

(No Model.)

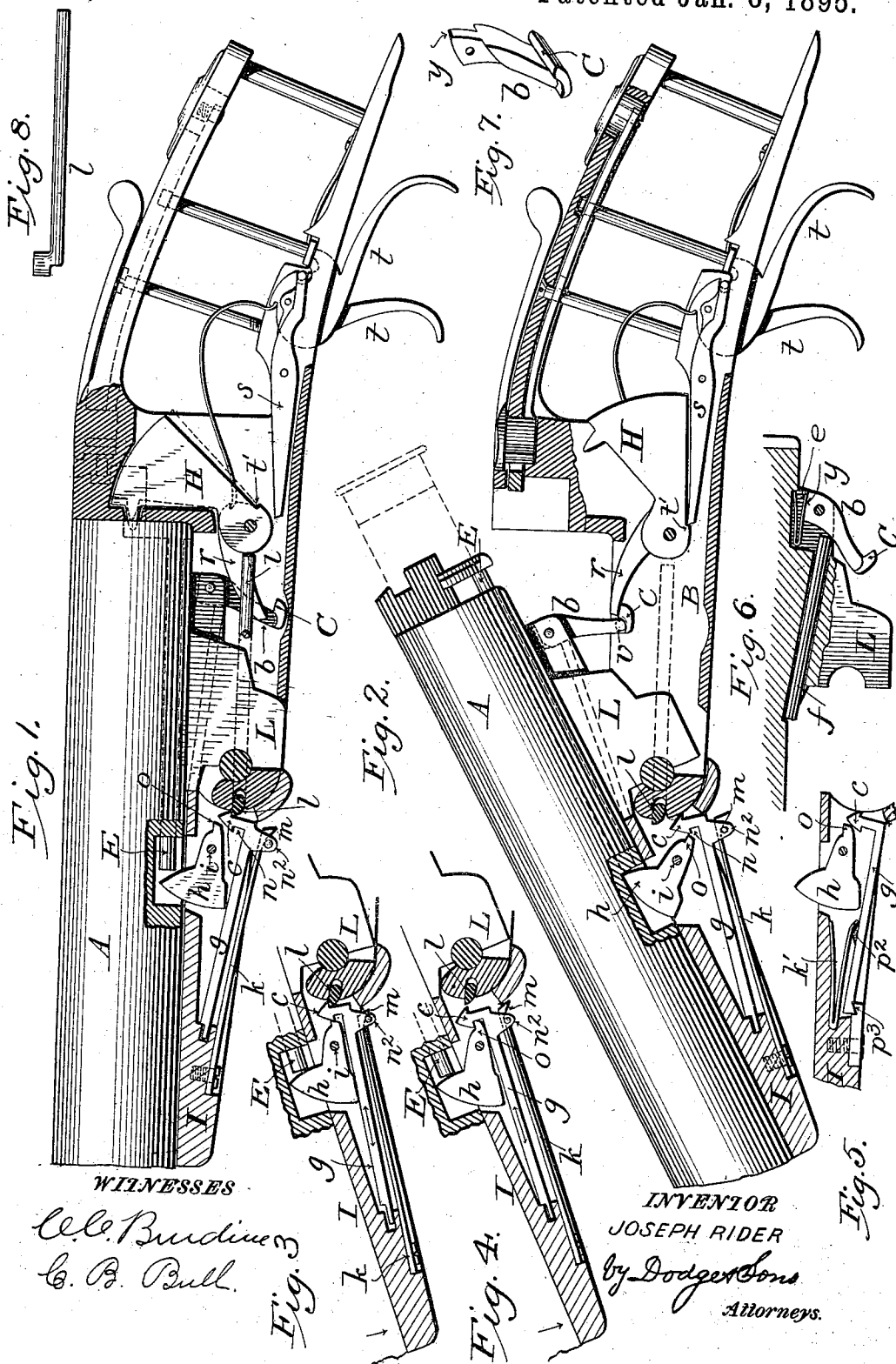
2 Sheets—Sheet 1.

J. RIDER.

EJECTING MECHANISM FOR BREAKDOWN GUNS.

No. 532,096.

Patented Jan. 8, 1895.



