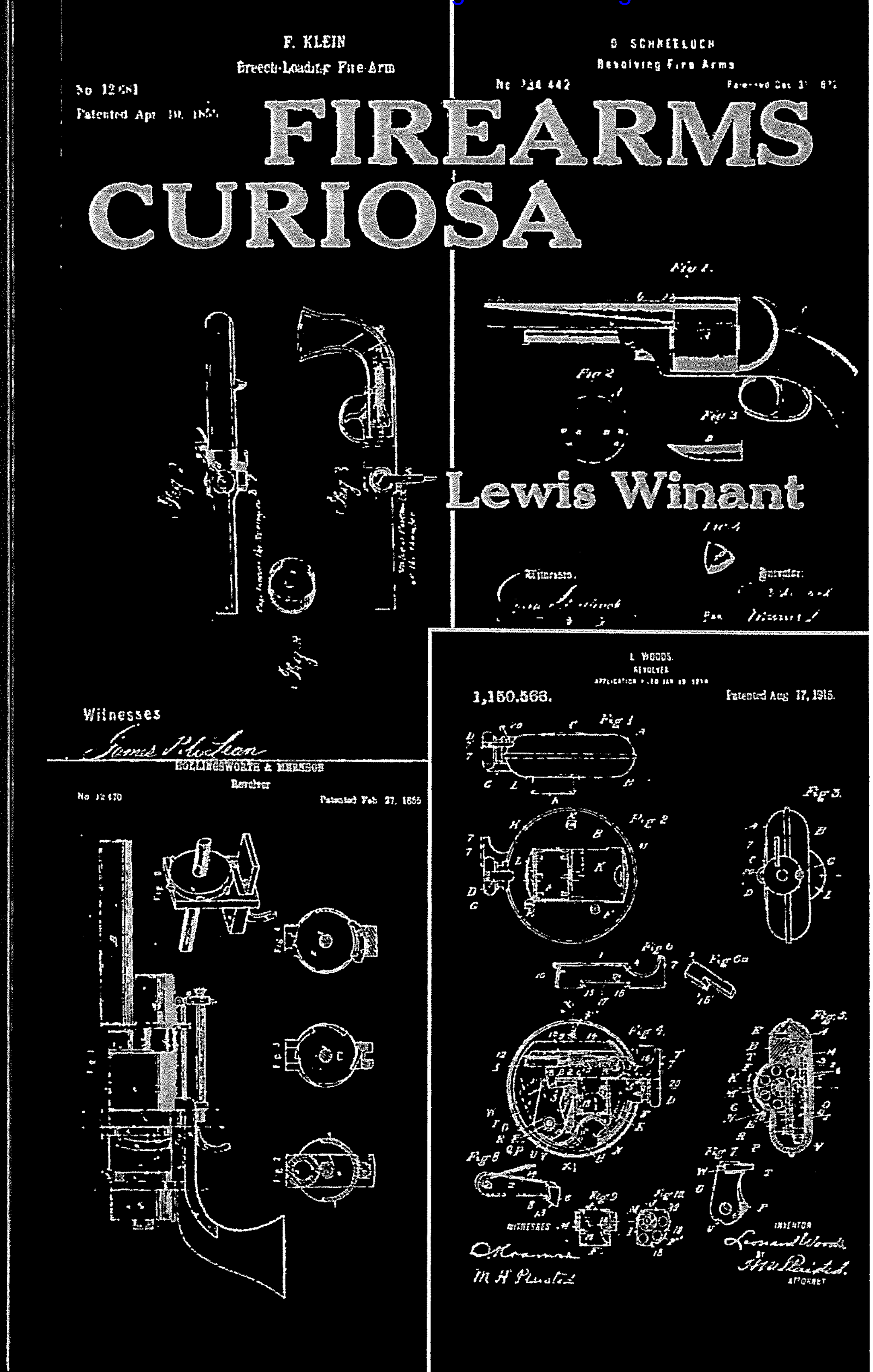


FIG.65 – Another 18-shot Mariette but considerably smaller than Figure 64. 7¾ inches overall. 3¼ inch barrels of .31 caliber. (Dr. J. Otto Lottes Collection.)

EXHIBIT R


F. KLEIN
Breech-Loading Fire-Arm
FIREARMS
CURIOSA
Lewis Winant
Witnesses
Revolver
L. WOODS
REVOLVER
Patented Aug. 17, 1915.
INVENTOR
ATTORNEY

Firearms Curiosa
by
Lewis Winant

First published in 1954

Published several times since

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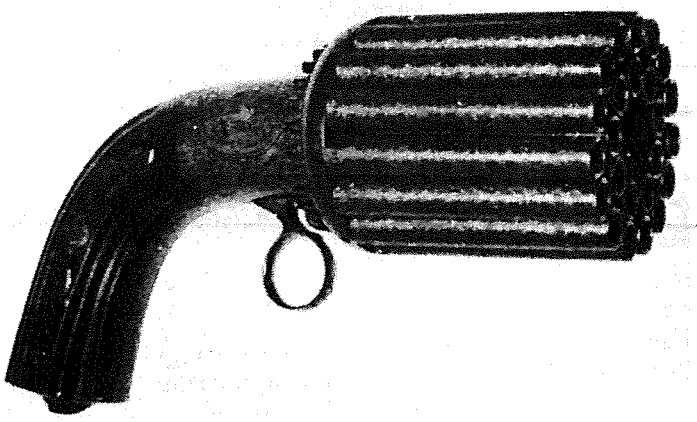

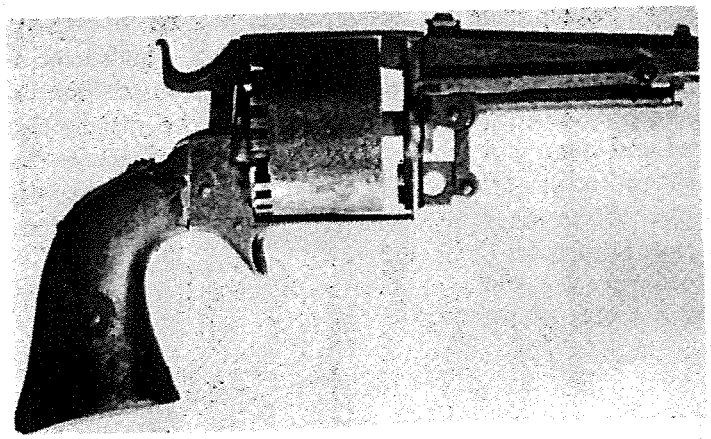

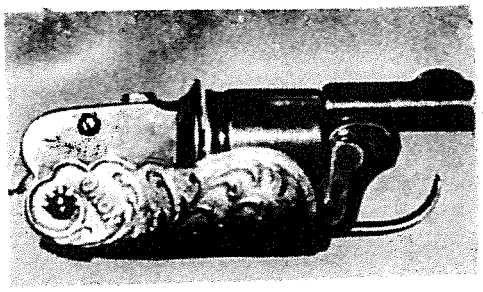

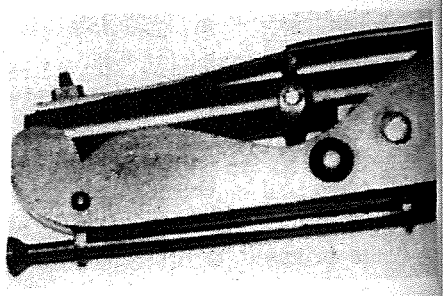

288. 24-shot pepperbox/ Paul Mitchell collection.
289. 24-shot revolver/ Henry M. Stewart collection.
290. Novo revolver/ Eddie Reider collection.
291. Folding pistol/ Dr. W. R. Funderburg collection.

EXHIBIT S

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ABOUT THE COVER

Representing the newer end of the contents spectrum, the Colt Model 1911 pistol has become a sought-after collectible, and continues in use by military units, law enforcement personnel and private citizens.

The Model 1911 autoloading 45-caliber pistol was adopted in 1911, and Colt's first deliveries were made to Springfield Armory in early January 1912. Subsequently the Model 1911, with numerous modifications, has compiled an enviable service record with total production (to 1970) of over three million units, with most going to military contracts.

Author Norm Flayderman acquired the illustrated M-1911, frames and drawing from the Winchester Gun Museum in the mid-1970s when the museum contents were moved to the Buffalo Bill Museum in Cody, Wyoming. The Flayderman letter documenting the details of the acquisitions appears in the background, as does a letter from the Winchester Gun Museum, and is the sort of provenance that collectors value greatly. *(Courtesy Little John's Auction Service)*

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Designed by Patsy Howell and Donna Mummery
Edited by Ken Ramage

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configurations of the guns on which they appear are correspondingly altered.

The field of revolving rifle collecting is noticeably less condition-conscious than most other American arms specialties. The usually low production figures of various makers and their relative scarcity on the collectors' market, combined with a certain erudition on the part of collectors who fancy these types, has placed emphasis (and consequently values) on their rarity factor with condition decidedly taking a back seat. Many of these types may be considered in great demand and eagerly sought after in almost any degree of condition. The foregoing, however, should certainly be modified and tempered by the fact that condition still plays a role in determining value.

