Feb. 8, 1938. E. ALTENBURGER 2,107,359

BARREL HOLDING DEVICE FOR AUTOMATIC PISTOLS

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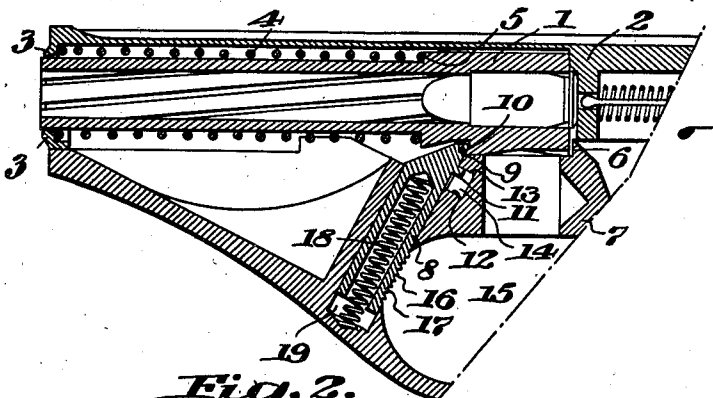



Fig. 1.

Fig. 2.

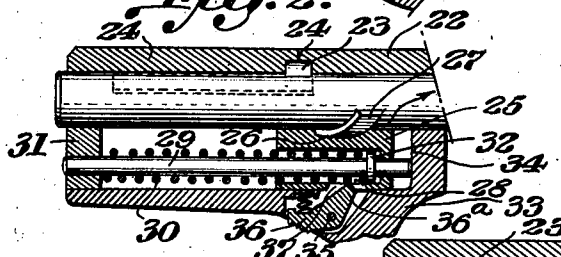
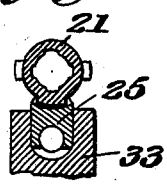



Fig. 6.



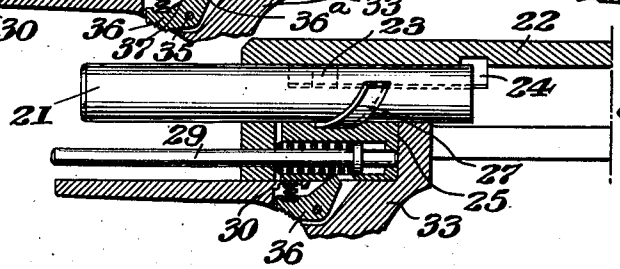




Fig. 3.

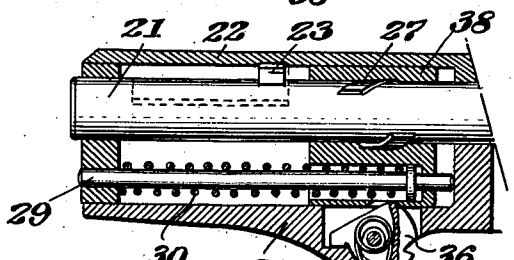
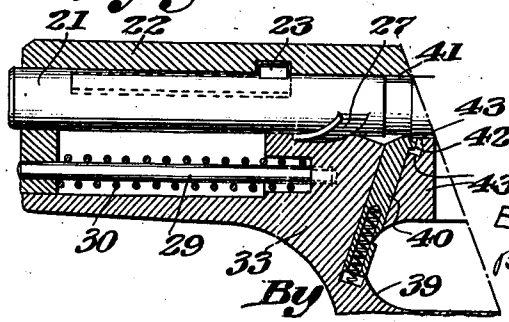



Fig. 4.

Fig. 5.




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## BARREL-HOLDING DEVICE FOR AUTOMATIC PISTOLS

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3 Claims. (Cl. 42—75)

The invention relates to barrel-locking devices for automatic pistols and has for its objects to produce such a device which is always in a position ready for use and to a great extent acts automatically so that it is possible to rapidly insert and remove the barrel, to eliminate parts which may be loosened during firing, and external parts which might impair the facility with which the pistol can be gripped and manipulated, and to avoid the use of parts which become loose or separated after the removal of the breech-closing member or of the barrel.