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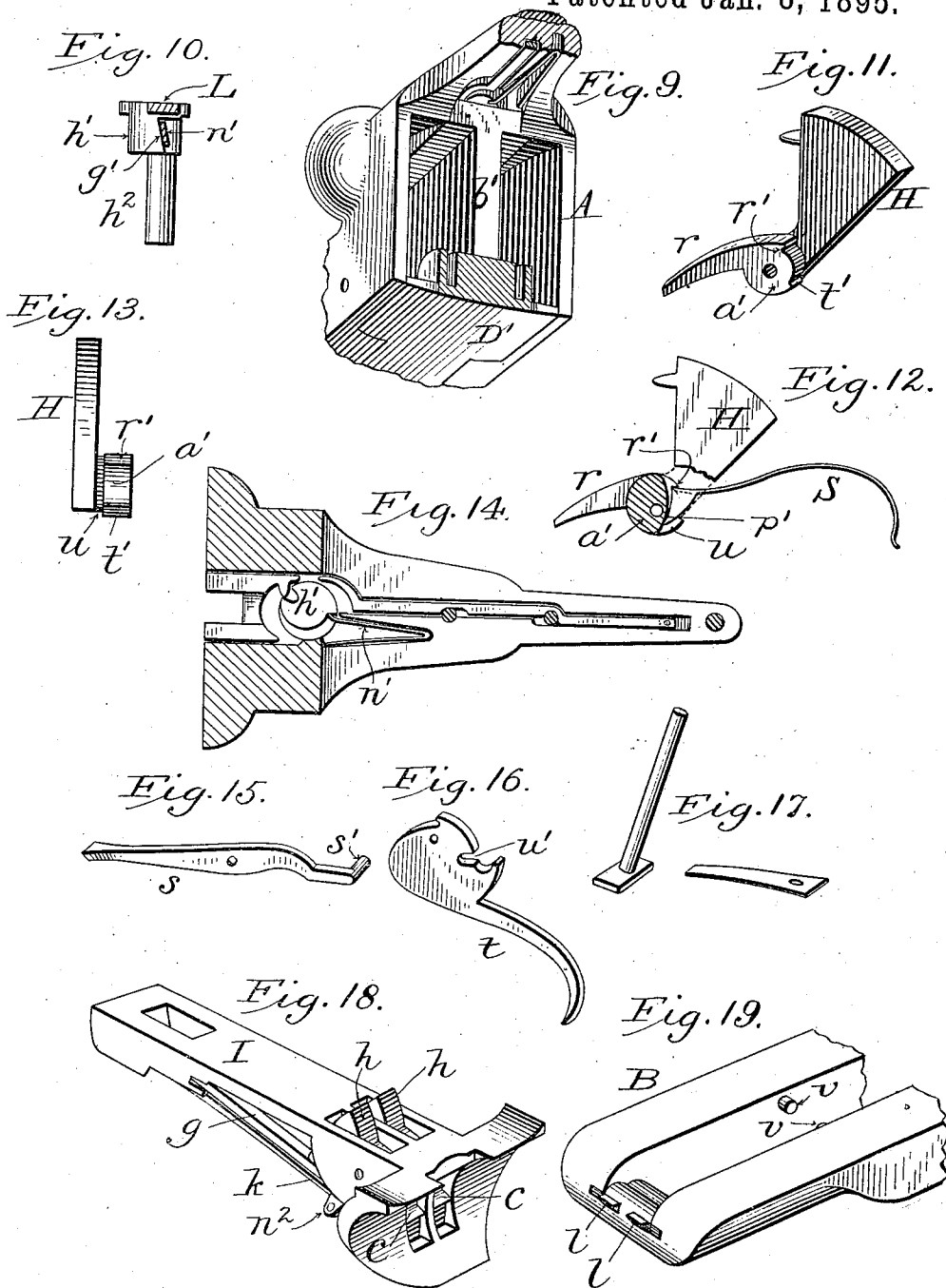
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WITNESSES

Chas. Burdine
C. B. Bull.

INVENTOR
JOSEPH RIDER

By Dodge & Sons
Attorneys

UNITED STATES PATENT OFFICE.

JOSEPH RIDER, OF NEWARK, ASSIGNOR TO HENRY S. HALLWOOD, OF COLUMBUS, OHIO.