BIBLIOGRAPHY

(Note: There is a decided lack of published definitive information about American revolving rifles. Some material about them may be found in several books having general coverage of American firearms and appearing in complete bibliographic listings elsewhere in this book. Most notable and valuable for the collector is *American Percussion Revolvers* by Frank Sellers and Samuel Smith. Others are *The Collecting Of Guns* edited by James E. Serven, *Spencer Repeating Firearms* by R. Marcot (best details on Ropers) and the numerous works covering Colt Firearms [the revolving rifles of this maker only have been adequately and completely covered].)

James, Edsall. *The Revolver Rifles*. Nashville, Tenn. Pioneer Press, 1974. Short monograph well illustrated on general history of revolving rifles.

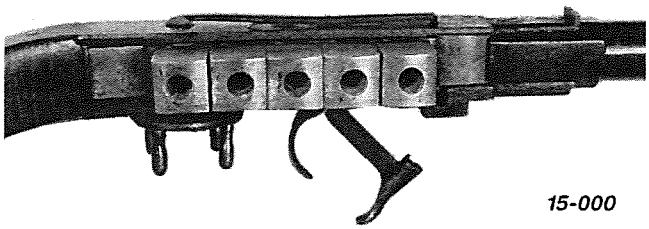
(Author unknown.) *The J. C. Lowe Collection Of Cylinder Guns.* Issue No. 35 (February, 1951) *The Gun Collector* Magazine, Published Whitewater, Wisconsin. For many years a major source of reference on revolving longarms of all types. The entire issue devoted to a study of those in the collection of J. Churchill Lowe of St. Louis.

(*) Preceding a title indicates the book is currently in print.

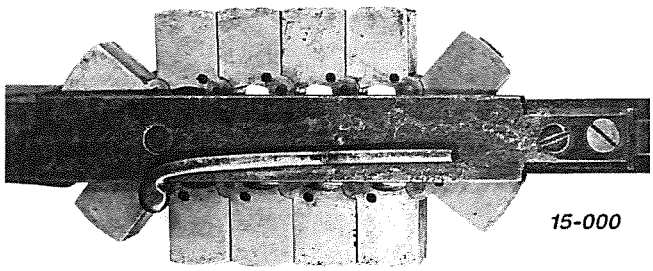
Allen & Wheelock Revolving Lip Fire and Percussion Rifles and Carbines

See E. Allen Arms, Chapter V-A.

Bennett & Haviland Many Chambered Revolving Rifle



15-000



15-000

Epenetus A. Bennett and Frederick P. Haviland, Waterville, Maine, Many Chambered Revolving Rifle. Made c. 1838-40. U.S. Patent No. 603, Feb. 15, 1838. Quantity unknown; likely less than ten.

Twelve-shot. 40 caliber. 29" octagon barrel (dimensions, caliber likely will vary on all specimens).

Rectangular brass chambers horizontally mounted in linked belt fashion. Manually revolved by rotating disc at rear of chambers. Locking latch for chambers on topstrap. Marking of well-known gunsmith N. KENDALL, WINDSOR, VT. observed on barrel of one specimen with BENNETT'S PATENT on frame. Markings likely will vary on each. Very rare. Unique system:

15-000 Values—Good **$9,500** Fine **$20,000**

Billinghurst Revolving Pill Lock Rifles

See J. & J. Miller

Cochran Underhammer Revolving Turret Rifle

John W. Cochran, New York City, Underhammer Revolving Turret Rifle. Made by C. B. Allen, Springfield, Massachusetts c. mid-late 1830s. Total quantity estimated at slightly over 200.

36 and 40 caliber horizontally mounted turret or radial cylinder. First and Second Types nine-shot; Third Type seven-shot. Manually revolved. Single action; underhammer. Octagon barrels of varying length; 31" to 32" average.

Finish: Frames and turrets casehardened; barrels blued or browned. Walnut stock.

Topstrap over turret marked on forward section: COCHRAN/MANY/CHAMBERD/ & /NON RECOIL/RIFLE Marked on rear of topstrap: C. B. ALLEN/SPRINGFIELD/MASS, and often, but not always, accompanied by an eagle motif.

Serial numbered from 1 to slightly over 200. Key to understanding variations of these arms as well as spotting occasional skullduggery with serial numbers, is the sequence in which patents were granted. The initial patent claim filed by Cochran was followed closely by a claim for an improvement. Surprisingly, the improvement patent (which was the hinged top plate) was granted first (Patent No. 183) on April 29, 1837, while the original patent claim followed after as Patent No. 188, and granted on the same date. The Second Type bearing very low serial numbers would therefore be quite inconsistent.

(a) First Type: Topstrap completely circular in center with short vertical projection of narrow width at either end and bolted securely down over the turret by two screws; turret is not easily removable for loading. The underhammer is gracefully curved and entirely encircles the trigger acting in a dual capacity as trigger guard. Estimated quantity made approximately 30; serial numbers in the range of 1 to 30:

15-001 Values—Good **$5,000** Fine **$12,500**

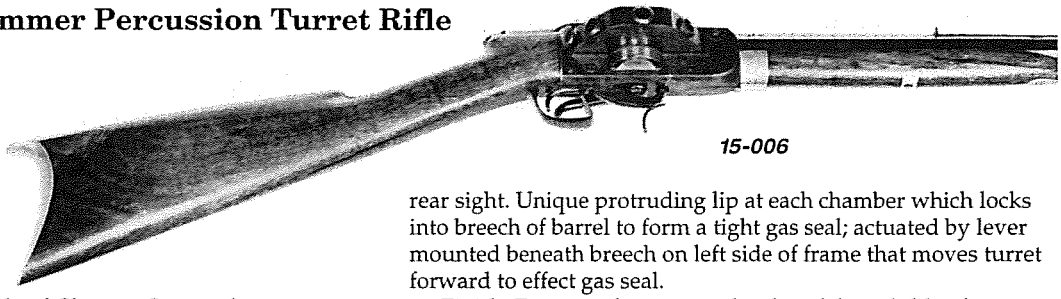
latter, although far more rare than original flintlock, normally do not bring as much. The entire Collier story is yet to be told. Important data about them may be found in *English Guns And Rifles* by J. N. George (Small-Arms Technical Publishing Company, Plantersville, South Carolina, 1947 and more recent reprint editions):

15-005 Values—Good **$12,500** Fine **$35,000**

Colt Revolving Percussion Rifles and Shotguns

See Colt Firearms, Chapter V-B.

Daniels Underhammer Percussion Turret Rifle



15-006

Henry and Charles Daniels of Chester, Connecticut, Underhammer Percussion Turret Rifle. Made by C. B. Allen, Springfield, Massachusetts c. late 1830s. Patent No. 610, February 15, 1838 and Patent No. 677, April 3, 1838. Quantity made unknown, estimated at less than 50. Rare.

Calibers and dimensions vary; average approximately 40 caliber with 34" octagon barrel. Eight-shot horizontal turret or radial cylinder of octagon shape. Manually revolved. Turret removed for loading by raising the hinged topstrap (as on the Second and Third Type Cochran) with the latch also acting as rear sight. Unique protruding lip at each chamber which locks into breech of barrel to form a tight gas seal; actuated by lever mounted beneath breech on left side of frame that moves turret forward to effect gas seal.

Finish: Frame and turret casehardened; barrels blued or browned.

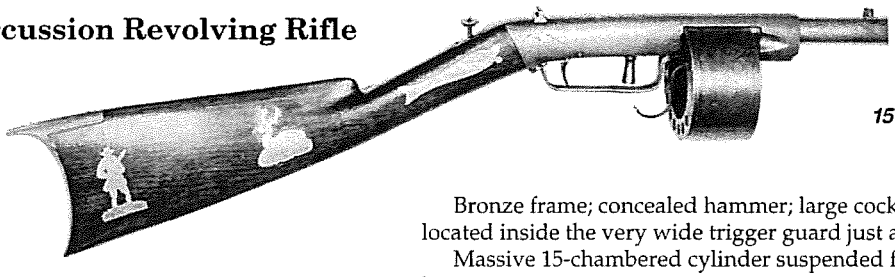
Marked on forward section of topstrap: H & C DANIELS/PATENT/CHESTER, CONN. Marked at rear of topstrap: C. B. ALLEN/SPRINGFIELD/MASS. accompanied with an eagle motif.

Walnut stock and forend; German silver furniture.

It is quite apparent that C. B. Allen made this shortly after his manufacture of the Third Type Cochran (*q.v.*). Note the similarities in design with the hammer mounted ahead of trigger:

15-006 Values—Good **$7,000** Fine **$12,500**

Hall 15-Shot Percussion Revolving Rifle



15-007

Alexander Hall of New York City, New York, 15-Shot Percussion Revolving Rifle. Made c. mid-1850s. Quantity unknown. Very rare.

Calibers and dimensions will undoubtedly vary; specimen viewed was 38 caliber.

