(No Model.)

2 Sheets—Sheet 1.

W. H. DAVENPORT.

EJECTOR FOR BREAKDOWN GUNS.

No. 514,674. Patented Feb. 13, 1894.

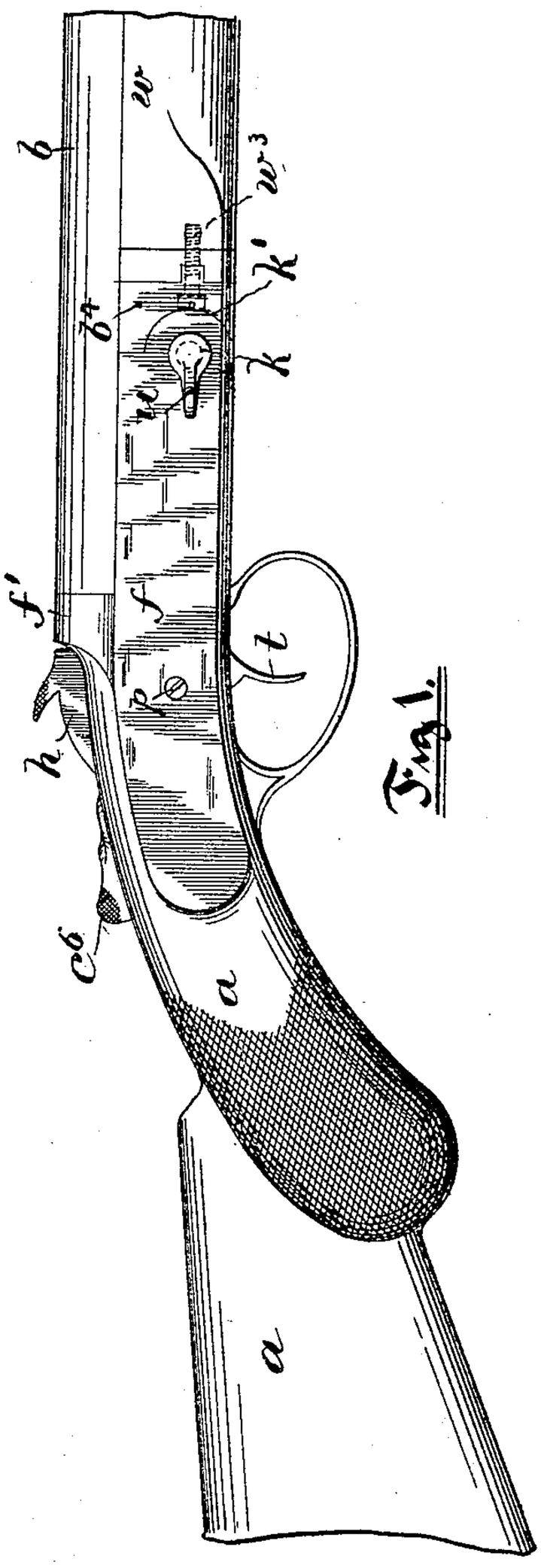

Fig. 1.

