



A.D. 1871, *11th August.* N° 2124.

S P E C I F I C A T I O N

OF

CHARLES GREVILLE HARSTON.

BREECH-LOADING FIRE-ARMS.

LONDON:

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Breech-loading Fire-arms.

LETTERS PATENT to Charles Greville Harston, of Birmingham, in the County of Warwick, Gentleman, for the Invention of "**IMPROVEMENTS IN BREECH-LOADING FIRE-ARMS.**"

Sealed the 31st October 1871, and dated the 11th August 1871.

PROVISIONAL SPECIFICATION left by the said Charles Greville Harston at the Office of the Commissioners of Patents, with his Petition, on the 11th August 1871.

I, **CHARLES GREVILLE HARSTON**, of Birmingham, in the County of Warwick, Gentleman, do hereby declare the nature of the said Invention for "**IMPROVEMENTS IN BREECH-LOADING FIRE-ARMS,**" to be as follows, that is to say:—

This Invention refers chiefly to improvements in the "actions" of breech-loaders upon the "falling block" principle, and upon the "Snider" principle, though applicable with certain modifications to "actions" of other descriptions; and it consists in such a formation and arrangement of the parts that the striker or needle works through the block in the direct line of the longitudinal axis of the barrel, being axially coincident

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therewith; the hammer is concealed, and acts directly upon the rear end of the needle.

In the falling block action the upper inside edges of the shoe or block frame are under cut so that these edges slightly overlap the corresponding meeting edges of the block when locked for firing, and thus prevent escape of gas and the ingress of sand, dirt, or wet. The lever for working the action is below, and may form a portion of the trigger guard. It is furnished with a wedge piece, fitting when the breech is open into a recess formed on the breech block, and bearing against a lug on the under side of the block to force upwards and close and keep the breech block when up rigidly in position. Any convenient form of snap or catch may be used to secure the lever, upon the axial surface of which lever a stop or bent is cut, which bears against a shoulder on the hammer in opening the breech, so that the motion of the lever in opening the breech cocks the hammer, takes back the needle, and actuates the extractor, which is worked by the end of the breech block impinging upon an arm which projects the extractor a sufficient length to throw out the empty case.

In my improved action upon the Snider principle the lever is made to throw open the block, cock the hammer, and throw out the cartridge case by one operation, the traverse of the needle and hammer being in the same lines as in the action before described, that is to say, the needle has its axis horizontally coincident with the longitudinal axis of the barrel, and is struck at its rear end directly by the hammer. The actuating lever has a bent or projection upon it for cocking the hammer in the act of opening the breech. The pin upon which the hammer is hung has a lever arm attached to it, which arm works with the actuating lever in a slide which has a to-and-fro motion, and upon which slide is fixed a cam roller working in a cam groove cut upon the hinged part of the breech block, so that as the slide is caused to move rearwards the block is raised out of its seating and thrown to the side upon the pin upon which it works. A helical spring upon this pin retires the block, and with it the extractor for reloading. To assist in clearly ejecting the cartridge case I form on the bottom of the inside of the shoe a curve or incline on either side, the block being formed to fit those curves.

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SPECIFICATION in pursuance of the conditions of the Letters Patent, filed by the said Charles Greville Harston in the Great Seal Patent Office on the 10th February 1872.

TO ALL TO WHOM THESE PRESENTS SHALL COME, I, CHARLES GREVILLE HARSTON, of Birmingham, in the County of Warwick, Gentleman, send greeting.

WHEREAS Her most Excellent Majesty Queen Victoria, by Her Letters Patent, bearing date the Eleventh day of August, in the year of our Lord One thousand eight hundred and seventy-one, in the thirty-fifth year of Her reign, did, for Herself, Her heirs and successors, give and grant unto me, the said Charles Greville Harston, Her special license that I, the said Charles Greville Harston, my executors, administrators, and assigns, or such others as I, the said Charles Greville Harston, my executors, administrators, and assigns, should at any time agree with, and no others, from time to time and at all times thereafter during the term therein expressed, should and lawfully might make, use, exercise, and vend, within the United Kingdom of Great Britain and Ireland, the Channel Islands, and Isle of Man, an Invention for "**IMPROVEMENTS IN BREECH-LOADING FIRE-ARMS,**" upon the condition (amongst others) that I, the said Charles Greville Harston, my executors or administrators, by an instrument in writing under my, or their, or one of their hands and seals, should particularly describe and ascertain the nature of the said Invention, and in what manner the same was to be performed, and cause the same to be filed in the Great Seal Patent Office within six calendar months next and immediately after the date of the said Letters Patent.

NOW KNOW YE, that I, the said Charles Greville Harston, do hereby declare the nature of my said Invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement, that is to say:—

This Invention refers, firstly, to certain improvements in breech-loaders constructed upon what is known as the falling block principle by which the breech is exposed, such improvements consisting in providing a horizontal striker or needle working in a line axially coincident with the central line of the barrel when in a position for firing, and acted upon directly by a concealed hammer following the striker; any ordinary trigger arrangement may be used.

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Secondly. The Invention refers to breech-loaders upon the side rising block principle or Snider action, in which the breech block is raised from the side upon a hinge. The improvements herein also consist in providing a horizontal striker or needle working in the line above described, and also directly acted upon by a concealed hammer, 5 with an improved arrangement and construction of the opening and actuating parts of the breech.

