May 20, 1941. F. F. BURTON 2,242,389

BOLT-ACTION FIREARM CONSTRUCTION

Filed Oct. 8, 1938

Fig. 1.

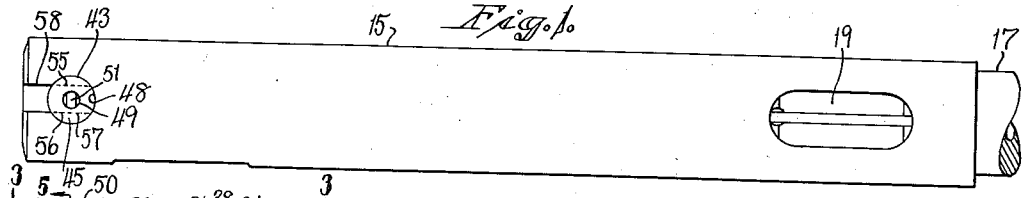


Fig. 2.

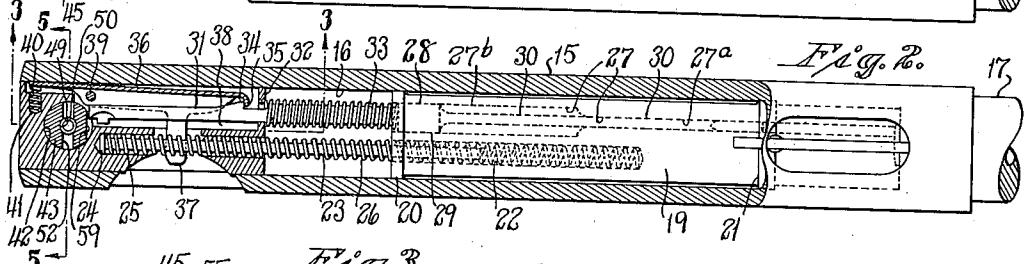


Fig. 3.

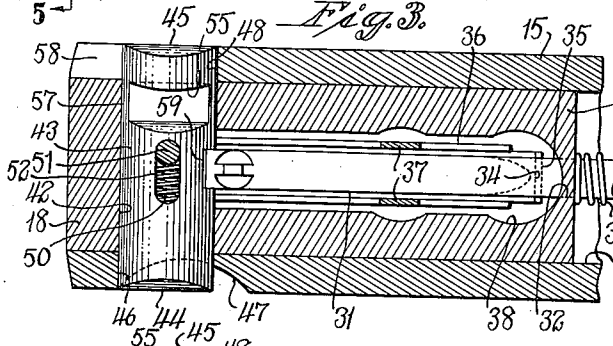


Fig. 5.

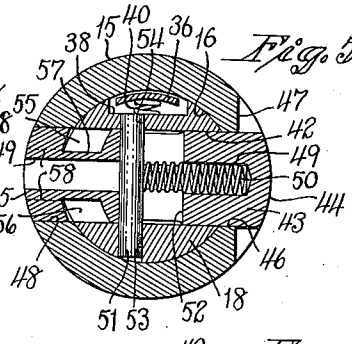


Fig. 4.

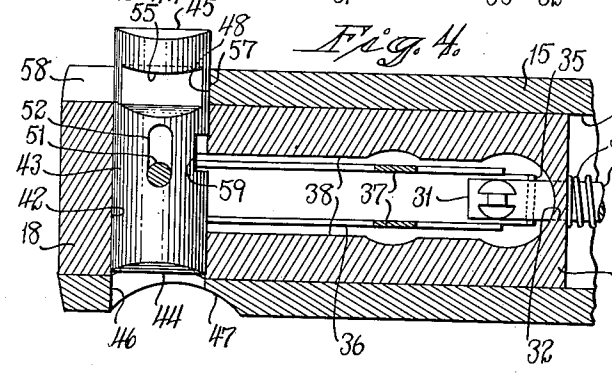


Fig. 6.

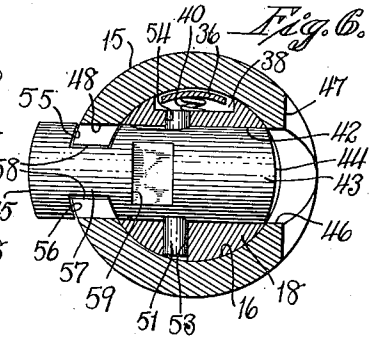


Fig. 7.

