March 4, 1952 E. H. WALTKE, JR 2,587,937

BARREL CONSTRUCTION FOR FIREARMS

Filed April 30, 1948

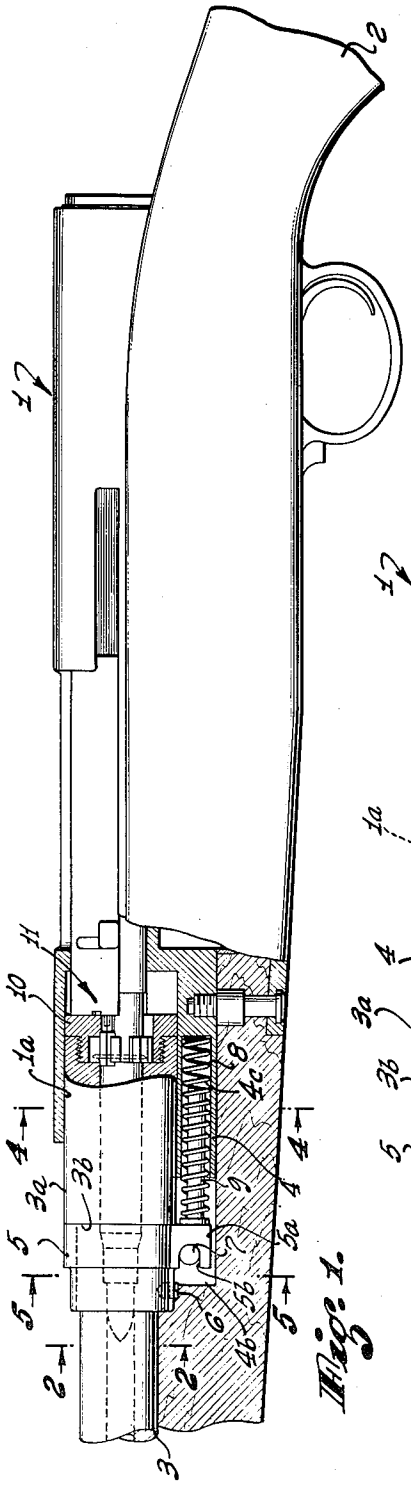


Fig. 1.

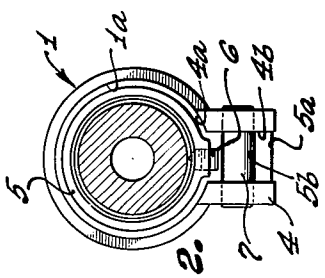


Fig. 2.

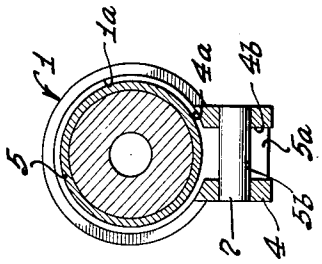


Fig. 5.

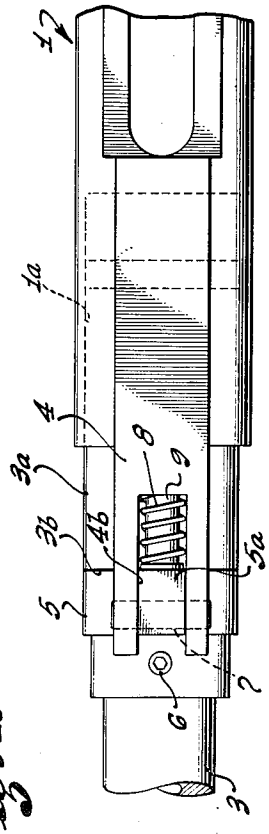


Fig. 3.

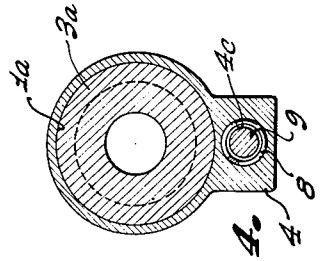


Fig. 4.

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## BARREL CONSTRUCTION FOR FIREARMS

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8 Claims. (Cl. 42—75)

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This invention relates to barrel construction for recoil-operated firearms, and more particularly to means for axially aligning the barrel with the frame or receiver of the firearm.

The barrel of a conventional recoil-operated firearm is slidably mounted within the receiver thereof, and is also rigidly connected to a breech-closing means, at least during the instant of high-chamber pressure immediately following the firing of the cartridge.

Due to the axially slidable feature of the barrel, the latter is not rigidly mounted in the receiver, and therefore means must be provided to hold the barrel in constant axial alignment with the receiver; otherwise the axis of the bore of the barrel would not be constantly and accurately aligned with the sights of the firearm.

