Nov. 22, 1938. P. R. HIGSON 2,137,612

MACHINE GUN AND AUTOMATIC SMALL ARM

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Fig. 1.

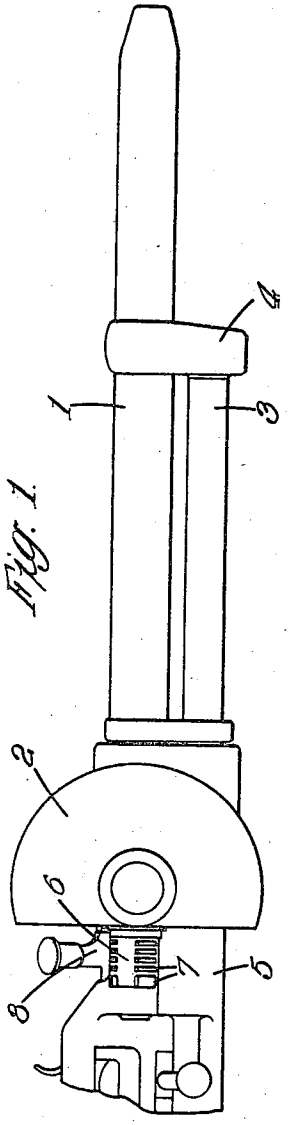

Fig. 3.

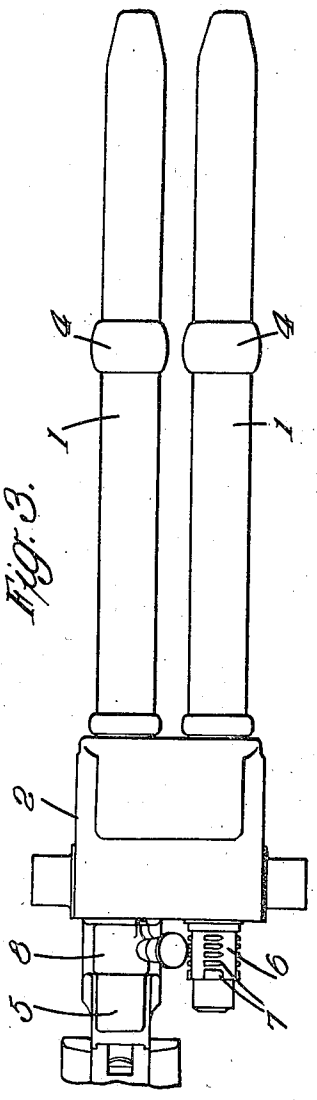

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Fig. 2.

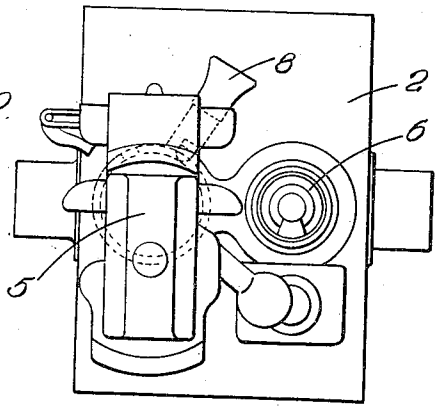

Fig. 5.

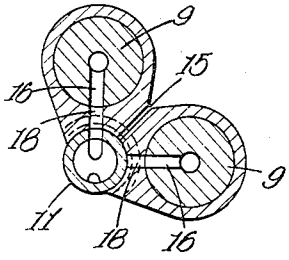

Fig. 6.

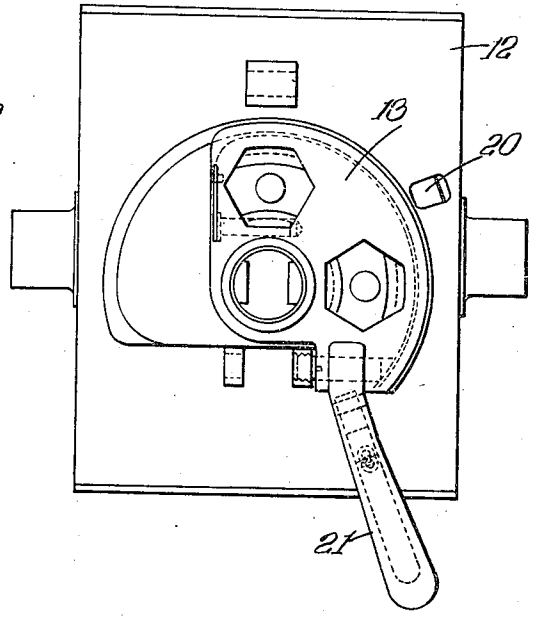

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Fig. 4.