Bronze frame; concealed hammer; large cocking lever/spur located inside the very wide trigger guard just ahead of trigger.

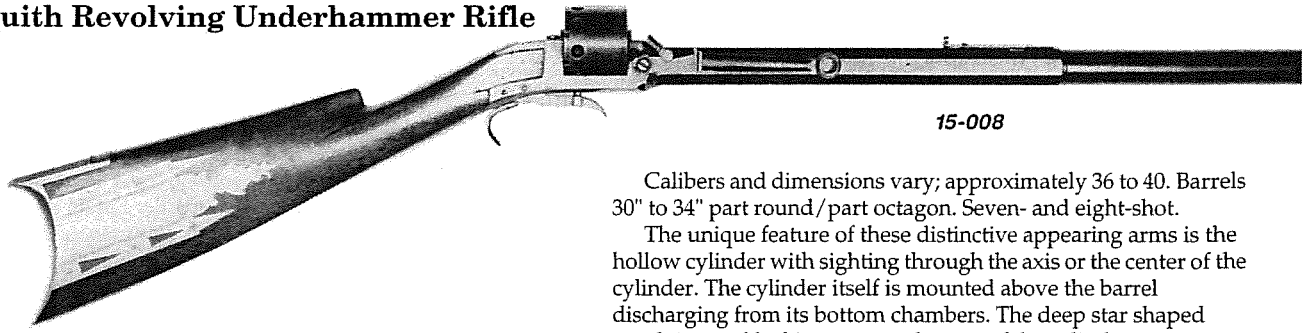
Massive 15-chambered cylinder suspended from frame by a hinge.

Marked in script on cylinder *HALL'S/REPEATING RIFLE/PATENTED JUNE 10/1856.*

Value estimated only with no known recorded recent sales:

15-007 Values—Good **$9,500** Fine **$20,000**

Jaquith Revolving Underhammer Rifle



15-008

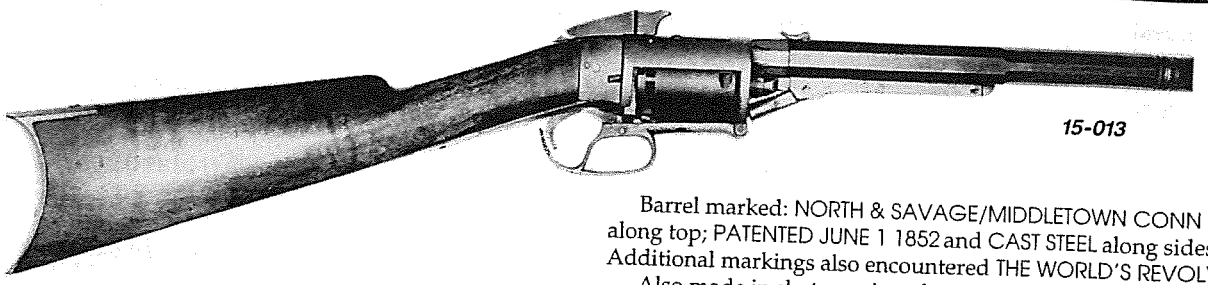
Elijah Jaquith of Brattleboro, Vermont, Revolving Percussion Underhammer Rifle. Made c. late 1830s; manufacturer unknown, but believed same as for Nichols and Childs (*q.v.*). Patent No. 832 of July 12, 1838. Quantity made unknown; extremely limited, estimated at approximately 25.

Calibers and dimensions vary; approximately 36 to 40. Barrels 30" to 34" part round/part octagon. Seven- and eight-shot.

The unique feature of these distinctive appearing arms is the hollow cylinder with sighting through the axis or the center of the cylinder. The cylinder itself is mounted above the barrel discharging from its bottom chambers. The deep star shaped revolving and locking cuts on the rear of the cylinder were utilized in the Jaquith pistol made by Springfield Arms Company to avoid infringement on the Colt's Patent at later date.

Finish: Frame and cylinder casehardened; barrel browned.

Barrel markings: E. JAQUITH BRATTLEBORO. VT. (with small design of hand and pointing finger) and PATENT.



15-013

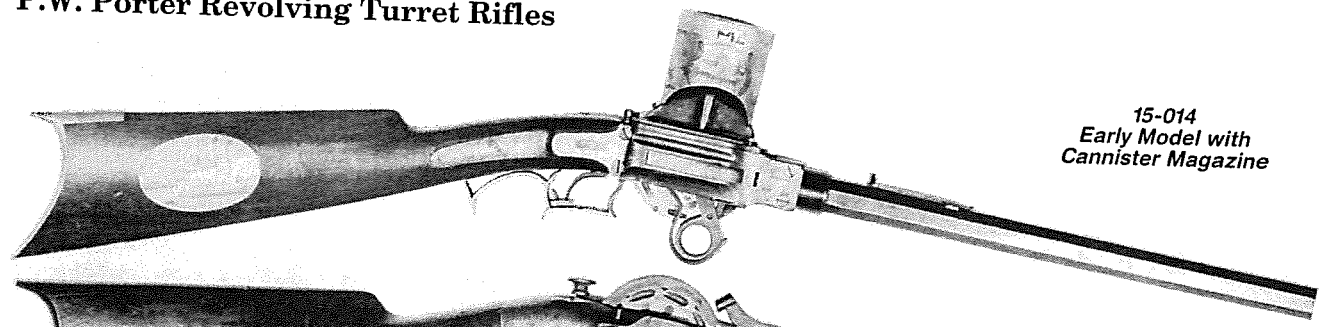
Average caliber 44, but could vary. Six-shot cylinder revolved, locked into position and hammer cocked by a downward motion of combination trigger guard and cocking lever. Round or part round/part octagonal barrels varying lengths; 23-1/2" average. Finish blued. Walnut stock.

Barrel marked: NORTH & SAVAGE/MIDDLETOWN CONN along top; PATENTED JUNE 1 1852 and CAST STEEL along sides. Additional markings also encountered THE WORLD'S REVOLVER

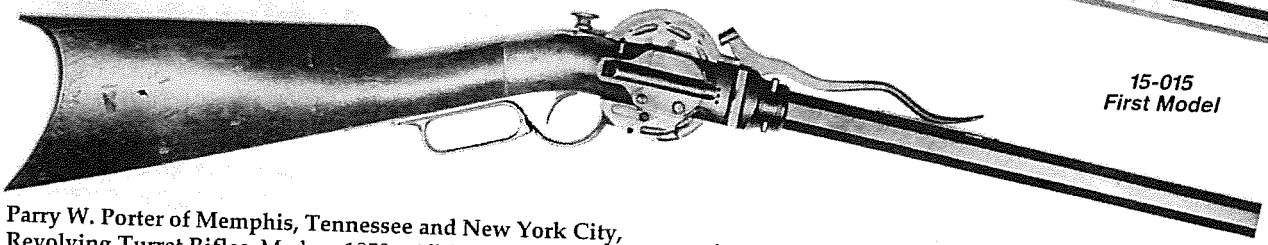
Also made in shotgun size of approximately 60 caliber with average 27" part octagonal/part round barrel, slightly longer frame and a full shield in front of cylinder. In place of the loading lever of the rifle there is a shotgun tamping rod/loading tool mounted below the barrel. Although fewer made, values either the same as rifle or slightly less as demand is not quite as strong:

15-013 Values—Good **$3,500** Fine **$7,500**

P.W. Porter Revolving Turret Rifles



15-014
Early Model with
Cannister Magazine



15-015
First Model

Parry W. Porter of Memphis, Tennessee and New York City, Revolving Turret Rifles. Made c. 1850s. All (except for earliest model with cannister magazine) made by G. P. Foster of Taunton, Massachusetts. Total quantity estimated about 1,250. U.S. Patent No. 8,210 of July 18, 1851.

Calibers and dimensions as below. The vertically mounted radial cylinder or turret is rotated and locked by movement of the under-lever which simultaneously cocks hammer.

Markings on the barrels of all New York era types: ADDRESS/ P. W. PORTER/NEW YORKand P. W. PORTER'S/PATENT 1851

An intriguing, though fictitious, legend has grown around Porter and his turret rifles stating that the inventor was killed while giving a demonstration of his arm to Colonel Samuel Colt, implying that but a few were made. Research has proven this story untrue and it seems likely that it was fabricated in the pre-World War II era to give color to an arms auction catalog! The wonderment is that so many specimens were produced since the arm had the same basic failing as the Cochran—at least one chamber aiming in the direction of the shooter at all times.

Early Porter With Cannister Magazine. Believed made in Tennessee prior to Porter's move to New York to seek financial assistance for mass production. Quantity unknown; estimated at approximately 25. Very rare. It is a matter of record that this type was given government trials at the Washington, D. C. arsenal in February of 1853.

Automatic loading and priming; with a distinctive large round German silver cannister magazine mounted above the turret holding balls (on ramp around outer periphery), black powder (in mid section of cannister) and fulminate (in the tube mounted over center). 30 shots are held in the magazine; that combined with the 8 loaded chambers gave the shooter a total of 38 shots providing all worked according to principle. Caliber average approximately 40; octagon barrels of varying lengths. All known specimens quite fancy with engraved symbolistic designs on the frame as well as the magazines and plaques inlaid in stocks (motifs such as clasped hands, sheaves of wheat, Masonic eye, town views and even an engraving of the capitol building at Washington, D.C.).

