Second Chapter

English hunting guns

First part

Paolo Tebaldi. September 2018

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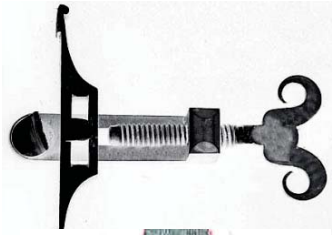
It is not an exaggeration if we say that the English gunmakers thought about everything and solved any problem and nothing was left to invent about the side by side, once their era was passed.

Flasks, scoops, waddings, adjusting the flint, put and remove the ramrod … the performance of a ritual practice that certified the competence of the loader. Screwdrivers and tools were not into the case just for exposition. After hunting they were used to remove and disassemble the locks, it was necessary to clean them deeply from the fired powder that slipped through the mechanisms. A gentleman was able to make a virtue out of this necessity.

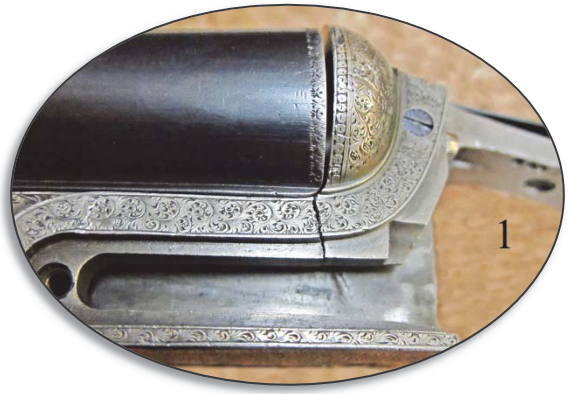
Despite these difficulties, in the first half of the 19th century the British were not interested in the breech loading. They slowly passed from the flint to the cap and, while the gunsmiths were already thinking about the hammerless, they set up a contest to demonstrate that a muzzle-loading side by side was better than a breech-loading one. The conservatives won, the gun loaded by the muzzle gave a better pattern.



In 1851 the French presented their breech-loading guns and the pinfire cartridge at the London's Great Exhibition.
Joseph Lang probably was the first one, among English gunmakers, to understand the scope of this innovation and he started to build pinfire guns.

Lang rightly considered the Lefaucheux structure (Fig. 2) too weak. The action was very whittled in order to receive a semicircular lump, moreover the barrels, when closed, were held only by the strength of the lever. So he changed the shape of the lump to make it work firmly in its mortise (Fig. 3 and 4), he reinforced the action and flattened the action flats.

This closure, that we also find in a 1860' Purdey gun, was the first result of a research that will commit the English gunmakers for several years then.



ACTION AND CLOSURE SYSTEM

Greener publicly proved that in a break action gun there is a momentary detachment of the barrels from the action when the shot is fired. With the modern locks this problem is not relevant, but in the second half of the 19th century the materials were far distant from the actual ones.

The lumps prevent the barrels from moving forward at the moment of firing, so the only thing they can do is to rotate around the hinge pin while tormentated by the friction of the shot. The bolt is demanded to prevent this rotation and its efficiency rises with the distance from the hinge pin. It's been the wisdom of the gunmaker that improved the coupling between lumps and action, that put the bolt in the most efficient place and the lever in an easy-opening position.

The reaction of the fired cartridge made the action flex backward and, since the need to keep it as light as possible, sometimes it broke (Fig. 1).
Two ways were found to solve the problem.
The first way has the purpose to make the action stronger in its weaker point: to leave as much material as possible at the junction between the flats and the breech face, eliminating the sharp edge there and keeping a weighty connection of the sides with the ball fences (Fig. 2). The skilled gunmaker was able to obtain a pleasant shape out of this body.
The other way was to anchor the barrels to the top of the action and, to make this, the gunmakers adopted different methods.
In its substance a strong extension of the top rib (Fig. 3) is blocked by a bolt when it fits into the top of the action. If everything is well made and well adjusted, the action won't be able to stray from the breech end of the barrels.

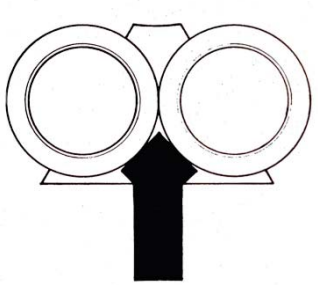
DAMASCUS BARRELS

Among different construction processes the one described below was used for the making of high quality barrels.
Thin strips of iron and steel were forged in a single billet. Three billets were joined, twisted around a mandrel (Fig. 1) and passed through the rolling mill, from which a strip 7-10 mm wide came out. This strip was heated in the forge, wrapped around a casing pipe and little by little percussion-welded (Fig. 2). Then it was the turn of other craftsmen who drilled and polished the barrels. Finally, after soldering ribs and lumps, the barrels were burnished. Thanks to this last process the iron gets darker and the steel lighter.

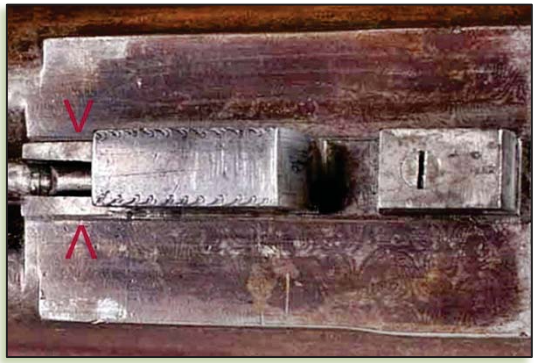
Lumps had to be made of steel and were dovetail joined to the barrels.
During the 1880s there was the beginning of the making of steel barrels and the expensive damascus went out of use.

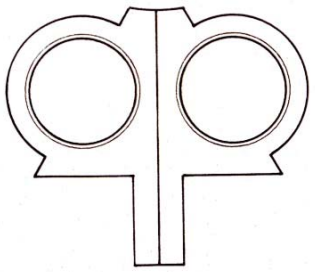

1


2

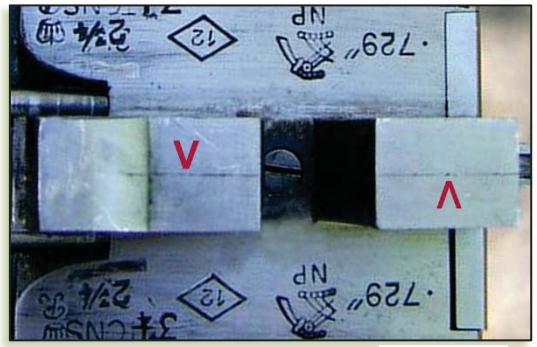


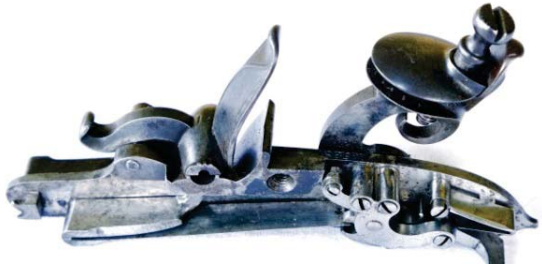
Dovetailed chopper lump barrels





Chopper lump barrels

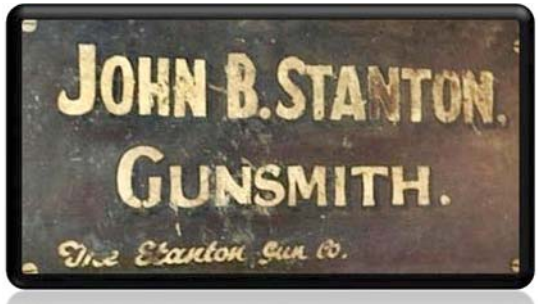


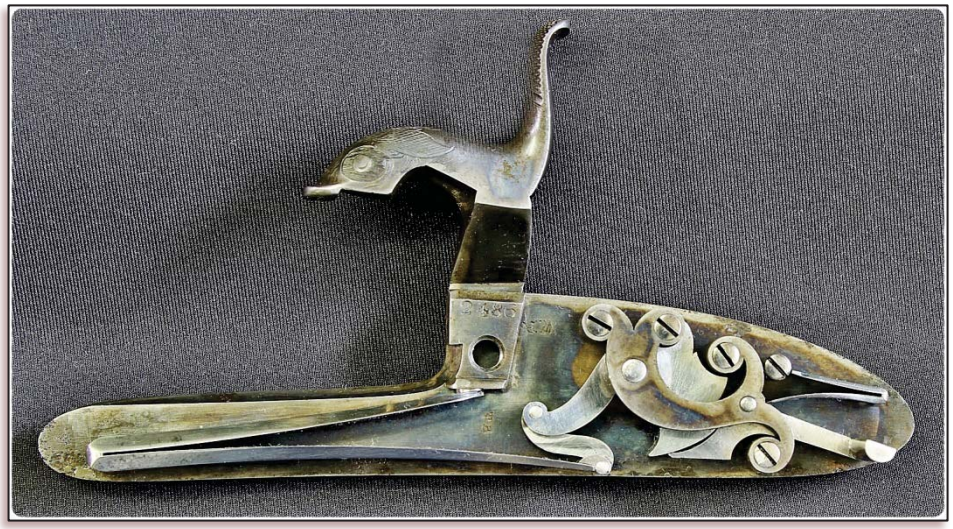


As English gunmakers started with the breech-loading guns it was not difficult for them to build the locks; they were very skilled since at least 50 years.

In 1840s the bar-action lock already had a wide tumbler, sear with high fulcrum and a solid four-pillars bridle.

