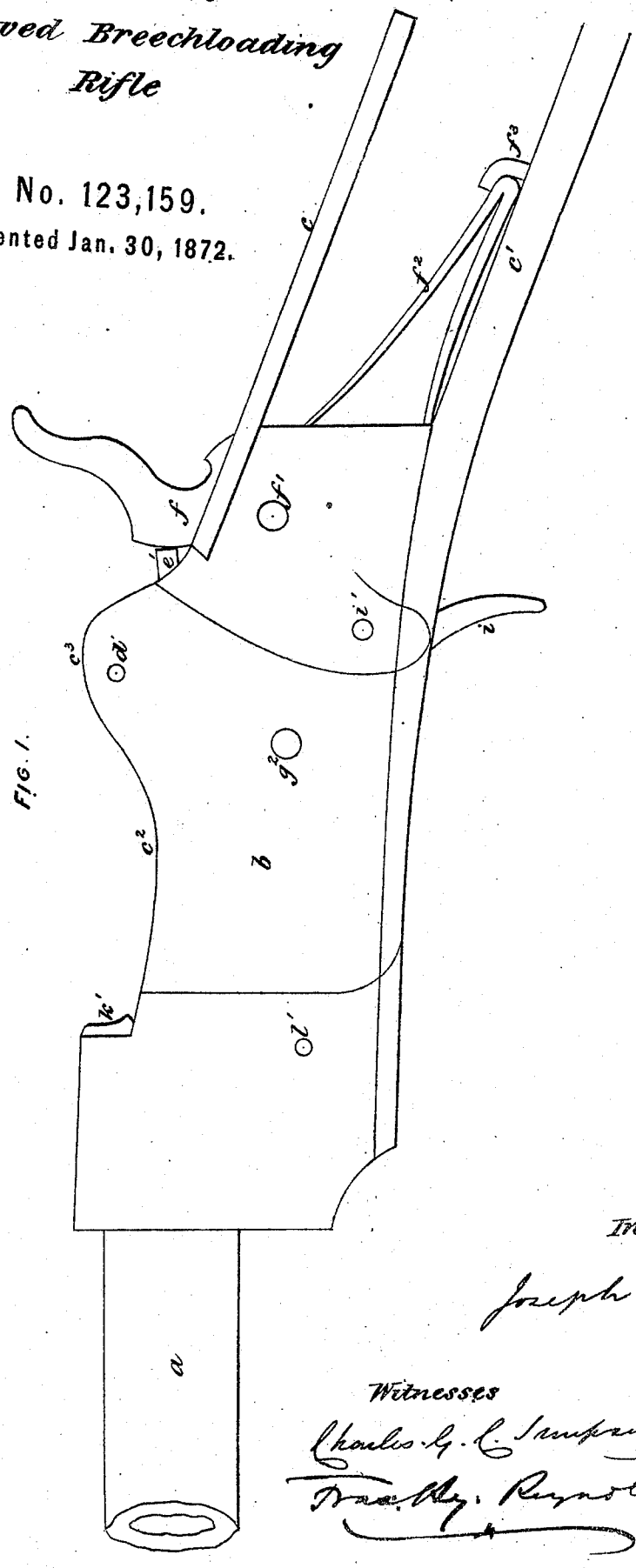
4 Sheets--Sheet 1.

J. DUVAL'S
Improved Breechloading Rifle

No. 123,159.

Patented Jan. 30, 1872.



Inventor

Joseph Duval

Witnesses

Charles G. C. Thompson

Wm. Thos. Reynolds

4 Sheets--Sheet 2.

J. DUVAL'S

Improved Breech loading Rifle

No. 123,159. Patented Jan. 30, 1872.