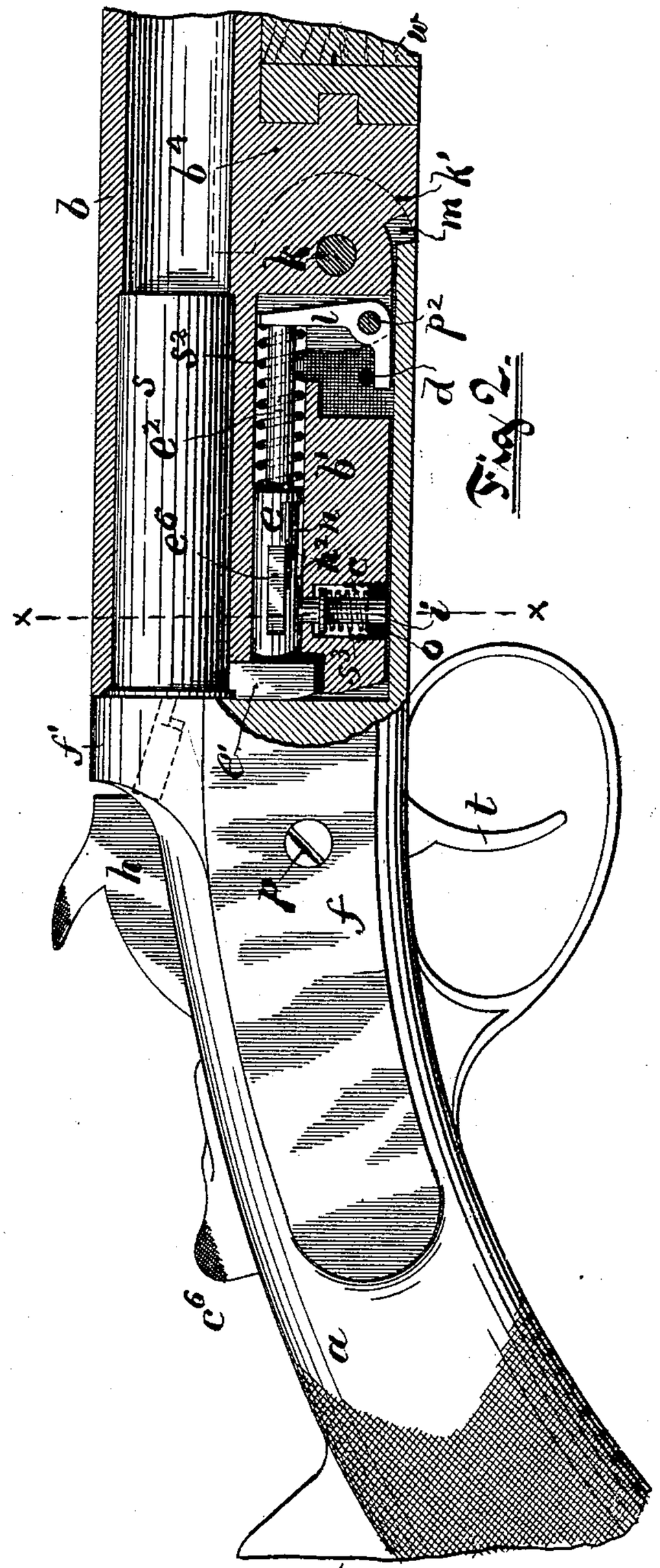

Fig. 2.

Witnesses.

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(No Model.) 2 Sheets—Sheet 2.

