April 7, 1970 T. A. GREELEY 3,504,594

SUB-CALIBER, SELF-RELOADING FIREARM WITH BARREL POSITION ADJUSTING MEANS

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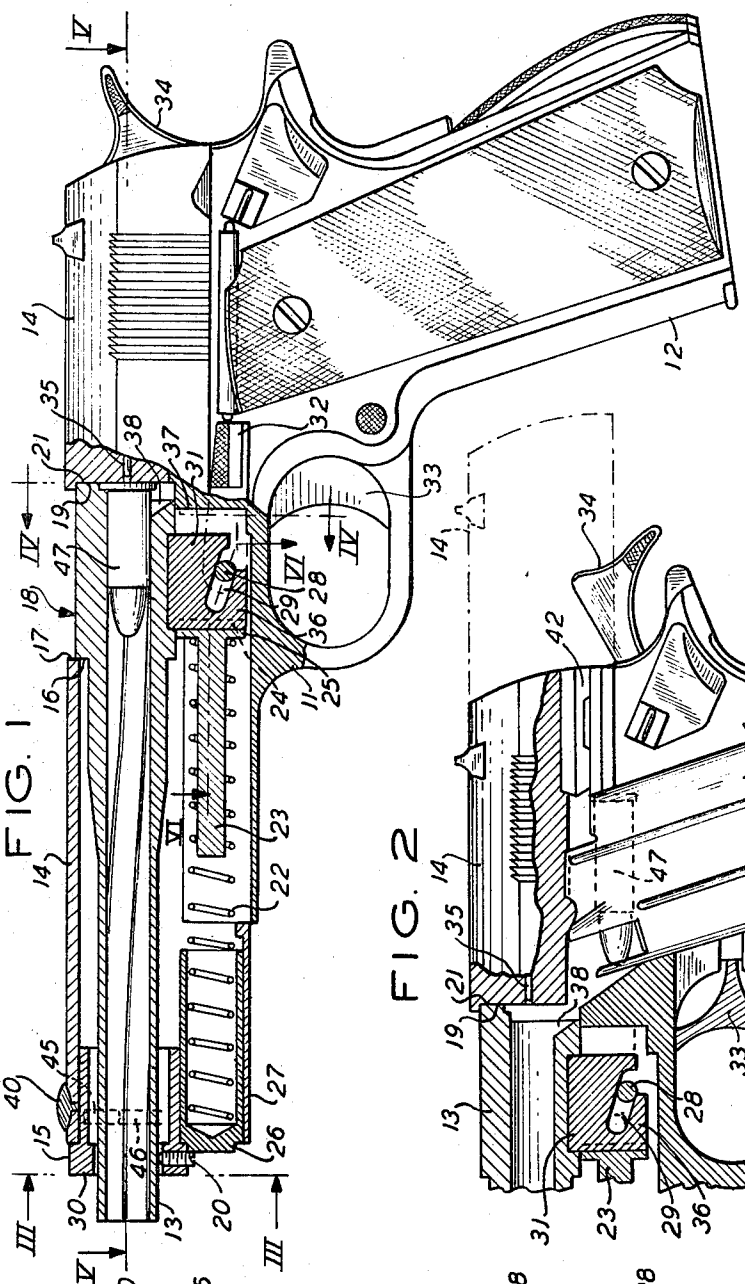


