

ENGLISH GUNMAKING IN THE 18TH CENTURY: GUNMAKERS OR SCREWERS TOGETHER?

by DAVID S. WEAVER

On February 21, 1747, The Gentlemen's Magazine of the Historical Chronical ran a story in which the Worshipful Company of Gunmakers of London (plaintiff) were suing a Mr. John Hirst (defendant) "...for using the Art, Mystery, and Manual Occupation of a Gunmaker, contrary to the Form of the Statute made in the fifth year of Queen Elizabeth, etc. to prevent the unskilful manufacturing of goods which would be prejudicial to the public." In his defence, Hirst told the court that the gunmakers' "...business in and about London was now divided into 21 distinct trades ¹...and that all master gun-makers do in London, after they receive the several parts from the respective makers, is only to screw those parts together, in which very little skill or art is required." Hirst then produced "...a fine gun which he forged, stocked, made and completed himself, from beginning to end, without assistance from any one person..." Thus, he claimed that he had proven his gun-making skills and "...challenged the whole company put together to make the like." Apparently that satisfied the court, the story reporting that "...the plaintiff not being able to make any case fit to be left to a jury, suffered a non-suit."

This fascinating bit of history has been reported on several relatively recent occasions,² but without critical comment. Given the claims made and their implications for the nature of gunmaking in the mid-18th century, I find this rather curious. This article attempts to present a more critical assessment of the merits of the Hirst case and to review the significant changes that were taking place in the practice of gunmaking in England in the early 18th century.

Merits of the Hirst Case

The Worshipful Company of Gunmakers of London received its Charter in 1637³ to regulate the practice of gunmaking in London and, thereby, to ensure the public safety. In fact, it created a "closed shop" and the Company spent a great deal of time and effort in protecting its turf by challenging everyone who made guns in London and was not a member of the company, as well as any Company member who had unproven barrels on their prem-

ises. Of course, this also created an obstacle for the many skilled gunmakers who immigrated to England from the continent,⁴ especially the Huguenots who came to avoid religious persecution after the revocation of the Edict of Nantes in 1685. The Company's case against Hirst had everything to do with his making guns while not being a member of the Company and little to do with protecting the public safety or with any gunmaking skills he may or may not have had.

Hirst's case was equally weak. There is no doubt that he was a skilled gunmaker, as his subsequent career attests. However, his description of the gun trade in 1747 is debatable to say the least, and even if it were accepted that gunmakers were simply "screwers together," his position that "very little skill or art" is required is ridiculous. Firearms during this period were individually made and assembled and this took substantial skill. Even military small arms, which had become standardized in the early 18th century, did not have interchangeable parts and required substantial skill to assemble properly. The advent of machine-made components and truly interchangeable parts was still nearly a century off.⁵ Even more absurd was Hirst's challenge to the "whole company together" to make a gun which compared favorably with his. There were numerous gunmakers in London at the time whose work was superior to anything known to have been produced by Hirst.

I would conclude that neither side in this case had any merit. However, it is ironic that John Hirst subsequently developed a virtual monopoly as a "setter up" of all types of Ordnance small arms.⁶ The more profound question is then "what was the state of the art of English gunmaking in 1747?"

English Gunmaking in the Late 17th Century

The secrets of the gunmaking trade in England in the 17th and 18th centuries were passed from master to apprentice, and almost certainly between at least some of the master gunmakers. Unfortunately, virtually nothing was written down, so we are left trying to deduce from existing firearms and various public records what the gun-

making practice must have been. In this vein, some interesting lessons can be learned through careful examination of a group of fine and unusual double-barrelled over-and-under flintlock carriage pistols dating to about 1690, as shown in Fig 1. They were made by John Shaw,^{7,8} Nicholas Paris,⁹ and Andrew Dolep.¹⁰ All of the details comparing these pistols are provided in an article by Weaver and Godwin,¹¹ so only those of specific interest to the present argument will be given here, using one of the pistols for illustrative purposes.



Fig 1. A group of four unusual English double-barrelled over-and-under flintlock carriage pistols with side-by-side locks circa 1690.

The barrels are made separately and kept apart by the wood fore stock except at the breech as seen in Fig 2. The touch holes must, of course, be at very different elevations in this over-and-under arrangement, and this is best observed by examining the insides of the locks as shown in Fig 3. The left lock (lower one in the Fig 3) serves the lower barrel and its pan is then necessarily very deep. Note that this arrangement of the locks requires them to be of the “back action” type with the mainsprings behind the cocks. To accommodate the two triggers in line under the barrels, the sear mechanisms must be different, as seen in Figs 4 and 5. Figure 4 shows the stock with the locks removed; the trigger plates are seen through the holes cut out in the stock for the sears. Pulling the forward trigger causes the trigger plate to pull down on its sear, thus

disengaging the tumbler and dropping the cock. On the other hand, the rear trigger must push up on the rear sear to disengage the tumbler. The different sear arrangements are seen more clearly in Fig 5.