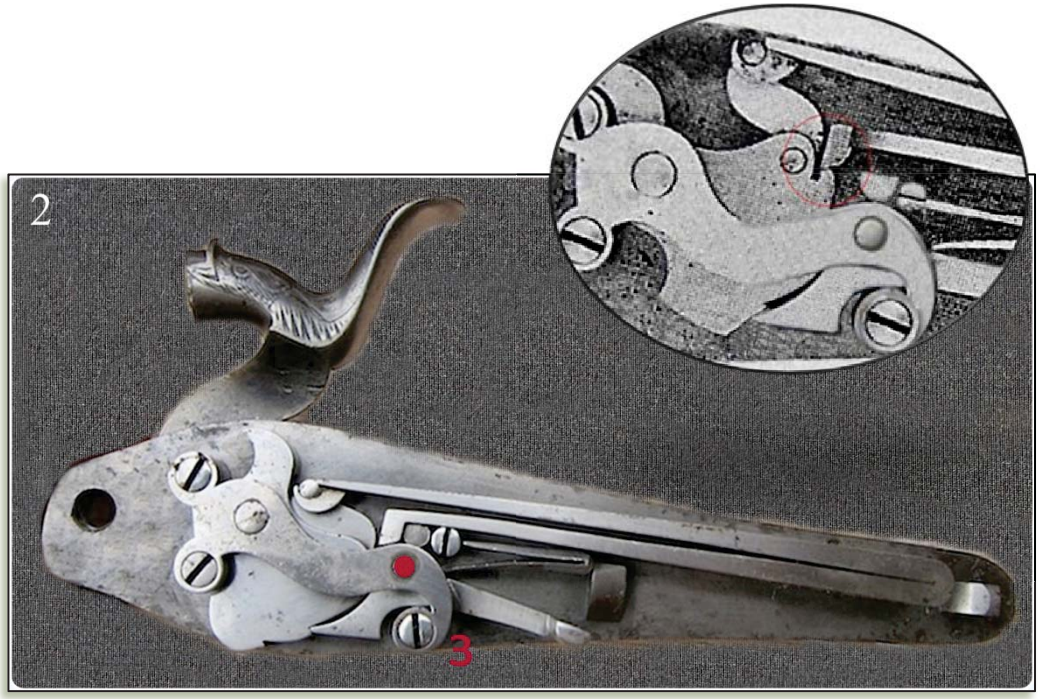
To use the pinfire cartridge it was only necessary to re-design the hammer. To use the centrefire cartridge it was necessary to refine the mechanism. In fact the hammer, when uncocked, left the striker protrude from the breech-end of the action, so it was possible to have accidental shooting while closing the gun.
The problem was solved by the locksmith J. Stanton, in 1867 he patented the rebounding action lock. While reaching its rest position the upper arm of the mainspring causes a slight rotation of the tumbler and the hammer lifts from the striker.





Non-rebounding lock by Westley Richards, 1860 approx..

Rebounding lock by William Powell, signed by Stanton.



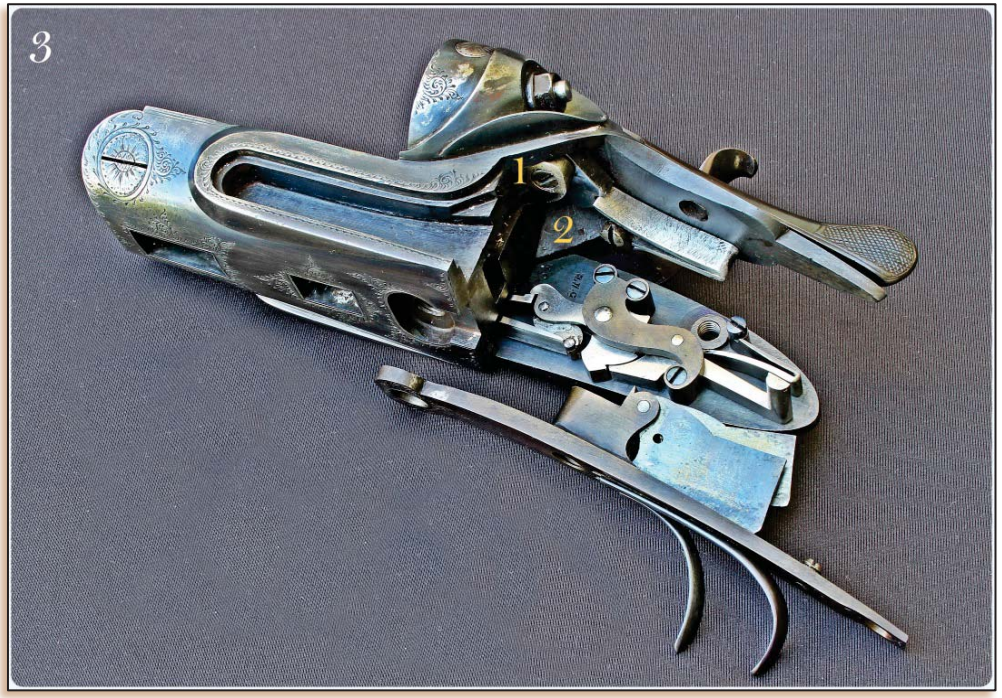
If we think about it, the minor role given to the back action sidelock comes from the fact that the bar action one needs to be fitted into the action. An expensive process that, if well done, raises the cost of the gun and is expected to raise its value too.
The back action side lock has instead a dowry that doesn't belong to the other one. Fitted into the neck of the stock it leaves the sides of the action filled and allows the building of solidly structured and less costly guns. As solidly structured we don't only mean the heavy big bore guns; a slim and light side by side, with minimum-dimensioned parts, if wisely built with its "pear-shaped" sidelocks, can show a surprising sturdness.

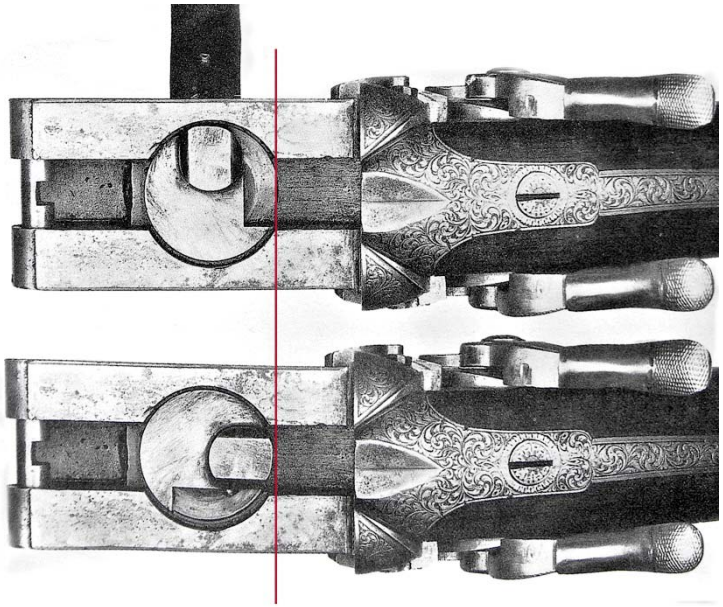
Also the back action sidelock, born non-rebounding, gained this improvement (Fig. 2).
By the time the sears' pin was put in a higher position, to improve the shoot, and the third pillar of the bridle (***3***) found a more suitable positioning.

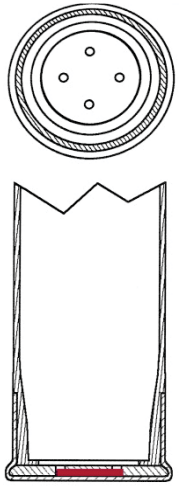
Fig.1). A round body and two back action locks. The less expensive way to build a side by side in the second half of the 19th century.

Fig.2). The bar-in-wood side by side. The bar action locks and the body are fitted into the wood.
It was built until the 1890s, with improvements to the body and also in the hammerless configuration.

Fig.3). The complex work on the body to be used with bar action locks. To be observed the reinforcements (1-2) between the back side and the top strap.



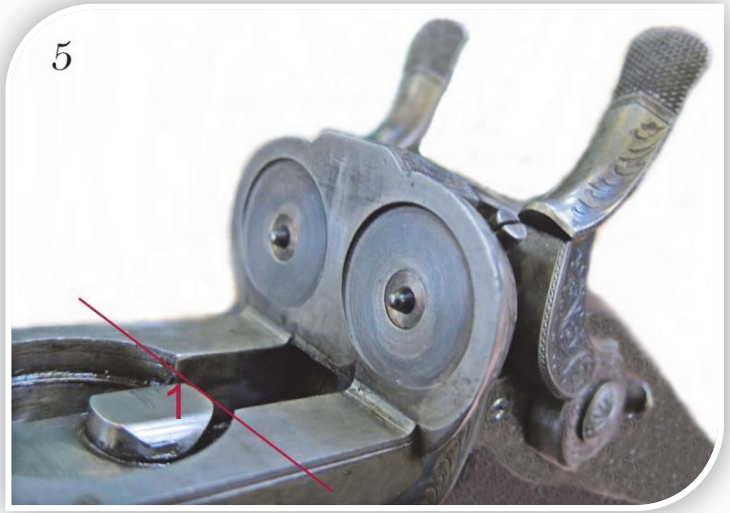




1853. CHARLES W. LANCASTER

In 1852 Lancaster conceived the base-fire cartridge. Paper case and brass base with internal ignition. The lighting mixture was kept by a disc with four holes.
The gun that shoots this cartridge appeared in 1856 approx. and it was the English realization of the L. Gastinne's patent.

