EARLY EVOLUTION OF THE WESSON & LEAVITT REVOLVERS

A Second Wesson, Stevens & Miller Revolver Sheds New Light on an Old Enigma

by Jeff Goodson

In 2017, a man walked into an antique store in Connecticut and set a hundred-year old suitcase down on the counter. It was full of old knives and small handguns, all heavily rusted together, that his immigrant ancestor had collected from unruly bar patrons when he worked as a New Haven bartender in the early 1900's. The owners of the store bought the suitcase, and gradually teased apart the items inside. Most were unremarkable. But one item, a small revolver, was not. After careful cleaning, they found the following engraved on the top strap

Leavitt's Patent Manufactured by

Wesson, Stevens & Miller Hartford, CT

Figure 1. New Haven bar revolver top strap. Photo by Don Summers.

When the owners discovered that the gun wasn't listed in *Flayderman's Guide to Antique American Firearms*[1], they did enough research to get a rough idea of its potential significance. With the cylinder rusted solid, however, and evidence of the revolving mechanism hidden, their research could only go so far. The gun piqued my interest in rare percussion revolvers, and when they put it up for sale we struck a deal. The gun isn't much to look at It's a small, brown, 7-shot percussion revolver, nominally in .28 caliber, that was rusted shut for a century (Figure 2). It took two weeks of soaking in Kroil just to free the cylinder so that evidence of the internal bevel gears that rotate the cylinder were exposed (Figures 2 and 3). But the investigation proved well worth the journey, as it turned out to be of exceptional historical significance.

This is the earliest known Wesson-marked revolver. It's the first Wesson, Stevens & Miller gun of any kind to surface since 1861,[2] and only the second known surviving specimen. The other example, in .40 caliber, was inventoried in Samuel Colt's office in 1861[3,4] and is now in the Museum of Connecticut History. The New Haven bar gun is also the first known Wesson & Leavitt prototype, and the first revolver of any kind to use bevel gears to rotate the cylinder. As such, it's an important missing link in the early evolution of the Wesson & Leavitt revolvers. It is also probably the very same "*mineature moddle*" of a Leavitt-patent gun[4] being made by Joshua Stevens and William Miller in Colt's factory when they were caught red-handed and fired by Colt in July of 1848.[5]

New light on an old enigma

The discovery of the New Haven bar gun sheds new light on a 175-year old enigma about the early evolution of these guns. Wesson & Leavitt revolvers are most famous for their high quality, for launching the Massachusetts Arms Company and for precipitating the infamous Colt lawsuit against Massachusetts Arms in 1851 that led to what still stands today as one of the biggest landmark decisions in American patent law (*Samuel Colt v. The Massachusetts Arms Company, 1851*).[6]

Yet almost nothing is known about the ultra-rare Wesson, Stevens & Miller revolver. Satterlee[7] and Sawyer[8] both include a brief entry for it in their 1939 books; Sawyer states that a few were used in the Mexican War, although the war ended in February 1848 before they were actually completed. Gluckman doesn't mention the gun.[9] Sellers and Smith[4] have a short entry for it, noting that only one specimen is known. Larry Jones[10] has two brief sentences on the gun in his seminal 1977 ASAC article, *Handguns of the Massachusetts Arms Co.* And Flayderman[1] briefly mentions the gun, but only in the context that Joshua Stevens was involved in making it.

Exactly who invented the rotating bevel gear, when and where the invention was developed and what role the Wesson, Stevens & Miller guns played in the evolution of this line of iconic American revolvers, have long been subjects of conjecture.[1, 4] The New Haven bar gun discovered in 2017 sheds significant light on these questions, and makes possible construction of an early evolutionary timeline for the Wesson & Leavitt revolvers.

Background

The evolution of the Wesson & Leavitt revolvers unfolds over a period of fourteen years, from 1837-1851. The principal players in this history read like a who's who of early American firearms giants: Daniel Leavitt, Edwin Wesson, Daniel Wesson, Eli Whitney, Joshua Stevens, William Miller, Samuel Colt, Captain

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Figure 2. The New Haven bar revolver. Photos by Don Summers

Samuel Walker, Thomas Warner, James Warner, Horace Smith and J. T. Ames, among others. This study focuses on nine patent, prototype, pre-production and production revolvers that were benchmarks in that evolution, from Daniel Leavitt's 1837 patent revolver to the final Wesson & Leavitt production revolvers in 1851. A detailed comparison of the characteristics of these guns is presented in Table 1. on pages 47-48.

Daniel Leavitt

Inventor Daniel Leavitt (1813-1859) was born in Rye, New Hampshire. In April 1837, while living in Cabotville, Massachusetts (later Chicopee Falls) he was issued U.S. patent #182 for a "many chambered fire-arm" (Figure 4). The principal claim of the patent was a beveled or convex cylinder front, designed to deflect lateral or chain flash and avoid double ignition of the gun's chambers.[5] It was an important invention, addressing a critical problem of the era that wasn't ultimately solved until the 1850s.

Leavitt's patent gun, now in the Smithsonian (#251082), is shown in Figure 5. He adapted the improvement to a small caliber carbine and entered it in the West Point trials of June 16, 1837. Tested along with Leavitt's carbine were several U.S. muskets and rifles, as well as those made by Sam Colt, John Webster Cochran and Baron Hackett.[5] The Board, however, unanimously decided in favor of the guns already in the service of the United States at the time. Leavitt's lack of success at the West Point trials probably kept him from developing the patent.[10] He made few if any more revolvers and for ten years after the trials he seems to have largely disappeared from the firearms scene. He invented and patented a weaving device in 1842, however, and became wealthy making textile machinery with his father in Cabotville.

Figure 3. Breech face showing "sleeve or collar" protrusion on the New Haven bar revolver. Photo by Don Summers

