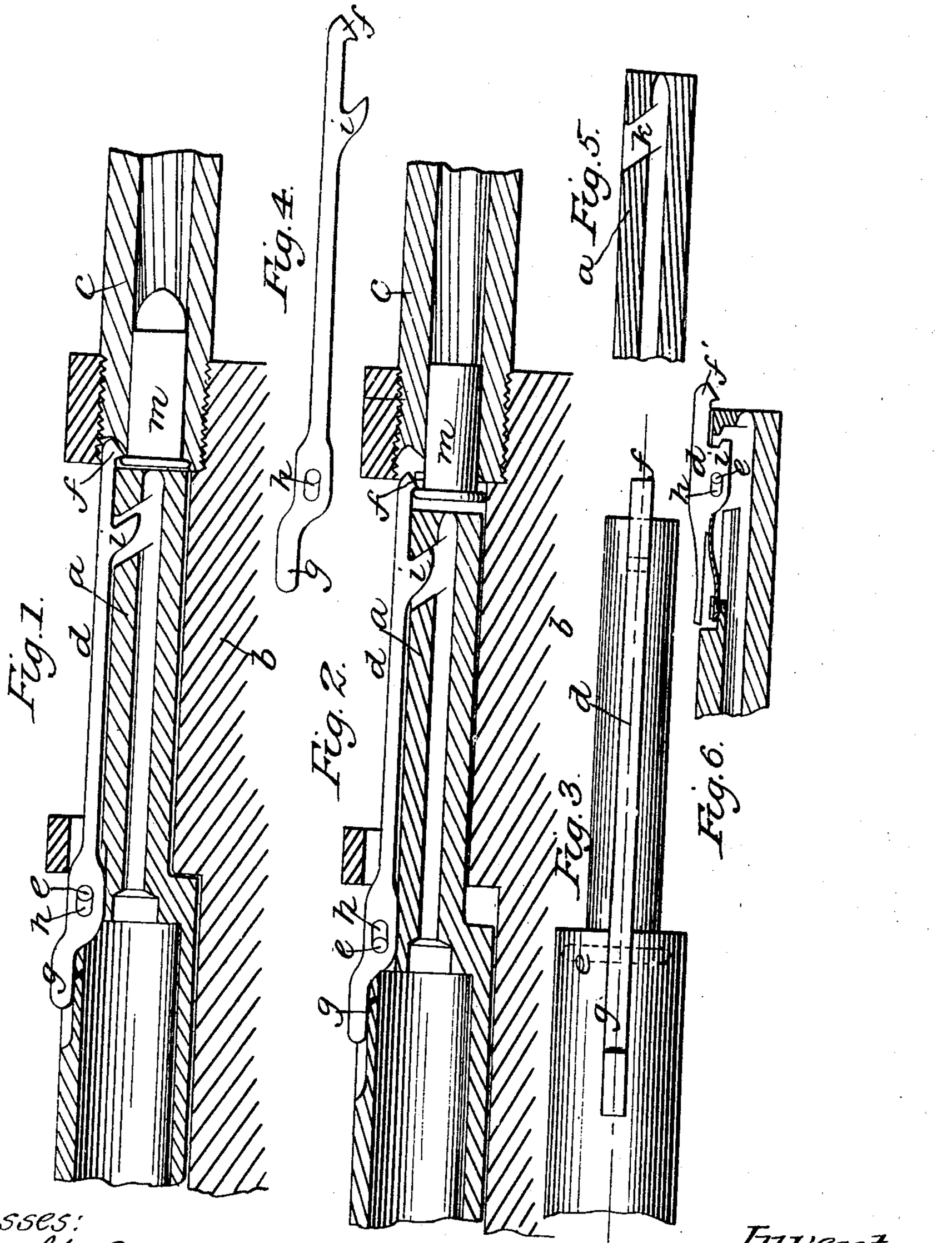
C. B. RICHARDS.

Breech Loading Fire Arm.

No. 81,290.

Patented Aug. 18, 1868.



Witnesses:

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C. B. RICHARDS, OF HARTFORD, CONNECTICUT.

IMPROVEMENT IN BREECH-LOADING FIRE-ARMS.

Specification forming part of Letters Patent No. **81,290**, dated August 18, 1868.

To all whom it may concern:

Be it known that I, C. B. RICHARDS, of Hartford, in the county of Hartford and State of Connecticut, have invented a new and useful Improvement in Cartridge-Shell Extractors for Breech-Loading Fire-Arms; and I do hereby declare the following, when taken in connection with the accompanying drawings, and the letters of reference marked thereon, to be a full, clear, and exact description of the same.

My invention relates particularly to the kind of hooked spring-extractor which is used on the breech-plugs of the repeating battery-gun patented in the United States by R. J. Gatling; but it is applicable to other breech-loading guns, particularly to such as have a breech plug or closer which may be moved back and forth in line with the axis of the barrels, as examples of which I may mention the Henry magazine-gun and various needle-guns.

