

No. 665,941.

Patented Jan. 15, 1901.

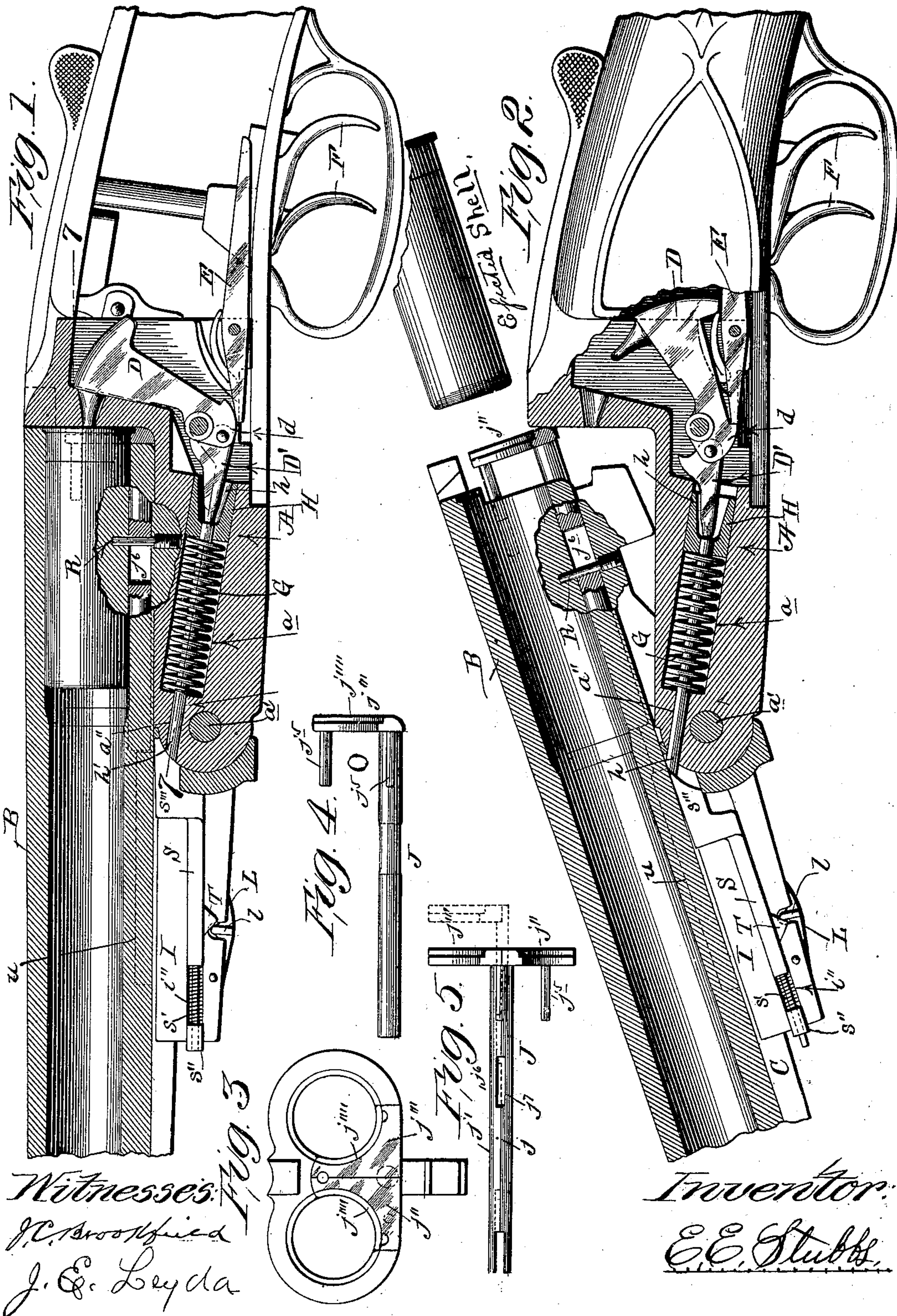
E. E. STUBBS.