FIG. 1

FIG. 2

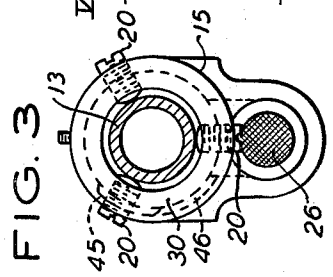


FIG. 3

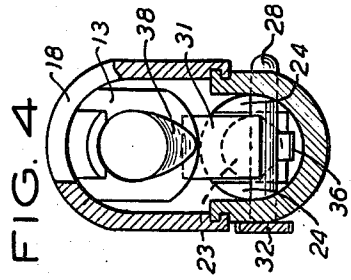


FIG. 4

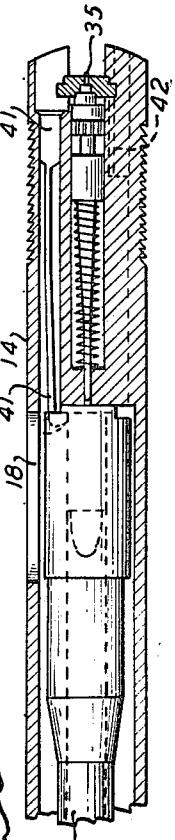


FIG. 5

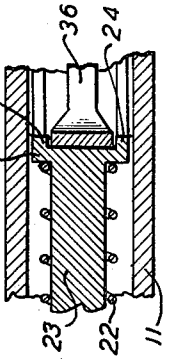


FIG. 6

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SUB-CALIBER, SELF-RELOADING FIREARM WITH BARREL POSITION ADJUSTING MEANS

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ABSTRACT OF THE DISCLOSURE

A sub-caliber self-reloading firearm comprising a frame, a slide, a sub-caliber barrel and sub-caliber cartridge holder as a single unit, an extractor and a sub-caliber magazine, said barrel being improved by having no grooves across the top and a depending block formed with a slot, open-minded and sloping downwardly and rearwardly, a slide stop with a pin portion in said frame and received in said slot, said block being separately formed and silver-soldered in a square-milled space in the bottom of the barrel, a flanged bushing disposed between the forward end of the barrel and said slide, said bushing having a lug locking it against longitudinal movement with respect to said slide upon insertion and turning to position, nylon-tipped sight-adjusting screws in said bushing for attachment to said centering said barrel in the slide, the flange of said bushing being knurled and overlapping a cup received in said slide and in which is housed the front end portion of a coil return spring, and a rod over which the rear end portion of said spring fits, the rear end of which rod is enlarged to provide a spring seat bifurcated rearwardly to straddle the barrel block and engage abutments on the frame, whereby the barrel on firing is tilted and unlocked from the slide to effect operation of the extractor.

This invention relates to firearms and, more particularly, to the adaptation of a standard .45 caliber automatic pistol to use sub-caliber cartridges, especially those of the .38 caliber "wad-cutter" type, such as are desired for target practice, while still not materially affecting the characteristics of the firearm for training purposes.

More particularly I have by the present invention made it possible to provide a sub-caliber pistol utilizing, with little or no change, the frame and associated parts of a Colt automatic pistol, caliber .45, Government model. The sub-caliber pistol has a barrel and chamber unit, a slide adapted for cooperation with the sub-caliber barrel and ammunition, and a magazine adapted for the sub-caliber ammunition.

In order that the before-mentioned substitution of parts may be more clearly understood, I refer to Patent No. 2,090,657 showing a Colt automtic pistol, caliber .45, Government model, with sub-caliber mechanism applied. I have here shown improved parts which may be substituted for the standard parts to enable sub-caliber ammunition to be used.

An object of my invention is to adapt a .45 caliber Colt automatic pistol for use with .38 caliber ammunition without change in its frame and without much change in appearance, weight or construction of the other parts, by substituing a .38 caliber barrel with unitary cartidge-holding portion and separately-formed block silver-soldered in place in a space in the lower part of the barrel, the lower part of said block being formed with a slot sloping downwardly and rearwardly to an open end to receive the pivot portion of a slide stop in order to effect tilting of the barrel to release it from the slide on firing.

Another object is to provide such a pistol with a bushing having a flange at its forward end, three equally

spaced screws through said flange to engage and adjust the position of the barrel in the bushing, the body of the bushing carrying an outstanding lug and the interior of the slide having a mating groove to lockingly receive said lug and hold said bushing in place in the slide.