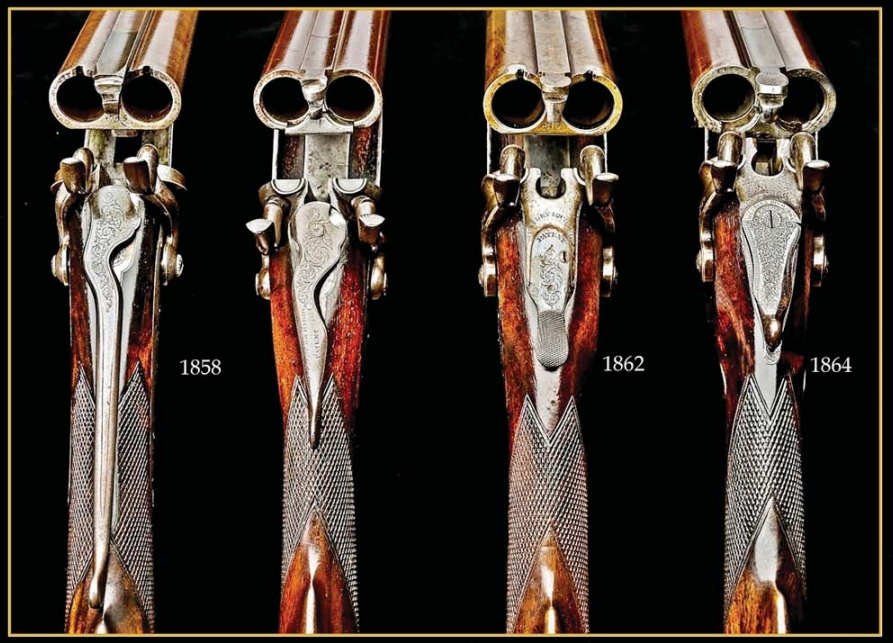
With the movement of the lever the barrels slide forward, the rear lump is free and the gun opens. An intermediate lump works as an eccentric around the cross pin.
The closure is made strong by the return of the lever (**1** in fig. 5) wich fixes the rear lump in its seat, inside the body.

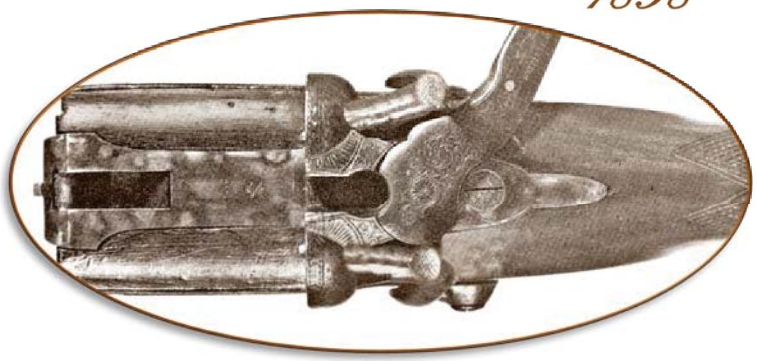



CHARLES LANCASTER'S PATENT

1858. WESTLEY RICHARDS

The Bishop of Bond Street

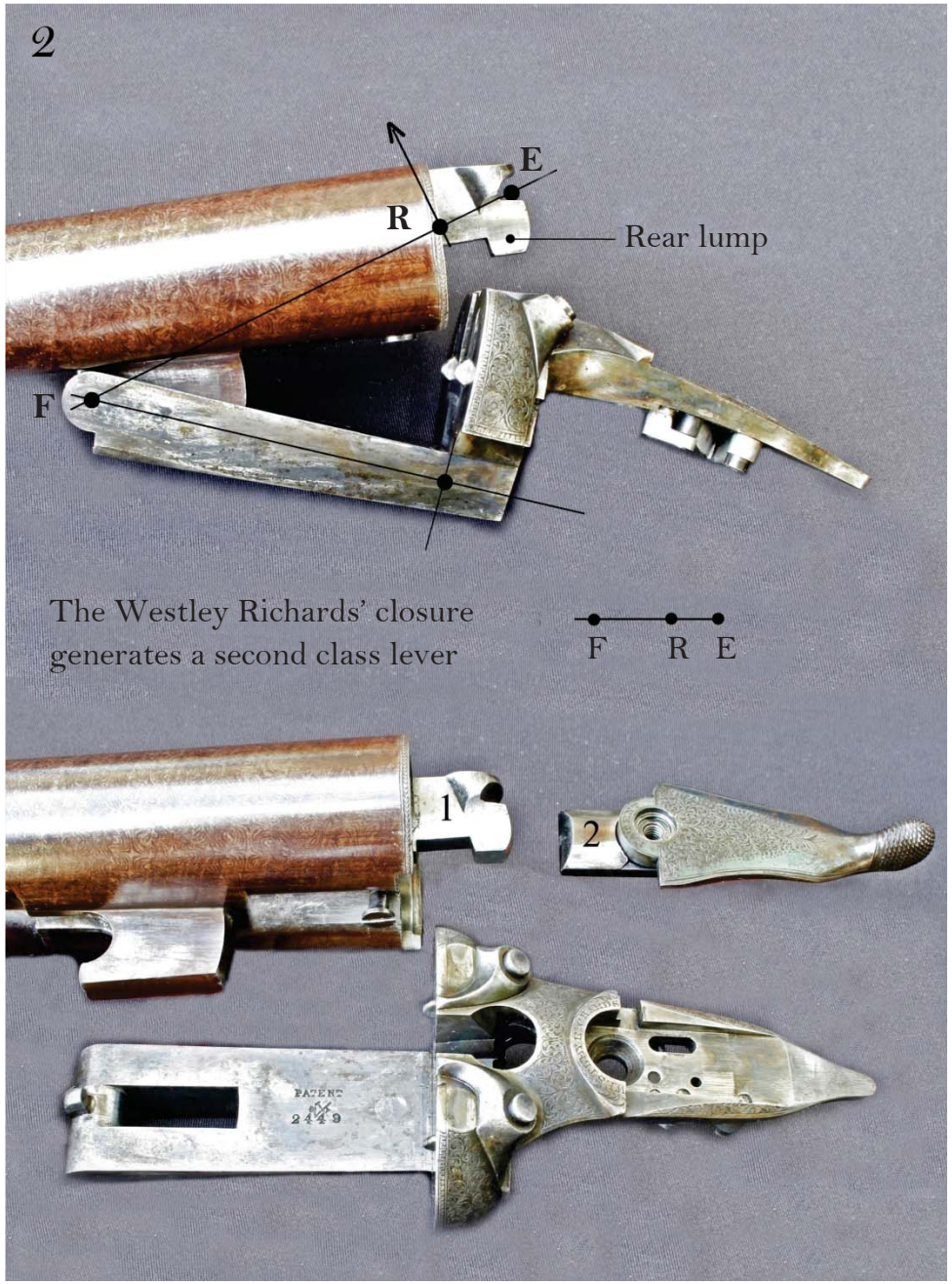




In 1850s and 1860s the biggest problem to solve for the gunmakers was how to keep firmly closed a gun that had to be easy to open.
An unexceptionable solution came from Westley Richards with its gun made in 1858, then improved in 1862 and again in 1864. Locking the barrels on the top of the action realizes a closure as advantageous as possible, the lever on the top between the hammers is the most handy to use.
With small adjustment by the time this is the closure still used today by this illustrious gunmaker.

The pivoting barrels act as a lever and the gunmakers understood that the work made by the bolt is more efficient on increasing the distance from the hinge pin. So they put the rear lump flush with the breech face (1-Fig.1).
To be noted the rib (2) that strengthens the body.

Westley Richards, instructed person, realized a less empirical closure, inspired by the principle of physics applied to the mechanics.
His side by side solved the three big problems.
-The top rib extension (1-Fig.2) has doll's head shape on the horizontal plane and is a lump on the vertical one. Once it is in its case on the top of the action, this one will not be able to flex backward.
- The bolt (2), situated in an elevated location, locks the barrels at the maximum distance from the hinge pin.
- The lever is in the most handy position.



1866 is the year of the centrefire version.

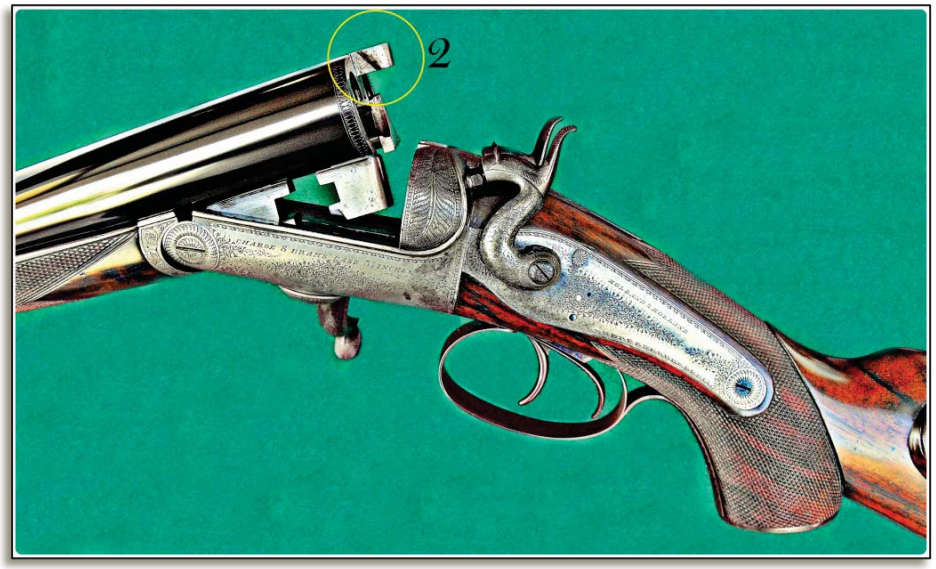
The striker was made in two parts, with the horizontal component hold in its position by a strong dovetail insert, blocked by a screw. A sort of replaceable striker-holder.