SHELL EJECTOR FOR BREAKDOWN GUNS.

(Application filed Sept. 26, 1899.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses:
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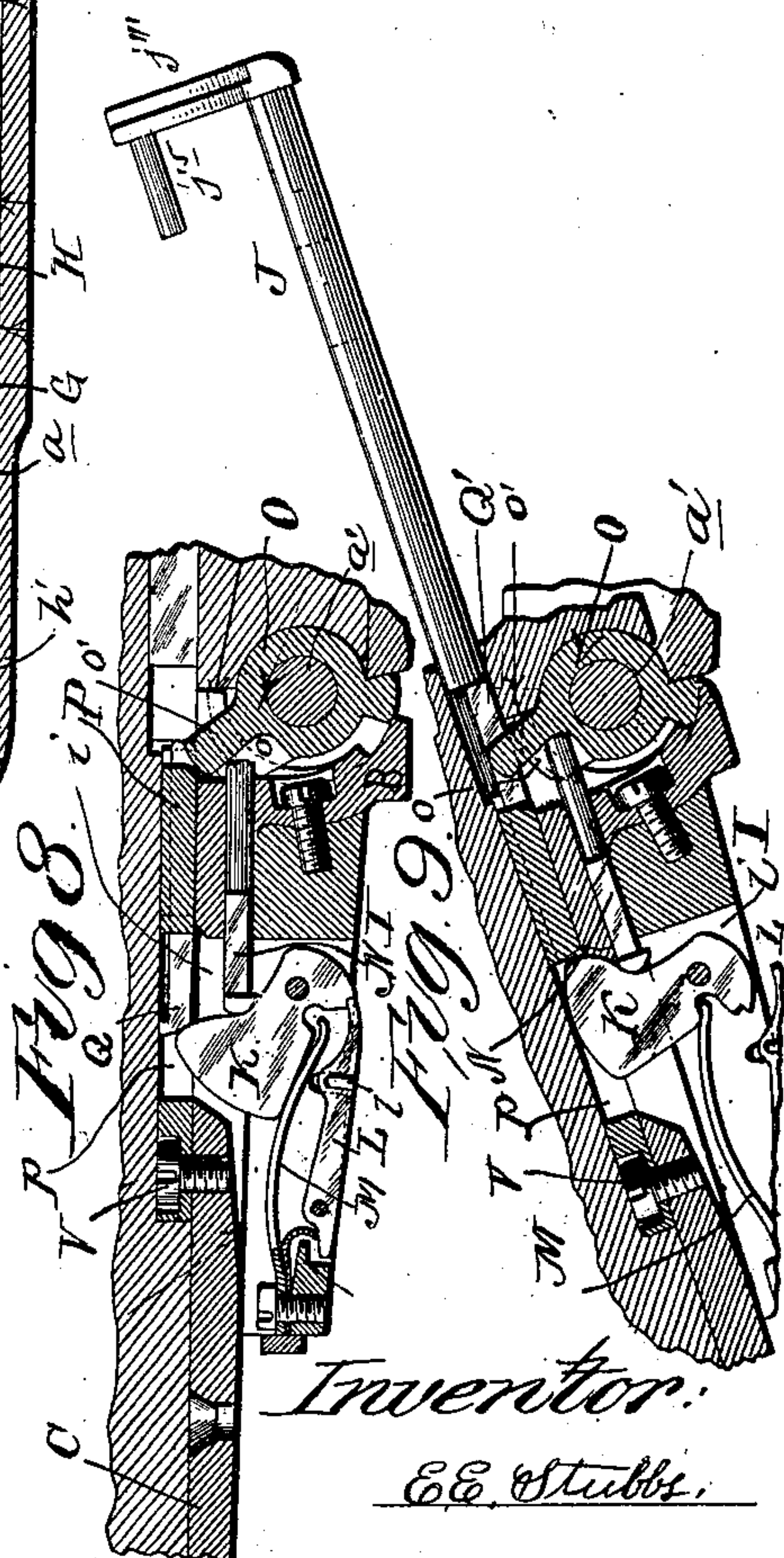
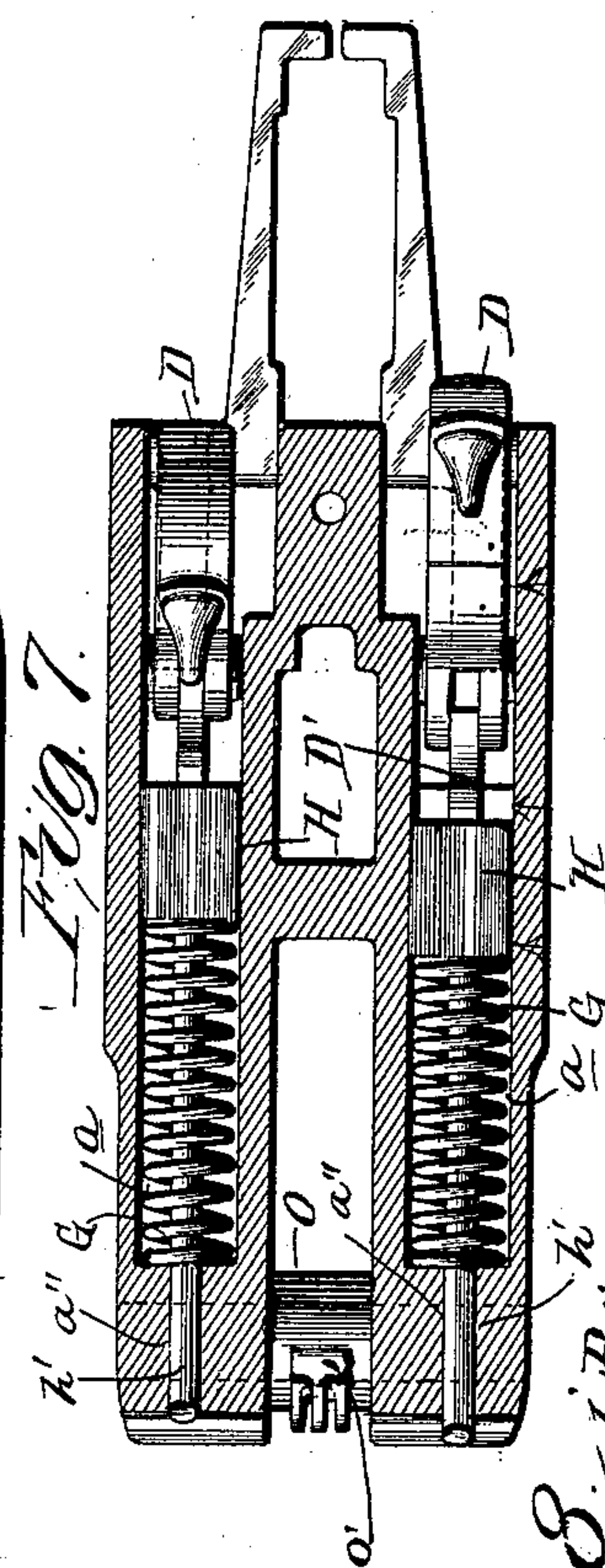
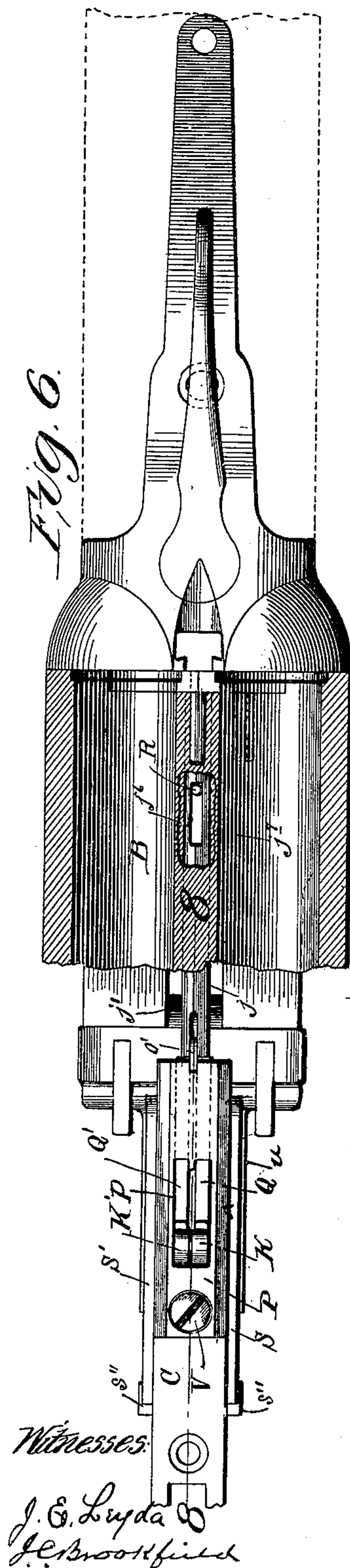
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2 Sheets—Sheet 2.



