

April 8, 1941.

F. HOLEK

2,237,601

SHOULDER-CONTROLLED FIREARM

Filed June 28, 1938

3 Sheets-Sheet 1

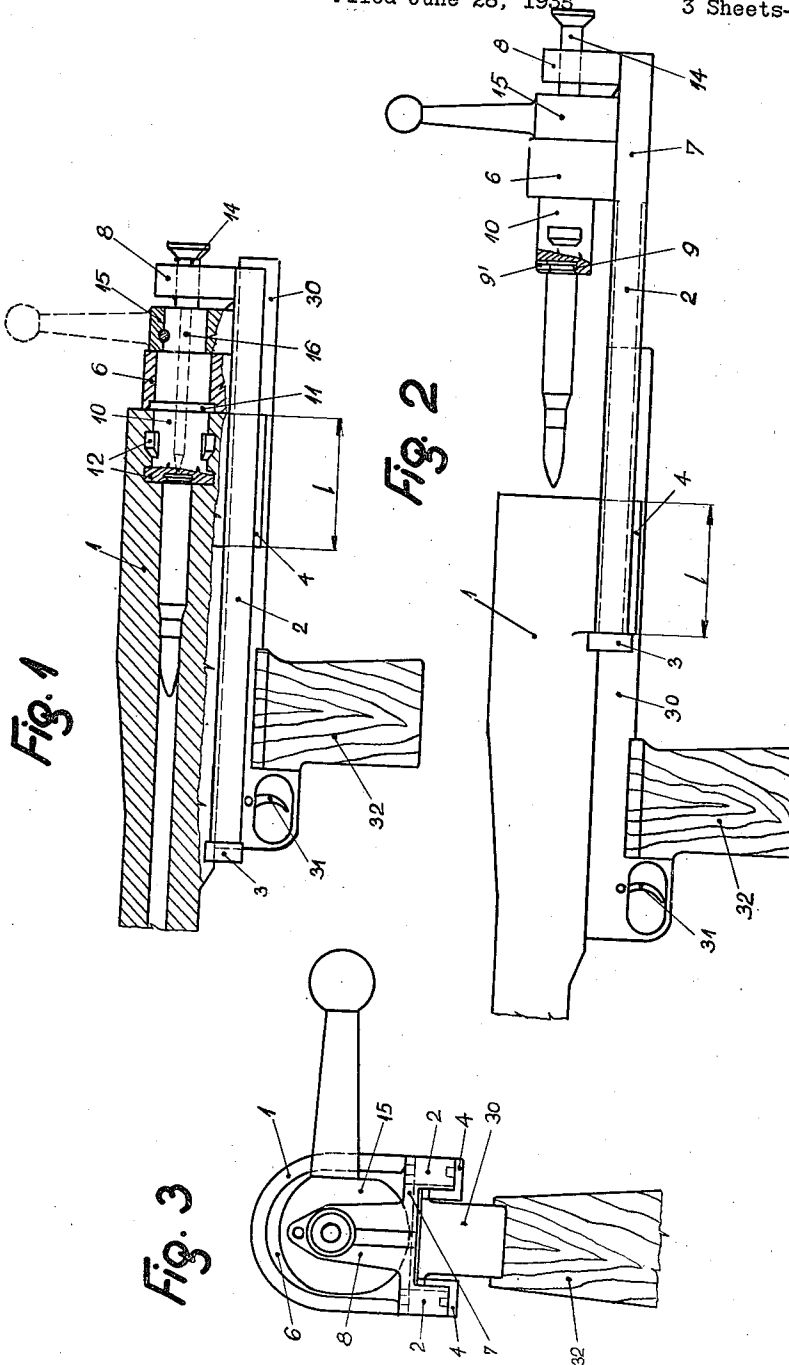


Fig. 3

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