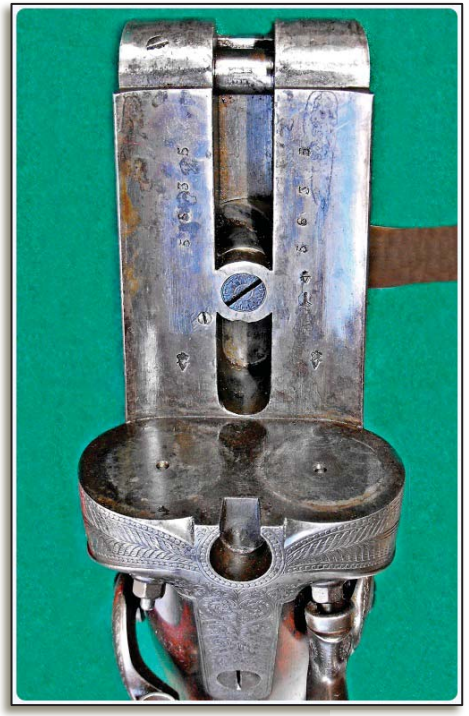
As the locks were still non-rebounding action, the head of the hammers was left long enough to be over the breech end of the barrels. A further evidence of the acumen of Westley Richards: it is not possible to open and close his gun, unlike others, without half-cocking the hammers, putting the sear in the safety notch.

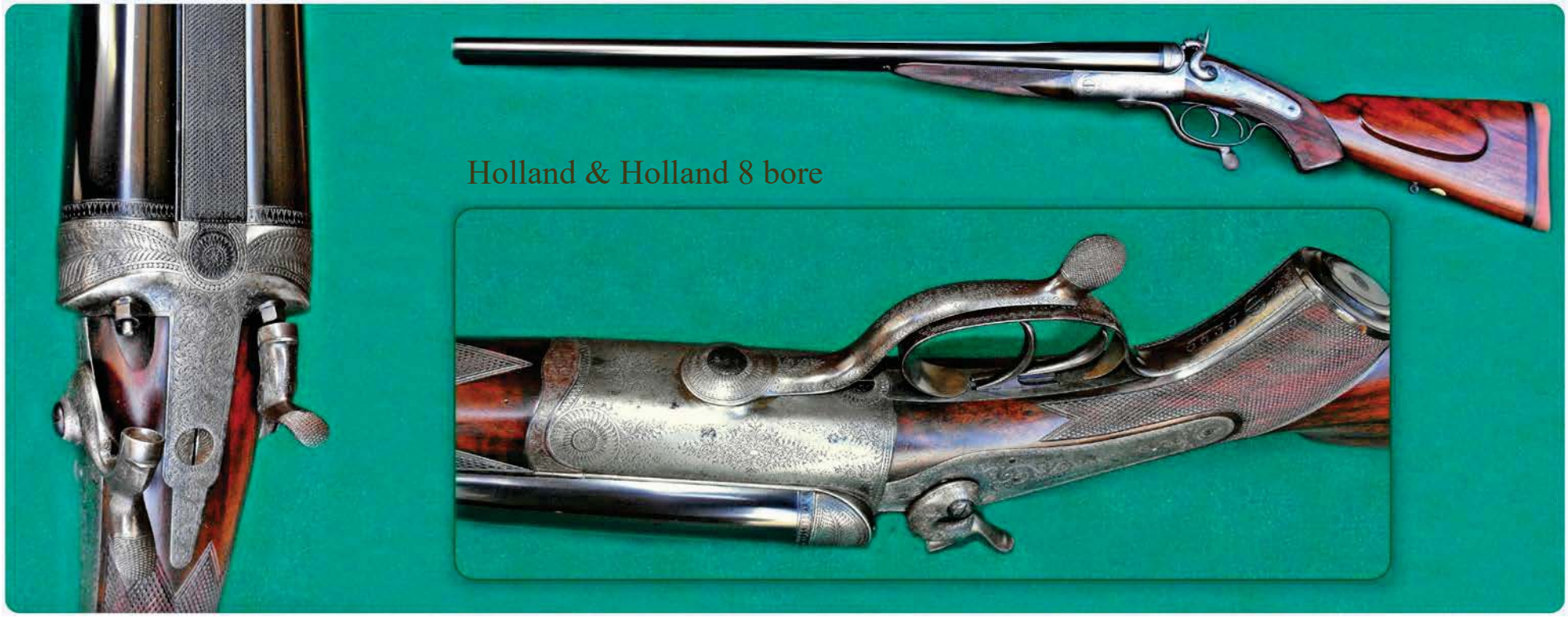
1859. The T-lever by HENRY JONES

The rifled barrels side by side or the 8 bore, which shot almost 2 oz. of lead, had to be particularly rugged and heavy. A strong body was necessary, therefore not much carved, and the problem to solve was to find the way to keep the barrels locked while stressed by such a big strain.

H. Jones solved it reforming the Lefaucheux closure. A strong rotating bolt, with a sloped faces T-head (1), engages the lumps and strongly lock the barrels to the action. A doll's head extension (2) perfects the closure.

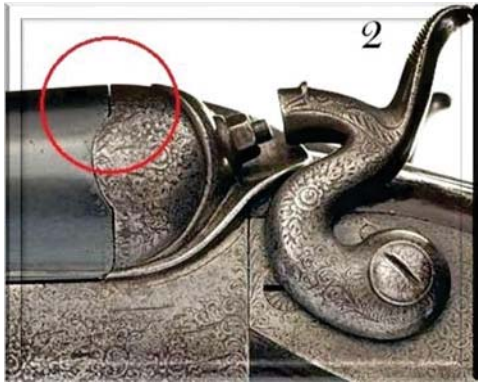






(Fig.2). This H&H Paradox, from late 19th century, has the Purdey bolt instead of the T-lever, there is no anchorage on the top of the barrels. With the usage the breech end of the barrels is no more tight to the action.

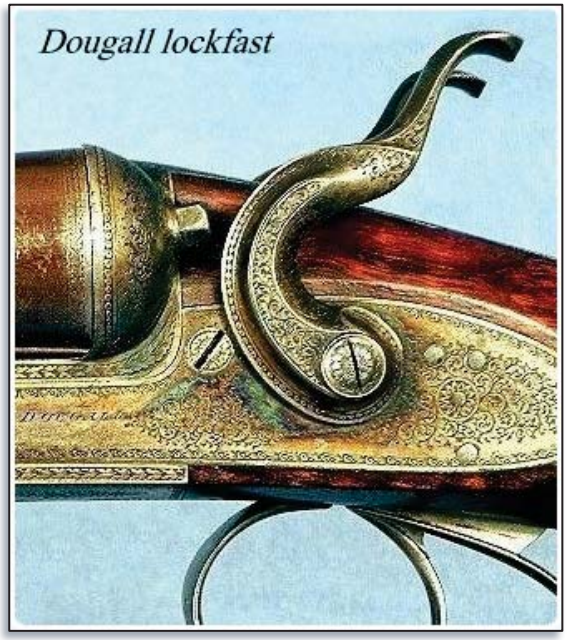
(Fig.3). Another rifled from H&H, 450 cal.. As the previous one it has only the bolt on the lumps to keep it closed, there is not even a simple doll's head extension.



1861. GEORGE HENRY DAW

George H. Daw.
A side by side for a centrefire cartridge..
… designed by a Frenchman …
… built by an Englishman …
… in the year of Our Lord 1862.
The usage of the centrefire cartridge restricted the gun's companionship; the Needham needle-fire gun, very archaic, and the Lancaster gun made in 1853/56.
French patent dating back to 1858, closure and body had to be improved.
In 1862 the English gunmaker worked tirelessly on the needle gun. In that period Purdey (Fig. 2) built a pinfire gun with irrational mechanics. Westley Richards (Fig. 3) patented the 2nd type lever.

1860. The lockfast gun by J. Dougall



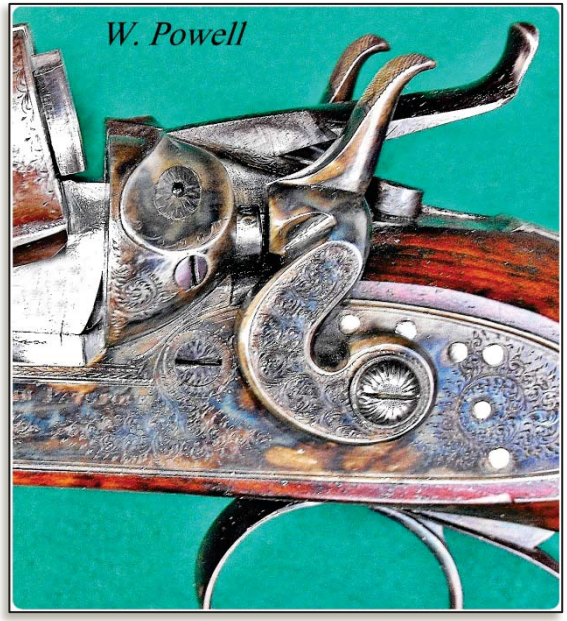
At the beginning of the 1860s, in a moment of full creative ferment, other gunmakers proposed their solutions establishing a contest with the goal of creating the best possible side by side. At the end of the decade the solutions that imposed were the double closure on the lumps by Purdey, operated by the Scott' top lever or by a sidelever, and the Westley Richards one. The T-lever by Jones remained a necessity, an essential solution in specific cases.

Other mechanical solutions were abandoned, even if they were the result of a great inventive capacity often together with an exemplary taste.

Just look to the creativity used to adapt the hammers to the usage of the centerfire cartridge when they started to take the place of the pinfire ones.