I will now proceed to describe the first part of my Invention more fully in detail by aid of the accompanying Drawings, reference being had to the letters and figures marked thereon. 10

Figure 1, Sheet 1, is an elevation, and Figure 2 a section of those portions of the action of a breech loader to which my Invention refers shewing the breech block (*a*) in position for firing; Figure 3 is a similar section of the parts without the stock, and shewing the breech block (*a*) down ready for loading. Figure 4 is a cross section on the line A, B. 15 Figure 2, and Figure 5 represents the parts in plan as seen from above. (*a*¹) is the shoe or framework of the breech, and it may be undercut or rebated so that the breech block (*a*) when secured in position may have a tight joint preventing the escape of gas or ingress of sand, dirt, or wet. In practice I prefer to employ a sliding plate (*a*²) for covering over 20 the pan and upper surface of the breech block (*a*) when required; this covering plate may be hinged upon the side or end of the frame of the breech block if desired. (*b*) is the horizontal striker or needle working through the block (*a*) in a line axially coincident with the central line of the barrel (*c*) when the parts are in position for firing and 25 kept in position by a spring (*b*¹) acting upon the one side of a collar (*b*²) formed on the striker (*b*) and by a screw pin (*b*³) on the other side of the striker (*b*). (*d*) is the concealed hammer working upon a pin (*e*) and striking the needle (*b*) direct in a radial line from the pin or centre (*e*); (*f*) is the actuating lever provided with a wedge piece (*g*) fitting into 30 a recess formed in the breech block (*a*) and when the breech is down, as in Figure 3 bearing against a lug or projection (*h*) to force upwards and close and keep rigidly in position the breech block (*a*) when up, and thus forming one point of resistance to the power of the discharge.

I use any convenient form of snap or catch such as (*f*¹), Figure 2, to 35 secure the end of the lever (*f*) in fastening the breech, and as shewn in the Drawings; the lever (*f*) also acts as the trigger guard. Upon the axial surface of the lever (*f*) is cut a stop (*i*) to bear against the shoulder

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(*k*) of the hammer, as seen in Figure 3, so that the movement of the lever (*f*) in opening the breech will at the same time take back the hammer into position cocked for firing; (*l*) is the extractor worked by the end of the breech block (*a*) impinging upon the arm (*l'*) and throwing out the extractor a suitable distance; (*m*) is the trigger; (*m'*) is the trigger sear; and (*n*) the mainspring.

There are thus by this arrangement three points of resistance to the power of discharge, firstly, the hinge upon which the block is worked; secondly, the impact of the wedge piece (*g*) upon the part (*h*) as already pointed out; and, thirdly, that of the hammer (*d*) upon the striker or needle (*b*).

Sheet 2 illustrates the second part of my Invention. Figure 6 is a section of the parts shewing the hinged side breech block (*a*) raised ready for charging; Figure 7 is a cross section on the line A, B, of Figure 6; and Figure 8 is a side elevation of the parts with the breech closed. (*b*) is the horizontal striker or needle arranged as in the action already described to work in the breech block (*a*) and in a line axially coincident with the central line of the barrel (*c*) when in position for firing; (*d*) is the hammer striking directly upon the end of the needle (*b*) in a radial line from the centre or pin (*d'*); (*e*) is the actuating lever indicated in dotted lines only in Figure 6; (*e'*) being a pin or projection attached to the actuating lever for cocking the hammer (*d*) in opening the breech; (*f*), Figure 8, is a lever arm attached to the pin (*d'*) and working with the actuating lever (*e*) in the slide (*g*); the slide (*g*) has a to-and-fro motion, and upon it is secured a cam roller (*h*) working in a cam groove (*i*) cut upon the hinged part (*a'*) of the breech block (*a*) so that as the slide (*g*) is caused to move rearwards the block will be raised from out of its seating in the shoe and thrown back, the reverse action of the parts closing the breech; (*k*) is a pin upon which the breech block (*a*) works; (*l*) is a helical spring for the purpose of retiring the block and extractor (*m*) for reloading after the exploded cartridge case has been jerked or forced out, and to assist in forcing out or freeing the exploded cartridge case I form in the shoe a curve or incline (*n*).

Having thus described the object and nature of my said Invention, and the manner of carrying the same into effect, I claim without confining myself to these exact details,—

Firstly. The improvements in breech-loading fire-arms by the arrangement and construction of a striker or needle working in a line axially

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coincident with the central line of the barrel when in position for firing, and operated upon directly by a concealed hammer as herein described.

Secondly. I claim the cover or slide (*a*²) Sheet 1, or rebating the inside of the breech block (*a*) for the purpose of excluding dust and wet, 5 as herein described.

Thirdly. I claim the mode of opening the breech block of arms upon the Snider principle as described and shewn in Sheet 2 by means of the lever arm (*f*), slide (*g*), friction roller (*h*) and cam groove (*i*) actuated by the lever (*e*). 10

Fourthly. I claim the curve or incline (*n*) formed in the shoe, Figure 6 Sheet 2, for the purpose of assisting the ejection of the cartridge case.

And generally I claim the arrangement and combination of the several parts of the actions of breech-loading fire-arms substantially as herein more fully set forth and specified. 15

In witness whereof, I, the said Charles Greville Harston, have hereunto set my hand and seal, this Ninth day of February, in the year of our Lord One thousand eight hundred and seventy-two.

CHARLES GREVILLE HARSTON. (L.S.) 20

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