

PATENT SPECIFICATION

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DRAWINGS ATTACHED

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(54) FIREARM MAGAZINES

(71) We, COLT'S INC, a corporation of the State of Arizona, United States of America, located at 150 Huyshope Avenue, Hartford, Connecticut, United States of America, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to fire-arm magazines for storing and feeding stacked cartridges.

An object of the invention is to provide a magazine ensuring smooth, rapid feeding of cartridges to a fire-arm and which substantially eliminates any possibility of so-called double feeding of the cartridges which might cause the fire-arm to malfunction or jam.

According to the present invention there is provided a fire-arm magazine including an elongate body for storing and feeding a staggered double column stack of cartridges, said body including a pair of side walls and a front wall having an upper edge defining in part an opening in an upper end of the body for feeding an uppermost cartridge to a fire arm, an indentation protruding inwardly from each side wall adjacent the front wall and below its upper edge, said indentations forming respective opposed cartridge engagement surfaces which terminate below the pertinent side wall upper edge for each said surface to engage and constrain a pertinent cartridge following the uppermost cartridge into line contact engagement with the uppermost cartridge, whereby substantially to prevent double feeding.

An embodiment of the invention will now be described, by way of example, with reference to the accompanying drawings, in which:

Figure 1 is a side view, partly broken away and partly in section, showing a magazine fitted into a receiver of a rifle;

Figure 2 is a cross-sectional view of a firearm magazine according to this invention; and

Figure 3 is an enlarged, partly broken away, section view of the magazine of Figure 2,

taken along line X—X, with cartridge noses shown in full lines and cartridge casings shown in superimposed sections taken along lines Y—Y and Z—Z of Figure 2.

The drawings show a magazine 10 constructed in accordance with this invention in operative position in a receiver 12 of a firearm such as a rifle. A cartridge 14 is shown entering a firing chamber 16 of a rifle barrel extension 18 upon being removed from the magazine 10 by an advancing bolt 20. A face of the bolt 20 engages an upper rim portion of the cartridge 14 to force it forwardly to ride up a ramp 22 at the entrance of the barrel extension 18 to guide the cartridge 14 into firing chamber 16. Upon chambering the cartridge 14, the bolt 20 is held in battery position by cooperative locking action of barrel extension lugs 24 and bolt lugs 26 to lock the breech against the pressure of firing.

A suitable base plate, not shown, closes the magazine 10 at its lower end and provides a seat for a follower spring 28 which continuously biases a follower 30 into engagement with the stacked cartridges 14. The latter are shown arranged in a staggered double column within the magazine 10, and each cartridge is shown having a conventional tapered configuration.

The magazine 10 has an elongated body of generally rectangular cross section including a front wall 32, a back wall 34 and a pair of side walls 36 and 38. To minimize any friction force opposing upward movement of the cartridges 14, the side walls 36 (and 38) are preferably fluted with grooves such as at 40 extending longitudinally of the body to provide linear guide surfaces 42, 44, 46 (and 42', 44', 46') for engaging the casings 48 of the cartridges 14 within the magazine 10.

As is well known to those skilled in the art, the spacing between each set of linear guide surfaces such as between 42 and 42' and between 44 and 44', e.g., is sufficient to conventionally permit a limited "play" among the cartridges as they are fed upwardly from

[Price 25p]

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the lower end of the magazine to ensure trouble-free feeding of the cartridges without binding against the magazine side walls. However, a vexatious problem particularly of concern in the use of such conventional magazines in connection with semi-automatic and automatic magazine-fed rifles is that of double feeding of cartridges. This problem occurs when a cartridge 14b, following an uppermost cartridge 14a, is partially removed from the magazine 10 during the advance of the bolt 20. Upon bolt 20 being blocked, the rifle malfunctions or jams and must be cleared, which may result in an extremely dangerous delay if encountered under stress in a combat situation.

To ensure a smooth and rapid cartridge feeding action with minimal frictional drag, while continuously providing positional control of at least the upper two cartridges 14a and 14b to substantially eliminate any possibility of double feeding cartridges, the cartridge 14b following the uppermost cartridge 14a is intentionally misaligned in the opposite column within the magazine 10 in accordance with this invention and positioned in line contact engagement substantially along the entire length of the adjacent uppermost cartridge casing. Such continuous positional control over the upper two cartridges 14a, 14b not only automatically positions the uppermost cartridge 14a in feeding position with its longitudinal axis substantially parallel to the bore of barrel extension 18, but also ensures that the following cartridge 14b is captured against movement past the front magazine wall 32.

More specifically, the following cartridge 14b is longitudinally misaligned relative to the magazine 10 by the provision of an anti-double-feed indentation 50, 50' formed in each side wall 36, 38 to protrude inwardly toward the center of the magazine 10. The anti-double-feed indentations 50 and 50' are positioned in spaced opposed relation adjacent the front wall 32 and below its upper edge 52.

