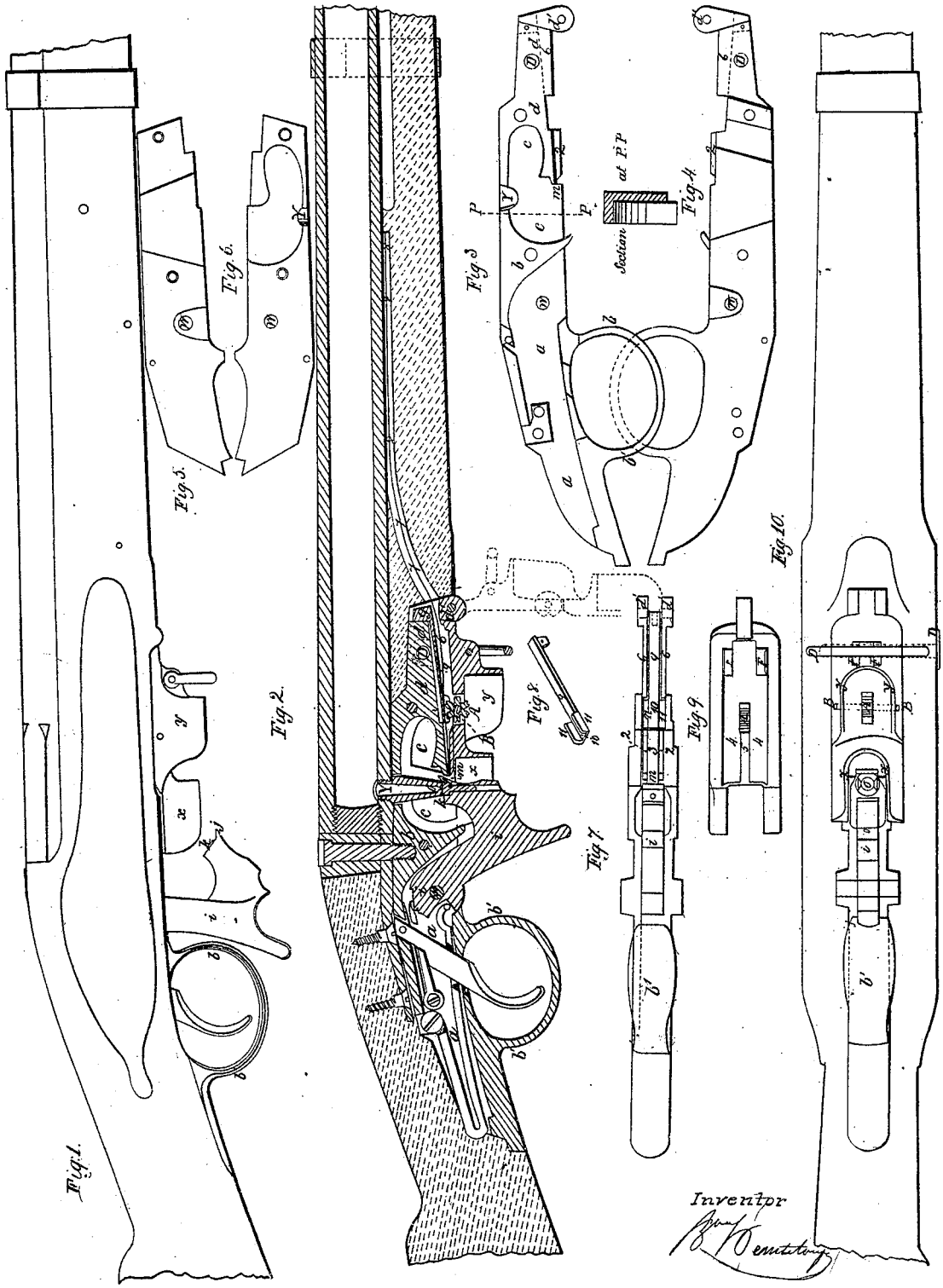
B. HEURTELOUPE.

Muzzle-Loading Fire-Arm.

No. 2,203. Patented July 29, 1841.