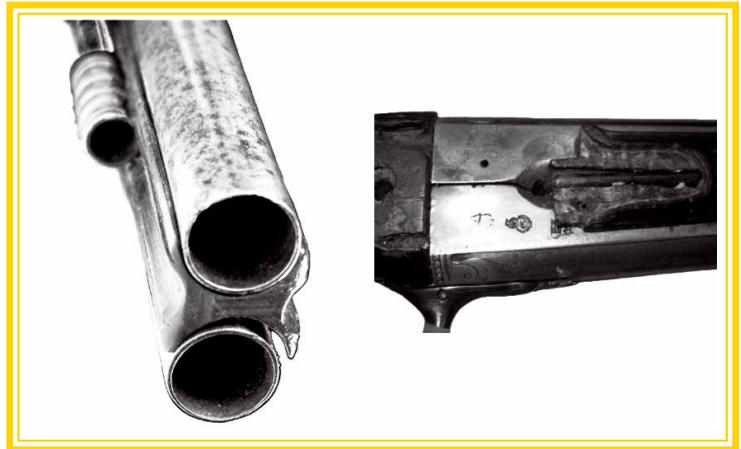


Fig 2. Separate barrels showing stock at muzzle and breech arrangement.



Fig 3. Lock internals: top, right lock with shallow pan for top barrel; left lock with deep pan for lower barrel.

All of the pistols in this group used exactly this mechanical concept but were otherwise quite different in execution. The barrel lengths and bore diameters, the furniture and decoration, and the way the locks were secured to the pistols, all these details between the pistols are different. Even the Dyrham Park Shaw pistols are very different from the single pistol in this group by the same maker. It is absolutely clear that there was no outsourcing of components to a common supplier, no use of common tool-



Fig 4. Stock cut out for right lock. Forward trigger serves top barrel by pushing down on sear of right lock while rear trigger pushes up on sear of left lock to fire lower barrel.

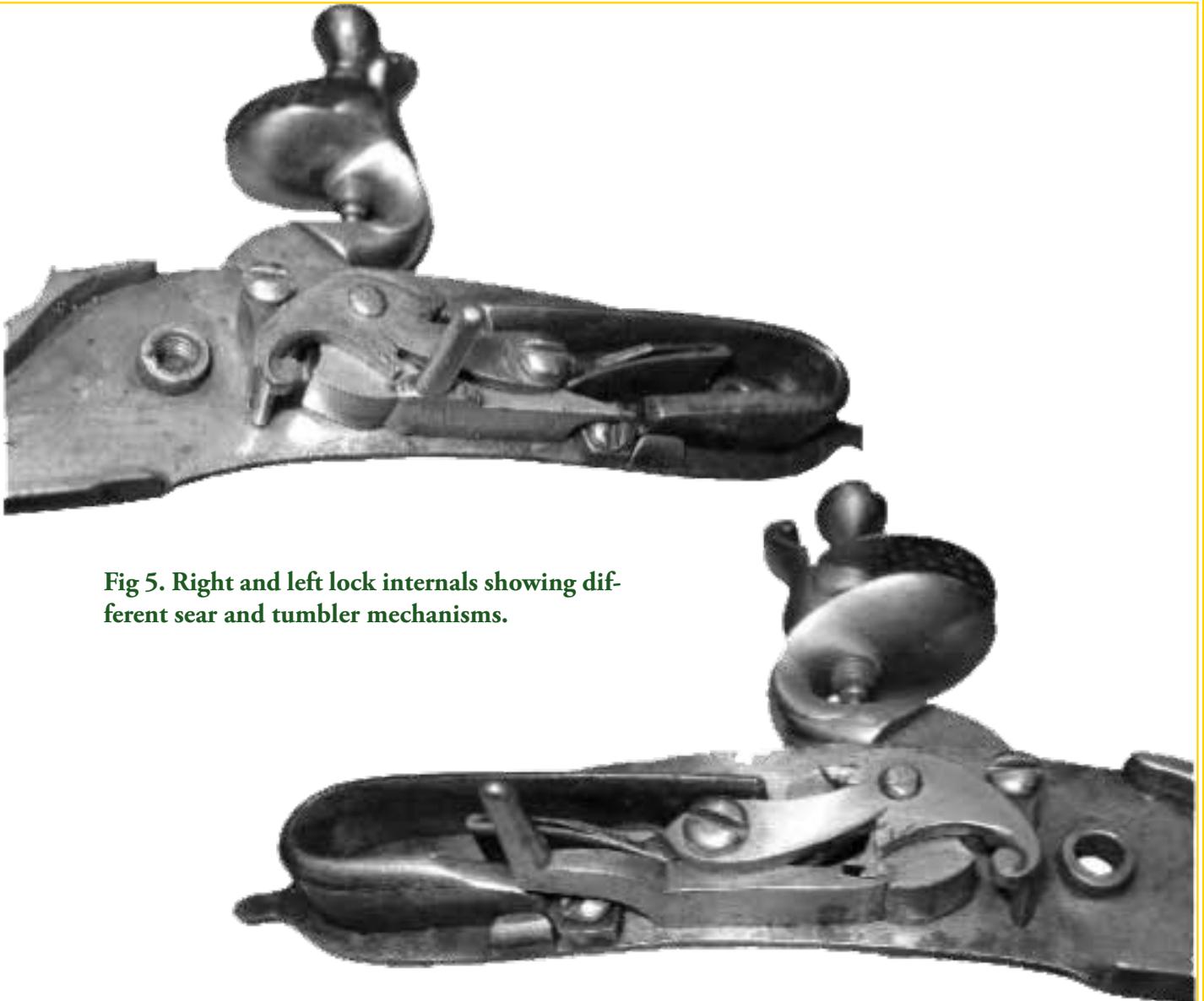


Fig 5. Right and left lock internals showing different sear and tumbler mechanisms.

