

[54] **LARGE CAPACITY MAGAZINE**

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[73] Assignee: The United States of America as represented by the Secretary of the Army

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[51] Int. Cl. .... F41c 25/02, F41c 25/08  
[58] Field of Search .... 42/50; 89/34

[56] **References Cited**

**UNITED STATES PATENTS**

|           |         |               |         |
|-----------|---------|---------------|---------|
| 2,365,392 | 12/1944 | Cooley.....   | 42/50 X |
| 2,503,116 | 4/1950  | Maillard..... | 42/50 X |
| 3,087,270 | 4/1963  | Stoner .....  | 42/50   |
| 3,345,771 | 10/1967 | Silsby.....   | 42/50 X |

**FOREIGN PATENTS OR APPLICATIONS**

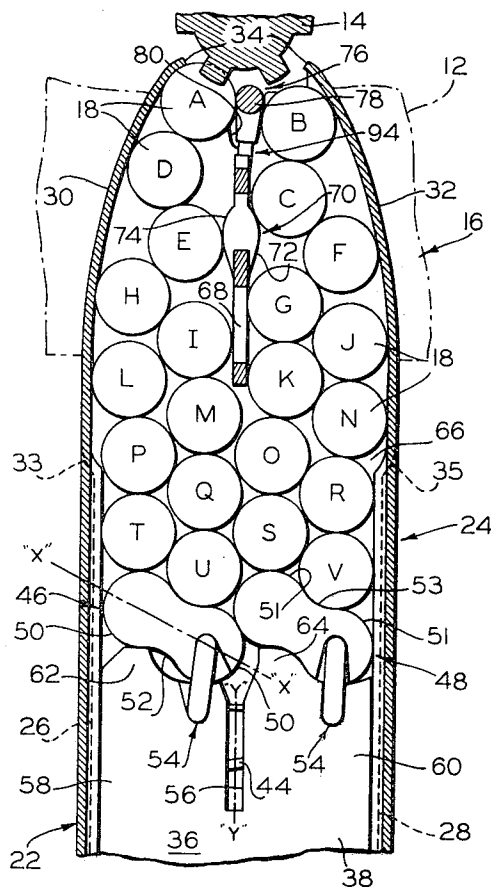
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|---------|--------|--------------------|-------|
| 484,431 | 7/1952 | Canada.....        | 42/50 |
| 536,728 | 5/1941 | Great Britain..... | 42/50 |

