

Dec. 19, 1944.

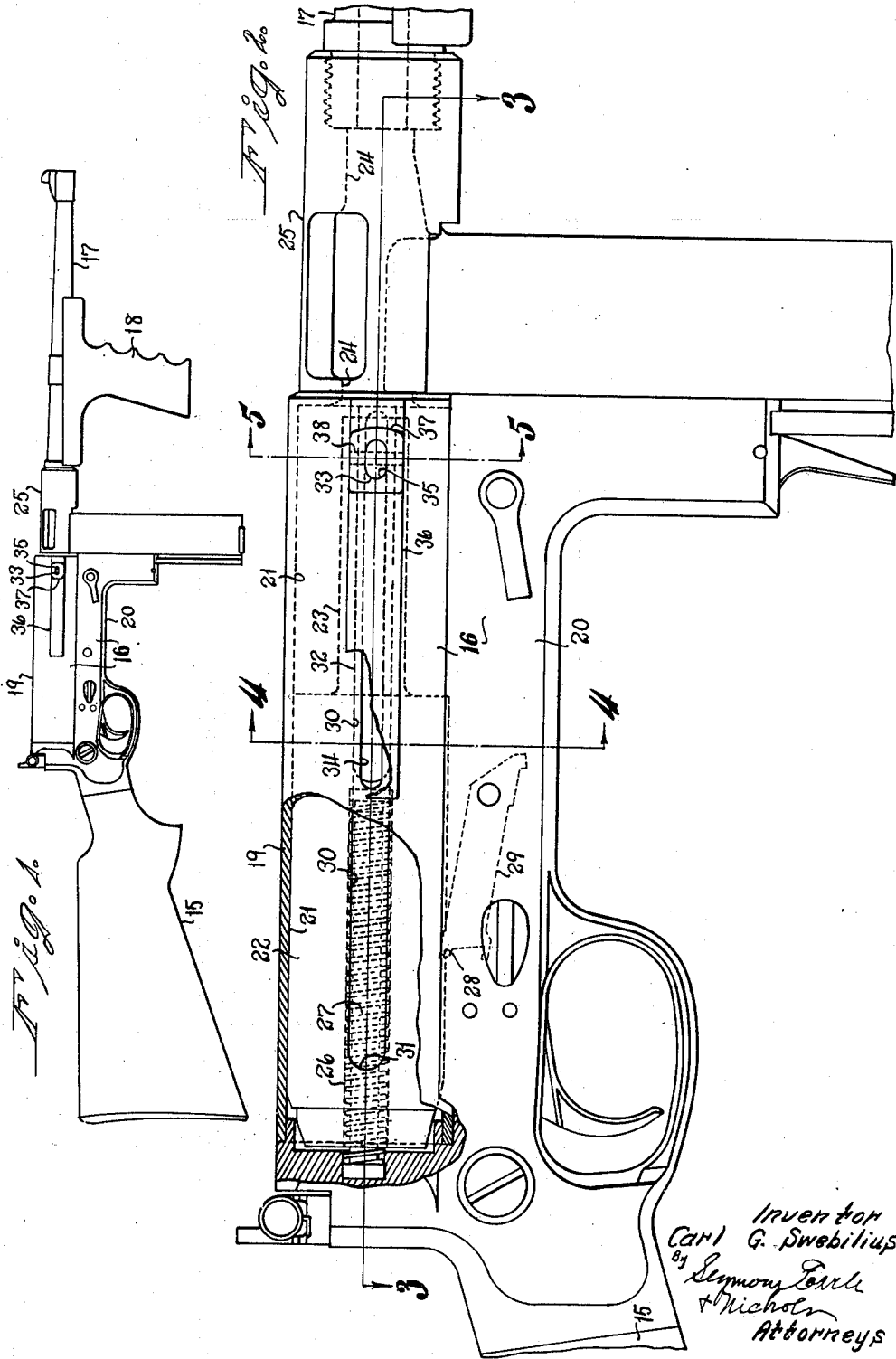
C. G. SWEBILIUS

2,365,307

SELF-LOADING REPEATING FIREARM

Original Filed Oct. 15, 1940

3 Sheets-Sheet 1