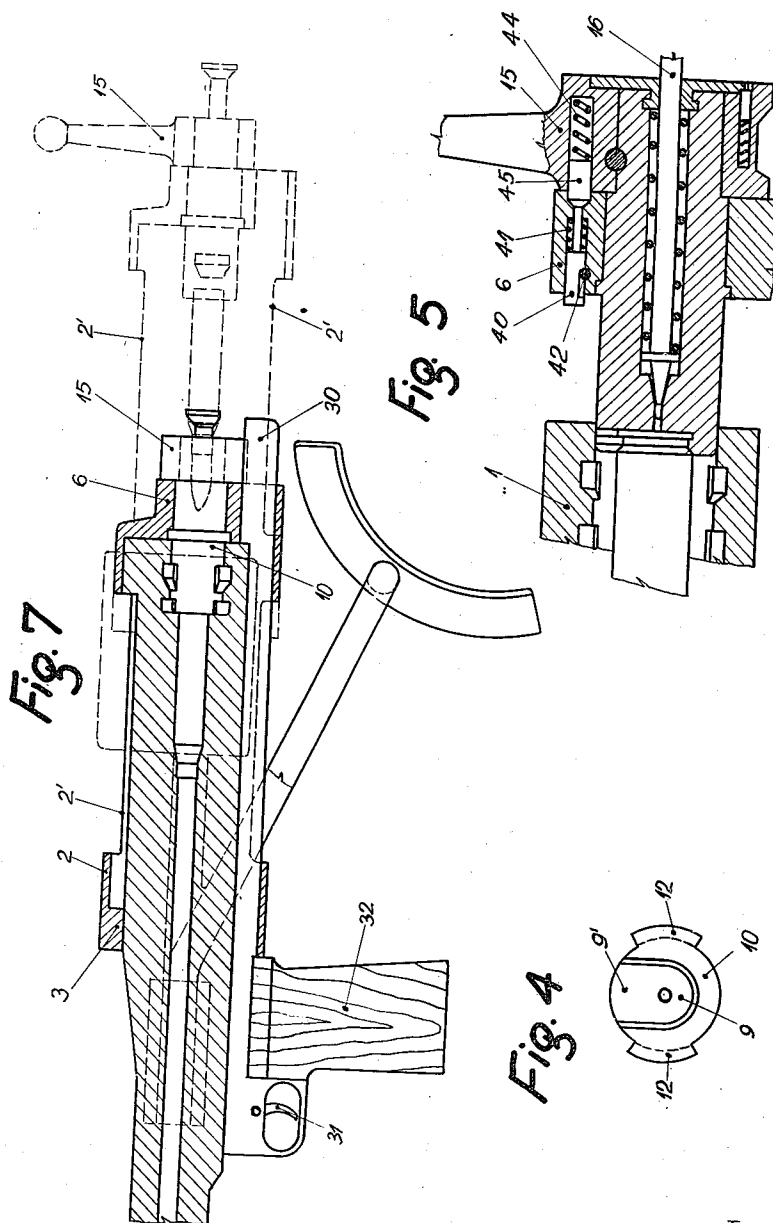
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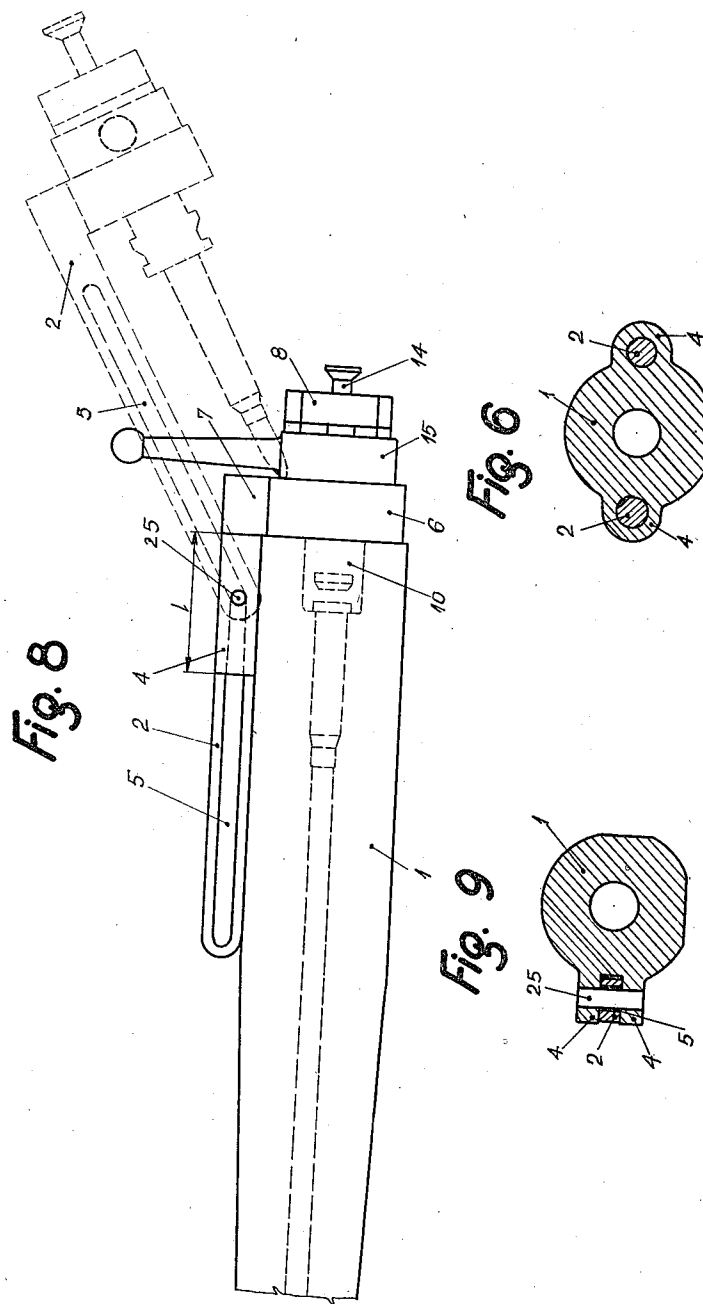
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## UNITED STATES PATENT OFFICE