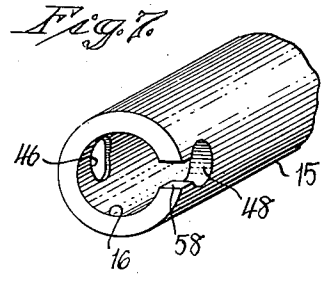


Fig. 9.

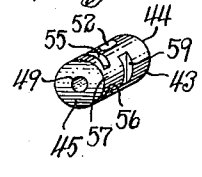
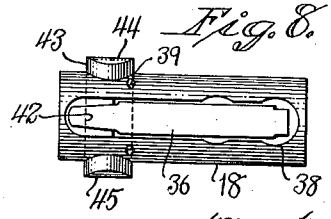


Fig. 8.



Inventor
By Frank F. Burton
Seymour Earle Nichols
Attorneys

Patented May 20, 1941 2,242,389

UNITED STATES PATENT OFFICE

2,242,389

BOLT-ACTION FIREARM CONSTRUCTION

Frank F. Burton, Mount Carmel, Conn., assignor, by mesne assignments, to Western Cartridge Company, a corporation of Delaware

Application October 8, 1938, Serial No. 233,941

8 Claims. (Cl. 42—16)

This invention relates to improvements in the construction of bolt-action firearms and relates more particularly to the receiver construction of such firearms.

As will be apparent from the following, considered in conjunction with the accompanying drawing, the present invention is concerned with a construction and organization of parts wherein the receiver of the bolt-action firearm is provided at its rear with a receiver-plug, forward of which the breech-bolt of the firearm operates and which is removable to permit the installation and the complete withdrawal of the said breech-bolt from the said receiver.

One of the objects of the present invention is to provide a simple, reliable and effective receiver construction for bolt-action firearms, which may be produced at a low cost for manufacture and which will provide for the ready assembly and disassembly of the breech-bolt and receiver.

Another object of the present invention is to provide a bolt-action firearm having a superior construction and arrangement of parts whereby the receiver is provided with a removable receiver-plug which is normally removable, but which is automatically prevented from being removed when the firearm is cocked.

A further object of the present invention is to provide a superior bolt-action firearm construction in which provision is made whereby the firearm is automatically prevented from being cocked in the event that the removable receiver-plug is partly unlocked or not fully locked in place.

With the above and other objects in view, as will appear to those skilled in the art from the present disclosure, this invention includes all features in the said disclosure which are novel over the prior art and which are not claimed in any separate application.

In the accompanying drawing, in which certain modes of carrying out the present invention are shown for illustrative purposes:

Fig. 1 is a broken view in side elevation of the receiver and the rear-portion of the barrel of a firearm constructed in accordance with the present invention, together with certain of the parts mounted on or carried by the said receiver;

Fig. 2 is a view thereof mainly in central vertical-longitudinal section and partly in side elevation;

Fig. 3 is a longitudinal sectional view taken on the line 3—3 of Fig. 2, but on a larger scale, and showing the locking-bolt restrained against movement into its unlocking position by the rear-portion of the firing-plunger;

Fig. 4 is a view corresponding to Fig. 3, but showing the locking-bolt moved transversely of the receiver into its unlocking position, and showing the firing-plunger in its forward or fired position to enable the said locking-bolt to be moved as described;

Fig. 5 is a transverse sectional view taken on the line 5—5 of Fig. 2, but on a larger scale;

Fig. 6 is a view corresponding to Fig. 5, but showing the locking-bolt moved into its unlocking position;

Fig. 7 is a broken perspective view of the rear-portion of the receiver;

Fig. 8 is a top or plan view of the receiver-plug, together with the parts organized therewith; and

Fig. 9 is a perspective view of the locking-bolt, detached.

In the accompanying drawing, there is shown only the receiver and the parts immediately associated therewith, together with a portion of the barrel, the stock and other structure being omitted for clarity of illustration, since the invention here involved relates to the receiver and its immediately-associated structure.

