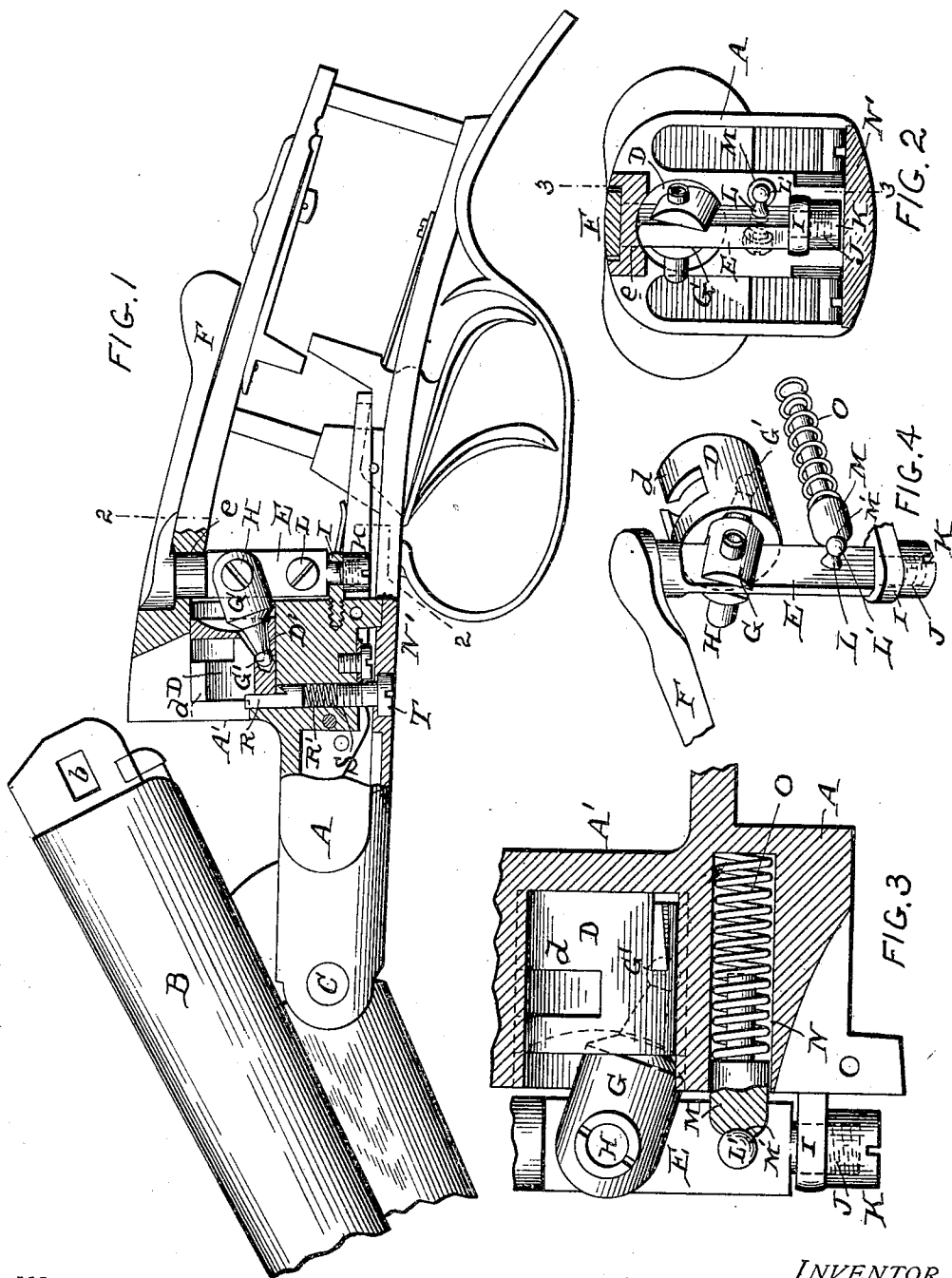


No. 810,046.

PATENTED JAN. 16, 1906.

A. H. FOX.  
BARREL LOCKING DEVICE FOR BREAKDOWN GUNS.

APPLICATION FILED AUG. 12, 1905.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

ANSLEY H. FOX, OF PHILADELPHIA, PENNSYLVANIA.

## BARREL-LOCKING DEVICE FOR BREAKDOWN GUNS.

No. 810,046.

Specification of Letters Patent.