W. H. DAVENPORT.

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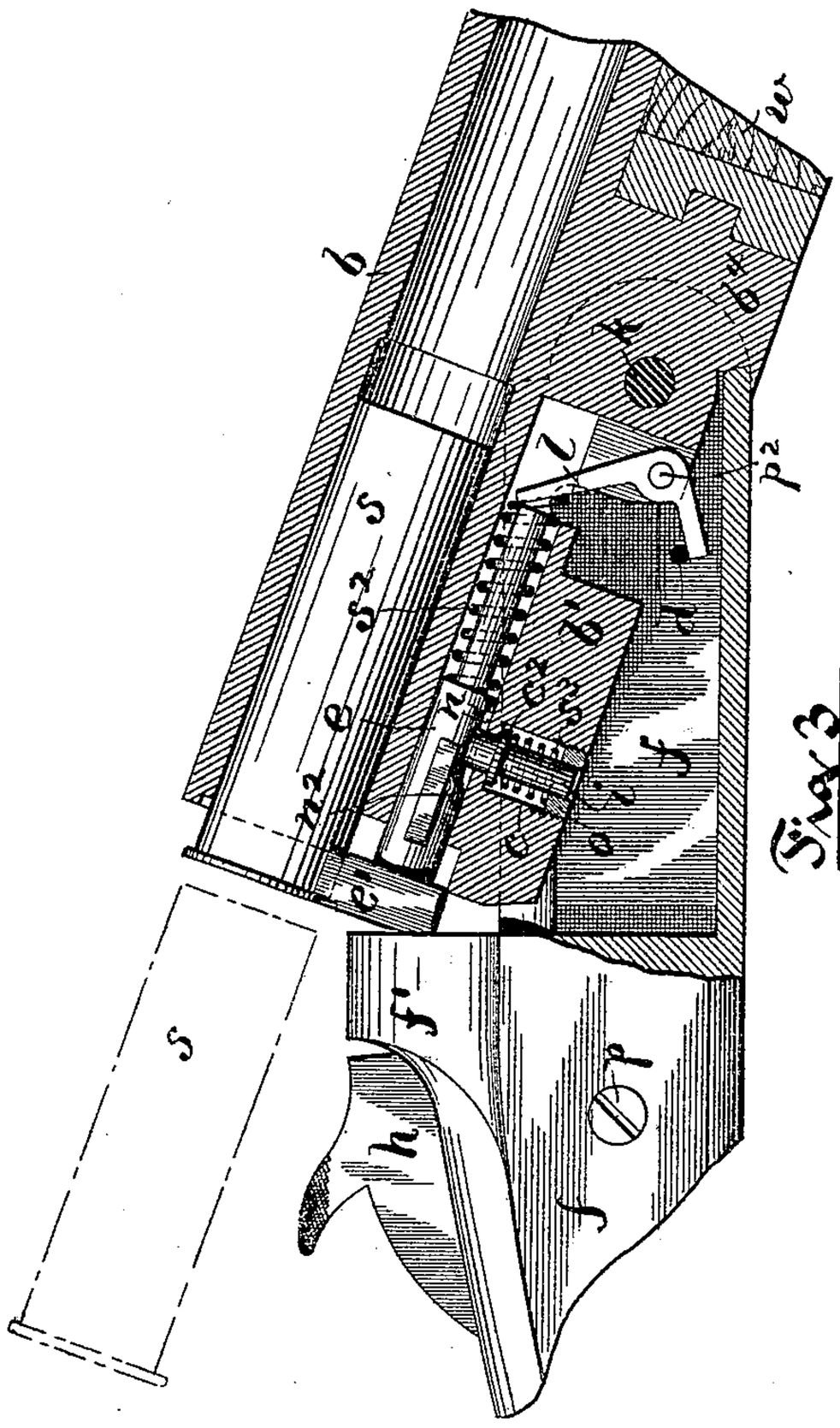