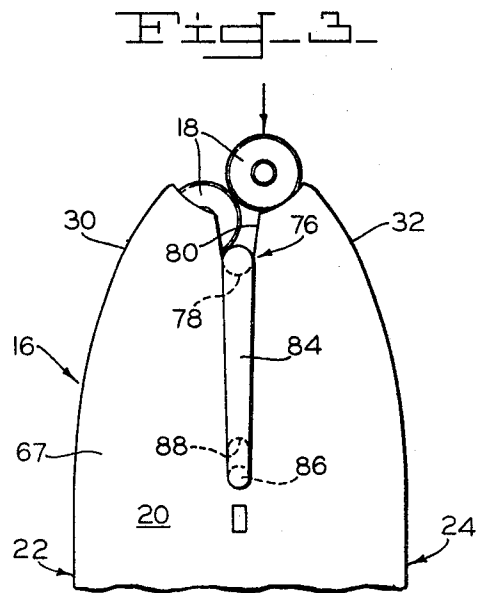
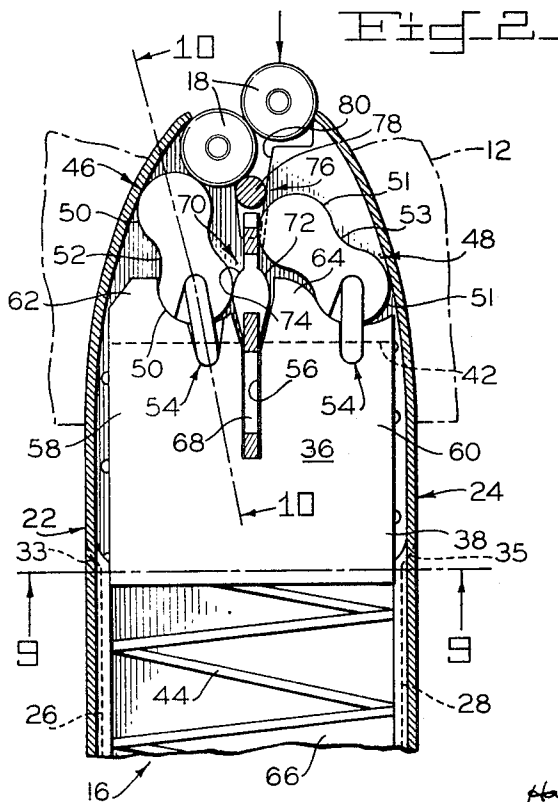
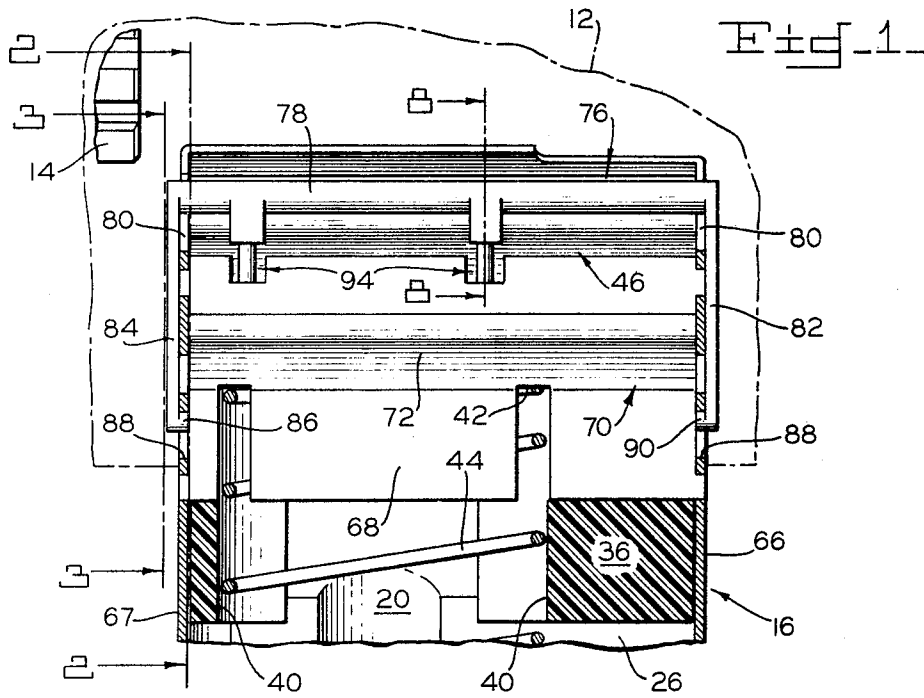
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**ABSTRACT**

A large capacity magazine of practical proportions feeds cartridges successively from four columns to a mouth ready for pickup by the reciprocating firearm bolt. During displacement towards the mouth the cartridges are separated by a divider into the two double columns which are in turn converted into single columns by cams on the divider arranged in combination with curved sides of the magazine so that two cartridges are fed consecutively to the mouth from one side of the divider followed by two consecutive cartridges on the other side to prevent jamming at the mouth.