Inventor:

EE Stubbs.

UNITED STATES PATENT OFFICE.

ELMER E. STUBBS, OF JONESBOROUGH, ARKANSAS, ASSIGNOR TO J. E. LEYDA
AND R. L. MUSE, OF SAME PLACE.

SHELL-EJECTOR FOR BREAKDOWN GUNS.

SPECIFICATION forming part of Letters Patent No. 665,941, dated January 15, 1901.

Application filed September 26, 1899. Serial No. 731,738. (No model.)

To all whom it may concern:

Be it known that I, ELMER E. STUBBS, a citizen of the United States, residing at Jonesborough, in the county of Craighead and State of Arkansas, have invented a new and useful Ejector for Breech-Loading Shotguns, of which the following is a specification.

This invention relates to a new and useful improvement in an automatic shell ejector and extractor for breech-loading breakdown guns of preferably the double-barrel hammerless class.

One object of this present invention is to provide an automatic shell-ejector, which is also an extractor, which will be set or cocked ready to eject a shell upon the closing of the gun and not upon the opening of the gun, as is usual in devices of this character, and by which construction no additional work is imposed upon the opening or breakdown action, leaving the same to perform its usual function of cocking the gun without requiring the application of additional force.

Another object of this invention is to provide a combined shell ejector and extractor whereby should the ejector mechanism fail to properly perform its designed function of ejecting or throwing out the empty shell, which is possible in any ejecting device under adverse conditions—such, for instance, as the swelling of the shells in damp weather—the positive movement of the extractor will force the shell sufficiently out of the barrel to enable the operator to grasp and withdraw the same by hand.

Another object of this invention is to provide means whereby when the gun is opened the ejector will operate only upon the shell or shells which has or have been fired or exploded, leaving the unexploded shell or shells in place in the gun.

Another object of the invention is to provide means whereby the ejector mechanism will be positively operated upon the opening of the gun to initially start the shell, after which the fired shell will be ejected by the impellent action of a spring whose energy is stored when the gun is closed.

The essential features of this invention reside, first, in the novel construction and arrangement of the ejecting mechanism proper;

second, in the novel means employed for operating the ejector proper; third, in the novel means employed whereby only the exploded shell in the chamber of the gun will be ejected when the gun is opened, or, in other words, if both firing-hammers have been tripped, which means that both shells have been exploded, both of said exploded shells will be ejected when the gun is opened; but if neither of the hammers has been tripped neither of the shells has been exploded and the opening of the gun will not eject either of the unexploded shells, and where one hammer only has been tripped only one shell will have been exploded, and that only will be ejected upon the opening of the gun, leaving the unexploded shell in its chamber; fourth, in the novel construction of the divided ejector and extractor; fifth, in the novel construction and arrangement of the divided ejector and extractor stop-bolt; and, finally, the invention consists in the novel construction, arrangement, and combination of the several parts, all as will hereinafter be described and afterward pointed out in the claims.