2,237,601

## SHOULDER-CONTROLLED FIREARM

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Application June 28, 1938, Serial No. 216,380  
 In Czechoslovakia June 29, 1937

2 Claims. (Cl. 42—16)

This invention relates to shoulder-controlled firearms and more particularly to large calibre shoulder-controlled firearms suitable for anti-tank purposes. By the term "large calibre firearm" it is to be understood that such firearms are those in which the calibre is greater than 10 mm., although the invention is not to be restricted in this respect.

Large calibre firearms were previously so constructed that, together with the enlargement of the calibre, the other dimensions of normal or small calibre firearms were proportionately enlarged. This arrangement had the disadvantage that the firearm was increased so much in length and weight that difficulties arose in handling and transporting the firearm. In the ordinary construction, the breech was made in the stock or breech housing, which was rigidly connected with the barrel and which was carried in the butt. In the stock or breech housing, locking means for the breech were also provided.

The object of the present invention is to avoid these disadvantages and to reduce the overall length of the firearm, or to decrease its weight without thereby making it less efficient in operation.

According to the present invention, the above-mentioned object is achieved by arranging on the breech, carrying and guiding means, which cooperate with means directly on the barrel during the entire opening or closing movement of the breech. There may be arranged on the breech, in addition to the carrying and guiding means known, per se, for example in the so-called Mauser breech, locking means which cooperate with the locking means provided directly on the barrel behind the cartridge chamber. By the arrangement of the carrying, guiding, and locking means directly on, or in the barrel, the breech housing can be dispensed with, whereby the entire length of the firearm is reduced. Furthermore, it is not necessary to use the butt, which may be replaced by the known shoulder support, so that the length of the firearm is practically reduced to nearly the length of the barrel only.

The arrangement according to the invention does not interfere with the construction of the striker, cocking, or the firing of the gun in the same manner as in known systems, for example according to the Mauser system.

In order that the present invention may be clearly understood and readily carried into effect, the same will now be described more fully, by

way of example, with reference to the accompanying drawings, in which—

Figure 1 is a longitudinal sectional elevation of a single shot firearm embodying the invention, the breech being closed.

