

Dec. 7, 1943.

D. M. WILLIAMS

2,336,431

TAKEDOWN FIREARM

Filed Oct. 26, 1940

2 Sheets-Sheet 1

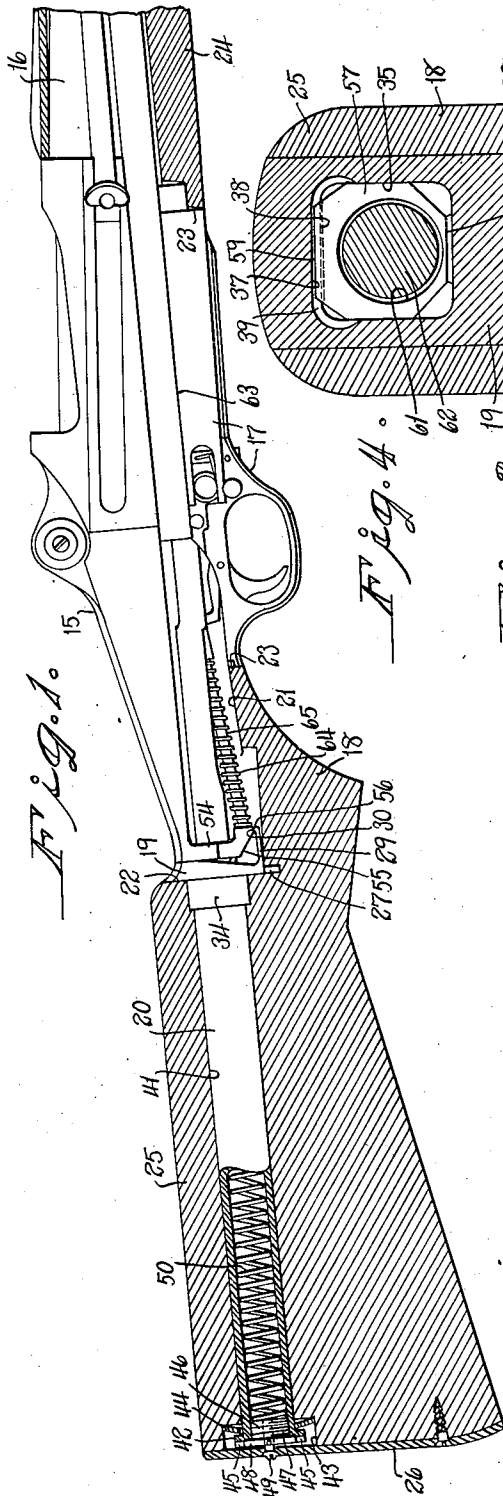
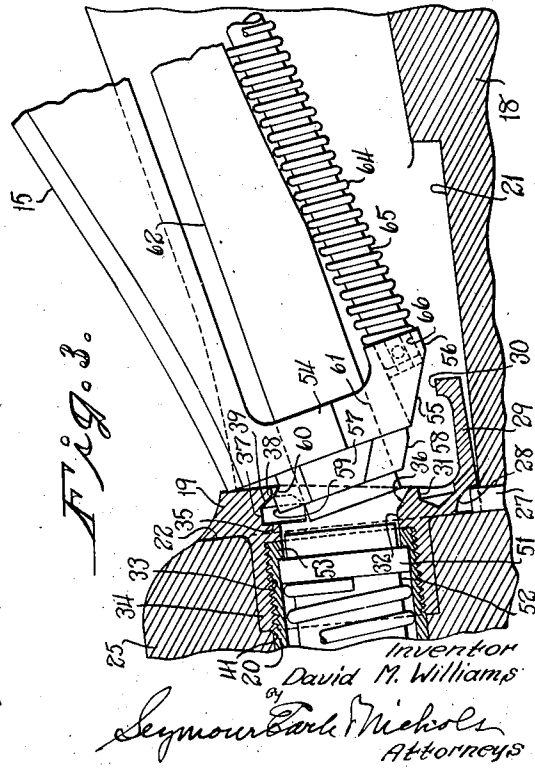
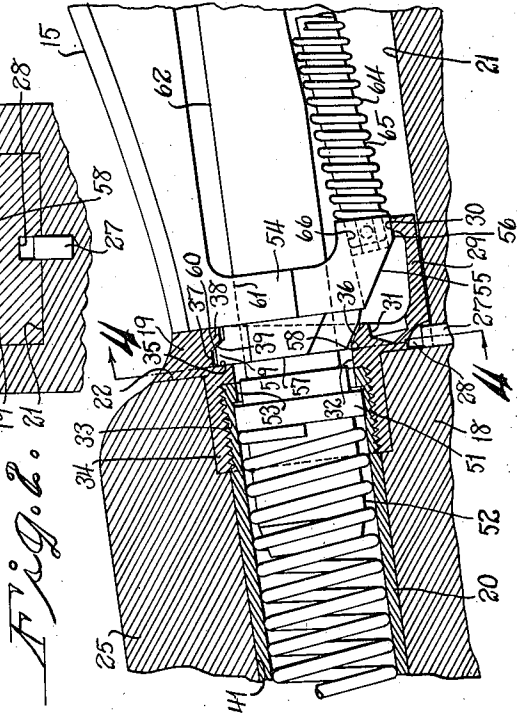