I attain the objects heretofore referred to by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a longitudinal sectional view through one of the locks and a portion of one of the barrels of a hammerless breakdown breech-loading gun provided with my improved automatic shell ejector and extractor as the same appears when the gun is in a closed position and the hammer tripped after firing. Fig. 2 is a similar view to that of Fig. 1, showing the gun in an open or "broken" position and the hammer cocked. Fig. 3 is a detail view of the breech end of the barrels, illustrating in position thereon the divided ejector employed in carrying out my invention. Fig. 4 is a side elevational view of one of the members of the divided ejector employed in carrying out my invention. Fig. 5 is a plan view of both members of the divided ejector employed in carrying out my invention. Fig. 6 is a plan view of a portion of a gun and a portion of my improved ejector and extractor, together with a horizontal sectional view of a portion of the barrels. Fig.

7 is a horizontal sectional view of a portion of the mechanism employed in carrying out my invention, the same being taken on line 7 7 of Fig. 1. Fig. 8 is a vertical longitudinal sectional view of a portion of the mechanism employed in carrying out my invention, the same being taken on line 8 8 of Fig. 6 and illustrates the parts as they appear when the gun is in a closed position. Fig. 9 is a similar view to that of Fig. 8, with the addition of the ejector thereto, and illustrates the parts as they appear when the gun has been fired and broken.

In the drawings, A indicates the frame, B the barrels, C the fore-end iron, which carries the barrels and which is pivoted to the forward end of the frame A, as is usual, D the hammers, E the sears, F the triggers, and G the mainsprings, all of said parts being practically of the usual and well-known construction.

The general construction and operation of a double-barrel hammerless breech-loading gun of the breakdown type are so well known that a detailed description of the same is deemed unnecessary; but for the purposes of introducing in this description my improved shell ejector and extractor I will explain that when the gun is broken after one or both hammers are tripped the tripped hammer or hammers are cocked or moved rearwardly until a notch or shoulder thereon rides over and coöperates with the forward ends of the sears, which retain the hammers in such position against the tension of springs until the trigger or triggers of the gun are pulled.

The operation of opening the gun not only cocks the hammers, as above described, but also releases the ejector mechanism and allows the same to perform its function of ejecting the exploded shells; but this opening movement does not cock or set the ejectors, they having been cocked or set by the closing movement, which is an advantageous feature, for the reason that no more force is required to open a gun equipped with my improved ejector than would be required in opening a gun having no ejector, as I do not employ the opening movement of the gun to both cock the hammers and set the ejector, that work being divided, respectively, between the opening and closing of the gun. In other words, the opening movement of the gun releases the ejector and expels the empty shell, and the ejector is then reset or cocked, ready for the next ejectment by the closing movement of the gun. For the sake of clearness I will describe but one lock. While there are two represented in the drawings, they are substantially the same, and this is due to the fact that the drawings, as before stated, represent a double-barrel gun; but each lock acts independently of the other, and the operation of the mechanism would be substantially the same as a single-barrel gun.

In the forward portion of the frame of the gun and in vertical alinement with each hammer is a cylindrical bore a , which is arranged on such a slant relative to the barrel of the gun that its axis will pass, preferably, below the pivot-point of the hammer D and above the hinge-pin a' of the barrels. This bore is sufficiently deep to receive a suitable length of the coiled spring G, and axially in line with and opening into this bore a is a bore a'' of smaller diameter, which bore a'' is formed through the frame A.