Fig 3

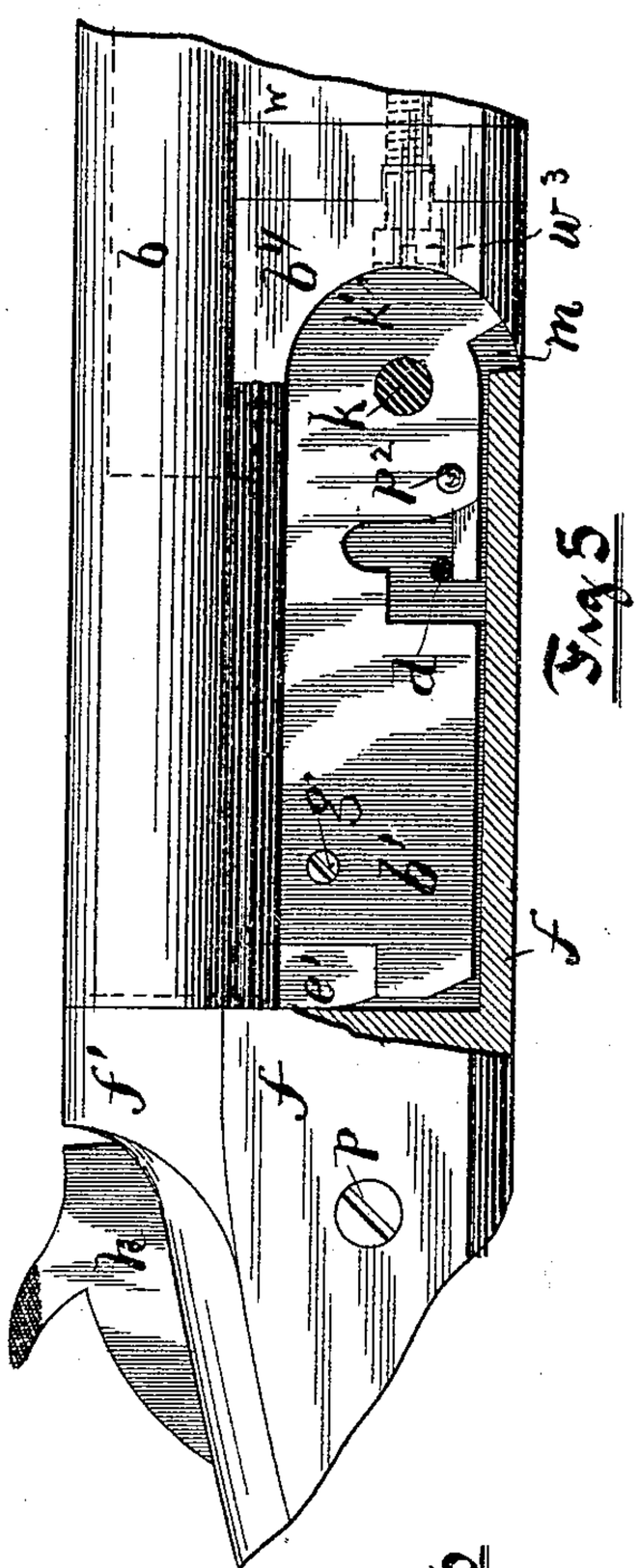

Fig 5

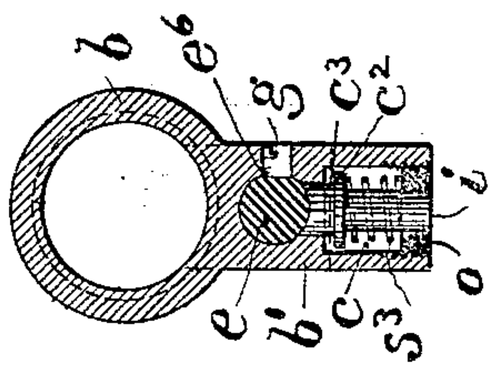

Fig 4

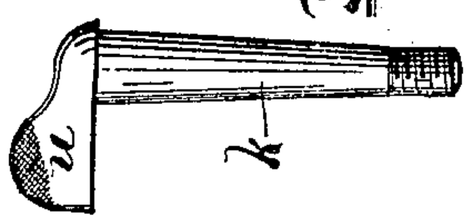

Fig 6

Witnesses

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UNITED STATES PATENT OFFICE.

WILLIAM H. DAVENPORT, OF NORWICH, CONNECTICUT.

EJECTOR FOR BREAKDOWN GUNS.

SPECIFICATION forming part of Letters Patent No. 514,674, dated February 13, 1894.

Application filed March 2, 1893. Serial No. 464,297. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. DAVENPORT, a citizen of the United States, residing at Norwich, in the county of New London and State of Connecticut, have invented certain new and useful Improvements in Automatic Shell-Ejectors for Breakdown Guns; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

The device forming the subject of my present invention has relation to mechanism adapted for automatically ejecting cartridge-shells from breech-loading fire-arms; and it consists essentially in providing the barrel-lug with an ejector-rod and an adjustably mounted restraining pin arranged to frictionally engage said rod, combined with an operating lever, whereby upon opening, or "breaking-down," the gun an arm of the lever gradually forces the ejector-rod rearwardly past the restraining-pin and allows the freed rod to quickly eject the empty shell from the gun, all as will be more fully pointed out and claimed.