A further object of my invention is to provide a pistol as above set forth with a coil return spring, a cup housing the front end of said spring and the bushing flange overlapping the outer end of said cup for holding it in place, maintaining the spring stressed as desired.

A still further object of my invention is to provide the coil return spring of such a pistol with a rod over which its rear portion fits, the rear end of said rod carrying a seat for said spring, and bifurcations extending rearward therefrom, straddling the barrel block and engaging the frame.

These and other objects and advantages will become apparatus from the following detailed descrtption when taken with the accompanying drawings.

In the drawing:

FIGURE 1 is a partial side elevational and partial vertical longitudinal mid-sectional view of an automatic firearm in uncocked position and embodying my invention.

FIGURE 2 is a fragmentary view corresponding generally to FIGURE 1, but showing the firearm in cocked position and in dot-dash lines the slide in the rearward position that it assumes after firing a cartridge.

FIGURE 3 is a transverse sectional view on the line III—III of FIGURE 1, in the direction of the arrows.

FIGURE 4 is a transverse sectional view on the line IV—IV of FIGURE 1, in the direction of the arrows.

FIGURE 5 is a fragmentary horizontal sectional view on the line V—V of FIGURE 1, in the direction of the arrows.

FIGURE 6 is a fragmentary horizontal sectional view on the line VI—VI of FIGURE 1, in the direction of the arrows.

Referring to the drawings in detail, the standard .45 caliber firearm or pistol, as shown in FIGURE 1 of the drawing of the Williams Patent No. 2,090,657, is or may be substantially the same in construction as shown and described in detail in the patents to John M. Browning Nos. 580,924, 984,519 and 1,070,582. Reference may be had to the said patents for details not fully shown here and in said Williams patent.

The piston embodying my invention comprises a frame **11** having a handle or grip **12** with a recess therein for receiving a magazine to hold .38 or other sub-caliber cartridges, but otherwise of usual construction, the magazine not being fully shown. Mounted on the frame **11** is a barrel **13** and a receiver, breech bolt or slide **14**. The rear portion of the slide **14** serves to close the breech or chamber of the barrel, as clearly shown in FIGURE 1, and the forward projecting portion of the slide surrounds the barrel and is provided with a bushing **15** at its forward end which supports the forward end of the barrel **13**.

The slide and barrel are initially locked in fixed relationship to each other by means of a shoulder **16** on the barrel engaging the rear surface **17** of the slide **14** which defines the forward end of the ejection opening **18**, and its rear surface **19** engaging a forwardly facing surface **21** on the slide **14**. The slide and barrel are normally maintained in their forward positions by means of a coil spring **22** encircling a rod **23** having bifurcations **24** extending from the rear surface of a spring-abutment portion **25** and straddling a lug **31** depending from the barrel. At the front the spring is received in a cup **26** detachably held in a hollow portion **27** carried below the forward end of the silde **14**.

The barrel **13** is loosely pivoted to the frame **11** by

means of a pin **28** which is mounted in the frame and received in a normally rearwardly downwardly inclined open-ended slot **29** in a lug **31** depending from the barrel. The lug or block **31** is not milled one piece from the barrel stock, but rather machined separately and secured, desirably by silver solder, in a rectangular milled space in the lower side of said barrel. This makes for economy in manufacture as less milling is required. The pivot pin **28** extends transversely through suitable holes in the frame and is provided at its left hand end with a handle **32** by means of which it can be inserted or removed as desired.

Carried by the frame **11** is a firing mechanism, which includes a trigger **33** and a hammer **34**, adapted to be cocked by the slide **14** when it moves rearward from the position shown in FIGURE 1 to that shown in dot-dash lines in FIGURE 2. The details of the firing mechanism are not shown as they do not in themselves constitute any part of the present invention. When the trigger is pulled the hammer is released and moves to the position shown in FIGURE 1. In so moving it strikes the rear end of the firing pin **35** carried by the slide **14** and this pin moves forward to fire the cartridge **47**. As the result of recoil, the barrel and slide move rearward in unison, being locked together as before stated by engagement of the shoulder **16** and rear surface **19** of the barrel with abutment surfaces **17** and **21** on the slide.

