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S. K. JANSON ET AL
FIREARMS CARRIER MECHANISM

2,887,808

Filed April 24, 1957

2 Sheets-Sheet 1

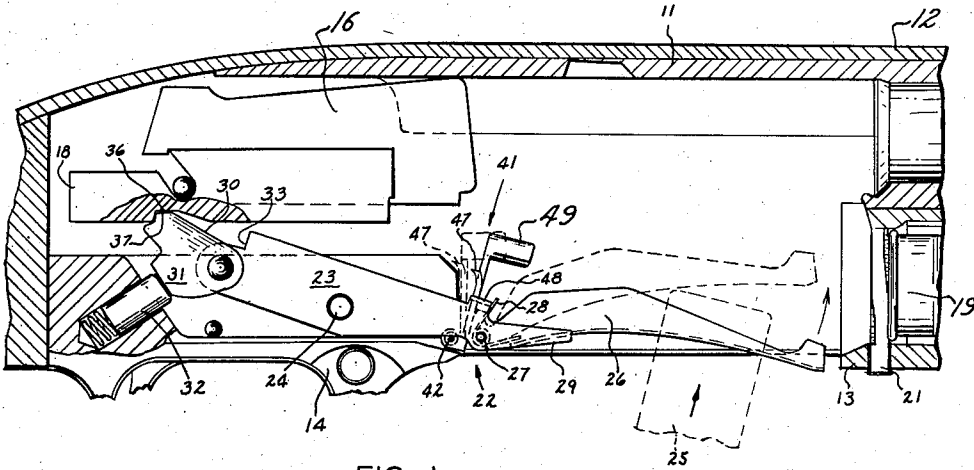


FIG - 1

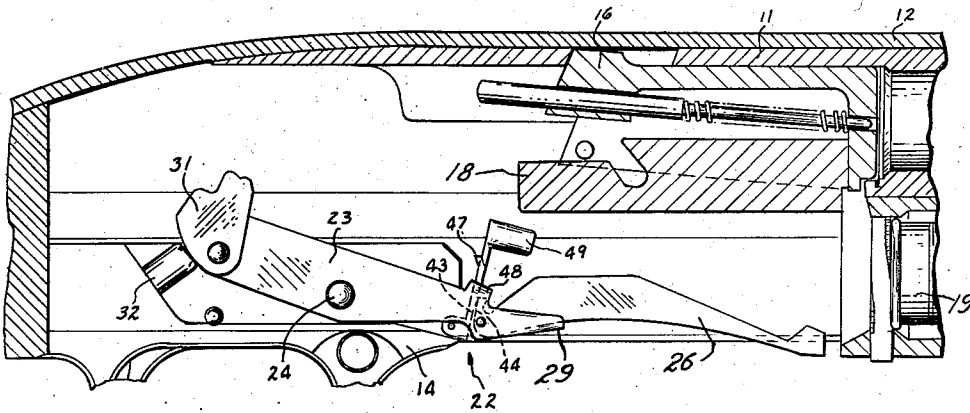


FIG - 2

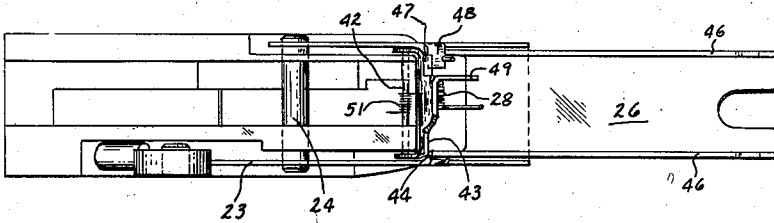


FIG - 3

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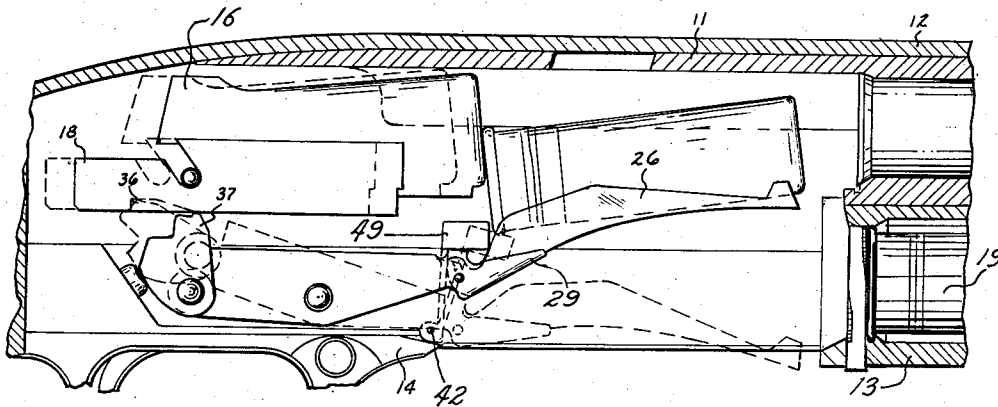


