Jan. 19, 1965 H. A. INTO 3,165,849

MAGAZINE CUTOFFS

Filed Nov. 28, 1962 2 Sheets-Sheet 1

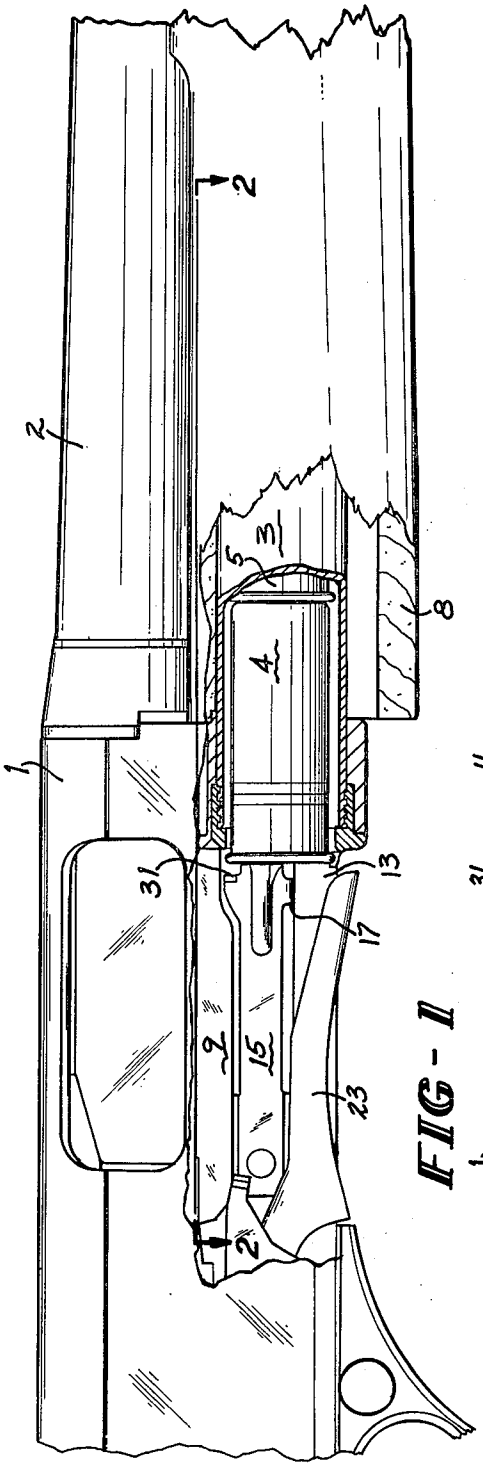

FIG - 1

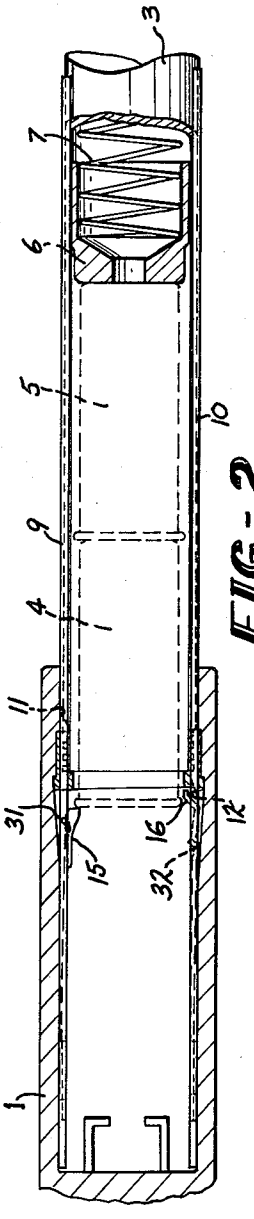

FIG - 2

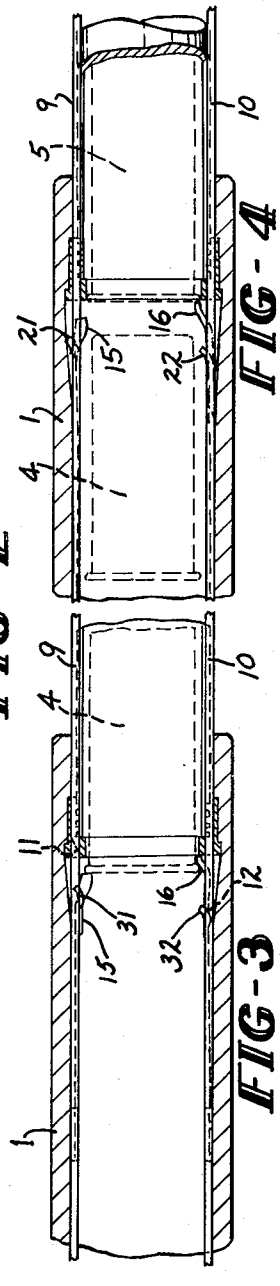

FIG - 4

FIG - 3

INVENTOR.
HENRY A. INTO

BY
Donald R. Motsch

ATTORNEY

Jan. 19, 1965 H. A. INTO 3,165,849

MAGAZINE CUTOFFS

Filed Nov. 28, 1962 2 Sheets-Sheet 2

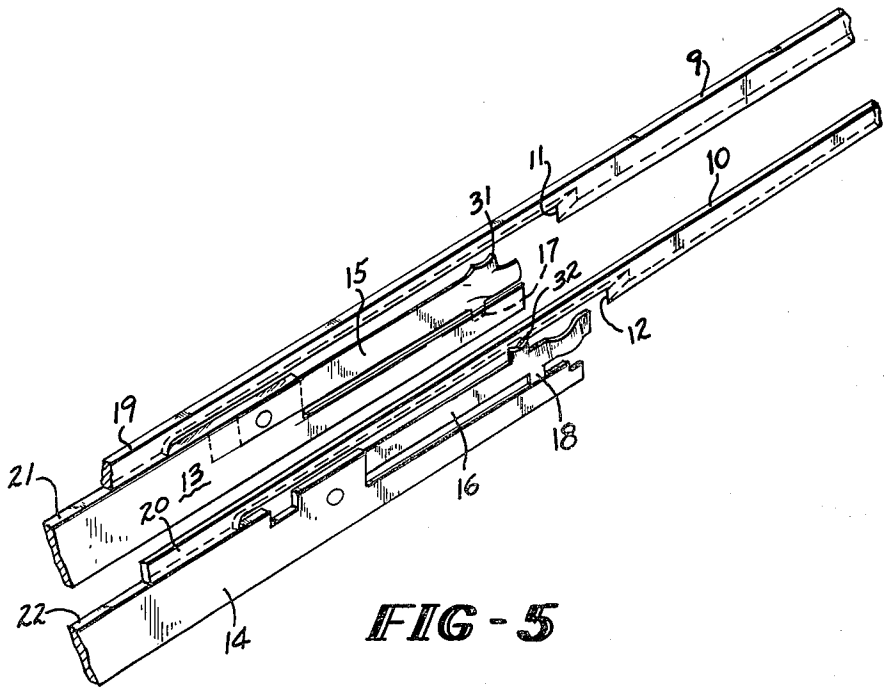

FIG - 5

INVENTOR.
HENRY A. INTO

BY
Donald R. Motsko
ATTORNEY

United States Patent Office 3,165,849 Patented Jan. 19, 1965

3,165,849

MAGAZINE CUTOFFS

Henry A. Into, Wallingford, Conn., assignor to Olin Mathieson Chemical Corporation, a corporation of Virginia

Filed Nov. 28, 1962, Ser. No. 240,586
6 Claims. (Cl. 42—17)

This invention relates to automatic, semi-automatic and slide actuated firearms in which a tubular magazine is mounted below the barrel. Cartridges housed in the tubular magazine are fed one at a time into the receiver of the firearm by a pair of novel cutoffs mounted in the receiver and controlled by a pair of slide arms. The slide arms may be actuated by the manipulation of a manual slide or automatically by a gas piston mounted in the front of the magazine tube or other means.