As each uppermost cartridge 14a is successively removed from the magazine 10 by the bolt 20, the cartridges of each column on opposite sides of a longitudinal center plane A—A of the magazine 10 ascend under the bias of the spring 28 to ride up ramp portions 54, 54' of the indentations 50, 50', which taper toward a lower end of the magazine 10, and are then "nosed in" upon reaching flat engagement surfaces 56, 56' formed in continuation with the ramp portions 54, 54'. Each flat engagement surface 56, 56' is shown extending parallel to the longitudinal center plane A—A of the magazine 10 and protruding inwardly a sufficient distance to engage a casing neck portion 58 of each ascending cartridge 14 in the adjacent column causing it to "nose in" toward the longi-

tudinal center plane A—A of magazine 10. The "nosed in" cartridge is then pressed upwardly into uppermost position by the spring biased follower 30 upon removal of the preceding cartridge in the opposite column.

Each flat engagement surface 56, 56' additionally serves to direct the cartridges 14 in the opposite column into an uppermost feeding position in the magazine 10 such as that illustrated as being occupied by cartridge 14a. The cartridges 14 of each column thus respectively seat against bottom edge portions of arcuate lips 62 and 64 of the side walls 36 and 38 in parallel alignment with the bore of the barrel extension 18. As shown, the only other contact between the uppermost cartridge 14a and the magazine 10 is provided by localized contact engagement of rear and middle portions of the cartridge casing 48 with upper terminal portions of the guide surface 42 and 44. To ensure such contact engagement maintaining the uppermost cartridge 14a in feeding position, each groove 40 is preferably indented to a greater extent in the neck of the magazine 10 such as indicated by the inwardly and upwardly directed guide surfaces 65, 65' to maintain both the uppermost cartridge 14a and that cartridge 14c directly below it against any tendency to float or to be laterally displaced.

Thus, it will be seen that such angular displacement of the cartridge 14b causes it to nest into line contact engagement substantially along the full length of each of the adjacent cartridge casings in the opposite column. With the uppermost cartridge 14a in feeding position, cartridge 14b is not only "nosed in" toward the center of the magazine 10, but is also tilted upwardly due to its substantially continuous line contact engagement with the tapered cartridge casings in the opposite column. That cartridge 14c directly below the uppermost cartridge 14a is similarly tilted upwardly under the bias of the follower spring 28 but is maintained in a plane parallel to the longitudinal center plane A—A by the guide surfaces 42, 44 which, as previously described, are indented a maximum distance in the neck of the magazine.

With the three uppermost cartridge casings completely nested within the neck of the magazine 10 in line contact engagement, each cartridge 14a is automatically repositioned into a feeding position as it emerges at the top of the magazine 10 while the following cartridge 14b is positively located below the upper edge of the front wall 32 in abutting relation thereto (apart from a minimal clearance gap) to eliminate any possibility of overtravel during the advance of the bolt 20.

By virtue of the above-described structure, a smooth rapid feeding action of the cartridges 14 is ensured, and there is no need for lock-

ing ribs, e.g., to project into the extracting groove 66 adjacent the cartridge rim 68 as normally associated with magazines of this type to maintain the cartridges 14 against double feeding.

WHAT WE CLAIM IS:—

1. A firearm magazine including an elongate body for storing and feeding a staggered double column stack of cartridges, said body including a pair of side walls and a front wall having an upper edge defining in part an opening in an upper end of the body for feeding an uppermost cartridge to a firearm, an indentation protruding inwardly from each side wall adjacent the front wall and below its upper edge, said indentations forming respective opposed cartridge engagement surfaces which terminate below the pertinent side wall upper edge for each said surface to engage and constrain a pertinent cartridge following the uppermost cartridge into line contact engagement with the uppermost cartridge, whereby substantially to prevent double feeding.

2. A magazine as defined in claim 1 wherein the indentations each include a ramp portion tapering toward a lower end of the body and formed in downward continuation of the pertinent said cartridge engagement surface.

3. A magazine as defined in claim 1 or claim 2 wherein the indentations each protrude inwardly a distance sufficient to misalign the following cartridge longitudinally

of the body and into nesting line contact engagement with the cartridge casings in the opposite column.

4. A magazine as defined in any one of claims 1 to 3 wherein the indentations each protrude inwardly a distance sufficient to misalign the following cartridge longitudinally of the body and into continuous line contact engagement substantially along the entire length of the uppermost cartridge casing for automatically adjusting the latter to a feeding position longitudinally aligned with the body and in spaced independent relation to the indentations.

5. A magazine as defined in any one of claims 1 to 4 wherein the indentations are spaced opposed on their respective side walls for alternately engaging a casing neck portion of successive cartridges being fed to the firearm for constraining each following cartridge in a position with its nose directed inwardly toward a longitudinal center plane of the body below the upper edge of its front wall.

6. A firearm magazine substantially as described herein with reference to the accompanying drawings.

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