1864

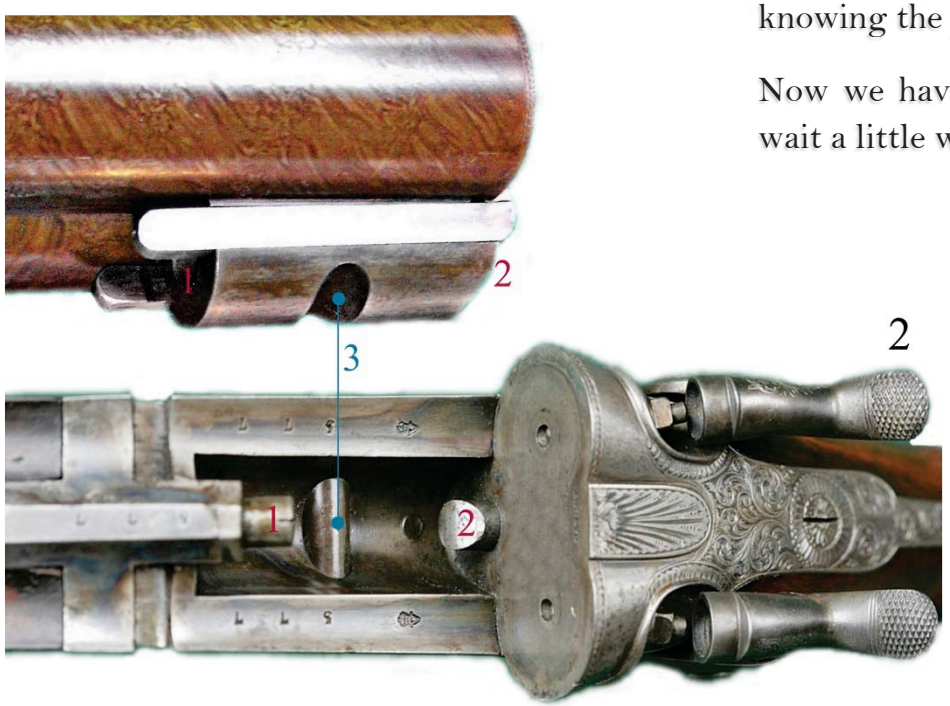
William Powell with lift-up lever

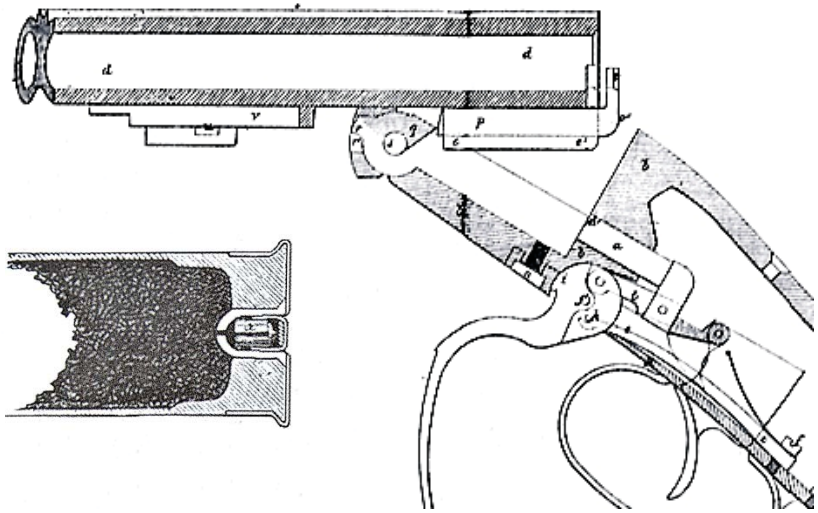


The side by side made by Daw appeared in that boiling period and it was a forward-looking act of faith. The cartridge was hard to find and only when other gunmakers passed to the centrefire, the industry started a large-scale production. With its safe ignition the cartridge we are still using was born.

While handling a well preserved Daw you will be struck by the excellent workmanship. Easy to handle, a solid presence without exaggeration, it reveals an accurate adjustment among well-made components. The locks are exemplary.
The good impression changes while examining the closure (Fig. 2). The lump is the Lefaucheux one, a sectioned cylinder which fits in a semi-circular mortise and leans on the forend iron (**1**). Schneider only modified bolt (**2**) and lever.
As it is known, with a radial force applied a cylinder rotates inside its cradle, on the contrary, a parallelepiped shaped lump does not move from its mortise. Daw, knowing the problem, tried to fix it with the insertion of a transversal bar (***3***).

Now we have the modern cartridge, to reach the modern gun we still have to wait a little while.

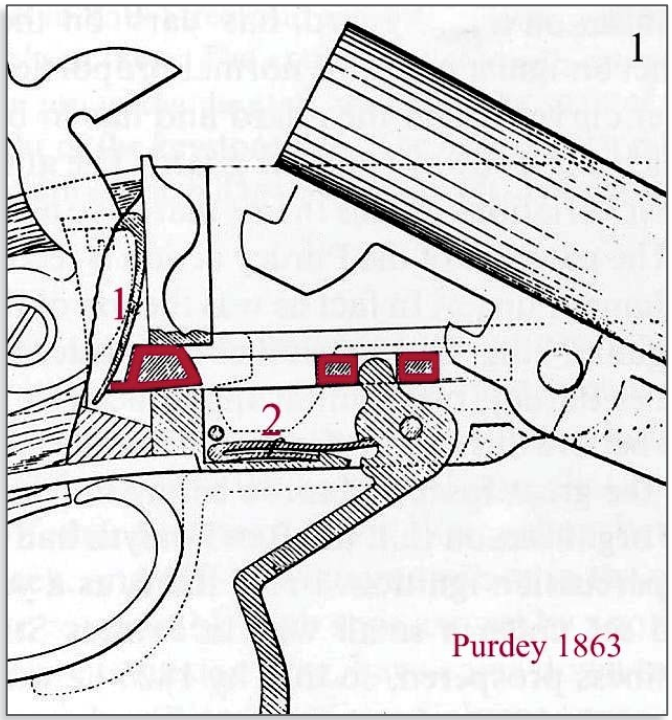


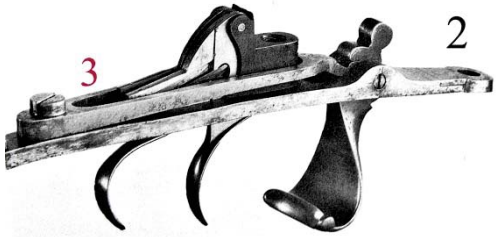


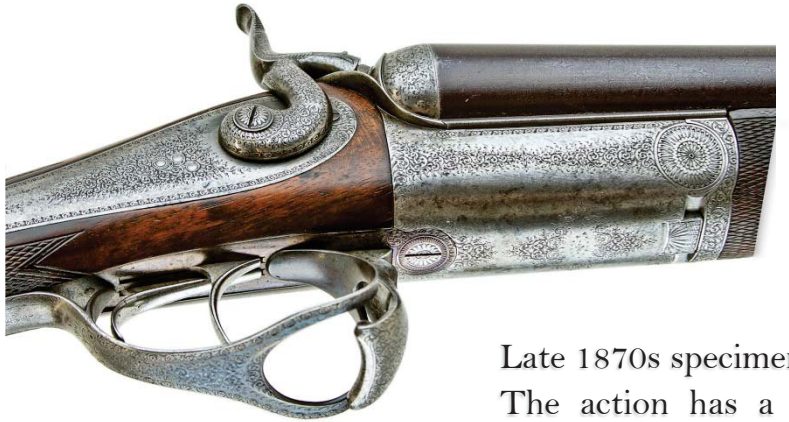

GEORGE H. DAW,
Manufacturer of
EVERY DESCRIPTION OF MUZZLE OR BREECH LOADING,
FIRE ARMS
and
PATENT BREECH LOADING CARTRIDGES.
67, THREADNEEDLE STREET, London.
ESTABLISHED 1780.