Prior art devices are known in which a pair of cutoffs is mounted in the receiver of a firearm and spring biased inwardly on opposite sides of the mouth of a tubular magazine to control the movement of cartridges into the receiver. Young, Patent 955,490; Swebilius, Patent 1,550,758; and Crittendon et al. Patent 2,719,375 disclose such an arrangement. This invention provides a novel arrangement of cutoffs mounted in the receiver on opposite sides of the mouth of a tubular magazine. One of the cutoffs being normally spring biased inwardly into the path of movement of the cartridge and moved outwardly by cam means. The other cutoff being normally spring biased outwardly and positively moved into the path of movement of the cartridges by cam means. This novel arrangement of cutoffs provides a degree of positive control over the movement of the cartridges from the magazine tube to the receiver which was heretofore impossible with the known prior art structures. The novel arrangement of elements disclosed in this invention eliminates jamming of the gun action which frequently occurs when a cartridge prematurely bypasses a cutoff, as frequently occurs in the known prior art devices.

In the preferred embodiment of this invention a first and a second cutoff are mounted in the receiver of a firearm on opposite sides of the mouth of a magazine tube. The first cutoff is normally spring biased outwardly away from the path of movement of a first cartridge passing from the magazine into the receiver. The second cutoff is normally spring biased inwardly into the path of movement of the first cartridges and is mounted slightly rearward of the first cutoff. As the cartridges are loaded into the magazine tube, the rim of the first cartridge engages the second cutoff which is positioned in its path. The first cutoff at this point being normally spring biased out of engagement with the cartridge. A pair of slide arms mounted above the cutoffs are then actuated to selectively feed the cartridges from the magazine into the receiver. Each slide arm is provided with a cam to engage a cam follower on the respective cutoffs. Rearward movement of the slide arms causes a cam on a first slide arm to engage the first cutoff and move the cutoff inwardly behind the rim of the first cartridge. Further rearward movement causes a cam on the second slide arm to engage the second cutoff and cam it outwardly out of engagement with the first cartridge. The first cartridge is then free to move rearwardly into the receiver. The rim of the second cartridge in the magazine moves into engagement with the first cutoff which has been positively cammed inwardly. Since there is a positive cam force on the first cutoff, there is no possibility of the cutoff being forced outwardly by the engaging force of the second cartridge; thereby, allowing the cartridge to slip by the cutoff and jam the gun action. The slide arms are reciprocated rearwardly to the end of their stroke and then brought

forward. During the forward movement of the slide arms, the second cutoff is released by the cam on the second slide arm and is allowed to assume its normal inwardly biased position in the path of movement of the cartridges. The first cutoff is also released by the cam on its respective slide arm and assumes its normal outwardly biased position. As the second cartridge is released by the first cutoff, it moves rearwardly a very slight distance until the rim of the cartridge comes into engagement with the second cutoff. The operation of the slide arms is then repeated to feed the second cartridge into the receiver.

It is apparent that at the moment each cartridge in the magazine is moving the greatest distance under the most force; there is a cutoff positively held in its path by a cam. This feature eliminates completely any danger of the cartridge merely biasing the cutoff outwardly out of its path and bypassing the cutoff.

The preferred embodiment of this invention will now be described in detail with reference to the accompanying drawings in which:

FIGURE 1 is a cut-away sectional view showing the general arrangement of the elements of this invention as applied to a firearm.

FIGURE 2 is a sectional view taken along line 2—2 of FIGURE 1 with the slide arms fully forward and the cutoffs in their normal position.

FIGURE 3 is a sectional view similar to FIGURE 2 showing the slide arms reciprocated rearwardly slightly, so that the cutoff on the right is moved inwardly behind the rim of the first cartridge in the magazine tube.

FIGURE 4 is a sectional view similar to FIGURE 3 in which the slide arms have been reciprocated rearwardly far enough to cam the left-hand cutoff out of the path of movement of the first cartridge.

FIGURE 5 is a perspective view showing the details of the cutoffs and slide arms of this invention removed from the receiver.