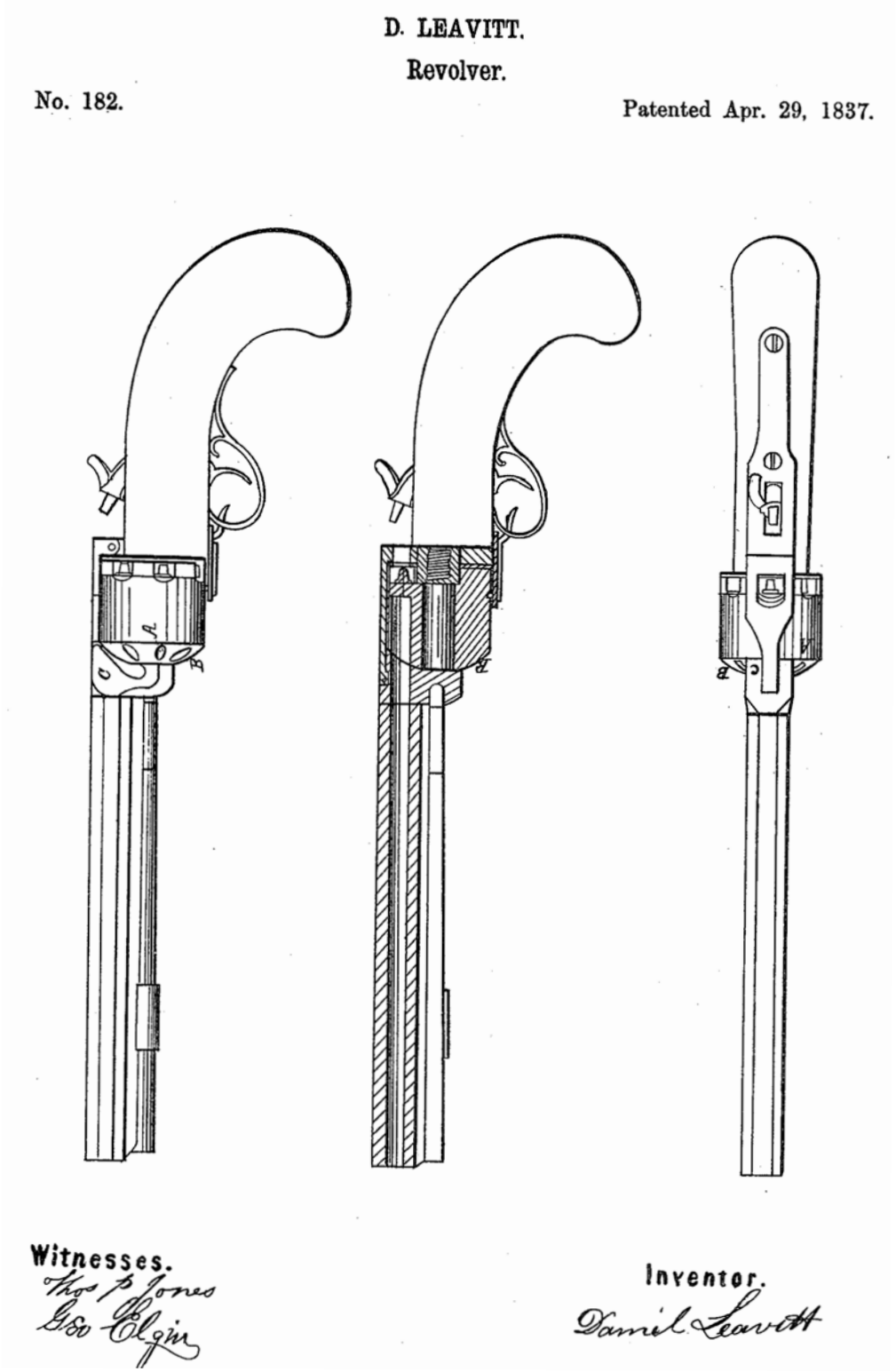

Figure 4. Daniel Leavitt's 1837 patent drawing, Patent #182. Note beveled or convex cylinder front.

In 1847 Leavitt lost a public election for Selectman in Springfield, Massachusetts[11] and served as Captain of Company F, 10th Regiment, 6th Brigade, of the Massachusetts Volunteer Militia.[12] By early 1848, Leavitt was working with Edwin Wesson in nearby Northboro, Massachusetts, helping him market his firearms to the U.S. Ordnance Department. The relationship wasn't a new one; Wesson had reportedly been associated with the manufacture of Leavitt's original 1837 revolver.[9]

Edwin Wesson

Edwin Wesson (1811-1849), the older brother of Daniel B. Wesson (1825-1906) of Smith & Wesson fame, set up as gunsmith and rifle maker in Grafton, Massachusetts in 1835. He quickly established a reputation for making "*superb quality muzzle-loading, hand-crafted percussion sporting and target rifles, considered to be some of the finest of the era*".[1] He also made some very high-quality single shot percussion pistols.[13] In 1842 Wesson moved his shop to Northboro and took on his younger brother Daniel as an indentured assistant. Until Edwin's untimely death on January 31, 1849[14], they worked together on both long arms and handguns.

Table 1

Major Benchmarks in the Evolution of the Wesson & Leavitt Revolvers 1837-1851

(Ten significant evolutionary features are in *red italics* with first appearance cells highlighted in yellow)

Manufacturer:	*Daniel Leavitt*	*Wesson, Stevens & Miller*		*Edwin Wesson*		*Warner & Wesson*	*Massachusetts Arms Co.*		
Model:	Patent Revolver	.28 Caliber	.40 Caliber	Patent Revolver	Dragoon Model	Dragoon Model	Early Pocket Model	Dragoon Model	Belt Model
Stage of Evolution:	Patent Revolver	Prototype	Prototype	Patent Revolver	Pre-Production	Pre-Production	Pre-Production	Production	Production
Date of Manufacture	Patented April 29, 1837	~Early-Mid 1848	~Early-Mid 1848	Submitted August 1848	~August 1848-April 1849	April 1849-Nov. 1849	Dated 1850	~1850-1851	~1850-1851
Manufacturers Mark (Topstrap)	DANIEL LEAVITT, SPRINGFIELD MASS.	LEAVITT'S PATENT MANUFACTURED BY/ WESSON, STEVENS & MILLER HARTFORD CT.	*LEAVITT'S/ PATENT MANUFACTURED BY/ WESSON, STEVENS & MILLER HARTFORD CT.*	*D. LEAVITT'S PATENT/ MANUFACTURED BY E. WESSON, HARTFORD, Ct.*	*D. LEAVITT'S PATENT/ MANUFACTURED BY E. WESSON, HARTFORD, CONN.*	*LEAVITT'S PATENT/MANd BY WARNER & WESSON HARd, Ct.*	*MASS. ARMS CO./ PATENT*	*MASS ARMS. CO./CHICOPEE FALLS*	MASS ARMS. CO./CHICOPEE FALLS
Wesson Patent Marks	No	No	No	No	No	*WESSON'S & LEAVITT'S PATENT*	*CHICOPEE FALLS, MASS./1850; LEAVITT'S PATENT APRIL 29, 1837*	*WESSON'S & LEAVITT'S PATENT; PATENT NOV. 26, 1850; WESSON'S PATENT AUG. 28, 1849; LEAVITT'S PATENT APRIL 29, 1837*	WESSON'S & LEAVITT'S PATENT; PATENT NOV. 26, 1850; WESSON'S PATENT AUG. 28, 1849; LEAVITT'S PATENT APRIL 29, 1837
Leavitt Patent Cylinder	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Wesson Patent Bevel Gear	No; hand-turned	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Estimated Production	1	1	1	1	"Unknown; very limited"	"probably less than six"	At least two	~800	~1,000
Serial Numbering	No	No	No	No	No	No	No	Yes	Yes
Caliber	.36	~.28	.40	.44	.45	.40	.31	.40	.31
Shot Capacity	7-shot	7-shot	7-shot	6-shot	6-shot	6-shot	6-shot	6-shot	6-shot
Lock Plate	None	Flush	Rounded	Rounded	Rounded	Flush	Flush	Flush	Flush
Hammer	Centerhammer	Sidehammer attached with 4 rivets	Recessed sidehammer attached with screw	Recessed sidehammer attached with screw	Recessed sidehammer attached with screw	Un-recessed sidehammer w/screw	Un-recessed sidehammer w/screw	Un-recessed sidehammer w/screw	Un-recessed sidehammer w/screw
Barrel Form	Unknown	Tip-up	Tip-up	Tip-up	Tip-up	Tip-up	Tip-up	Tip-up	Tip-up
Barrel Shape	Octagon	1/2 Octagon 1/2 Round with 3 etched rings	Round with octagon collar	Round with octagon collar	"Round"	Round with octagon collar	Round with octagon collar	Round with octagon collar	Round with octagon collar
Type of Barrel Catch	Lever in front of trigger	Cylinder pin knob	Cylinder pin knob	Cylinder pin knob	Cylinder pin knob	Cylinder pin knob	Cylinder pin knob	Hook	Hook
Barrel Length	9-1/2"	3-1/2"	6-3/4"	7"	7"	6"	3-3/4"	6-1/4" to 8"	3"-7"
Loading Lever	No	No	No	No	No	No	No	None except a few late non-production experimental pieces	No
Grip Shape and Butt Cap	Birds head/rounded butt; no cap	Flat butt without cap	Flat butt with cap	High-domed butt with brass cap	High-domed butt with brass cap	High-domed butt with brass cap	Flat butt without cap	Flat butt without cap	Flat butt without cap
Engraving	No	Extensive	Extensive	None	*Unknown*	Yes	Extensive	Some	Most
PHOTO REFERENCES	Fig. 5; Sellers & Smith p. 83	Figs. 1,2,3,9	Houze p. 135	Figs. 8,10; Sellers & Smith p. 186	None	Sellers & Smith p. 185; Flayderman p. 376; July 1961 *Gun Report* cover; ASAC Bulletin #102 p.72	July 1961 *Gun Report* p. 40; Sellers & Smith p. 92; Jones Fig. 2.	Fig. 11	Fig. 11

