

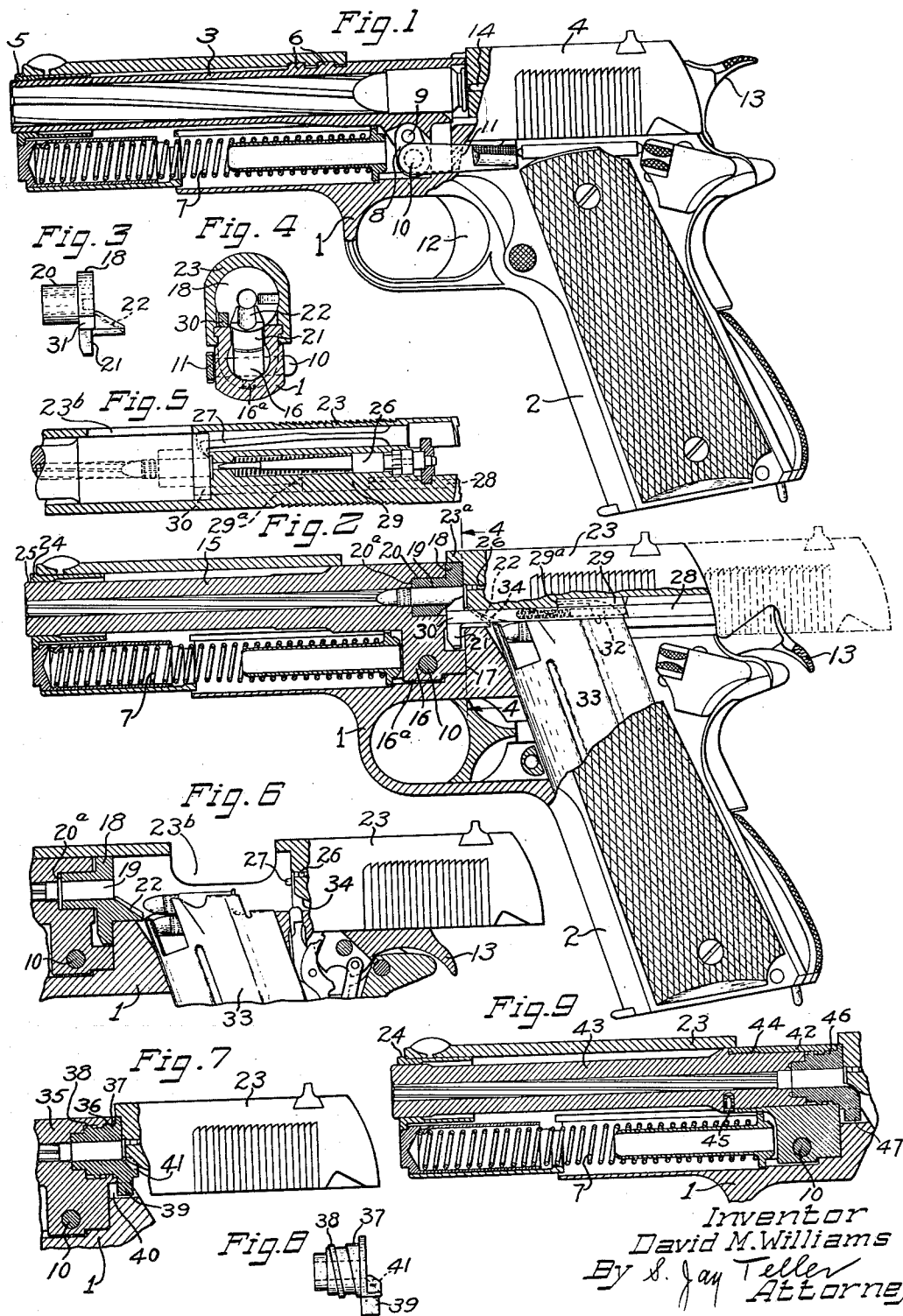
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D. M. WILLIAMS

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FIREARM

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# UNITED STATES PATENT OFFICE

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## AUTOMATIC FIREARM

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27 Claims. (Cl. 42-4)

In my prior application Serial No. 514,252 for Automatic firearms, filed February 7, 1931, I have disclosed an invention applicable generally to firearms of various types. The present application is a continuation-in-part of the said prior application. In accordance with the invention set forth in prior application, there is provided in combination with the barrel of the firearm a vibrating member, preferably chambered and having telescopic engagement with the rear part of the barrel. The arrangement is such that an interposed gas contact area is provided whereby, upon firing, the vibrating member is forced rearward. The said vibrating member is narrowly limited as to its rearward movement and it abuts against the breech bolt or slide, the result being that, when the vibrating member is moved rearward under the influence of gas pressure, an impulse is given to the breech bolt or slide which causes it to move rearward to the normal extent to effect the functioning of the firearm in the usual manner. By making the gas pressure area of suitable size it is possible to obtain, from even a small caliber cartridge, any desired reasonable force to satisfactorily operate the breech bolt or slide.