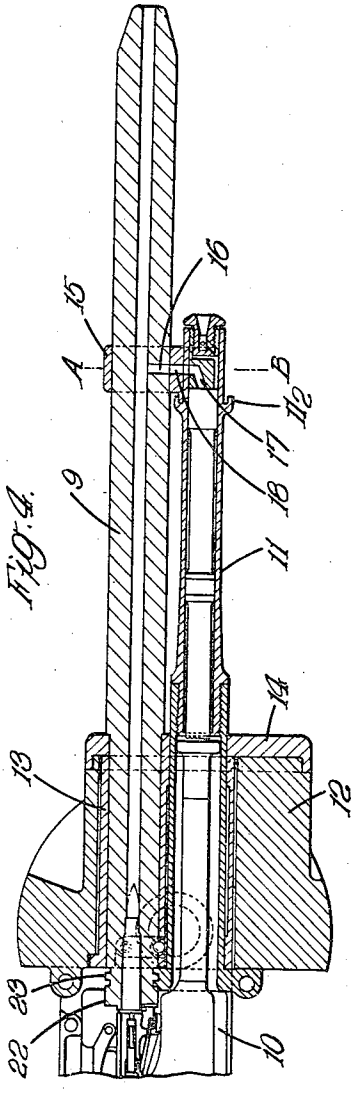
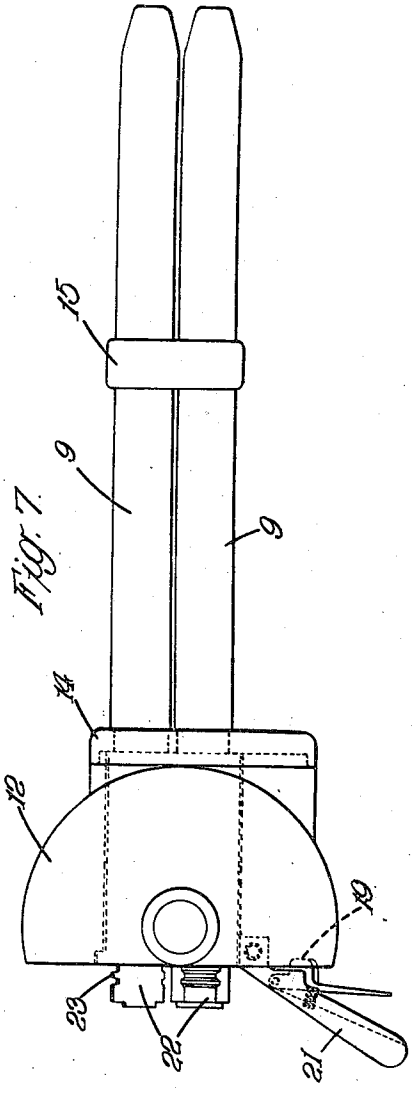


Fig. 7.



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Patented Nov. 22, 1938 2,137,612

UNITED STATES PATENT OFFICE

2,137,612

MACHINE GUN AND AUTOMATIC SMALL ARMS

Percy Reuben Higson, Sidcup, England, assignor to Vickers-Armstrong Limited, Westminster, England, a British company

Application May 4, 1937, Serial No. 140,614
In Great Britain May 13, 1936

3 Claims. (Cl. 42—3)

This invention relates to machine guns and automatic small arms and especially to machine guns of the gas operated type and intended more particularly for use in tanks.

The chief object of the invention is to evolve a construction of machine gun or automatic small arm in which barrel change is facilitated whereby a cool barrel may be quickly brought into operation in substitution for one which has become hot or otherwise temporarily or permanently rendered unfit for use, and in which the operation of changing from one barrel to another can be effected within a confined space as for example within a tank.

A machine gun or automatic small arm constructed in accordance with the invention includes a plurality of barrels in combination with a single common breech mechanism, the breech body or barrels or both being relatively movable to enable any one of the barrels to be brought into operation at one time.

In order that the invention may be clearly understood and readily carried into effect, the same will now be more fully described with reference to the accompanying drawings, in which:—

Figure 1 represents in side elevation the barrels, mounting and a portion of the breech mechanism of a machine gun constructed in accordance with the invention.

Figure 2 is a view of the gun looking from the rear.

Figure 3 is a plan view.

Figure 4 is a longitudinal vertical section illustrating a modified construction.

Figure 5 is a transverse section on the line A—B in Figure 4.

Figure 6 is a rear elevation of the mounting shown in Figure 4, the breech mechanism having been removed, and

Figure 7 is a side elevation, the breech mechanism being again omitted.