Referring now to the drawings: FIGURE 1 shows a cut-away view of a firearm having a receiver 1. A barrel 2 is connected to the front of the receiver. A magazine tube 3 is mounted below the barrel and is adapted to accommodate a plurality of cartridges 4 and 5 as shown in FIGURE 2. A magazine follower 6 and magazine spring 7 urge the cartridges rearwardly toward the receiver. A forearm 8 is shown slidably mounted on the magazine. In semi-automatic and automatic firearms, the forearm is fixed to the magazine tube and a piston is arranged in the front of the magazine tube to automatically perform the function of the manually operated forearm. Connected to the forearm 8 and reciprocable therewith is a pair of slide arms 9 and 10. Slide arms 9 and 10 are provided with cams 11 and 12 respectively. The function of cams 11 and 12 will be explained in detail below.

Mounted in the receiver 1 is a pair of cutoff supports 13 and 14. Fastened to support 13 is left cutoff 15 and fastened to support 14 is right cutoff 16. Cutoffs 15 and 16 are formed from a resilient spring steel. Left cutoff 15 is normally spring biased inwardly into the path of movement of a cartridge passing from the magazine tube into the receiver as clearly shown in FIGURES 2 and 5. Right cutoff 16 is normally spring biased outwardly away from the path of movement of the cartridges passing from the magazine into the receiver. Right cutoff 16 is mounted slightly ahead of left cutoff 15. Lug 17 depending from cutoff 15 limits the normal inward movement of the left cutoff. Lug 18 depending from cutoff 16 limits the normal outward movement of the right cutoff.

Slide arms 9 and 10 are positioned directly above cutoff supports 13 and 14 respectively, and have rear portions

19 and 20 respectively, which ride on the upper surfaces 21 and 22 respectively, of the cutoff supports. (Note FIGURE 5.)

Cutoff 15 has formed integral therewith a cam follower 31 adapted to be engaged by cam 11 on slide arm 9. Engagement of cam 11 with follower 31 causes cutoff 15 to be moved outwardly against its normal inward spring force. Cutoff 16 has formed integral therewith a cam follower 32 adapted to be engaged by cam 12 on slide arm 10. Engagement of cam 12 with cam follower 32 causes cutoff 16 to be urged inwardly against its normal outward spring force. Cams 11 and 12 function to control cutoffs 15 and 16 respectively to selectively facilitate movement of the cartridges from the magazine tube 3 onto a carrier 23 positioned in receiver 1. The operation of the novel arrangement of elements disclosed above will now be described in detail.

FIGURE 2 shows the firearm with cartridges 4 and 5 positioned in the magazine tube 2. The cutoffs 15 and 16 are shown in their normal positions with cutoff 15 spring biased inwardly into engagement with the rim of cartridge 4, and cutoff 16 normally spring biased outwardly away from engagement with the cartridge. Note that cutoff 15 is mounted slightly rearward of cutoff 16 and that cam 11 on slide arm 9 is located forward of cam 12 on slide arm 10.

Rearward movement of the slide arms 9 and 10 brings cam 12 into engagement with the cam follower 32 on cutoff 16. Cutoff 16 is cammed inwardly as shown in FIGURE 3 so that the cutoff engages behind the rim of cartridge 4 and is held in this position by the cam 12. Further rearward movement of the slide arms causes cam 11 on the slide arm 9 to engage the cam follower 31 on cutoff 15. Cutoff 15 is cammed outwardly as shown in FIGURE 4 thereby releasing cartridge 4 which is free to move into the receiver and onto carrier 23. As cartridge 4 moves into the receiver; cartridge 5 is moved rearwardly by magazine spring 7 and follower 6. The rim of cartridge 5 engages cutoff 16 which is positively held inwardly by cam 12. The slide arms are reciprocated rearwardly to the end of their stroke and then brought forward. As the slide arms are brought forward; cam 11 disengages cutoff 15, and cutoff 15 assumes its normal inwardly biased position shown in FIGURE 2. Further forward movement of the slide arms allows cam 12 to disengage cutoff 16 and cutoff 16 assumes its normal inwardly biased position thereby releasing cartridge 5. Cartridge 5 moves rearwardly slightly from the position shown in FIGURE 4 to a position as shown in FIGURE 2 where the rim of the cartridge engages cutoff 15. To feed cartridge 5 and subsequent cartridges into the receiver, the operation described above is repeated.