Table 1 notes on next page

Notes:

Leavitt's 1837 Patent Revolver: Data from David Miller, Curator of Military History, Smithsonian Institution[25]; Smithsonian photo of the gun (#AF251082); and Sellers & Smith[4] page 83.

WS&M .28 Caliber: Data from author specimen. Gun calipers at about .28 caliber.

WS&M .40 Caliber: Data from Sellers & Smith[4] pp. 186-187; and Houze[2] p. 135. Original 1887 Museum inventory lists this gun as .36 caliber, 7-shot, with 6-5/16" barrel. Sellers & Smith list it as 6-shot. The 1861 inventory of Col. Colt's office lists it as "Leavitt's patent Pistol."

Edwin Wesson Patent Revolver. Smithsonian #252509. Photo from David Miller, Curator of Military History, National Museum of American History[25]; and Sellers & Smith[4] page 186. Patent applied for in August 1848; received August 28, 1849. Seller & Smith list it as .45 caliber.

Edwin Wesson Dragoon Model. Total produced unknown but "very limited" (Flayderman[1]). Sellers & Smith[4] put production from May 1848 until D. Wesson's death in January 1849 (see text). Considered pre-production here since not serialized. No confirmed photo. Photo in Flayderman (p. 377) is closeup of Wesson patent revolver. Due to lack of photographic documentation, characteristics for this model include only those described by Flayderman.

Warner & Wesson Dragoon Model: Data from Sellers & Smith[4] pp. 185-186. Completed after Warner took over in April 1849, and before the assets of the Wesson Rifle Co. were sold in November 1849. Considered pre-production here since unserialized.

Massachusetts Arms .31 Caliber: AKA "early production". Data from July 1961 Gun Report[35] (p. 40); Sellers & Smith[4] (except re: buttcap); and photo in Jones[10] (Fig. 2). The Gun Report specimen has a gold plated backstrap and trigger guard, and is unserialized.

Massachusetts Arms Dragoon: Data from author specimen S/N 624 (105); Sellers and Smith[4] pages 90-94; and Sellers The Locke Collection[45] pp. 284-287. Some of the later Army revolvers were fitted with experimental loading levers, including one patented by Stevens, but they never reached production status (Sellers & Smith).

Massachusetts Arms Belt: Data from author specimen S/N 534; Sellers and Smith[4] pages 90-94; Sellers The Locke Collection[45] pages 284-287.

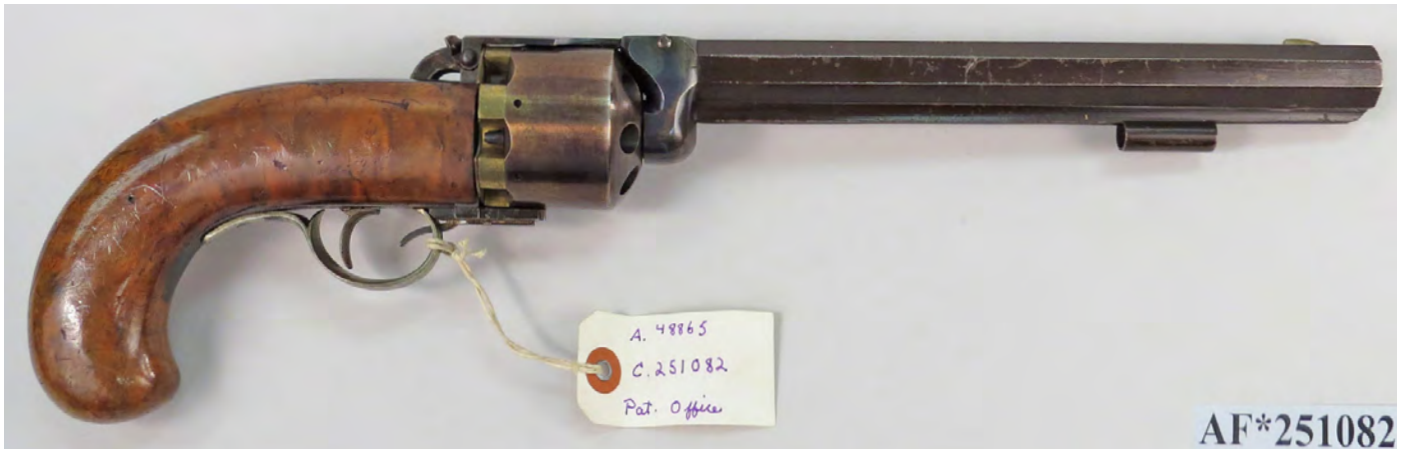

Figure 5. Daniel Leavitt's patent revolver (Smithsonian #251082). Photo courtesy of the National Museum of American History.

Enter Samuel Colt

On December 7, 1846, with the Mexican-American war under way, the U.S. government ordered 1,000 large caliber revolvers that Colt designed with the help of former Texas Ranger and then-U.S. Rifles Captain Samuel Walker (Figure 6).[15] This was great news for Colt, but it also put him in a bind since his Paterson, New Jersey factory had closed several years before. Colt approached Eli Whitney about building the guns, a logical choice since Whitney had both the experience and manufacturing capacity. After initially resisting, Whitney agreed.[5]

Colt visited the Wesson factory along with Captain Walker that same month. Edwin Wesson was away when they arrived, but his brother Daniel was present and Colt left the Wesson brothers what must have been a Colt Paterson revolver to use in working up a cost estimate to fabricate 1,000 barrels for the new Walker Colt.[5,13,16,17] On January 6, 1847, the Ordnance Department approved the Walker Colt contract and on January 9th Colt signed an agreement with Whitney to build the guns. They agreed to subcontract out as much of the manufacturing as possible to speed up delivery, with all payments in and out made by Whitney.[16] Production started on January 22nd and the final delivery was made less than eight months later on September 7, 1847.[3]

In the meantime, Captain Walker had written Wesson in January to order a .44 caliber rifle. Wesson had been making rifles for the U.S. Army[13,16,18], and Walker was sufficiently impressed with the rifle Wesson made for him that in February he ordered 1,000 of them for his mounted regiment. Unfortunately, Walker was shot and killed at Huamantla, Mexico on October 9, 1847[3] and the order to build the Walker rifles was never finalized.[13]

Colt had also visited Wesson again, in February 1847. He ordered bullet molds for the new Walker revolvers, and had both those and the cherries used to make them forwarded to Hartford where he was building a new manufacturing facility.[13] In March, Edwin Wesson moved his manufacturing operations to Hartford as well.