FIG - 4

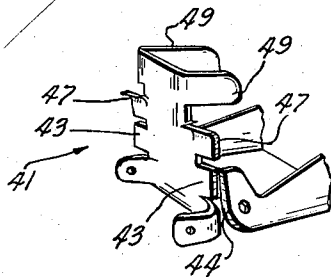


FIG - 5

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FIREARMS CARRIER MECHANISM

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3 Claims. (Cl. 42—17)

This invention relates to automatic firearms and the like and in particular to such weapons having a tubular magazine disposed below a barrel and provided with a hinged carrier mechanism adapted to lift cartridges emerging from the magazine into the path of a forwardly moving bolt to chamber the cartridge. A firearm of the above general type is disclosed in U.S. Patent No. 2,509,382 issued to D. M. Williams.

Shotguns fall in the above general class of firearms and have a carrier mechanism which, in the normal position, is in alignment with the magazine. Shotshells are fed singly and cyclically from the magazine to the carrier by the action of a suitable cut-off device. Upon reception of each shell the carrier is carted upwardly lifting the shell into the path of a slidable bolt while the bolt is returning to a closed or battery position after a previous discharge of the weapon. On its closing stroke the bolt picks up the shell lifted by the carrier mechanism and drives the shell forwardly into the chamber of the gun.

In well-known arrangements of the above described carrier mechanism means are provided for locking the carrier in the normal position, i.e., the position wherein the carrier is in alignment with the magazine and in condition to receive shells from the magazine. Usually an external device such as a push button is provided in the receiver for releasing the carrier so that it may be depressed or moved out of alignment with respect to the magazine to permit loading of the magazine through the receiver.

The provision of push buttons or other similar arrangements for releasing the carrier to permit loading the magazine are cumbersome and frequently present difficulty to the sportsman in cold weather or while gloves are worn. It is exceedingly difficult to hold the gun, depress the button and thereafter depress the unlocked carrier to introduce new shells into the magazine through the receiver.

Accordingly, it is an object of the present invention to provide a novel articulated carrier mechanism effective to uncover the magazine of the firearm to permit reloading thereof simply upon manual movement of a portion of the carrier.

It is a further object of the invention to provide a carrier mechanism for an automatic firearm operable at all times to uncover the magazine for loading by merely pressing a cartridge upon the carrier at the underside of the receiver, all other exterior latches or push buttons having been eliminated.

A still further object of the invention is the provision of a carrier mechanism which is operable independently of the cut-off device.

A firearm embodying certain features of the present invention may comprise a receiver, a magazine, a carrier pivotally mounted to the receiver and having a body portion and a tray, said tray being movable relative to the receiver and the body, said carrier being movable as a unitary assembly relative to the receiver and normally disposed in a position closing said magazine to the atmosphere,

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where, a latch means mounted to the firearm and normally adapted to block motion of the body, said tray being manually movable into the receiver and adapted to engage and unlock said latch whereby the magazine is opened to the atmosphere and the body is unblocked.

Other features and advantages of the invention will become apparent from the succeeding specification and drawings in which:

Fig. 1 is an elevational view of the receiver portion of an automatic shotgun with which the principles of the present invention may be associated with certain parts thereof broken away for clarity;

Fig. 2 is a view similar to Fig. 1 showing a shotshell chambered and the bolt locked;

Fig. 3 is a plan view of a portion of Fig. 2, as viewed in the plane of line 3—3; portions of the latch are broken away to show the disposition of certain interlocking lugs;

Fig. 4 is a showing similar to Figs. 1 and 2 and is illustrative of the disposition of the bolt and carrier mechanism when the bolt is locked open and at the instant at which the bolt is released having begun its forward travel to ram a shell into the chamber; and,

Fig. 5 is a perspective view of the latch of the present invention.