Patented Jan. 16, 1906.

Application filed August 12, 1905. Serial No. 273,878

*To all whom it may concern:*

Be it known that I, ANSLEY H. FOX, of the city and county of Philadelphia and State of Pennsylvania, have invented an Improvement  
5 in Barrel-Locking Devices for Breakdown Guns, of which the following is a specification.

My invention has reference to barrel-locking devices for breakdown guns; and it consists of certain improvements which are fully  
10 set forth in the following specification and shown in the accompanying drawings, which form a part thereof.

The invention described in this application is more particularly an improvement upon my  
15 invention set out in Letters Patent No. 796,119, granted to me on August 1, 1905.

The object of my invention is to provide specific improvements in the means for operating the rotary locking-bolt, whereby a minimum friction will be produced between certain of the parts and whereby certain other of the parts may be readily removed for accessibility for purposes of proper adjustment in the manufacture and assembling of the gun  
25 and also for repairs.

My invention will be better understood by reference to the drawings, in which—

Figure 1 is a longitudinal sectional elevation of the breech portion of a gun embodying my improvements. Fig. 2 is a cross-section of same on line 2 2. Fig. 3 is a sectional elevation of a portion of same on line 3 3, and Fig. 4 is a perspective view of the locking-bolt and its operating mechanism separated  
35 from the breech-frame.

The breech-frame A has the barrels B hinged to it at C and is provided with the upwardly-extending portion A', containing the locking-bolt D, which in the particular illustration is of the rotary construction. The locking-bolt D consists of a cylindrical body rotating on an axis substantially parallel to the axis of the bore of the barrels and provided with the locking part d, adapted to be moved through the slot or aperture b in the rear projection of the barrels B. This rotary locking-bolt D is given a rotary reciprocatory motion by an arm or pendulum lever G, journaled therein and hinged to a vertical rocking spindle E on  
40 a transverse axis H. The spindle E is arranged immediately at the rear of the breech-frame A A' and is journaled therein at the upper end at e, and said end is provided with a lever F, adapted to be operated by hand for

unlocking the barrels in the act of breaking  
55 down the gun. The lower end of the spindle E is provided with a stud J, which is journaled in an eye-bearing I and mounted with a nut K below the bearing for holding the spindle down in place. The eye-bearing I is provided with a screw-threaded shank, which is  
60 screwed into the rear wall of the breech-frame.

The pendulum-lever G, which operates the bolt, is provided on its free or forward end with the ball-shaped head G', which takes a  
65 bearing in the cylindrical end of the aperture D' in the bolt, thereby making a contact only in a circular line and permitting more or less free movement of the pendulum-lever without creating objectionable friction with the  
70 rotary bolt. The ball-shaped head makes connection with the rotary bolt midway between its ends, so that the power is properly applied to rotate the bolt within its bearing and without permitting excessive friction due to improper  
75 application of the power which rotates it.

For the purpose of holding the locking-bolt in unlocking position when the barrels are opened I employ a vertically-reciprocating trip R, which works in a hole S beneath the  
80 bolt. This trip-hole is continued downward through the bottom of the breech-frame and of a diameter sufficient to enable the trip R and the spring R' to be inserted or removed from the bottom. The hole S is closed at the  
85 bottom by a screw T, which holds the trigger-plate N' to the bottom of the breech-frame. The upper part of the said screw acts as an abutment against which the spring R' of the trip rests. In this manner the trip and the  
90 spring may be readily removed for adjustment or repair by simply withdrawing the screw T. This is a most important feature, because the trip must be very accurately adjusted relatively to the rotary bolt, so as  
95 to be exactly timed in its movement under the action of its barrels in closing down into the breech-frame, the extension back of the barrels being required to depress the trip R to release the bolt exactly at the moment that  
100 the aperture b of the said extension is in perfect alinement with the rotary prong d of the bolt D, so that when the bolt is rocked the barrels are locked without any possibility of the smallest vertical movement. It frequently  
105 happens that the trip has to be removed several times and properly shaped to secure the necessary adjustment before the assemblage

of the gun can be considered perfect, and this has always been an expensive operation because of the difficulty of reaching the trip, which could only be accomplished by removal of the locking-bolt and its connections. By my present improvement this adjustment can readily be made, since it only requires the removal of the screw T to secure access to the trip.