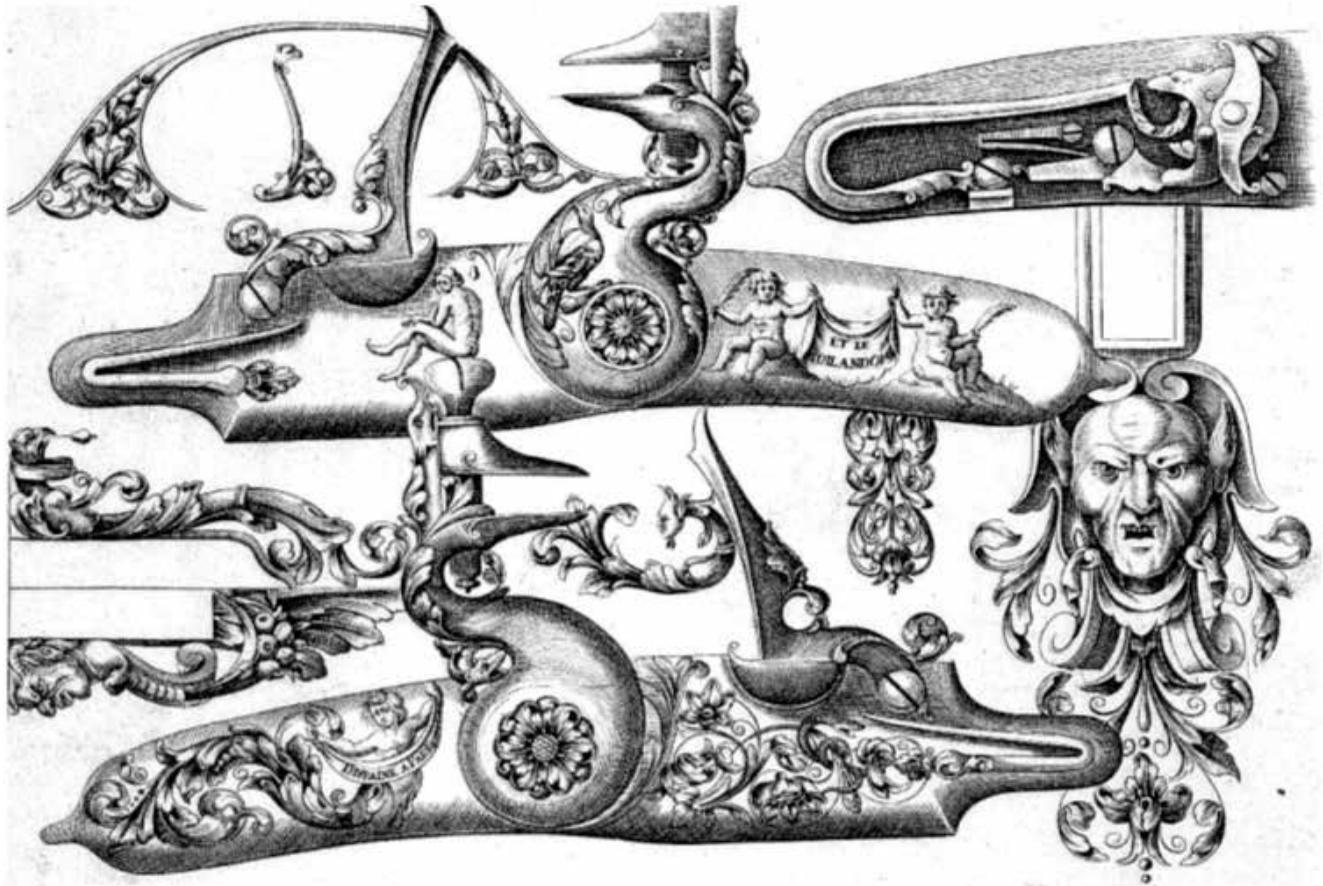


Fig 6. French Designs of Jacquinet, first published in 1660.