There are generally two methods of producing this result. One is to extend the receiver a considerable distance forwardly of the breech so as to provide two relatively distant or axially spaced points between which the barrel is supported. The other method is to attach a rigid extension to the breech of the barrel which is supported also at a point to the rear of the breech within the receiver. The latter method or construction is generally more complicated and more difficult to carry out, although the first method and construction, by necessarily elongating the receiver, adds unnecessary weight and bulk to the firearm.

My invention utilizes the first method and construction, but in such a modified form that the axially spaced supporting points of the barrel on the receiver are of less distance apart.

An object also of this invention is to provide a relatively simple, economical, and durable construction for effecting the results mentioned, although with the incorporation of an additional part.

A further important object of this invention is to provide a barrel and receiver construction of this class whereby a worn barrel may be easily and economically replaced.

With these and other objects in view, as will appear hereinafter, I have devised a barrel construction for firearms having certain novel features of construction, combination, and arrangement of parts and portions, as will be hereinafter described in detail, and particularly set forth in the appended claims, reference being had to the accompanying drawings and to the characters of reference thereon, which form a part of this application, in which:

Fig. 1 is a fragmentary side elevational view of a firearm incorporating my invention, a portion thereof being broken away and in section to facilitate the illustration;

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Fig. 2 is a transverse sectional view thereof, taken through 2—2 of Fig. 1, showing substantially a front end view of the barrel and the receiver upon which it is mounted;

Fig. 3 is a fragmentary bottom view thereof, separate and apart from the stock; and

Figs. 4 and 5 are transverse sectional views thereof, taken, respectively, through 4—4 and 5—5 of Fig. 1.

The embodiment of my invention, as shown in the drawings and as will be hereinafter described, is applied in one of its forms to one type of firearm, but this invention is not to be construed as limited to the type of design shown.

In the firearm shown, a receiver 1 is carried in a conventional manner on a stock 2, as shown in my co-pending application for automatic firearm, Serial No. 16,551, series of 1948, filed March 23, 1948, and patented September 13, 1949, as Patent No. 2,481.548. The firearm has a barrel 3, the rear end of which has a cylindrical enlargment $3^a$ which is slidably mounted in a bore $1^a$ at the forward portion of the receiver, the walls of the bore closely fitting the enlarged portion of the barrel so as to eliminate unnecessary play.

The lower portion of the receiver has a forward extension 4, the upper side of which is rounded, conforming with and being substantially an extension of the wall of the main bore of the receiver, as indicated by $4^a$ in Figs. 2 and 5.

Around the barrel, in front of the cylindrical enlargement $3^a$, is mounted a barrel guide 5, this member being in the form of a collar abutting against an annular shoulder $3^b$ formed at the forward end of the enlargement $3^a$. This collar or guide is secured in position by suitable means, such as a setscrew 6. This guide or collar has at its lower side a radial projection $5^a$, forming a part of the barrel guide, and this projection is slidable in a longitudinal slot $4^b$ in the extension 4, the slot providing substantially furcations at the forward end of the extension 4, as shown best in Fig. 3.

Across the forward end portions of the furcations is a rigid portion provided by a pin 7. The projection $5^a$ has at its forward side a transverse slot $5^b$, which slot extends inwardly from the forward side of the projection in a direction parallel to the axis of the barrel. The walls of the slot $5^b$ snugly fit at least the lower side of the pin for urging the barrel downwardly and aligning it between the extensions $4^a$.

The projection 5a of the barrel guide is normally urged against the pin 7 as a stop, by means of a compression spring 8 which is located at its rear portion within a hole 4c in the extension 4 backwardly from the slot 4b. The forward end of the spring impinges against the rear side of the projection 5a. A rod 9 presses against the projection 5a and extends backwardly therefrom into the hole 4c, for guiding the spring 8.

The spring 8 holds the barrel in a forward firing position and returns it to such firing position after recoil caused by the firing of a cartridge in the breech.

To the rear end of the barrel 3 is attached, by means of screw threads, a barrel extension 10, which is provided with means whereby the barrel is locked to a breech-closing means, designated 11, specifically shown and described in my copending application, Serial No. 16,551, series of 1948, mentioned above. This breech-closing means is shown only by way of example, since there are several other known methods of locking the barrel to the breech-closing means during the period of high-chamber pressure.

Between the rear end of the barrel extension 10 and the abutment or shoulder 1b of the receiver is a space through which the barrel slides in its recoil. Its rearward movement is checked by such abutment from which it rebounds, and, aided by the spring 8, is returned to the above mentioned firing position. The distance which the barrel recoils is variable, but in some types of firearms, as here shown, is only a short distance.