EJECTING MECHANISM FOR BREAKDOWN GUNS.

SPECIFICATION forming part of Letters Patent No. 532,096, dated January 8, 1895.

Application filed June 8, 1894. Serial No. 513,939. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH RIDER, a citizen of the United States, residing at Newark, in the county of Licking and State of Ohio, have invented certain new and useful Improvements in Breakdown Guns, of which the following is a specification.

This invention relates to breech loading guns of that class known as break down guns, and the invention consists in a new style of automatic ejectors, which also serve to start the shells, and in certain other features, all as hereinafter more fully set forth.

Figure 1 is a side elevation partly in section, showing the gun closed. Fig. 2 is a similar view, showing the barrels tipped to eject the shells. Fig. 3 is a side elevation, partly in section, showing the ejector nearly in position to eject the shell. Fig. 4 is a similar view showing the position of the parts at the instant that the ejector commences to eject the shell; and Fig. 5 is a similar view illustrating a modification of the ejector. Figs. 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16 and 17 are views of parts shown in detail. Fig. 18 is a perspective view of the ejectors and their frames detached, and Fig. 19 is a perspective view of the front end of the frame to which the barrels are hinged, showing the stop pins which limit the tip of the barrels, and also the front ends of the sliding rods which engage with and operate the lifting bars of the ejectors.

This invention is an improvement on the gun for which Patents No. 500,949, dated July 4, 1893, and No. 511,362, dated December 26, 1893, were issued to me.

The construction of the frame and safety device are the same as in my former patents, and need not, therefore, be described. In its general form the lock mechanism is the same also, with the exception of certain improvements which I will now proceed to describe.

The hammer II, with its laterally projecting tumbler *a'* and cocking arm *r*, are made as before, in a single solid piece, but the arm *r* is made longer and slightly different in shape, and is shown clearly in Figs. 1, 2, 11 and 12. I also use the same form of spring *S* arranged to serve both as a main spring and also as a trigger spring, as described in my

former Patent No. 500,949, and as shown in Fig. 1; but in order to secure a rebound of the hammer, I now make the spring with a vertically depending lip *p'* at its front end, as shown in Fig. 12, this lip resting loosely in a slot *u* cut in the rear side of the tumbler *a'* with its point below the axis or journal of the hammer, as shown in Fig. 12, the parts being so proportioned and arranged that when the hammer delivers its blow, the bearing of the spring on the tumbler will be transferred from the shoulder *r'* above the axis, to the point of the lip below the axis, which will cause the hammer to rebound, as indicated by the dotted lines in Fig. 1.

Instead of arranging the sear to engage in a notch on the top of the hammer, I now make a notch *t'* in the lower side of the tumbler, and use a simple lever *s* as a sear, the form of which is clearly shown in Fig. 15, its rear end as there shown being provided with a laterally projecting arm *s'* which engages in a notch *u'* in the upper side of the trigger *t*, shown detached in Fig. 16, these parts all being shown in position in Figs. 1 and 2.

In order to enable the barrels *A* to be more easily dismounted, instead of the solid lug, I now pivot to the barrels near their rear ends, a hook shaped piece *b*, as shown in Figs. 1, 2 and 6. The form of this piece is shown more fully in Fig. 7, in which it will be seen that its upper end is provided on its rear side with a shoulder *y*, on which, as shown in Fig. 6, a spring *e* is arranged to bear, by which the lower end of piece *b* is thrown forward, as shown in Fig. 6, thus freeing it entirely from the cocking arms, and the stop pin *v*, located in the frame *A* as shown in Fig. 19, and enabling the barrels to be removed at once. As shown in Fig. 7, this piece *b* has across its lower end a projection *C*, upon the top of which the cocking arms engage when the barrels are dropped, thus automatically cocking the hammers as shown in Fig. 2, the ends of this projection or cross head striking against the stop pins *v*, just as the hammers are fully cocked, thereby limiting the tip of the barrels.