It is apparent from the above description that while cartridge 5 is moving the greatest distance in the magazine tube 3 under the greatest force; cutoff 16 is positively held in its path by the cam 12 on slide arm 10. This arrangement eliminates the possibility of cutoff 16 being merely biased outwardly by the impact force of the cartridge, thereby jamming the gun action.

This invention has been described in detail in connection with the preferred embodiment of the invention illustrated in the drawings. Variations in design and structural modifications are also contemplated which will be within the spirit and scope of the appended claims.

I claim:

1. In a firearm, a receiver, a barrel secured to said receiver, a tubular magazine mounted below said barrel and having a mouth opening into said receiver, a pair of cutoffs, means mounting said cutoffs in said receiver, one of said cutoffs being normally spring biased outwardly clear of the mouth of said magazine, the other cutoff being normally spring biased inwardly to block the mouth of said magazine tube, a pair of slide arms extending into said receiver, cam means on said slide arms operative to sequentially move and hold said one cutoff inwardly obstructing the mouth of said tubular magazine and to move said other cutoff outwardly each time the slide arms are reciprocated rearwardly, said cam means being arranged on said slide arms so that a complete back and forth reciprocation of said slide arms is effective to feed a single cartridge from said tubular magazine into said receiver.

2. The device of claim 1 in which said one cutoff is mounted in said receiver forward of said other cutoff.

3. The device of claim 2 in which said cam means on the slide arms are arranged so that said one cutoff is engaged by a cam and moved inwardly before said other cutoff is engaged by a cam and moved outwardly upon rearward movement of the slide arms.

4. The device of claim 1 in which said cutoffs are laterally spaced on diametrically opposed sides of said mouth of the magazine and a slide arm is positioned directly above each cutoff.

5. In a firearm, a receiver, a barrel secured to a forward portion of said receiver, a tubular magazine mounted below said barrel and having a mouth opening into said receiver, cutoff means mounted in said receiver on opposite sides of said mouth, said cutoff means including a first cutoff normally spring biased outwardly clear of the mouth of said magazine and a second cutoff normally spring biased inwardly to block the mouth of said magazine tube, a cam follower formed integral with each of said cutoffs, slide arm means slidably mounted in said receiver including a first slide arm positioned above said first cutoff and a second slide arm positioned above said second cutoff, cam means on said first slide arm operative to move and hold said first cutoff inwardly obstructing the mouth of said magazine, cam means on said second cutoff operative to move said second cutoff outwardly away from the mouth of said magazine, said cam means being fixed on said slide arms to engage the cam followers and actuate said cutoffs to selectively feed a cartridge from said magazine into the receiver each time the slide arms are reciprocated in a complete back and forth movement.

6. In a firearm including a receiver and a tubular magazine having a mouth at one end opening into said receiver, first and second cutoffs mounted in said receiver, said first cutoff having a cartridge engaging end which is normally spring biased outwardly clear of the mouth of said tubular magazine and said second cutoff having a cartridge engaging end which is normally spring biased inwardly obstructing the mouth of said tubular magazine, the cartridge engaging end of said second cutoff being mounted in said receiver rearwardly of the cartridge engaging end of said first cutoff, cam means slidably engaging said cutoffs to position and hold said first cutoff inwardly obstructing the mouth of said tubular magazine and to position said second cutoff outwardly clear of the mouth of said magazine, said cam means being operative to sequentially actuate said cutoffs in opposition to the normal spring forces acting thereon to selectively feed cartridges from said tubular magazine into said receiver.

References Cited by the Examiner

UNITED STATES PATENTS

1,702,984	2/29	Shelman	42—21
2,645,873	7/53	Crittendon et al.	42—21

BENJAMIN A. BORCHELT, *Primary Examiner.*