In accordance with the present invention I have provided various details of construction which make it possible for the before-mentioned vibrating member to be conveniently and simply combined with a barrel to constitute a readily separable unit adapted to be used with the other parts of a firearm. The combined unit may advantageously be a sub-caliber unit adapted to be used in a firearm originally designed to fire large caliber ammunition, the sub-caliber unit making it possible for smaller ammunition to be used and making it possible for such smaller ammunition to satisfactorily operate the mechanism of the firearm. While I do not so limit myself, the self-contained unit consisting of the barrel and the vibrating member, whether of sub-caliber character or otherwise, may be adapted to constitute parts of an automatic pistol. 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 is constructed by providing in combination with the said frame and associated parts, a sub-caliber barrel and chamber unit, a slide adapted for cooperation with the sub-caliber 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 have in the drawing shown a Colt automatic pistol, caliber .45, Government model, and I have shown three different embodiments of the present invention showing the parts which may be substituted for the standard parts to enable sub-caliber ammunition to be used. It will be understood that the drawing is intended for illustrative purposes only and is not to be construed as defining or limiting the scope of the invention, the claims forming a part of this specification being relied upon for that purpose.

Of the drawing:

Fig. 1 is a combined side and longitudinal sectional view of a Colt automatic pistol, caliber .45, Government model.

Fig. 2 is a view similar to Fig. 1, but showing the parts constituting the present invention substituted for the standard parts. In this view the firing mechanism is shown in cocked position.

Fig. 3 is a side view of the vibrating chamber member.

Fig. 4 is a fragmentary vertical sectional view taken along the line 4-4 of Fig. 2.

Fig. 5 is a fragmentary horizontal sectional view taken through the breech bolt or slide, this view showing the extractor and firing pin in full lines and the ejector in dotted lines.

Fig. 6 is a fragmentary view similar to Fig. 2, but showing the breech bolt or slide in its rear-most position.

Fig. 7 is a fragmentary view similar to Fig. 2, but showing an alternative embodiment of the invention.

Fig. 8 is a detail side view of the vibrating or floating chamber member shown in Fig. 7.

Fig. 9 is a fragmentary view similar to Fig. 2, but showing a still different embodiment of the invention.

The standard pistol as shown in Fig. 1 of the drawing is or may be substantially the same in construction as shown and described in detail in the two patents to John M. Browning No. 984,519 and No. 1,070,582. Reference may be had to the said patents for details not herein fully shown.

The pistol comprises a frame 1 having a handle or grip 2 with a recess therein for receiving a magazine of usual construction, the magazine not being shown in Fig. 1. Mounted on the frame 1 is a barrel 3 and a breech bolt or slide 4. The rear portion of the slide 4 serves to close the breech or chamber of the barrel as clearly shown in Fig. 1 and the forward projecting portion of the slide surrounds the bar-

rel and is provided with a bushing 5 at the forward end which supports the forward end of the barrel. The slide and barrel are initially locked in fixed relationship to each other by means of ribs 6 on the barrel which project upward into corresponding grooves in the slide. The slide and barrel are normally maintained in their forward positions by means of a coil spring 7 abutting at the rear against a tube which engages the frame, and abutting at the front against a tube detachably connected with the forward end of the slide. The barrel 3 is connected with the frame by means of a link 8 which is pivoted to the barrel at 9 and which is pivoted to the frame by means of a transverse pivot pin 10. The pivot pin 10 extends transversely through suitable holes in the frame and is provided at its left hand end with a handle 11 by means of which the pin can be removed when desired.

Carried by the frame 1 is a firing mechanism which includes a trigger 12 and a hammer 13 adapted to be cocked by the slide when it moves rearward from the position shown in Fig. 1. The details of the firing mechanism are not shown as they do not of themselves constitute any part of the present invention. When the trigger is pulled the hammer is released and moves to the position shown in Fig. 1. In so moving it strikes the rear end of the firing pin 14 carried by the slide, and this firing pin moves forward to fire the cartridge. As the result of recoil, the barrel and slide move rearward in unison, being locked together as before stated by the ribs 6. However, after a short rearward movement in unison the rear part of the barrel is caused to move downward on account of the action of the pivoted connecting link 8, the result being that the ribs 6 are withdrawn from the grooves in the slide thus permitting the slide to continue to move rearward separately from the barrel. This separate rearward movement of the slide effects the cocking of the firing mechanism and also effects the extraction and ejection of the empty shell. The slide is immediately returned in the forward direction by means of the spring 7, 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 link 8 is reversed, the rear part of the barrel being elevated to again bring the ribs 6 into engagement with the grooves in the slide.