Most of those known specimens are without the magazine intact. Thus, prices reflected are for specimens without the cannister magazine. A premium of approximately 50 percent may be added to the price if complete with original magazine:

15-014 Values—Good **$9,500** Fine **$27,500**

New York Types (Made by Foster in Massachusetts). Total quantity made estimated about 1,225 for all three models.

In debunking another arms collecting myth, it should be specifically noted that the First and Second Model Porters *are not pill lock ignition as invariably described,* but rather, are all percussion ignition, accepting the standard type percussion caps of the era and not pills. Caps are spring forced into alignment with the hammer as the gun is used. When the hammer struck, the cap was smashed flat against the outer wall of the turret (over the tiny flash hole which is often confused as a receptacle for pills) and the residue of the exploded cap fell clear through the slot provided underneath the magazine.

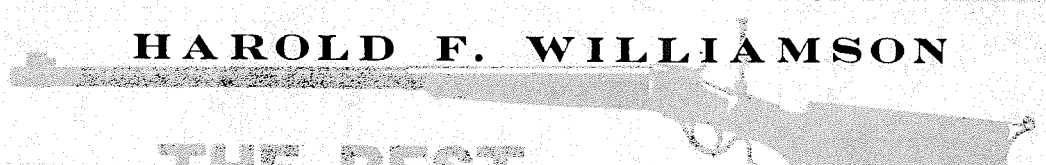
In the First and Second Models occasionally nipples may be found screwed into the frame (with magazines often removed or partly missing). Such alterations are usually performed by parties unfamiliar with the Porter system; thereby making it

EXHIBIT T

WINCHESTER

SINGLE SHOT RIFLE.

HAROLD F. WILLIAMSON



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WINCHESTER - Model

1886

.50-100-450.

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.50 Caliber,
100 Grains Powder.

d Bullet.

LIST PRIC[illegible] P[illegible]

To meet the demands of our friends for a .50 caliber carrying a heavy bullet, we [illegible] above. The bullet has a penetration of about 16 pine boards ⅞ inch thick, and a trajectory of about [illegible] The [illegible] fired with good results out of the .50-110-300 rifle, but requires a barrel especially rifled [illegible]

Winchester Repeating Arms Company,

NEW HAVEN, CONN.

000286
EXHIBIT T

(The Winchester trade mark is used with permission of the Winchester Repeating Arms Company)

MANUFACTURED IN THE UNITED STATES OF AMERICA

Library of Congress Catalog No. 52-11409

SBN: 498 08315 2

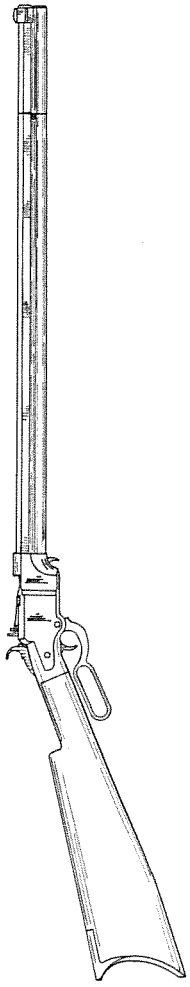
ruary 1856, in a small building located near the corner of Orange and Grove Streets. Compared with the Colt and the Robbins & Lawrence establishments at Hartford, operations were on a relatively modest scale. At the same time the labor force which numbered some fifty employees, including four girls making ammunition, and the amount of machinery used, made this plant well above the average size for the industry.

No description of the factory's operations at this time is available, but an inventory made when the Volcanic Company was liquidated gives some indication of the processes used. Included in the inventory were such standard types of machine tools as lathes, millers, drills, reamers, broachers, screw cutters, and the like. More specialized equipment was used in barrel-making and rifling. All of the machinery was apparently purchased from contemporary tool builders.

The machinery on hand was sufficient to permit the fabrication of parts that were reasonably interchangeable. Samples of the pistols and carbines show a considerable amount of file work, but this process was carried only to the point necessary to smooth off machined surfaces so that a more accurate fit was possible. The Company depended upon outside suppliers for frames and receivers, made of brass castings, drilled gun barrels of mild steel, and rough gun stocks.[9] Otherwise the quantity and variety of machinery on hand was extensive enough to have produced practically all of the parts that went into the finished products, plus the making of gauges, jigs, and fixtures.

An examination of the names that appear on the payrolls of the Company indicates that almost all of the labor force was of English or Scottish background. The work-day and the work-week were probably typical for the period in the arms industry; that is, six days per week and ten hours per day. There is evidence of the beginnings of the contract system being utilized in the organization, under which agreements were made with individuals to assume responsibility for the production of specific items within the plant of the Volcanic Company. These early contractors were drawn from the more highly paid men already employed, or from outside the firm. Different individuals assumed contractual obligations from time to time, resuming their status as regular employees after the contract had been filled. It was not uncommon for a man to take on such an obligation in addition to his regular employment.[10] As will be noted subsequently, the contract system became a very important feature of the organization of manufacturing under the Winchester Repeating Arms Company.

The Volcanic Company continued to produce the same types of firearms and ammunition begun by the Smith & Wesson partnership. The principal change was the addition of carbines to the line which used the same repeating action as the pistols. An advertisement in the form of a circular, issued in 1856, lists the following models, all of which were caliber .36:



Volcanic Rifle

Type	*Length of Barrel*	*Load*
Navy Pistol	6 inches	8 balls
Navy Pistol	8 inches	10 balls
Carbine	16 inches	20 balls
Carbine	20 inches	25 balls
Carbine	24 inches	30 balls

VOLCANIC
REPEATING FIRE ARMS,

MANUFACTURED BY THE

NEW HAVEN ARMS COMPANY,

NEW HAVEN, CONN.

(PATENTED, 1854.)

The above named Company having purchased all the Patent rights on this Arm and its ammunition, (some eight or ten in number,) the inventions of as many of the most ingenious mechanics of the country, who have spent years in bringing this wonderful triumph of genius to perfection, are now prepared to manufacture them in a perfect manner, and offer them for sale as the most powerful and effective weapon of defense ever invented. They are made of all sizes, from a four inch Pocket Pistol, carrying six balls, to a twenty-four inch Rifle, carrying thirty balls.

The rapidity of execution of this Arm places it beyond all competition. The thirty shooter can be loaded and fired in less than one minute—a quickness and force of execution which is as much superior to the best revolvers, as they are to the old muzzle loading single shooters.

The Ammunition is water-proof, hence it can be used in any weather, or loaded and hung up for months, or laid under water, and then fired with certainty.

Its safety from accidental discharge is a great consideration in its favor; for while the magazine (a tube running the whole length of the barrel) may be filled with balls, and thus the gun, in fact, be loaded from breech to muzzle, it is yet impossible, from any carelessness in handling, to discharge it. *Its construction* is simple and its workmanship most perfect, hence it is not easily got out of repair.

Its proportions are light, elegant and compact, and the barrels are all rifled with great exactness. It requires no cap nor priming, no bullet mould nor powder flask. The powder and cap is contained in a loaded "minnie" ball of the best form and proportions, and is as sure as the best percussion caps.

It shoots with accuracy and *greater force* than any other Arm can with double the powder used in this. Directions for use accompany each Arm. Balls are packed in tin cases, 200 each.

LIST OF MANUFACTURERS' PRICES.

No. 1,	4 inch	Pocket Pistol,	$12.00,	Plated and Engraved,	$13.50,	Carrying	6	Balls.
" 1,	6 "	for Target Practice,	13.50,	" "	15.00,	"	10	"
" 2,	6 "	Navy Pistol,	18.00,	" "	20.00,	"	8	"
" 2,	8 "	" "	18.00,	" "	20.00,	"	10	"
" 2,	16 "	Carbine,	30.00,	" "	33.00,	"	20	"
" 2,	20 "	"	35.00,	" "	38.00,	"	25	"
" 2,	24 "	"	40.00,	" "	43.00,	"	30	"

Plating and Engraving, from $2.50 to $5.00 extra, per Arm.

AMMUNITION.

No. 1 Balls, 130 to the Pound, $10 per M. No. 2 Balls, 66 to the Pound, $12 per M. (No. 1 Arms, require No. 1 Balls. No. 2 Arms, require No. 2 Balls.)

The numbers 1 and 2 designate the size of the bore, and the Balls are numbered to correspond.

A liberal discount to the trade.

We select the following from numerous testimonials, as the service to which the Arms were subjected was most severe, from the rapid action of salt water upon all metals.

New York, March 10th, 1855.