Joshua Stevens and William Miller

Joshua Stevens (1814-1907) was born in Chicopee Falls, Massachusetts.[18] By 1834 he was a machinist's apprentice, and in 1838 he was working for Cyrus B. Allen in Springfield.[19] He was a high-

ly accomplished toolmaker at Eli Whitney's gun factory in Whitneyville by 1847, which is now part of New Haven, Connecticut – the same town where the subject revolver was taken from a bar patron over half a century later.

Figure 6. U.S. Rifles Captain Samuel Walker.

When Whitney secured the contract to make 1,000 Walker Colts, he turned to James Warner for help. James was the brother of Thomas Warner[20], Eli Whitney's shop boss.[5] James worked for the Slate & Brown forge in Windsor Locks, Connecticut at the time, and he hand-picked Stevens from Whitney's staff to help forge the cylinders and barrels for the Colts. Stevens was described as "*one of the highest paid overseers at Slate & Brown's, and a toolmaker and mechanic of unusual skill*".[5]

By prior arrangement, after the Walker Colt contract was completed Whitney transferred ownership of the special tools and machinery used in making the revolvers to Colt. By October 1847, Colt was set up in Hartford and ready to produce his own revolvers.[16] Colt started hiring workers away from Whitney, including Joshua Stevens, Stevens' close friend William Henry Miller, and Almon E. Lazell.[5] Archival documentation points to November 22, 1847 as the date that Colt hired them.[16]

Stevens and Miller boarded together at 34 Trumbull Street in Hartford while doing piece work for Colt. In late November 1847, Lazell and Stevens signed a contract with Colt to make 1,000 cylinders, barrels, levers, rammers and keys. At the same time, Lazell et al., which included Stevens and Miller, contracted to complete 279 "refuse" cylinders, lock frames and other parts left over from production of the first Walker Colt contract into what have since come to be known as the Whitneyville-Hartford dragoons. Colt considered Stevens and Miller the two most important workmen completing these guns.[3] Eight months later, however, on July 18, 1847, Colt's relationship with Stevens and Miller suddenly came undone. Colt caught the two men red-handed, working on their own revolver design in Colt's factory, on Colt's time and with Colt's machinery.[5,10] Edwards reproduces a letter from Colt to Senator Rusk dated July 19, 1848 that states in part:

> *"I discovered yesterday that two of my principal workmen are engaged with several other persons in getting up a repeating pistol with the hope of avoiding my patents, and that they are in correspondence with the Ordnance Department".*[21]

It was an abrupt parting of the ways. Stevens and Miller left Colt, and immediately went to work for Edwin Wesson who was also in Hartford.

The Wesson bevel gear: new application of an old idea

The "several other persons" referred to in Colt's July 1848 letter included Edwin Wesson and Daniel Leavitt. Sometime after Colt's visit in December 1846, Wesson seems to have ramped up experimentation on a new revolver design of his own. On June 15, 1847 he wrote the Chief Ordnance Officer (COO) that he had just patented an improvement in firearms that might be "*advantageously applied to ordnance*".[16] The patent (#5,146) had just been issued on June 5th but it was for a system that connected several chambers or barrels "*so as to cause their charges to be fired by the explosion of the charge in one of them*". The idea never caught on, with Ordnance or anyone else. A patent gun with this "improvement" was likely manufactured by Wesson, but neither the gun nor a photograph of it have been found.

Wesson's next patent did catch on. It was a bevel gear system located inside of the lock that could rotate the cylinder of a revolver when the hammer is pulled. Thomas Warner later testified that the idea wasn't entirely new: "*The bevel gear, to carry motion around the corner, is an old idea—old grist mills as well as new ones have it*".[6] What was new was its application to revolving the cylinder of a hand gun. Figure 2 on the patent drawing (Figure 7) shows the protrusion on the "sleeve or collar (f)" that couples with the revolving cylinder. Only visible after the cylinder is removed, this is the telltale sign of the existence of a bevel gear rotating system versus Colt's ratchet and pawl system.[22]

Wesson applied for the patent in August 1848, submitting it along with the patent revolver (Smithsonian #252509) (Figure 8). This was the very month after Stevens and Miller went to work for him. The patent (#6,669) was granted, but only a full year later on August 28, 1849.[23] Since this occurred seven months after Edwin Wesson's untimely death, the patent was granted to Edwin J. Ripley of Hartford, administrator of Wesson's estate.[24]

Who exactly invented the bevel gear system – or rather applied it to revolving a hand gun cylinder – remains unclear. Sellers and Smith wrote in 1971[4]:

> *"(I)t has been held by some that the bevel gear arrangement was designed by Joshua Stevens and William Henry Miller while they were working for Colt on the 'Whitneyville-Hartford' Dragoons. There is no question that they were working on a revolver of some sort, but whether it was on the bevel gear system is not known".*

More than thirty-five years later, Flayderman less than conclusively wrote[1]:

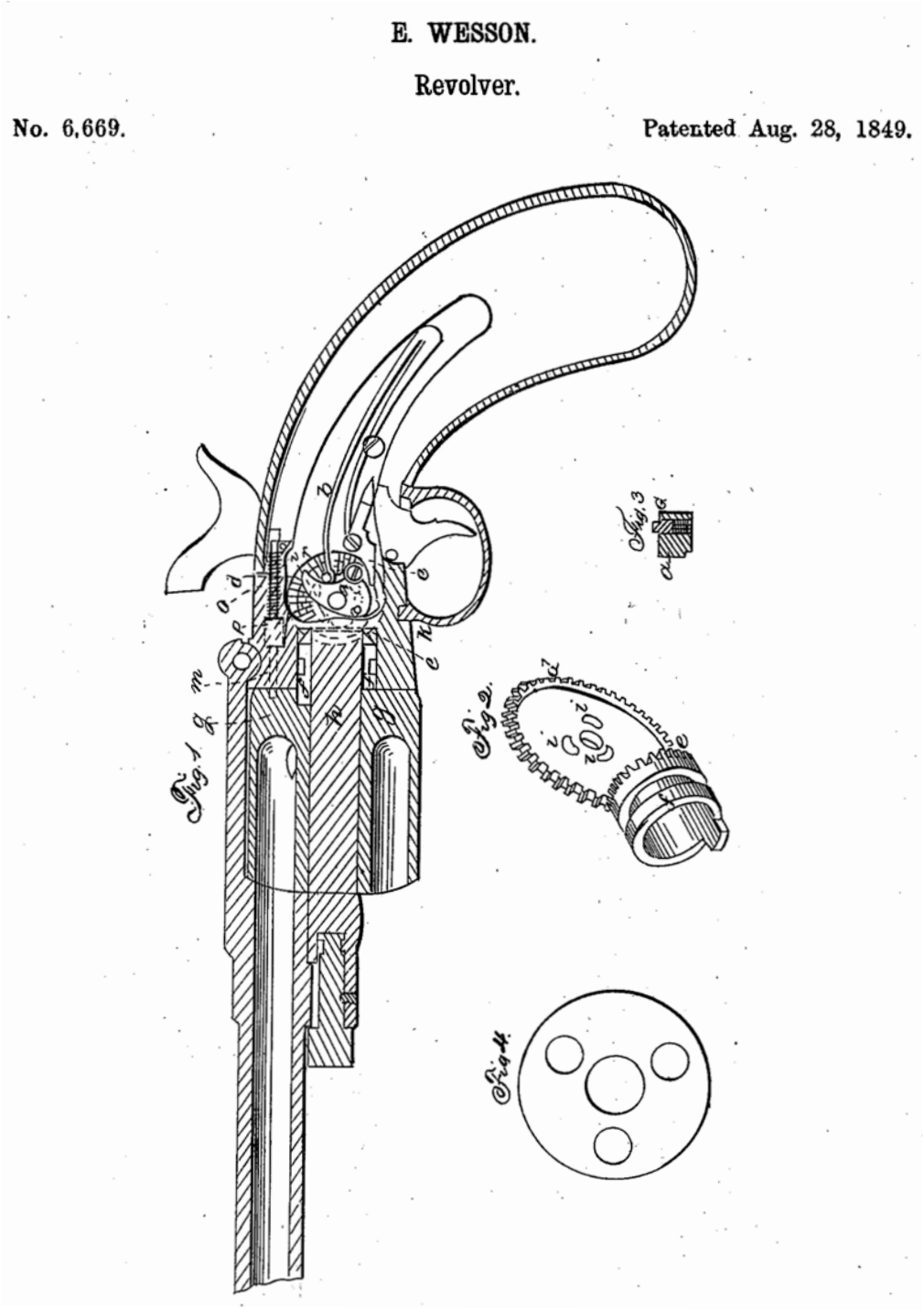

Figure 7. Wesson's 1849 Patent bevel gear drawing. Patent #6,669. Note detail of bevel gear in Figure 2 of patent drawing.

"A highly prized pioneer effort at revolver production, the Edwin Wesson revolver's 'bevel gear' mechanism is thought to have been designed by William Henry Miller and Joshua Stevens while they were employed at Colt's factory, in 1848."

The timing of the patent submission, and the fact that Stevens and Millers names were included as manufacturers on the top strap of the Wesson, Stevens & Miller guns, certainly lends weight to this theory. In any case, what is now clear is that the bevel gear was developed sometime between late 1847 and mid 1848. This includes the period when Stevens and Miller were "getting up a repeating pistol" at Colt's shop. While it's possible that they were working on the revolver as early as November 1847 when they signed their contracts with Colt, the first prototype using the bevel gear had to have been stamped after July 1848 when Stevens and Miller started working for Wesson.

Comparative analysis of the benchmark revolvers

Eight benchmark guns define the evolution of the Wesson & Leavitt revolvers from 1837-1851. They are the Leavitt patent revolver; two Wesson, Stevens & Miller prototypes; Edwin Wesson's patent and pre-production revolvers; the Warner & Wesson pre-production dragoon; and three Massachusetts Arms pre-production and production revolvers. These guns were manufactured by five different entities:

Daniel Leavitt

Wesson, Stevens & Miller

Edwin Wesson

Warner & Wesson

The Massachusetts Arms Company

Figure 8. The Edwin Wesson patent revolver (Smithsonian #252509). Photo courtesy of the National Museum of American History.

The key characteristics of these guns are shown in Table 1. Their only common denominator is the Leavitt-patent convex-front cylinder. Highlighted are ten elements that mark significant transition points in this evolution: introduction of the Wesson bevel gear; marking with Wesson's patent; production; serialization; shot capacity; form of the lock plate; location and attachment of the hammer; barrel shape; type of barrel catch and grip shape and butt cap. Other differences occur but are not considered here to be diagnostic of model evolution. Comparative analysis of changes in these elements indicate that the development sequence, from the Leavitt patent revolver (1837) to the final Massachusetts Arms Wesson & Leavitt belt and dragoon revolvers (1850-1851), was chronologically as follows:

- Leavitt Patent Revolver (1837)
- Wesson, Stevens & Miller .28 Caliber Revolver (~Early-Mid 1848)
- Wesson, Stevens & Miller .40 Caliber Revolver (~Early-Mid 1848)
- Edwin Wesson Patent Revolver (Submitted August 1848)
- Edwin Wesson Pre-Production Dragoon Revolver (~August 1848-April 1849)
- Warner & Wesson Pre-Production Dragoon Revolver (~April-November 1849)
- Massachusetts Arms Pre-Production Pocket Revolver (1850)
- Massachusetts Arms Wesson & Leavitt Belt and Dragoon Revolvers (~1850-1851)

Leavitt's Patent Revolver (Figures 4 and 5)

Leavitt's patent revolver was made circa 1837, with the reported assistance of Edwin Wesson.[9] The top strap is marked DANIEL LEAVITT, SPRINGFIELD MASS. The patented convex-fronted cylinder endured throughout the evolution of the Wesson & Leavitt revolvers. Pre-dating the subsequent Wesson & Leavitt revolvers by eleven years, however, it varies from them significantly. It is hand rotated; the hammer is centrally located rather than attached to the side; there is no lock plate; the barrel is octagon; the barrel catch is a lever located in front of the trigger; and it has a birds head grip with a rounded butt and no butt cap. This patent revolver is now in the Smithsonian (#251082).

The Wesson, Stevens & Miller Revolvers

Jones[10] writes that the Wesson, Stevens & Miller guns are the first of the pre-production or prototype revolvers:

> "*These earliest revolvers were marked D. LEAVITT'S PATENT/MANUFACTURED BY E. WESSON, STEVENS & MILLER, HARTFORD, CT….It is not known how many revolvers were made with this marking, but only one specimen is known today, that in the Colt collection at the Connecticut State Library.*"

The markings that Jones reports differ from what are now the only two known surviving specimens. Since the only specimen Jones had for reference at the time of his writing was the sole surviving example that he referenced, the most likely explanation is an erroneous transcription of the top strap by either Jones or by both Gluckman[9] and Houze.[2] The markings on the top strap of the Colt Collection .40 caliber revolver, as reported by Gluckman[9] and Houze[2], do not include the first initials of either Leavitt or Wesson:

LEAVITTS
PATENT
MANUFACTURED BY
WESSON, STEVENS & MILLER HARTFORD, CT

The top strap markings on the .28 caliber New Haven bar specimen are in two lines and also do not include first initials (Figure 1):

LEAVITT'S PATENT MANUFACTURED BY
WESSON, STEVENS & MILLER HARTFORD CT

These are the first known Wesson marked revolvers. They are classified here as prototypes, and they mark a clear transition between the 1837 Leavitt patent gun and the subsequent evolving line of Wesson & Leavitt revolvers. The biggest advance from the Leavitt patent revolver of 1837 is use of the bevel gear. In addition, both have a lock plate, a side hammer instead of a center hammer, a pin-type barrel catch instead of a lever catch and a flat rather than rounded butt.

There are also key differences between the two known specimens besides just the caliber. Three elements indicate that the .28 caliber

prototype *pre-dates* the .40 caliber prototype. First, the .28 caliber gun (Figure 2) has a half-round, half-octagon barrel, while all subsequent Wesson & Leavitt guns have round barrels with an octagon collar only. Second, the barrel includes three etched rings, similar to some Ethan Allen single shot pistols of the 1830s and 1840s.[26] This feature was never found on any later Wesson & Leavitt guns. And third, the side hammer of the .28 caliber is attached with four tiny rivets rather than by a screw as in all subsequent models (Figure 9).

Figure 9. Attachment of the hammer on the New Haven bar gun. Photo by Don Summers.

Sellers & Smith[4] mention without reference that a "*mineature moddle*" of a Leavitt-patent gun was made in 1848. This *moddle* is most likely the revolver that Stevens and Miller were caught with while working for Colt, and the same small .28 caliber New Haven bar gun discovered in 2017.