My improvement is well adapted to various styles of break-down guns, therefore I make no claim herewith to devices for operating the locking-pin or bolt, firing mechanism, &c.

In the appended two sheets of drawings, Figure 1 is a side elevation, in reduced scale, of the breech frame, &c, of a fire-arm provided with my invention. Fig. 2 shows the same in enlarged scale, a part of the barrel and adjacent portion of the breech-frame being broken away to show the ejector in its normal position. Fig. 3 is a similar view, showing the device in the act of ejecting a shell from the barrel. Fig. 4 is a transverse sectional view, taken through the barrel on line $x\,x$ of Fig. 2. Fig. 5 is a side elevation of the rear portion of the barrel, the breech-frame being broken away, and Fig. 6 is a side elevation of the joint-screw or key.

I would state that while my invention is not limited to any particular construction of fire-arms of the break-down type or to single guns yet I prefer to employ barrels b provided with a lug b' located below and centrally of the barrel, substantially as indicated in the drawings. The breech-frame f is or may be adapted to receive firing and locking mechanisms substantially as common to guns of this class. In view of this I have not deemed it necessary to illustrate devices adapted for the purposes last named. Moreover, the hammer h and trigger t as well as the top-snap lever c^6 are constructed and adapted to operate as usual.

The breech-frame is enlarged contiguous to the rear end of the barrel, as at f', to form an abutment and at the same time it serves as a seat for the firing-pin, also as common. The opposite or forward end of the frame is made semi-circular, as at k', to fit into a correspondingly shaped recess formed in each side of the lug b', which together with the screw-pin or key k forms the joint-check, so called as shown in Figs. 1 and 5. This key is taper-fitted and extends through the frame and lug; one end being screw-threaded and the other provided with a lever u, which latter serves as a crank to facilitate the turning of the key.

It will be seen that a space m is formed between the end of the breech-frame and the adjacent portion of the under side of the lug, see Figs. 2 and 5. The construction and relation of these two parts are such that when in contact they coact to form a stop to limit the angular movement of the barrel when in the break-down position, as shown in Fig. 3. The forward part b^4 of the barrel-lug is increased transversely, so that its outer surface will be flush with that of the frame f. The forewood w is secured to the lug by screws w^3 passing through the latter into the wood, see Figs. 1 and 5.

The shell-ejecting device proper may be described substantially as follows—The upper portion of the lug b' is bored out longitudi-

nally to freely receive the ejector-rod *e*. The forward portion e^2 of the latter is reduced in diameter and is provided with a spiral spring s^2 which bears against the shoulder thus formed and also against the upper end of a two-arm or bell-crank pusher-lever *l* pivoted to vibrate on a pin p^2 located in an opening formed in the lug just at the rear of the joint-key. The other arm of the lever is in engagement with a pin *d* secured to the breech-frame. By this arrangement it is apparent that the office of the stationary pin *d* is to insure the action of the lever whenever the barrel is depressed, as in opening the gun.

The ejector rod is provided at its rear end with an enlargement e' seated in the lug b' and arranged to receive the lower portion of the rim of the shell. A screw or stop-pin *g* passing through the side of the lug and bearing against the flattened portion e^6 of the ejector-rod serves to prevent the latter from accidentally dropping out upon detaching the barrel from the frame.

In order to prevent the shell from being ejected too soon, or before the gun is sufficiently opened, I provide a device for automatically restraining the ejector's movement. This device is located in a hole *c* counterbored vertically into the rear portion of the barrel-lug from the under side. Into this hole is mounted a collared pin *i;* said collar, c^2, being adapted to bear against the shoulder forming the bottom of the counterbore. The upper end of the pin *i* extends through the lug and is concaved to engage the surface of the ejector-rod, see Fig. 4; the opposite end of the pin passes freely into an annular nut *o* which is screwed into the corresponding end of the hole *c*. A spring s^3 is interposed between the adjacent faces of the nut and collar, as clearly shown. The tension of this spring is adapted to press the pin against the rod with a force exceeding that of the spring s^2.

