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F. D. HOPPERT ET AL

2,108,817

MACHINE GUN

Filed June 17, 1936

Fig. 1.

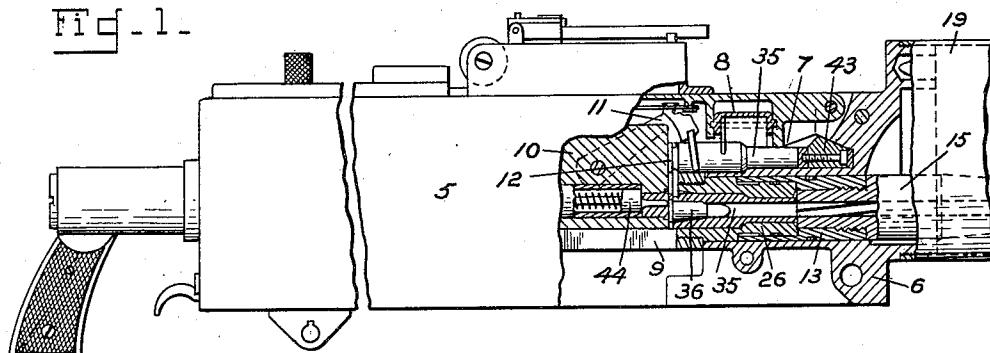


Fig. 2.

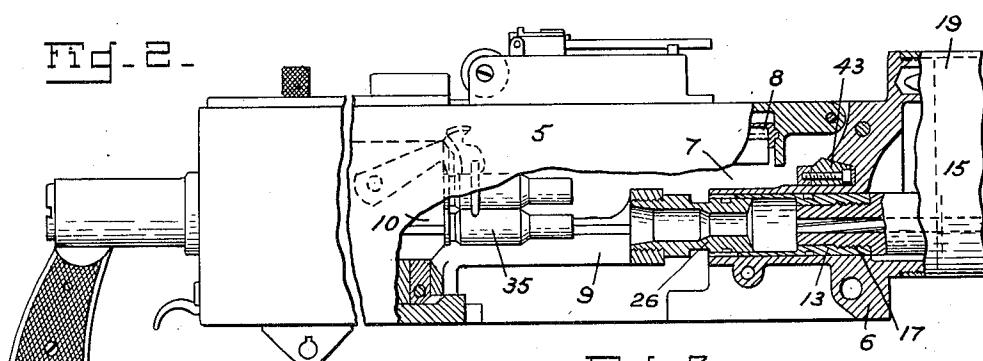


Fig. 3.

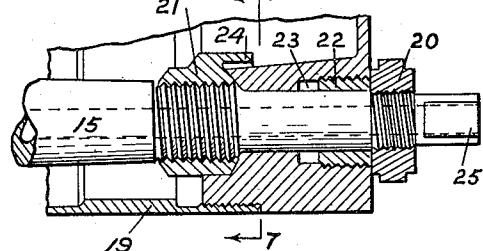


Fig. 4.

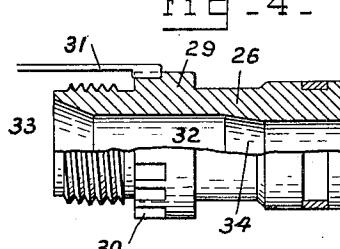


Fig. 5.

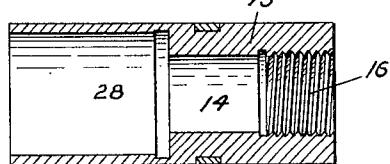
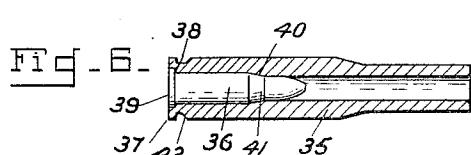
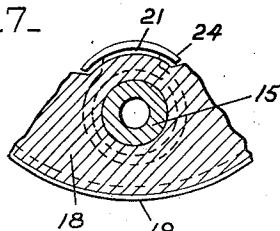


Fig. 7.