In the firearm structure shown, the receiver 15 is of tubular form with its exterior cylindrically contoured save for certain cuts therein as will hereinafter appear. The said receiver is formed interiorly with an axial cylindrically-contoured bolt-receiving passage 16 which extends throughout the length of the receiver and at its forward end receives the rear end of a barrel 17 rigidly attached to the forward end of the said receiver in accordance with any approved practice not requiring detailed description herein.

Fitting into the rear-portion of the bolt-receiving passage 16 in the receiver 15 is a cylindrically-contoured receiver-plug 18 intermediate the forward end of which and the rear end of the barrel 17 is a reciprocating breech-bolt 19 which, generally considered, is cylindrically-contoured and is formed at its rear end with an annular bearing-flange 20 and adjacent its forward end with a similar bearing-flange 21. Both of the bearing-flanges 20 and 21, just referred to, have a smooth sliding fit with respect to the surface of the bolt-receiving passage 16 so as to provide support and guidance for the breech-bolt 19 in its reciprocating movement without, however, occasioning any binding action.

The lower portion of the breech-bolt 19 is formed with a longitudinal passage 22 in which extends the forward end of a spring-guiding pin

23 having its rear end provided with a head 24 and seated in a forwardly-opening socket 25 extending longitudinally of the receiver-plug 18 in axial alignment with the longitudinal passage 22 in the breech-bolt 19. Encircling the spring-guiding pin 23 is a helical breech-bolt-return spring 26 bearing at its forward end against the front-end wall of the passage 22 and at its rear end bearing against the forward face of the head 24 of the said spring-guiding pin 23, as is clearly shown in Fig. 2 of the drawing.

Above its longitudinal axis and in parallelism with the longitudinal passage 22 therein, the breech-bolt 19 is formed with a firing-plunger passage, generally designated by the reference character 27, and having a relatively-small-diametered forward-portion 27*a* and a relatively-large-diametered rear-portion 27*b*, which latter opens through the rear face of the said breech-bolt.

Reciprocating in the firing-plunger passage 27 in the breech-bolt 19 is the forward portion of a reciprocating firing-plunger or striker generally designated by the reference character 28 and including a cylindrically-contoured bearing-portion 29 located about midway the length of the said firing-pin and bearing in the rear portion 27*b* of the firing-plunger passage 27. Projecting forwardly from the bearing-portion 29 of the firing-plunger 28 is a firing-pin 30 reciprocating in the forward portion 27*a* of the firing-plunger passage 27. Projecting rearwardly from the bearing-portion 29 of the said firing-plunger 28 is a shank 31 which is adapted to reciprocate in a bore 32 formed in the receiver-plug 18 before referred to.

Located intermediate the forward face of the receiver-plug 18 and the rear face of the bearing-portion 29 of the firing-plunger 27, is a helical firing-spring 33 encircling the portion of the shank 31 of the said firing-plunger 28 which happens to be located forwardly of the receiver-plug 18 at any given time.

The shank 31 of the firing-plunger 28 above referred to, is formed as shown in Fig. 2 with a cocking-nose 34 which is engageable by a sear-nose 35 formed at the forward end of a sear 36 having a pair of spaced apart downwardly-extending actuating-fingers 37—37 respectively formed on opposite sides of the said sear and projecting downwardly along opposite sides of the breech-bolt-return spring 26 for being engaged by a trigger (not shown) of any approved form not herein requiring either description or illustration.

In the particular structure illustrated in the accompanying drawing, the sear 36 is located in a recess 38 formed in the receiver-plug 18. The said sear 36 is mounted in the recess 38 just referred to, upon a transverse pivot-pin 39 and has its rearmost portion yieldingly pressed outwardly by a sear-spring 40 seated in a spring-pocket 41 formed in the receiver-plug 18 as is clearly shown in Fig. 2.

As thus constructed and arranged the firing-plunger 28 is under the constant forward urge of the firing-spring 33 and is releasably restrained, when the gun is cocked, by the sear-nose 35 of the sear 36.

