MAGAZINE WITH MOBILE FEED LIPS AND GUIDE FINGERS

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ABSTRACT OF THE DISCLOSURE

A magazine having movable cartridge feed lips and movable cartridge guide fingers which may be deflected by a closing bolt without attendant jamming.

This invention concerns a magazine having a clip slidably mounted thereon, which clip includes a pair of cartridge feed lips and a pair of cartridge guide fingers. As a cartridge is fed from the magazine to be picked up by a closing bolt, the bolt may contact the feed lips and deflect the clip away from the path of the bolt thereby preventing engagement between the magazine and the clip. After the cartridge is picked up by the bolt, the clip feeds the magazine, which induces lateral movement of the magazine so that it is fed into the firing chamber. The guides are forced aside by the bolt as it moves to the battery position.

The conventional box-type cartridge magazine includes one or two feed lips which overlie the feed end of the magazine. The feed lips are integral with, or rigidly attached to the magazine, thus acting as an extension of the magazine. Cartridges are fed from the magazine into engagement with the feed lips where the cartridges are positioned for pickup by the bolt as the latter is recirculated from a retiring to a battery position. The cartridges are picked up by the bolt and moved forward into a firing chamber. The magazine is generally releasably locked into engagement with the receiver on a firearm, with the magazine being manufactured as a separate unit from the firearm to which it is used. Individual magazines must be usable with a number of different guns.

A problem common to the operation of the prior art firearm and box magazine combination arises from the tendency of the reciprocating bolt to become jammed against the feed lips of the magazine as the bolt moves past the magazine to pick up a cartridge. The jamming may result from minor variations in the position of the bolt within the receiver which occur in different individual guns of the same model, or the jamming may result from variations in the dimensions of the feed lips which occur from magazine to magazine in the same model. A further cause of jamming may arise from wear which occurs on the magazine or the firearm receiver after repeated use. It is readily apparent that such jamming between the bolt and the magazine feed lips is undesirable and should be avoided.

Another problem which may occur in the prior art magazines is that the cartridge position as defined by the feed lips may be offset from the axis of the bolt by too great a distance so that the bolt fails to engage the cartridge as the bolt slides from its retiring position to its battery position. This may occur when a magazine is fitted into one firearm but not another, due to dimensional variances from firearm to firearm or from magazine to magazine.

A further problem present in the prior art box magazines concerns control of the path of the cartridge after it has been picked up by the bolt, moved forward on the feed lips, and before it has entered the firing chamber. The box magazines of the prior art are devoid of any means to control the direction which a cartridge takes after it is picked up by the bolt and moved free of the feed lips. As a result, frequently the cartridge will be drawn by the bolt into the end wall of the barrel, or will be driven into the firing chamber at an angle with the axis thereof to cause a jamming fit between the cartridge and the wall of the firing chamber. The above is under the interruption of the automatic sequence of firing results, and in the case of a rimfire cartridge, premature exploding of the cartridge could result.

This invention eliminates jamming between the bolt and the magazine feed lips by providing floating feed lips which can be smoothly deflected aside by the bolt when the round is picked up. Furthermore, this invention provides easily deflectable guide fingers which prevent lateral straying of the cartridge after the latter has been moved clear of the feed lips and before the cartridge has entered the firing chamber. This invention can be used with center fire or rim fire ammunition with equal facility. In particular, a box-type magazine is provided with a clip member slidably mounted thereon adjacent the feed end of the magazine. The clip member includes a body portion, preferably having a U-shaped configuration, which slidably engages the wall of the magazine. The magazine wall ideally includes lateral shoulders or the like to limit the upward extent of movement of the clip. A pair of feed lips of generally conventional configuration are integrally formed on the body portion to extend partially across the feed end of the magazine. The rear face of the feed lips may be chamfered to facilitate deflection of the feed lips should they be encountered by the forwardly moving bolt. The feed lips engage a cartridge as the latter is pushed out of the magazine feed end by a spring-mounted follower, with the upwardly moving cartridge causing the clip to slide upwardly on the magazine toward the path of the bolt. As the bolt moves forward toward its battery position in a conventional manner, it engages the cartridge and pushes the latter toward the firing chamber and out from under the feed lips. If the bolt also contacts the feed lips when it picks up the cartridge, the feed lips are merely deflected downwardly as the bolt slides by. The clip also includes a pair of upwardly extending fingers interposed between the feed lips and the firing chamber to provide lateral guides for the cartridge as it moves from the feed lips to the firing chamber. The guide fingers have inner surfaces spaced apart approximately the width of the cartridge which operate to restrict the moving magazine against lateral deflection. The rear surfaces of the guide fingers are obliquely shaped to provide a camming surface whereby the guide fingers are deflected out of the path of the bolt when the latter is driven against the guide fingers.