Referring now in detail to the drawings, there is shown a barrel 11 disposed within a receiver 12. The receiver carries a magazine 13 and a trigger guard 14. A bolt 16 is carried by a bolt slide 18 in turn slidably mounted in the receiver and actuated by a gas piston not shown.

A shotshell 19 is shown disposed in the magazine 13 and is constantly urged to the left as viewed in Fig. 1 by a coil spring at the forward end of the magazine and is retained by a cut-off 21 in conventional manner. A carrier mechanism, indicated by the reference numeral 22, includes a body portion 23 pivotally mounted to the receiver by a pin 24 and a forward element referred to hereinafter as a tray 26. The body 23 and the tray 26, hinged by a pin 27, are relatively movable. A spring 28 is utilized in cooperation with a lip 29 formed on the body member to retain the tray and body member in the relative position shown in solid lines in Figs. 1 and 2.

In a manner which will become more apparent hereinafter, the tray 26 is movable upwardly, as indicated by the dotted lines shown in Fig. 1, to expose the magazine to the atmosphere whereupon shells 25 may be fed directly to the magazine through the receiver.

The left end of the body 23 carries a pawl 31, constantly bearing upon a spring pressed plunger 32. The plunger tends to rotate the pawl in a clockwise direction until a face 30 thereof engages a corresponding notch 33 formed in the carrier body.

The pawl, considered part of the carrier mechanism, is utilized to engage a notch 36 formed in the underside of the bolt slide 18 and when overrun by the slide, as shown in Fig. 1, a projection 37 of the pawl is effective to engage and lock the bolt and its slide in the open position (Fig. 1).

The bolt is unlocked and free to travel to the right as viewed in the drawings whenever the rear end of the carrier mechanism carrying the pawl 31 is permitted to drop downwardly or to rotate counterclockwise about the pin 24.

In that event, the carrier mechanism assumes the position shown in solid lines in Fig. 4 wherein the projection 37 of the pawl 31 has dropped out of the notch 36 of the bolt slide and the bolt is free to move to the right. Correspondingly, the forward end of the carrier mechanism, specifically the lip 29 and the tray 26, have moved to the solid line position shown in Fig. 4 to present a shell to the face of the bolt. Upon continued

forward motion of the bolt, the shell will be chambered as shown in Fig. 2.

Note that after the bolt is closed, the carrier mechanism is rotated clockwise by the plunger 32 and the tray 26 assumes its normal alignment with respect to the magazine.

To lock the carrier mechanism against counterclockwise rotation at all times, except when a shell is disposed upon the tray or when the tray is moved upwardly to load the magazine, the illustrated embodiment of the present invention includes a releasable retaining means such as a latch, indicated generally by the reference numeral 41, pivotally mounted upon the receiver by a pin 42.

It is noted that the carrier body 23 straddles the latch 41 and also straddles the tray 26 as is apparent in Figs. 1, 2 and 4.

The latch 41 (Fig. 5) is formed with a pair of opposed lugs 43 adapted to be engaged by corresponding end faces 44 of sidewalls 46 of the tray 26 and with a second pair of opposed lugs 47 normally disposed over and projecting outwardly above a corresponding pair of opposed, inwardly projecting ears 48 formed integral with the body 23 (Fig. 2).

The latch, held in its normal position with the lugs 43 bearing upon end faces 44 by a spring 51 (Fig. 3) is also provided with a pair of forwardly projecting lugs 49 adapted to engage the head of a shotshell in the manner shown in Fig. 4.

The latch is effective to lock the carrier body 23 against rotation or against motion from the position shown in dotted lines in Fig. 4 to the solid line position shown therein.

The carrier body 23 is locked because the opposed lugs 47 of the latch are positioned over the inwardly projecting ears 48 (Fig. 2) of the body and thus the right end of the body cannot move upwardly.

In normal operation of the weapon the body 23 is normally locked so that the tray 26 is in alignment with the magazine and in a position to receive a shell from the magazine. After a round has been fired, the bolt and the bolt slide move to the rear to the position (Fig. 1) and the spent case is ejected. As the bolt and the slide approach the rearmost position, the cut-off is actuated, in a well-known manner, to release a shell from the magazine to the tray 26. Thereafter when the bolt and the slide begin their forward travel, the projection 37 formed on the pawl 31 engages the notch 36 of the slide. This occurrence locks the bolt and the slide in the rear position since the carrier is locked against counterclockwise rotation by the latch 41 as shown in solid lines in Fig. 1.