To one side of the spindle the breech-frame A is furnished with a hole N, opening rearwardly, and in this hole is arranged a coil-spring O and a follower resting upon the spring and extending rearwardly somewhat beyond the rear wall of the breech-frame. The spindle E is provided on its side with an arm or extension L, which is received upon the end of the follower M. By these means the coil-spring O, acting through the follower causes the spindle to be rocked in a position to lock the gun.

The coil-spring O and follower M are located in the breech-frame between the spindle E and hinge C of the barrels, and consequently is well protected, takes up no room in the stock, and is strong, durable, and not liable to derangement.

The lateral arm L is preferably screwed into the spindle and is provided upon its free end with the ball-shaped head L', and the follower M is provided with a spherical-shaped recess M' to receive the ball-shaped head of the arm L. The follower M is made of slightly smaller diameter than the diameter of the aperture or hole N, so that it may have a very slight rocking motion without contact with the side walls of said aperture between the coil-spring and the arm L. The clearance between the follower and the walls of the hole is very slight, but should be sufficient to permit the rotary swinging movement of the arm L and its ball-shaped head without forcing the follower into binding contact with the walls of the hole. The ball-and-socket connection between the parts L' and M' not only retain the follower in proper position in a transverse direction, but also in a vertical direction, so that no contact with the side walls of the hole would occur anywhere along the follower. This feature of construction is an important part of my invention.

It will be obvious that a rotation of the spindle E by the lever F will, through the arm L, impart a forward motion to the follower M and produce a compression of the spring O in addition to the normal compression under which the spring is held. This compression of the spring O gives to it a force which is utilized to return the spindle E and lever F to normal position and rotate the locking-bolt D and positively hold them in position when so thrown.

While I prefer to locate the spring O and the follower M forward of the spindle in the

breech-frame between the barrel-hinge and the spindle, it is evident that I need not restrict myself to that position of the parts, as by suitable modifications, which will be understood by any one skilled in the art of gun-making, the said parts L, M, N, and O can be arranged in any other suitable positions about the spindle.

While I prefer the employment of the screw T for holding the trigger-plate in position and also sealing the bottom of the aperture or hole in which the trip and its coil-spring are located, I do not confine myself to sealing the bottom of this aperture by means of such screw, as any other means of closing the aperture and removal from the outside of the breech-frame would answer the requirements. It is also evident that by varying the length of the screw the pressure of the spring may be varied, so that if the spring is too strong the removal of a small portion of the end of the screw would secure the requisite adjustment of the tension of the spring.

The several advantages of my improvements described in the foregoing specification may be summarized as follows: The great difficulty of fitting the pendulum-lever to the rotary bolt and spindle to enable it to move properly and without binding, which heretofore existed, is entirely overcome, as by boring the large taper hole D' with small cylindrical end and using a ball-shaped head G' on the end of the pendulum-lever G the fitting is reduced to a minimum and no accuracy is required in the pendulum-lever to the greater part of the hole. This also enables a tapered shank to be employed for strength and obviates the necessity of accurately centering the pivot H of the pendulum-lever in the axial line of the rotary locking-bolt D. This construction enables an ordinary workman to produce a more satisfactory mechanism, offering less resistance than was possible by a most skilled and high-priced workman with the former construction. The employment of the ball-shaped head L', working in the socket M' of the follower M, and the clearance between the follower and hole N, containing the spring O, greatly reduces the friction, gives the spring full play, and largely reduces the wear on the several parts, thereby increasing their life. The ball-shaped head L' and socket M' supports the follower in every direction, and as the other end of the follower is supported by the spring it is not required to touch or be guided by the sides of the hole N. This construction is also simpler, more accurate, and requires less skill and time to assemble. The employment of the hole S for the spring R' and trip R, opening through the bottom of the breech-frame and closed by the screw T, which holds the trigger-plate N' in position, enables the rapid removal and replacement of the spring and trip

without removing the rotary locking-bolt, so that the filing or fitting of the trip to accurately adjust it to the extension of the barrels, which operates it to release the bolt D, may be accomplished at a minimum cost. By this means very little time is required to adjust and assemble the trip parts, and the tension of the spring R' may also with equal facility be adjusted. The saving in time in making adjustments and assembling means greatly less cost.

The minor details of construction may be modified without departing from the spirit of the invention.