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UNITED STATES PATENT OFFICE

2,108,817

MACHINE GUN

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2 Claims. (Cl. 42—75)

(Granted under the act of March 3, 1883, as
amended April 30, 1928; 370 O. G. 757)

The invention described herein may be manufactured and used by or for the Government for governmental purposes, without the payment to us of any royalty thereon.

5 This invention relates to a machine gun. For the purpose of instruction it is customary to adapt guns to fire sub-caliber or low pressure ammunition. An adaptation of this character for machine guns is shown in Patents Nos. 10 2,027,892 and 2,027,893 of January 14, 1935, in which the standard Browning machine gun of Patent No. 1,293,021 of February 4, 1919, designed to fire a .30 caliber cartridge developing high pressure, is arranged to fire a .22 caliber 15 cartridge developing low pressure, provision being made to increase the kinetic effect of the gases so that sufficient energy will be available to actuate the breech bolt and the cartridge-feeding mechanism.

20 Because of the difference in length and diameter of the caliber .30 and .22 cartridges, it was necessary in the device of the patents to so modify the breech bolt, the cams on the receiver and the feeding mechanism that the conversion 25 is expensive and of more or less permanent nature to be performed at an arsenal.

The purpose of the present invention is to provide an arrangement whereby the conversion of the gun to fire a caliber .22 cartridge and its 30 conversion to fire a caliber .30 cartridge may be readily accomplished by substitutable parts and without structural modification of the original gun.

The distinguishing feature of the invention is 35 the provision of a holder similar in shape and size to the case of a caliber .30 cartridge, the holder being adapted to carry a caliber .22 cartridge for which it serves as a firing tube, and which is fed, extracted and ejected in the conventional manner.

40 A further object is to provide means for locking the gun barrel in various longitudinal positions for the purpose of establishing head-space adjustment.

45 To these and other ends, the invention consists in the construction, arrangement and combination of elements described hereinafter and pointed out in the claims forming a part of this specification.

50 A practical embodiment of the invention is illustrated in the accompanying drawing, wherein:

55 Fig. 1 is a view partly in side elevation and partly in section of the breech end of a machine gun with the parts in firing position.

Fig. 2 is a similar view with the parts in position of full recoil.

Fig. 3 is a longitudinal sectional view of the muzzle end of the gun.

Fig. 4 is a detail view in side elevation and partly in section of the piston.

Fig. 5 is a longitudinal sectional view of the barrel cylinder.

Fig. 6 is a longitudinal sectional view of the holder carrying a round of sub-caliber ammunition.

Fig. 7 is a sectional view on the line 7—7 of Fig. 3.

The gun illustrated in the drawing is of the Browning type and includes the usual receiver 15 5 having the trunnion block 6, cartridge feedway 7, and belt feeding slide 8. In the standard gun the barrel is attached to a member 9 usually referred to as the barrel extension and this extension member is mounted for limited movement within the receiver. It carries a slideable breech bolt 10 having the customary extractor lever 11 which is provided for withdrawing a cartridge from the belt in the feedway and lowering it into the groove 12 in the front face of 20 the bolt.

A cylinder 13 fitting in the trunnion block 6 of the receiver has a thickened front portion with an axial passage 14 whereby it is mounted on and threadedly attached to the rear end of the 30 gun barrel 15. The front part of the passage is provided with threads 16 for engagement of the threaded portion 17 of the barrel.

The muzzle end of the barrel passes through the front end cap 18 of the water jacket 19 35 and is held stationary by means of a locking nut 20 and an adjusting nut 21 threaded on the barrel respectively on the outer and the inner side of the cap 18. The nut 20 retains the usual packing gland 22 in the socket 23 of the cap. 40 The nut 21 is formed with a projecting lip 24 adapted to engage the end cap 18 and be restrained thereby against rotational movement. The muzzle of the barrel is formed with surfaces indicated at 25 for the application of a 45 tool which is to be used in turning the barrel to adjust it longitudinally with respect to the breech bolt.