However, after a short rearward movement in unison, the rear part of the barrel **13** is caused to move downward, on account of the movement of the barrel rearward, with respect to the pivot pin **28**, bringing the latter, without raising it, toward the forward end of the slot **29**, where it is shown dotted in FIGURE 2. This pulling down on said rear barrel part, causes shoulder **16** to be withdrawn from engagement with the slide, permitting the slide to continue to move rearward with respect to and separately from the barrel. This separate rearward movement of the slide effects the cocking of the firing mechanism. It also effects the extraction and, on its return, the ejection of the empty shell. This slide is immediately returned in the forward direction by means of the spring **22**, and during such forward movement a cartridge is withdrawn from the magazine and pushed into the chamber of the barrel in position to be fired. Near the end of its forward movement, the slide again engages the barrel and the action of the pin in the slot **29** is reversed, the rear part of the barrel being elevated to again bring the shoulder **16** into engagement with the rear surface **17** on the slide **14**.

In accordance with the present invention I may, and preferably do, use many of the parts of the standard Colt automatic pistol, caliber .45, Government model, although the invention in its broader aspects is not necessarily so limited. Preferably and as shown, use is made of a standard frame **11** and the standard firing mechanism. However, the barrel, the slide and the magazine are different as will now be specifically described. Parts not described are conventional or as in the standard Colt pistol.

The barrel **13** is in some respects similar to the standard caliber .45 barrel, but it has a smaller bore, as for instance caliber .38. The barrel **13** instead of being rigidly secured to the frame or receiver **11**, is reciprocable in a manner which will be described. Preferably and as shown, the barrel **13** is provided with a depending lug **31** having a transverse slot **29** therein and inclined down rearwardly to receive the before-mentioned pin **28**. Thus the barrel is slidably connected with the frame by means of the pin **28**.

The lug **31** preferably has an extension **36** which fits a suitable groove in the frame to cooperate with the pin in such a way as to prevent the barrel from turning. By preference in order to still more firmly connect the barrel with the frame, the lug **31** is extended rearward so as to directly shut against a vertical surface **37** forming a stop wall on the frame, when it reaches the rearward end of its travel. The barrel is freely detachable upon removing the pin **28**. The rear end portion of the barrel **13** is provided with an inclined upper surface **38** which constitutes a ramp and which assists in guiding cartridges into the barrel.

The slide **14** is, in the main, similar to the slide for the standard pistol, but differs insofar as is necessary to cooperate with the barrel **13** and with the smaller cartridges. The breech portion of the slide normaly abuts directly against the rear face of the barrel. The forward portion of the slide carries the sleeve or bushing **15** having loose sliding engagement with the outer surface of the barrel **13** at the front end thereof.

The forward portion of the barrel **13** fits the bushing **15** and is centered therein by adjustment of the three screws **20** in its outer knurled flange **30** equally spaced therearound, so that the positioning of the barrel in the bushing may not only be central with respect thereto but, if necessary, set to accurately agree with the forward sight **40**. These screws are desirably provided with tips of nylon or the like to avoid scratching the barrel as it moves back and forth in the bushing.

The bushing **15** has an outstanding lug **45** on the body thereof spaced rearwardly from its flange **30**. While mounted on the barrel, it is held in place in the slide **14**. The latter is formed with a mating groove **46** in the interior surface thereof and spaced from its front end a distance corresponding with the spacing of the lug **45** from the flange **30**. This groove starts at the bottom of the right side, where the hollow portion connects to the slide, and continues for about 90°. The bushing may thus be positioned and locked in place in the slide by inserting its body at the front of the slide, lug down, so as to pass along the opening at the top of the portion **27**, and after its flange **30** engages the front end of the slide, turning it clockwise until the lug **35** slides in the grove **46** to its end.