Fig. 4.



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Fig. 5.

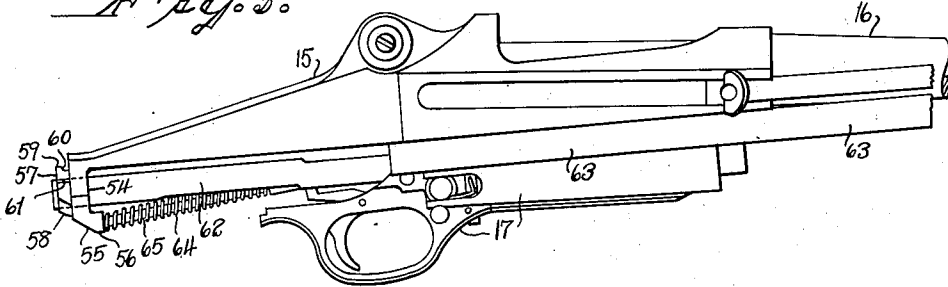


Fig. 6.

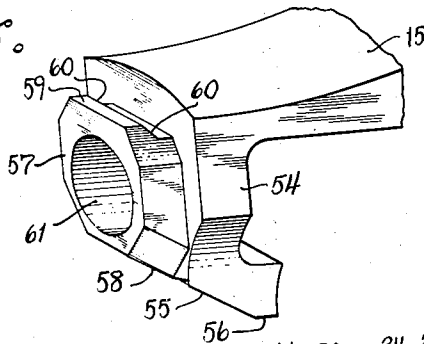


Fig. 7.

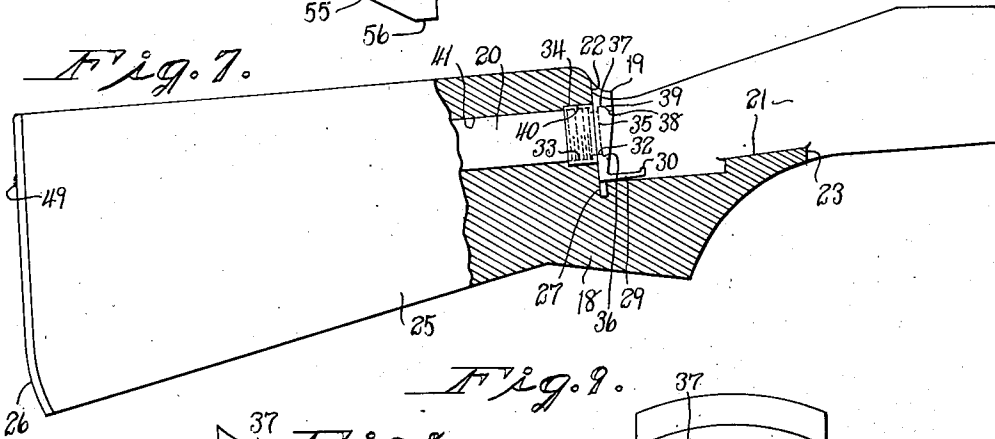
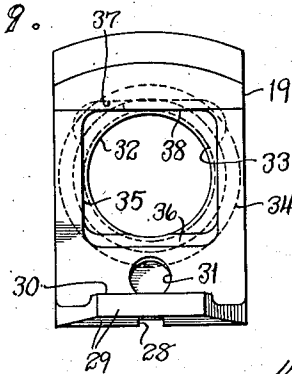
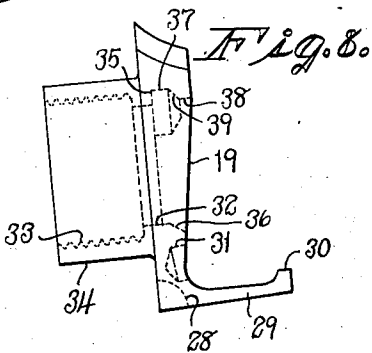


