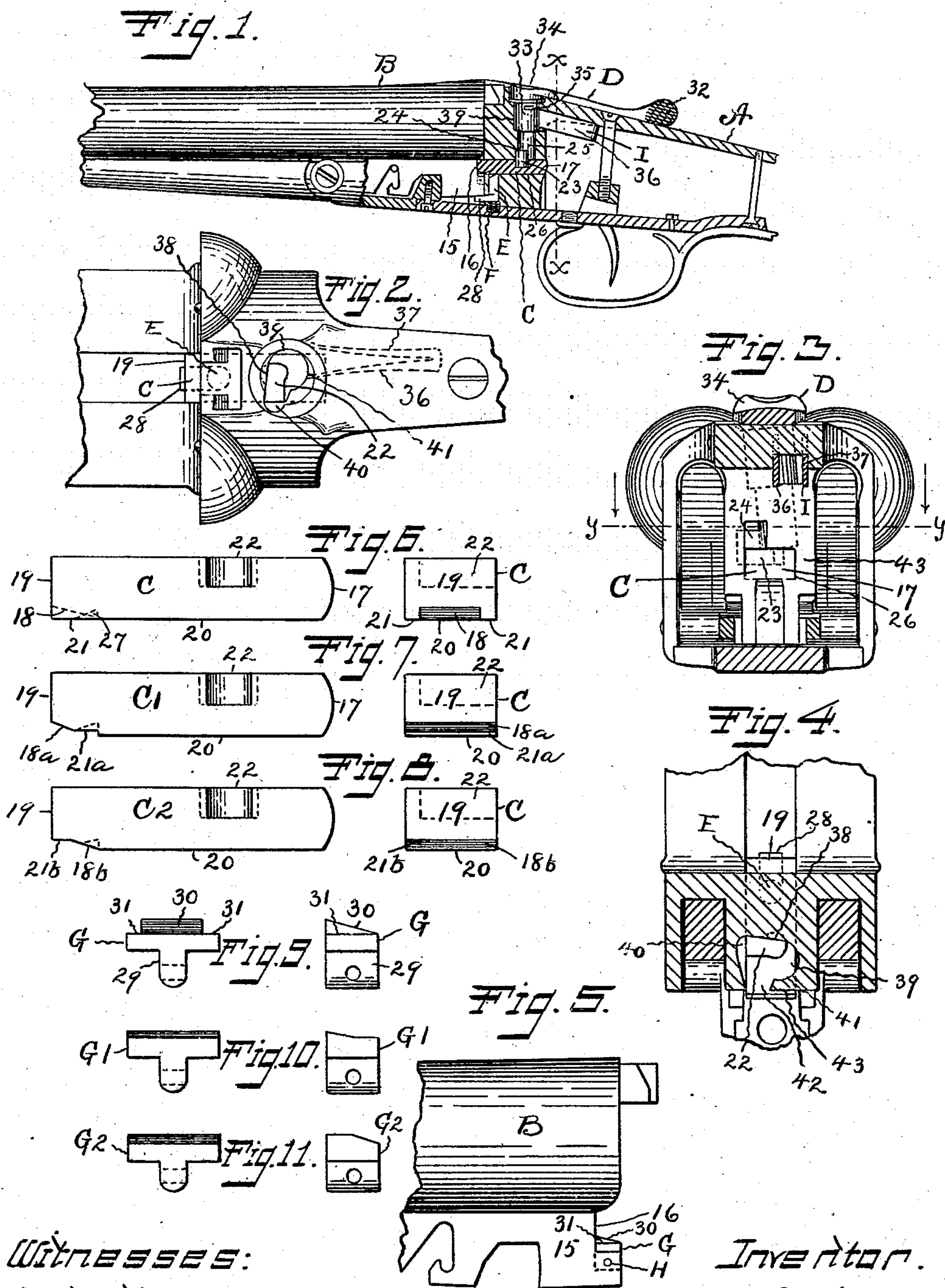


J. P. HAYES.  
BREECH MECHANISM FOR FIREARMS.  
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WITNESSES:

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# UNITED STATES PATENT OFFICE.

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BREECH MECHANISM FOR FIREARMS.

973,655.

Specification of Letters Patent.

Patented Oct. 25, 1910.

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*To all whom it may concern:*

Be it known that I, JAMES P. HAYES, a citizen of the United States, residing at Meriden, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Breech Mechanism for Firearms, of which the following is a specification.

My invention relates to improvements in breech mechanism for fire arms, and the objects of my invention are simplicity and economy in construction and convenience and efficiency in use.