H represents a plunger, preferably formed with a rearwardly-opening concavity h , which is arranged in the bore a and has secured to its forward end a rod h' and around which rod and interposed between the forward end of the plunger and the stock at the forward end of the bore a is arranged the expansible coiled spring G. The hammer D is provided with an extension d below its pivot-point, and pivotally secured to said extension is a dog or pusher-bar D' , which protrudes into the concavity h and rests against the plunger H. This hammer D is provided with a shoulder, which when the hammer is forced to its cocked position engages and is retained by the forward end of the sear E, and when in this position the pusher-bar D' has pushed the plunger and its carried rod forwardly against the tension of spring G, said movement also causing the forward end of the rod h' to project beyond the partially-cylindrical end of the frame A, the object and purpose of which will hereinafter be described.

Arranged in advance of the pivot-point of the barrel and secured to the fore-end iron C is a block I, upon and within which is mounted the mechanism employed for actuating and coöperating with the divided ejector and extractor J.

The block I is provided with a vertically-disposed slot i , in which are mounted two pivoted tumblers $K K'$, two pivoted levers, which I will term "tumbler-sears," $L L'$, and two leaf-springs $M M'$, which are preferably connected at one end to receive the securing-screw.

Directly above the rear portion of the block I and slidingly mounted in the rear portion of the fore-end iron C is what I will term the "cocking-bar" N, the forward end of which is designed to rest against the suitably-curved rear faces of the tumblers $K K'$, while the rear ends of said cocking-bar rest in a forwardly-opening concavity o of what I will term the "extractor-arm" o' , arranged on a sleeve O, located around the hinge-pin and between the forked end of the frame A.

P represents a cap-piece screwed or otherwise fastened to the upper rearward portion of the fore-end iron, which is provided with a slot or recess p , which slot or recess is directly above the tumblers $K K'$ and allows the same in their rearward movement to pass thereinto, as shown in Fig. 8. Formed in the

lower rearward portion of this cap-piece P and opening into the slot or recess *p* are two parallel grooves, in which are arranged two parallel slidable ejector needles or bars *Q Q'*, the forward ends of which touch and are in the path of movement of the tumblers *K K'*, while the rearward ends touch or abut against the forward ends of the divided ejector and extractor *J*. This divided ejector and extractor, which is shown more clearly in Figs. 3, 4, and 5 of the drawings, is constructed of practically two semicylindrical rods *j j'*, with their flat faces resting against each other. Arranged on the rear end of each of the rods *j j'* are heads *j'' j'''*, said heads being provided with suitable shoulders *j''''* for receiving the rim or bead of the shell or cartridge, as is usual in extractors of this type. Suitable guide-pins *j⁵* are also provided for each of the heads *j'' j'''* for obvious reasons. These semicylindrical rods *j j'* are provided with recesses *j⁶* and *j⁷*, which when the ejector and extractor members are both in either their extreme forward or extreme rearward positions are in alinement with each other; but when only one of the rods *j j'* is moved rearwardly said recesses are out of alinement, as is illustrated by dotted lines in Fig. 5.

The forward ends of the divided extractor are reduced to form on their adjacent faces shoulders, as shown in Fig. 5, against which the arm *o'* operates when the gun is being opened. The needle-bars *Q* and *Q'* operate to move the two parts of the ejector or extractor independently of the arm *o'*, and, as shown in Fig. 6, said needle-bars are arranged on each side of the arm *o'*. This divided ejector and extractor is mounted in the breech portion of the barrels of the gun in the usual manner by allowing the cylindrical rod formed of the two semicylindrical members to enter a suitable bore located below and midway between the chambers, suitable bores being also provided in the end of the breech for receiving the guide-pins *j⁵*.

R represents a pin or bolt which passes through the lug between the barrels and is designed to pass through the slot formed by the united recesses *j⁶ j⁷* and is designed to arrest the semicylindrical rods in their rearward movement, as is clearly illustrated in Figs. 1, 2, and 6 of the drawings.