According to the invention, a barrel-holding device meeting these requirements is constructed as follows: The barrel guided at two points of support after insertion in the firearm is held fast by a locking device automatically coming into action, which is simply brought into the releasing position for lifting the barrel. The automatic coming-into-action of the locking device considerably simplifies the insertion of the barrel, for which purpose both hands are free, any operation of screw bolts and the like as in known constructions being dispensed with.

For carrying into effect the aforesaid fundamental idea of the invention, provisions are made in pistols having a fixed barrel and an inertia breech-closing device, whereby the barrel abuts, upon insertion, on the one hand against the breech-closing member to prevent transverse displacement and on the other hand against the stock to prevent longitudinal displacement with respect to the axis of the barrel in one direction and to prevent axial displacement in the other direction, and is secured against axial rotation by an automatically engaging bolt mounted in the stock which bolt is always in the position ready for operation.

According to a further feature of the invention, the barrel is provided on its lower side with a notch, into which engages the head of a bolt which is held by spring pressure in the locking position and is displaceable between fixed stops. The bolt is, in its turn, disposed in a boring situated entirely inside the stock, that is to say, no recesses are necessary in the stock or parts projecting outwardly therefrom. With one part of its circumference, the bolt penetrates through the wall of the trigger guard and may be actuated from this point for unlocking the barrel.

The invention also relates to a barrel-holding device for pistols having a sliding barrel and a lock breech-closing member, which is constructed in accordance with the above-mentioned idea of the invention. In the case of such a pistol, the holding device is advantageously so arranged that the barrel is held indirectly above a control member (barrel nut) effecting the rotation of the barrel by an automatically acting and releasable locking device. The barrel is held fast in the transverse direction by the breech-closing member, while the locking device permits pre-determined longitudinal displacement of the barrel or of the barrel nut. The barrel nut is ensured against turning by guiding in the stock. The locking device preferably consists of a lever mounted in the stock and subjected to spring pressure, one arm of which limits the axial displacement of the barrel nut in the direction of the muzzle, while its other arm projects into the opening of the trigger guard.

The barrel-holding device may also be so constructed that the locking device engages with a barrel nut sleeve guiding the barrel in the transverse direction and completely enclosing it.

The sliding and lockable barrel, finally, if the barrel nut be omitted, may be held directly by a locking device which locks the barrel against axial displacement from the normal position in the forward direction, but permits longitudinal displacement to a pre-determined extent in the backward direction and rotation of the barrel. To this end, the locking device may preferably be formed of a spring bolt mounted in the stock, which so engages in a groove on the barrel which corresponds in width to the longitudinal displacement of the barrel that it engages the rear groove wall, but has a free clearance between its end and the base of the groove.

By the hereinbefore described manner of arranging and constructing the bolt, the manipulation of the firearm is considerably facilitated. The bolt is always ready to be operated. For example, it is not necessary, as in known constructions, to first of all move the bolt from a self-locking position into the releasing position and then to free the barrel by removal of the bolt from the pistol.

Further features and details of the invention will be apparent from the following description and from the drawing, in which a number of constructional examples are illustrated.

Figure 1 is a sectional view of the forward part of a piston having a fixed barrel and inertia breech-closing member, seen from the side, with the details of the barrel-holding device.

Figure 2 shows the barrel-holding device according to the invention on a pistol having a sliding barrel and a locked breech-closing mem-

ber, in section, the parts being in the closing position.

Figure 3 is a similar view to that shown in Figure 2, the parts being in the withdrawn position.

Figure 4 shows a modified constructional form.

Figure 5 shows a further constructional example according to the invention.

Figure 6 shows the inter-engagement of the barrel, the barrel nut and the stock in a transverse section with respect to the axis.