1863. PURDEY double underlug

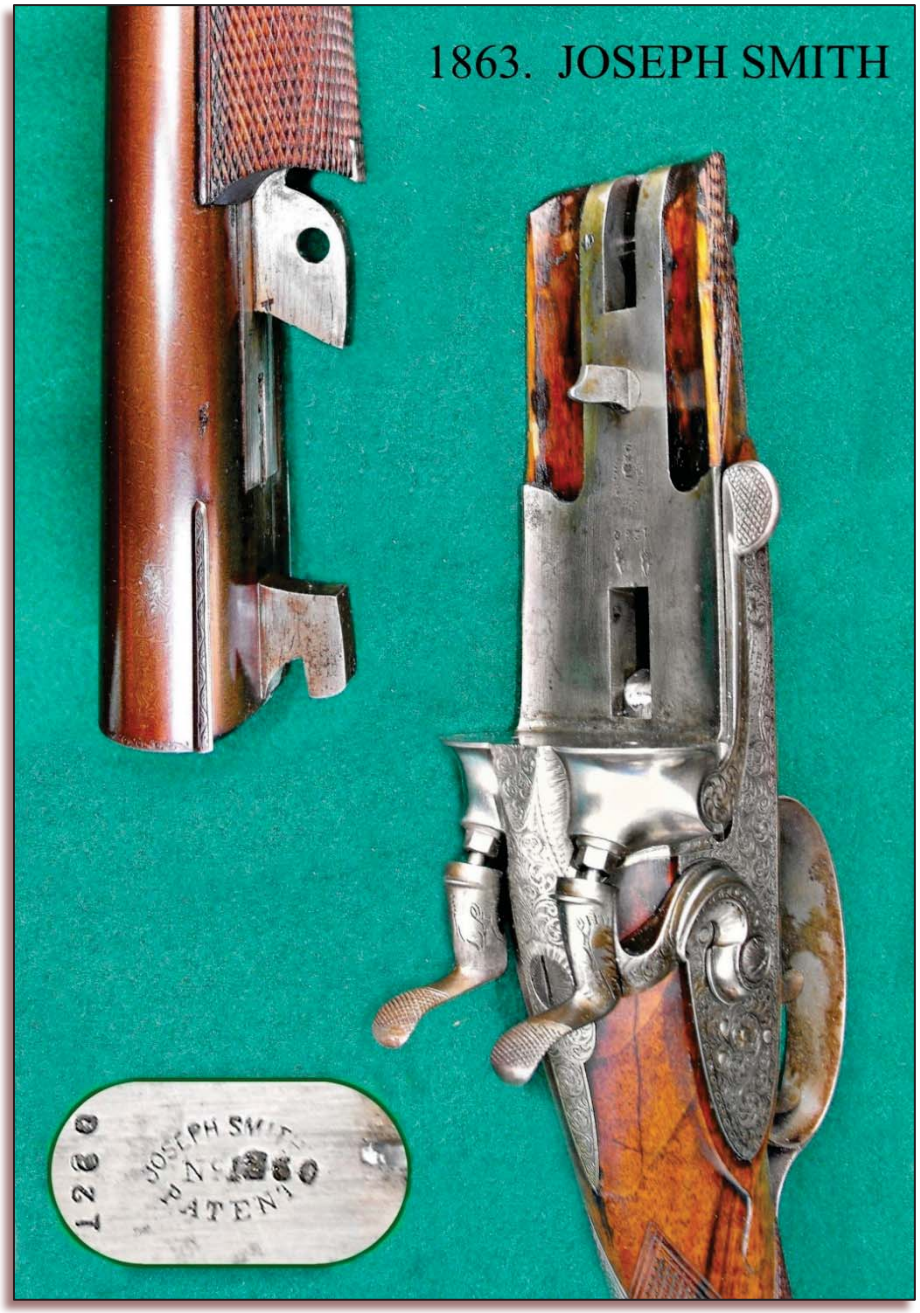
The Purdey double, universally adopted, pride and glory of this House, so faithful to its own ideas that, over time, the closure system of the side by side has been called the Purdey or the Westley Richards mode.
(Fig.1). The bolt, which slides under the action flats, tighten the lumps, is pushed by a leaf spring (**1**). The lever that controls its movement has its own V shape spring (**2**).
(Fig.2). In the next version of this opening mechanism the lever is hinged on the trigger plate, it is easier to operate and is served by a strong spring (**3**) that substitutes the two ones in the previous project.

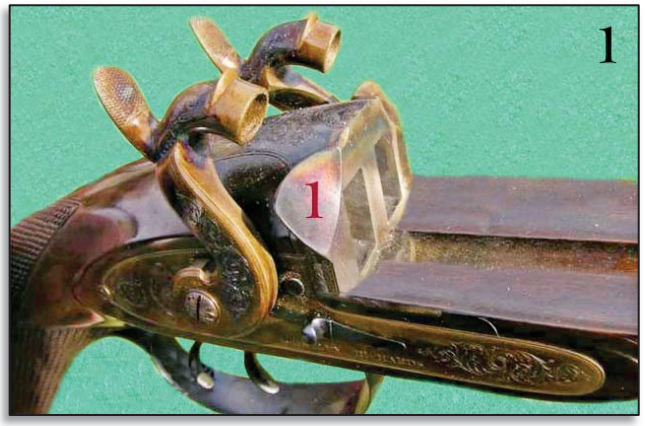






Late 1870s specimen.
The action has a transversal bar (**1**), on which the rear lump leans on.



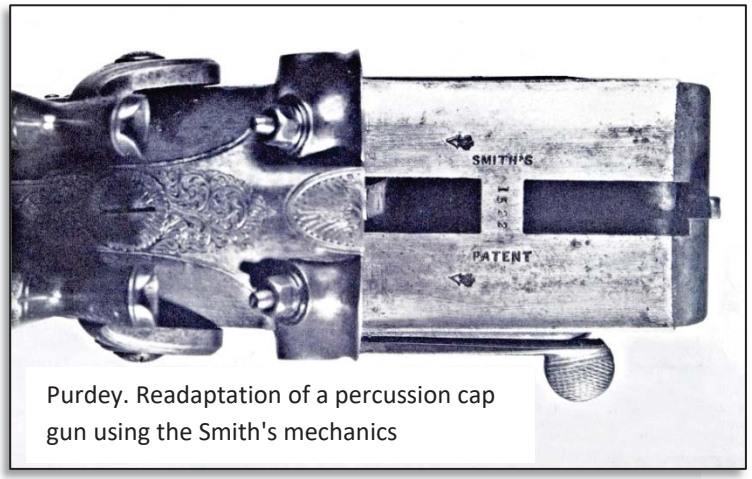


The J. Smith patent (1863 no. 3171) concerns the transformation of a side by side from muzzle loading to breech loading.

Once removed the breech end of the barrels the Smith action was cased in the old stock.

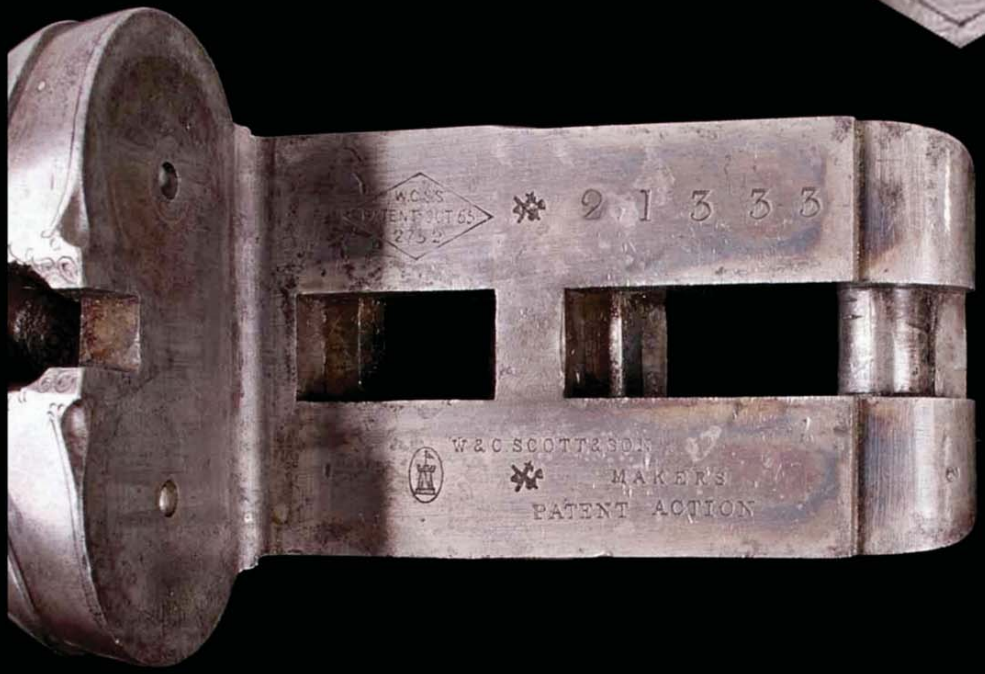
The barrels had to be chambered and it was necessary to add lumps and extractors.

The hammers were modified or replaced to arrange the locks.



Purdey. Readaptation of a percussion cap gun using the Smith's mechanics

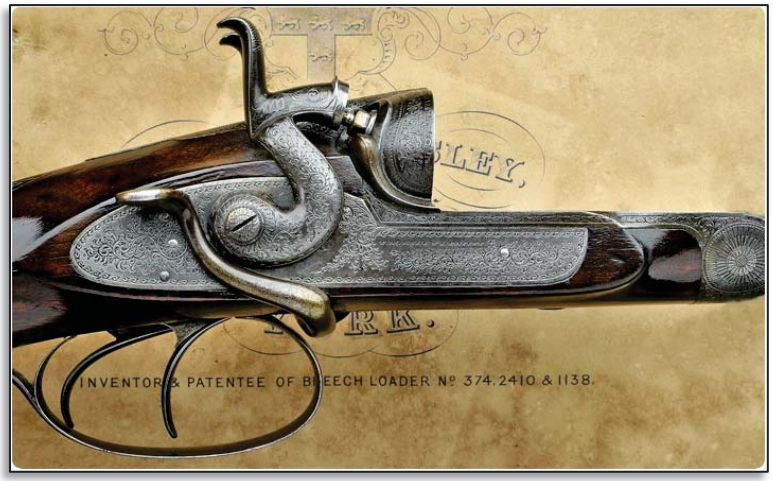
1865. The Scott closing system



In 1865 W. M. Scott patented the opening mechanism that's still in use today. The lever, above the strap of action, operates the bolt that tighten the lumps.
This closing system , universally adopted, is called Purdey closure system but it was designed by Scott. The bolt designed by Purdey, dating back to 1863, was operated by an under lever.

Other systems will be abandoned, with the exception of the Westley Richards' one and the sidelever one, this one particularly loved by some gunmakers, maybe for the unique charm it gives to the gun.
The Jones' T-lever (Fig. 3) will remain in use for some years on big bore guns, the underlever shown in Fig. 4 will be adopted on the first hammerless guns.