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3 Sheets-Sheet 2

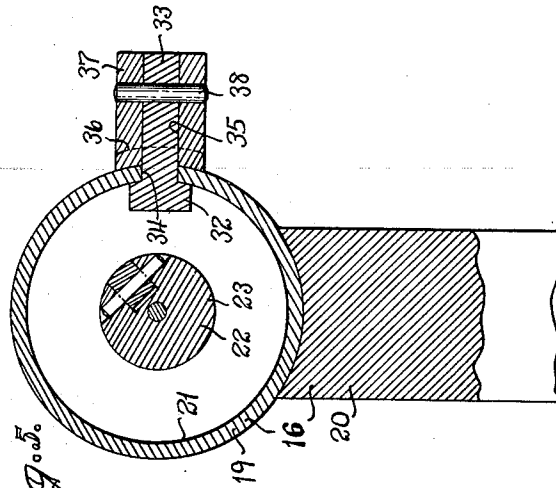
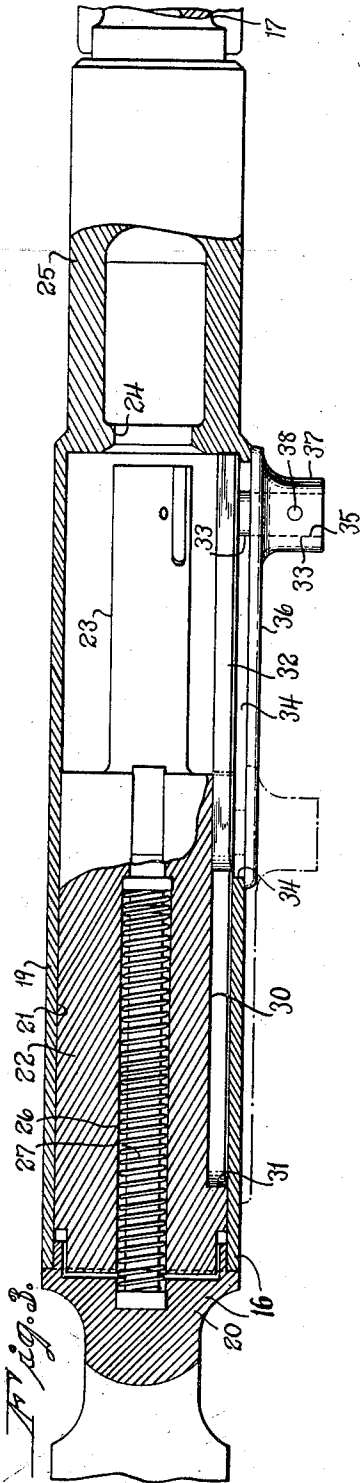


Fig. 5.

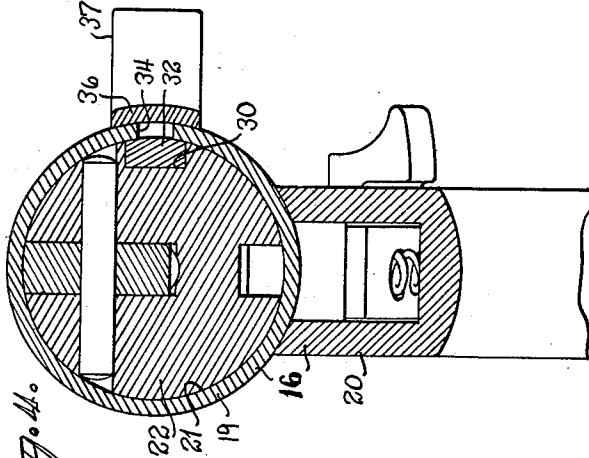


Fig. 4.