It will be seen, referring to Figs. 2 and 4, that when the parts are in the normal position a small space c^3 is formed between the collar c^2 and the bottom of the hole; this space being somewhat less than the space *n* where the rod *e* is reduced on its lower side, just forward of the pin *i*. Obviously the tension of spring s^3 can be adjusted as desired by means of the nut *o;* the pressure being increased by screwing-in the nut.

The manner of operation of my improvements is as follows—Assuming first that the parts are in the normal position, as indicated in Fig. 2. Now upon withdrawing the locking bolt through the medium of the top-snap lever c^6, as common, the barrel is next depressed, thereby elevating its rear portion; at the same time while the barrel-lug, operating lever *l*, &c., are being thus raised the stationary pin *d* causes the upper arm of said lever to be carried rearwardly, thereby gradually forcing the rod *e* and shell *s* in the same direction, against the pressure of the pin *i*, until the enlarged portion of the rod or point n^2 passes by the pin; when the rod during this initial movement being thus freed from the pin instantly acts, through the medium of spring s^2, to quickly eject the shell from the barrel, see dotted outline of shell in Fig. 3; the abutment f' of the frame serving to arrest the rod's movement. I would state that the several parts are so adjusted that the beveled portion n^2 of the rod moves past the pin *i* at about the same instant the upwardly moving portion of the barrel carries the lower side of the shell above the frame f', consequently the fuller and final action of the spring s^2 is correspondingly delayed; the complete ejection of the shell being practically coincident with the release of the rod. After the shell has been ejected the act of closing the gun forces the head e' of the rod downwardly along the face of the breech-frame and causes the rod to move endwise, or ahead, against the resistance of the ejector-spring and that of the spring s^3 of the restraining-pin *i;* the forward end of the rod and spring at the same time being in contact with the pusher-lever *l*. When the gun is fully closed the relation of the parts will be substantially as represented in Fig. 2.

I would add that by omitting the restraining device, or removing the spring s^3, the action of the ejector will then be substantially as common to guns of this class, or in other words the shell will not be thrown out but will remain seated in the head of the ejector-rod, as indicated by full lines in Fig. 3. This latter arrangement may be advantageously adopted in case metal shells *s* are used and it is desirable to save them for recharging. But in the event of using paper shells I prefer to retain the spring s^3, &c., as then the action of the ejector is to throw the shell from the barrel with considerable force.

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

1. In a break-down gun, the combination with shell-ejecting mechanism adapted to be operated by the act of opening the gun, of a yielding pin or member engaging with and restraining the initial movement of the ejector.

2. In a breech-loading fire-arm of the break-down type, a shell-ejecting device consisting of a spring resisted member engaging the shell, a pusher or forcing lever in contact with said member and a device for retarding the initial movement of the ejector, substantially as set forth.

3. In a break-down gun, the combination of an ejector-rod having a reduced portion, *n*, and an operating lever, *l* engaging said rod, both mounted in the barrel-lug; a fixed pin in contact with an arm of the lever; a yielding pin, *i*, adjustably mounted in the barrel-lug having an end adapted to frictionally engage a portion of said ejector-rod and a stop for limiting the rod's movement, all

arranged and adapted for operation, substantially as hereinbefore described.

4. In a break-down gun, the combination, with the mounted ejector-rod, arranged to engage the shell *s*, and means, substantially as described, for moving said rod endwise in its seat by the act of opening and closing the gun, of a yielding checking device in frictional engagement with the ejector-rod, substantially as and for the purpose specified.

In testimony whereof I have affixed my signature in presence of two witnesses.

WILLIAM H. DAVENPORT.

Witnesses:

GEO. H. REMINGTON,

IDA M. WARREN.