In the construction illustrated by Figures 1 to 3, the machine gun or automatic small arm includes two barrels 1 disposed side by side and carried by a gimbal, ball, or similar part of a mounting 2, a gas cylinder 3 and gas block 4 being associated with each barrel and arranged beneath in the usual manner. The breech body 5 is so arranged that it can be moved out of register with the one barrel and into register with the other barrel when it is necessary to change over, the rearwardly projecting part 6 of each barrel having locking teeth or projections 7 for co-operating with corresponding parts of a locking nut or bolt 8 carried by the breech body to enable the breech body and the barrel in operation to be locked together firmly but in a quickly releasable manner, the rearwardly projecting extremity of the barrel entering a recess in the breech body.

In Figures 1, 2 and 3, the left hand barrel is shown in operation and with this arrangement when it is desired to change over from one barrel to the other, the locking bolt or nut is first released, thus enabling the breech body to be completely removed from the rearwardly projecting extremity of the one barrel and placed in position upon the extremity of the adjacent barrel, the locking bolt or nut being then tightened to secure the parts firmly together.

In the modified arrangement illustrated by Figures 4 to 7, the barrels 9, two of which are preferably provided, are movable relatively to the breech body 10, and also relatively to a common gas cylinder 11, the barrels being partially rotatable as a whole within the mounting 12 so that either may be brought into register with the breech mechanism as required.

With this arrangement the breech body 10, gas cylinder 11 and its associated piston are secured to the gimbal or other mounting 12, the barrels 9 being carried by a partially rotatable block 13 spigoted on a projection forming part of the gun casing and cylinder and at the front end to an armoured disc 14 which spigots on the front end of the gimbal.

The barrels have independent gas blocks 15, held together by means of an extension 11^2 of the gas cylinder, and arranged so as to compensate for the longitudinal expansion or contraction of the individual barrels. Each barrel 9 has a port 16 communicating with the gas block port 18, and which only aligns with the cylinder port 17, when that particular barrel is in position for firing. The barrel out of use has its gas port blanked off. The partially rotatable block 13 carrying the barrels is adapted to be locked in either of its terminal positions by means of a spring urged catch 19 (see Figures 6 and 7) adapted to enter either of two holes or recesses 20 (only one of which is shown, the other hole being engaged by the catch) formed in the mounting 12 adjacent each terminal position, the catch 19 being carried by an arm or lever 21 secured to the block 12 and by which the latter may be rotated, the barrels being rotatable throughout an angle of 90° or as required. Each barrel 9 projects rearwardly of the block 12, the rearwardly projecting extremities 22 of the barrels having teeth or projections 23 adapted to

engage corresponding teeth or projections in the breech body 10 when their associated barrel is in its operative position.

In operation, it is merely necessary when changing from one barrel to the other to disengage the spring urged catch on the mounting and rotate the barrels throughout the necessary angle, the spring urged catch being thus engaged with the remaining hole or recess in the mounting, the projections or teeth on the rearwardly projecting parts of the barrel to be brought into operation automatically co-operating with the corresponding teeth or projections in the breech body. The rotational movement of the gas block relative to the fixed gas cylinder when bringing a fresh barrel into operation automatically closes the port to the old barrel and at the same time opens the port to the new one.

As hereinbefore stated, the invention is particularly suitable for use in connection with guns which are intended for use in tanks or other confined spaces where the barrel itself is not easily accessible and consequently could not easily be removed from the mounting and exchanged.

What I claim and desire to secure by Letters Patent of the United States is:—

1. A machine gun or automatic small arm of the gas operated type comprising a mounting, a plurality of barrels, a breech body and gas cylinder common to all of said barrels, said barrels being revolubly mounted within said mounting about the axis of said gas cylinder so as to bring any one of said barrels individually into register with said breech body and into communication with said gas cylinder, a gas block associated with each barrel and having a gas port communicating with its associated barrel and adapted to register with a further port in said gas cylinder when its associated barrel is in the firing position in which it registers with the breech body.

2. A machine gun or automatic small arm of the gas operated type comprising a mounting, a plurality of barrels, a breech body and gas cylinder common to all of said barrels, said barrels being revolubly mounted within said mounting about the axis of said gas cylinder so as to bring any one of said barrels individually into register with said breech body and into communication with said gas cylinder, a separate gas block associated with each barrel and having a port for connecting its associated barrel when in the firing position with said gas cylinder, the gas blocks of all the barrels being loosely connected together to allow of longitudinal expansion of the individual barrels.

3. A machine gun or automatic small arm of the gas operated type comprising a mounting, a plurality of barrels, a breech body and gas cylinder common to all of said barrels, said barrels being revolubly mounted within said mounting about the axis of said gas cylinder so as to bring any one of said barrels individually into register with said breech body and into communication with said gas cylinder, means for rotating said barrels to bring any one of said barrels into register with said breech body, and teeth on each of said barrels co-operating with correspondingly shaped teeth on said breech body for maintaining each respective barrel in operative relationship with said breech body when desired.

PERCY REUBEN HIGSON.