Since the shell is spring pressed within the magazine it moves rearwardly along the tray until the head thereof strikes the forwardly projecting latch lugs 49, thrusting the latch counterclockwise or to the solid line position shown in Fig. 4.

Upon the occurrence of rotation of the latch 41 by the shell discharged from the magazine, the carrier body 23 is unlocked and free to rotate to the solid line position of Fig. 4, releasing the bolt. Simultaneously, the forward end of the carrier mechanism or the tray 26 presents the shell to the forward face of the released bolt permitting the bolt to drive the shell into the chamber in well known fashion.

When the new shell is chambered, the disposition of the various elements of the carrier mechanism are as shown in Fig. 2 wherein the body returns to its locked condition, the lugs 47 having returned to a blocking condition with respect to the ears 48.

The carrier body may be unlocked by another occurrence; namely, the manual upward movement of the tray 26 by placing a shell thereagainst whereupon the tray 26 moves from the solid line position in Fig. 1 through the dotted line position. Since the lower pair

of opposed lugs 43 formed on the latch 41 constantly bear upon the end faces 44 of the sidewalls 46 of the tray, rotation of the tray acts to move the latch out of blocking position to the position shown in dotted lines. In this position (Fig. 1), note that latch lugs 47 are clear of ears 48 freeing the carrier body for counterclockwise rotation. The bolt is also unlocked during depression of the tray 26, but in any event the magazine is uncovered to atmosphere whereupon the shooter may readily insert additional rounds into the magazine.

It is to be distinctly understood that the magazine of the present invention is normally covered or enclosed by the tray 26, nevertheless, in any position of the bolt the shooter is free to place additional shells into the magazine merely upon manual upward movement of the forward end of the tray 26. Access to the magazine is not hindered by the position of the bolt cut-off or other instrumentality but is gained simply by manipulating the tray 26.

It is anticipated that various embodiments of the present invention may be devised beyond the embodiment disclosed herein without departing from the spirit and scope thereof. For example, the latch means mounting may be reversed wherein the latch may be mounted upon the carrier and engage the receiver in lieu of being mounted upon the receiver and engage the carrier.

What is claimed is:

1. In an automatic firearm comprising a barrel, a magazine and a receiver, said receiver being free of depressible buttons, a carrier for receiving cartridges from the magazine and transferring cartridges to the barrel comprising a rear operating element pivotally mounted to the receiver, said receiver having a magazine loading port providing access to the magazine, said carrier being movable from a position in which cartridges are received from the magazine to a position from which cartridges are transferred to the barrel, a latch pivotally mounted to the receiver and having a first lug operable to engage and lock the rear operating element of the carrier in a position corresponding to the cartridge receiving position, said latch having a second lug, and a cartridge carrying element pivotally mounted to said rear element and manually movable relative thereto, said cartridge carrying element being operative to engage the second lug to move the latch and the first lug, thus freeing said rear element for rotation away from said cartridge receiving position.

2. In an automatic firearm comprising a barrel, a magazine and a receiver, said receiver being free of depressible buttons, a carrier for receiving cartridges from the magazine and transferring cartridges to the barrel comprising a rear operating element pivotally mounted to the receiver, said receiver having a magazine loading port providing access to the magazine, said carrier being movable from a position in which cartridges are received from the magazine to a position from which cartridges are transferred to the barrel, a latch pivotally mounted to the receiver and operable to engage and retain the rear operating element of the carrier in a position corresponding to a cartridge receiving position, said latch having at least two latch releasing lugs and a cartridge carrying element pivotally mounted to said rear element and manually movable relative thereto, said cartridge carrying element being formed with a projection operative to engage one of said lugs to move the latch thus freeing said rear element for rotation away from said cartridge receiving position, the other lug being operative to move the latch when engaged by the head of a cartridge.

3. In an automatic firearm including a tubular magazine, a receiver and a reciprocating bolt within the receiver of the type where the bolt remains in the open position after firing the last shell contained in the magazine, said receiver being free of push buttons, an articu-

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lated carrier pivotally mounted upon the receiver and including a body portion, a latch pivotally mounted upon the receiver, said latch being formed with at least three lugs, one lug being operative to engage the head of a shotshell, a second lug being directly engageable with the body portion and operable to lock said portion, pawl means pivotally mounted upon the carrier and operable to engage and lock the bolt means in the open position when said body is locked by the latch and a shotshell receiving tray pivotally mounted upon the body portion 10

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and having an end face operable to engage a third lug of said latch effective to unlock the body portion whereby the bolt is released.

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