

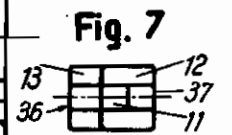
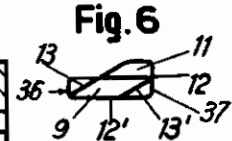
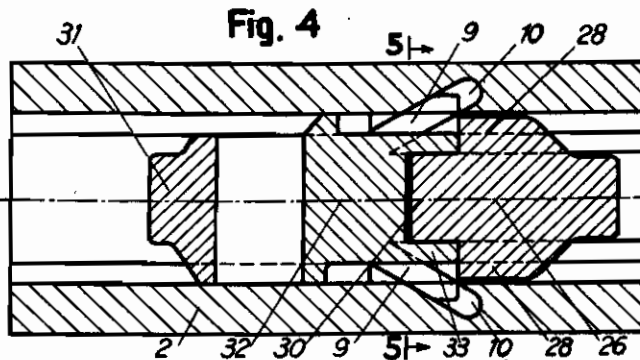
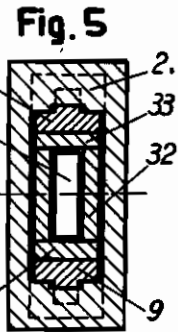
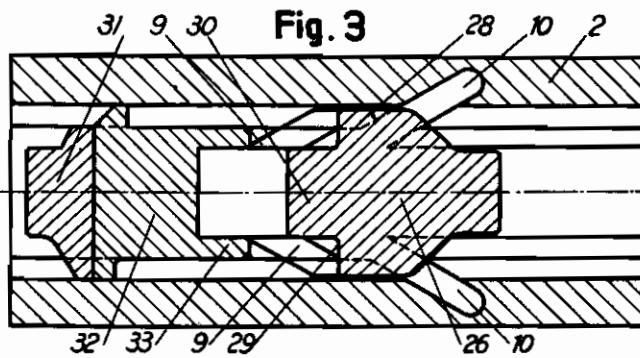
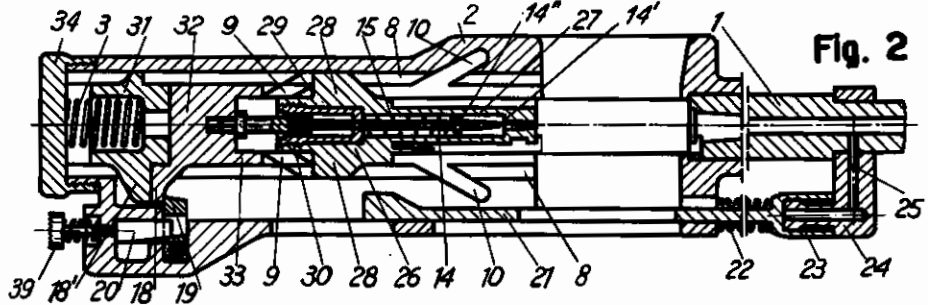
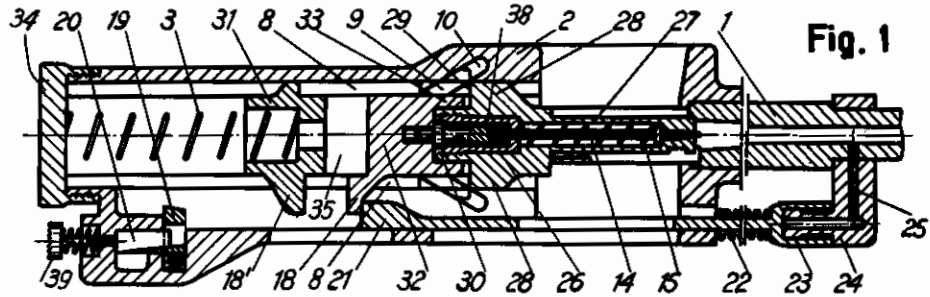
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FIRE ARMS

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ALIEN PROPERTY CUSTODIAN

FIRE ARMS

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This invention relates to breech closing means for fire arms and more particularly for automatic and semi-automatic fire arms and it comprises a breech closing mechanism in which the breech bolt cooperates with a slider mounted to move longitudinally with respect thereto, said slider cooperating with means devoted to lock said breech bolt in breech closing position.

An entirely reliable and self locking closing mechanism is obtained in accordance with this invention by means of parts to which a translatory rectilinear movement only is imparted and with the aid of flat sloping surfaces which may be easily machined with full precision as required.