7 Claims, 12 Drawing Figures





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Fig. 4

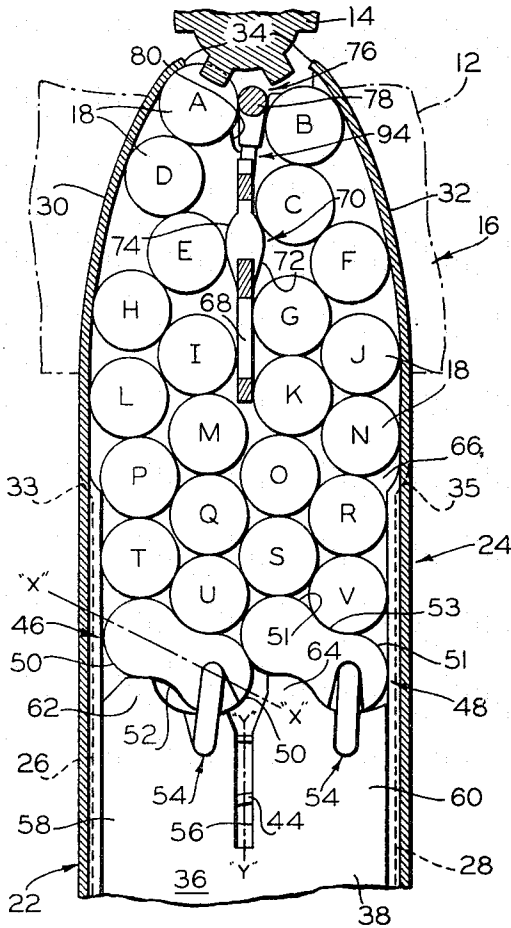


Fig. 5

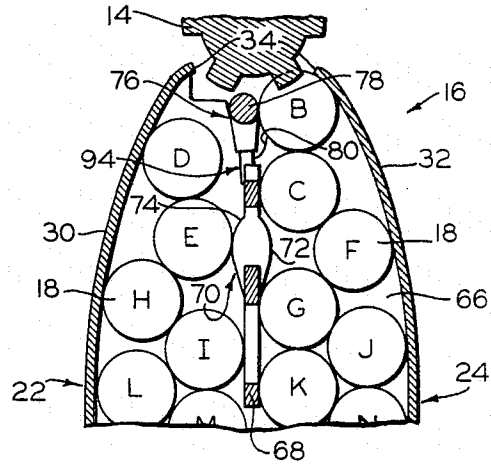


Fig. 6

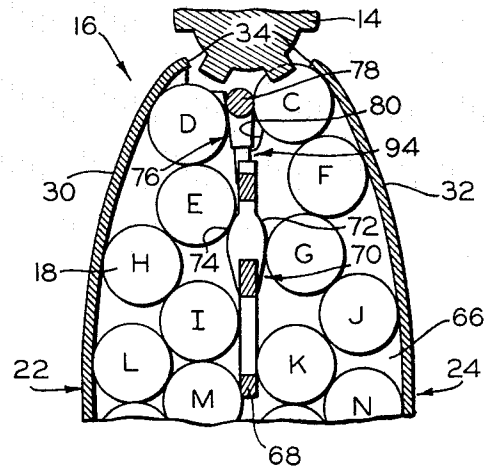


Fig. 7

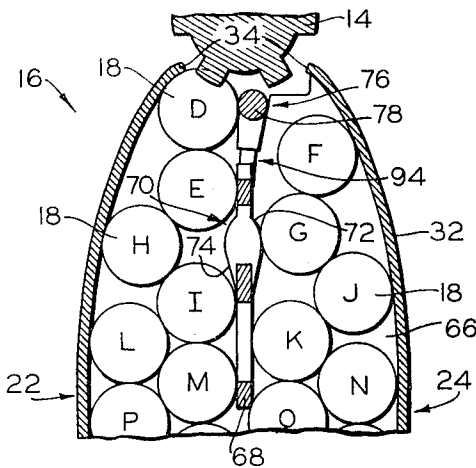
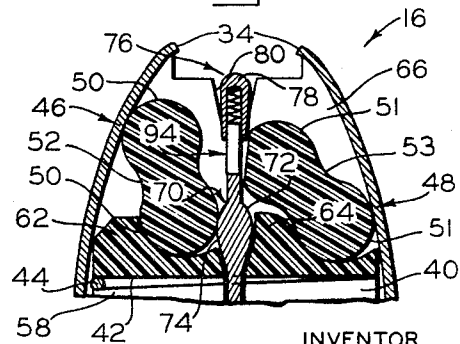


