Sept. 11, 1945. E. C. HOLTON 2,384,678

MACHINE GUN CASE AND LINK EJECTION CHUTE

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Fig. 1.

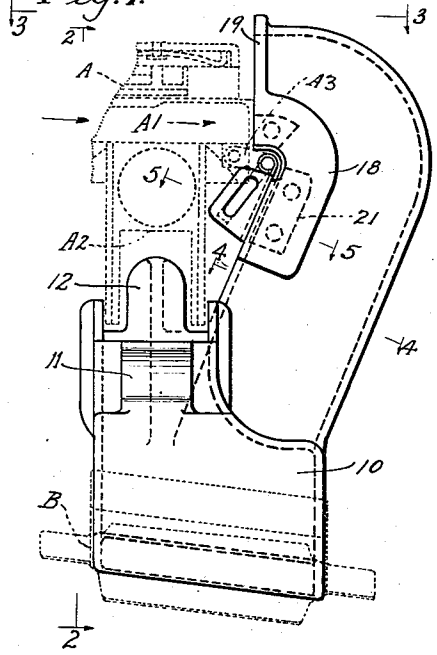


Fig. 2.

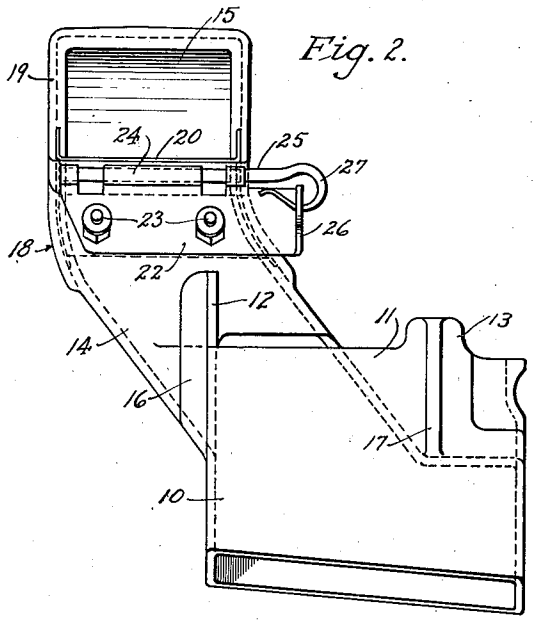


Fig. 4.

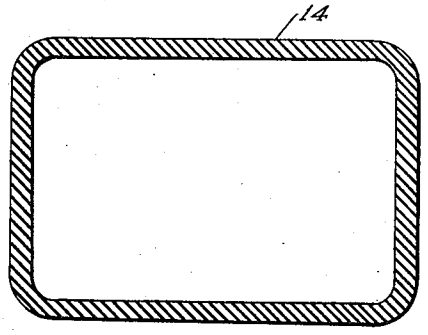


Fig. 3.

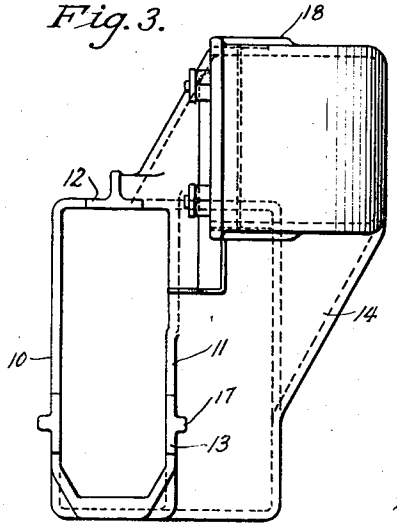
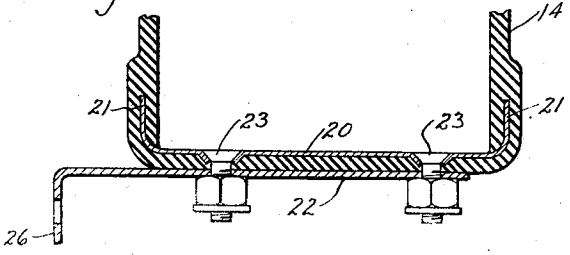


Fig. 5.