Fig. 8.



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UNITED STATES PATENT OFFICE

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TAKEDOWN FIREARM

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6 Claims. (Cl. 42—75)

The present invention relates to improvements in firearms and more particularly to improvements in takedown firearms, i. e., firearms of the type wherein a barrel unit and a stock-unit are constructed and arranged for ready disassembly and assembly.

One of the objects of the present invention is to provide a takedown firearm with a superior construction and arrangement of parts by means of which the stock-unit and the barrel-unit thereof may be rigidly coupled together in a simple, reliable and effective manner.

Another object of the present invention is to provide a superior takedown firearm in which means is provided for the hook-like interengagement of the barrel-unit and stock-unit, which hook-like means will discharge the double function of holding the two said units against both lengthwise and lateral displacement with respect to each other when the two said units are assembled.

A further object of the present invention is to provide a superior takedown firearm in which the means for coupling the rear end of the barrel-unit to the stock-unit is of such character as not to interfere with the extension of the portion of an action-slide or its equivalent beyond the rear of the barrel-unit.

A still further object of the present invention is to provide a takedown firearm with superior readily detachable means for holding the barrel-unit and the stock-unit thereof in assembled relation in such manner as to automatically compensate for wear between the engaging parts and for slight variations in manufacture.

Another object of the present invention is to provide a superior takedown firearm in which a breech-closing spring is incorporated as a normal part of the stock-unit and in which simple, reliable and effective means is provided for coupling the two said units together with freedom for the movement of an action-slide in coacting with the said breech-closing spring.

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 broken view partly in vertical central-longitudinal section and partly in side ele-

vation of the rear portion of a takedown firearm embodying the present invention;

Fig. 2 is a broken view partly in side elevation and partly in vertical central-longitudinal section of the portions of the firearm immediately adjacent the rear end of the receiver and shown on a larger scale than in Fig. 1;

Fig. 3 is a view corresponding to Fig. 2 but showing the rear portion of the barrel-unit in an upwardly-and-forwardly-inclined position with respect to the stock-unit, preparatory to separating or reassembling the said units together;

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

Fig. 5 is a broken view in side elevation of the rear portion of the barrel-unit, detached;

Fig. 6 is a broken perspective view of the rear portion of the receiver, detached and shown on a scale substantially corresponding to the scales of Figs. 2, 3 and 4;

Fig. 7 is a view partly in side elevation and partly in vertical central-longitudinal section of the rear portion of the stock-unit;

Fig. 8 is a view in side elevation of the coupling-shoe on a scale substantially corresponding to the scale of Fig. 6; and

Fig. 9 is a view thereof in front elevation.

The particular takedown firearm herein chosen for the purpose of illustrating the present invention includes a barrel-unit composed, in the main, of a receiver 15, a barrel 16 rigid with and extending forwardly from the said receiver, and a trigger-plate generally designated by the reference character 17. Complementing the barrel-unit above referred to and separable therefrom is a stock-unit composed, in the main, of a stock generally designated by the reference character 18 and carrying a coupling-shoe 19 and a spring-housing tube 20.