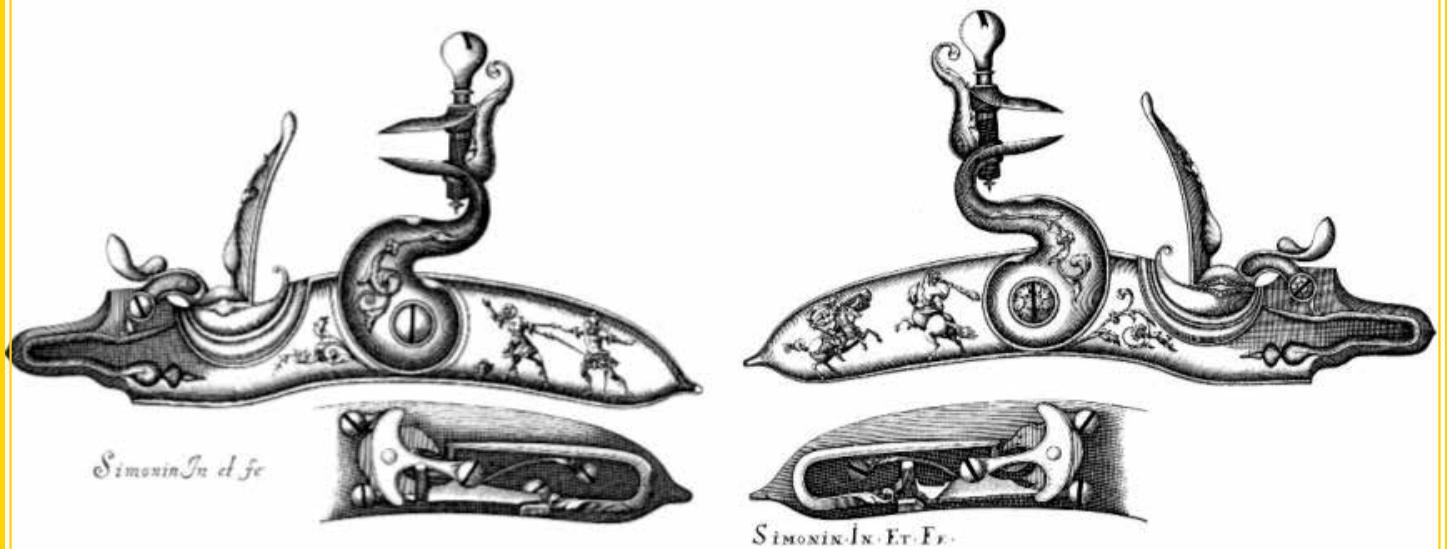


Fig 7. French designs of Simonin, published in 1684.

ing, and no common decoration style, engraver, or iron chiseller. These pistols were all made independently. How then, can the use of what is obviously the same ingenious mechanical design concept be explained? The answer is found through examination of the French designs of Jacquinet,¹² first published in 1660, and then slightly later in the 1684 designs of Simonin,¹³ as shown in Figs 6 and 7. Clearly the English gunmakers had copied the French design concept.

It is well known that, during the late 17th and early 18th centuries, English firearm decoration was strongly influenced by the published French designs and that English gunmakers had “pirated” copies of these designs and used them openly to inspire the decoration of their firearms. An example is shown in Fig 8 where the top side plate is on a holster pistol by Alexandre Masson of Paris, circa 1670, and the bottom side plate is from a holster pistol, circa 1680, by John Cosens, Gunmaker-in-Ordinary to Charles II. Although the design copy is not slavish, it is clear that the French design inspired the English version. It is equally clear that the use of these French pattern books by the English gunmakers went well beyond just copying the decorative style.



Fig 8. Comparison of French and English silver side plates: top, Alexandre Masson a Paris, circa 1670; John Cosens of London, circa 1680.

The important lessons to be learned from this example are that, at least around 1690, the English gunmakers were apparently working independently, producing the entire firearms themselves, and that they had copies of the French pattern books which influenced mechanical design as well as decoration. Indeed, by the end of the 17th century, English civilian firearms are often difficult to distinguish from those of French makers in the absence of proof marks and a maker’s name. This was to change

dramatically in the early 18th century when the English makers developed distinctively English forms and decoration which tended to be more restrained than the French designs.

Interestingly, there is substantial evidence for the mutual collaboration of English gunmakers as well, especially in the production of barrels. For example, John Cosens was Gunmaker-in-Ordinary to Charles II and is known to have made firearms with London Gunmaker proofs and his own barrel makers mark, with barrels showing the mark of other London gunmakers and, in some cases, with barrels showing no proof marks at all.¹⁴ Many examples exist of signed firearms with different barrel maker’s marks.

Further evidence for the nature of gunmaking in late 17th century England can be seen in the endless variety of decorative details on civilian firearms. Whereas sheet silver was used on high-quality firearms made in England up to the 1680s, the majority of firearms were made with wrought iron furniture. This meant that the components such as furniture, locks, and barrels had to be hot forged, filed, and finished. Based on examination of a large number of existing firearms of the period, there is no evidence to suggest that common forgings were used and shared between gunmakers. Indeed, there is little evidence to suggest that a given gunmaker used a set of common dies to produce multiple components for his own use. It seems that, despite the obvious difficulties and cost of producing elaborately chiselled and engraved firearm furniture, the gunmaker’s individuality and skills were expressed in the work he produced. This is illustrated in Figs 9–11 inclusive, showing butt masks, side plates, and escutcheons, respectively. From about 1685, English holster pistols generally had grotesque mask butt caps, following the then well-established French tradition. However, the English designs tended to be more fanciful and, in some cases, almost comedic. It seems that this component provided an opportunity for individual artistic expression. The side plates and escutcheons also tended to be fanciful and to have endless variety. Although there were certainly many similarities in overall design, each component appears to be a “one-off” in terms of manufacture.

The range of skills practiced by gunmakers of the period can also be deduced from an inventory of the tools and equipment found in their shops, such as may be created when a gunmaker dies. An interesting example is the inventory prepared for Probate Court of Andrew Dolep



Fig 9. Forged and chiselled iron butt masks by eight different gunmakers (1685-1720).

- (A) John Cosens, c1685
- (B) John Shaw, c1685
- (C) Henry Ellis, c1690
- (D) Andrew Dolep, c1690
- (E) Andrew Dolep, c1695
- (F) Pierre Monlong, c 1690
- (G) Jean Le Maire, c1710
- (H) John White, c 1720