Fig. 8



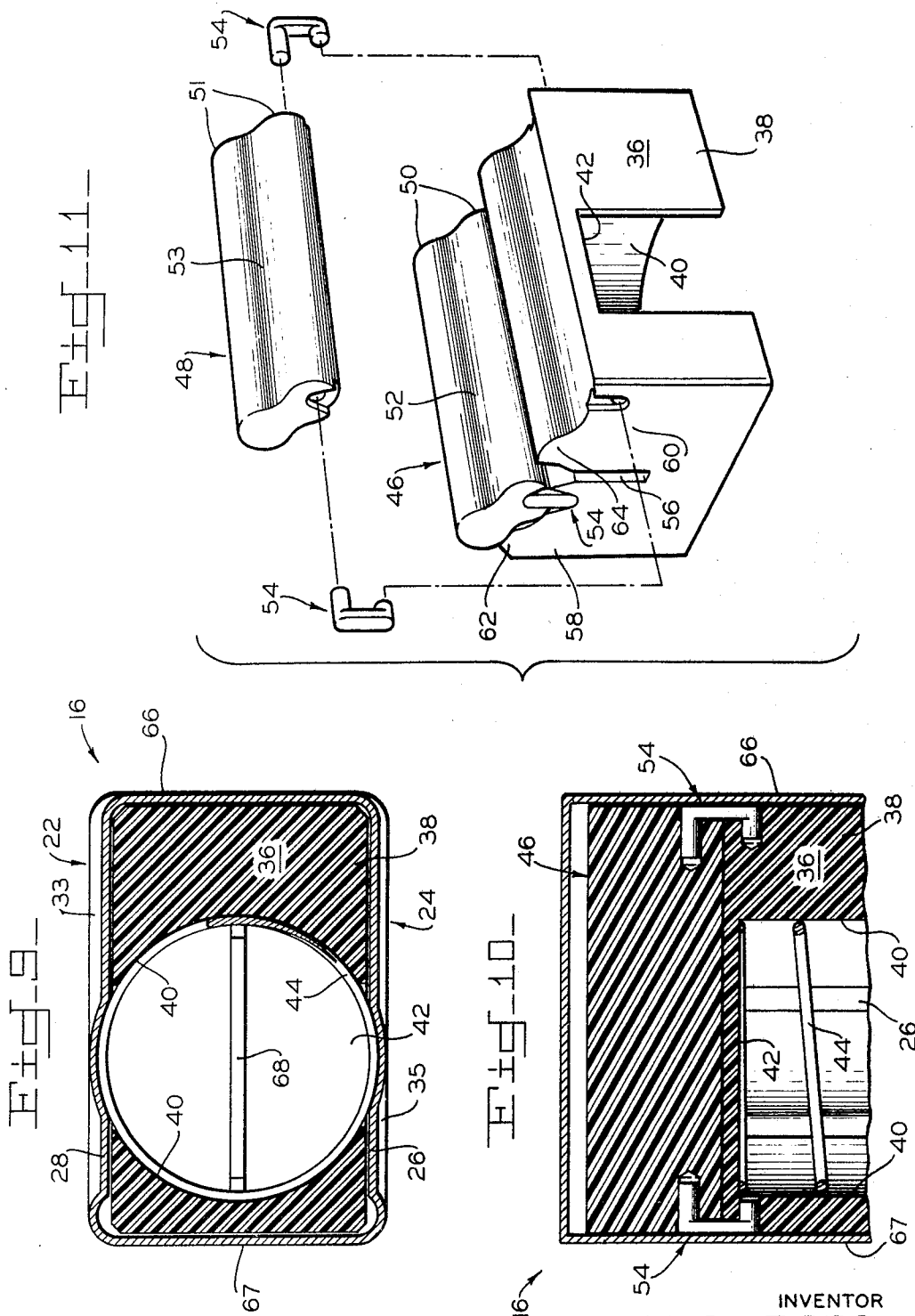
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