In the case of the pistol in Figure 1 having a fixed barrel and an inertia breech-closing member, the barrel 1 is mounted in the breech-closing member 2 and is embraced thereby at its forward end by means of the guide ring 3. The ring 3 serves at the same time as an abutment for the tension spring 4, which bears at its opposite end on a projection 5 on the barrel and presses the breech-closing member against the rear end of the barrel. By means of the mounting in the breech-closing member 3, the barrel 1 is secured against displacement transversely to its axis. On one side, the barrel is secured against displacement in the axial direction by the fixed stop 6 on the stock or frame 7; on the other side, the barrel abuts against a bolt 8, which has a head 9 engaging a notch or recess 10 on the lower side of the barrel. The bolt is disposed in a boring 19 inside the stock 7 and is held by a spring 18 in the locking position. The bolt 8 is displaceable to a limited extent and consequently it neither presses against the lower side of the barrel in the upward direction, nor can it fall out when the barrel is removed. To limit the locking movement, use is made of a projection 11 on the bolt, which cooperates with the stop surfaces 12 and 13 of a recess 14 in the stock 7. The boring for the bolt 8 laterally penetrates through the wall of the recess 15 of the trigger guard. The part 16 of the circumference of the bolt which projects into the said recess is provided with a roughened portion or notches 17 and the bolt can be displaced thereby out of the recess 13 into the unlocking position. Owing to the fact that the bolt 8 engages in the barrel obliquely with respect to the barrel axis, it further secures the barrel in the stock against vertical upward displacement.

The replacing of the barrel takes place as follows:—

For removing the barrel (with breech-closing member), the bolt 8 is first pressed downwards by hand or with the aid of the bottom of the magazine. The barrel is thus unlocked and is now pushed forward together with the breech-closing member until it leaves its guide grooves on the stock. The breech-closing member 2 is now lifted as a whole with the barrel 1 and the spring 4 and the barrel then withdrawn from the breech-closing member.

The assembly takes place by mounting the breech-closing member as a whole with the barrel and the tension spring vertically from above on the stock and displaced in the backward direction until the guide grooves of the breech-closing member engage with the stock and until the head of the barrel-holding bolt 9 automatically springs into the notch 10 on the barrel. The barrel and the breech-closing member are thereby held fast in their position without any special actuation of the barrel-holding device.

The particular advantage of the new barrel-holding device over other known constructions resides in that, after the lifting of the breech-closing member and the barrel, no loose parts are present which might be lost.

Figures 2–6 illustrate the construction of the barrel-holding device according to the invention in the case of a pistol having a sliding barrel and a locked breech-closing member. According to Figures 2 and 3, the barrel 21 of the pistol is slidingly mounted in the breech-closing member 22 and has a locking boss 23 engaging a longitudinal and transverse groove 24 of the breech-closing member. The barrel is guided at its forward end in a boring in the breech-closing member 2, while the rear end is ensured only against transverse displacement by the breech-closing member. A barrel nut 25 is guided at the rear part in the stock 33 and ensured against turning (Figure 6). The barrel nut bears against the outer surface of the barrel and has a curved groove 26, in which a control boss 27 of the barrel engages. In a boring of the barrel nut a spring guiding bolt 29 is provided, on which the tension spring 30 of the breech-closing member is situated, the said tension spring abutting on the one hand against a projection 31 of the breech-closing member and on the other hand against a collar 32 on the guide bolt 29. The barrel nut is mounted in the stock 33 and is limited in its rearward movement by a surface 34 of the stock, which also serves as a stop surface for the spring bolt 29. In the stock 33 a locking device for holding the barrel is arranged and consists of a lever 36 rotatable about a pin 35, one arm of the said lever engaging with the barrel nut 25, while its other arm projects outwards through an aperture in the stock for operation by hand. The lever is under the action of a spring whereby it always automatically tends to remain in engagement with the barrel nut. The engagement of the locking device with the barrel nut is so arranged that the barrel nut can shift in the rearward direction out of its normal position in spite of the engagement of the locking device, while the movement through the normal position in the forward direction can only take place by actuation of the locking device. To this end, the head of the lever arm 36*a* engages in a longitudinal slot 37 of the barrel nut and bears against the rear end surface of the slot. The head at the same time prevents a rotational movement of the barrel nut by bearing against the lateral surface of the slot.