In order to shove the piece *b* backward and hold it in position to engage with the cocking arms and the stop pins, I bore a hole longitudinally through the hinge lug *L*, and place

loosely therein a small rod *f*, as shown in Fig. 6, the rear end of this rod *f* bearing against the piece *b*, while its front end projects beyond the lug, so that when the ejector frame *I* is placed in position, it will push the rod *f* back far enough to swing the piece *b* back to the proper position to engage with the cocking arms and the stop pins, as shown in Figs. 1 and 2, the stop pins *v* being shown in dotted line in Fig. 2. The moment the fore end of the stock in which the extractor frame is set is removed, the spring *e* throws the lower end of piece *b* forward to the position shown in Fig. 6, when the barrels can be at once unhooked from the frame.

Heretofore in this class of guns, when automatic ejectors were used, it has been customary to first start the shells by a projection secured to the frame at its front end, against which the stems of the extractors engaged as the barrels were dropped, such being shown in my former patents. In the present instance I use a new style of ejectors, which also serves to start the shells, as well as to eject them subsequently. These ejectors which I will now describe, are shown clearly in Figs. 1, 2, 3, 4 and 5, and with their frames complete, in Fig. 18. They consist of three parts, viz: an ejector hammer *h*, an operating bar *g*, and a spring *k*. These parts are made in the forms shown, and are mounted in a metallic frame *I*, as shown in the several figures. The hammers *h*, one for each barrel, are provided with a head to bear against the ends of the extractor stems *E* as shown in Figs. 3 and 4, and with a toe *o* to engage with a notch in the rear face of the upright part *c* of the bar *g*. The bar *g* has a longitudinal body, and at its rear end is provided with an upright arm *c*, the upper end of which is beveled or inclined on both its front and rear faces, and with right angled shoulders below, the space between the front shoulder and the body of the bar forming a notch or recess *n*, in which, at the proper time, the toe of the hammer *h* engages, as shown in Fig. 4. This bar *g* is also provided on its under side with a couple of flanges *n*², through which a pin is inserted for the spring *k* to bear upon, as shown, the bar being placed loosely in the frame so as to permit of a slight endwise movement to and fro. The spring *k* has its free end, where it bears upon the pin, formed with an incline *m* as shown in the several figures, and which incline may be formed by an enlargement of the spring at that point, or by a bend in the spring, as found most convenient.

A small sliding bolt *l*, shown detached in Fig. 8, is located loosely in a hole in the frame, in a line between the main hammers *H* of the gun and the upright *c* of bar *g*, as shown in Fig. 1, and in dotted lines in Fig. 2. The front ends of these bolts, which I term lifting latches, are beveled on their under sides, as shown in Figs. 1, 2, 3 and 4, and are offset laterally as shown in Fig. 8 to bring their points in line with the uprights *c* of the bars

g. When the gun is fired, these lifting latches are forced forward by the hammers *H*, the same as in my Patent No. 511,362, by which their points are made to project from the front end of the frame *A*, as shown in Figs. 1, 2, 3, 4 and 19, so as to engage under the rear shoulder of the upright *c* of the bar *g*, as shown in Figs. 1 and 3.

The parts being thus constructed and arranged, the operation is as follows: Supposing the gun to have been fired, the various parts will be in the positions shown in Fig. 1, in which it will be observed that the back of the ejector hammer *h* rests on the bar *g*, while the face of the hammer touches or very nearly touches the end of the extractor stem *E*. Now as the barrels begin to tip, the point of the latch *l* will raise the rear end of bar *g*, thereby at the same time raising the hammer which rests on the bar, and causing the face of the hammer to press against the end of the extractor stem, and thus to start the shell. The toe *o* of the ejector hammer being carried downward in contact with the inclined face of upright *c*, forces said upright, and consequently the bar *g*, backward, this movement continuing until the toe *o* and notch *n* are brought into alignment or coincidence, whereupon the bar *g* is moved forward by the action of the incline *m* of spring *K* and its upper wall or shoulder is engaged over the toe *o*. In thus moving forward, the bar *g* carries the rear shoulder of upright *c* off and clear of the point of lifting latch *l*. The rear end of bar *g* being thus made free, is instantly thrown downward by the spring, and gives a sudden impulse to the ejector hammer, which in turn gives a like sudden movement to the extractor *E*, thereby ejecting the shell from the barrel. At the same time the incline on the spring will force the bar *g* forward. As the barrels are brought back to the closed position, the rear incline of the upright *c* will be brought into contact with the under beveled face of the lifting latch *l*, thereby shoving that back, when the several parts will have assumed their original positions.