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 in Fig. 2, use is made of a standard frame 1 without any changes whatsoever, and use is also made of the standard firing mechanism in its entirety without any changes whatsoever. However, the barrel, the slide and the magazine are different as will now be described.

The barrel 15 shown in Fig. 2 is in some respects similar to the standard caliber .45 barrel shown in Fig. 1, but it has a smaller bore, as for instance caliber .22. The barrel 15 instead of being reciprocable in the manner described in connection with the barrel 3 is rigidly secured to the frame 1. Preferably and as shown the barrel 15 is provided with a depending lug 16 having a transverse hole therein to

receive the before-mentioned pin 10. Thus the barrel is rigidly connected with the frame by means of the same pin 10 which serves in the standard pistol to hold the barrel connecting link 8. The lug 16 preferably has an extension 16<sup>a</sup> 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 16 is extended rearward so as to directly abut against a vertical surface 17 on the frame, as clearly shown in Fig. 2. The barrel while rigidly connected to the frame is nevertheless freely detachable by removing the pin 10.

A vibrating member 18 is provided in direct association with the barrel 5 so as to operate therewith to constitute a self-contained readily removable unit. The member 18 is preferably chambered at 19 to receive a cartridge corresponding in caliber to the caliber of the bore in the barrel 15, and as shown it is adapted for receiving a .22 caliber long rifle cartridge. The chamber member 18 has telescopic engagement with the rear part of the barrel so as to be capable of limited endwise movement relatively to the barrel. Preferably and as shown the barrel has a cylindrical recess in the rear end concentric with the bore and the chamber member 18 has a forward projecting piston-like portion 20 fitting the recess to provide an interposed gas contact area 20<sup>a</sup> in the said recess at the front end of the forward projecting portion. The rear part of the chamber member 18 is extended radially and the upper part preferably conforms in outline to the outline of the barrel. The chamber member 18 terminates at the rear at a transverse plane adjacent the rearmost transverse plane of the barrel 15.

A suitable means is provided to narrowly limit rearward movement of the chamber member 18, and as to this means there may be considerable variation within the scope of my invention. Preferably, however, and as shown in Fig. 2, the member 18 is provided with a depending eccentric lug 21 which is positioned in a notch formed in the rearward extending portion of the lug 16 on the barrel. This depending lug 21 is adapted to abut against the before-mentioned vertical surface 17 on the frame, thus serving to narrowly limit rearward movement of the chamber member. In addition to the depending lug 21 the chamber member is preferably provided with a rearward projection having an inclined upper surface 22 which constitutes a ramp and which assists in guiding cartridges into the chamber.

The slide 23 is, in the main, similar to the slide 4 for the standard pistol, but differs insofar as is necessary to cooperate with the barrel 15 and with the smaller cartridges. The breech portion of the slide normally abuts directly against the rear face of the chamber member 18, as shown in Fig. 2, and it has a forward projecting portion at 23<sup>a</sup> with a longitudinal guide or bearing surface which engages the chamber member 18. The forward portion of the slide carries a sleeve 24 similar to the sleeve 5 shown in Fig. 1, this sleeve having sliding engagement with the outer surface 25 of the barrel at the front end thereof. Preferably the outer surface of the barrel behind the said front bearing surface 25 is relieved as shown in Fig. 2 so that resistance and wear are reduced to a minimum as the slide moves rearward.

As shown most clearly in Fig. 5, the slide 23 is provided with a suitable firing pin 26 for engaging and firing the smaller cartridges, and it is pro-

vided with an extractor 27 adapted for engaging and withdrawing the said smaller cartridges when the slide moves rearward.

The ejector 28 which is provided for the standard .45 caliber cartridges is not suitably positioned for engaging the smaller .22 caliber cartridges, and I therefore associate with the ejector 28 a separate sub-caliber ejector member 29 shown by dotted lines in Fig. 5 and by full lines in Fig. 2. This ejector 29 directly engages the standard ejector 28, and in order that it may be firmly held in place it is provided with a forward extension 30 which is engaged along its outer edge by the side wall of the slide and which at its extreme forward end is entered in a notch 31 in the movable chamber member 18 and is in engagement with the rear end of the barrel. Preferably in order that the sub-caliber ejector 29 may be more firmly held, it is provided with a spring pressed plunger 32 which is exposed at the rear and which is adapted to engage the standard ejector 28. When the cartridge shell is drawn back by the extractor 27 it is engaged by the portion 29<sup>a</sup> of the ejector 29 and is thus thrown out through the ejection opening 23<sup>b</sup> formed in the slide 23.

