UNITED STATES PATENT OFFICE.

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EJECTOR MECHANISM FOR GUNS.

SPECIFICATION forming part of Letters Patent No. 663,830, dated December 11, 1900.

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To all whom it may concern:

Be it known that I, EDWARD H. ELDER, a citizen of the United States of America, and a resident of Chicopee, in the county of Hampden and State of Massachusetts, have invented certain new and useful Improvements in Ejector Mechanism for Guns, of which the following is a full, clear, and exact description.

This invention relates to improvements in ejector mechanism for firearms, more especially shotguns, either double or single barreled.

The object of the invention is to produce an ejector or extractor device for the shells which is automatically operated on the breaking down of the gun, which is simple and efficient and not liable to derangement or to become displaced or lost; and the invention consists in the construction and combination of arrangement of parts, all substantially as will be hereinafter described, and set forth in the claims.

Reference is to be had to the accompanying drawings, in which the present improved ejector mechanism is illustrated, and in which—

Figure 1 is a central longitudinal section through the portion of a shotgun in which the ejector is contained, showing the parts which constitute the latter as in their relative positions when the gun is closed. Fig. 2 is a substantially similar longitudinal sectional view, but showing the gun as broken down and the parts of the ejector as in their changed positions as insured by the breaking down or opening of the gun. Figs. 3, 4, and 5 are perspective views in detail of the parts which constitute the ejector device.

Similar characters of reference indicate corresponding parts in all of the views.

In the drawings, A represents the frame of the gun, comprising the forward extension a, to which the bottom lug b of the barrel or barrels B is hinged at d, the frame having the upwardly and forwardly inclined portion f in advance of the hinge to act as a cam-surface in relation to the catch-releasing rod g, hereinafter described.

The bottom lug g under the barrel is provided with the longitudinal bore or socket h, in which is longitudinally movable the stem i of the extractor or ejector, the flange or rear-end enlargement j being when the gun is closed disposed within the rabbeted seat k therefor, said seat merging into or opening to the shell-receiving chamber of the barrel, as usual.

The front end portion of the ejector-stem is formed with a central longitudinal passage r, preferably by making this portion of the stem tubular, and such tubular portion is longitudinally slotted or recessed at its under side, as indicated at s in Fig. 3, the bottom edge of the tube-walls at the opposite sides of the median slot being constructed with the notches 10 and 12, the vertical or catch portion 13 of the notch 10 being of slightly-less depth than the corresponding part of the notch 12, while each notch from the said catch portion thereof is beveled or inclined rearwardly, as shown.

j represents the catch for engaging the stem of the ejector when the latter is in its closed position and for retaining it in such closed position until the catch is displaced transversely relative to the length of the ejector to release the latter. The said catch is shown as in the form of a cylindrical block set for an axial play within a socket 14 therefor vertically through the bottom lug b and inwardly merging into or connecting with the longitudinal bore h of the lug. The upper engaging end of the catch, as plainly shown in Fig. 5, is constructed with the forwardly-facing catch members 15 and 16, rearwardly beveled, as seen at 17; and having between them the further endwise-extended portion, which is beveled, as seen at 18, from its rear edge downwardly and forwardly, constituting an incline suitable for receiving the impingement thereagainst of the cam or wedge-shaped end 18 of the ejector-catch-releasing rod g. The cylindrical block having the engagement and inclining portion at its inner end, as described, has an elevating force imparted thereto by the spring which bears against its lower end and which is confined under compression between such lower end of the catch and the screw-plug m, which screw engages into and closes the lower end of the afore-mentioned socket 11.

The catch-releasing rod for convenience and practicability is formed in two sections 22 and 23, as shown in Fig. 4, the forward end of the section 23 being provided with the shoulder-flange 25, axially screw-threaded and
tapped to receive the rear screw-threaded end portion of the stem-section 22 therein, so that when the parts are assembled the two portions are as one piece. The rear portion 5 of the operating stem having the wedge-shaped extremity enters the central passage 2 of the in the stem or shank of the ejector, the vertically portion 21 of said wedge-shaped extremity or cam depending so as to have its position between the opposite margins of the longitudinal slot or recess 2, whereby the said part 2 will be restrained from any undue rotational movement, and the engagement of the portion 17 f and through the said recessed portion 2 of the ejector-stem, not only insures that the ejector-stem will not be turned, but also serves to prevent the catch j from becoming turned, whereby such incline 17 would be displaced from its proper relative position for receiving the impingement of the cam 18 thereof when the barrel is swung open. The spiral spring n is provided at the bottom of the stem 25 of the catch-releasing rod and the forward end of the ejector-stem.

The action of closing the gun insures that the ejector will be moved longitudinally forward and closed as ordinary, at which time the catch 15 engages the catch-notches 10, provided at the bottom of the stem of the ejector, as shown in Fig. 1. Now when the gun is broken down the forward portion f of the frame, which has its surface more or less sharply angular to the length of the part g, constitutes an abutment whereby the swinging of the barrel and bottom lug insure, as the catch-releasing rod is swung therewith into the rearwardly and upwardly inclined position shown in Fig. 2, a rearwardly longitudinal forcing of the said rod g within the bore h in the bottom lug, and the cam 18 in working against the incline 17 of the catch j crowds such catch endwise, so that the catch members 15 become disengaged from the notches 12, and the face upper part of the frame of the gun efficiently serves as the abutment or resistant against the necessary transverse displacement of the catch 7 to release the ejector from the engagement had by its catch portion 10, such transverse displacement effected by the said cam 18 is not so great as to place the catch portions 15 below the path of the deeper vertical catch portions 13 of the notch 12, but will intersect such portions if the throwing force of the spring n is sufficient to project the extraneous rod of the length of, and thereby bring the notches 12 into proximity to the catch 7, and thus there is no liability at any time of the ejector being thrown entirely out of the bore or socket in which it has its requisite extent of back-and-forth play.