The block *I* is provided upon its sides with suitable longitudinal grooves *i' i''*, in which are bars *S S'*, respectively held in their rear-most positions against the partially-cylindrical forward end of the frame *A* by springs *s s'*, interposed between their forward ends and a bearing-block *s''*. These sliding bars *S S'* are so proportioned that their rear ends *s'''* are offset laterally from the bar proper, and their extreme rear ends are formed slightly convexed or curved, which enables them in the rearmost position of said bars to snugly fit the partially-cylindrical forward end of frame *A*, said ends *s'''* being also in

alinement with the rods *h'*, the ends of which are also formed with a curve of the same radius as the partially-cylindrical end of the frame *A*.

T indicates rockers or projections formed on the under sides of the slide-bars *S S'*, which are designed to cooperate with the projections *l* and *l'* on the tumbler-sears, respectively. The block *I* is secured to the fore-end iron by means of a suitable screw *V*, (see Figs. 8 and 9,) which passes through the concave portion of the block which is next adjacent the hinge portion of the gun. It is of course understood that lateral movement of this block *I* is prevented by the flanges *u*, which engage each side of the fore-end iron.

The operation of my improved shell ejector and extractor is as follows: As has been stated before, the ordinary operation of the breakdown gun shown in the drawings is that when either or both hammers are tripped the breaking or opening movement of the gun will reset or cock the tripped hammer or hammers. When the hammers are cocked, as shown in Fig. 2, the plunger-rods *h'* are projected forward and the slides *S* and *S'* are held in a forward position, the rockers or projections *T* occupying positions in advance of the projections *l* and *l'* on the sears for the ejector-tumblers. Being in advance of said sear projections, the sears for the ejector-tumblers are in engagement with the respective tumblers to the extent that the sears are in the paths of the shoulders on the tumblers; but there is sufficient clearance between said shoulders and the rear ends of said sears to permit the free movement of the sears. When the gun is closed, as shown in Fig. 8, the cocking-bar *N* is in engagement with both tumblers, forcing them slightly beyond a position where their shoulders will engage with the sears *L* and *L'*, and in this manner all strain is removed from the ejectors proper, so that said ejectors will not crowd the breech of the gun. When one of the hammers has been tripped, as shown in Fig. 1, the controlled plunger-rod *h'* is retracted, so as to permit the cooperating slide-bar *S* to move rearwardly, which movement forces the sear *L* to make an idle vibration—that is, said sear is depressed so that its end passes out of the path of the tumbler-shoulder, said sear end again returning to a position in the path of the shoulder on the ejector-tumbler. Assuming now that the gun is broken, the first movement is to force the extractor-arm *o'* against the shoulders in the forward ends of the divided extractor, so as to positively move said extractor rearwardly. The continued movement of breaking the gun next cocks the tripped hammer, which results in forcing the cooperating slide *S* forwardly and in so doing depresses the sear *L* out of the path of the shoulder on the tumbler *K*. As the cocking-bar *N* is now in a position to be projected into the recess *o* the moment that

tumbler K is released, it delivers an impacting blow against the needle-bar Q, which in turn engages with the left-hand side of the ejector and moves the same rearwardly beyond the position to which it had been moved by the action of the arm o'. This quick hammer-like blow delivered by the tumbler K forces the left-hand side of the ejector rearwardly until it is arrested by the bolt R operating in the recess j⁶ thereof. The above description applies where the left barrel only has been fired, and it will be obvious that as the right barrel has not been fired the slide S' occupies its forward position, so that the sear L' is in a position to arrest the tumbler K' and prevent said tumbler from moving under the action of its spring M'. In fact, when either of the slides S or S' occupy their forward positions before the gun is broken neither of the tumblers K or K' will be tripped, but the arm o' will always act to positively move the parts of the ejector to force the same and their carried shells rearwardly a slight distance, so that they can be grasped in the hand and taken out, if desired. It is only when the slides S or S' occupy a rear position resulting from tripping their controlling-hammers that the opening movement of the gun will vibrate the ejector-tumbler sears and release said tumblers. When the right-hand barrel is fired, the empty shell from that side of the gun will be first moved positively by the arm o' and then ejected when the tumbler K' is tripped. The positive movement above referred to also operates to move rearwardly the unfired shell, but not to eject it.