In lieu of the standard magazine there is provided a special magazine 33 adapted to hold the sub-caliber cartridges. As indicated in Fig. 2 the uppermost cartridge rests against a depending central rib 34 on the slide 23. The magazine is provided with the usual spring pressed follower which serves to press the cartridges upward successively as each topmost cartridge is withdrawn and fired by the mechanism of the pistol.

It will be understood that when the parts are in the positions shown in Fig. 2 the pistol is loaded and cocked, cocking having been effected by a prior movement of the slide 23 to the position indicated by dot-and-dash lines. Firing can be effected in the usual manner, movement of the trigger releasing the hammer which strikes the firing pin 26 and fires the cartridge. Upon the firing of the cartridge the chamber member 45 and the cartridge recoil rearward and at the same instant some of the expanding gases of explosion enter the gas contact area 20<sup>a</sup> and impinge against the front end of the piston-like portion 20 of the chamber member 18 to drive the said chamber member rearward with great force to the position shown in Fig. 6. As already explained the lug 21 serves to narrowly limit the rearward movement of the chamber member 18, but, as the result of the combined recoil action and gas pressure, the small movement of the chamber member is made with such force and speed that the slide is thrown rearward so as to effect its full normal movement. The slide moves rearward to the position shown in Fig. 6, thus effecting the re-cocking of the firing mechanism. The slide is immediately returned in the forward direction by means of the spring 7 and during return the central rib 34 on the slide engages the topmost cartridge in the magazine 33, pushing it forward into the chamber 19 of the member 18. The cartridge is guided into the chamber by means of the inclined ramp surface at 22. The slide pushes the chamber member forward, thus restoring all of the parts to the relative positions shown in Fig. 2. Cocking and reloading have thus been effected and the pistol is in condition to be again fired.

Preferably and as shown in Fig. 2, the chamber member is of such length that the forward end of the cartridge shell projects therefrom at the

front. By reason of this relationship there is an assurance that metallic particles from the bullet cannot be cut or abraded therefrom, so as to be driven by the gases into the gas contact area. It is obviously desirable to prevent any possible accumulation of metallic particles or other solid material in the said gas contact area.

While the extent of movement of the chamber member is quite limited, it is nevertheless sufficient to permit the said member to remain in engagement with the slide during at least a portion of the barrel time of the pistol, that is, during the time required for the bullet to leave the front end of the barrel. The engagement between the chamber member and slide is maintained at least until the gas pressure is materially reduced. During this period the chamber member is being pushed rearward with considerable pressure, and thus there is maintained a "gas lock" which holds the slide and the chamber member in firm engagement during the period of high gas pressure within the barrel.

Inasmuch as the movement of the chamber member is very small the said member remains at all times in front of the path of the cartridges so that the cartridges can move upward into feeding position as shown in Fig. 6 even though the chamber member 18 may be in its rearmost position. Furthermore, in view of the limited extent of movement, and in view of the fact that the chamber member is always in front of the cartridges, it is unnecessary to provide any special means for returning the chamber member to its forward position. The chamber member 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 determining the size of the piston-like portion 20 of the chamber member 18, the gas contact area 20<sup>a</sup> can be made such as to give whatever force is necessary to effect the correct movement and functioning of the slide 23. By properly proportioning the parts the recoil effect with the .22 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 Fig. 2 has, in the main, the dimensions and weight and the recoil action of the standard large caliber pistol shown in Fig. 1. 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 the same, the skill and proficiency which may be developed by use of the sub-caliber pistol are retained when the standard large caliber pistol is used. After practicing with the sub-caliber pistol there is no 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 gun 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.

In Figs. 7 and 8, I have shown a construction similar to that shown in Figs. 2 to 6, but differing primarily as to the means for limiting the end-wise or rearward movement of the chamber member. The barrel 35 is similar to the barrel 15 already described, and it is similarly connected to the frame. However, the barrel is supplementally recessed at 36 and this recess is provided with an internal thread. The chamber member 37 is similar to the chamber member 18, but is provided with an external thread 38 adapted to engage the internal thread on the barrel. The engagement between the two threads is a loose one and is such as to permit a limited rearward movement of the chamber member when the cartridge is fired. The extent of this movement is the same or substantially the same as that shown in Fig. 6. Preferably, in order to prevent the chamber member 37 from turning, it is provided with a depending lug 39 which fits a specially formed notch 40 in the frame 1. The lug 39 may be also formed with an inclined surface 41 adapted to serve as a ramp and corresponding to the inclined surface on the lug 22 of the chamber member 18. The action of the pistol shown in Fig. 7 is substantially as already described and repetition is unnecessary.