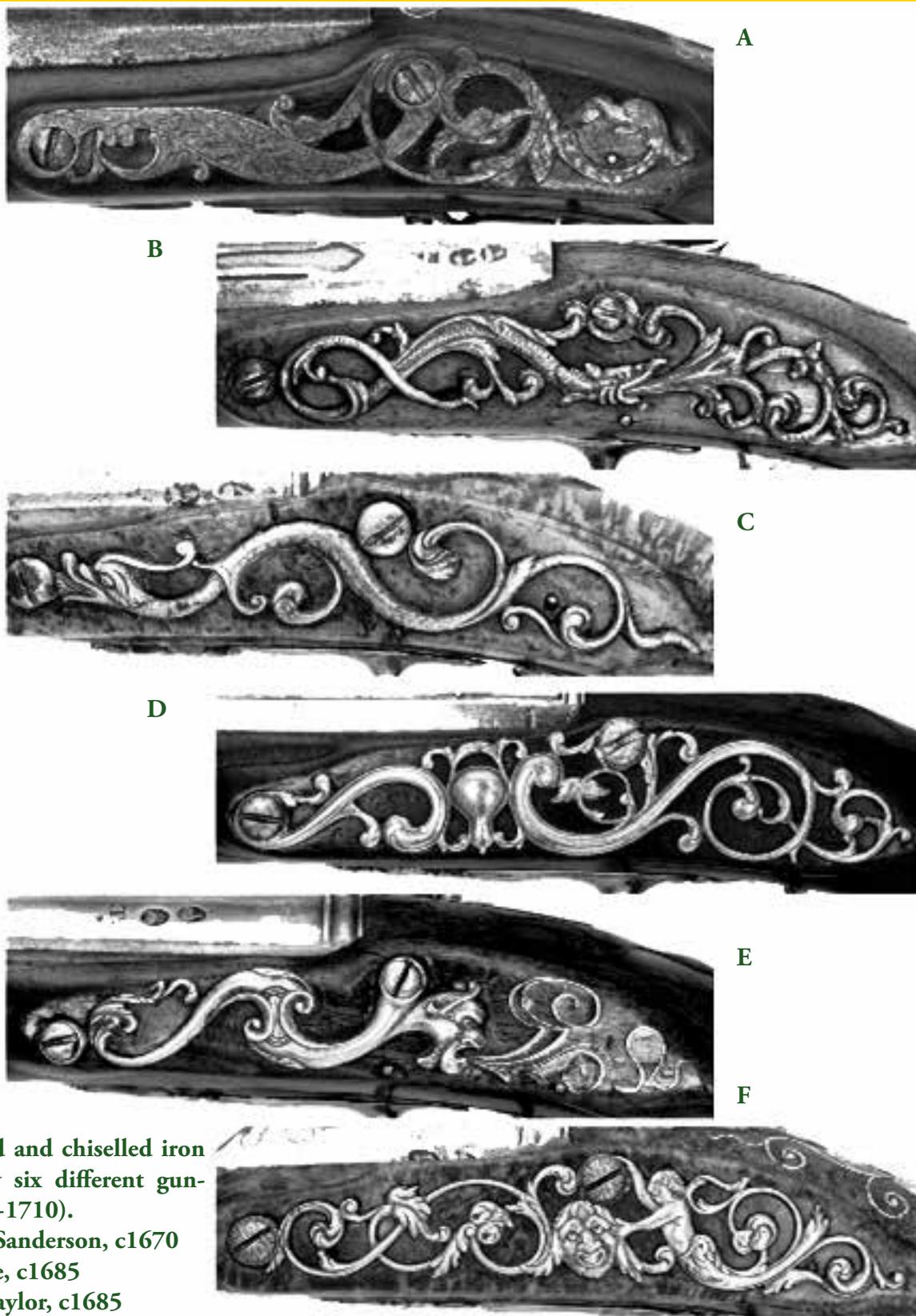


Fig 10. Forged and chiselled iron side plates by six different gun-makers (1670–1710).

- (A) Lawrence Sanderson, c1670
- (B) John Dafte, c1685
- (C) Godfrey Taylor, c1685
- (D) Andrew Dolep, c1690
- (E) Andrew Dolep, c1700
- (F) Jean Le Maire, c1710



Fig 11. Forged and chiselled iron escutcheons by six different gunmakers (1670–1720).

- (A) Lawrence Sanderson, c1670
- (B) Godfrey Taylor, c1685
- (C) George Trulock, c1690
- (D) Andrew Dolep, c1690
- (E) Jean Le Maire, c1710
- (F) John White, c1720

who died in 1713.¹⁵ His shop had bellows, a forge, barrel boring tools, et cetera, all the tools required to make a complete firearm. Another useful source is the Board of Ordnance records. John Shaw was Gunmaker-in-Ordinary to Charles II (1670), James II (1685), William III (1689), and George I (1715), and maintained the King's Closet of Private Arms from 1688 to 1702. In this latter position, all the accounts were handled by the Board of Ordnance and have been preserved.¹⁶ Shaw did repairs as well as gunmaking and the accounts provide details of bills regarding all kinds of lock parts from tumblers to springs, barrels, stocks, and even furniture items such as a "silver thumbpiece." Clearly, John Shaw had the capabilities to produce an entire firearm and there is no reason to suspect that he was unique in this capacity.

Changing Times in the 18th Century

By the 1690s, changes were underway in the gunmaking trade in England. Cast silver and brass were replacing wrought iron as materials for firearm furniture. The advantages were obvious. Silver and brass were easily cast and worked, producing a substantial reduction in manufacturing costs over the hot forging, filing, and finishing of wrought iron. Furthermore, the use of castings permitted a design to be produced many times over, thereby permitting economies of scale. It would only become a matter of time before the savings associated with outsourcing components from specialized suppliers would become apparent. The first example involving the same component on firearms by different gunmakers which I have been able to identify is the side plate shown in Fig 12. These are from holster pistols by Louis Barbar, John Shaw, and Bidet and Hutcheson, all very prominent London gunmakers, and all dating to about 1715. Neal and Back¹⁷ also illustrate a silver mounted pistol by Bidet and Hutcheson and a pair of brass mounted holster pistols by John Willowes (1701-1739) with the same side plate. There are some subtle differences as one would expect from a casting at this period which would need filing up and polishing, but the similarities are so strong that it seems very likely that they came from the same source.