In the accompanying drawing:—Figure 1 is a longitudinal section of part of a fire arm showing my invention, certain parts being shown in side elevation. Fig. 2 is a top view of the same on an enlarged scale, with the top lever removed. Fig. 3 is a sectional view on the line *x x* of Fig. 1. Fig. 4 is a sectional view on the line *y y* of Fig. 3. Fig. 5 is a side elevation of the rear end of the barrels shown in Fig. 1. Fig. 6 is a side and end view of my preferred form of bolt on an enlarged scale. Fig. 7 and Fig. 8 are similar views of modifications of my bolt. Fig. 9 is an end and side view of my preferred form of bolt plate. Fig. 10 and Fig. 11 are similar views of modifications of my bolt plate.

A is the frame of my improved fire arm and comprises on the lower side a forwardly projecting arm to which the barrels B are pivoted in the usual manner. The barrels B are provided with a downwardly projecting lug 15 provided with a mortise 16 adapted to receive and engage with the bolt C so as to hold the barrels B closed in position for use. A top lever D, pivotally mounted in the frame A, is provided with means for operating the said bolt C, to be described. The said bolt C comprises an elongated block approximately square in cross section having a rounded rear end 17, and is cut away at the front end on the lower side so as to form an inclined engaging surface 18 extending along the middle from the front end 19 backwardly and downwardly to the bottom surface 20, leaving on each side adjacent said inclined engaging surface 18 coöperating horizontal engaging surfaces 21, which latter are extensions of the general lower surface 20. The said bolt C is further provided on its upper side with a recess 22 fitting and

adapted to receive a tooth 23 projecting downwardly from the arm 24 extending radially outwardly from the lower end of the lower body 25 of the said top lever D and adapted to be reciprocated thereby. The general body of the said bolt C is a fit for a corresponding chamber 26 provided therefor in the said frame A, and in which it is adapted to be reciprocated in the manner described by the said top lever D.

On the lower side the bolt C is provided with a notch 27 which is adapted to engage with the trip E which is forced into engagement therewith by means of a spring F when the said bolt is retracted to its rearmost position and to be held in such retracted position until released from such engagement by the tripping of the said trip E by the lug 15 engaging with the offset lug 28 on the same in an ordinary manner. A bolt block G is mounted on the said lug 15 in an ordinary manner as by means of a downwardly projecting web 29 fitting in a corresponding groove in the said lug 15 and a pin H and has on its upper side an inclined engaging surface 30 along the central line and generally a counterpart of the said inclined surface 18 on the said bolt C and on each side a flat engaging surface 31 similarly generally corresponding to the said horizontal engaging surfaces 21 on the bolt C, though preferably formed in a plane appreciably below the normal position of the same so as to provide clearance between the opposed horizontal surfaces on the bolt and bolt plate.

The said top lever D comprises a backwardly directed arm 32 having at the rear end a handle or thumb piece and provided at its forward end with a downwardly projecting body 33, generally cylindrical, having at the upper end an enlarged head 34 and at the lower end the said lower body 25, also cylindrical and of reduced diameter and provided as described with the said arm 24 and tooth 23, the said head and bodies generally fitting a corresponding socket 39 provided in the frame A. Adjacent the said head 34 the said body 33 is provided with a slot 35 adapted to receive a screw so as to be held in place thereby and have free limited pivotal movement. The said body 33 is provided with a slot adapted to receive the free arm 36 of a V shaped spring I. The fixed arm 37 of the said spring is fixed in the said



frame A in an ordinary manner, so as to permit the free insertion and removal of the said top lever in the frame A. The said spring I operates normally to force the bolt C forward so as to engage the said engaging surfaces 18 and 21 of the same with the surfaces 30 and 31 of the bolt block. The front wall 38 of the radial slot 40 to be described is generally flattened to fit the corresponding wall of the arm 24 and its tooth 23 so as to limit thereby the forward movement of the bolt C when the barrels are removed. The said socket 39 in the frame A is provided with said radial enlargement 40 to admit the said arm 24 and tooth 23 in inserting and removing the said top lever D from the frame A, the said enlargement or recess 40 being on the front side generally and away from the rear side or active bearing side 41 in use. An operating space for the said tooth 23 is provided in a convenient manner by cutting a channel 42 through from the back wall 43 of the frame to the said socket 39 and slot 40.

The bolt C<sup>1</sup> shown in Fig. 7 has the inclined surface 18<sup>a</sup> extending across the end of the bolt and the horizontal engaging surface 21<sup>a</sup> immediately in the rear of the same. The bolt C<sup>2</sup> shown in Fig. 8 has the surfaces 18<sup>b</sup> and 21<sup>b</sup> interchanged from the relation shown in Fig. 7. Fig. 10 shows a bolt block G<sup>1</sup> corresponding to the bolt shown in Fig. 7 and Fig. 11 shows the bolt block G<sup>2</sup> corresponding to the bolt shown in Fig. 8.

The said bolt C as described has full body dimensions across the corners from end to end, except for the single interruption at the said recess, which is at about the middle of the length, so that the same has practically the maximum bearing surface possible to withstand wear and to insure proper guiding of the same in its reciprocal travel in the chamber provided for the same in the frame.