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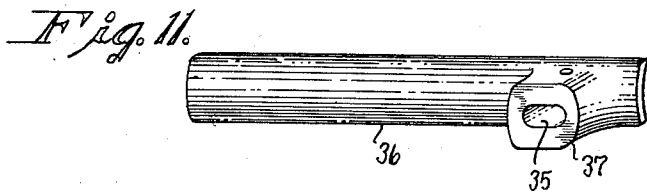
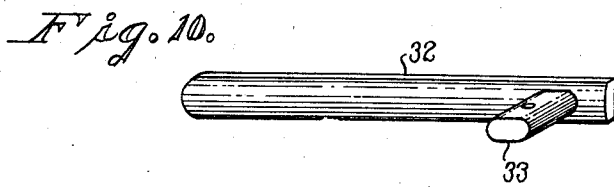
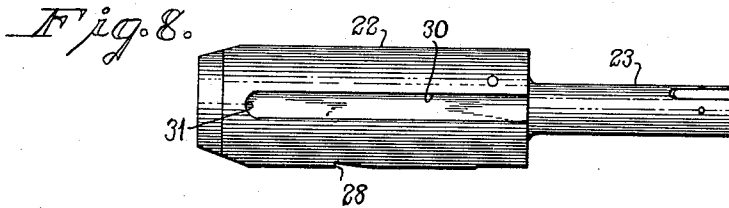
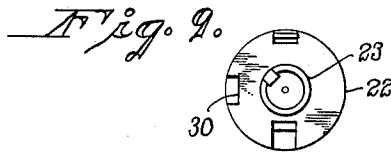
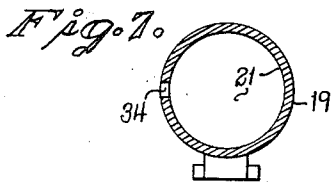
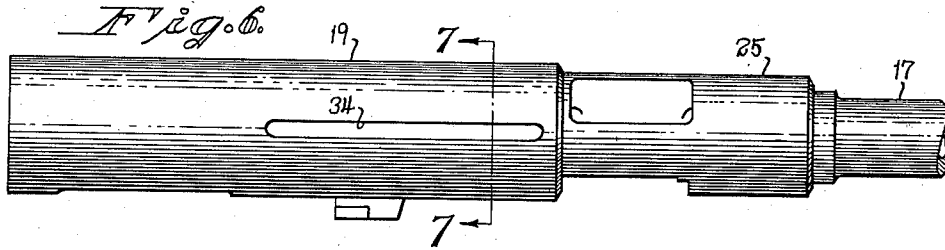
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SELF-LOADING REPEATING FIREARM

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3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE

2,365,307

SELF-LOADING REPEATING FIREARM

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Original application October 15, 1940, Serial No. 361,208. Divided and this application October 31, 1941, Serial No. 417,251

5 Claims. (Cl. 42—16)

The present invention relates to improvements in self-loading repeating firearms, that is to say, firearms of the type wherein the forces developed by the discharge of a given cartridge are utilized to operate the firearm and effect the extraction and ejection of the just-fired cartridge preparatory to the insertion of a fresh cartridge and another cycle of operation. The present application constitutes a division of my co-pending application Serial No. 361,208, filed October 15, 1940, now Patent No. 2,342,824, dated February 29, 1944.

One of the objects of the present invention is to provide a superior self-loading repeating firearm characterized by low cost for manufacture and ruggedness and reliability of performance over long periods of use under adverse conditions.

Another object of the present invention is to provide a firearm of the type referred to embodying a reciprocating breech-bolt and a manually-operable slide for manually retiring the said breech-bolt, and in which the said operating-member acts in an effective manner to restrain the breech-bolt against turning movement relative to the firearm-structure.

A further object of the present invention is to provide a superior self-loading repeating firearm with simple and effective means for manually effecting the retirement of the breech-bolt of the firearm.

A further object of the present invention is to provide a superior firearm of the type referred to and in which the operating-slide or its equivalent does not normally partake of the automatic rearward movement of the breech-bolt.