The precise timing of manufacture of these two surviving Wesson, Stevens & Miller guns isn't clear. Jones[10] writes that "*the first of the preproduction or prototype revolvers made by the earlier companies* (the Massachusetts Arms) *were made by Edwin Wesson at Hartford starting in May of 1848."* Work on the guns, however, must have started earlier than that. On May 3, 1848, Leavitt wrote that he had seen in the Congressional News that a Senate resolution had been introduced for the purchase of 5,000 Colt pistols. He wrote the Chief Ordnance Officer that he would soon have ready a new model of repeating pistol superior to Colts, and requested that no others be purchased until his could be compared to the Colt.[27] But since they're marked Wesson, Stevens & Miller, it's unlikely that they were marked that way before Stevens and Miller actually went to work for Wesson after Colt fired them in July 1848. While the .28 caliber prototype clearly predates the .40 caliber, it can't have been by much; the manufacture of both are dated here as early to mid -1848.

The .28 caliber New Haven bar revolver is referred to here as *a* missing link in the evolution of the Wesson & Leavitt revolvers, rather than *the* missing link. This recognizes that other transitional specimens have or may in the future come to light. Two unmarked Wesson & Leavitt-style revolvers pictured in Jones, for example, are also very early. Jones describes these in a section on the "*pre-production or prototype revolvers made by the earlier* (i.e., pre-Massachusetts Arms) *companies*" – but makes clear that the Wesson, Stevens & Miller revolvers were the earliest.[10]

Jones' Figure 1 is described as "*a belt size Wesson & Leavitt revolver of the preproduction type with an octagonal barrel and no markings, probably made in Europe*." It has a Leavitt patent cylinder, rounded lock plate, recessed hammer, cylinder pin barrel catch, flat butt without cap and, most unusually, an octagon barrel. No other reference to Edwin Wesson revolvers as 'made in Europe' has been located. Jones' Figure 2B also has a rounded lock plate, recessed hammer, cylinder pin barrel catch and, in spite of his description of it as being "*a dragoon revolver of production type*", an octagon barrel, which no production guns are known to have had. It also appears to have the bevel gear rotating system.[10] These two guns are likely prototypes and, if indeed made by Wesson, would

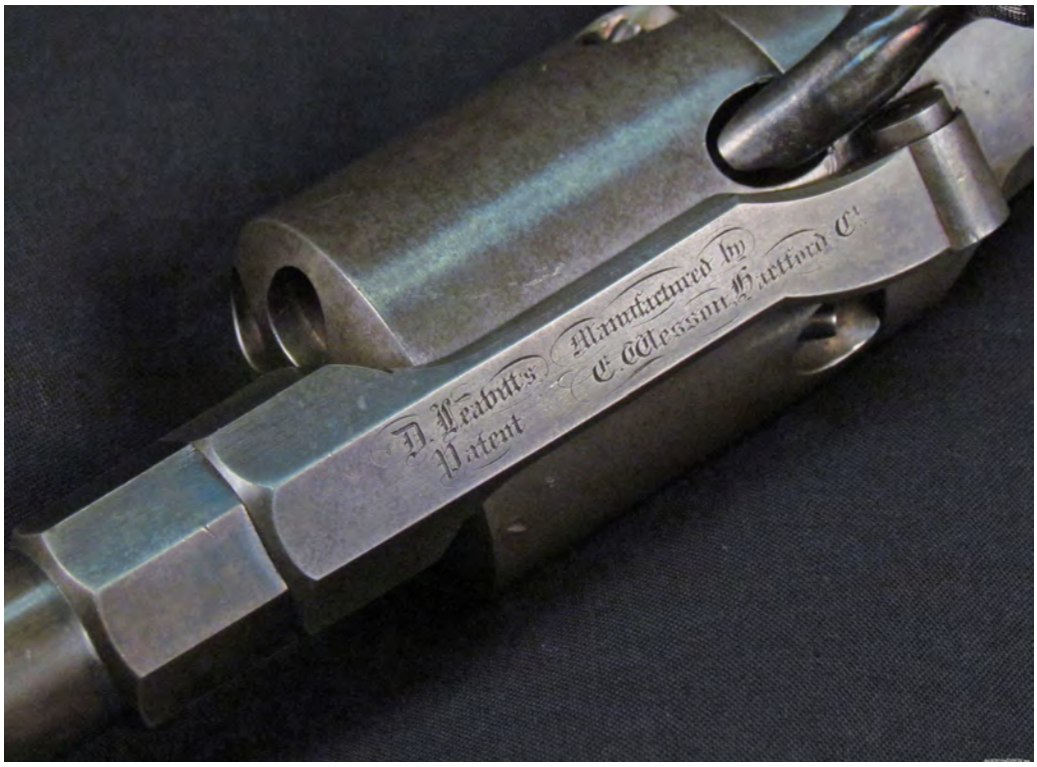

Figure 10. Wesson's patent revolver top strap. Photo courtesy of the National Museum of American History.

most likely have been developed at about the same time as the Wesson, Stevens & Miller prototypes – before August 1848 when the Wesson patent revolver was submitted.

The Edwin Wesson Patent and Dragoon Revolvers

Edwin Wesson's patent revolver (Figure 10) was submitted with his patent application[25] in August 1848, just weeks after Stevens and Miller parted ways with Colt and went to work for Wesson.[10] The gun is marked D. LEAVITT'S PATENT/ MANUFACTURED BY E. WESSON, HARTFORD, Ct. (Figure 10). Now in the Smithsonian (#252509), it's in .44 caliber with a 7-inch round barrel (Sellers & Smith list it as .45 caliber). It differs from the previous .40 caliber Wesson, Stevens & Miller prototype in manufacturers markings, a change from the previous 7-shot capacity to 6 shots, and the high-domed brass grip cap patterned after the single shot military pistol.[4]

The Edwin Wesson dragoon revolvers were the first manufactured by Edwin Wesson based on the patent he submitted in August 1848. Flayderman lists production as "*unknown/very limited*".[1] Although Jones refers to them as prototypes[10], they are considered here as pre-production guns because even though unserialized they were still made in small quantity. They were likely started in late 1848, and remained in development when Warner took over operations in April 1849, three months after Edwin Wesson's death, when Warner started branding the very few completed revolvers with the Warner & Wesson markings.

No photograph has been located that definitively shows the Edwin Wesson dragoon model revolver. A close-up photo in Flayderman[28] is actually the Wesson patent revolver, as shown in Sellers & Smith.[29] Flayderman states that the model is marked on the top strap: D.LEAVITT'S PATENT/ MANUFACTURED BY E. WESSON, HARTFORD, CONN. In spite of the lack of corroborating photographic evidence, the principal characteristics of this revolver are assumed here to be as described by Flayderman[1] and consistent with the characteristics of Edwin Wesson's patent revolver.