UNITED STATES PATENT OFFICE.

CH. LOUIS STANISLAS, BARON HEURTELOUP, OF ALBANY STREET, REGENT'S PARK, COUNTY OF MIDDLESEX, ENGLAND.

IMPROVEMENT IN PORTABLE FIRE-ARMS.

Specification forming part of Letters Patent No. **2,203**, dated July 29, 1841; antedated February 23, 1839.

To all whom it may concern:

Be it known that I, CHARLES LOUIS STANISLAS, BARON HEURTELOUP, a subject of the King of the French, and now residing at Albany street, Regent's Park, in the county of Middlesex, in the Kingdom of Great Britain, have invented or discovered certain new and useful Improvements in Portable Fire-Arms, (and for which Letters Patent were granted to me in England on the 23d day of February, 1839;) and I, the said CHARLES LOUIS STANISLAS, BARON HEURTELOUP, do hereby declare that my said invention and the manner in which the same is intended to act are fully described and set forth in and by the following statement thereof, reference being had to the drawings hereunto annexed, and to the figures and letters marked thereon—that is to say:

Several years have elapsed since I discovered that a tube of soft metal—as, for instance, of lead or pewter—when filled with detonating powder, formed an excellent priming for fire-arms. I also discovered that a small portion might be cut off or separated from the remainder of such tube by a sharp instrument without exploding the other part of the tube, and that by means of a cock provided with a cutting-blade projecting from that part of it which is meant to act as a hammer a small portion might be cut off or separated from a tube made as before mentioned, which portion, when struck by the flat part of the cock upon the nipple of the gun, would produce the ignition of the charge therein. The discovery of this phenomenon appeared to me to offer a ready solution of the problem how to explode fire-arms; and having studied with much care the mechanical means by which this description of priming could be acted upon in the most satisfactory way, I am now about to describe as clearly as possible a new method by which I propose to effect this object.

Before entering into details of this description, I will proceed to explain the several figures of the drawings annexed hereto.

Figure 1 is a side view of a portion of a musket with my mechanism applied thereto, to show its general form. The lock is at half-cock. Close to the lock and a little forward is the particular piece which I call the "compressor," and which is closed. Fig. 2 is a section of the same musket, which shows that the general mechanism is under the barrel. The continuous priming is shown by a red line and lies in a channel or gutter. The wheel which moves the continuous priming is also seen, and ultimately the extremity of the priming-tube, which, after being cut off from the whole tube by the blade of the cock, is struck upon the nipple by the hammer of the cock. Fig. 3 is an inside view of the large plate in which both the mechanism to move the cock and the priming-tube are inclosed. It shows also the cavity or chamber for the reception of the fire and smoke of the powder when the priming is exploded. The guard forms a part of this plate. Fig. 4 is an outside view of the large plate. Fig. 5 is an outside view of the small plate, which, when put together with the large one, forms a box. Fig. 6 is an inside view of the same plate. Fig. 7 shows the under part of the mechanism when the two plates are joined together and the compressor altogether taken off. Fig. 8 is a detached view of the priming-conducting spring, and which contributes most essentially to move forward or draw backward the priming-tube; Fig. 9, the inner side of the compressor; Fig. 10, a view of the under part of the gun, which shows (commencing at the butt-end) the guard, the cock at full-cock, the touch-hole of the nipple, the wheel fixed in the compressor, the compressor with its two shields, and also the hinge by which the compressor is joined to the large plate, as shown in Fig. 3.

In order to display the subject clearly and distinctly, I shall represent it in three different points of view: first, as to the pieces which inclose or surround the mechanism; secondly, as to the cock and its mode of action; thirdly, as to the pieces which keep the priming-tube in its proper direction, and which move it.