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MACHINE GUN CASE AND LINK EJECTION CHUTE

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2 Claims. (Cl. 89—33)

The present invention relates generally to airplane guns, commonly of the rapid fire type, into one side of which a belt of link-connected cartridges are fed, and at the bottom of which the links are discharged and the spent cases are dropped. It is usual to provide a link and case receiver at the latter side of the gun mount including a short case receiving chute below the gun breech and a relatively taller link receiving chute upstanding to the link discharge station, with the chutes joining at a lower point for common discharge. Usually this common discharge is directed into a link and case container which must be removed from time to time when full, for the substitution of an empty container.

It has long been desired to connect the link and case discharge chutes with an overboard chute on the airplane for continuous overboard discharge of links and cases, and elimination of their accumulation in containers. This is difficult owing to slight shifting of the gun and it is one of the primary objects of the present invention to provide a link and case receiver including link and case ejection chutes, having a common discharge, opening into an overboard chute on the airplane, and at the same time connected to, and yielding with, movements of the gun.

It is a further object to provide a flexible link and case ejection assembly needing but a single point of connection with the gun, for the ejection of links and cases into an overboard chute, and which, on account of its flexible nature, readily adapts itself to movements of the gun.

Since the usual link and case ejection assembly is formed of fabricated metal, the present flexible assembly, formed for example of rubber or neoprene, not only provides for slight movements of the gun, but greatly simplifies installation by the elimination of adjustments and adjustable mounting means, and greatly reduces time and cost in production as well as installation.

With the foregoing in mind, other and further objects of the invention, and its advantages in use, will be apparent from the following detailed description of the construction thus far developed as best adapted to carry the invention into practical use, such construction being shown by way of example, in the accompanying drawing, which forms a part of this specification.

In the drawing, like reference characters designate similar parts in the several views.

Fig. 1 is a rear elevation showing the link and case ejection assembly as in use, portions of a gun being indicated in dotted lines.

Fig. 2 is a side view of the assembly, particularly showing the means at the link ejection chute for attachment thereof to a gun.

Fig. 3 is a top plan view of the assembly looking downwardly along line 3—3 of Fig. 2.

Fig. 4 is a detail cross section through the link ejection chute taken substantially along line 4—4 of Fig. 1.

Fig. 5 is a detail partial cross section through the upper gun connected portion of the link ejection chute taken substantially along line 5—5 of Fig. 1.

In Fig. 1 of the above described drawing, there is indicated in dotted lines portions of a conventional airplane rapid fire gun A of the fixed type in connection with which it is possible to discharge spent cases and links overboard through a suitable discharge opening of the airplane below the gun. Such opening may have a frame B also shown in dotted lines and pictured with an upstanding rim. The gun A is pictured as usual as though one is looking down the barrel from the breech end and as including the usual cross channel through which link-connected cartridges are fed from a feed opening at one side of the gun to a link discharge opening at the opposite side thereof. The direction of movement in the channel is indicated by the arrow A' in the channel and it is well known that in the course of this movement the stripping of the cartridges from the connecting links frees the latter for movement laterally from the link discharge opening. As is also well known, the spent cases are dropped through a lower case discharge opening indicated at A^2.

The gun A is also shown as provided with laterally projectable links or apertured arms A^3 below its link discharge opening for the support and connection of the link ejection chute of the present assembly, the openings of these links or arms being utilized to receive an assembly pin in a manner which will presently appear.

The link and case ejection assembly of the present invention includes a lower hollow body portion 10, preferably of rectangular form so that its lower open end or base may telescopingly interfit the frame B of the overboard discharge opening of the airplane.

The top of the body 10 is open upwardly for a portion thereof at one side of its longitudinal center to form a case receiving chute 11 positionable beneath the case discharge opening A^2 of the gun and preferably provided at one end with an upright flap 12 adapted to upstand at one end portion of the case discharge opening A^2 in a manner plainly to be seen in Fig. 1. This ar-

rangement not only provides a resilient bumper against which the cases, discharged from the links, strike, but also cooperates with side lugs 13 of the case ejection chute 11 upstanding at opposite sides of the lower portion of the gun, for the purpose of preventing lateral displacement of the case chute 11 with respect to the case discharge opening of the gun, to which it is not otherwise directly connected.