Only rarely at this time was silver on firearms assayed, so the suppliers and the date of manufacture are not known with certainty. This all changed with the passage of the Plate Offences Act of 1738, which meant that silver used for firearms furniture had to be assayed and marked. Thus, the name and location of the silversmith as well as the date of manufacture were now punched on the silver,



Fig 12. Very similar cast side plates on pistols by different makers, suggesting the beginning of the common practice of outsourcing of firearms furniture to industry suppliers in England circa 1715. (A) Louis Barbar, c1715; (B) John Shaw, c1715; (C) Bidet & Hutcheson, c1715

and the silversmith was no longer a mystery. Indeed, it appears that the entire gun trade used the same silver smiths and the choices of firearm furniture in general became quite limited. The great individuality of the furniture on firearms made during the late 17th and early 18th centuries gave way to basically the same designs from the same suppliers to the entire gunmaking trade in London. Of course, there are a few notable exceptions, but these are relatively rare. This is illustrated in Fig 13 which shows silver grotesque butt masks over a period of about 40 years (1730s to 1770s) by five different gunmakers and four different silversmiths. A similar comparison could be made for side plates, escutcheons, pommels and trigger guards from virtually all the gunsmiths producing civilian firearms in the middle years of the 18th century. There were a few different designs, but the choices were very limited. Not only were essentially all of the gunmakers using the same silversmiths, but also the molds for casting components were apparently passed down from silversmith to silversmith over the decades. There may have been some sort of agreement regarding the supply of silver furniture to the gun trade because there was apparently little production overlap between silversmiths in years based on the date letters on extant firearms.¹⁸ Of course, this may have been driven by economic pressures because relatively



Fig 13. Cast silver grotesque butt masks on pistols by different gunmakers and different silversmiths.

- (A) James Willmore, c1730**
- (B) William Bailes, hallmarked 1761 JA**
- (C) Joseph Griffin, hallmarked 1764 IK**
- (D) John Twigg, hallmarked 1776 IK**
- (E) Wallis of Hull, Birmingham hallmarked 1778 CF**

low production numbers were required to serve the gun trade. This situation continued well into the 1780s when silver was no longer commonly used on English firearms following the shift in fashion from rococo to neoclassical design.

The discussion so far has concentrated on firearms furniture, but similar changes were no doubt occurring with regard to other components. In 1707, a group of 42 of the leading London gunsmiths banded together to establish a common facility for the forging, filing, and boring of pistol barrels.¹⁹ The subscription rate varied between respective gunmakers, likely depending on their expected use, and a total of 3000 pounds was collected, a very substantial amount in those days. This suggests both that these gunmakers did not have a reliable supply of barrels from other sources at the time, and that they saw the clear advantages of producing their barrels using a common facility. There is little indication regarding how this collective worked out subsequently for the gun trade, but it is known that the Birmingham gun trade was flourishing by the mid-18th century and supplying components such as barrels, locks, and furniture to the London trade. Interestingly, the Birmingham trade felt the prejudice against “provincial” makers and regularly engraved “London” on their barrels and used proof marks which could easily be confused with London Company marks. It is difficult to

believe that this was not intended to deceive, and it is not known with certainty that all these marked barrels were actually subjected to view and proofing as was done in London. Birmingham was not to establish its own official proof house until 1813.

The procurement and production of military firearms was also changing dramatically during this time frame. During the period from 1689 to 1714, Ordnance contracts for small arms were let to the London Gunmakers Company which appears to have spread the work according to a member’s capacity and standing with the Company officials. Some 200 different gunsmiths were involved, each generally producing completed small arms. Since there was no real standardization, there was a problem in maintaining supply and quality. According to Bailey,²⁰ “The result was a hodgepodge of weapons varying widely in quality of materials and workmanship, and conforming only in very basic terms to a fixed pattern.” This was all to change with the New Ordnance System for procurement of small arms which was introduced in 1715. Thus, separate contracts were let to gunsmiths for supply of barrels, locks, ramrods and bayonets, brass furniture, and small workers, each component being made to a set pattern and submitted to the Board of Ordnance for inspection and approval.²¹ After that, separate contracts were made for stockers and setters-up to produce completed small arms

from components supplied by the Board of Ordnance. Noting that this was a revolutionary step in small arms production, one might see where Hirst formed the impression that the gunmakers of London were simply “screwers together,” requiring very little skill or art. Of course, this was not true for military small arms and much less so for civilian arms. It must be said, as well, that a number of gunmakers who were involved in the set-up of completed arms for Ordnance were also contractors to Ordnance for manufacture of the components, so they maintained all the skills required to produce complete firearms.