The manner of operation of the arrangement is as follows:—

After firing, the barrel locked with the breech-closing member will both move over a predetermined path owing to the recoil energy, whereby the barrel nut is also carried along by means of the control boss until it is brought to a standstill by striking against the surface 34 of the stock 33. The barrel is then turned through the medium of the control bosses 27 due to its kinetic energy and is thus unlocked from the breech-closing member, which now continues the backward alone. When the breech-closing member again slides forward under the force of the tension spring 30, the barrel and the barrel nut are carried forward in the last part of the movement, the barrel nut bearing against the head of the lever arm 36*a*. The barrel nut thus remains stationary, and when the barrel and the breech-closing member again slide forward, the barrel is turned by the control bosses and thus becomes locked with the breech-closing member.

For removing the barrel, the lever 36*a* is pressed inwards from the outside against the spring force, so that the head 36 is withdrawn

from the slot of the barrel nut. The breech-closing member, the barrel and the barrel nut are now pushed forward together until the breech-closing member is free of the guide grooves on the stock. These parts can then be lifted together, whereupon the extraction of the barrel can easily be effected after removal of the barrel nut. Then the breech-closing member, the barrel and the barrel nut are inserted, the locking device **36** automatically snaps into the slot **37** of the barrel nut and thus limits a displacement of the barrel and of the barrel nut out of the normal position in the forward direction.

In Figure 4, the barrel nut is constructed as a sleeve **38**, which completely embraces the rear part of the barrel. The barrel nut thus also effects the guidance of the barrel in the transverse direction. The locking device has one arm engaging a longitudinal slot in the barrel nut, and another arm adapted to be actuated from outside and penetrating the recess **39** of the trigger guard, whereby better protection against involuntary actuation of the locking device when handling the pistol is afforded.

Figure 5 shows a barrel-holding device according to the invention in a piston having a sliding barrel and a locked breech-closing member, wherein a separate barrel nut is not provided. In this case, the locking device, which is constructed as a spring bolt **40**, engages in a recess **41** in the barrel, which is of a length in the axial direction of the barrel that the barrel can be displaced out of the normal position in the rearward direction to a predetermined extent without hindrance. The spring bolt has a head engaging the rear end surface of the recess **41** to limit the movement of the barrel out of the normal position in the forward direction. For changing the barrel, the spring bolt is withdrawn from the path of the barrel. In order that the head shall not cause any friction on the bottom surface of the recess upon the rotary movement of the barrel taking place with the longitudinal displacement, the movement of the spring bolt is limited by the striking of a projection **42** against abutment surfaces **43** on the stock, so that between the upper edge of the head and the bottom surface of the recess a clearance is always present. After the removal of the spring bolt from its recess, the breech-closing member is shifted forwards with the barrel out of the securing grooves on the stock and lifted up. The barrel may then easily be removed out of the breech-closing member.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. A pistol comprising a frame, a barrel removably mounted in the frame and having a recess in the periphery thereof and a trigger guard forming a part of said frame and defining an opening therein, a barrel-locking element movably mounted in the frame and extending approximately tangentially to a side of said opening but intersecting the opening sufficiently for manual manipulation of said element to remove the barrel, and a high powered spring urging said element into barrel-locking position in which said element engages the recess.

2. A pistol comprising a frame, a barrel removably mounted in the frame and having a recess in the periphery thereof and a trigger guard forming a part of said frame and defining an opening therein, a barrel-locking bolt having a bore therein and slidably mounted in the grip portion and extending approximately tangentially to the side of said opening but intersecting the opening sufficiently for manual manipulation of said bolt to remove the barrel, a high powered spring urging said bolt into barrel-locking position in which said bolt engages the recess and said spring occupying the bore in said bolt and extending substantially the entire length thereof, and stop means on the bolt and the frame for limiting the movement of the bolt.

3. A pistol comprising a frame, a sliding barrel removably mounted in the frame and having an annular groove in the periphery thereof, a breech-closing member having a lug and groove connection with the barrel adapted to be released by a turning movement of the barrel during recoil, a trigger guard forming a part of said frame and defining an opening therein, a barrel-locking bolt slidably mounted in the frame and extending approximately tangentially to a side of said opening but intersecting the opening sufficiently for manual manipulation of said bolt to remove the barrel, said bolt engaging the rear edge of the annular groove in said barrel and having clearance from the base of the groove, and a high powered spring urging said bolt into barrel-locking position.

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