As shown most clearly in FIGURE 5, the slide **14** is provided with a suitable firing pin **35** for engaging and firing the smaller cartridges, and it is provided with an extractor **41** adapted for engaging and withdrawing the said smaller cartridges when the slide moves rearward. The ejector **42** is suitably positioned for engaging the smaller or .38 caliber cartridges. When the cartridge shell is drawn back by the extractor **41** is it engaged by the forward portion of the ejector **42** and is thus thrown out through the ejection opening **18** formed in the slide **14**.

In lieu of the standard magazine there is provided a special one **43** adapted to hold the sub-caliber cartridges. As indicated in FIGURE 2 the uppermost cartridge is adapted to rest against a depending central rib (not shown) on the slide **14**. The magazine is provided with the usual spring-pressed follower which serves to press the cartridges upward successively as each topmost cartridge **47** is withdrawn and fired by the mechanism of the pistol.

It will be understood that when the parts are in the positions shown in FIGURE 1 the pistol is loaded and cocked, cocking having been effected by a prior movement of the slide **14** to the position indicated by dot-dash lines. Firing can be effected in the usual manner, movement of the trigger releasing the hammer which strikes the firing pin **35** and fires the cartridge. Upon the firing of the cartridge the barrel and the cartridge recoil rearward.

The slide thus moves rearward to the position shown dot-dash in FIGURE 2, effecting the re-cocking of the firing mechanism. The slide is immediately returned in the forward direction by means of the spring **22** and during return the central rib on the slide engages the topmost cartridge in the magazine **43**, pushing it forward into the barrel **13**. The cartridge is guided into the barrel by means of the inclined ramp surface at **38**. The slide pushes the barrel forward, thus restoring all of the parts of the relative positions shown in FIGURE 1. Cocking and reloading having thus been effected and the pistol is in condition to be again fired.

Inasmuch as the movement of the barrel is very small, it remains at all times in front of the path of the car-

tridges so that the cartridges can move upward into feeding position as shown in FIGURE 2, even though the barrel **13** may be in its rearmost position. Furthermore, in view of the limited extent of movement, and in view of the fact that the barrel is always in front of the cartridges, it is unnecessary to provide any special means for returning the barrel to its forward position. The barrel is free to move within the limits provided for it, and if it is not otherwise returned to its forward position it will so be returned by the slide as the slide moves forward and approaches its breeched position. By properly proportioning the parts, the recoil effect with the .38 caliber cartridges can be made to very closely approximate the recoil effect of the standard .45 caliber cartridges. This feature of the invention is particularly important for firearms intended to be used for practice or training purposes.

The complete sub-caliber pistol as shown in FIGURE 1, has, in the main, the dimensions, weight and recoil action of the standard larger caliber pistol. The sub-caliber pistol may be used for practice and training purposes at a minimum of expense with the same beneficial results that would be obtained with the standard pistol. Inasmuch as the size, weight and recoil action are approximately the same, the skill and proficiency which may be developed by use of the sub-caliber pistol are retained as when the standard large caliber pistol is used. After practicing with the sub-caliber pistol there is no appreciable unexpected or greater recoil action with the standard pistol to disturb or change the accuracy or speed of firing.

Inasmuch as the frame, firing mechanism and other parts of the pistol are standard, it is practicable if so desired to sell a combination package comprising a standard frame with parts carried thereby, together with interchangeable standard and sub-caliber parts adapted to be assembled with the frame as may be desired. Thus a considerable economy is effected, as the purchaser need buy only one frame with associated parts, using this one frame either for the standard pistol or for the sub-caliber pistol.

Having now described my invention in detail in accordance with the requirements of the patent statutes, those skilled in this art will have no difficulty in making changes or modifications in the individual parts or their relative assembly in order to meet specific requirements or conditions.