3



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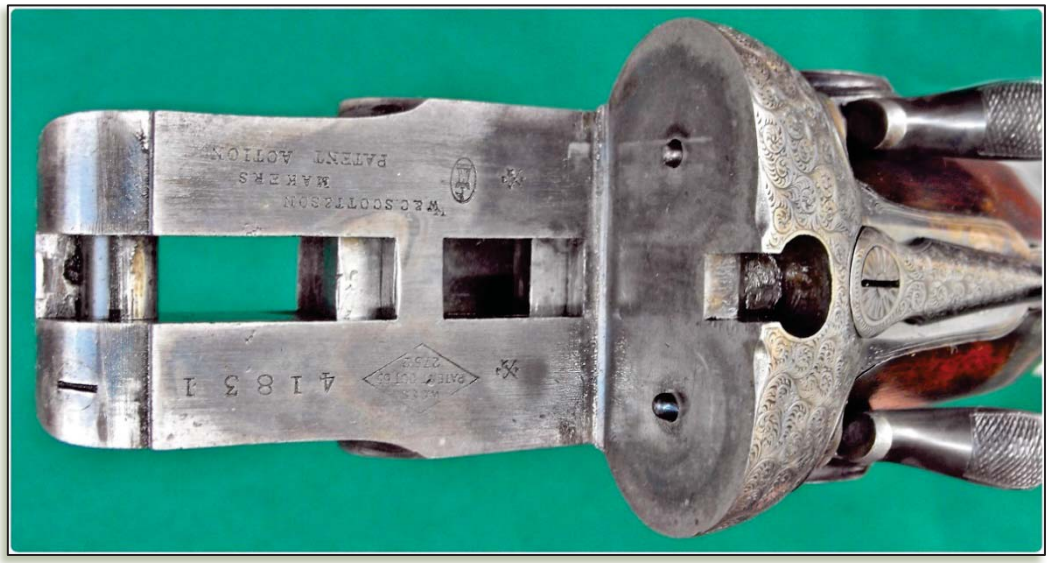
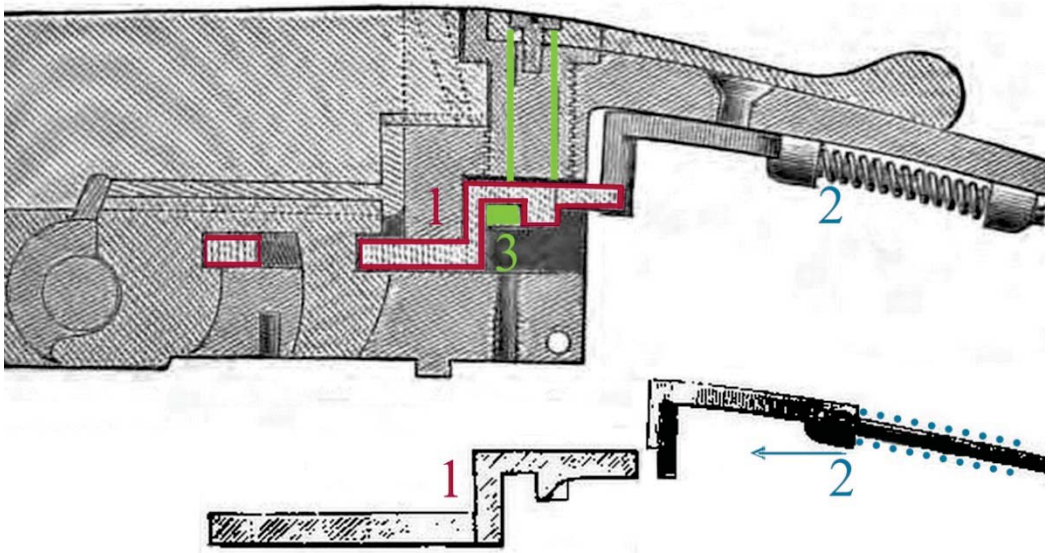
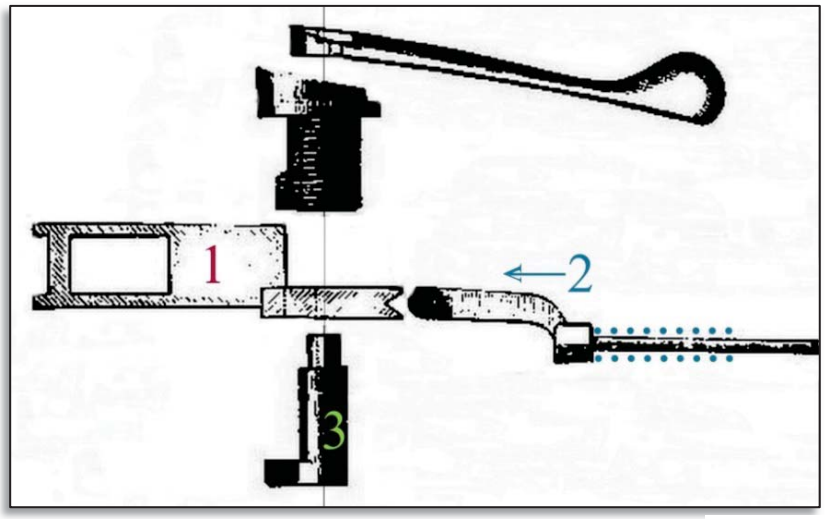


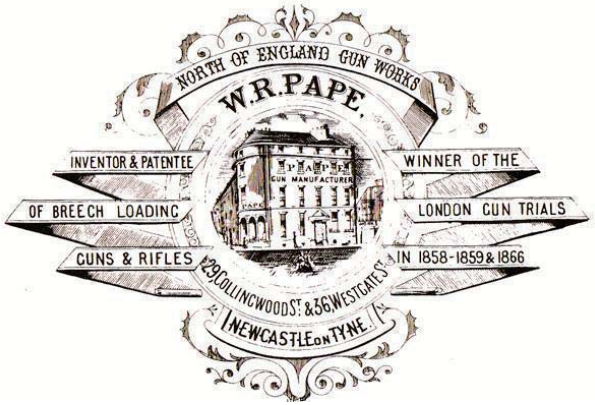
We are using this mechanism since over 150 years and we no more care about it. Its venerable age comes to mind when looking to the action flats of an old Scott, here we find the words W&C. S. PATENT OCT. 65 – 2752 inscribed in a diamond.

While opening the lever the pillar (**3**) rotates and moves the bolt (**1**) backward. The bar with spring in the first specimens (**2**) will be then replaced with a V-spring which works directly on the pillar.

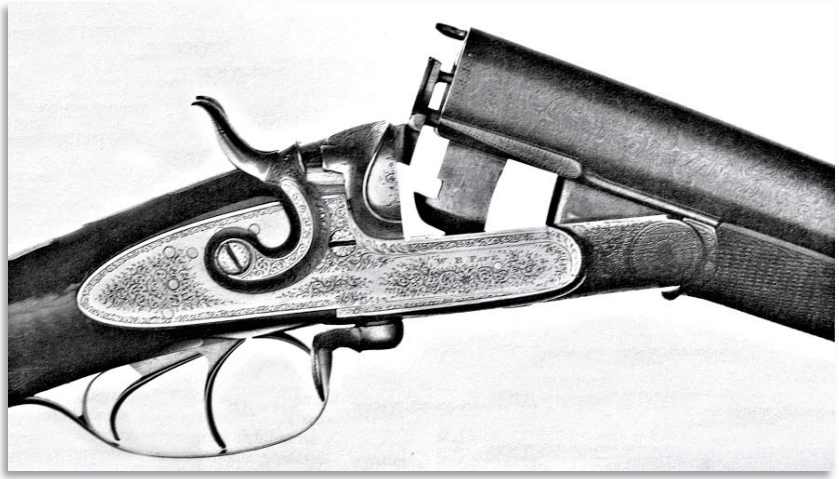




1866. CHOKED BARRELS

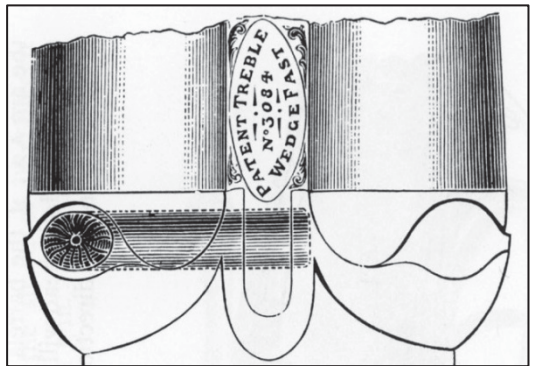


The name of William Rochester Pape is not linked to his closing system, a lever that tightens the rear lump, but to the choked barrels of which he attributed the paternity to himself. Greener asserted that it was his invention.
Whoever it belongs, the innovation was highlighted with the script "NOT FOR BALL" and with the boring (B) and the choking (M for muzzle) values, all punched on the barrels.



ENGLISH BORING VALUES	
13 gauge:	from 0,71 to 0,719 in
13/1 gauge:	from 0,719 to 0,729 in
12 gauge:	from 0,729 to 0,739 in
12/1 gauge:	from 0,739 to 0,75 in

1867. The Greener cross-bolt

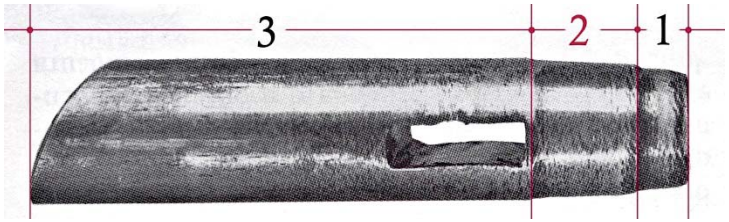


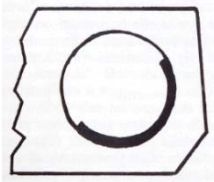
From the half of the 1870s, the Greener lever controls the movements of the cross-bolt on the top and of the bolt that tightens the lumps too.

The top one has three profiles. The long section (3) is cylindrical, the intermediate part (**2**) is conical, the initial one (1) is a truncated cone with a smaller diameter (Fig. 4).

The section 1 has to enter exactly into the conic hole inside the right ball fence (Fig. 5), until it stops because of the bigger diameter of the section **2**. In this way the intermediate cone remains firm, the external face of the bolt, which is concave, is flush with the roundness of the left ball fence and the lever is aligned with the middle of the action.