The Warner & Wesson Revolvers

When Edwin Wesson died in January 1849, control over the operations fell to a group of businessmen who had co-signed notes taken out to finance expansion of the company. They formed a stock company, the Wesson Rifle Company, and in April 1849 the administrator of Wesson's estate (E.G. Ripley) hired Thomas Warner to finish the "work in progress." Warner was a good choice. He had been superintendent of both the Springfield Armory and Whitney's plant in New Haven during manufacture of the Walker Colts.[30]

Around May 1849, the backers of the new company sold their interest in Wesson's pending patent for $1,000 to Benjamin F. Warner. In August, just as Wesson's bevel gear patent was finally issued, creditors attached the assets of the Wesson Rifle Company. On November 9th the *Hartford Daily Courant* printed a notice that the Wesson Rifle Company assets would be sold at public auction, and on November 22nd a group of Chicopee Falls businessmen bought the assets.[13] The new owners formed the Massachusetts Arms Company, and quickly hired Thomas Warner "*to see to getting up the tools and machinery for the manufacture of their arms*".[31]

Warner later testified that he was hired "*to finish out a lot of fine rifles* (150 or so) *which Mr. Wesson had partially commenced*".[31] He makes no mention of 1,000 rifles under a contract with Thomas Smith that Wesson is said to have made shortly after moving to Hartford in March 1848, nor any mention of fifty to seventy-five barrels for the Sharps Model 1849 sporting rifle under a contract between Wesson and the Sharps Rifle Co. that were delivered after Edwin's death.[17] In any case, completion of additional revolvers under Wesson's tenure was clearly a low priority. Sellers & Smith[4] in 1972, and Flayderman[1] in 2007, estimate total production at just around half a dozen. Of related note, Bainbridge writes that a sheriff's inventory of the Wesson assets in October 1849 included "*three unfinished pistols*".[32]

A photograph of a Warner & Wesson revolver is shown in Sellers & Smith[33], and also in Flayderman.[34] These are the same gun. Another photo, found on the cover of the July 1961 *Gun Report*[35], may or may not be the same gun. The guns are marked in two locations. LEAVITT'S PATENT/MANd BY WARNER & WESSON HARd, Ct. appears on the top strap, and WESSON'S & LEAVITT'S PATENT appears on the lock plate. The owner of the 1961 *Gun Report* revolver stated at the time that there were only two others known in the United States, one in the Colt Museum and the other in a private collection. It is unclear whether the Warner & Wesson revolver displayed by Hank Truslow at the 2010 meeting in Ann Arbor of the American Society of Arms Collectors is one of these guns.

Production of the Warner & Wesson revolvers can be bracketed to a period of about four to eight months. While they were probably under construction in late 1848, the inclusion of Warner's name on the guns as co-manufacturer means that they would not have been completed and marked earlier than April 1849 when Warner took over, nor later than about November 1849 when the Wesson Rifle Company assets were sold and Massachusetts Arms was formed. Since they're marked "WESSON'S & LEAVITT'S PATENT", however, they were likely finished after August 1849 when Wesson's patent was actually issued.

While Jones refers to these guns as prototypes[10], the Warner & Wesson dragoon is basically just a continuation of the Edwin Wesson dragoon. Because production is so small, and the guns are not serialized, it is considered here to also be a pre-production firearm. It's the first Wesson & Leavitt revolver to be marked with Wesson's patent, and the first and only model to carry Warner's name. They are only known in 6-shot dragoon configuration, with a 6-inch barrel and the early pin-type barrel catch. They differ from the Edwin Wesson patent revolver primarily by the presence of a patent marking on the lock plate, a flush-fitting rather than a rounded lock plate, and a non-recessed side hammer. These changes would have been made by Warner during the process of completing the few unfinished revolvers on hand when he took over.

The Massachusetts Arms Wesson & Leavitt Revolvers (Figure 11)

The new owners of the Wesson assets wanted to make a revolver to compete with Colt's. After buying the assets, they formed the Massachusetts Arms Company in October 1849 and incorporated it in March 1850.[13] They moved the operation from Hartford to Chicopee Falls in October 1850.[13] Principal stockholders included Daniel Wesson, James T. Ames, Daniel Leavitt, Benjamin Warner, Joshua Stevens, William Miller, Timothy Carter and Horace Smith.[4] Work got off to a fast start. Thomas Warner, who had been hired as superintendent in October 1849, held that position until 1860. Sellers & Smith write that:

Figure 11. Massachusetts Arms Wesson & Leavitt revolvers. Frank Graves Collection and photo.

"With the patterns made by Thomas Warner while he was completing revolvers for the estate of Edwin Wesson already available, it was only a short time before production was underway at Chicopee Falls. The first revolvers made…were virtually identical to those made by Wesson in Hartford…The main difference was in the barrel catch and the grip." [4]

At least two pre-production[10] or early production[4] Massachusetts Arms-marked revolvers are known, both dated 1850. Since one is known to be unserialized, they are considered here as pre-production guns. They're in .31 caliber, and marked on the top strap MASS ARMS CO./ PATENT. The side plate is marked CHICOPEE FALLS, MASS./ 1850, and the face of the cylinder is marked LEAVITT'S PATENT APRIL 29, 1837.[4] Three photographs of these guns have been located; those in Jones[36] and Sellers & Smith[37] are the same gun. The photograph in the July 1961 *Gun Report*[38] appears to be a different gun, and has a gold-plated back strap and trigger guard. Both guns are heavily engraved. They retain the pin-type barrel catch, but return to the flat grip without a butt cap that were last seen on the Wesson, Stevens & Miller guns. This feature does not change again after that.

From 1850-1851, Massachusetts Arms produced about eight hundred .40 caliber, 6-shot dragoons and about a thousand .31 caliber, 6-shot belt revolvers before production stopped in the face of Colt patent infringement litigation (Figure 11). These were the first true production model revolvers. Marked MASS. ARMS. CO./CHICOPEE FALLS, they differ from the previous Warner & Wesson revolvers in production, serialization, a flat butt without a butt cap and, except for a few later experimental dragoons with factory installed loading levers patented by Stevens, the use of a new hook-type barrel catch. While the catch was also claimed by Stevens in his application for patent #7,802, issued November 26, 1850, it was disallowed as already existing in the public domain.[4]

Lawfare: end of the Wesson & Leavitt revolver

There was bad blood between the Wessons and Samuel Colt. Wesson was collaborating with Stevens & Miller while they worked in Colt's factory, and hired them when they were fired by Colt in July 1848. Also, in 1849 Wesson and Leavitt hired J. J. Greenough to oppose the extension of Colt's 1836 patent.[39] He was unsuccessful, when a procedural sleight of hand led Patents to approve the extension on March 10, 1849[2] for an additional seven years beginning February 25, 1850[40] – a maneuver that was the subject of hot debate during the 1851 *Colt v. Massachusetts Arms* litigation.

Colt knew early on that competitors were working on a revolver; he confirmed that in his letter to Rusk of July 1848 after firing Stevens and Miller. He tried to kill Wesson's patent application for the bevel gear[6,13] as soon as it was submitted in August 1848, and while he didn't succeed he did manage to delay its issuance for a year.[4] He also wrote President Polk on September 2, 1848 that Leavitt had presented the War Department with a gun infringing on his patent rights. That same week the War Department leaned on the Patent Office to expedite review of the Wesson application[16]; Patents initially refused, then complied. But the patent still wasn't issued until a year after it was submitted.