GENT.—I consider the Volcanic Repeating Pistol the *ne plus ultra* of Repeating or Revolving Arms, and far superior in many respects to Colt's much extolled Revolver. I have fired, myself, over 200 shots from it without even wiping the barrel—this is an advantage which no other Arm I know of possesses. I have had the Pistol with me at sea for more than eighteen months, on a voyage around the world, and find that, with the most common care, it will keep free from rust, far more so than Colt's. I find the Balls as good now as when I left New York. I have shown the Pistol to my friends in San Francisco, Hong Kong, Manilla, Canton and Shanghaie, and they were much pleased with it.

C. F. W. BEHM, Late of Clipper Ship Stag Hound.

New York, 23d November, 1856.

GENT.—I have used a Volcanic Repeating Pistol for some months, on my last voyage to San Francisco, and in all that constitutes a good Pistol or Fire Arm, it has no equal, and excels all others I have ever seen in rapidity, efficiency and certainty of execution. Its peculiar merit for sea service is in the nature of the Ball, which containing the Ammunition, is water-proof, and cannot be damaged by any change of climate, but is sure fire even after having been loaded for months.

Signed, FRED'K A. STALL, Commander Ship Star of the Union.

All orders may be addressed to

NEW HAVEN ARMS COMPANY,

October, 1859. **New Haven, Conn.**

Broadside Advertising Volcanic Repeating Arms

EXHIBIT U

The Leading Reference for Antique American Arms

FLAYDERMAN'S GUIDE TO ANTIQUE AMERICAN FIREARMS

...and their values

9th EDITION

Norm Flayderman

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ABOUT THE COVER

Representing the newer end of the contents spectrum, the Colt Model 1911 pistol has become a sought-after collectible, and continues in use by military units, law enforcement personnel and private citizens.

The Model 1911 autoloading 45-caliber pistol was adopted in 1911, and Colt's first deliveries were made to Springfield Armory in early January 1912. Subsequently the Model 1911, with numerous modifications, has compiled an enviable service record with total production (to 1970) of over three million units, with most going to military contracts.

Author Norm Flayderman acquired the illustrated M-1911, frames and drawing from the Winchester Gun Museum in the mid-1970s when the museum contents were moved to the Buffalo Bill Museum in Cody, Wyoming. The Flayderman letter documenting the details of the acquisitions appears in the background, as does a letter from the Winchester Gun Museum, and is the sort of provenance that collectors value greatly. *(Courtesy Little John's Auction Service)*

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Designed by Patsy Howell and Donna Mummery
Edited by Ken Ramage

Printed in the United States of America

The basic models are:

31 Caliber No. 1 Pistol; 4" barrel, bag shaped varnished wooden grip, all steel construction with engraved frame. The lever with a round finger hole. Blued finish with browned barrels. Serial number usually found beneath the grips. Standard marking on barrel flats: SMITH & WESSON, NORWICH, CT. and PATENTED FEBRUARY 14, 1854 and CAST STEEL. Quantity made approximately 1,200:

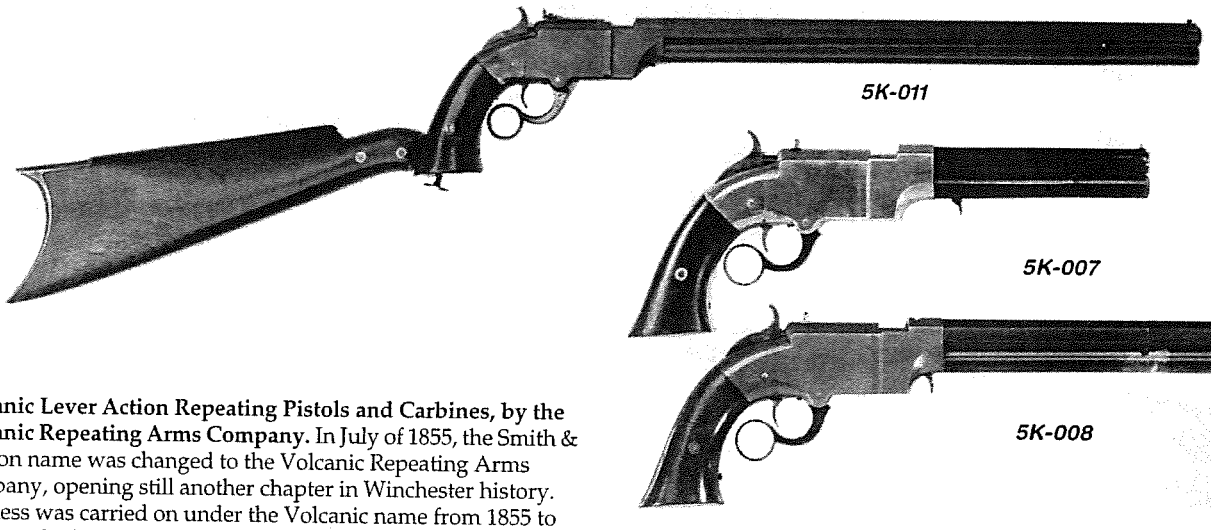
5K-005 Values—Good **$3,250** Fine **$12,500**

41 Caliber No. 2 Pistol; 8" barrel, flat bottomed varnished wooden grip, all steel construction with engraved frame. Note spur on bottom of the round finger hole of the lever. Blued finish with browned barrels. Serial number usually beneath grips. Generally marked on barrel top flat: SMITH & WESSON NORWICH, CT./CAST-STEEL PATENT. Also made with 6" bbl. and worth premium. Quantity made under 500:

5K-006 Values—Good **$5,500** Fine **$15,000**

NOTE: Calibers for S&W and Volcanic Arms have been variously listed as 30 and 38 cal. Correct sizes are 31 cal. and 41 cal. as shown.

Volcanic Lever Action Pistols and Carbines



5K-011

5K-007

5K-008

Volcanic Lever Action Repeating Pistols and Carbines, by the Volcanic Repeating Arms Company. In July of 1855, the Smith & Wesson name was changed to the Volcanic Repeating Arms Company, opening still another chapter in Winchester history. Business was carried on under the Volcanic name from 1855 to 1857, at which time it was reorganized as the New Haven Arms Company. Oliver F. Winchester, a successful manufacturer of clothing, became an increasingly active investor in the lever action arms, having first purchased stock in the Volcanic firm c. 1855. Smith and Wesson both dropped out of the enterprise c. 1855-56.

The breakdown of Volcanic arms is presented in the following model listings. All guns were of the same caliber, 41, and fired the patented, specially designed cartridges (though improved) of the Smith & Wesson type; magazines of integral structure, located beneath the barrel. The Volcanics began with serial 1, and have been observed marked in excess of the number 3000. Standard markings of all models, on the barrels: THE VOLCANIC/REPEATING ARMS CO./PATENT NEW HAVEN CONN/FEB 14, 1854. Marking variations are noted in these. Finish: Unfinished brass frames; the barrels blued. (Note: Engraved specimens, cut in a large, open scroll pattern, are often encountered. These arms command an added premium.)

Lever Action Navy Pistol; 6" barrel, 41 caliber, brass frame, flat-bottomed varnished walnut grip, rounded finger hole in the lever. VOLCANIC barrel markings as noted above. Quantity estimated 1,200:

5K-007 Values—Good **$3,500** Fine **$8,000**

Lever Action Navy Pistol; same as above but with 8" barrel. Quantity estimated 1,500:

5K-008 Values—Good **$3,500** Fine **$8,000**

(Note: Pistols as above fitted with shoulder stocks demand a premium.)

Lever Action Navy Pistol; as above but with 16" barrel, and attachable shoulder stock. Quantity estimated 300. Rare.

Pistol:

5K-009 Values—Good **$5,000** Fine **$16,000**

Pistol with Stock:

5K-010 Values—Good **$8,500** Fine **$22,500**

Lever Action Carbine; 41 caliber, barrel length of 16-1/2" utilizing left-over barrels from Navy Pistol. Long and straight, varnished walnut, buttstocks, with crescent type brass buttplate. VOLCANIC markings as noted above:

16-1/2" barrel:

5K-011 Values—Good **$7,000** Fine **$17,500**

21" barrel made only by New Haven Arms Co. (*q.v.*):

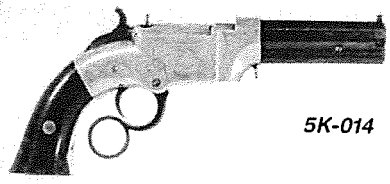
5K-012

25" barrel made only by New Haven Arms Co. (*q.v.*):

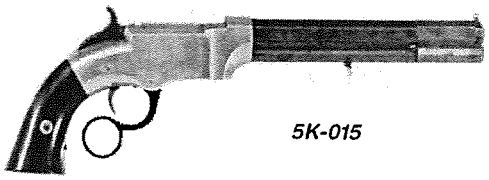
5K-013

Volcanic Lever Action Pistols and Carbines by New Haven Arms Co.

Volcanic Lever Action Repeating Pistols and Carbines, by the New Haven Arms Company. Due to increasing financial pressures, the Volcanic firm was reorganized into the New Haven Arms Company, in April of 1857. However, Volcanic remained as the trade name for the lever action pistols and carbines. A key means of telling the "Volcanic Volcanics" from the "New Haven Arms Company Volcanics" is the omission of VOLCANIC marks and change to PATENT FEB. 14, 1854/NEW HAVEN,CONN. Marking variations are also noted in these.