The stock 18 above referred to is formed mainly in its upper portion with an upwardly-opening recess 21 having a substantially-vertical rear wall 22 and having its bottom wall intersected by a vertical-longitudinal clearance-passage 23 opening through the under face of the stock as is shown especially well in Figs. 1 and 7. The portion of the stock 18 lying forwardly of the clearance-passage 23 therein constitutes what may be aptly termed the "fore-stock" portion 24 which mainly underlies the barrel 16. The portion of the stock 18 lying to the rear of the clearance-passage 23 therein constitutes in effect a "buttstock" portion 25

provided on its rear face with a usual butt-plate 26 as is shown in Figs. 1 and 7.

At the lower rear corner of its upwardly-opening recess 21 the stock 18 is provided with a stabilizing-pin 27 extending vertically slightly above the bottom surface of the said recess and entering a stabilizing-notch 28 formed in the lower rear corner of the coupling-shoe 19 before referred to. Formed integral with and leading forwardly from the lower edge of the coupling-shoe 19 is a resilient receiver-supporting arm 23 terminating in a short upwardly-extending receiver-supporting finger 30 functioning in a manner as will hereinafter appear. Immediately above the receiver-supporting arm 23 the coupling-head 19 is formed with a shallow forwardly-opening clearance-recess 31 which also lies below a substantially-horizontal passage 32 extending from front to rear through the coupling-shoe 19. The said passage 32 communicates at its rear with an aligned internally-threaded socket 33 in a cuff 34 formed integral with and extending rearwardly from the body portion of the coupling-shoe 19 which latter is normally seated against the rear wall 22 of the recess 21 in the stock 18. The passage 32 in the coupling-shoe 19 is of circular form in cross section and immediately forwardly thereof the said coupling-shoe is formed with a forwardly-opening locating-recess 35 which is of rectangular form in cross section as is especially well shown in Fig. 9. The lower wall of the clearance-recess 35 just referred to is forwardly and downwardly sloped to provide a guide-surface 36 which is engaged by a portion of the receiver 15, under conditions as will hereinafter appear.

Immediately forwardly of its substantially-horizontal passage 32 the coupling-shoe 19 is formed in the upper wall of its locating-recess 35 with a downwardly-opening transverse-recess 37. The formation of the said recess 35 results in turn in the formation at the forward upper corner of the locating-recess 35 of a downwardly-extending coupling-lip 38 having its rear face downwardly and forwardly sloped to provide a cam-surface 39 cooperating with a portion of the receiver 15 in a manner as will hereinafter appear.

The cuff 34 of the coupling-shoe 19 is accommodated in a cylindrically-contoured enlarged forward end 40 of a cylindrically-contoured passage 41 extending from front to rear through the buttstock portion 25 of the stock 18 as is especially well shown in Fig. 1.

At its rear end the spring-housing tube 20 before referred to, is formed with an outwardly-projecting annular flange 42 which is accommodated in a rearwardly-opening recess 43 formed in the rear face of the buttstock portion 25. The rear end of the recess 43 just referred to is normally covered by the butt-plate 26 and is intersected at its forward portion by the longitudinal passage 41 in the said buttstock portion 25, as is especially well shown in Fig. 1. Interposed between the forward face of the annular flange 42 of the spring-housing tube 20 and the front end wall of the recess 43 is a resilient bowed washer 44 against which the said flange presses and which permits both expansion and contraction of the buttstock portion 25 without either unduly straining the part or permitting the same to become loose. The annular flange 42 of the spring-housing tube 20 is formed in its rear face with two (more or less) diametrically-aligned tool-receiving notches 45—45 adapted to receive an edge portion of the butt-plate 26 when the

same is removed from the stock 18, which removal must take place prior to access being had to the said notches 45—45.

The rear end of the spring-housing tube 20 before referred to is internally threaded for the reception of the externally-threaded stem 46 of a plug-like spring-seat generally designated by the reference character 47, and including also an overhanging kerfed head 48 seated in a recess formed in the rear face of the flange 42 of the spring-housing tube 20, as is shown in Fig. 1. An edge portion of the butt-plate 26 may be inserted into the kerf of the plug-like spring-seat 47 to conveniently remove and install the same in the rear end of the spring-housing tube 20. Threaded axially into the plug-like spring-seat 47 and having its head seated in the butt-plate 26 is a screw 49 serving to secure the upper portion of the said butt-plate in place upon the rear end of the buttstock portion 25 of the stock 18.