Extending diametrically across the rear portion of the receiver-plug 18 is a locking-bolt passage 42 which is intersected about midway of its length by the recess 38 before referred to. The said locking-bolt passage is in general cylindrically contoured to receive with a sliding-fit, a locking-bolt 43 which is also of substantially-cylindrical form and which has its respective opposite end-faces 44 and 45 shaped to substantially conform to the cylindrical periphery of the receiver 15. At its end adjacent its end-face 44 the locking-bolt 43 projects with a sliding-fit into a locking-passage 46 formed in the adjacent wall of the receiver 15 and terminating at its outer end in a spherically-contoured finger-clearance recess 47 formed in the side of the said receiver 15 for a purpose as will hereinafter appear.

At its end adjacent its end-face 45 the locking-bolt 43 extends with a sliding-fit into a locking-passage 48 formed in the side-wall of the receiver 15 at a point diametrically opposite the locking-passage 46 before referred to and in axial alignment therewith as well as with the locking-bolt passage 42 in the receiver-plug 18.

The locking-bolt 43 above referred to is also formed with an axial spring-pocket 49 which extends from the end-face 45 of the said locking-bolt to a point closely adjacent the opposite end-face 44 thereof as is clearly indicated in Fig. 5. Housed within the spring-pocket 49 is a helical locking-bolt spring 50 bearing at one end against the end-wall or bottom of the spring-pocket 49 and bearing at its other end against a limiting-pin 51 projecting through a diametrical clearance-passage 52 in the said locking-bolt 43 and intersecting the spring-pocket 49 therein. The lower end of the stop-pin 51 just referred to, extends with a drive-fit into a socket 53 formed in the receiver-plug 18 at a point below the locking-bolt 43 (Figs. 5 and 6). The upper end of the stop-pin 51 fits with a drive-fit into a socket 54 in the portion of the receiver-plug 18 which lies immediately above the locking-bolt 43.

As thus constructed and arranged, the locking-bolt spring 50 exerts a constant but yielding effort to maintain the locking-bolt 43 in the position in which it is indicated most clearly in Figs. 3 and 5 but permits the said locking-bolt to be moved axially to the limit permitted by the coaction of its clearance-passage 52 and the limiting-pin 51, into the position in which it is indicated in Figs. 4 and 6.

Slightly inwardly from its end-face 45 the locking-bolt 43 is formed with an upwardly-opening clearance-notch 55 and with a lower complemental clearance-notch 56, both of which have widths, lengthwise of the locking-bolt 43, slightly exceeding the wall-thickness of the receiver 15, as will be apparent by reference to Figs. 5 and 6 in particular. The clearance-notches 55 and 56 have inclined inner and outer walls conforming substantially to the inclination of the adjacent portion of the wall of the receiver 15. The aforesaid clearance-notches 55 and 56 in the upper and lower faces respectively of the locking-bolt 43 are separated from each other in a vertical direction by a contracted neck-portion 57 having a vertical dimension slightly less than the similar dimension of a releasing passage 58 leading rearwardly from the locking-passage 48 in the receiver 15 to the rear edge of the latter.

For the purpose of guarding against the movement of the locking-bolt 43 into its unlocking position when the firing-plunger 28 is cocked, the forward face of the said locking-bolt is provided with a safety-notch 59 which is entered on occasion, by the rear end of the firing-plunger 28 when the latter is in its cocked position.

For the purpose of making clear some of the advantages of the present invention let it be assumed that the parts are in the positions in which they are shown in Fig. 1, 2, 3 and 5.

When the locking-bolt 43 is in the position in which it is indicated in the figures just above referred to, it serves to firmly lock the receiver-plug 18 in place within the rear end of the receiver 15 by virtue of its extending through the locking-bolt passage 42 and into both of the locking-passages 46 and 48 so that a firm seat is provided for the breech-bolt-return spring 26 and the firing-spring 33 as well as a firm mount for the sear 36 and associated parts. Furthermore, the receiver-plug 18 as thus held in place in the receiver 15, constitutes a firm and reliable abutment for checking the rearward movement of the breech-bolt 19 should the same be driven violently rearwardly as for instance by the explosion of a cartridge.

Should it now be desired for any reason to remove the breech-bolt 19 rearwardly from the receiver 15 this may be accomplished only when the firing-plunger 28 is uncocked so that its rear end is withdrawn from the safety-notch 59 in the said locking-bolt. Now by first pressing against the end-face 44 of the locking-bolt 43 and moving the same cross-wise of the firearm from the position in which it is shown in Figs. 1, 2, 3 and 5 into the position in which it is shown in Figs. 4 and 6, the rearward removal of the receiver-plug 18 will be made possible in a manner as will be more fully described.