15 Having now described the invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a breech-loading breakdown gun the breech-frame having a hole, combined with a locking-bolt arranged in the breech-frame for locking the barrels, an upright spindle journaled in the breech-frame and having a lateral arm terminating in a ball-shaped head, a spring located in the hole in the breech-frame, a follower resting against the spring and having a diameter less than the diameter of the hole so as to form a clearance-space between it and the hole and also provided on its outer end with a concave recess into which the ball-shaped head of the lateral arm is received, and a connection between the spindle and the locking-bolt whereby the latter may be operated by rocking the spindle.

2. In a breech-loading breakdown gun, the breech-frame having a hole, combined with a cylindrical rotary locking-bolt opened in the breech-frame in line with its center for locking the barrels, an upright spindle journaled in the breech-frame and having a spring, a lateral arm terminating in a ball-shaped head, a spring located in the hole in the breech-frame, a follower resting against the spring and having a diameter less than the diameter of the hole so as to form a clearance-space between it and the hole and also provided on its outer end with a concave recess into which the ball-shaped head of the lateral arm is received, and a connection between the spindle and the locking-bolt consisting of a pendulum-lever having a ball-shaped head extending into the body of the rotary locking-bolt and contacting therewith only at its cylindrical head whereby it may be operated by rocking the spindle.

3. In a breech-loading breakdown gun, the combination of the barrels, a rotary locking-bolt revolving on an axis substantially parallel to the axis of the bore of the barrel and having an oblique hole D', a rocking spindle having a hand-lever by which to rock it, spring devices to normally rock the spindle when the pressure on the hand-lever is released, and a pendulum-lever G hinged to the vertical rocking spindle on a transverse axis and provided on

its end with a ball-shaped head G' which fits into the oblique aperture in the locking-bolt whereby the bolt is given a rotary motion and contact between the pendulum-lever and the walls of the hole in the locking-bolt is prevented except adjacent to the ball-shaped head.

4. In a breech-loading breakdown gun the breech-frame combined with a rotary locking-bolt rotating on an axis substantially parallel to the axis of the barrels, a rocking spindle journaled in the breech-frame to the rear of the locking-bolt, and a pendulum-lever hinged to the rocking spindle and forming a ball-and-socket connection with the rotary locking-bolt.

5. In a breech-loading breakdown gun, the combination of the breech-frame, a locking-bolt for the barrels carried by the breech-frame, an upright rocking spindle having a hand-lever and journaled in the breech-frame and also having a lateral-extending arm terminating in a ball-shaped head, a coil-spring carried by the breech-frame, a follower resting against the coil-spring at one end and having the other end recessed to receive the cylindrical-shaped head of the lateral arm of the spindle, and connections between the rocking spindle and the locking-bolt.

6. In a breech-loading breakdown gun, the breech-frame having a hole S extending upwardly from the bottom, in combination with a rotary cylindrical locking-bolt arranged in the breech-frame, spring-controlled means for rotating the locking-bolt, a trip R arranged in the hole adapted to lock the locking-bolt in open position, a coil-spring R' adapted to press the trip upward also arranged in the hole and removable together with the trip downward through the bottom of the hole in the breech-frame, and means for closing the lower part of the hole in the breech-frame for holding the said spring and trip within the said hole and putting the spring under tension.

7. In a breech-loading breakdown gun, the breech-frame having a hole S extending upwardly from the bottom, in combination with a rotary cylindrical locking-bolt arranged in the breech-frame, spring-controlled means for rotating the locking-bolt, a trip R arranged in the hole adapted to lock the locking-bolt in open position, a coil-spring R' adapted to press the trip upward also arranged in the hole and removable together with the trip downward through the hole in the breech-frame, a trigger-plate fitting against the lower part of the breech-frame, and means for closing the lower part of the hole in the breech-frame for holding the said spring and trip within the said hole and putting the spring under tension consisting of a screw T extending through the trigger-plate and screwed into the lower part of the hole S.

8. In a breech-loading breakdown gun, the combination of a rotary locking-bolt, spring-actuated means for rotating the bolt to lock

the barrels, a trip to lock the locking-bolt in its open position, a spring to move the trip into locking position, a breech-frame inclosing the rotary locking-bolt and having an  
5 aperture of a diameter larger than the diameter of the trip and spring and open entirely through to the bottom, and removable means for sealing the bottom of the said aperture

and applying a pressure to the spring to create an upward thrust upon the trip. 10

In testimony of which invention I hereunto set my hand.

ANSLEY H. FOX.

Witnesses:

W. L. CORNELL,  
ROY HITCHNER.