In Fig. 9, I have shown a still different embodiment of the invention. The construction shown in this figure is similar to that shown in Fig. 7, but differs in that there is provided a sleeve 42 with which the barrel 43 is detachably connected by means of screw threads at 44. A spring pressed plunger 45 serves to prevent accidental rotation of the barrel with respect to the sleeve. The sleeve 42 is provided with a depending lug which serves to connect the sleeve to the frame, this lug being similar to that shown in Fig. 7. The chamber member 46 is or may be substantially the same as the chamber member 37 shown in Figs. 7 and 8, and the sleeve 42 is provided with an internal thread adapted to engage the external thread on the chamber member 46 and limit endwise movement. A lug 47 on the member 46 prevents it from turning.

While I have shown and described my invention as embodied in a sub-caliber pistol incorporating parts of a standard pistol of larger caliber, it is to be understood that I do not necessarily so limit my invention and that as concerns certain phases of the invention it may be incorporated in an automatic pistol or other firearm designed and constructed entirely independently of any existing standard pistol or firearm.

The expressions "a barrel and chamber member readily separable as a unit from the other parts of the firearm" and "barrel and vibrator member readily separable as a unit from other parts of the firearm", or equivalent expressions as used in some of the claims, are intended to cover a barrel and chamber member which is normally dismountable from the receiver or frame of the firearm by the user of the firearm for inspection and cleaning.

What I claim is:

1. For an automatic firearm having bolt means of the inertia type, a barrel and vibrator member readily separable as a unit from other parts of the firearm and comprising in combination, a barrel provided with means for rigid attachment to the frame of the firearm, and a vibrator member having telescopic engagement with the rear part of the barrel to provide an interposed gas contact area whereby upon firing

the vibrator member is forced rearward, the said member having means for narrowly limiting its rearward movement and being engagable with the bolt means of the firearm so that it causes normal rearward movement of the said bolt means.

2. For an automatic firearm having bolt means of the inertia type, a barrel and vibrator readily separable as a unit from other parts of the firearm and comprising in combination, a barrel provided with means for rigid attachment to the frame of the firearm and having a cylindrical recess in the rear and concentric with the bore, and a vibrator member having a cylindrical forward projecting portion fitting the recess in the barrel to provide an interposed gas contact area whereby upon firing the vibrator member is forced rearward, the said member having means for narrowly limiting its rearward movement and being engagable with the bolt means of the firearm so that it causes normal rearward movement of the said bolt means.

3. For an automatic pistol, a barrel and chamber readily separable as a unit from other parts of the firearm and comprising in combination, a barrel provided with means for rigid attachment to the pistol frame, a chamber member having telescopic engagement with the rear part of the barrel to provide an interposed gas contact area whereby upon firing the chamber member is forced rearward, the said member having means for narrowly limiting its rearward movement and being engageable with the slide of the pistol so that it causes normal rearward movement of the slide, and an inclined ramp projecting rearward from the chamber member for guiding cartridges into the chamber.

4. An automatic pistol comprising in combination, a frame having a cartridge magazine recess, a reciprocable slide of the inertia type on the frame, firing mechanism on the frame and slide, a barrel provided near the rear with a depending lug by means of which it is rigidly attached to the frame, a vibrator member abutting against a forward facing surface of the slide and having telescopic engagement with the rear part of the barrel independently of the frame to provide an interposed gas contact area whereby the said member is forced rearward and is maintained in contact with the slide during the period of high gas pressure to provide a gas lock, and means for narrowly limiting the rearward movement of the said member while permitting the slide to continue its rearward movement separately therefrom.

5. An automatic pistol comprising in combination, a frame having a cartridge magazine recess, a reciprocable slide of the inertia type on the frame, firing mechanism on the frame and slide, a barrel provided near the rear with a depending lug by means of which it is rigidly attached to the frame, a vibrator member abutting against a forward facing surface of the slide and having telescopic engagement with the rear part of the barrel independently of the frame to provide an interposed gas contact area whereby the said member is forced rearward when firing occurs, and means for narrowly limiting the rearward movement of the said member to maintain all parts of it at all times in front of the path of movement of cartridges from the magazine.

6. An automatic pistol comprising in combination, a frame having a cartridge magazine recess, a reciprocable slide on the frame, firing mechanism on the frame and slide, a barrel 75

rigidly attached to the frame, a chamber member abutting against a forward facing surface of the slide and having telescopic engagement with the rear part of the barrel to provide an interposed gas contact area whereby the said member is forced rearward when firing occurs. means for narrowly limiting the rearward movement of the said member while permitting the slide to continue its rearward movement separately therefrom, and an inclined ramp on the chamber member at the rear thereof for guiding cartridges into the chamber.