A piston 26 threadedly attached to the extension member 9 has its front portion arranged to slide in the rear portion of the cylinder 13 in rear of the gun barrel 15. The front end of the piston 26 is formed with a dished face as at 27 and is adapted to engage an annular shoulder 28 formed by the thickened front por- 55

tion of the cylinder 13 while a collar 29 in the piston engages the rear end of the cylinder and in this position it is disposed within the trunnion block 6. The periphery of the collar is formed with notches 30 for engagement of a locking spring 31 which is carried by the extension member 9. This part of the mechanism for obtaining headspace adjustment is the same as that of the standard gun.

10 The piston is formed with an axial chamber 32 having a flare 33 at its rear end and having a central tapered portion 34. A tubular holder 35 similar in shape and size to the case of a caliber .30 cartridge is adapted to fit in the chamber 32. The holder carries a caliber .22 cartridge 36 and serves as a loading member and a firing tube. As shown most clearly in Fig. 6, the base 37 of the holder is formed with an annular recess 38 for receiving the rim 39 of the cartridge 36 so that the base of the cartridge is flush with the base of the holder. The interior wall of the holder is formed with a tapered seat 40 for the shoulder 41 of the cartridge 36. The holder has the usual cannelure 42 whereby it is seized by the extractor lever 11 and held in the groove 12 of the breech bolt.

15 A guide and stop unit 43 is placed in the cartridge feedway 7 and serves to properly position the holders 35 which are carried in a belt in lieu of the caliber .30 cartridges.

20 Because of the similarity of the holder 35 and the caliber .30 cartridge the operations of withdrawing a holder from the feedway and inserting it in the chamber 32 of the piston 26 will be performed in the same manner as in the standard gun.

25 When the cartridge 36 in the holder is struck by the firing pin 44, the bullet moves through the holder and then through the gun barrel 15. The 40 gases of the propellant charge travel out of the piston and expanding radially act on the dished front face of the piston and the annular shoulder 28 in the stationary cylinder 13 to drive the piston rearwardly. Since the piston is attached to the extension member 9 the latter will be driven rearwardly, and after moving a short distance as shown in Fig. 2 to accomplish unlocking 45 of the breech bolt, it is locked in place in the usual manner, while the breech bolt continues its movement in recoil to perform its usual functions of extracting the holder from the piston,

cocking the firing pin, withdrawing a loaded holder from the feedway and lowering it in the groove 12. During counterrecoil movement of the breech bolt the loaded holder is inserted in the chamber of the piston while the breech bolt 5 trips the extension member 9 which moves into battery. The empty holder which is ejected from the breech bolt is recovered and repeatedly reused.

10 It is to be understood that the terms caliber .22 and .30 are relative only and that a large caliber piston cartridge such as the .45 may equally as well be placed in the holder, or a caliber .30 cartridge with a reduced charge may be substituted for the holder.

15 We claim:

1. In a gun, a receiver, a jacket on the receiver having a barrel supporting member at its front end, a barrel mounted in said member and having a cylinder on its rear end mounted in the 20 receiver, an adjusting nut on the barrel and having means engaging the rear part of the supporting member whereby said nut is restrained against rotational movement, a locking nut on the barrel on the forward side of the supporting member, an extension member slidable in the receiver, a chambered piston carried by the extension member and working in the cylinder on the rear end of the barrel a collar on the piston engageable with the rear end of the cylinder to limit forward movement of the piston, said piston having an annular series of notches 25 on its periphery, a spring carried by the extension member and engageable in the notches, and a bolt mechanism actuated by the rearward movement of the piston.

2. In a gun, a receiver, a jacket on the receiver having a barrel supporting member at its front end, a barrel having its breech end mounted in the receiver and its muzzle end passing through 40 the front supporting member of the jacket, an adjusting nut threaded on the barrel and having means engaging the rear part of the front supporting member whereby said nut is restrained against rotational movement, and a locking nut 45 on the barrel on the forward side of the front supporting member.

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