Housed within the spring-housing tube 20 is a helical breech-closing spring 50 which presses at its rear against the front face of the plug-like spring-seat 47 and which presses at its forward end against the rear face of an annular outwardly-extending flange 51 formed upon a follower generally designated by the reference character 52. The external diameter of the flange 51 just referred to is proportioned to have a free sliding fit relative to the interior surface of the spring-housing tube 20 in which it is adapted to reciprocate. The forward face of the flange 51 of the follower 52 is adapted under some conditions to engage with the rear face of an inwardly-extending annular stop-flange 53 formed integral with the spring-housing tube 20 at the forward end thereof. Normally, and as is shown in Fig. 2, the flange 51 does not engage with the stop-flange 53 but when the barrel-unit and the butt-unit are separated in a manner as will hereinafter appear, the said parts serve to prevent the follower 52 and the spring 50 from moving outwardly through the forward end of the spring-housing tube 20.

Returning now to the receiver 15, it will be noted that the same is provided at its rear end with a downwardly-extending arm 54 provided at its lower rear corner with a rearwardly-and-upwardly-inclined guide-surface 55 merging at its forward edge into a downwardly-facing supporting-surface 56 adapted to normally rest upon the upper surface of the receiver-supporting finger 30 of the coupling-shoe 19 before referred to.

On its rear face the depending-arm 54 of the receiver 15 is formed with an integral coupling-lug 57 having an upwardly-and-rearwardly-sloping bottom surface 58 substantially conforming in slope to and adapted to engage with the guide-surface 36 of the coupling-shoe 19. At its upper rear corner the coupling-lug 57 of the receiver 15 is formed with an upwardly-extending coupling-lip 59 having its forward face shaped to provide an upwardly-and-rearwardly-inclined cam-surface 60 adapted to coact with the cam-surface 39 of the coupling-lip 38 of the coupling-shoe 19, in a manner as will be more fully hereinafter described.

Extending substantially horizontally through the depending-arm 54 of the receiver 15 and also through the coupling-lug 57 of the said arm is a clearance-passage 61 as is shown especially well in Figs. 2, 3 and 6. The lateral dimensions of the coupling-lug 57 at the rear end of the receiver

15 are such as to have a free sliding fit with respect to the complementary side walls of the rectangular locating-recess 35 in the forward face of the coupling-shoe 19.

Adapted to reciprocate in the clearance-passage 61 at the rear end of the receiver 15, is the cylindrically-contoured stem 62 of an action-slide 63 which bears against the under surfaces of the receiver 15 and against the upper surfaces of the trigger-plate 17. The said action-slide 63 is adapted to move rearwardly from the position in which it is shown in the drawings under force imparted to it by a gas cylinder or by manual effort as is well known in the art. When the said action-slide is moved rearwardly to effect the operation of the firearm in a manner not requiring detailed description herein, the rear face of the stem 62 of the said action-slide thrusts against the forward face of the follower 52 to move the said follower rearwardly against the tension of the breech-closing spring 50. The said breech-closing spring thus serves to yieldingly maintain the action-slide 63 in its forward position subject to being moved rearwardly under the forces developed by the discharge of a cartridge or by manual force applied to the said slide.

As the firearm above described is thus organized, the same comprises in the main a so-called "barrel-unit" which comprises the parts shown particularly well in Fig. 5 and including the receiver 15, barrel 16, trigger-plate 17 and action-slide 63. The parts just referred to are accommodated in the upwardly-opening longitudinal recess 21 in the stock 18 save that the trigger-plate unit extends downwardly through the clearance-passage 23 in the said stock, as is shown in Fig. 1. Complementing the barrel-unit above referred to and separable therefrom as a unit is a so-called "stock-unit" which includes the stock 18 and the parts normally fixed thereto including the coupling-shoe 19, spring-housing tube 20, butt-plate 26, spring 50, follower 52, etc.