The efficiency of my invention depends largely upon the accuracy with which the pin 7 fits the lower wall of the slot 5b. In fact, it is necessary that the pin 7 be disposed sufficiently low to slightly, but forcibly, spread the extensions 4 and thus insure that the barrel will be drawn downwardly, snugly between the concave surfaces 4a. In any event, it is essential that means be provided by which the "slack" between the bore 1a and the barrel can be neutralized and this means must be located between the rearward end of the bore 1a and the front end of the extensions 4, preferably midway when practical.

The pin 7, while in the slot 5b, reduces the amount of play between the barrel and the receiver to approximately one-half the amount of play which would occur, even if the bore 1a were extended to the forward end of the extensions 4. This desirable result is attained due to the fact that the pin 7 serves as a rigid fulcrum about which the barrel can pivot. The degree of such pivotal movement is controlled by closely fitting the breech end of the barrel to the bore 1a. Lateral play is reduced proportionately since the pin 7 acts to draw the barrel downwardly against the concave surfaces 4a, thus producing a similar rigid fulcrum effect.

In order to make a new barrel for replacement, it is necessary only to machine the outside diameters of the barrel to fit the bore in the receiver and the hole through the barrel guide or collar, and to cut threads in the breech end thereof to receive the extension 10. Thus, the barrel may be readily replaced in the firearm.

I wish it to be understood that I do not desire to be limited to the exact details of construction shown and described, for obvious modifications will occur to a person skilled in the art.

I claim:

1. A barrel construction for firearms, comprising a frame having in its forward portion a bore



and having a portion extending forwardly of the bored portion with the inner side thereof forming a forward extension of the wall of the bore, said extension being provided with a longitudinal slot, a barrel mounted for axial reciprocable movement on the frame, the rear end of the barrel slidably fitting the wall of the bore, the barrel having a detachable downward projection forwardly of the rear end and slidably extending into said slot, said extension having at the forward end of the slot therein a rigid portion extending transversely of the axis of the barrel, the projection having a slot in its forward end parallel with said axis for slidably receiving said rigid portion so as to maintain the barrel in axial alignment with the frame and to limit forward movement of the barrel.

2. A barrel construction for a firearm, comprising: a receiver having a bore in its forward portion and provided with an integral extension projecting forwardly of the bore, said extension having an inner concave surface at its outer end, said extension having a longitudinally-extending slot; a barrel slidable axially within the bore and said extension and closely fitting said bore; a radial projection on said barrel projecting downwardly into said slot and being slidable therein; and interengaging means on said extension and said projection for drawing said barrel downwardly into engagement with said inner surface of said extension.

3. A barrel construction for a firearm, comprising: a receiver having a bore in its forward portion and provided with an integral extension projecting forwardly of the bore, said extension having an inner concave surface at least at its outer end, said extension having a longitudinally-extending slot; a barrel slidable axially within the bore and said extension and closely fitting said bore; a radial projection on said barrel projecting downwardly into said slot and being slidable therein; and interengaging pin-and-slot means on said extension and said projection for drawing said barrel downwardly into engagement with said inner surface of said extension.

4. A barrel costruction for a firearm, comprising: a receiver having a bore in its forward portion and provided with an integral extension projecting forwardly of the bore, said extension having an inner concave surface at least at its outer end, said extension having a longitudinally-extending slot; a barrel slidable axially within the bore and said extension and closely fitting said bore; a radial projection on said barrel projecting downwardly into said slot and being slidable therein, said projection having a transversely extending slot and a pin rigidly carried by said extension and extending transversely across said slot thereof and through said transverse slot of said projection, the interengagement of said pin and said transverse slot forcing said barrel downwardly against the inner surface of said extension.

5. A barrel construction for a firearm, comprising: a receiver having a bore in its forward portion and provided with an integral extension projecting forwardly of the bore, said extension having an inner concave surface at least at its outer end, said extension having a longitudinally-extending slot; a barrel slidable axially within the bore and said extension and closely fitting said bore; a radial projection on said barrel projecting downwardly into said slot and being slidable therein, said projection having a transversely extending slot and a pin rigidly carried by said

extension and extending transversely across said slot thereof and through said transverse slot of said projection, the interengagement of said pin and said transverse slot forcing said barrel downwardly against said inner surface of said extension; and a spring compressed between said receiver and the rearward side of said projection, said spring being normally operative to slide said barrel forwardly to a position wherein the inner end of said transverse slot engages said pin to limit the forward sliding movement of said barrel.

6. A barrel construction as defined in claim 4 in which said pin and said transverse slot are disposed below said barrel and intermediate the rearward end of said bore and the forward end of said extension.

7. A barrel construction as defined in claim 4 in which said pin and said transverse slot are disposed at a substantial distance forwardly of said receiver and directly below said extension thereof.



8. A barrel construction as defined in claim 4 in which said pin and said transverse slot are so positioned forwardly of said receiver and directly below said extension as to maintain the lower peripheral surface of said barrel in engagement with the upper surface of said extension at the forward end thereof.

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