When the locking-bolt 43 is moved as just above described to the limit of the movement thereof permitted by the coaction of its clearance-passage 52 and the limiting-pin 51, both of the releasing-notches 55 and 56 of the said locking-bolt will be brought into registration with the portions of the wall of the receiver 15 respectively lying above and below the releasing-passage 58 in the said receiver 15, all as indicated in Figs. 4 and 6. When the locking-bolt 43 is moved as just described, its neck-portion 57 is brought into registration with the said releasing-passage 58 so that the entire receiver-plug 18 together with the locking-bolt 43 and associated parts may be drawn rearwardly completely out of the rear end of the receiver 15 for either the simultaneous or the subsequent removal of the breech-bolt 19.

When the receiver-plug 18 is replaced in the receiver 15, it will be obvious that the firing-plunger 28 cannot be cocked until the locking-bolt 43 has been fully returned to its locking-position (Figs. 1, 2, 3 and 5) to register its safety-recess 59 with the path of movement of the rear end of the said firing-plunger.

From the foregoing it will be seen that the construction and arrangement of parts is such that the locking-bolt 43 or its equivalent is automatically held against movement into its unlocking position in the event that the firing-plunger 28 is in its cocked position, thereby automatically guarding against the unlocking of the receiver-plug 18 until such time as the said firing-plunger has been released from its potentially-dangerous cocked position wherein it might accidentally be released and cause the explosion of a cartridge with the consequent violent ejection not only of the breech-bolt 19 but also of the receiver-plug 18 and associated parts, which ejection obviously might occasion serious injury to a user.

Furthermore by means of the construction and arrangement of parts above described and illustrated in the accompanying drawing, the locking-bolt 43 provides a rugged and reliable retainer for insuring the holding of the receiver-plug 18 in place in the receiver 15 despite violent blows and other shocks which might be received by the said receiver-plug during the use of the firearm of which it forms a part.

The invention may be carried out in other specific ways than those herein set forth without departing from the spirit and essential characteristics of the invention, and the present embodiments are, therefore, to be considered in all respects as illustrative and not restrictive, and all changes coming within the meaning and equivalency range of the appended claims are intended to be embraced therein.

I claim:

1. A bolt-action firearm-construction including in combination: a receiver having an opening at its rear end; a breech-bolt normally in the said receiver and removable through the opening in the rear end thereof; a receiver-plug removably mounted in the opening in the rear end of the said receiver to the rear of and in line with the path of withdrawal of the said breech-bolt therefrom and provided with a transversely arranged cylindrically-contoured locking-bolt-receiving passage; a cylindrically-contoured locking-bolt extending through the locking-bolt-receiving passage in the said receiver-plug and engageable with the said receiver to releasably hold the said receiver-plug in place in the said receiver, the said locking-bolt being provided with a transverse limiting-passage; and a limiting-pin extending into the limiting-passage in the said locking-bolt and rigidly carried by the said receiver-plug.

2. A bolt-action firearm-construction including in combination: a receiver having an opening at its rear end; a breech-bolt normally in the said receiver and removable through the opening in the rear end thereof; a receiver-plug removably mounted in the opening in the rear end of the said receiver to the rear of and in line with the path of withdrawal of the said breech-bolt therefrom and provided with a transversely arranged cylindrically-contoured locking-bolt-receiving passage; a cylindrically-contoured locking-bolt extending through the locking-bolt-receiving passage in the said receiver-plug and engageable with the said receiver to releasably hold the receiver-plug in place in the said receiver, the said locking-bolt being provided with a transverse limiting-passage; a limiting-pin extending into the limiting-slot in the said locking-bolt and rigidly carried by the said receiver-plug; and a spring engageable with the said limiting-pin and the said locking-bolt and yieldingly urging the latter into its locking-position.