It is therefore, an object of this invention to provide a clip for slidably mounting on a cartridge magazine, which clip includes cartridge feed lips.

It is a further object of this invention to provide a cartridge magazine having floating feed lips.

It is yet another object of this invention to provide a cartridge magazine having movable cartridge guides to restrict lateral deflection of a cartridge.

Other features, objects, and advantages of this invention will become apparent from the following detailed description and accompanying drawings, in which:

FIG. 1 is a fragmental side view of a box cartridge magazine with a clip having feed lips and guide fingers movably mounted on the magazine, the clip being shown in its downwardmost position.

FIG. 2 is a fragmental side view of the magazine of FIG. 1 shown mounted in a firearm receiver with a plurality of cartridges being disposed in the magazine, the upper-
most of which cartridges engages the feed lips and slides the clip to its upwardmost position on the magazine;

FIG. 3 is a fragmental sectional view taken along line 3--3 of FIG. 2 showing details of the cartridge guide fingers;

FIG. 4 is a fragmental sectional view taken along line 4--4 of FIG. 2 showing the details of the cartridge feed lips;

FIG. 5 is a top view of the magazine of FIG. 2 with the firearm structure omitted for clarity; and

FIG. 6 is a fragmental side view of the magazine of FIG. 2 showing the deflection of the feed lips and guide fingers by the bolt as the latter moves toward its battery position.

Referring now to FIG. 1, a box magazine indicated generally by the numeral 2, is shown. The body of the magazine may preferably be made of plastic and in accordance generally with the teachings of application S.N. 638,832 to H. A. Into, filed May 16, 1967, now U.S. Pat. No. 3,383,790, however, the scope of the invention is not limited to the use of such a plastic magazine. The magazine 2 includes a side wall 4 defining a chamber 6 having an open feed end 8. A cartridge follower 10 is slidably mounted in the chamber 6, the follower 10 being biased toward the feed end 8 by a spring 12. A groove 14 is cut into the magazine wall 4 adjacent the feed end 8, the groove 14 being deeper and having shoulders 16 and 18 respectively. A metal clip member, indicated generally by the numeral 20, preferably formed of 1050 spring steel, is slidably mounted in the groove 14.

The clip 20 includes a U-shaped body portion 22 which slidably engages the bottom wall of the groove 14. A first pair of upwardly extending fingers 24 having inwardly turned terminal flange portions 26 are formed integrally with the body portion 22 at a location spaced apart from the closed end of the body portion 22. The fingers 24 and flanges 26 extend across the open feed end 8 of the magazine to define feed lips for engagement with cartridges issuing from the chamber 6. A second pair of fingers 28 are formed integrally with the body portion 22 at a location forwardly offset from the feed lips 24, 26. The second fingers 28 include basal converging portions 30 and parallel terminal portions 32 defining lateral guides to restrict lateral movement of a cartridge as will be shown hereinafter in greater detail. The rear edge of each of the terminal portions 32 is cut obliquely to form camming surfaces 34. As shown in FIG. 1, the clip 20 is disposed in a downward direction on the magazine. It is noted that a slot 31 is cut in the sides of each of the side walls of the magazine inwardly adjacent to the basal portions 30 of the fingers 28. The slots 31 provide clearance so that the fingers 28 can be pivoted downwardly, as will be more clearly pointed out hereinafter.