7. In an automatic firearm, the combination of a barrel, a movable aligning and holding means for the barrel, said barrel being provided for a portion of its length with means to allow the holding means to move in a loose relationship to the barrel when the firearm is in the open position, and additional means for allowing the holding means to move in tight engagement with the barrel when the firearm is in the ready to fire position.

8. In an automatic firearm originally designed to fire large caliber ammunition and modified to fire sub-caliber ammunition, the combination of slide means, a barrel cooperating therewith having a reduced portion and an enlarged portion, the former allowing the slide means to move in a loose relationship to the barrel when the firearm is in the open position and the enlarged portion allowing the slide to move in tight engagement with the barrel when the firearm is in the ready to fire position, a movable member positioned adjacent the breech end of the barrel and provided with a gas contact area capable of magnifying the effect of the kinetic energy of the exploding gases, thereby enabling the automatic firearm to function as satisfactorily with the sub-caliber ammunition as it would with the large caliber ammunition.

9. An automatic pistol comprising in combination, a frame having a cartridge magazine recess and having means for engagement with a reciprocable slide, a barrel rigidly attached to the frame and having a longitudinal bearing surface at its forward end and being relieved throughout a portion thereof behind the said surface, a chamber member having telescopic engagement with the rear part of the barrel to provide an interposed gas contact area whereby the chamber member is forced rearward when firing occurs, means for narrowly limiting the rearward movement of the said member, and a slide on the frame normally engaged by the chamber member so that the said member causes rearward movement of the slide additional to the rearward movement of the member, the said slide having at its forward end a short bearing surface engaging the said bearing surface on the barrel when the slide is in forward position and disengaging the said surface as the slide moves rearward.

10. An automatic firearm comprising in combination, a frame having a cartridge recess, a reciprocable slide on the frame having a longitudinal bearing surface, firing mechanism on the frame and slide, a barrel rigidly attached to the frame, a chamber member having telescopic engagement with the rear part of the barrel to provide an interposed gas contact area whereby the said member is forced rearward when firing occurs, the said chamber member abutting against a forward facing surface of the slide and also engaging a longitudinal bearing surface on the slide, and means for narrowly limiting the rear-

ward movement of the chamber member while permitting the slide to continue its rearward movement separately therefrom.

11. An automatic firearm comprising in combination, a frame having a cartridge magazine recess, a reciprocable slide of the inertia type on the frame, the slide being open at its front end, firing mechanism on the frame and slide, a barrel and vibrator member unit assemblable with or removable from the frame and slide at the front thereof, said unit having exterior dimensions approximately corresponding to the interior dimensions of the slide, the said barrel being rigidly attached to the frame and the said vibrator member normally abutting against a forward facing surface of the slide and having telescopic engagement with the rear part of the barrel to provide an interposed gas contact area whereby the said member is forced rearward when firing occurs, and means for narrowly limiting the rearward movement of the said vibrator member while permitting the slide to continue its rearward movement separately therefrom.

12. A sub-caliber automatic pistol having in the main the dimensions and weight and the recoil action of a standard large caliber pistol, the said pistol comprising in combination, a substantially standard frame having means for connection with a standard large caliber reciprocable barrel and having means for engagement with a reciprocable slide, the said frame carrying the usual firing mechanism adapted to be cocked upon rearward movement of the slide and having the usual cartridge magazine recess, a sub-caliber barrel rigidly attached to the frame in lieu of the standard reciprocable barrel, a chamber member having its chamber of the same caliber as the bore of the barrel and having telescopic engagement with the rear part of the barrel to provide an interposed gas contact area whereby the said member is forced rearward when firing occurs, means for narrowly limiting the rearward movement of the said chamber member, and a slide on the frame engaged by the chamber member so that the said member causes normal rearward movement of the slide, the said slide having a firing pin and an extractor adapted to engage the sub-caliber cartridges.

13. A sub-caliber automatic pistol having in the main the dimensions and weight and the recoil action of a standard large caliber pistol, the said pistol comprising in combination, a substantially standard frame having means for connection with a standard large caliber reciprocable barrel and having means for engagement with a reciprocable slide, the said frame carrying the usual firing mechanism adapted to be cocked upon rearward movement of the slide and having the usual cartridge magazine recess, a sub-caliber barrel rigidly attached to the frame in lieu of the standard reciprocable barrel and having a cylindrical recess in the rear end concentric with the bore, a chamber member having its chamber of the same caliber as the bore of the barrel and having a forward projecting portion fitting the recess in the barrel to provide an interposed gas contact area whereby the said member is forced rearward when firing occurs, an inclined ramp on the chamber member at the rear thereof for guiding cartridges into the chamber, means for narrowly limiting the rearward movement of the chamber member, and a slide on the frame engaged by the chamber member so that the said member causes normal rearward movement of the slide, the said

slide having a firing pin and an extractor adapted to engage the sub-caliber cartridges.