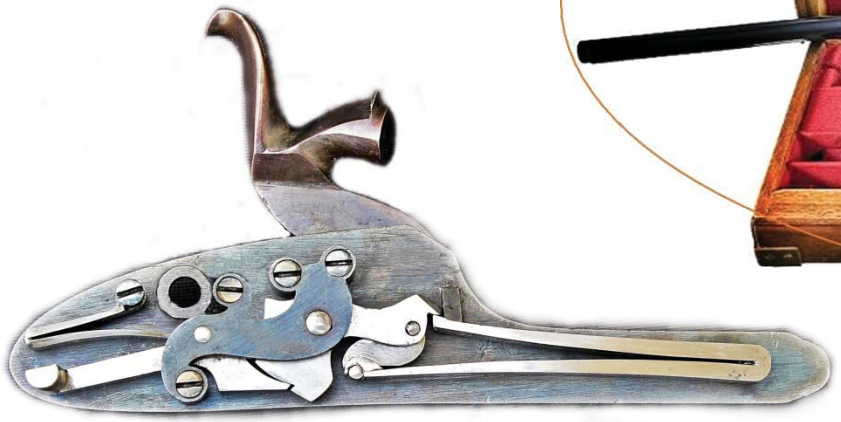
If the bolts and the surfaces on which they lie are not too worn out by the long-term use, the barrels remain firmly closed and the body can't flex backward while shooting.





The top cross-bolt, enetering the head of the top rib, has to tighten the highlighted zone of the hole and to remain more free in the remaining sector.

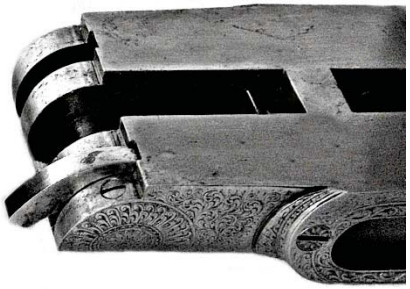
GREENER
GUNS
RIFLES AND
CARTRIDGES



THE FOREND

1). With crosspin fastener. 1851-70 approx.
2). Snap-on
3). Lever release. 1866
4). Anson. 1872
5). Deeley-Edge. 1873
6). Scott. 1876

While opening the barrels the lever cocks the hammer.
The lock, forced in a small space, is not so well-made.



THE "AUTOMATIC" HAMMERS

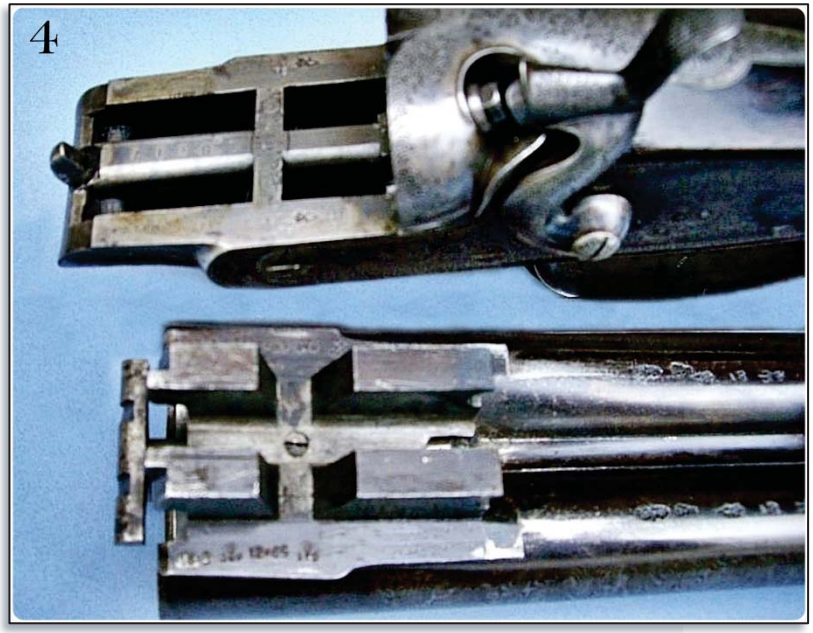
The first hammerless guns left the English hunter concerned; after centuries the hammer disappeared, hidden from sight. The side by side, not only robbed of two fascinating components, didn't show instantly if it was ready to shoot or not.
The shock was so big that in 1871 when the hammerless gun by Murcott came out, it was renamed *mousetrap*.

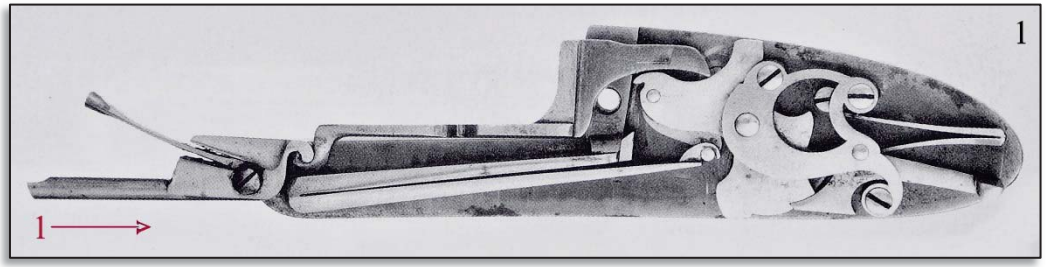
Someone among the gunmakers put two levers with a shape similar to the hammer outside the body, they were used as indicators.
In 1878 W. & C.Scott put a small crystal window on the sideplate of his hammerless.
Then, after 1880, he built guns with hammers that were automatically cocked with the opening of the barrels so the sportsmen enjoyed the benefits of both systems.

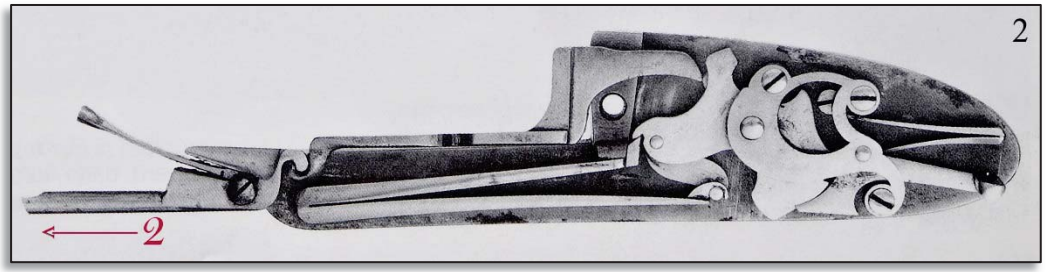
It was possible to have the automatic lock also with the safety sear (Fig. 4). The head of the lever (1), which goes down only if you pull the trigger, intercepts the tumbler (2) in case of accidental release of the hammer.

This gun (Fig. 1) dates back to the beginning of the 19th century, transformed into percussion cap in 1830 approx., has two different safety systems. One lever in the neck of the stock blocks the triggers until it is pushed and the locks have the safety sear (Fig. 2).
One hundred years later Zanotti made an excellent lock (Fig. 3) that shows evident analogies.

It is not an exaggeration to say that English gunmakers reasoned about everything and solved any problem and, once their season was up, nothing on the side by side was left to do.
About commendable and recent realizations, in Figure 4 we see a gun made by Scott with four lumps on the damascus barrels.





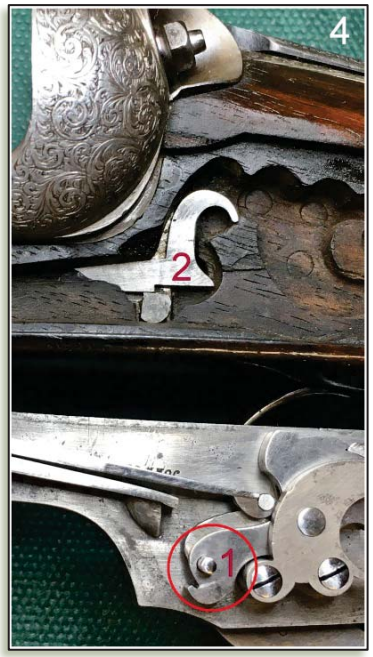


THE EJECTORS

There are rare examples of hammer guns with ejectors.

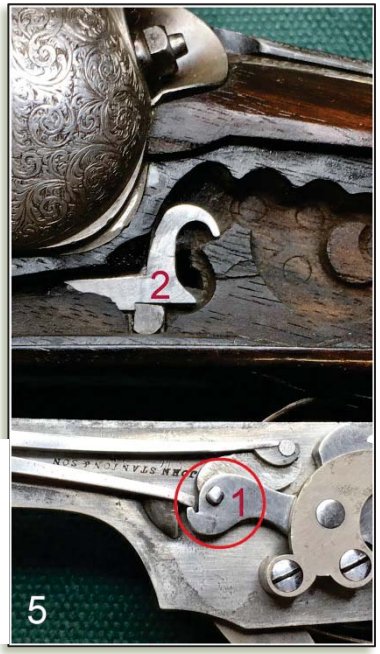
In the Purdey's lock (Fig. 1-2), when the hammer is cocked, the lever (1) remains inside the action. Uncocking the hammer, the rotation of the tumbler makes the lever protrude (2) and this position activates the ejector.

In this gun by Moore and Grey (Fig. 3) a pin (1) protruding from the tumbler moves a lever (2) that activates the ejector.



*(4). Hammer cocked. The lever (**2**) is completely inside the body.*

*(5). Hammer uncocked. The pin (**1**) has moved the lever out of the body thus the ejector can operate.*



Paolo Tebaldi. September 2018
English version by Piero Zanette