In Fig. 5 I have shown a modification of my ejector. In this I use a bent spring, placed above the bar *g*, and on the bar at the point where the spring bears, I make an incline *p*², on which the point of the spring operates to draw the bar back, the same as does the incline *m* on the spring in the other case; or, in lieu of this, the rear end of the bar *g* may have an incline on its under side bearing on a corresponding incline, as shown at *p*³. Either of these will cause the bar to move backward when released from the lifting latch, just the same as when the incline is made on the spring, though I prefer to make the incline on the spring. It will be seen that by this arrangement the ejector springs are under tension only during the tipping of the barrels, and that when the gun is closed the ejector hammers lie loose upon the bar *g*, as repre-

sented in Fig. 1, and thus all parts of the ejecting devices are freed from strain at all times except during the time occupied in dropping the barrels. By this construction I not only produce a most efficient automatic ejector, but also make the ejectors serve to start the shells preparatory to their ejection.

It will of course be understood that two separate extractors are used, one for each barrel, the same as in my Patent No. 511,362, and that consequently the shell will be started and ejected only from the barrel that has been fired. If both barrels be fired, the shells will be ejected from both; but if only one barrel be fired, then the shell will be ejected from that one, while the shell in the other barrel will not even be started; because, unless the gun hammer be let down, the lifting latch will not be driven forward to engage with the upright of bar *g*, and consequently the ejector hammer of that side will not be moved at all.

It is to be noted that the bar *g* acts positively upon the ejector hammer *h* during the initial movement of the barrel in opening, thus insuring the starting of the shell and affording adequate power to that end, and the invention is therefore to be distinguished from constructions in which the entire operation of starting the shell and ejecting it is by spring pressure, though varying in leverage and in quickness of movement. In other words, the initial movement is a positive movement, with abundant power to start a tight shell; and the final movement is a sudden spring-produced movement.

Having thus described my invention, what I claim is—

1. In combination, the hammer *H* provided with a laterally projecting tumbler *a'* having a vertical notch *u* therein, and the curved spring *S* provided with the depending lip or projection *p'* arranged to rest in said notch with its point below the axis of the hammer, for the two-fold purpose of causing a rebound of the hammer and holding the front end of the spring from lateral displacement.

2. In combination with the main frame and barrels of a gun, the piece or link *b*, pivoted at its upper end; spring *c* bearing upon the link *b*; push rod *f*, bearing against the forward side of the link below the pivot of the

latter; and ejector frame *I*, adapted to bear against the push rod and to force it and the lower end of the link backward.

3. In combination with tipping barrel *A* and frame *B*, extractor *E*; ejector hammer *i* provided with toe *o*; bar *g* provided with upright *c* shouldered on its front and rear faces and provided with an inclined front face; spring *K*; and lifting latch *L*.

4. In a gun, the combination with an ejecting hammer *h* and with a bar *g* adapted to engage and move said hammer, a sliding latch bar *l* located in the frame *A* between the gun hammer *H* and the bar *g*, and adapted to hold up the rear end of said bar while the toe of the ejecting hammer rides downward over the same preparatory to engagement of the bar with said toe.

5. In a break-down gun, the combination of a main frame, a barrel pivoted thereto; an extractor; an ejector hammer adapted to bear against the extractor; a bar or lever carried by the barrel and adapted to bear against the ejector hammer during the initial tipping of the barrel and then to engage with said hammer; a sliding latch adapted to engage with said bar during the initial tipping of the barrel; and a spring to move the bar and hammer suddenly during the latter portion of the tipping movement of the barrel, substantially as set forth.

6. In a break-down gun, the combination of a pivoted ejector hammer arranged to bear normally against the extractor stem, a bar and spring for operating the same, and a sliding bar arranged to lock said hammer and cause it to start the extractor by a positive motion during the initial tipping of the barrel and then releasing it during the latter portion of the tipping movement, substantially as described, whereby the extractor hammer is caused to start the shell, then eject it, and the spring be released from tension at all times except during the tipping of the barrel.

In witness whereof I hereunto set my hand in the presence of two witnesses.

JOSEPH RIDER.

Witnesses:

MOSES SHAUCK,
DAVID A. ALLEN.