When it is desired to "take down" the firearm, i. e., separate the barrel-unit and the stock-unit, the said barrel-unit after being released from such supplemental fastening-means as may be employed to hold it rigidly connected to the stock, is tilted up into the position in which it is shown in Fig. 3 relative to the stock 18 and associated parts. This tilting up of the receiver 15 which forms the rear part of the barrel-unit partly "unhooks," so to speak, the coupling-lip 59 of the said receiver from the coupling-lip 38 of the coupling-shoe 19 and moves the supporting-surface 56 of the said receiver forwardly and clear of the upper surface of the receiver-supporting finger 30 of the coupling-shoe 19. The rear end of the receiver, and hence the rear end of the entire barrel-unit, may now be moved forwardly to complete the separation of the coupling-lips 38 and 59, whereupon the barrel-unit and stock-unit may be completely separated.

When the barrel-unit and the stock-unit are separated as just above described, the follower 52 in the spring-housing tube 20 will move forwardly (Fig. 3) under the urge of the breech-closing spring 50 to a slight extent until the forward face of the annular flange 51 of the said follower engages with the rear face of the annular stop-flange 53 in the forward end of the said tube 20, whereupon the forward movement of the said follower 52 will be halted.

When it is desired to reassemble the barrel-

unit and the butt-unit, the parts may be first reset substantially in to the positions in which they are indicated in Fig. 3, following which a downward swinging movement upon the forward portion of the receiver 15 and hence of the barrel-unit will cause the rearwardly-and-upwardly-sloping bottom surface 58 of the coupling-lug 57 to engage with the similarly sloping guide-surface 36 of the coupling-shoe 19. The said movement will also cause the upwardly-and-rearwardly-sloping guide surface 55 on the under face of the depending-arm 54 of the receiver 15 to engage (with a cam-like action) the upper face of the receiver-supporting finger 30 of the said coupling-shoe 19. The described engagement of the surfaces 58 and 55 respectively with the guide-surface 36 and the receiver-supporting finger 30 will ultimately serve to cause the barrel-unit and receiver-unit to reassume the relative positions in which they are shown particularly well in Fig. 2 when the downward swinging movement of the receiver 15 and hence of the entire barrel-unit is continued from the positions indicated in Fig. 3.

As the receiver is tilted in reassembling the parts as above described, the engagement of the guide-surface 55 on the lower rear portion of the receiver 15 with the upper surface of the receiver-supporting finger 30 of the coupling-shoe 19 will cause the resilient receiver-supporting arm 29 of the said coupling-shoe to flex downwardly so that when the parts have been restored to the positions in which they are shown particularly well in Fig. 2, the tension of the resilient receiver-supporting arm will serve to maintain the cam-surface 60 of the coupling-lip 59 of the receiver 15 in tight wedging engagement with the cam-surface 39 on the rear face of the coupling-lip 38 of the coupling-shoe 19. In this manner both variations in manufacture and variations due to wear are automatically compensated for in that the two said coupling-lips 38 and 59 are maintained in tight engagement by the tension of the receiver-supporting arm 29 of the coupling-shoe 19.

In the accompanying drawings the barrel-unit is shown as also including a helical firing-spring 64 mounted upon a plunger 65 and thrusting rearwardly against the forward face of the lower portion of the depending-arm 54 of the receiver 15. The plunger 65, just referred to, reciprocates in a guide-passage 66 extending from front to rear through the lower portion of the arm 54 and it is for the purpose of accommodating the rear end of the said plunger when the same is moved rearwardly that the coupling-shoe 19 is formed with the clearance-recess 31 before described.

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 takedown firearm including in combination: a receiver provided at its rear with an upwardly-projecting coupling-lip; a stock formed with an upwardly-opening recess for the reception of the said receiver; a coupling-shoe mounted in the said stock at the rear of the said recess therein and formed with a downwardly-extend-

ing coupling-lip engaging with the coupling-lip of the said receiver to couple the same and the parts carried thereby to the said stock; resilient means yieldingly thrusting upwardly upon the rear portion of the said receiver to engage the coupling-lip thereof with the coupling-lip of the said coupling-shoe; and retaining-means holding the said coupling-shoe organized with the said stock.