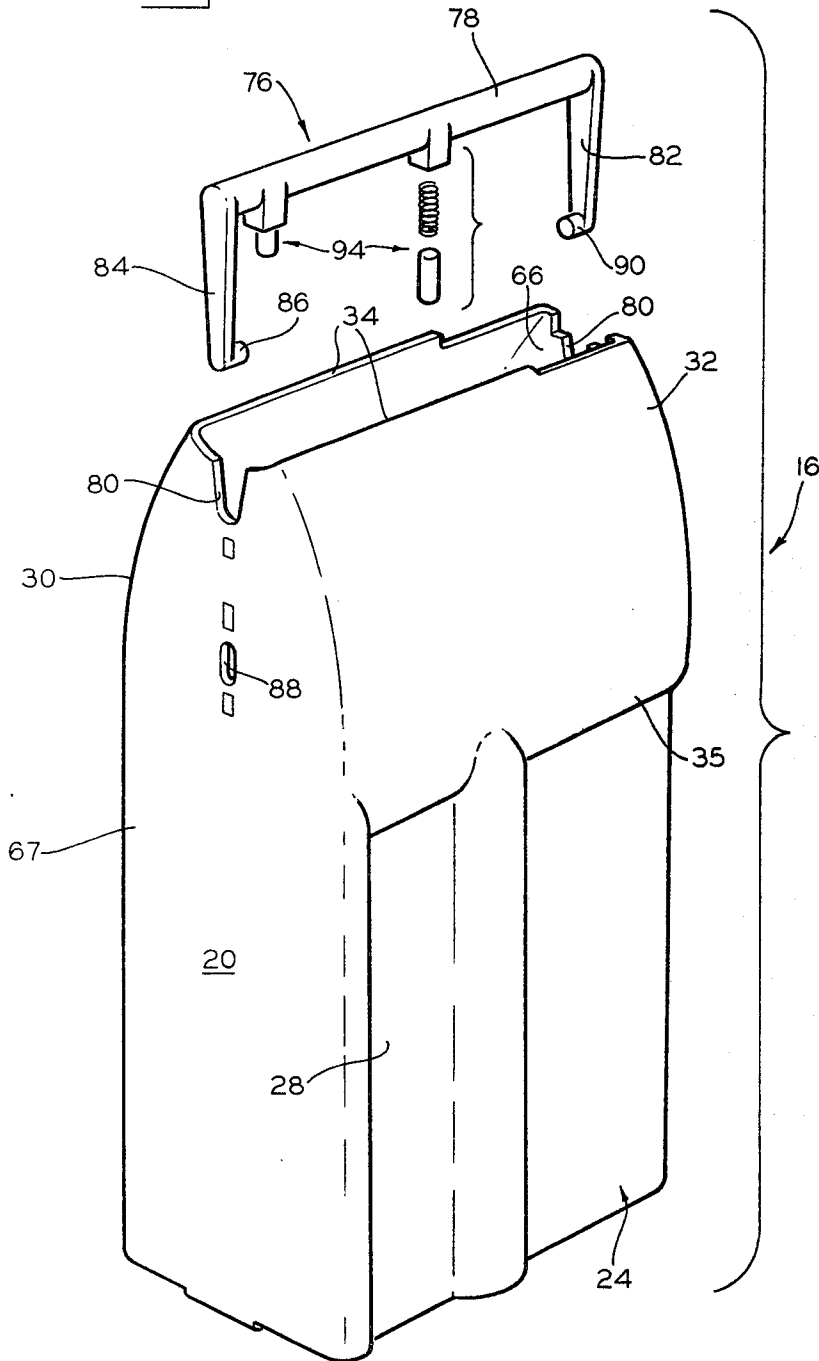
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Fig. 12