At the other side of its top, the body 10 is in open communication with the lower end of the link ejection chute 14 which rises therefrom in laterally and longitudinally inclined relation thereto and terminates at its upper end in a laterally curved and laterally opening link receiving mouth 15 opposite to the link discharge opening of the gun.

An outstandingly important feature of the present invention is that the entire link and case ejection assembly including body 10, case ejection chute 11 and link ejection chute 14, is formed in one part, molded of rubber, neoprene or other suitable lasting flexible material which will lend itself to ready formation as a unit as well as to simple, quick and effective installation, and will permit of ready yielding to compensate for slight movements of the gun. For this reason the flap 12 and side lugs 13 are preferably reenforced by integral, vertical external ribs 16 and 17, and the wall of the upper portion of the chute 14 is increased in thickness at the sides thereof as at 18, and around its link receiving mouth 15 to form a framing rib 19.

Below its receiving mouth 15, chute 14 is provided with an internal reenforcing and attaching plate 20 curved to form the lower lip of said receiving mouth and provided with side wings 21 embedded in the thickened side wall portions 18, as plainly seen by a comparison of Figs. 1 and 5, said plate serving as an anchor for an attaching bracket 22 to which it may be connected by short bolts 23, as seen in Fig. 5.

The bracket 22 sits flatwise, horizontally below the link receiving mouth 15 of chute 14 and has upstanding lengthwise spaced tubular extensions 24, the spaces between which are ample for the reception of the before mentioned links or arms A^3 extending from the gun. Thus a latch bar 25 may be extended through the alined openings of extensions 24 and links or arm A^3 and will serve as the only needful connection between the assembly and the gun, leaving the former free to yield to slight movements of the gun, and permitting installation to be made without adjustments or adjustable mounting means.

Preferably one end of bracket has a slotted angular ear 26 and latch bar 25 has a shepherd's crook clasp 27 at one end, as shown in Fig. 2, the extremity of which may be extended through the slot of ear 26 to thus prevent danger of lengthwise displacement of the latch bar under the constant vibrations of the gun in use. This, however, is a detail which, like others previously described, may be varied at will, without any sacrifice of the advantages inherent in the flexible unitary structure outlined and the manner in which it is proposed to install the same.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. In combination, an airplane having a discharge opening therefrom, a gun mounted in said airplane and adjacent to said opening, a link- and case-ejecting assembly including non-metallic chutes arranged to receive respectively ejected links and cases from the gun, a hollow non-metallic body portion connecting with both chutes and in turn constructed and arranged to direct the links and cases overboard through the discharge opening, the bottom of said body portion being interfittingly connected with the aircraft and the link ejection chute having a positive connection with the gun, the case-ejection chute having gun-engaging flexible members to resiliently resist lateral displacement from its case-receiving position, the link-ejection chute being inclined laterally from the body in two directions, to receive the links ahead of and at the side of the chute into which the cases are dropped, and the neck of the link-ejection chute being formed of a flexible, elastic material and thus adapted to be laterally yieldable in said two directions.

2. A link and case discharge assembly for use in aircraft of the type having a gun mounted therein with a laterally opening link discharge member and a downwardly opening case discharge member, and also having an overboard discharge fixture for links and cases, said assembly including a lower generally upright chute open at its top and adapted to be mounted beneath the case discharge member of the gun, and at its bottom open for registry with the said overboard discharge fixture and constructed and arranged to be removably interfitting therewith to hold said chute against displacement, and an upwardly inclined link discharge chute in open communication at its lower end with the case discharge chute and having an upper laterally opening receiving mouth adapted to be positioned opposite the link discharge member of the gun, said assembly being formed in a single piece with its walls throughout of a flexible, elastic material constructed and arranged to yield to individual vibrations of the gun and aircraft engaged portions thereof and to prevent communication of the vibrations therebetween, the said case discharge chute having spaced upwardly projecting yielding elements adapted to engage sides of the case discharge member of the gun, a bracket below the link receiving mouth of the chute having spaced tubular extensions for connective cooperation with the gun and means passing through said extensions of said bracket and gun for connecting the link discharge chute with the gun and arranged to hold the case discharge chute extensions in engagement with the case discharge member, to thus hold the entire assembly in position with respect to the gun from a single position on the gun.

EDWARD C. HOLTON.