2. A takedown firearm including in combination: a receiver provided at its rear with an upwardly-projecting coupling-lip; a stock formed with an upwardly-opening recess for the reception of the said receiver; a coupling-shoe mounted in the said stock at the rear of the said recess therein and formed with a downwardly-extending coupling-lip engaging with the coupling-lip of the said receiver to couple the same and the parts carried thereby to the said stock; resilient means carried by the said stock and thrusting upwardly against the rear portion of the said receiver to engage the coupling-lip thereof with the coupling-lip of the said coupling-shoe; and retaining-means holding the said coupling-shoe organized with the said stock.

3. A takedown firearm including in combination: a receiver provided at its upper rear portion with an upwardly-projecting coupling-lip; a stock formed with an upwardly-opening recess for the reception of the said receiver; a coupling-shoe mounted in the said stock at the rear of the said recess therein and formed in its upper portion with a downwardly-extending coupling-lip engaging with the coupling-lip of the said receiver to couple the same and the parts carried thereby to the said stock; a resilient receiver-supporting arm projecting forwardly from the said coupling-shoe and engaging with a portion of the said receiver to yieldingly urge the same upwardly to engage the coupling-lip thereof with the coupling-lip of the said coupling-shoe; and retaining-means holding the said coupling-shoe organized with the said stock.

4. A takedown firearm including in combination: a receiver having a substantially-horizontal passage in its rear portion and provided at its rear above the said passage with an upwardly-projecting coupling-lip; a stock formed with an upwardly-opening recess for the reception of the said receiver; a coupling-shoe mounted in the said stock at the rear of the said recess therein and formed with a substantially-horizontal passage aligned with the passage in the rear of the said receiver, the said coupling-shoe also being provided at a point above its said passage with a downwardly-extending coupling-lip engaging with the coupling-lip of the said re-

ceiver; an action-slide located adjacent the said receiver and having a portion movable through the passage in the rear of the said receiver and through the aligned passage in the said coupling-shoe; spring-means located below the clearance-passage in the rear of the said receiver and yieldingly urging the said receiver upwardly to engage its coupling-lip with the coupling-lip of the said coupling shoe and retaining-means holding the same coupling-shoe in said stock.

5. A takedown firearm including in combination: a receiver having a substantially-horizontal passage in its rear portion and provided at its rear above the said passage with an upwardly-projecting coupling-lip; a stock formed with an upwardly-opening recess for the reception of the said receiver; a coupling-shoe mounted in the said stock at the rear of the said recess therein and formed with a substantially-horizontal passage aligned with the passage in the rear of the said receiver, the said coupling-shoe also being formed with a downwardly-extending coupling-lip engaging with the coupling-lip of the said receiver; an action-slide located adjacent the said receiver and having a portion movable through the passage in the rear of the said receiver and through the aligned passage in the said coupling-shoe; a resilient receiver-supporting finger carried by and projecting forwardly from the said coupling-shoe at a point below the passage therein and engaging with an adjacent portion of the said receiver to yieldingly urge the same upwardly to maintain engagement between the coupling-lip thereof and the coupling-lip of the said coupling-shoe; and retaining-means holding the said coupling-shoe in the said stock.

6. A takedown firearm including in combination: a receiver provided at its rear with an upwardly-projecting coupling-lip having an upwardly-and-rearwardly-inclined front face; a stock formed with an upwardly-opening recess for the reception of the said receiver; a coupling-shoe mounted in the said stock and formed with a downwardly-extending coupling-lip having an upwardly-and-rearwardly-sloping rear face engaging with the similarly sloping forward face of the coupling-lip of the said receiver; a resilient receiver-supporting arm projecting forwardly from the said coupling-shoe and engaging with the said receiver to yieldingly force the sloping face of the coupling-lip thereof into engagement with the similarly sloping face of the coupling-lip of the said coupling-shoe; and retaining-means holding the said coupling-shoe in the said stock.

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