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APPARATUS FOR DISCHARGING FROM FEED CHUTES IMPROPERLY ORIENTED CARTRIDGES

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Fig. 1.

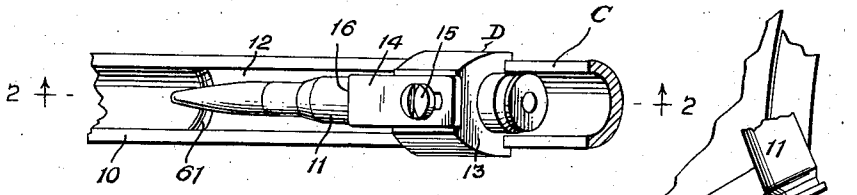


Fig. 2.

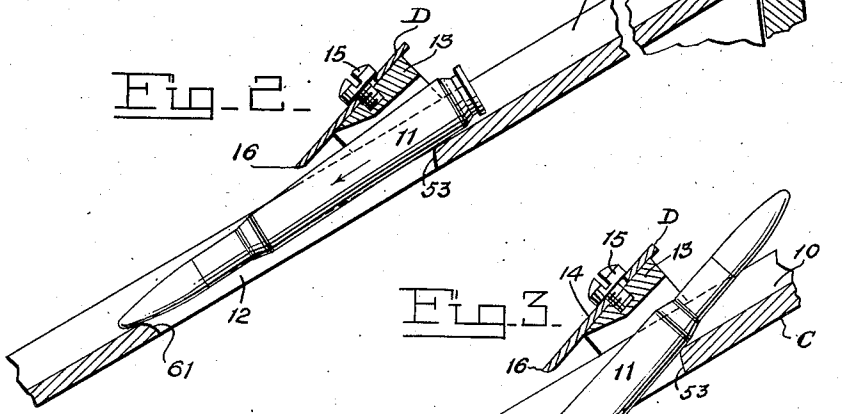
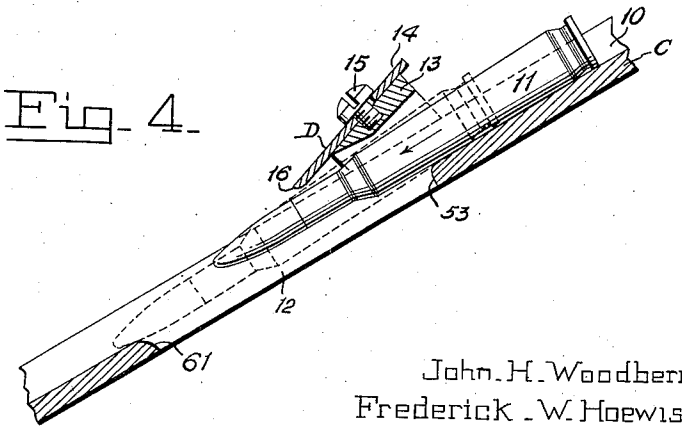


Fig. 3.

Fig. 4.



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APPARATUS FOR DISCHARGING FROM FEED CHUTES IMPROPERLY ORIENTED CARTRIDGES

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Original application July 24, 1942, Serial No. 452,174. Divided and this application May 26, 1945, Serial No. 596,073

2 Claims. (Cl. 209—72)

(Granted under the act of March 3, 1883, as amended April 30, 1928; 370 O. G. 757)

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The invention described herein may be manufactured and used by or for the Government for governmental purposes, without the payment to us of any royalty thereon.

This invention relates to means for removing from a feed chute articles such as cartridges which are passing therethrough in an undesired position among other cartridges properly positioned for delivery to a mechanism which is to perform work thereon, where a specific position of the article is required. It is particularly applicable to, and in the present instance is embodied for use in, rejecting cartridges from chutes of our application Serial Number 452,174, filed July 24, 1942, now Patent No. 2,433,010, dated December 23, 1947, of which application this is a division. The prior application will be termed the parent case.

It is an object of the invention to present a highly effective inexpensive and simple device for effecting the discard of improperly positioned cartridges or the like which are in course of feeding to belt loading or other mechanisms, and especially to enable such discard without requiring extensive structure while utilizing a limited amount of space, yet which will be highly effective and capable of sufficiently rapid function for the needs of such apparatus using inclined chutes.

It is a further important aim of the invention to present a device for the purpose indicated which will utilize in a novel way moderate momentum imparted to cartridges and the like moving slidably along a chute, trough or the like, so that this momentum will cause properly positioned cartridges to move along the desired path to the receiving mechanism; but, so that in the case of an improperly positioned cartridge, such momentum will be utilized to cause the diversion of the article from such path. It is an important purpose to attain such diversion without the use of moving mechanical parts.

Additional objects, advantages and features of invention reside in the construction, arrangement and combination of parts involved in the embodiment of the invention and will be apparent or understood from the following description and accompanying drawings, wherein:

Figure 1 is a top view of a portion of a chute such as is shown at C in our parent case with the discard device D installed thereon as described in that case;

Figure 2 is a vertical longitudinal sectional view of the device, showing a part of the initial ordering means by which cartridges are delivered to the chute;

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Figure 3 is a similar view of the discard device only, illustrating its discard function;

Figure 4 is a similar view showing a correctly positioned cartridge passing the discard device.