FIG. 2 shows the magazine partially filled with a plurality of cartridges 36, and mounted on a firearm receiver 38. The means utilized to amount the magazine 2 on the receiver does not form any part of this invention and can be any conventional latch or the like. A schematic representation of a bolt 40 is shown in the retired position, to which position the bolt is driven in a conventional manner after firing a shot. At the forward end of the receiver 38 is shown a firing chamber 42. It is noted that the topmost cartridge 36 is urged upwardly into engagement with the feed lips 24, 26 thereby causing the clip 20 to slide upwardly in the groove 14 to contact the shoulder 16. In FIG. 2, the clip 20 is shown in its upwardmost position on the magazine. It is noted that the rear flange 37 on the cartridge 36 extends upwardly beyond the feed lips 24, 26 and into the path of the bolt 40. The bolt 40 may include a dependent finger or the like to contact the cartridge 36, or the bolt may omit such a finger and still be operative with the magazine of this invention. It is noted that the front end of the cartridge 36 is disposed between the lateral cartridge guides 32.

FIG. 3 clearly shows the configuration of the lateral cartridge guides, showing the converging basal portions 30 and the parallel terminal portions 32. It is readily apparent that the terminal portions 32 are so spaced apart as to straddle the cartridge 36 and restrict its lateral movement. It is also apparent that the terminal portions 32 extend into the path of the bolt 40.

FIG. 4 clearly shows the configuration of the feed lips 24, 26 and the manner in which the flanges 26 partially bridge the feed end of the magazine.

FIG. 5 is a top view of the magazine and clip showing the cartridge 36 in engagement with the feed lips. It is noted that the inner opposed edges 27 of the feed lip terminal flanges 26 preferably are tapered inwardly and forwardly so as to form opposed frontal points 27 which contact the cartridge 36. Furthermore, the rear edge of the flanges 26 are preferably chamfered, as at 29 so as to readily provide a surface on the flanges 26 which can be smoothly overridden by the bolt.

FIG. 6 shows the bolt 40 having moved toward its battery position and having picked up the cartridge 36 from the feed lips 24, 26. The bolt 40 is shown as having contacted the feed lips 24, 26 with the result that the clip 20 is slid downward in the groove 14. It is thus readily apparent that contact between the bolt 40 and the feed lips 24, 26 will not prevent the bolt 40 from moving to its battery position. The cartridge 36 has been moved clear of the feed lips 24, 26 but is still disposed in the lateral cartridge guides 28, thus movement of the cartridge 36 toward the firing chamber 42 is controlled. The phantom lines in FIG. 6 show the bolt 40' having moved still further toward its battery position to a point where the cartridge 36' has begun to enter the firing chamber 42. The manner in which the lateral cartridge guides are deflected out of the path of the bolt 40' is clearly shown in phantom in FIG. 6. As the bolt 40' moves forward, it moves against the camming surfaces 34 on the rear edge of the parallel terminal portions 32 of the lateral cartridge guides. Continued forward movement of the bolt 40' against the camming surfaces 34 causes the lateral cartridge guides 28 to be deflected downwardly to the position shown in phantom. The slots 31 provide clearance for the converging portions 30 to move downwardly. Thus the bolt 40' is able to completely override the lateral cartridge guides 28 and seat the cartridge 36' in the firing chamber 42.

It is thus apparent that this invention provides a simple, inexpensive means for preventing jamming between a magazine and a closing bolt, while at the same time ensuring that the magazine will be picked up by the bolt and moved into the firing chamber. Furthermore, the possibility that the cartridge will be laterally deflected into the end wall of the receiver is eliminated without interfering with the closing action of the bolt.

What is claimed is:

1. A clip for a cartridge magazine, said clip comprising:
   (a) a body portion for movably mounting said clip on a magazine;
   (b) cartridge feed lip means on said body portion, said feed lip means comprising a first pair of fingers having converging terminal flanges; and
   (c) cartridge guide means on said body portion, said cartridge guide means comprising a second pair of fingers having parallel portions operative to straddle a cartridge.