5K-014



5K-015

The New Haven Arms Company's Volcanic production lasted from 1857 to 1860, and the breakdown of models is presented below. The cartridge type, magazine, and other basic features remained as on the "Volcanic Volcanics." Total manufactured of the New Haven Volcanics is estimated at about 3,300; serial numbering began with 1. Finish: Unfinished brass frames; the barrels blued. (Note: Engraved specimens, cut in a large, open scroll pattern, are often encountered. These arms command an added premium.)

Lever Action No. 1 Pocket Pistol; 3-1/2" and 6" (Target type) barrels (scarce and will bring a premium), 31 caliber, small size brass frame, flat-bottomed varnished walnut grip, round finger hole in the lever. VOLCANIC barrel markings as on Volcanic Arms Company pistols, but including 1854 patent date and New Haven address:

3-1/2" barrel. Quantity estimated 850:
5K-014 Values—Good **$2,750** Fine **$5,000**

6" barrel. Quantity estimated 225:
5K-015 Values—Good **$3,250** Fine **$6,750**

Lever Action No. 2 Navy Pistol; 8" barrel, 41 caliber large size brass frame, flat-bottomed varnished walnut grip, round finger hole in lever. VOLCANIC barrel markings as above, including 1854 patent date and New Haven address. Quantity estimated 1,000:
5K-016 Values—Good **$3,750** Fine **$8,000**

No. 2 Navy Pistol identical above with 6" barrel. Quantity estimated 300:
5K-016.5 Values—Good **$4,250** Fine **$9,500**

Lever Action Navy Pistol; large frame model as above, but with 16" barrel, and attachable shoulder stock. Quantity unknown; extremely limited; very rare. Great caution should be exercised in acquiring this variant:

Pistol:
5K-017 Values—Good **$5,000** Fine **$15,000**

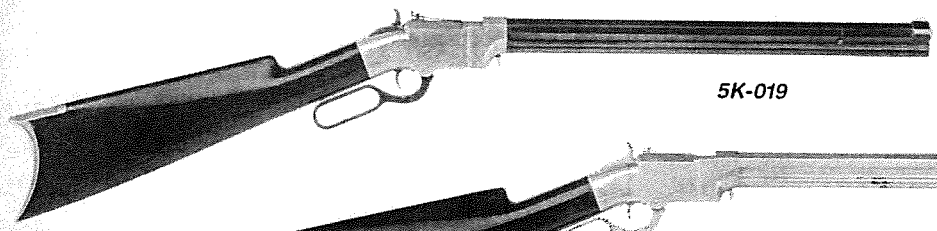
Pistol with Stock:
5K-018 Values—Good **$7,500** Fine **$22,500**

Lever Action Carbine; 41 caliber, barrel lengths of 16-1/2", 21", and 25". Large brass frame. Long and straight, varnished walnut, buttstocks with crescent type brass buttplate. Barrel markings as above, including 1854 patent date and New Haven address. Quantity estimated 1,000 for all three lengths:

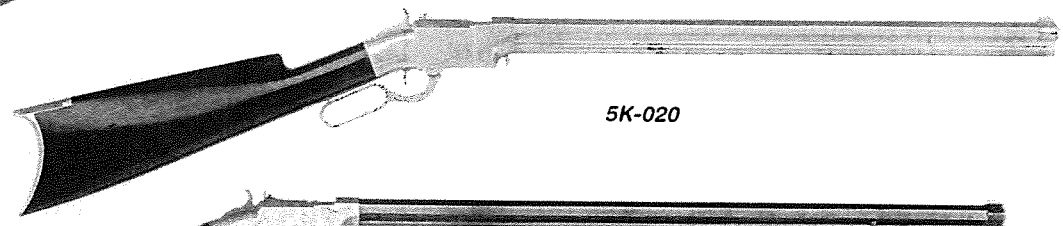
16-1/2" barrel:
5K-019 Values—Good **$7,000** Fine **$17,500**

21" barrel:
5K-020 Values—Good **$8,000** Fine **$24,000**

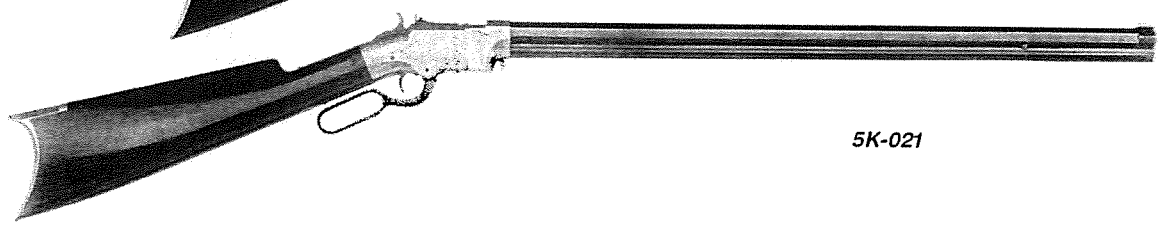
25" Barrel:
5K-021 Values—Good **$9,000** Fine **$27,500**



5K-019



5K-020



5K-021

See also Walch Revolver 7A-117

Henry Rifle

Henry Rifle. Made 1860-66; total quantity approximately 14,000. (overlap with model 1866).

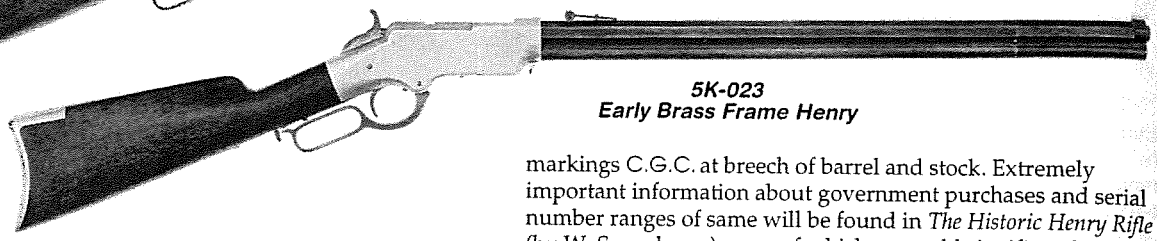
44 rimfire caliber. Tubular magazine integral with the barrel, and located beneath it. 15 shots. 24" barrel length standard.

Oil stained walnut stocks. Blued finish; brass frames usually left plain.

Serial numbers overlap the Model 1866. Highest Henry range is about 14000. Major serial number location on the top of breech end of barrel; marked: HENRY'S PATENT. OCT. 16. 1860/ MANUFACT'D BY THE NEW HAVEN ARMS. CO. NEW HAVEN. CT.

The Henry Rifle was developed from the Volcanic, and was built around the new 44 rimfire cartridge. Both the new rifle and the cartridge were designed by B. Tyler Henry. A basic feature of the 44 rimfire was the use of a metallic casing, rather than the undependable self-contained powder, ball and primer bullet of the Volcanic. Loading continued to be from the muzzle end of

5K-022
Iron Frame Henry



5K-023
Early Brass Frame Henry

the magazine. A distinctive identifying feature of the Henry is the lack of a forend, and the absence of a loading gate on either side of the frame. Made in relatively limited quantities, and a revolutionary weapon in Civil War service, the Henry is one of the major collector's items in the entire Winchester field. The model is difficult to obtain in fine condition and commands premium prices in all its variations. Quite a few company-size Union outfits, especially those from Kentucky, Illinois, Indiana and Missouri purchased at their own expense, and carried, Henry rifles. Much significant information on the development and history of this important rifle, its production, sale and usage by the military during the Civil War is found in *The Historic Henry Rifle* by W. Sword (q.v.).

Iron Frame Model. The most desirable Henry variation, featuring the frame of iron, rather than the standard brass. Rounded type iron buttplate at its heel; no lever latch; sporting style adjustable leaf rear sights. Quantity estimated 275. Serial number range 1 to 400:

5K-022 Values—Good **$30,000** Fine **$100,000**

Early Brass Frame Model. As above, but the frame and buttplate of brass. With or without lever latch. Serial numbers overlap iron frames. Total made about 1,500:

5K-023 Values—Good **$11,500** Fine **$35,000**

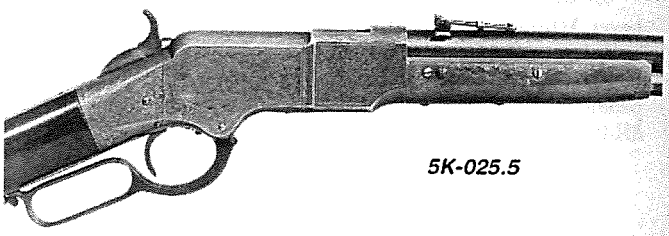
Late Brass Frame Model. As above, but the heel of the **brass** buttplate (**adopted approx. serial range no. 4,000**) has a pointed profile. Lever latch standard. Serial range primarily above about 2500 (overlap with early M1866 brass frame rifles):

5K-024 Values—Good **$10,000** Fine **$30,000**

U.S. Government Purchased and Issued Henry Rifles. Total quantity 1,731 acquired between 1862 and 1865. Most in serial range 3000 to 4200. Known issued to 1st Maine and 1st District of Columbia Cavalry Regiments, (more than 200 were captured Sept. 1864 from the 1st D.C. Regiment and issued to the 7th, 11th and 35th Virginia (Confederate) Cavalry); small quantity trial issues to other units. Believed brass frames only. Inspector markings C.G.C. at breech of barrel and stock. Extremely important information about government purchases and serial number ranges of same will be found in *The Historic Henry Rifle* (by W. Sword, q.v.) some of which may add significantly to historic significance and premium values.