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## LARGE CAPACITY MAGAZINE

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

### BACKGROUND OF THE INVENTION

This invention relates to cartridge magazines for firearms and provides a magazine which holds a large number of cartridges and is of practical proportions so as to increase the firepower available to the troops.

### SUMMARY OF THE INVENTION

It is a principal object of this invention to provide a large capacity magazine of practical proportions which holds four columns of cartridges without the aid of partitions and which is provided with a divider that separates the four columns into two double columns as they progress towards the mouth of the magazine with cam surfaces provided on the divider to cooperate with the curved upper sides of the magazine in converting the double columns into single columns and feeding them consecutively therefrom, two from one side of the divider followed by two from the opposite side, to the mouth ready for individual pickup by the bolt, so as to prevent jamming thereat.

It is a further object of this invention to provide such a magazine with a follower which is biased upwardly by a cylindrical, coiled spring to press the cartridges on both sides of the divider toward the mouth.

It is another object of this invention to provide the follower with a pair of last-round positioners which position the last cartridges on both sides of the divider in positions for pickup by the bolt.

Further objects and advantages of the invention will be apparent from the following specification and the accompanying drawings which are for the purpose of illustration only.

### BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a fragmentary longitudinally cross-sectioned view of the magazine of this invention mounted to a firearm receiver;

FIG. 2 is a sectional view taken along line 2—2 of FIG. 1;

FIG. 3 is a sectional view taken along line 3—3 of FIG. 1;

FIG. 4 is a sectional view similar to FIG. 2 but showing the magazine loaded with cartridges which are lettered to show the sequence of their progress through the magazine to the mouth thereof with cartridge "A" from the left double column, located in the mouth ready for bolt pickup;

FIG. 5 is a fragmentary, sectional view similar to FIG. 4 but showing cartridge "B" in the right double column located in position for bolt pickup after cartridge "A" has been removed;

FIG. 6 is a sectional view similar to FIG. 5 but showing cartridge "C" in the right double column in pickup position after removal of cartridge "B";

FIG. 7 is a sectional view similar to FIG. 6 but showing cartridge "D" in the left double column positioned for bolt pickup after removal of cartridge "C";

FIG. 8 is a sectional view taken along line 8—8 of FIG. 1;

FIG. 9 is a sectional view taken along line 9—9 of FIG. 2;

FIG. 10 is a sectional view taken along line 10—10 of FIG. 2;

FIG. 11 is a perspective, partially exploded view of the follower assembly; and

FIG. 12 is a perspective, partially exploded view of the magazine.

### DESCRIPTION OF THE PREFERRED EMBODIMENT

Shown in the figures is a firearm receiver 12 which houses a reciprocal bolt 14 and mounted to such receiver is a magazine 16 for holding a supply of cartridges 18 and successively positioning the cartridges for longitudinal pickup by the bolt during travel thereof to battery position.

Magazine 16 includes a case 20 having a left side 22 and a right side 24 which are respectively provided with bottom sections 26 and 28 spaced a distance slightly less than four times the diameter of the case of cartridge 18 so as to hold four columns thereof in oblique relationship, as is especially well shown in FIG. 4. Extending upwardly from bottom sections 26 and 28, respectively, are curved sections 30 and 32 which flare outwardly at 33 and 35 from the related bottom sections a distance to be more fully defined hereinafter and then curve upwardly and inwardly to form a mouth 34 therebetween.

Cartridges 18 are biased upwardly in case 20 towards mouth 34 by a follower assembly 36 which is guided in its vertical displacement by bottom sections 26 and 28. Follower assembly 36 includes a body 38 which is preferably made from plastic because of its light weight and which is provided with a blind hole 40 that extends upwardly therein to surface 42. Hole 40 receives the top end of a circular coiled spring 44 which presses upwardly against surface 42 to bias follower assembly 36 toward mouth 34. The use of a circular coiled spring is of advantage because of the considerable difference as to cost from the conventional rectangular magazine springs. Hole 40 and therefore spring 44 are located so that a balanced pressure is applied thereby against follower assembly 36.

Pivotaly mounted on the upper portion of body 38, so as to be longitudinally disposed thereon in parallel relationship, are a left last-round positioner 46 and a right last-round positioner 48. Positioners 46 and 48 are of an essentially oval configuration in cross section and are provided, respectively, with a pair of cylindrical surfaces 50 and 51 formed at the opposite edges thereof. Cylindrical surfaces 50 and 51 have the same radius as cartridges 18 and the length of positioners 46 and 48 in cross section along line  $x-x$  is twice the diameter thereof. A channel 52 extends symmetrically along the length of positioner 46 on opposite sides thereof and a channel 53 extends similarly along opposite sides of positioner 48. Channels 52 and 53 have the same radius as cartridges 18 to provide nests therefor and they are blended with the related cylindrical surfaces 50 or 51 to extend the arcuate areas thereof to more than  $180^\circ$  so as to form, in effect, a pair of dummy cartridges in contacting relationship. Positioners 46 and 48 are each mounted at opposite ends thereof to body 38 by means of a pair of U-shaped hinges 54, as shown in FIG. 11. One leg of each of the hinges 54 is rotatably received by a mating hole in body 38 and the other leg is rotatably received by a mating hole axially located respective to one of the cylindrical surfaces 50 and 51.