I. *Description of the pieces which inclose or surround the mechanism.*—The lock which I discovered to be best adapted to the system of continuous priming consists of two plates, Figs. 3, 4, 5, and 6, which, when put together, form a box, Fig. 7, containing as well the mechanism required to give action to the cock as a chamber or cavity to receive the smoke and fire of the powder, as also the groove or channel which contains the continuous priming, and the mechanism by which such priming is acted on. In order to insure greater strength

and solidity to the different parts which compose the mechanism of this lock, and to give it that compactness and harmony of action required to propel forward and to cut off with neatness and precision the exact and determinate length and quantity of the priming-tube which is meant to be subjected to the action of the cock, I have considered it most advisable to concentrate and combine into one piece all the component parts which are required to produce this complex action. This piece I have called the "large plate," Figs. 3 and 4, and which is composed of a strong and solid plate of metal, having on its inner surface, Fig. 3, two spaces or cavities sunk in or hollowed out, of the thickness of the metal, of the shape and form represented, respectively *a a* and *c c*. These spaces or cavities are completely separated from each other by a projection or eminence, *b b*, of the whole substance of the piece. The space or cavity *a a* is meant to inclose the cock and the mechanism which moves it. *c c* is the chamber or cavity wherein the priming is exploded, and which is meant to receive the fire and smoke occasioned by the powder. *d d* is a prolongation which is meant to support the mechanism for propelling the priming-tube. *d' d'* is a hinge to keep the compressor attached to the large plate, and *b' b'* is the guard, which also serves as a handle wherewith to detach the lock from the stock. The smaller plate, Figs. 5 and 6, is made with slight depressions and elevations on its inner and outer surface to correspond with and to fit into those contained on the larger plate.

II. *Description of the cock and its mode of action.*—The cock *i i*, Figs. 1 and 2, is provided with a blade, *j*, and a hammer, *k*. Its axis is fixed in the large plate at the point *w*, Figs. 2, 3, and 4. In its descent upon the nipple the blade *j'* cuts off such portion of the priming-tube as may be projected beyond the point *m*, which point I call the "spitter," and which, being formed from the solid substance of the plate itself, on which, also, the axis of the cock works, thereby insures invariable certainty and correctness in the performance of both the blade and hammer, which latter acts on the part so cut off from the priming-tube by striking it on the flat surface of the nipple *o*, Figs. 2 and 10, thus producing deflagration. The nipple *o*, Figs. 2 and 10, is screwed to the barrel, and protrudes into the cavity or chamber *c c* through a hole at Y, Figs. 2 and 3, which is formed when the two plates are joined together.

III. *Description of the pieces which keep the priming-tube in its proper direction and which move it.*

First, as to the pieces which keep the priming-tube in its proper direction. It is of the utmost importance that the continuous priming should always present its extremity at the place where the blade of the cock is meant to act upon it in its fall; hence the greatest care has been taken to keep it in a straight direction and prevent the possibility of its leaving the channel in which it is placed. In order to effect this with certainty and to introduce the priming-tube with facility, the channel for a great portion of its length is made wider than the continuous priming. This wider opening is obtained by means of a particular piece, which I call a "compressor," Figs. 2 and 9, which compressor, being connected with the large plate by a hinge, *d' d'*, Fig. 2, can be raised up and lowered again at pleasure, or, when occasion may require, that the interior part of the channel containing the priming should be exposed. (Fig. 2 shows this mechanism. The shape of the compressor is represented in lines when it is closed and dotted when open.) It is especially by means of the compressor that the continuous priming is retained in its place in the channel destined for its reception; but in order to prevent its deviating from its proper direction, the channel must always be covered or closed in on its upper surface, which it would not be if the action of the compressor were only upon the borders of the gutter or groove which contains the priming. To the borders of this groove, at the point near the spitter, I have given a particular form. In like manner I have given a particular shape to that part of the compressor which corresponds with the spitter.

I will now give a description of the aforesaid arrangement and disposition of parts as they appear in the annexed drawings.

Upon the borders of the gutter, Figs. 3 and 7, are two prolonged elevations, 2 2, which project from the lower surface of the large plate, and which, when the compressor is closed, enter into two grooves, 4 4, Fig. 9, on its upper surface. The compressor also shows between these two grooves 4 4, Fig. 9, a small but long projection, 5, on its inner surface, which, falling between the projections 2 2, Fig. 7, on the borders of the gutter 3, retains the continuous priming at the bottom of the gutter. Next to the hinge of the compressor the priming-tube is confined in its proper direction by the two sides of the channel 6, Figs. 2, 3, and 4. In the stock it is retained in a channel, 7 7, Fig. 2, and is ultimately received by the channel 8 8 8, made between the stock and the barrel, which channel is exposed when the barrel is separated from the stock. This last arrangement is very important, as it affords the facility for cleaning the channel when necessary.