5K-025 Values—Good **$20,000** Fine **$70,000**

Cleaning or wiping rods issued with all Henry rifles. Earliest types were jointed, four-piece hickory wood rods with small iron fittings for assembly. The four sections were stowed in the butt stock through a hinged brass door in buttplate. Later rods were four pieces of steel with brass tip stowed in butt in same manner. However, the aperture and the loading port was narrower in diameter, hence the earlier wooden rod will not fit into that later style! Reported that some earlier wooden rods may bear "CGC" inspector markings to accompany government contract rifles.



5K-025.5

Briggs Patent Henry Rifle. Although the King's Patent (May 22, 1866) hinged loading gate adapted to a Henry rifle became the device used to facilitate loading cartridges from the receiver in the M.1866, other methods were experimented with. Best known and most practical is the Briggs Patent of Oct. 16, 1866 which allowed for loading the magazine tube immediately in front of the receiver. Made only experimently, there are a handful of known examples that have come on the market. One method, made without a forearm, had the entire magazine tube slide forward; the other (illus. here) is fitted with a uniquely designed brass forend which slides forward to expose the bottom end of the magazine for ease in loading. Few recorded sales; values minimum in low five figures; upward considerably dependant on condition.

5K-025.5

Winchester Model 1866 Rifle

Model 1866 Rifle. Manufactured c. 1866-98; total produced approximately 170,101.

44 rimfire caliber. Tubular magazine located beneath the barrel. Distinctive brass frame.

Oil stained walnut stocks. Metal parts finished as follows: Lever and hammer casehardened; barrel browned or blued, magazine tube blued, the brass furniture left a natural finish.

Serial numbering overlaps that of the Henry Rifle, and began at about 12476. Until about the 20000 serial range the number was marked beneath the buttstock on the left side of the upper tang. Thereafter the number could be found on the lower tang and was visible without removing the buttstock.

These arms are not marked "Model 1866," and are easily distinguished by their brass frames with loading gates, and the presence of forestocks. Winchester Museum serial records are only partially complete on the 1866 production. Popularly known on the frontier as the "Yellow Boy", the Indian also called it "many shots" along with "heap firing" guns. The '66 is the repeating rifle most deserving of the name "The Gun That Won The West."

Rifles: Standard with 24" barrel, octagonal through about the serial range 100000, at which time round barrels became common. Brass frame, buttplate, and forend cap (steel cap became standard after serial range 135000). The buttplate of the crescent type.

Carbines: Standard with 20" round barrel and two barrel bands. Brass frame and buttplate, the latter of the distinctive curved profile. Saddle ring mounted on the left side of the frame.

Muskets: Standard with 27" round barrel, 24" magazine, and

EXHIBIT V

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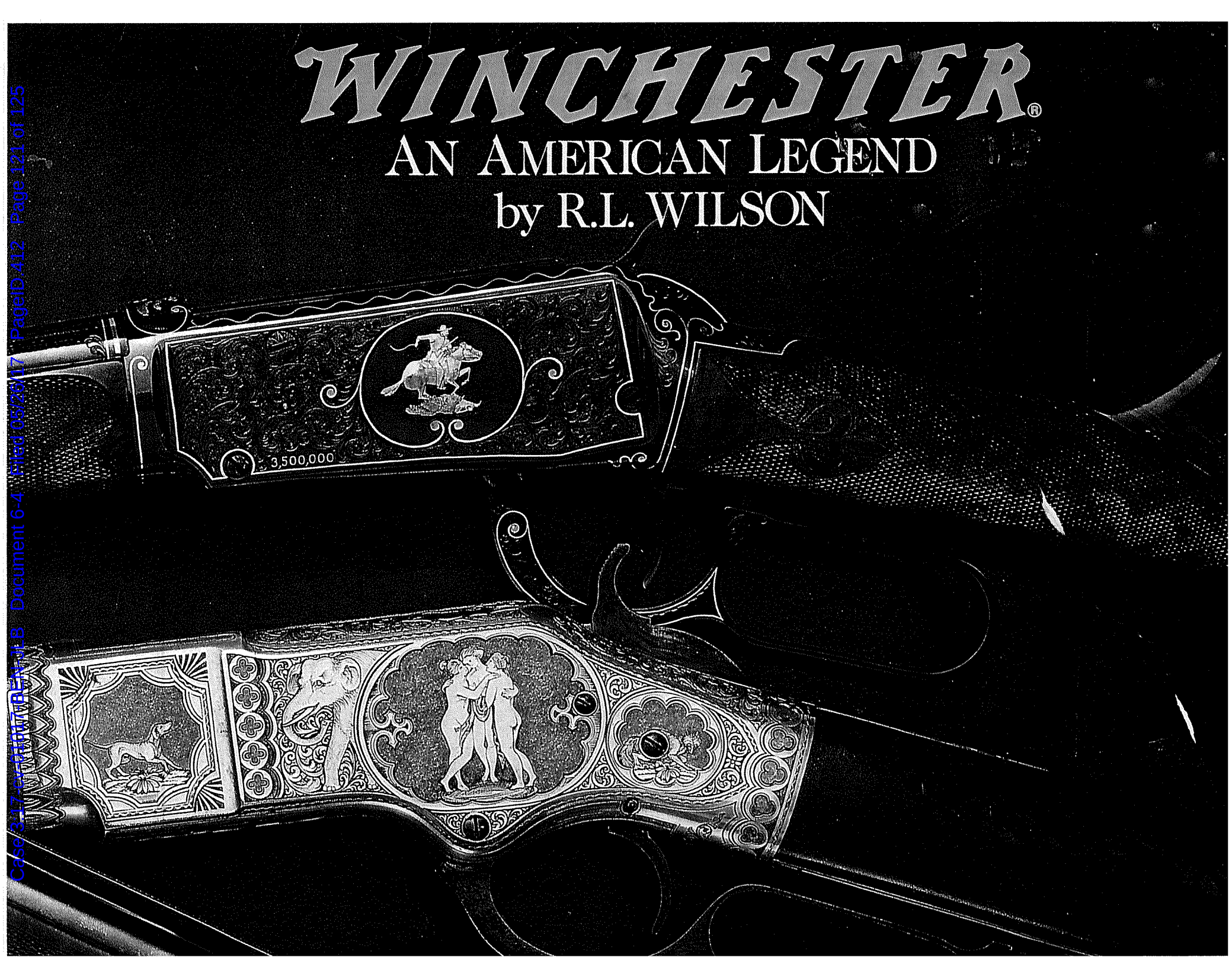

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Antique Arms Annual (editor)
The Book of Colt Firearms
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Colt: An American Legend

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George Brady
Book Production:
Linda Kaye