14. A sub-caliber automatic pistol having in the main the dimensions and weight and the recoil action of a standard large caliber pistol, the said pistol comprising in combination, a substantially standard frame having a transverse pin for engaging a link connected with a standard large caliber reciprocable barrel and having means for engagement with a reciprocable slide, the said frame carrying the usual firing mechanism adapted to be cocked upon rearward movement of the slide and having the usual cartridge magazine recess, a sub-caliber barrel on the frame in lieu of the standard reciprocable barrel and provided near the rear with a depending lug having a transverse hole for receiving the aforesaid transverse pin, a chamber member having its chamber of the same caliber as the bore of the barrel and having telescopic engagement with the rear part of the barrel to provide an interposed gas contact area whereby the said member is forced rearward when firing occurs, means for narrowly limiting the rearward movement of the chamber member, and a slide on the frame engaged by the chamber member so that the said member causes normal rearward movement of the slide, the said slide having a firing pin and an extractor adapted to engage the sub-caliber cartridges.

15. A sub-caliber automatic pistol having in the main the dimensions and weight and the recoil action of a standard large caliber pistol, the said pistol comprising in combination, a substantially standard frame having means for connection with a standard large caliber reciprocable barrel and having means for engagement with a reciprocable slide, the said frame carrying the usual firing mechanism adapted to be cocked upon rearward movement of the slide and having the usual cartridge magazine recess, a sub-caliber barrel rigidly attached to the frame in lieu of the standard reciprocable barrel, a chamber member having its chamber of the same caliber as the bore of the barrel and having telescopic engagement with the rear part of the barrel to provide an interposed gas contact area whereby the said member is forced rearward when firing occurs, means for narrowly limiting the rearward movement of the said chamber member, a slide on the frame engaged by the chamber member so that the said member causes normal rearward movement of the slide, the said slide having a firing pin and an extractor adapted to engage the sub-caliber cartridges, and an ejector for the sub-caliber cartridges carried by the frame and held in place by the slide, the standard ejector and the barrel.

16. For an automatic firearm having bolt means of the inertia type, a barrel and vibrator unit assemblable with or disassemblable from the firearm as a unit and comprising in combination, a barrel provided with means for rigid attachment to the frame of the firearm, and a vibrator member having telescopic engagement with the rear part of the barrel to provide an interposed gas contact area, the said member being freely separable from the barrel by longitudinal movement when both are disconnected from the frame of the firearm and the said member having a radially projecting eccentric lug thereon for engaging the frame to narrowly limit rearward movement when the barrel and member are assembled with the frame.

17. For an automatic pistol having a slide of the inertia type, a barrel and vibrator unit assemblable with or disassemblable from the firearm as

a unit and comprising in combination, a barrel provided near the rear with a depending lug having a transverse hole therein to receive a pin connected with the pistol frame, and a vibrator member having telescopic engagement with the rear part of the barrel to provide an interposed gas contact area, the said member being freely separable from the barrel by longitudinal movement when both are disconnected from the pistol frame and the said member having an eccentric lug thereon for engaging the frame to narrowly limit rearward movement when the barrel and member are assembled with the frame.

18. An automatic firearm comprising in combination, a frame having a cartridge magazine recess, a reciprocable slide of the inertia type on the frame, firing mechanism on the frame and slide, a barrel rigidly attached to the frame, a vibrator member abutting against a forward facing surface of the slide and having telescopic engagement with the rear part of the barrel to provide an interposed gas contact area whereby the said member is forced rearward when firing occurs, the said member terminating at the rear at a transverse plane adjacent the rearmost transverse plane of the barrel and the said barrel and vibrator member constituting a unit assemblable with or disassemblable as a unit from the firearm, and a depending eccentric lug on the chamber member near the rear thereof directly engaging a forward facing surface of the frame to narrowly limit the rearward movement of the said member while permitting the slide to continue its rearward movement separately therefrom.

19. An automatic pistol comprising in combination, a frame having a cartridge magazine recess, a reciprocable slide on the frame, firing mechanism on the frame and slide, a barrel provided near the rear with a depending lug engaging a vertical forward facing surface on the frame, a chamber member abutting against a forward facing surface of the slide and having telescopic engagement with the rear part of the barrel to provide an interposed gas contact area whereby the said member is forced rearward when firing occurs, and a depending eccentric lug on the chamber member directly engaging the aforesaid vertical surface on the frame when the chamber member is in its rearmost position to narrowly limit the rearward movement of the said member while permitting the slide to continue its rearward movement separately therefrom.