Second, as to the pieces which move the continuous priming. In order to propel forward the priming-tube for the purpose of priming the gun, or to retract it when such priming is not required, it must be subjected to two sorts of movements—the one to draw it forward toward the nipple, the other to draw it back into its channel—and as the length of the priming-tube must necessarily be limited, this movement must be so regulated as to propel or retract it only so far as is requisite. It is also necessary that after having advanced or receded it should be held firmly in one position.

I will now describe the mechanism by which these three operations are effected.

In the bottom of the gutter formed in the extremity of the large plate, Fig. 2, I have placed a spring, 9 9, (drawn separately at Fig. 8.) This spring, which I call the "priming-conducting spring," has at its extremity 10, Fig. 7, two small prominences or projecting lips. (Seen at 11 11, Figs. 7 and 8.) These two prominences give to this part of the spring the shape of a gutter, and form a continuation of the channel intended to contain the priming-tube. In an aperture made in the compressor, and corresponding with the groove of the priming-conducting spring, I have placed a small toothed wheel, A, Figs. 2, 9, and 10, which turns upon a pivot or axis, B B, Fig. 10. This wheel has six cogs or divisions, as represented in Fig. 2, each of which is notched like teeth. When two of these cogs rest in the gutter of the priming-conducting spring and press upon it, the two opposite cogs will project outside of the compressor. It follows that by turning the wheel with the finger, by means of the cogs projecting outside of the compressor, the continuous priming, which is placed between the two inside divisions of the wheel and the gutter of the priming-conducting spring, will at the same time be moved as far as the distance between each of the divisions of the wheel. Now, as the wheel may be moved either forward or backward, it is evident that the priming-tube, upon which it presses, will also be pushed forward or drawn back. Then, as the six divisions are equal, it follows that every cog moves the priming-tube forward or backward equally and in a determined length.

Lastly, the natural tendency of the wheel being to rest upon two of its teeth, upon which the priming-conducting spring presses and with which it corresponds, it follows that, having moved the priming, it will stop by itself and thus keep the priming-tube fixed and steady. The compressor is kept closed by means of a pin, D D, Fig. 10, which goes through the stock, the two ears F F of the compressor and the prolongation of the large plate. The compressor (see Figs. 2 and 10) has also two shields or covers—one, *x x*, for preserving the extremity of the priming and the nipple from the rain when the gun is piled, the other, *y y*, to protect the aperture containing the wheel from the same inconvenience when the gun is in that position.

Having thus described the nature of my said improvements and the manner of carrying the same into effect, I would have it understood that I claim as my invention and desire to secure by Letters Patent—

1. The making of the large plate (shown in Figs. 3 and 4 in the drawings annexed) so as to adapt it to the reception of the mechanism which moves the continuous priming; also, making therein the chamber to receive the smoke or deposit caused by the ignited powder, in order that it shall not injure the different parts of the lock, which large plate also presents the peculiar characteristics of containing within itself the hole to receive the axis of the cock, the receptacle or channel for the priming, the chamber to receive the smoke and the spitter, all within the same solid piece of metal, so that the distances between the various parts of the machinery herein described being always fixed and invariable, the action of the parts shall not admit of any variation, all as herein described.

2. The making of a covered channel for confining the continuous priming between the barrel and the stock, in the stock before the lock, from which it can be drawn toward the touch-hole, and in combination therewith the priming-conducting spring, which presses the priming toward the wheel, the wheel for moving it forward or backward and fixing it, all as hereinbefore described.

3. The compressor with two shields, which is fastened to the lock in the mode and for the purpose specified.

BON. HEURTELOUP.

Witnesses:
G. M. HARRISON,
THOS. BROWN,
Both of No. 2 George Yard, Lombard Street, London.