3. A bolt-action firearm-construction including in combination: a receiver having an opening at its rear end; a breech-bolt normally in the said receiver and removable therefrom through the opening in the rear end thereof; a firing-member associated with the said breech-bolt; a receiver-plug removably mounted in the opening in the rear end of the said receiver; and a releasable locking-bolt engaging with both the said receiver and the said receiver-plug to releasably hold the latter in the former, the said locking-bolt being provided with a portion interposable in the path of movement of the said firing-member when the said locking-bolt is moved out of its locking position to thereby prevent the cocking of the said firing-member

when the said locking-bolt is in other than its locking position.

4. A bolt-action firearm-construction including in combination: a receiver having an opening at its rear end; a breech-bolt normally in the said receiver and removable therefrom through the opening in the rear end thereof; a firing-member associated with the said breech-bolt; a receiver-plug removably mounted in the opening in the rear end of the said receiver; and a locking-bolt engaging with both the said receiver and the said receiver-plug to releasably hold the latter in the former, the said locking-bolt being provided with a stop-portion engageable with the said firing-member when the same is in its cocked position to prevent the said locking-bolt from being moved into its unlocking position when the said firing-member is in its cocked position.

5. A bolt-action firearm-construction including in combination: a receiver having a cylindrical bolt-receiving passage therein; a cylindrically-contoured breech-bolt reciprocatable in the bolt-receiving passage in the said receiver; a cylindrically-contoured receiver-plug removably installed in the rear end of the bolt-receiving-passage in the said receiver; a firing-plunger projecting through the said breech-bolt and having a portion extending rearwardly into a recess in said receiver-plug; and a locking-bolt carried by the said receiver-plug and engageable with the said receiver to releasably hold the former in the latter, the said locking-bolt having a portion interposable in the path of rearward movement of the said firing-plunger when the said locking-bolt is in other than its locking position to thereby prevent the said firing-plunger from being cocked when the said locking-bolt is in its unlocking-position.

6. A bolt-action firearm construction including in combination: a receiver having a bolt-receiving chamber opening through its rear end; a receiver-plug removably mounted in the rear end of the bolt-receiving chamber in the said receiver; a breech-bolt reciprocable in the bolt-receiving chamber of the said receiver at a point forwardly of the said receiver-plug and in substantial alignment therewith longitudinally of the firearm-structure; coupling-means extending between the rear end of the said breech-bolt and the forward end of the said receiver-plug and constructed and arranged to couple the same together against relative turning movement but permitting the said breech-bolt to move axially relative to the said receiver-plug; and a releasable spring-pressed locking-bolt extending transversely through the said receiver and transversely through the said receiver-plug at points within the lateral boundaries of both thereof.

7. A bolt-action firearm construction including in combination: a receiver having a cylindrically-contoured bolt-receiving chamber opening through its rear end; a cylindrically-contoured receiver-plug removably mounted in the rear end of the bolt-receiving chamber in the said receiver; a cylindrically-contoured breech-bolt of substantially the same diameter as the said receiver-plug and reciprocable in the cylindrically-contoured bolt-receiving chamber of the said receiver at a point forwardly of the said receiver-plug and in substantial axial alignment therewith; coupling-means extending between the rear end of the said cylindrically-contoured breech-bolt and the forward end of the said cylindrically-contoured receiver-plug and constructed and arranged to couple the same together against relative turning movement but permitting the said cylindrically-contoured breech-bolt to move axially relative to the cylindrically-contoured receiver-plug; and a releasable spring-pressed locking-bolt extending transversely through the said receiver and transversely through the said cylindrically-contoured receiver-plug at points within the lateral boundaries of both thereof.

8. A bolt-action firearm-construction including in combination: a receiver having a bolt-receiving chamber opening through its rear end; a receiver-plug removably mounted in the rear end of the bolt-receiving chamber in the said receiver; a breech-bolt reciprocable in the bolt-receiving chamber of the said receiver at a point forwardly of the said receiver-plug and in substantial longitudinal alignment therewith; coupling-means extending between the rear end of the said breech-bolt and the forward end of the said receiver-plug and constructed and arranged to couple the same together against relative turning movement but permitting the said breech-bolt to move axially relative to the said receiver-plug; and a releasable spring-pressed locking-bolt carried by and removable with the said receiver-plug and extending substantially diametrically through the said receiver and substantially diametrically through the said receiver-plug.

FRANK F. BURTON.