I claim:

1. A firearm with reload mechanism comprising a frame, a slide, a barrel and cartridge holder as a single unit positioned to float in the slide, said unit being adapted to move backward to impart sufficient impetus to actuate a recoil cycle of the firearm when actuated by gas from the explosive in a cartridge on the firing of a bullet in said unit, a forwardly-facing surface on said barrel engaging a rearwardly-facing surface on said slide to cause the former to initially travel rearwardly with the latter when firing a cartridge, a stop wall on the frame normally spaced a sufficient distance to the rear of the barrel to allow enough rearward movement thereof to operate the reload mechanism, a bushing at the forward position of the slide and in which the barrel moves upon firing, means to engage and adjust the position of the barrel with respect to said bushing, the barrel having a space milled in its lower portion, a separately-formed block with its upper portion in said space and its lower portion formed with a slot sloping downwardly and rearwardly to an open end, solder uniting said upper portion and said barrel and a pivot pin received in the frame and said slot, whereby the barrel on firing is moved rearward and tilted with respect to the slide.

2. A firearm as recited in claim **1**, the frame being for a standard .45 caliber pistol and the barrel being sub-caliber with the slide adapted thereto.

3. A firearm, with reload mechanism comprising a frame, a slide, a barrel and cartridge holder as a single unit positioned to float in the slide, said unit being adapted to move backward to impart sufficient impetus to actuate a recoil cycle of the firearm when actuated by gas from the explosive in a cartridge on the firing of a bullet in said unit, a forwardly-facing surface on said barrel engaging a rearwardly-facing surface on said slide to cause the former to initially travel rearwardly with the latter upon firing a cartridge, a stop wall on the frame normally spaced a sufficient distance to the rear of the barrel to allow enough rearward movement thereof to operate the reload mechanism, a bushing in which the forward portion of the barrel slides during firing, a front sight on said slide, a knurled flange at the forward end of said bushing, and equally-spaced screws through said flange to engage and adjust the position of the barrel therein with respect to said sight.

4. A firearm as recited in claim **3**, the barrel having a space milled in its lower portion, a separately-formed block with its upper portion silver-soldered in said space and its lower portion formed with a slot sloping downwardly and rearwardly to an open end, a pivot pin received in the frame and said slot, whereby the barrel on firing is moved rearward and tilted with respect to the slide, a coil return spring, a rod over which the rear end portion of said spring fits, the rear end of said rod being enlarged to form a spring seat, and bifurcations extending rearward therefrom, straddling a portion of the barrel.

5. A firearm as recited in claim **3**, including a coil return spring, a cup housing the front end of said spring and the bushing flange overlapping the outer end of said cup for holding it in place.

6. A firearm as recited in claim **3**, including a coil return spring, a rod over which the rear end portion of said spring fits, the rear end of said rod being enlarged to form a spring seat, and bifurcations extending rearward therefrom, straddling a portion of the barrel.

7. A firearm with reload mechanism comprising a frame, a slide, a barrel and cartridge holder as a single unit positioned to float in the slide, said unit being adapted to move backward to impart sufficient impetus to actuate a recoil cycle of the firearm when actuated by gas from the explosive in a cartridge on the firing of a bullet in said unit, a forwardly-facing surface on said barrel engaging a rearwardly facing surface on said slide to cause the former to initially travel rearwardly with the latter upon firing a cartridge, a stop wall on the frame normally spaced a sufficient distance to the rear of the barrel to allow enough rearward movement thereof to operate the reload mechanism, a bushing in which the forward portion of the barrel fits, a knurled flange at the forward end of said bushing, equally-spaced screws through said flange to engage and adjust the position of the barrel therein, an outstanding lug on the body of the bushing and the interior of the slide having a mating groove to lockingly receive said lug on turning of said bushing after fitting it in said slide.

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