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

Fig. 1 is a view in side elevation of a self-loading repeating firearm embodying the present invention;

Fig. 2 is a view of the central portion of the firearm shown mainly in side elevation and partly in vertical central-longitudinal section with the breech-bolt shown in its retired position;

Fig. 3 is a horizontal sectional view taken on the line 3—3 of Fig. 2;

Fig. 4 is a transverse sectional view taken on the line 4—4 of Fig. 2;

Fig. 5 is a broken sectional view taken on the line 5—5 of Fig. 2;

Fig. 6 is a view in side elevation of the upper receiver-member together with the rear portion of the barrel assembled therewith;

Fig. 7 is a transverse sectional view taken on the line 7—7 of Fig. 6;

Fig. 8 is a view in side elevation of the breech-bolt;

Fig. 9 is an elevational view looking toward the forward end of the breech-bolt;

Fig. 10 is a perspective view of the inner slide-member of the manual bolt-operating-slide unit; and

Fig. 11 is a similar view of the outer slide-member of the manual bolt-operating-slide unit.

The particular self-loading repeating firearm herein chosen for purposes of illustrating the present invention comprises, in the main, a buttstock 15, a two-part receiver generally designated by the reference character 16, a barrel 17 and a forehand grip 18. The receiver 16 above referred to includes an upper receiver-member 19 and a lower receiver-member 20, which are normally firmly and rigidly coupled together. The said lower receiver-member 20 is rigidly attached at its rear to the forward end of the buttstock 15 in any approved manner. The upper receiver-member 19 is generally of cylindrical form exteriorly and has threaded into its extreme forward end the rear end of the barrel 17, to which latter in turn is secured the forehand grip 18.

The upper receiver-member 19 is of substantially-tubular form and is provided with a substantially-cylindrical interior mechanism-receiving chamber 21 receiving a cylindrically-contoured breech-bolt 22 formed with a coaxial forwardly-extending integral breech-closing stem 23. The said breech-closing stem 23 is also cylindrically-contoured and is adapted to be entered into and retired from a longitudinal passage 24 formed in the forward reduced-diameter portion 25 of the upper receiver-member 19.

The breech-bolt 22 is formed in its rear portion with an axial spring-receiving bore 26 opening through the rear end of the breech-bolt and receiving a breech-closing spring 27 requiring no detailed description herein but serving to yieldingly urge the breech-bolt 22 forwardly to its breech-closing position, all in a manner more fully set forth in my co-pending application before referred to. About midway of its length, the breech-bolt 22 is formed in its under face with a rearwardly-facing cocking-shoulder 28 releasably

engaged by the rear end of a sear 29 indicated in Fig. 2.

In its right side the breech-bolt 22 is formed with a longitudinally-extending groove 30 having its forward end intersecting the front end of the breech-bolt proper and having its rear end terminating just short of the rear end of the breech-bolt and constituting a forwardly-facing actuating-abutment 31. The groove 30 receives with a capacity for relative longitudinal sliding movement the bar-like body-portion of an inner slide-member 32, as shown particularly well in Fig. 10. At its forward end the inner slide-member 32 is provided with a rigid outwardly-projecting coupling-finger 33 extending outwardly through a longitudinal slot 34 in the right side wall of the main portion of the upper receiver-member 19, as is particularly well shown in Fig. 3. By reference to Figs. 3 and 4 in particular, it will be seen that the body-portion of the inner slide-member 32 is located within the interior of the upper receiver-member 19. The coupling-finger 33 of the inner slide-member 32, after passing outwardly through the slot 34, extends within a coupling-passage 35 extending perpendicularly through the forward portion of an outer slide-member 36. The said outer slide-member 36 is formed at its forward portion with an integral outwardly-projecting finger-piece 37, through which the coupling-passage 35 extends. Extending vertically through the finger-piece 37 of the outer slide-member 36 and vertically through the coupling-finger 33 of the inner slide-member 32 is a key-pin 38. As will be noted by reference to Figs. 4 and 5 in particular of the drawings, the outer face of the body-portion of the inner slide-member 32 is convexed to substantially conform to the curvature of the mechanism-receiving chamber 21 in the upper receiver-member 19. The outer slide-member 36 rides upon the outer surface of the upper receiver-member 19 and has its inner face transversely concaved to substantially conform to the transverse curvature of the adjacent outer face of the said upper receiver-member 19.