The positive and forceful engagement of the inclined engaging surfaces described insures a firm and rigid holding of the gun barrels in the closed position under normal conditions. The opposed horizontal engaging surfaces prevent positively the premature opening of the barrels by the discharge, while the clearance between the said horizontal surfaces obviates the liability of any difficulty in freely opening and closing the gun on account of accumulation of dirt and foreign matter on the barrels or the surfaces of the frame A which engage with the same.

I claim as my invention:—

1. In a firearm mechanism having a frame and a barrel hinged thereto, cooperating means for locking said frame and barrel comprising a lug on said barrel and a bolt reciprocatingly mounted in said frame and having two sets of engaging surfaces, and held in engaging position, one of said sets of surfaces inclined and adapted to lock said

frame and barrel rigidly under normal conditions, and the other set of surfaces parallel to the line of reciprocation of said bolt and adapted to positively lock the said frame and barrel under abnormal conditions and when the firearm is discharged.

2. In a firearm mechanism having a frame and a barrel hinged thereto, the said barrel provided with a lug having engaging surfaces and the said frame provided with a bolt having engaging surfaces adapted to engage with said surfaces on said lug, and means for projecting said bolt forward into engaging position and means for retracting the same from such position, the said surfaces comprising in combination inclined surfaces and surfaces parallel with the line of movement of said bolt.

3. In a firearm mechanism having a frame, a barrel hinged thereto, a bolt and means for reciprocating said bolt in said frame the said barrel and bolt having a multiple of engaging surfaces, and means for retaining the same in engaging position, the said surfaces comprising inclined surfaces adapted to prevent rattling and any tendency to looseness in the connection between the said barrel and frame, and cooperating surfaces parallel with the line of reciprocation of said bolt adapted to positively prevent the opening of said barrel and frame.

4. In a firearm mechanism having a frame, a barrel hinged thereto, means for opening and closing said barrel and frame, a bolt adapted to be reciprocated so as to lock and unlock said barrel and frame, and cooperating engaging surfaces on said bolt and frame adapted to engage with one another in effecting such locking, and comprising inclined surfaces in cooperation with surfaces parallel with the line of motion of said bolt, spring pressure means for holding said inclined surfaces in engagement and said parallel surfaces in position ready for engagement and separated by an appreciable space.

5. In a firearm mechanism having a frame and a barrel hinged thereto, means for opening and closing said barrel and frame, a bolt having a back and forth motion and adapted to lock said barrel and frame closed, engaging surfaces on said barrel and bolt adapted to cooperate in said locking, the said surfaces comprising inclined surfaces centrally located and lateral surfaces parallel with the line of motion of said bolt.

6. In a firearm mechanism, a frame having a chamber, a barrel hinged to said frame, a bolt comprising an elongated structure rectangular in cross-section fitting said chamber, a recess in one side of said bolt adapted to receive means for reciprocation, and the said bolt provided with means of engagement with the said barrel at one end comprising an inclined surface and the said



bolt having full body dimensions across the corners at points remote from the said recess.

7. In a firearm mechanism, a frame, a bolt, a top lever and a spring, the said top lever comprising a head at the upper end and an operating handle extending laterally from the said head, a cylindrical upper body below said head and provided with means for engagement with the said spring, a cylindrical lower body below said upper body, of reduced diameter relatively to the said upper body, and having laterally directed means for engaging with the said bolt, the said frame comprising a closed rear end and forwardly of the said end provided with a socket fitting generally and on all sides the said head, upper body and lower body, and a longitudinal slot provided in the said socket permitting free and unobstructed passage of the said bolt engaging means during the insertion and removal of the said top lever relatively to the said frame, and the said slot located remote from the rear wall of the said frame, so as to leave an uninterrupted full length bearing in said rear wall for the said top lever.

8. In a firearm mechanism, a frame, a bolt, and a top lever, the said top lever comprising a head at the upper end and an operating handle extending laterally therefrom a cylindrical body below said head and provided with a laterally directed arm serving as means for engagement with the

said bolt, the said frame comprising a socket fitting generally the said top lever body, and provided with a lateral extension forming an operating chamber permitting operation therein of the said arm and a longitudinal slot in the side wall of the said socket for admitting the said arm the said slot terminating in said operating chamber and having a common front wall therewith, and the said front wall serving as a stop limiting the motion of the said arm and the bolt engaged therewith when the said bolt is free to move in a forward direction.

9. A mechanism of the character described comprising a longitudinally movable bolt having a surface parallel with its line of movement and a surface inclined to the line of movement and a barrel lug having surfaces coacting with the surfaces on the said bolt.

10. A mechanism of the character described comprising a longitudinally movable bolt having a surface parallel with its line of movement and a surface inclined to the line of movement and a barrel lug having in the normal engaged position an inclined and a parallel surface coacting with the said surfaces on the bolt.

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Witnesses:

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