From the above it will be seen that when either one or both barrels of a gun are fired the ejector mechanism will operate to throw the empty shell from the gun. When the shells are not fired, however, only the extractor will work to place the unfired shells in position to be grasped by the hand of the operator, if desired.

I am aware that minor changes in the arrangement, construction, and combination of several parts of my device may be made and substituted for those herein shown and described without in the least departing from the nature and principle of my invention.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination with an ejector, of means for initially moving said ejector, a tumbler for delivering an impacting blow to said ejector to eject the shell, means for setting said tumbler upon the closing movement of the gun, and mechanism for releasing said tumbler when the gun is opened, substantially as described.

2. The combination with a divided ejector, of means for initially moving both ejector parts, tumblers each adapted to deliver an impacting blow to one of said ejector parts to

eject the emptied shell, means for setting said tumblers upon the closing movement of the gun, firing mechanism, and mechanism for releasing the tumbler and operating the ejector for the fired shell, substantially as described.

3. The combination with a two-part ejector, of an arm adapted to engage and initially move said ejector parts, an independently-movable needle-bar for each ejector part, a tumbler for each needle-bar and operating to deliver an impacting blow thereto, cocking means for said tumblers, said means being operated by said arm, and means for moving said arm, substantially as described.

4. The combination with a divided ejector, of an arm o' coöperating with both parts of said ejector, independently-movable needle-bars coöperating with the two parts of said ejector, tumblers coöperating with said needle-bars, a cocking-bar operated by said arm o' for cocking said tumblers, sears for the tumblers, and independently-movable slides carrying projections for operating said sears; substantially as described.

5. In a breakdown gun, the combination with the cocking mechanism for the hammers, of plunger-rods controlled thereby, slides whose positions are controlled by said plunger-rods, sears tripped by said slides, tumblers controlled by said sears, and a divided ejector mechanism actuated by said tumblers; substantially as described.

6. The combination with a frame, the pivoted barrel, the fore-end iron, the firing-hammer and mechanism for cocking said hammer when the gun is opened, an ejector, a tumbler mounted in the fore-end iron, a sear for said tumbler, a slide operated by the firing mechanism for moving said sear, and means on the pivot-bolt of the barrel for cocking the tumbler upon the closing movement of the gun; substantially as described.

7. In a device of the character described, the combination with the frame, the hammer carried thereby, the pivoted barrel, the ejector proper, the fore-end iron secured to said barrel, a block secured to said fore-end iron, a tumbler pivoted in said block, a spring which bears against said tumbler, a sear for coöperating with said tumbler, a slide-bar, a projection on said slide-bar, a rod which coöperates with said slide-bar, a plunger to which said rod is secured, and an arm on the hammer for coöperating with said plunger; substantially as described.

8. In combination with the frame, hammers and pivoted barrels of a gun, a divided ejector, a block secured to said barrels, tumblers pivotally mounted on said block, springs for coöperating with said tumblers, slide-bars, projections arranged on said slide-bars and designed in one position of the parts to coöperate with and release the sears from the tumblers, and means for sliding said slide-bars,

so that when the hammer or hammers of the gun have been tripped and the gun is opened, the tumbler or tumblers will be released, in order that an impacting blow may be delivered to the one or both members of the divided ejector, to eject the exploded shell or shells; substantially as described.

In testimony whereof I hereunto affix my signature, in the presence of two witnesses, this 20th day of September, 1899.

E. E. STUBBS.

Witnesses:

J. C. BROOKFIELD,

J. E. LEYDA.