Wesson & Leavitt: A Superior Revolver Design

The Wesson & Leavitt revolvers were a clear and present threat to Colt's near-monopoly over both the government and private markets for revolving handguns. They had quickly gained a reputation for 'form and operation superior to Colt's'.[10] Thomas Warner, who oversaw both manufacture of the Colt Walker for Eli Whitney, and later the production of the Wesson & Leavitt revolvers for Massachusetts Arms, testified in the 1851 trial that the Wesson & Leavitt revolvers were superior in several important ways. In communicating motion to the cylinder, the bevel gear was "*more easy, natural and regular*" than the Colt ratchet and pawl system. "*By having a bevel gear, we can get a side-lock on these guns, which is to be*

considered better than any other." And the guns "*enable us to get a better fastening; taking the barrels off, you have two pieces that are attached and detached very readily*". Other superior elements cited by Warner included the springs, rear sight, cylinder bolt and lock.[41]

See You in Court

Colt became alarmed and he pursued patent infringement cases with Massachusetts Arms (and other manufacturers) with a vengeance. From 1849-1852 he sued Massachusetts Arms three different times. He won two cases and tied one. The first Colt lawsuit, apparently initiated in 1849[16], accused Stevens and Miller of breach of contract and sought damages sustained in getting others to finish the work that they had failed to do before they were fired by Colt in July 1848. The trial ended in a draw, but the court awarded damages to Stevens "for his costs" in the amount of $116.48.[5]

The second case was the most important for Colt and it became a landmark of U.S. patent law. On May 5, 1851, Colt wrote his cousin Henry Sargeant asking him to buy a specimen of the revolvers being made at Massachusetts Arms.[42]

> *"I want a good specimen of the pistols now being made by the Mass. Arms Co. at Chicopee Falls, and also one of those now making in the south part of Springfield by Messrs. Young & Leavitt of N. York & Mr. Warner. Will you do me the favor to purchase a specimen pistol from each of the above named establishments & forward the same to me today or tomorrow if possible & draw upon me for their cost. I do not want them to know the arms are for me. I want them immediately & you will confer a great favor on me by getting & forwarding them as soon as you can & much oblige."*

Houze writes that "*it is highly probable*" that the Massachusetts Arms gun purchased by Sargeant is the .40 caliber Wesson, Stevens & Miller revolver that turned up in an 1861 inventory of Colonel Colt's office.[2] That gun, now in the Museum of Connecticut History, is listed as Entry 87 in his book *Samuel Colt; Arms, Art, and Invention*[2] as an unserialized Wesson & Leavitt holster pistol. Although it's conceivable that that was one of the guns brought back by Sergeant, it now seems highly unlikely. That particular gun is an 1848 prototype, and not the later 1851 Massachusetts Arms production dragoon that Colt would have wanted to examine for patent infringement. Indeed, this was Colt's *modus operandi*. For the next ten years before his death in January 1862, Colt "*kept abreast of* (competitor) *activities by purchasing representative examples of their products on the open market*".[2] Which is probably how he came to own the .40 caliber prototype Wesson, Stevens & Miller that was inventoried in his office in 1861.

In late May 1851, Colt filed his groundbreaking lawsuit against Massachusetts Arms for patent infringement. The suit came to trial in the U.S. Circuit Court of Boston on June 30, 1851, with Colt charging that Massachusetts Arms was using mechanisms covered in Colt's 1836 U.S. patent.[6] The fascinating transcript of this trial is a treasure trove of information for firearms researchers of this era, but beyond the scope of this article. The upshot is that Colt won, and an injunction was issued to prevent any company from making revolvers infringing on Colt's patent.[2,4] Damages of just one dollar were awarded, but Massachusetts Arms had to settle on a royalty of $15,000 for the Wesson & Leavitt revolvers they had already made.[2,5]

The Sun Sets on Wesson & Leavitt's Revolvers

After the trial, Massachusetts Arms continued making revolvers that Colt considered infringements. In October 1852 Colt's attorney filed a third lawsuit on his behalf against the firm, naming Hiram Terry and another principal. The case was heard before the U.S. Circuit Court for the District of New York, and received widespread media coverage. When Colt also won that case, he issued a patent infringement notice to the trade that had a chilling effect on the American arms industry.[2]

With his legal victory in one hand and his seven-year patent extension in the other, Colt became a very rich man. He effectively cornered the government and commercial markets for revolving handguns until his patent expired in 1857. His company continued to dominate those markets through the end of the Civil War.

Epilogue

After the loss to Colt in 1852, Massachusetts Arms gave up on the Wesson and Leavitt revolvers. The Leavitt patent continued in use on some guns until the mid-1850s[10], but the company was forced to drop the bevel gear and rely on hand-rotated cylinders that didn't infringe on Colt's patent. Altogether it made about 1,000 Maynard-primed belt revolvers from 1851-1857 and over 2,500 Maynard-primed pocket revolvers from 1851-1860.[1] By the time that Colt's patent expired in 1857, however, hand-rotated cylinders were fully obsolete.[4,10.]

The company made Adams patent revolvers from 1857-1861, and from circa 1855-1866 it made thousands of Greene, Smith, Maynard and Warner carbines primarily for use by the Ordnance Department in the Civil War. The company dissolved in 1866, although the company name was retained for another two decades under different ownership. Most of the principles went on to play auspicious roles in American firearms evolution.

Daniel Leavitt's converted factory continued to be used by Massachusetts Arms. He received his last patent (#24,394), for a breech-loading lever mechanism, in June 1859 and died a month later in Chicopee, Massachusetts.

About three years after his brother Edwin died, Daniel Wesson partnered with Horace Smith to make lever-action repeating handguns. They made about 1,000 iron frame guns until 1855, when they sold out to the new Volcanic Repeating Arms Company, the precursor of the Winchester line. In 1856 they formed Smith & Wesson, and developed a revolver chambering a self-contained metallic cartridge. This gun revolutionized the firearms industry, and was the first of a long line of revolvers to carry the famous Smith & Wesson name. Daniel Wesson died in Springfield in August 1906, having patented firearms improvements well into his seventies.[43]

Joshua Stevens stayed at Massachusetts Arms for years, taking over superintendent responsibilities after Thomas Warner left the company in 1860. He received a series of patents, including for a combination tip-up action and cartridge shell extractor on a single shot pistol.[44] He formed J. Stevens & Company and in 1886 incorporated as the J. Stevens Arms & Tool Company.[43] That eventually grew into one of the world's largest producers of sporting firearms. It was sold to Westinghouse Electric in 1915 and re-sold to the Savage Arms Company in 1920. Stevens died in 1907 at the age of 92.

William Miller went on to obtain a number of patents for

breech-loading firearms in the 1860s.[20] He and his brother George patented a conversion for U.S. Model 1861 rifle-muskets, and from 1865-1867 converted about two thousand to breechloaders.[1] Miller received his last patent, for a cartridge ejector, in August 1867.[20]

As for the .28 caliber Wesson, Stevens & Miller prototype, what happened to it between 1848 and the early 1900s when it was confiscated by a New Haven bartender is anybody's guess. But the fact that it survived at all, after rusting in the family attic for another hundred years, validates every old gun-hunter's faith that lurking out there somewhere, just waiting to be found, is another extreme firearm rarity of major historical significance.

Acknowledgements.

Special thanks to Dean Schimetschek, who first identified the New Haven bar revolver and recognized its potential historical significance. To Charles Pate for review of a draft of this article, and for his permission to use his notes from the National Archives and Connecticut State Historical Society. To David Miller at the Smithsonian for permission to use photos of the Leavitt patent and Edwin Wesson patent guns. To Diana Davidson for providing photographic access to her remarkable collection of Massachusetts Arms revolvers. To Mike Helms for reading early versions of the draft and providing historical context and details on Daniel Leavitt. To Frank Graves for reviewing an early draft of the article and for his photographic assistance. To Dick Littlefield for his observations on an early unmarked revolver. To Vince Rausch, Dick Salzer and Jim Supica for also reviewing earlier versions of the paper. To Hank Truslow for reviewing a draft final version. And to Frank Miller for editorial and publishing support.

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