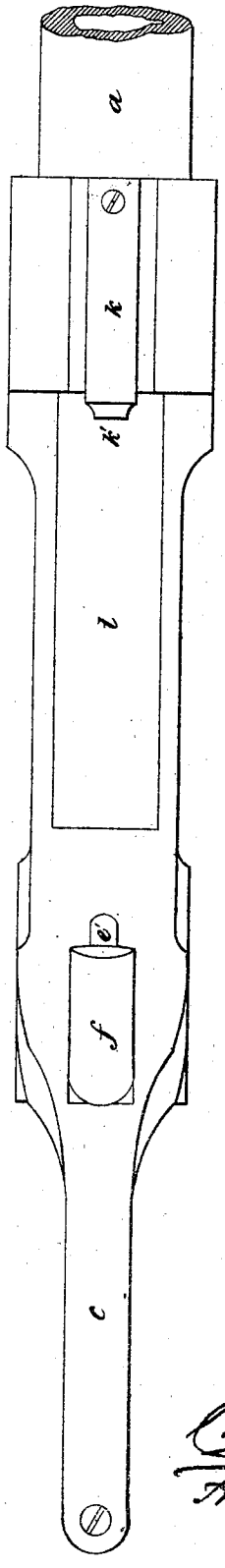


FIG. 2

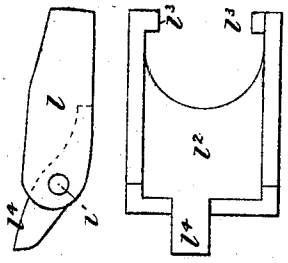


FIG. 6 FIG. 7

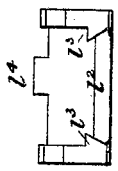


FIG. 5

Inventor

Joseph Duval

Witnesses

Charles G. Simpson

Frank G. Reynolds

4 Sheets--Sheet 3.

J. DUVAL'S
Improved Breech-loading Rifle

No. 123,159.

Patented Jan. 30, 1872.