An embodiment of this invention is illustrated by way of example on the annexed drawing and

Figure 1 is a longitudinal fragmentary section on the barrel axis of an arm equipped with the means of this invention the breech bolt being in closed position.

Fig. 2 is a longitudinal section similar to Fig. 1 with the breech bolt in open position;

Fig. 3 is a diagrammatic section of certain parts of the fire arm shown in Figs. 1 and 2 drawn to an enlarged scale with respect to said figures and with the breech bolt in open position;

Fig. 4 is a section similar to Fig. 3 with the breech bolt in closed position;

Fig. 5 is a transverse section on line 5-5 of Fig. 4;

Fig. 6 is a side view of a separate locking member and

Fig. 7 is a top plan view of the locking member shown in Fig. 6.

In Figures 1 and 2, 1 denotes the fire arm barrel and 2 denotes the breech which has grooves 3 in internal faces of opposite walls thereof, said grooves being connected with sloping seats 10 which expand transversely to the respective groove 3 connected therewith and are inclined to the direction in which said groove extends.

An elongated member 26 which provides a breech bolt is mounted to reciprocate in the chamber confined within the breech 2 and said bolt provides a forwardly-extending rod 27 adapted to abut by its free end on the base of a cartridge located in barrel 1; the bolt 26 has side lugs 28 in its intermediate portion which are arranged to reciprocate along the breech grooves 3 and provide rear transverse faces 29 at both sides of a central extension 30 of said bolt.

The bolt 26 is provided with a socket 31 open-

ing at its rear end where the recoil spring 3 enters; said spring abuts on a plug 34 closing the breech 2 at its rear end.

The bolt 26 has a transverse slot 35 intermediate its extension 30 and its spring socket 31 and a slider 32 is mounted to reciprocate along said bolt 26 within the slot 35 thereof.

The slider 32 has side extensions 33 adapted to embrace the bolt central extension 30 and to abut on the transverse faces 29 of the bolt 26.

Locking shoes 9 are provided for cooperation with the bolt 26, the slider 32 and the breech 2 and each of them includes a main body (Figs. 6 and 7) having transverse faces 36, 37 at its longitudinal ends and a guiding lug 11 adapted to enter a cooperating breech groove 8; on each side the locking shoe 9 provides a nose confined by longitudinally extending faces 12, 12' and by sloping end faces 13, 13' the faces 12, 12' being intended to slide along cooperating surfaces of the breech 2, bolt extension 30 and slider 32 while the sloping faces 13, 13' have an inclination registering with that of the side surfaces of the sloping seats 10.

The respective positions of the bolt 26, slider 32 and locking shoes 9 are shown in diagrammatic Figures 3 and 4; when the bolt 26 is in its open position said locking shoes 9 are positioned in the space intermediate the transverse faces 29 of the bolt 26 and the opposite end faces of the extensions 33 of the slider 32 which are in their position at maximum permissible distance with respect to the bolt extension 30.

On the contrary at the time the locking shoes 9 are within the sloping seats 10 each of them abuts frontally against a face 29 of the bolt 26 and the opposite face of the cooperating seat 10 and it rests against the side face of the adjacent extension 33 of the slider 32 which projects over the bolt extension 30; the breech closing parts of the fire arm then are in their locked position.

The striker includes a stem 14 having an end pin 14'; said striker 14 is connected with the slider 32 and extends throughout a central bore of the bolt 26 where a spring 15 is located, this spring abutting on a flange 14'' of the striker 14 by one of its ends and on a sleeve 38 fast in the bolt 26 by its opposite end.

The spring 15 is thus operative both to drive the striker 14 forward and to move the slider 32 into its advanced position which corresponds with the bolt locked position.

The slider 32 is provided with a transverse finger 18 intended to cooperate with a sear 19

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to hold the bolt 26 in open position and the striker spring 15 cocked, said sear 19 being adapted to be released by means of a wedge trigger 20 actuated by a push-knob 39.

The finger 18 is located in the path of the rear end of a rod 21 mounted to reciprocate longitudinally in the breech 2 and resiliently held in its position spaced from finger 18 by a spring 22 (Figs. 1 and 2).

The front end of the rod 21 provides a sleeve 23 slidably fitting over a spout 24 where a firing gas outlet 25 from the barrel 1 opens.

The bolt 26 has in turn on the path of the finger 18 a similar finger 18' which is engaged by the finger 18 in its recoil stroke.