The top section of body 38 is divided by a longitudinal slot 56 which extends downwardly from the top surface thereof to form a left section 58 and a right section 60. Left section 58 is provided with a hump 62 along the left side thereof and a hump 64 is similarly formed on right section 60. Humps 62 and 64 function to position positioners 46 and 48, when resting thereagainst, so that line  $x-x$  connecting the axes of cylindrical surfaces 50 and 51 is angularly disposed approximately  $60^\circ$  respective to vertical axis of  $y-y$  of case 20, as shown in FIG. 4. Thus, as shown in FIG. 4, cartridges 18 which are located between bottom sections 26 and 28 of case 20 in four columns are similarly positioned relative to vertical axis  $y-y$  with one column of the cartridges supported by each of the cylindrical surfaces 50 and 51 which are on the outer edge of last-round positioners 46 and 48 and another column supported by each of the channels 52 and 53 which are uppermost in the positioners. Thus, the two columns of cartridges 18 is supported by each of the last-round positioners 46 and 48 are in staggered relationship.

Extending between front end 66 and rear end 67 of case 20 and between curved sections 30 and 32 thereof is a divider 68 which is fixed to the case at the front and rear ends and is provided with a longitudinally disposed bulbous section 70 that forms an arcuate cam surface 72 along the right side of the divider and arcuate cam surface 74 along the left side thereof. Cam surfaces 72 and 74 cooperate with the related curved sections 30 and 32 in squeezing together the double column of

cartridges 18 passing upwardly along opposite sides of divider 68 to form single columns thereof. Cam surfaces 72 and 74 are located vertically on divider 68 so as to control the sequence of displacement of cartridges 18 to mouth 34 so as to eliminate jamming thereat, as will be explained hereinafter.

After cartridges 18 in case 20 are converted to single columns, the leading cartridge on one side of divider 68 is held in mouth 34 in position for pickup by bolt 14, while the leading cartridge on the other side of the divider is held depressed away from contact by the bolt, by a retainer 76 which is located in the mouth above the divider. Retainer 76 is essentially of U-configuration, as shown in FIG. 12, and includes a bar 78 that extends along the length of mouth 34 and is received by triangular notches 80 in front end 66 and rear end 67, as shown in FIG. 12. A front arm 82 extends from the front end of bar 78 downwardly along the outside of front end 66 and a rear arm 84 extends from the opposite end of the bar downwardly along the outside of rear end 67. A tang 86 projects forwardly from the free end of rear arm 84 so as to be received by a vertically elongated slot 88 in rear end 67 and a similar tang 90 extends rearwardly from the free end of front arm 82 so as to be received by a similar slot 92 in front end 66 to permit vertical, translational displacement of retainer 76 between an upper operative position and a depressed loading position, and pivotal displacement between a position to the right of divider 68 and a position to the left thereof. A pair of spring-pressed plungers 94 are mounted in bar 78 so as to act against the top end of divider 68 for biasing retainer 76 in its operative position.

When retainer 76 is depressed to its loading position by pressing a cartridge 18 downwardly against bar 78, as shown in FIG. 2, sufficient space is provided between bar 78 and curved sections 30 and 32 for passage of the cartridge by the bar and into case 20 on either side of divider 68 to load magazine 16. When retainer 76 is elevated to its operative position, the spaces between bar 78 and curved sections 30 and 32 are reduced by the inward curvature thereof to block passage of cartridges 18 past bar 78 from within magazine 16. When retainer 76 is swung to the right side of divider 68, as shown in FIG. 4, the leading cartridge 18 on the left side of divider 68 is free to be located in mouth 34 for longitudinal pickup by bolt 14 but the leading cartridge on the right side of the divider is held depressed away from contact by the bolt. When retainer 76 is swung to the left side of divider 68 the opposite is true — the leading cartridge 18 on the right side of divider 68 is in position for pickup by bolt 14 and the cartridge on the left side is held depressed.