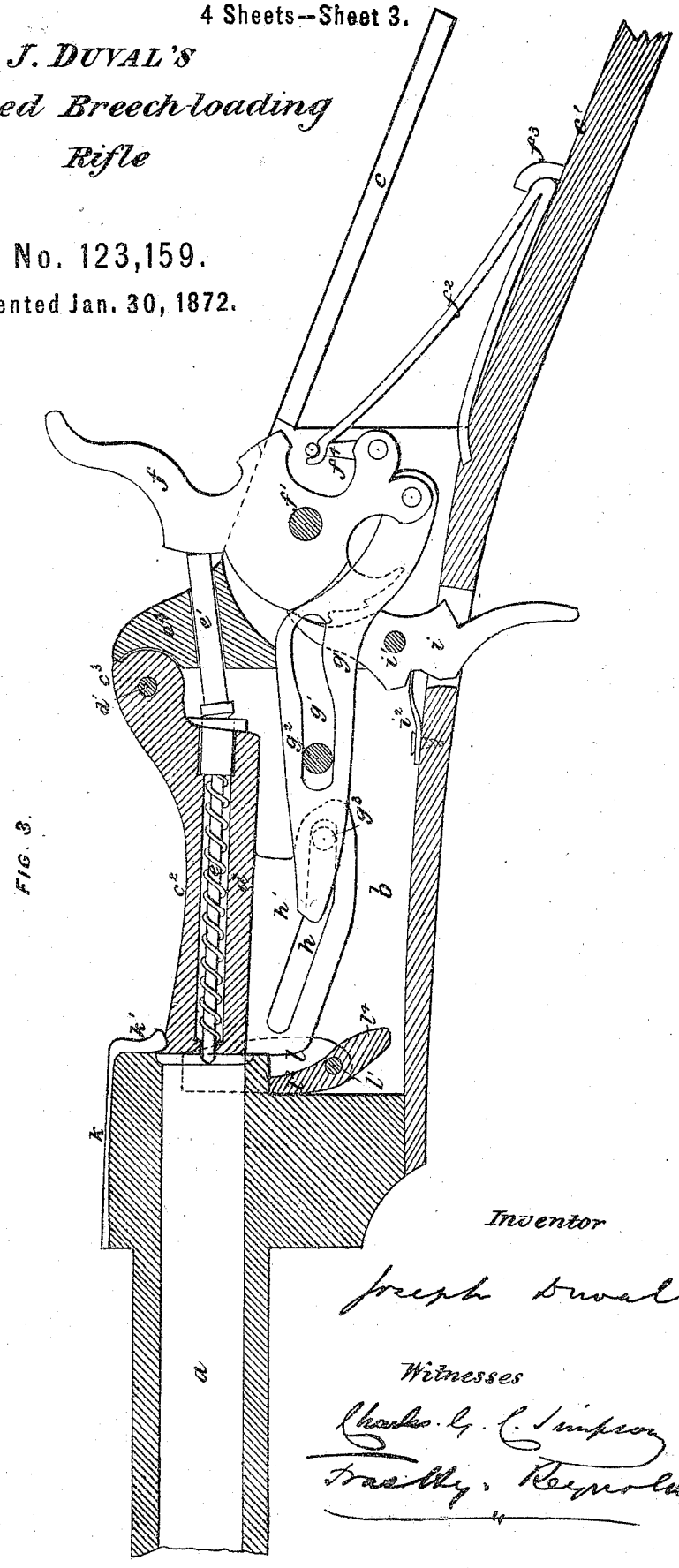


FIG. 3.

Inventor

Joseph Duval

Witnesses

Charles G. C. Simpson

Frankly. Reynolds

4 Sheets--Sheet 4.

J. DUVAL'S
Improved Breech loading Rifle

No. 123,159.

Patented Jan. 30, 1872.