Figure 2 is a side view, with the breech open,

Figure 3 is a rear view, with the breech closed.

Figure 4 is a view looking towards the rear, on an enlarged scale, of the breech block detached.

Figure 5 is a fragmentary longitudinal sectional elevation, on an enlarged scale, showing a safety device associated with the breech block to prevent the turning of the breech block handle until the breech is closed.

Figure 6 is a cross-sectional view showing a modified arrangement of the breech guides.

Figure 7 is a longitudinal sectional elevation of a firearm embodying a modification.

Figure 8 is a plan view of a firearm embodying a further modification, and

Figure 9 is a cross-section of Figure 8.

Referring first more particularly to Figures 1 to 3 of the drawings, 1 denotes the barrel of the firearm, the said barrel having arranged at both sides thereof, guides 4 of a length *l* for the guide edges 2 of the breech. The guide edges 2 have a cross-section 1a and are connected at their rear ends with a breech block carrier 7 or are made in one piece therewith. At the forward ends, the guiding edges 2 are provided with abutments 3, which prevent complete withdrawal of the breech.

The breech block carrier 7 forms a bridge member which connects the two guiding edges 2, on which two housings 6 and 8 are formed. The larger housing 6 carries the breech block 10 and the smaller housing 8 serves as a guide for the striker nut 14.

The breech block 10 is rotatably supported in the housing 6 and is secured against axial displacement on one side, by a ring 11 and on the other side by the end of the breech block handle 15, which is arranged upon a reduced end of the breech block and secured by a pin. The breech block is provided at the forward part thereof with screw-like surfaces by means of double locking lugs 12, which engage in correspondingly formed recesses in the barrel 1, when closing the breech. The lugs and recesses are doubled in order to increase the surface resisting the pressure on the breech block produced by the firing of the shot.

On one end of the breech block there is a seat 9 for the base of the cartridge case (Figure 4).

The seat 9 is so constructed that it embraces the base of the cartridge case and engages in the cartridge rim. This seat is open at one side and extended laterally as a groove 9' which serves for the introduction of the cartridge and the removal of the empty cartridge case.

The breech block is bored along its longitudinal axis and a striker 16 is carried in the bore. The end of the striker is threaded and the striker nut 14 is screwed thereon. The end of the striker nut is enlarged after the manner of a knob in order to permit the cocking of the striker by the finger of the operator (e. g. when repeating after a misfire). In the middle of the striker a projection is formed which co-operates with the trigger lever. The trigger device is arranged in the known manner in the trigger housing 30 and is operated by a trigger 31. A hand grip 32 is fixed to the trigger housing.

In order to prevent turning of the breech block handle 15 into the horizontal position before the inward movement of the breech block head into the barrel is completed, the breech, according to the invention, is provided with a safety device which is shown in Figure 5. In the fixed housing 6, a spigot 40 is supported and constantly pressed against the end of the barrel by means of a spring 41. The projection of the spigot 40 is limited by an abutment pin 42. A bore is arranged in the end of the breech block handle 15, which in the vertical position of the handle comes opposite the bore in the housing 6 and in which there is carried a pin 45 loaded by a spring 44. The pin 45 terminates in a conical frustum.

The shoulder support, cheek plate and pistol grip 32 are employed in the operation of the firearm, together with two legs (not shown) which support the forward end of the barrel.

The breech functions in the following manner: The breech is unlocked, by turning the handle 15, and withdrawn backwards as far as the abutments 3 on the guide edges 2 permit. During the turning of the handle 15, the striker is simultaneously cocked by the action of a cam arranged on the handle housing, engaging the striker nut, as is usual in the Mauser breech. A cartridge can then be inserted in the seat 9 of the breech block. The breech is then thrust forward until the cartridge is fully inserted in the cartridge chamber, and the housing 6 of the breech block carrier abuts against the end of the barrel. As long as the breech does not lie against the end of the barrel, it is not possible to move the handle into the horizontal position, since the spigot 40 in the housing 6 is thrust outwardly by the spring 41, and then the pin 45 of the handle presses into the bore therefor. The pin 45 secures the handle in the vertical position and only after the approach of the housing 6 to a determined distance from the end of the barrel, is the pin 45 thrust out of the bore of the housing 6 by means of the spigot 40, and then the handle 15 can be turned to the right and the breech block locked in the barrel. During locking, the breech block is drawn into the barrel to some extent, since the lugs 12 are made of screw-form, so that the housing 6 fits tightly against the barrel and the spigot 40 is driven completely home.