While military small arms were made to set patterns, civilian firearms continued to progress in both the technology and the art form. During the 18th century, a distinct English style evolved and the artistic fashion shifted from the Baroque, through the Rococo, to the Neoclassical Revival. At the same time, the flintlock mechanism evolved to a device which fired very rapidly and reliably through the use of roller bearings, low friction links, and various methods to improve the rate of fire and waterproofing. Many firearms were also built to order and custom made. Any gunmaker involved in such production had to be up-to-date, inventive, and have the full range of skills required to produce a firearm from start to finish. His skills are in no way diminished by acknowledging that any component he might be able to purchase rather than

make from scratch would increase his production and reduce his costs. These ideas are illustrated using a couple of examples. The first is a holster pistol by Edward North made in the 1750s; the side plate and pommel are shown in Fig 14. It is very unusual for the period in having full iron furniture, beautifully chiselled in a style typical of cast silver furniture of the day. This would have been much more costly and required much more skill to produce than the elaborate silver furniture which was popular at the time for high quality firearms. The wood carving is also extraordinary. Nothing is known about the pistol's provenance, but it was probably custom made for some wealthy client who did not endorse the changing fashions and could afford to indulge his tastes. The second example is of a breech loading gun by Charles Byrne and dated 1770²² as seen in Fig 15. This is an extraordinary one-off piece which demonstrates the capabilities of the top English gunmakers of the period, both in terms of inventiveness and artistic skills. It has a patented shock absorbing butt plate (about 100 years ahead of the general development of this feature), a 12-start thread on the breech so that the barrel turns off in half a turn, and magnificent artistic merit in engraving, wood carving, and silver wire inlaying. While these particular examples are unique, the point is that there were numerous gunmakers in England at this time who were producing this kind of work.

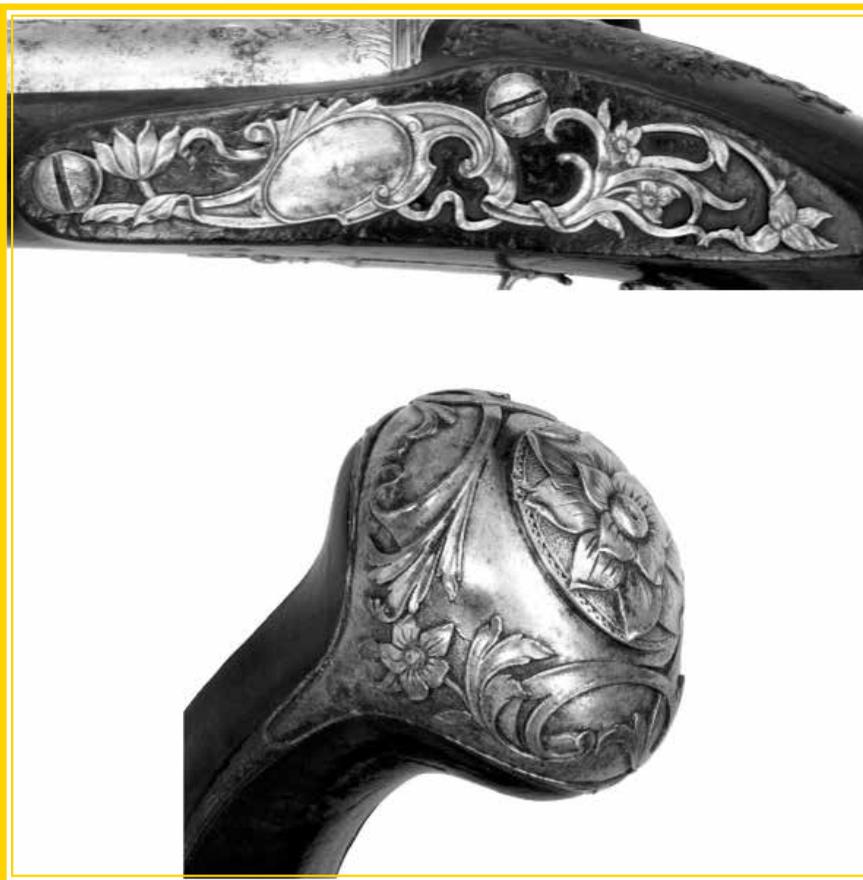


Fig 14. The forged and chiselled iron side plate and pommel of a holster pistol by Edward North circa 1755.



Fig 15. A unique gun by Charles Byrne of London with patented breech and shock absorbing butt plate showing extraordinary engraving, wood carving and silver wire inlays, dated 1770.

- (A) the complete gun, (B) breech signature,
- (C) breech loading mechanism,
- (D) butt showing elaborate silver wire inlays.

Summary

There can be no question that the gunmaking trade in England changed dramatically in the early 18th century. Gun making in the late 17th century was characterized by those who typically had the broad range of skills and the capabilities required to produce all the components for complete firearms. The most common material used for furniture was wrought iron and, at least in the civilian gun trade, the gunmakers produced high-quality firearms showing great individuality and imaginativeness in artistic design. By the early 18th century, cast brass and silver became the common materials used for firearms furniture and supply of these components was outsourced. In time, this became true of other components such as locks and barrels. This resulted in increased quality as well as in much more efficient production for both military and civilian firearms, including improved reliability in supply for the former. However, parts were still not interchangeable, even in the case of standardized parts for military small arms. Thus, substantial skills were required to make a broad range of components as well as to assemble them. Especially in terms of civilian firearms, significant artistic abilities were also essential. Hirst's expressed opinion of the London gunmaking trade in 1747 as simple "screwers together" who required little skill or art in their work is unsupportable by the facts.²³