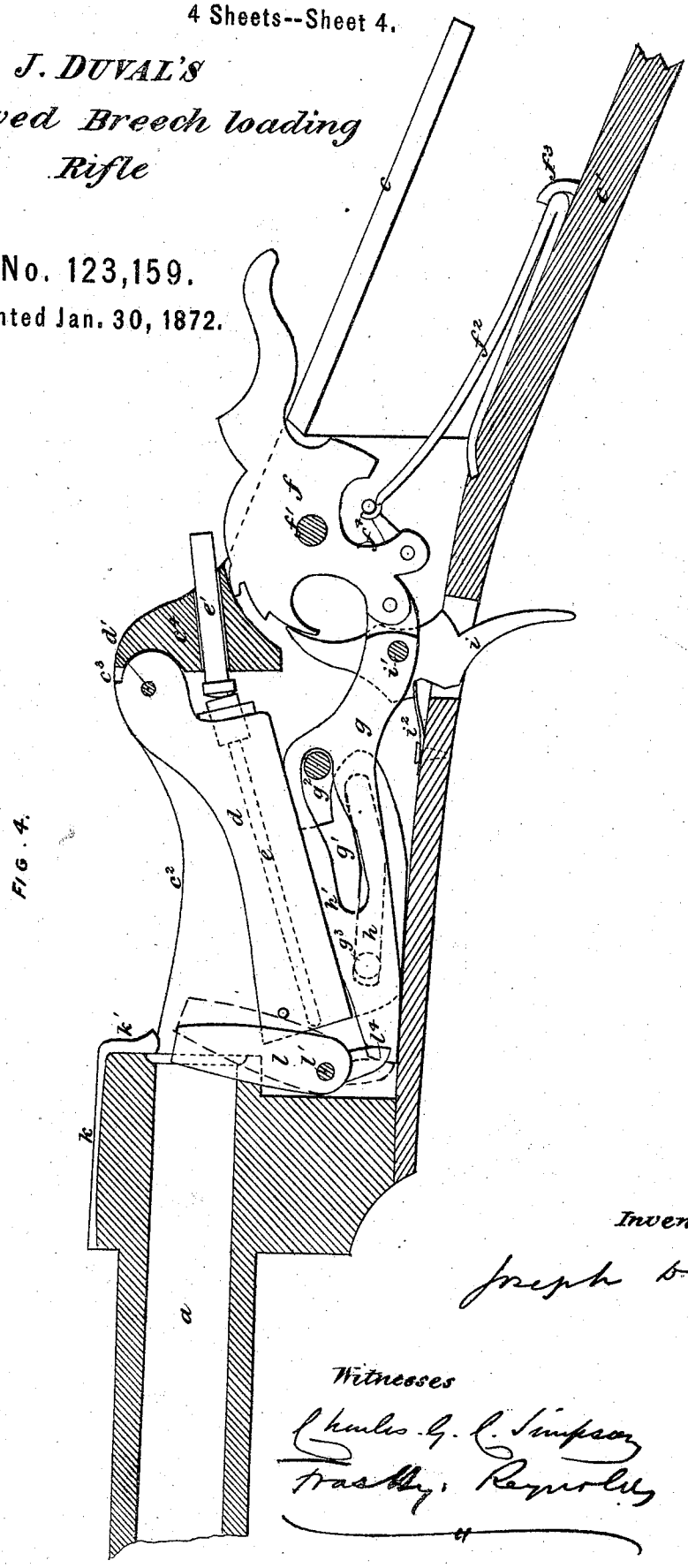


FIG. 4.

Inventor

Joseph Duval

Witnesses

Charles G. L. Simpson

Frasby & Reynolds

UNITED STATES PATENT OFFICE.

JOSEPH DUVAL, OF LAPRAIRIE, CANADA.

IMPROVEMENT IN BREECH-LOADING FIRE-ARMS.

Specification forming part of Letters Patent No. 123,159, dated January 30, 1872.

SPECIFICATION.

To all whom it may concern:

Be it known that I, JOSEPH DUVAL, of the town of Laprairie, in the county of Laprairie, in the Province of Quebec, Canada, mechanic, have invented new and useful "Improvements on Breech-Loading Rifles;" and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawing, where—

Figure 1 represents a side elevation of the breech of a rifle. Fig. 2 represents a plan of the breech of a rifle. Fig. 3 represents a sectional elevation of the breech of a rifle with parts in the position assumed when discharged. Fig. 4 represents a sectional elevation of the breech of a rifle with the parts in the position assumed at extracting exploded cartridge. Fig. 5 represents a plan of extractor. Fig. 6 represents a side view of extractor. Fig. 7 represents a front view of extractor.

This invention has reference to improvements on breech-loading rifles for simplifying their parts, rendering them more durable as regards wear, and capable of being loaded and discharged with great ease and rapidity.

I would here remark that I have already obtained Letters Patent of the United States No. 112,565, granted on the 14th day of March, 1871, for a similar invention. The present application consists in further improvements on the then patented invention.

In the drawing hereunto annexed similar letters of reference indicate like parts.

Letter *a* is the rifle or other barrel, of ordinary construction, and may be made in one with the box *b*, or screwed into it in the ordinary or any suitable manner. The box *b* at its other extremity is provided with the ordinary extensions *c* c^1 for attaching the stock. The box *b* consists of two flat sides, of the form indicated in the drawing, having a space between them in which the trigger and other works are placed. These are constructed in the following manner: The top edges of the sides of the box *b* are curved in the form shown at c^2, forming a projection, c^3. At this point the sides meet across, forming a resistance, c^4, for the breech-block *d*, attached by its end at this point by the pivot d'. The top side of the breech-block *d* is made to conform to the curved configuration of the sides at c^2, and of sufficient length that when it is raised to cover the end of the barrel *a* it will do so closely, but without bearing or friction, being then in the position shown in Fig. 3. Through the body of the breech-block *d* a hole is bored for holding the needle *e*, constructed in the ordinary manner for this class of arm, and provided, as shown, with the ordinary spring. All the above agrees with my previously-patented invention. In this case the needle *e* is actuated by a pin, e', sliding through a hole bored in the resistance c^4, and so situated that its inner end will be in the proper position to act on the end of the needle *e* and its outer end to be struck by the hammer. As the pin e' and needle *e* are not in the same line, the inner end of the pin e' is, as shown, rounded, in order to insure the certainty of action. As in my previous invention, the hammer *f*, secured to the box *b* by a pivot, f^1, is actuated by a spring, f^2, held in position by a projection, f^3; in this case, however, curved at the inner end to receive the arm of a link, f^4, attached to one fork of the lower end of the hammer, to the other fork being secured the tumbler *g*, of the peculiar configuration shown, slotted as at g^1 to allow the lever to work upon the pin g^2, and provided at its further end with a pin, g^3, which works in a slot, *h*, formed in a flange, h', carried down from the under side of the breech-block *d*. The trigger *i* is, as before, of the ordinary form, secured on a pivot-pin, i^1, and pressed by a spring, i^2, against the front side of the hammer, with the notches on which it intermeshes at the different positions of "half-cock" and "full-cock." At *k* is situated a spring, let in flush to the top of the breech and turned down as at k', so as to fit into a notch in the breech-block *d*, assisting to hold it in place during the explosion of the cartridge, and helping to throw out the shell when it is acted upon by the extractor *b*. The extractor, which differs materially from that described in my previous invention, is of the form shown in Figs. 5, 6, and 7, and works on a pivot, l'. The back l^2 is cut away, as shown in Fig. 6, to fit the end of the barrel, and the sides provided with projections l^3 to catch the rim of the cartridge. From the back l^2 pro-