The breech guide on the butt can also be formed in various other ways. In the embodiment shown in Figure 6, the breech is guided by means of two circular rods 2. The rods are arranged in a horizontal plane which contains the axis of the barrel, thus presenting the advantage

that the construction is symmetrically arranged.

In the construction shown in Figure 7, the breech guide is formed by a cylindrical casing 2, which embraces that end of the barrel serving as a guide for the casing. For the introduction of the cartridge into the seat 9 of the breech block 10, or the removal of the cartridges, recesses 2 are provided above and below on the casing. The abutment 3 on the end of the casing limits the longitudinal displacement of the breech. As in the previous case, the breech block 10 is rotatable in a similar manner in a hollow cylindrical projection 6 of the casing 2, and is operated by the handle 15 which is rigidly secured thereto. The breech block 10 can, however, be rigidly secured to the casing 2, which then executes a turning movement with the breech block during locking and unlocking.

The modification shown in Figures 8 and 9 differs from the foregoing in that in this case the breech block after being withdrawn by an amount equal to the length of the cartridge, is swung out laterally so that the cartridge seat on the breech block is more accessible for operation. The guide edges 2 of the breech are arranged at one side and are formed in one piece with the breech block carrier 7. The guide 2 is guided along the barrel by means of a pin 25 which passes through a groove 5 formed along the guide 2, (Figure 9). The pin 25 forms an abutment which prevents complete removal of the breech and simultaneously forms a pivot about which the entire breech turns in the last phase opening, into the position shown in broken lines in Figure 8.

The breech block and the other details of the breech are similar to those in the embodiment shown in Figures 1 to 3.

As a result of the turning of the handle 15 into the vertical position, the breech is opened, and it is then drawn backwards as far as the pin 25 and the groove 5 in the guide 2 permit, and is then swung to the right about the pin 25. In this position, it is possible to remove the empty cartridge easily and to insert a fresh cartridge in the seat 9.

When closing the breech, the entire device is first swung back into line with the barrel, whereupon it is thrust forward in a straight line until the housing 6 abuts against the end of the barrel. By turning the handle 15 into the horizontal position, the breech block is locked in the barrel.

What I claim is:

1. A firearm, particularly of large caliber, comprising a rotary breech block, a barrel having locking grooves therein, locking lugs on said breech block cooperating with said grooves and causing said breech block to execute a thrust movement upon opening and closing, a bolt for actuating said breech block, a breech block carrier, a cylindrical sleeve on said carrier in which said bolt is rotatably mounted, guides mounted on said carrier, guiding means on said barrel co-operating with said guides so that said breech block may exert a relative axial movement against said sleeve upon locking and unlocking thereof, said guides being formed as a longitudinally grooved guide bar and a pin provided on said barrel extending through said groove in said guide bar and about which said breech block may be swung when moved to open position.

2. A firearm, particularly of large caliber, comprising a rotary breech block, a barrel having locking grooves therein, locking lugs on said breech block cooperating with said grooves and causing said breech block to execute a thrust

movement upon opening and closing, a bolt for actuating said breech block, a breech block carrier, a cylindrical sleeve on said carrier in which said bolt is rotatably mounted, guides mounted on said carrier, guiding means on said barrel co-operating with said guides so that said breech block may exert a relative axial movement against

said sleeve upon locking and unlocking thereof, said guides being formed as a sleeve slidably mounted on the end of said barrel and said sleeve mounted on the end of the barrel being provided with longitudinal recesses for the insertion and removal of cartridges.

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