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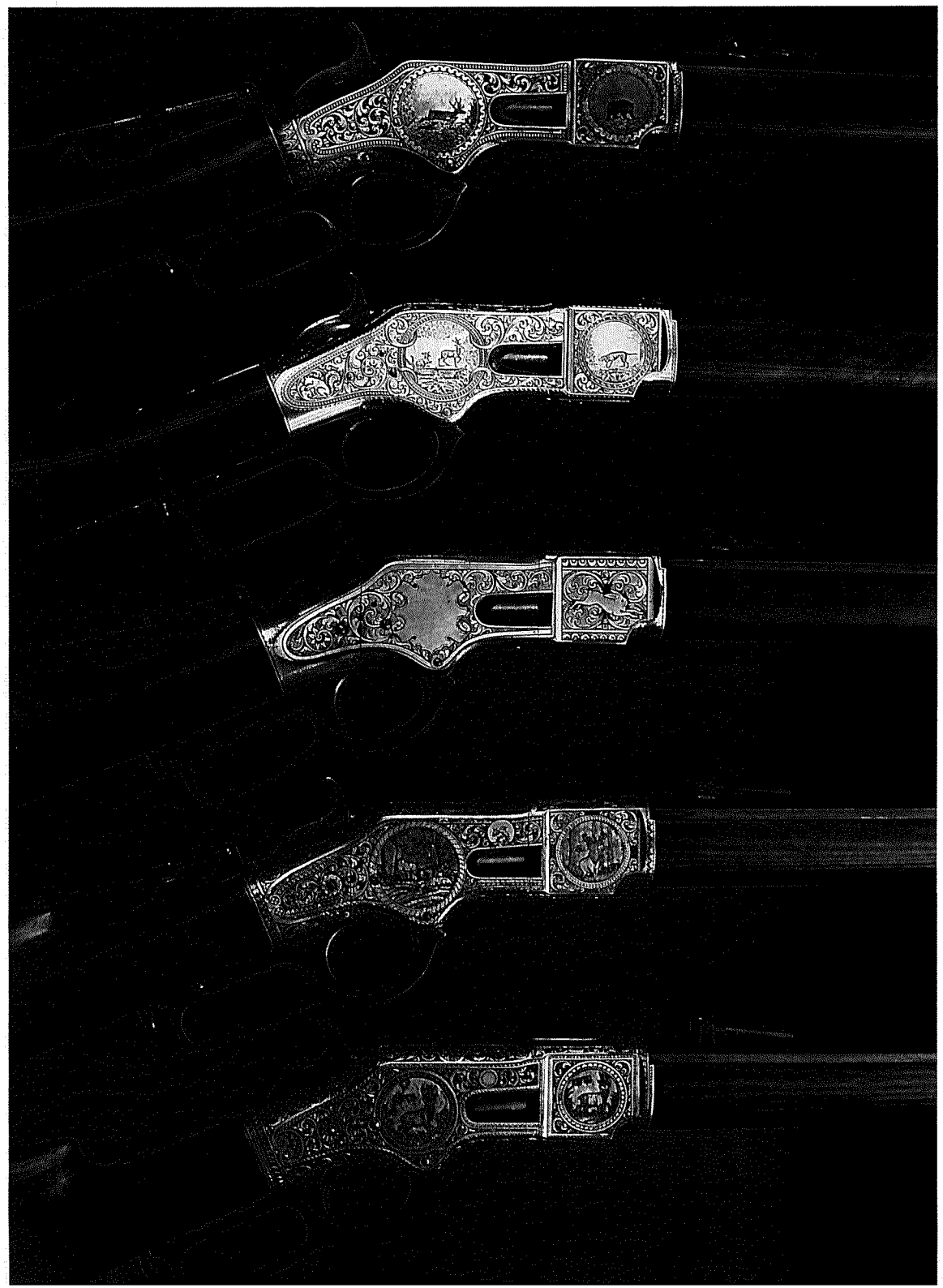
Endpapers: Cross section of the Winchester legend. *Upper left*, Volcanic lever-action pistol by Smith & Wesson, rights to which were bought by O. F. Winchester. Lever-action musket with bayonet, a Model 1873, an all-time classic. Rifle beneath, the Model 1904 .22 rimfire bolt-action, representing one of dozens of .22s of various types built by factory over the years. *Lower left*, the Model 50 automatic shotgun, landmark sixteen-millionth Winchester (gift to General LeMay, Outdoorsman of the Year, 1957, by John M. Olin). *Center right*, Grand American Model 21 side-by-side shotgun, top of the line, delivered to client Gary Hansen, 1990. O. F. Winchester commemorative Model 94, among the most popular of factory issues for a whole new breed of collector. Ammunition became a bread-and-butter product over the years and continues to be produced today by the Winchester Division of Olin Industries. Fly-fishing rod and reel represent non-gun Winchester products, mainly in sporting goods and hardware. The Winchester horse-and-rider logo was originally painted by artist Philip Goodwin, c. 1935. Catalogue at upper right from 1933.

Frontispiece: Evolutionary landmarks, and memorabilia, in the Winchester legend. *Left to right*, iron-framed Volcanic pistol, by Smith & Wesson, one of the earliest lever-actions. Model 1873, a musket, with its angular steel bayonet. Model 1904, .22 rimfire bolt-action rifle, evolved by Winchester from its first .22 bolt, the 1900 invented by John M. Browning. Sixteen-millionth Winchester is the Model 50 automatic, presented by John M. Olin to General Curtis LeMay, 1957. The Grand American Model 21 side-by-side double-barrel shotgun was delivered to client in 1990. O. F. Winchester commemorative Model 94 was among the most popular of factory issues for collectors. Ammunition has been a staple Winchester product since the 1860s. Fishing reel represents non-gun Winchester products, primarily in sporting goods and hardware.

pace, and, fueled by the Civil War market, the first Henrys were in the field by mid-1862. But the revolutionary new repeater had to prove itself. The Chief of Ordnance, Brigadier General James W. Ripley, was decidedly of a boldly looking backward mentality toward any newfangled repeaters (even though President Lincoln was so intrigued by them that he test-fired a Spencer repeater on the White House lawn). Ripley actually warned the Secretary of War, in December of 1861, of "a great evil . . . in regard to . . . the vast variety of new inventions. . . . the weights of the arms with the loaded magazines [is] objectionable, and also the requirement of special ammunition rendering it impossible to use the arms with the ordinary cartridges or with powder and ball." Single-shot guns could be loaded and fired quickly enough, he added.

The future of the Henry was likely boosted by special presentations to Secretary of War Edwin Stanton and Secretary of the Navy Gideon Welles, and even a gift to President Lincoln—all guns with single-digit serial numbers, richly engraved and inscribed, and fitted with rosewood stocks. The Henry was even tested at the Washington Navy Yard (conveniently, Secretary Welles was from Connecticut), reported in May of 1862: 187 shots were fired in three minutes and thirty-six seconds (not counting reloading time). and one full fifteen-shot magazine was fired in only 10.8 seconds. A total of 1,040 shots were fired, and hits were made from as far away as 348 feet, at an 18-inch-square target—quite impressive accuracy with open sights. The report noted, "It is manifest from the above experi-

From the *top*, Henry rifle serial number 11, with variant factory scroll, border engraving, and rosewood stock. Note early-style lever, without locking latch, a feature also evident on the iron-frame Henry number 73 (*next*), one of the finest examples known to collectors. This factory-engraved Henry has the rare combination of gold-plated frame and rosewood stock. *Bottom*, an example of engraving by Louis D. Nimschke, who was active in New York in the second half of the nineteenth century.



pounds, and could be fired rapidly twelve times without replenishing the magazine. Hung by a strap to the shoulder, this weapon can be dropped across the saddle in front, and held there very firmly by a slight pressure of the body . . . with a little practice, the magazine of the gun may be refilled without checking the horse. So light is this Henry and King weapon that I have often held it out with one hand like a pistol, and fired.

In response to the rapid-fire capability of the 1866, and indeed to the Henry, the Indians labeled these guns the "many shots" or "heap-firing." Model 1866 and Henry rifles were used against General George Armstrong Custer at the famous Last Stand; besides being outnumbered, Custer's men were generally outgunned—a Henry or an 1866 having far more firepower than the single-shot Springfield trapdoor carbines which were the issue longarm for the cavalrymen.

Some comments in a Winchester broadside of the late 1860s noted certain of the advantages of the 1866:

> The advantage that this Gun possesses over all others for *single individuals* traveling through a wild country, where there is reason to expect a sudden attack either from *robbers* or *Indians*, cannot be *over-estimated*, as it is well known to all who have used a gun to any extent . . . that there is a *little* uncertainty of its going off; but with this Gun there can be no such feeling, because even though a Cartridge should miss fire, it is drawn from the barrel with *unfailing certainty*, and another placed in its stead, and fired in just *half a second*, thereby giving two chances, even though the enemy should be within twenty feet at the firing of the

A distinguished lineup of deluxe Model 1866 rifles, each of show-gun quality, and each with a gold-plated frame. Attributed to John and Conrad F. Ulrich, with the possibility of at least one by brother Herman. No signed rifles by Herman have been located by collectors.

UNITED STATES DISTRICT COURT

SOUTHERN DISTRICT OF CALIFORNIA

VIRGINIA DUNCAN, RICHARD LEWIS, PATRICK LOVETTE, DAVID MARGUGLIO, CHRISTOPHER WADDELL, CALIFORNIA RIFLE & PISTOL ASSOCIATION, INCORPORATED, a California corporation,

Plaintiffs,

v.

XAVIER BECERRA, in his official capacity as Attorney General of the State of California; and DOES 1-10,

Defendant.

Case No: 17-cv-1017-BEN-JLB

CERTIFICATE OF SERVICE

IT IS HEREBY CERTIFIED THAT:

I, the undersigned, declare under penalty of perjury that I am a citizen of the United States over 18 years of age. My business address is 180 E. Ocean Boulevard, Suite 200 Long Beach, CA 90802. I am not a party to the above-entitled action.

I have cause service of the following documents, described as:
EXHIBITS H-V TO THE DECLARATION OF ANNA M. BARVIR IN SUPPORT OF PLAINTIFFS' MOTION FOR PRELIMINARY INJUNCTION
on all parties by placing a copy in a separate envelope, with postage fully prepaid, for each address named below and depositing each in the U.S. Mail at Long Beach, CA, on May 26, 2017.

Ms. Alexandra Robert Gordon
Mr. Anthony P. O'Brien
California Department of Justice
1300 I Street, Suite 125
Sacramento, CA 95814

I declare under penalty of perjury that the foregoing is true and correct. Executed on May 26, 2017, at Long Beach, CA.

Laura Palmerin