jects downward a tongue, l^4, set at any convenient angle with the rest of the extractor, to be acted upon by the end of the tumbler g.

I will now proceed to describe the operation of my invention. Presuming that the rifle has first been discharged, in which case the parts would be in the position shown in Fig. 3, the manner in which the exploded shell is thrown out and the breech thrown open for loading, is as follows: The cock being drawn back to the position shown in Fig. 4, the tumbler g is, by the action of the hammer h, pushed forward, the slot g^1 sliding upon the pin g^2, and the pin g^3, working in the slot h, causes the breech-block d to fall to the position shown in Fig. 4. The end of the tumbler g, in its forward movement, strikes sharply at the end of its stroke the tongue l^4 of the extractor l. By this the upper portion of the extractor is thrown backward, and the projections l^3, catching the rim of the shell, throws out the exploded cartridge, the curved line of the top of the breech-block d and the projection k' at the end of the spring k assisting materially in its removal. The rifle is now ready for the insertion of a new cartridge, which being done, by pulling the trigger the hammer is released, and, by the action of the spring f^2, springs back and strikes the pin e', which drives the needle e against the center of the cartridge, discharging the piece, all the parts resuming the several positions shown in Fig. 3.

Some of the advantages of the construction above described are as follows: The combination of the tumbler and that of the flange of the breech-block is more desirable than that shown in my former patents, because the parts possess more strength and are better adapted to bear the strain to which they are subjected, and, moreover, the operation of the parts is much improved. By means of the improved construction the breech-block is forced to its place by the first part of the backward movement of the tumbler, so that the breech is wholly closed some time previous to the striking of the firing-bolt by the hammer. It is thus rendered absolutely certain that no explosion can take place until the breech is entirely closed. The construction of the tumbler is such, also, that the extractor receives a sharp blow at the end of the movement of the former, by which means the cartridge is ejected with considerable force.

Having thus described the construction and operation of my invention, to which I have given the name of "Duval's Improved Breech-Loading Rifle," what I claim as my invention, and wish secured by Letters Patent, is the new and useful "improvements on breech-loading rifles," as follows:

1. The combination of the tumbler g, constructed as described, with the breech-block d having the flange h', constructed as described; the former, when operated by the hammer, being adapted to communicate motion to the latter only during the first part of its backward movement, and vice versa, substantially as described.

2. The combination of the hammer, the tumbler g, and the extractor l, the tumbler, when operated by the hammer, being adapted to actuate the extractor at the close of its movement, substantially as described.

Montreal, 12th day of April, A. D. 1871.

JOSEPH DUVAL.

Witnesses:

CHARLES G. C. SIMPSON,

FRAS. HY. REYNOLD.