It is found, in the use of hooked extractors, which engage with the cartridge-shells by snapping over their flanges, that when the shell sticks fast in the chamber of the barrel the hook is liable, in the act of retraction, to become disengaged from the shell by sliding up over the rounded edge of the flange, which the yielding of the spring by which the extractor is controlled permits.

It is the object of my invention to remedy this serious objection to the use of spring-extractors; and to this end my said invention consists in so arranging and shaping the spring-extractor and the breech-plug that their relative longitudinal movement in the act of retraction, substantially as hereinafter explained, shall cause the free end of the extractor to interlock with the breech-plug, and be thereby prevented from releasing its hold upon the flange of a cartridge-shell which resists extraction from the chamber of the barrel, as hereinafter set forth.

To enable others skilled in the art to make and use my invention, I will proceed to describe its practical application, referring to the accompanying drawing, in the several figures of which the same part is indicated by similar letters of reference.

Figure 1 shows a central longitudinal section of the front part of a breech block or plug (called the lock) of a "Gatling gun," also a part of the channel-block in which it slides, and of the rear end of the barrel, the cartridge being shown as forced home into the barrel by the breech-block. Fig. 2 is a similar section of the same parts, but shows the breech-plug partly drawn back, and the extractor in the act of withdrawing a shell from the chamber. Fig. 3 is a top view of the front part of the breech-plug, with the extractor *in situ*. Fig. 4 is a side elevation of the extractor, and Fig. 5 a section of the front end of the plug. Fig. 6 shows a form of extractor slightly different from the foregoing, but not requiring a separate description with my invention applied thereto.

a is the breech-plug, which slides back and forth in the channel-block *b* in line with the axis of the barrel *c*. *d* is the extractor, which is secured, at its rear end, to the breech-plug by a pin, *e*. The front end of the extractor *d* is shaped as a hook, *f*, of proper shape to hook over the flange of a cartridge-shell; but the greater part of its length is made thin, so as to act as a spring, to permit the hook *f* to snap over the cartridge-flange. The rear flat end *g* of the extractor *d*, behind the pin *e*, rests on a flat place made on the plug. These parts, so far as immediately above described, do not differ essentially in form and arrangement from those used in the Gatling gun.

I will now proceed to describe an application of my invention to this kind of extractor.

The hole *k* in the extractor *d*, through which the pin *e* passes, is elongated lengthwise of the extractor, so as to permit the latter to be moved a short distance longitudinally relatively to the breech-plug *a*. Near the extreme front end of the extractor, and on its under edge, a hook-shaped projection, *i*, is formed, which enters a hole, *k*, in the top of the breech-plug, and the metal of the plug in front of the hole *k* is so shaped as to permit the hook *i* to lock under the said metal, when the extractor is pulled forward relatively to the plug; but when the extractor is pushed back, as in Fig. 1, then its hooked end *f* is free to rise and to snap over the flange of a cartridge which is being thrust into the barrel by the breech-plug.

I prefer so to proportion the parts that even when the extractor is pushed back, relatively to the plug, as far as possible, the hook *f* can

rise only high enough to snap over the flange of the cartridge *m*, being restrained from rising higher by the hook *i*. This will lessen the danger of injury to the extractor by the bursting of a cartridge-head.

The operation of my invention, as above described, is as follows: When the breech-plug *a* moves toward the barrel, in the act of forcing the cartridge *m* into its chamber, the hooked end *f* of the extractor, being free to rise a short distance, except as controlled by the elasticity of its flexible part, will snap over the flange of the cartridge, and the hook *f* will lie in front of the said flange. (See Fig. 1.) When the breech-plug *a* is moved back to open the breech of the barrel, the hook *f* remains in front of the flange of the shell, and any resistance to retraction, caused by the shell sticking fast in its chamber, will cause the extractor to remain stationary until the breech-plug *a* has been moved back far enough to engage with the hook *i*, in which condition (see Fig. 2) the front end of the extractor will be locked down to the breech-plug, so as to counteract any tendency of the hook *f* to rise over the rounded edge of the cartridge-shell flange in the act of retraction, whereby the certain extraction of the cartridge or of the empty shell is insured.

A modification of my invention can be made, dispensing with the hook *i*, and substituting therefor a projection on the upper edge of the front end of the extractor, which projection could, to lock down that end, be drawn, by the act of retraction, under a hook formed on the breech-block, and reaching over the extractor.

Having thus represented and described more than one application of my invention, I do not deem it necessary to detail its many modifications.

What I claim as my invention, and desire to secure by Letters Patent, is—

So shaping and connecting the breech-plug *a* and a yielding hooked extractor that the free end of the extractor will be locked to the breech-plug by the relative movement of the two in the act of retraction, substantially as and for the purpose hereinbefore set forth.

In testimony whereof I have hereunto set my hand this 27th day of February, 1868.

C. B. RICHARDS.

Witnesses:

JOHN E. EARLE,

A. J. TIBBITS.