20. An automatic pistol comprising in combination, a frame having a magazine recess, a reciprocable slide on the frame, firing mechanism on the frame and slide, a barrel and chamber member unit adapted as an entirety to be assembled with or removed from the frame and slide at the front thereof, the said barrel having a depending lug by means of which it is rigidly attached to the frame and the said chamber member normally abutting against a forward facing surface of the slide and having telescopic engagement with the rear part of the barrel to provide an interposed gas contact area whereby the said member is forced rearward when firing occurs, and a depending eccentric lug on the chamber member directly engaging the frame separately from the barrel when the chamber member is in its rearmost position to narrowly limit the rearward movement of the said member while permitting the slide to continue its rearward movement separately therefrom.

21. A sub-caliber automatic pistol having in

the main the dimensions and weight and the recoil action of a standard large caliber pistol, the said pistol comprising in combination, a substantially standard frame having means for connection with a standard large caliber reciprocable barrel and having means for engagement with a reciprocable slide, the said frame carrying the usual firing mechanism adapted to be cocked upon rearward movement of the slide and having the usual cartridge magazine recess, a sub-caliber barrel in lieu of the standard reciprocable barrel and provided near the rear with a depending lug engaging a vertical forward facing surface on the frame, a chamber member abutting against a forward facing surface of the slide and having telescopic engagement with the rear part of the barrel to provide an interposed gas contact area whereby the said member is forced rearward when firing occurs, and a depending lug on the chamber member engaging the aforesaid vertical surface on the frame to narrowly limit the rearward movement of the said member, and a slide on the frame engaged by the chamber member so that the said member causes normal rearward movement of the slide, the said slide having a firing pin and an extractor adapted to engage the sub-caliber cartridges.

22. For an automatic firearm provided with a slide of the inertia type, a barrel and vibrator member readily separable as a unit from other parts of the firearm and comprising in combination, a barrel provided with means for rigid attachment to the frame of the firearm, and a chamber vibrator member adapted to abut against the slide of the firearm and having telescopic engagement with the rear part of the barrel to provide an interposed gas contact area, the said barrel and member having interengaging means for narrowly limiting endwise movement of the member relatively to the barrel.

23. An automatic firearm comprising in combination, a frame having a cartridge magazine recess, a reciprocable slide on the frame, firing mechanism on the frame and slide, a barrel rigidly attached to the frame, and a chamber member abutting against a forward facing surface of the slide and having telescopic engagement with the rear part of the barrel to provide an interposed gas contact area whereby the said member is forced rearward when firing occurs, the said barrel and member having loosely interengaging threads for limiting endwise movement of the member relatively to the barrel and the said member having a radially projecting lug thereon for engaging the frame of the firearm to prevent rotation of the member.

24. An automatic pistol comprising in combination, a frame having a cartridge magazine recess, a reciprocable slide on the frame, firing

mechanism on the frame and slide, a barrel provided near the rear with a depending lug by means of which it is rigidly attached to the frame, a chamber member abutting against a forward facing surface of the slide and having telescopic engagement with the rear part of the barrel to provide an interposed gas contact area whereby the said member is forced rearward when firing occurs, the said barrel and member having loosely interengaging threads for limiting endwise movement of the member relatively to the barrel and the said member having a radially projecting lug thereon for engaging the frame of the pistol to prevent rotation of the member.

25. For an automatic firearm having a slide, a unit readily separable as such from the other parts of the firearm and comprising in combination, a barrel, a sleeve detachably connected with the barrel and provided with means for rigid attachment to the frame of the firearm, and a chamber member adapted to abut against the slide of the firearm and having telescopic engagement with the rear part of the barrel to provide an interposed gas contact area, the said sleeve and member having loosely interengaging threads for limiting endwise movement of the member relatively to the barrel.

26. An automatic firearm comprising in combination, a frame having a cartridge magazine recess, a reciprocable slide on the frame, firing mechanism on the frame and slide, a barrel, a sleeve connected with the barrel and rigidly but detachably attached to the frame, and a chamber member abutting against a forward facing surface of the slide and having telescopic engagement with the rear part of the barrel to provide an interposed gas contact area whereby the said member is forced rearward when firing occurs, the said sleeve and member having interengaging means for narrowly limiting endwise movement of the member while permitting the slide to continue its rearward movement separately therefrom.

27. An automatic pistol comprising in combination, a frame having a cartridge magazine recess, a reciprocable slide on the frame, firing mechanism on the frame and slide, a barrel, a sleeve connected with the barrel and provided near the rear with a depending lug by means of which it is rigidly but detachably attached to the frame, a chamber member abutting against a forward facing surface of the slide and having telescopic engagement with the rear part of the barrel to provide an interposed gas contact area whereby the said member is forced rearward when firing occurs, the said sleeve and member having loosely interengaging threads for limiting endwise movement of the member.

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