As the inner slide-member 32 and the outer slide-member 36 are thus constructed and arranged, the coupling-finger 33 of the said inner slide-member and the key-pin 38 serve to organize the two said slide-members into a unitary structure which is capable of reciprocation with respect to the upper receiver-member 19 and within the limits of the length of the longitudinal slot 34 in the said upper receiver-member 19.

By virtue of the sliding fit of the body-portion of the inner slide-member 32 in the groove 30 in the side of the breech-bolt 22, the said breech-bolt is held by the said inner slide-member against rotational movement within the mechanism-receiving chamber 21. The inner slide-member 32, as well as the outer slide-member 36, is held against displacement around the periphery of the upper receiver-member 19 by the extension of the coupling-finger 33 through the slot 34 in the said member. Under these conditions, it follows that the breech-bolt 22 is keyed or splined against rotational movement within the upper receiver-member 19 while being permitted free longitudinal movement within the said receiver-member.

When the firearm illustrated is fired, the breech-bolt 22 will be thrown backwardly into its rearmost position and there releasably held by the engagement of the sear 29 with the cocking-shoulder 28 on the said breech-bolt, as is indi-

cated in Fig. 2. When the breech-bolt 22 is thrown rearwardly as just described, both the inner slide-member 32 and the outer slide-member 36 will remain in their forward positions, as is shown in Figs. 1, 2 and 3. Under these conditions, the actuating-abutment 31 of the breech-bolt 22 merely rides rearwardly away from the rear end of the inner slide-member 32. When the sear 29 is depressed in any approved manner, the breech-bolt 22 will move forwardly under the urge of the breech-closing spring 27 and if the firearm should be empty, the said breech-bolt will remain in its forward position, due to the absence of any explosion to throw it rearwardly.

With the breech-bolt 22 in its forward position, it is both necessary and desirable under various conditions to manually retract the said breech-bolt, and such retraction may be accomplished by the marksman grasping the finger-piece or handle 37 of the outer slide-member 36 and drawing rearwardly thereon. The rearward draft upon the finger-piece 37 as just referred to will simultaneously move both the outer slide-member 36 and the inner slide-member 32 in a rearward direction, with the result that the rear end of the said inner slide-member will be brought into engagement with the actuating-abutment 31 constituting the rear wall of the groove 30 in the breech-bolt 22. In this manner, the breech-bolt may be retired into its rearmost position.

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 self-loading repeating firearm including in combination: a receiver having a longitudinal chamber therein and formed in its wall with a longitudinal slot intersecting the said chamber and also the outer surface of the receiver; a breech-bolt reciprocable in the chamber in the said receiver and also transversely turnable therein except for the restraint imposed by the hereinafter-mentioned operating-slide, the said breech-bolt having a longitudinal coupling-groove therein and provided with a forwardly-facing abutment; and an operating-slide mounted for reciprocation in the longitudinal slot in the said receiver and having an outwardly-extending handle-portion available for manipulation from the exterior of the said receiver, the said operating-slide also having a bar-like inner portion reciprocating within the chamber in the said receiver and extending into sliding keying engagement with the longitudinal coupling-groove in the said breech-bolt and constructed and arranged to normally reciprocate longitudinally in the said coupling-groove and to hold the said breech-bolt against turning movement within the said receiver, the said bar-like inner portion of the operating-slide having a rearwardly-facing abutment engaging with the forwardly-facing abutment of the said breech-bolt to limit relative rearward movement of the said operating-slide with respect to the said breech-bolt.

2. A self-loading repeating firearm including in combination: a receiver having a longitudinal chamber therein and formed in its wall with a

longitudinal slot leading from the interior to the exterior of the receiver; a breech-bolt reciprocating within the chamber in the said receiver and also transversely turnable therein except for the restraint imposed by the hereinafter-mentioned operating-slide, the said breech-bolt being formed upon its periphery with a longitudinal coupling-groove opening through the forward end of the said breech-bolt and having a forwardly-facing abutment at its rear; and an operating-slide reciprocating in the longitudinal slot in the said receiver and having an outwardly-extending handle-portion available for manipulation from the exterior of the said receiver, the said operating-slide also having a bar-like inner portion reciprocating within the chamber in the said receiver and extending into sliding keying engagement with the longitudinal coupling-groove in the said breech-bolt to normally reciprocate longitudinally in the said coupling-groove and to hold the said breech-bolt against turning movement within the said receiver, the bar-like inner portion of the said operating-slide being positioned for the engagement of its rear end with the forwardly-facing abutment in the coupling groove of the said breech-bolt when the said operating-slide is moved rearwardly relative to the said receiver and the said breech-bolt.