Referring more particularly to the drawings, there is illustrated a portion of an inclined rectilinear chute 10 substantially U-shaped in cross section, having a semi-circular bottom and adapted to receive loosely a round or cartridge 11 for free sliding movement therein. The chute is so inclined that such cartridge will slide thereon at a proper rate of speed for the functions hereafter explained. There is shown also a portion of a drum A as described in our parent application which is so constructed as to deliver cartridges to the upper end of chute 10 with their points directed downwardly. Occasionally, however, for one reason or another, the cartridge will become improperly positioned in the chute, with its base advanced instead of the nose, and in such case, serious damage would be done to a belt or loading mechanism if such cartridge should reach the same. To remedy this, at a part of the chute sufficiently distant from the drum A, we have formed in the bottom of the chute a longitudinal slot 12 of a length slightly less than that of the round but of a width throughout which is equal to the major diameter of the cartridge case. The lower end edge 61 of this slot is rounded on its upper part. Transversely arranged over this slot and fixed on the sides thereof there is a bridge block 13 affording a clearance over the slot which is much greater than the dimension of the cartridge to be passed. Fixed adjustably on the upper side of this bridge block there is a planiform buffer plate 14 extending longitudinally of the chute and inclined inwardly theretoward so that it may be adjusted relatively to the path of the cartridge. This plate is longitudinally slotted and held upon the block 13 by a set screw 15. The lower edge 16 of this plate preferably stops near the middle of the longitudinal dimension of the slot 12, and is positioned within a distance of a longitudinal line along the bottom of the chute and across the slot which is less than the major diameter of the cartridge case.

Rounds of this type have their center of gravity so located that when resting upon the bottom of the chute the bullet is elevated above the bottom of the chute, and the round moves in a position with relation to the longitudinal elements of the chute substantially as shown in solid lines in Fig. 4. The bullet will have this relation to the longitudinal elements whether it is correctly positioned or incorrectly positioned. In the operation

of the device, cartridges properly positioned and moving down the chute will appear substantially as shown in Figs. 1, 2, and 4. As the cartridge approaches the buffer device, it will have the position shown in solid lines in Fig. 4, and will remain in that angular position in relation to the chute until it extends over the slot approximately to the extent illustrated in solid lines in Fig. 4. At this time the center of gravity of the cartridge will have reached or passed slightly beyond the upper end edge **53** of the slot, and the round will begin to tilt its nose farther downwardly at or before this time.

The round continues its longitudinal movement, however, so that the nose describes an arc and the bullet engages the lower rounded edge of the slot approximately as indicated in Figs. 1 and 2 and dotted in Fig. 4. Up to this time no part of the round is engaged by the buffer device, but as the round continues its longitudinal movement, and the base of the cartridge case clears the upper end of the slot, the buffer may engage the rear portion of the case and deflect it downwardly; or gravity, acting upon the round may cause such deflection. Owing to the momentum of the round, however, it moves as a projectile across the slot and continues its longitudinal movement through the lower part of the chute still properly aligned and with the nose advancing, and it continues in this way to the point of delivery.

In the case of a round improperly positioned as it moves along the chute toward the slot, its base extends high in the chute and the center of gravity of the round remains above the upper end edge **53** of the slot long enough to maintain this high position of the top side of the round until it engages the lower edge of the buffer plate **14**. This engagement abruptly deflects the advancing base of the round and causes it to pass downwardly through the slot on an arc which permits it to clear the lower end of the slot, the cartridge passing below the chute at this part of the slot. The trailing nose portion of the round follows without engaging the buffer device necessarily, although in case such engagement occurs, due to the longitudinal component of motion in the round, it will draw away from the buffer device and drop through the slot. Such discarded rounds may be caught and disposed of in any approved manner, the details of which need not be illustrated.

It should be explained that the reversed cartridges would be rejected and caused to drop through the opening without the deflector D, as the butts of the cartridges would strike the edge **51**, causing them to drop down through the opening. But the momentary stopping and delay thus involved would preclude feeding articles in rapid succession. The deflector D causes a continuous uninterrupted movement of both the properly ordered and the disordered cartridges at close intervals.

While we have shown our invention in the best construction known at the time of our parent application, it will nevertheless be understood that changes in construction and arrangement of parts, substitutions and other modifications may be made without departing from the spirit of the invention as embodied in the appended claims.

We claim:

1. In a round ordering device for case ammunition having a cartridge case with large base and reduced diameter shoulder, means to discard disordered rounds comprising an inclined chute having a bottom slot of a length less than that of a round, means to project rounds end first longitudinally therein at a speed sufficient to cause normally positioned rounds advancing nose first to cross the slot and move longitudinally therebeyond, and a deflector member positioned fixedly over the chute convergent to the chute bottom in the direction of movement of the cartridges with its proximal part intermediately of the length of the opening and spaced from a longitudinal projection of the chute bottom at the opening less than the major diametrical dimension of the cartridge case but more than the shoulder diameter of the cartridge case.

2. A device for passing moving cartridges which are oriented with their noses pointed forward and for discarding cartridges having rearwardly pointed noses, comprising an inclined chute, means to feed the cartridges end first longitudinally in the chute to gravitate in lengthwise aligned relation to said chute, said chute having a longitudinal opening in its bottom with a length equal to a major part of the length of a cartridge, and a baffle over said opening intermediately of the length of the opening and having its proximal portion spaced less than the diameter of a cartridge base from a longitudinal line at the bottom of said chute across said opening, said baffle spaced from said line more than the shoulder diameter of the cartridge.

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