Footnotes

1. The trades cited are: barrel forger, breech forger, barrel filer, barrel polisher, barrel loop maker, lock forger, lock filer, lock polisher, lock hardener, trigger and nail forger, furniture filer and cutter, tip and pipe maker, sidepiece and thumbpiece repairer and polisher, engraver, bluer, stick maker, flint maker, and moulder or screwer together.
2. Rabett, R.J., "The London Gun Trade in 1747," JAAS, Vol. VI, No. 10, 1970, pp 270-271. Also in Dixon, N., *Georgian Pistols*, Arms and Armour Press, London, 1971, pp 15-16, and in Dixon's article on Heylin, JAAS, Vol XVII, No 3, 2202, pp 155-189.
3. *The Worshipful Company of Gunmakers or The Gunmakers' Company A History*, Derek Stimpson ed., The Worshipful Company of Gunmakers, The Proof House, London, 2008.
4. Andrew Dolep immigrated to England in about 1681 or perhaps earlier, and is noted in the minute book of the Gunmakers Company for unauthorized manufacturing of guns. Even though he was working for Sir Philip Howard, Colonel of the Queen's Troop of Horse Guard, his application for Company membership was denied. Continuing to keep an eye on him, the Company raided his premises in St Martin's Lane in February 1686 and fined him 40 shillings. By this time, Dolep had Lord Dartmouth, the Master General of Ordnance, as his patron. Since Lord Dartmouth was the individual responsible for government weapons contracts, the Company saw the wisdom of setting aside the fine and at Lord Dartmouth's suggestion Dolep was made a Freeman of the Company on July 8, 1686. Typically, those gunmakers who did not enjoy the patronage of such people of influence fared less well.
5. Gooding, J., Ashby Morton, J., "Honore Blanc and Interchangeable Gunlocks," JAAS, Vol XIX, No 5, 2009, pp 208-218.
6. Bailey, De Witt, *British Board of Ordnance Small Arms Contractors 1689-1840*, W.S. Curtis Ltd, U.K., 1999, p 50.
7. A pair of pistols at Dyrham Park, a National Trust property. The pistols are not signed but are of very high quality and have the barrel maker's mark of John Shaw, a leading gunmaker in London who had numerous Royal warrants. These pistols by tradition belonged to William Blathwayt who held lucrative positions in the governments of James II and William III and married the heiress of Dyrham Park in 1686.
8. A single pistol, John Shaw (private collection). This pistol is signed on the lock plates behind the cocks and has the same barrel maker's mark as the Dyrham Park Shaw pistols.
9. A single pistol by Nicholas Paris of Warwick, an exceptional provincial gunmaker. In the collection of the Victoria and Albert Museum, London, and discussed in a study by A.E.R. North, "A double-barrelled 'over and under' pistol by Nicholas Paris of Warwick", 8th Park Lane Arms Fair Catalogue, 1991, pp 22-24.

10. A pair of pistols by Andrew Dolep in the collections of the Royal Armouries at Leeds. These have the crest of Baron Leigh of Stoneleigh near Warwick, who is known to have purchased pistols from Nicholas Paris of Warwick.
11. Weaver, D.S., Godwin, B., "A Remarkable Group of Late 17th Century English Pistols and Their Genesis," Catalogue of the Park Lane Arms Fair, Spring, 2009, pp 87-97.
12. Grancsay, S.V., *Master French Gunsmiths' Designs of the Mid-Seventeenth Century*, facsimile reproduction with preface and notes, Greenburg, NY, 1950.
13. La Rocca, D.J., "Sorting Out Simonin: Pattern Books for Decorated Firearms 1684-1705," in *Studies in European Arms and Armour*, ed. J. Watkins, Philadelphia Museum of Art, 1992, pp 184-208.
14. Cooper, J., "John Cosins, Gunmaker of London," Catalogue of the Sixteenth Park Lane Arms Fair, 1999, pp 31-40.
15. Blackmore, H.L., "Andrew Dolep- A Postscript," JAAS, Vol XIV(5), 1994, pp 257-267.
16. Neal, W.K., & Back, D.H.L., *Great British Gunmakers 1540-1740*, Norwich, 1984. A number of accounts submitted by Shaw to the Board of Ordnance for repairs to Royal guns are shown, pp 174-176.
17. Neal, W.K., & Back, D.H.L., op.cit., Bidet and Hutcheson example pp 333-334, Willowes example pp 373-376.
18. While a number of silversmiths marks can be found on fire-arms, by far the majority of silversmith marks are those of James Brooker [IB] (1734 – c1750), Jeconiah Ashley [script JA] (c1743 – mid 1760's), John King [IK] (c1760 – c1780), Michael Barnett [MB] (1781 – 1820) and Charles Freeth [CF] (1773 – c1804).
19. Neal, W.K., & Back, D.H.L., 1984, op.cit., pp 226-227.
20. Bailey, De Witt, 1999, op.cit., p 15.
21. Bailey, De Witt, *Small Arms of the British Forces in North America 1664-1815*, Andrew Mowbray Publishers Inc., Woonsocket, R.I., 2009, The "New Ordnance System" is illustrated graphically on p 15 and discussed in the associated text.
22. Weaver, D.S., Godwin, B.C., "A fine gun from a mysterious source," Catalogue of the Spring 2013 London Park Lane Arms Fair, 2013, pp 95-105.
23. It is interesting to note the similarities between this dispute in gunmaking and a similar debate in the goldsmithing trade. In the early 17th century, there were complaints that the "true practice of the art and mystery of the Goldsmithry" was being lost and that goldsmiths were no longer skillful in all aspects of their trade but were becoming specialists. It is argued that the division of labor in goldsmithing certainly did not mean a reduction in the skills required as each step in the design and manufacturing processes required high levels of expertise. As in the gunmaking trade, the quality of the product improved substantially through the changes brought about by specialization. See Forsyth, H., *The Cheapside Hoard, London's Lost Jewels*, The Museum of London, 2013.