2. The clip of claim 1, wherein said cartridge guide means includes at least one camming surface for engagement with a bolt.

3. In a cartridge magazine having an outer wall adapted to be immovably secured to a firearm, and an open feed end; a first groove formed on the exterior of said outer wall, said groove having a predetermined width, and said groove being offset a short distance below said open feed end; and a clip slidably mounted in said groove, said clip having a width which is substantially
5 less than the width of said groove, and said clip having feed lip means formed thereon and extending across said feed end to engage cartridges issuing from said feed end thereby causing said clip to slide in said groove.

4. The cartridge magazine of claim 3, further comprising a second groove formed on the exterior of said outer wall, said second groove intersecting said first groove and extending from the latter toward said feed end, said groove guide means formed on said clip and slidably disposed in said second groove, said cartridge guide means including parallel portions extending beyond said feed end to straddle cartridges issuing therefrom.

5. The cartridge magazine of claim 4, further comprising camming means formed on the rear edges of said parallel portions of said cartridge guide means.

6. A clip for movable mounting on a cartridge magazine, said clip comprising:
   (a) a generally U-shaped body portion for sliding frictional engagement with side walls of the cartridge magazine;
   (b) a first pair of extending fingers having converging terminal flanges defining feed lips for engagement with a cartridge; and
   (c) a second pair of extending fingers including converging base portions adjacent said body portion, and parallel, spaced apart terminal portions defining lateral guides for a cartridge, said terminal portions including rearward camming surfaces thereon.

7. The clip of claim 6, wherein said body portion, said first pair of fingers, and said second pair of fingers are integral and are formed from a sheet of spring steel.

8. In a cartridge magazine having an outer wall adapted to be immovably secured to a firearm, and an open feed end, a shoulder formed on the exterior of said outer wall and offset therealong from said feed end, a clip movably mounted on said outer wall near said feed end, said shoulder being interposed between said clip and said feed end, said clip comprising a generally U-shaped body portion disposed in sliding engagement with said outer wall of said magazine, and a first pair of fingers having converging terminal flanges extending across said feed end of said magazine to define cartridge feed lips, said feed lips contacting cartridges issuing from said feed end and moving with the issuing cartridges between a first position immediately overlying said feed end, and a second position spaced from said feed end.

9. The cartridge magazine of claim 8, wherein said clip further comprises a second pair of fingers having converging basal portions, and parallel terminal portions defining lateral guides for a cartridge, said parallel terminal portions including rearward camming surfaces.

10. A cartridge magazine comprising:
   (a) a substantially rectangular housing for reception of a plurality of cartridges, and having an open feed end and an outer side wall adapted to be immovably secured to a firearm;
   (b) a cartridge follower slidably disposed in said housing;
   (c) spring means mounted in said housing to bias said cartridge follower toward said feed end;
   (d) a clip movably mounted on said housing and slidable with respect to said outer side wall when the latter is secured to a firearm;
   (e) means on said housing operative to limit the extent of movement of said clip; and
   (f) cartridge feed lip means on said clip operative to engage a cartridge issuing from said feed end and move through a predetermined distance with the cartridge.

11. The cartridge magazine of claim 10, further comprising cartridge guide means on said clip operative to straddle a cartridge issuing from said feed end.

12. The cartridge magazine of claim 11, wherein said cartridge feed lip means comprise a first pair of fingers having converging terminal flanges partially bridging said feed end, said fingers being movable in a direction in which cartridges are urged from said housing member by virtue of the sliding disposition of said clip on said housing.

13. The cartridge magazine of claim 12, wherein said cartridge guide means comprise a second pair of fingers having converging basal portions and parallel terminal portions defining lateral guides for a cartridge, said parallel terminal portions including rearward camming surfaces whereby said second pair of fingers are deflected by a bolt moving to a battery position.

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