3. A self-loading repeating firearm including in combination: a receiver having a longitudinal chamber therein and formed in its wall with a longitudinal slot leading from the interior to the exterior of the receiver; a breech-bolt reciprocating within the chamber in the said receiver and also transversely turnable therein except for the restraint imposed by the hereinafter-mentioned operating-slide, the said breech-bolt being formed upon its periphery with a longitudinal coupling-groove opening through the forward end of the said breech-bolt and having a forwardly-facing abutment at its rear; and an operating-slide for manually retiring the said breech-bolt and including a bar-like inner slide-member constructed and arranged to slidably fit into and normally reciprocate longitudinally within the longitudinal coupling-groove in the periphery of the said breech-bolt and located within the chamber of the said receiver for longitudinal reciprocation therein and for engagement with the forwardly-facing abutment in the groove of the said breech-bolt, an outer slide-member located adjacent the outer periphery of the said receiver, and means extending through the slot in the said receiver and coupling the said inner slide-member to the said outer slide-member.

4. A self-loading repeating firearm including in combination: a receiver having a longitudinal chamber therein and formed in its side wall with a longitudinal slot leading from the interior to the exterior of the receiver; a breech-bolt reciprocable within the chamber in the said receiver and also transversely turnable therein except for the restraint imposed by the hereinafter-men-

tioned operating-slide, the said breech-bolt being formed upon its periphery with a longitudinal coupling-groove and provided with a forwardly-facing abutment; and an operating-slide for manually retiring the said breech-bolt and including a bar-like inner slide-member constructed and arranged to slidably fit into and normally reciprocate longitudinally within the longitudinal coupling-groove in the periphery of the said breech-bolt and located within the chamber of the said receiver for longitudinal reciprocation therein, the said bar-like inner slide-member having a rearwardly-facing abutment engaging with the forwardly-facing abutment of the said breech-bolt to limit the relative rearward movement of the action-slide with respect to the said breech-bolt, an outer slide-member located adjacent the outer periphery of the said receiver, one of the said members being formed with a socket and the other thereof being formed with a projection extending through the longitudinal slot in the said receiver and into the socket in the other of said members.

5. A self-loading repeating firearm including in combination: a receiver having a longitudinal chamber therein and formed in its wall with a longitudinal slot leading from the interior to the exterior of the receiver; a breech-bolt reciprocable within the chamber in the said receiver and also transversely turnable therein except for the restraint imposed by the hereinafter-mentioned operating-slide, the said breech-bolt being formed upon its periphery with a longitudinal coupling-groove and provided with a forwardly-facing abutment; and an operating-slide for manually retiring the said breech-bolt and including an outer slide-member reciprocable longitudinally of the firearm-structure adjacent the outer terminus of the longitudinal slot in the said receiver and having an outwardly-extending handle-portion provided with a substantially-radial coupling-recess, and a bar-like inner slide-member reciprocable within the chamber in the said receiver longitudinally of the firearm and adjacent the inner terminus of the slot therein, the said inner slide-member slidably fitting into and reciprocating longitudinally within the longitudinal coupling-groove in the said breech-bolt to hold the same against turning movement while normally permitting relative longitudinal movement between the inner slide-member and the said breech-bolt, the said bar-like inner slide-member having a rearwardly-facing abutment engaging with the forwardly-facing abutment of the said breech-bolt to limit the relative rearward movement of the action-slide with respect to the said breech-bolt and a coupling-finger extending outwardly from the said inner slide-member through the longitudinal slot in the said receiver and into the coupling-recess in the said outer slide-member to couple the two said slide-members together.

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