In the position of the parts shown in Fig. 1 the fire arm breech 2 is closed by the front face of the rod 27 of the bolt 26 located against the rear end of the bore of the barrel 1.

The breech bolt 26 is in turn locked by the locking shoes 8 which abut on the transverse faces 29 thereof and are in turn engaged within the seats 10 of the breech 2 said shoes 9 being restricted from coming out therefrom due to their abutment against the sides of the extensions 33 of the slider 32.

The breech is thus closed in a fully efficient manner and its closing is the more reliable the greater the rearward thrust exerted on the bolt 27, 28 because said thrust is imparted to locking shoes 9 which are thus wedged intermediate the faces of the inclined seats 10 and the slider extensions 33.

In fact the force the cartridge base transmits to the bolt 27, 28 and to shoes 8 at the time a shot is fired, is resolved into two components one of which acts on the breech 2 and the other on the slider 32 in a direction perpendicular to the barrel axis, the second named components having the same line of action and opposed directions in respect of the two shoes 9 so that no torque is imparted to the breech.

For opening the bolt 26, 27 the slider 32 is moved back; in the described construction such a back displacement is caused by the pressure imparted by the rod 21 which is moved back, immediately after a shot fired, by the action of the firing gases issuing from the barrel 1 through the duct 25 and operative on the bottom of the sleeve 23 at the time the bullet has moved past the orifice of said duct 25 in the spout 24.

At the time a shot is fired the rod 21 thus recoils under the action of the shot firing gases and imparts a blow on the finger 18; the slider 32 is thus caused to recoil against the action of the striker spring 15 whilst the bolt 26 at first remains stationary due to the longitudinal gap intermediate said slider 32 and the bolt 26.

In this operation due to the movement of the slider 32 along the bolt slot 35 the side abutments provided by the slider extensions 33 for the locking shoes 9 are removed and said shoes 9 slide along the sloping seats 10 under the action of bolt faces 29 on the shoes faces 37 due to firing gas pressure on the bolt 26, 27 and to the recoil action of the slider 32 on said bolt, said locking shoes thus finally taking a position in contact with the bolt extensions 30 (Figs. 2 and 3).

Then the bolt 26 recoils with slider 32 under the action of rod 21 and slider 32 to reach its position in which the slider finger 16 is engaged behind the sear 19 (Fig. 2).

To fire a shot a pressure is applied to the push button 39 to shift the trigger 20 and to remove the sear 19, the bolt 26 thus moving forward with the slider 32 under the action of the spring 3; at the time the bolt 26 stops in its forward end position the slider 32 further advances under the action of the striker spring 15 and the front faces of the extensions 33 thereof drive the shoes 9 in front thereto said shoes being finally caused to enter the sloping seats 10 connected with the breech grooves 8.

The slider 32 may thus reach its most advanced position to drive the striker pin 14, 14' against the cap of a fresh cartridge fed in the barrel bore only after said shoes 9 have entirely released the path of the extensions 33 of the slider 32 and are engaged in seats 10 to lock the breech bolt 26.

Accordingly the shot is fired only at the time the bolt is fully closed and locked that is when the bolt 26 is engaged by the shoes 8 which in turn abut against the sides of the slider extensions 30.

The breech is thus fully closed at the time a shot is fired and a cartridge may be struck only after the bolt has been locked in closed position, all the requirements inherent to a regular and safe operation of an automatic fire arm being thus satisfied.

The above described result is obtained without parts operating with rotary motion and accordingly no member of the mechanism is subject to harmful torsional actions.

Further due to the restricted mass of the slider 32 any liability to rebound actions is removed.

A similar action may be secured also by means different from the above described ones; by way of example a single locking shoe may be used and such shoe may be located on a side of the bolt or in the intermediate portion of the bolt.

The above described locking shoes may also be in a number larger than two and then they are conveniently arranged in a symmetrical position with respect to the bolt longitudinal axis, to remove unbalanced transverse actions.

The locking shoes may have a shape different from the illustrated one, being only essential that they are able to develop the described locking action.

Finally the rearward thrust which is required to be imparted to the slider to start the bolt opening stroke may be developed by means of hand operated means instead of by the shot firing gases.

Also the striker could be arranged in a different manner and it could be normally restricted from its forward motion by means which are released at the time a shot is fired.

The described breech closing device may also be embodied in fire arms having recoiling barrel and breech.

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