The face f of a suitably-recessed forward upper part of the frame of the gun efficiently serves as the abutment or resistant against which the swinging of the barrel and its lug cause the forward end of the catch-releasing rod to be brought; but any suitable fixed part of the frame, having its surface suitably angular or eccentric to the pivotal point d, will suffice to insure the same result. The rear wedge-shaped end of the catch-releasing rod g, after the rod has been so far moved as to force the catch from its engagement with the ejector, will have come adjacent the solid rear part of the ejector, so that the last portion of the thrust imparted to the rod g will cause such rod to positively and forcibly drive the ejector rearwardly should the spring fail to do the work of engagement of a cartridge shell sticking in the chamber, and in order to provide that the capability of this action in such contingency shall exist the normal location 85 of the rear end of the rod relating to the inner end wall 2 within the socket of the tubular ejector-stem is at less distance from the said wall 2 than the range or length of reciprocation or thrust movement which the rod has at each breaking down of the gun.

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

1. In an ejector mechanism for a break-down gun, in combination, the barrel or barrel-stock having, in an under portion or bottom lug thereof, the longitudinally-movable ejector, the stem of which is tubular and constructed with the rear end wall 2, and also provided with a catch or portion to be engaged, a catch movable transversely of the length of, and adapted to engage the ejector, a catch-releasing rod having, in an under portion or bottom lug having at its rear portion a cam playing in the tubular portion of the ejector-stem, adapted to impinge against the ejector-catch, and having a forwardly-projecting portion, and a fixed forward part of the gun-frame which serves as the catch releasing rod is swung in unison with the mechanism for such rod insuring the longitudinal catch-releasing movement thereof, the distance between the normal location of the cam-formed end of the said rod and said end wall 2 being less than the range of thrust imparted to the rod.

2. In an ejector mechanism for a break-down gun, in combination, the barrel having, in an under portion or bottom lug thereof, the longitudinally-movable ejector, the stem of which is formed with a longitudinal passage or way having rear end wall 2 and with a downwardly-open slot or recess, and provided with a catch, or portion to be engaged, a catch movable by bringing the forward portion of the ejector-lever into proximity to the catch 7, and thereby bring the notches 12 into proximity to the catch 7, and thus there is no liability at any time of the ejector being thrown entirely out of the bore or socket in which it has its requisite extent of back-and-forth play.
8. In an ejector mechanism for a breakdown gun, in combination, the barrel or barrels having, in an under portion or bottom lug thereof, the longitudinally-movable ejector, the stem of which is formed with a longitudinal passage or way and with a downwardly-open slot or recess, and provided with a catch-notch 10, and forward thereof with another catch-notch 12, the engaging side of which is deeper than that of the notch 10, a catch movable transversely of the length of, and normally adapted to engage in said catch 10 of the ejector, and having a part 17 which enters the passage in the ejector-stem, a catch-releasing rod longitudinally movable in the bottom lug, having its rear portion entered in said ejector-stem passage, and provided with a cam to impinge against said part 17 of the ejector-catch, and having a portion projecting forward of the bottom lug, and a fixed forward part 4 of the gun-frame adjacent which the forward end of the catch-releasing rod has its position, substantially as and for the purposes set forth.

4. In a breakdown gun, in combination, the gun-frame having at its forward portion the abutment or resistant part 7, and the barrel having the bottom lug thereof hinged to the frame adjacent said part 7, and having in said lug the longitudinal bore or passage 7 and transverse passage 14 leading from the bottom of the lug upwardly to said passage 7, the ejector provided with the stem 5 formed tubular and having the bottom longitudinal slot or recess 6 and having the notches 10 and 12 in the under side thereof, the engagement portions 13 of the notch 12 extending lower than the corresponding portion of the notch 10, the cylindrical catch-block 7 movable in said transverse passage 14, and having its inner upper end formed with the opposite side 50 catch portions 15, 15, having the rearwardly-beveled backs 16, 16, and having, between said parts 15, 15, the further endwise-extended flat-sided forwardly and downwardly beveled part 17 which enters through the slot of the ejector-stem, the catch-spring, and screw-plug m, the catch-releasing rod 9 having its rear end portion entered within the tubular ejector-stem provided with the downwardly-widened wedge or cam 18 at its rear end located adjacent said part 17 of the catch, said stem also having the intermediate shoulder 23, and its forward end projecting outwardly beyond the end of the said bottom lug of the barrel, and the spiral spring surrounding the rod 9 and having its ends against said shoulder 23 and the end of the ejector-stem, all substantially as described and shown, and for the purposes set forth.

Signed by me at Springfield, Massachusetts, this 16th day of April, 1900.

-EDWARD H. ELDER.

Witnesses:

WM. S. BELLOWS,
C. F. CLARKE.