FIG. 4 shows magazine 16 partially loaded with 22 cartridges 18 which are lettered according to their feeding sequences so as to better understand the operation of the magazine. Cartridge "A", as shown in the pickup position in mouth 34, was previously moved thereto from the innermost one of the double column on the left side of divider 68 and cartridge "E", the next cartridge in the innermost one of the double column, has contact with the high point of cam surface 72. Through the bias of spring 44, which is transferred to cartridge "A", retainer 76 is held in its right side position whereby cartridge "B", the leading cartridge on the right side of divider 68, is held away from contact by bolt 14.

When cartridge "A" is removed by bolt 14, the remaining cartridges 18 are moved upwardly by follower assembly 36 and thereby cartridge "B", which is closest to mouth 34, is moved to the pickup position thereat. This forces retainer 76 to its left position, which is easily accomplished because, as shown in FIG. 5, there is no cartridge on the left side of divider 68 in position to interfere with the displacement. As cartridges 18 which remain in case 20 are moved upwardly therein divider 68 separates the four columns below the divider into two double columns. The outward displacement of cartridges 18 by divider 68, when dividing the four columns, is permitted by the added width provided case 20 thereat by flaring sections 33 and 35 which are arranged to be in registry with the bottom end of the divider. Flaring sections 33 and 35 are dimensioned to provide for this required displacement.

During the upward movement of the two double columns of cartridges 18 along divider 68 they are squeezed together through the cooperation of curved sections 30 and 32 therewith to form single columns as they approach mouth 34. As the two double columns retain their staggered relationships after the four columns are divided, because of the controls of last round retainers 46 and 48, the cartridges in the two innermost ones of the two double columns, on the opposite sides of divider 68, come alternately under the influence of cam surfaces 72 and 74. Thus, when cartridge "B" is removed by bolt 14, permitting the remaining cartridges 18 to rise in case 20, cartridge "G" rides outwardly along cam surface 72, as shown in FIG. 6, to force it between "F" and "J" and at the same time cartridge "F" is moved between cartridges "C" and "G" by the curvature of curved section 32 to give extra movement to cartridge "C" and thereby move it to the pickup position ahead of cartridge "D" on the left side of divider 68. Simultaneously therewith, the upward movement of cartridge "D" is slowed down because as cartridge "E" moves off cam surface 74 part of the upward displacement transferred to cartridge "E" is lost in its lateral movement along such cam surface. Then, referring to FIGS. 6 and 7, when cartridge "C" is removed by bolt 14 and the remaining cartridges 18 are moved upwardly, cartridge "G" moves off cam surface 72 to slow down and reduce its upward movement so that it will not block the pivotal displacement of retainer 76 and cause jamming at mouth 34. Then, alternately in pairs, two cartridges 18 are removed consecutively by bolt 14 from those on the left side of divider 68 followed by two from the right side until all the cartridges are removed from case 20.

As follower assembly 36 approaches divider 68, the divider is received by slot 56 in body 38 to prevent interference between the follower assembly and divider. When the last cartridge 18 on the left side of divider 68 approaches mouth 34, left last-round positioner 46 is cammed to an erect position, as shown in FIG. 8, by contact of cylindrical surface 50 thereon with left curved section 30 to move the last cartridge on the left side of divider 68 to the pickup position. Right last-round positioner 48 is cammed erect to position the last cartridge 18 on the right side of divider 68 to the pickup position by camming contact of cylindrical surface 51 on such positioner with the divider.

I wish it to be understood that I do not desire to be limited to the exact details of construction shown and described, for obvious modifications will occur to a person skilled in the art.

I claim:

1. A cartridge magazine for a firearm provided with a reciprocal bolt disposed for successively removing the cartridges from said magazine during reciprocation, said magazine comprising a case adapted for holding four columns of the cartridges in contactual relationship and including a mouth, a divider disposed for separating the four columns of cartridges into two double columns responsive to displacement toward said mouth, a pair of sides each including a bottom section spaced from the opposite one thereof a distance less than four times the diameter of one of said cartridges so as to maintain the four columns of cartridges in oblique relationship responsive to displacement thereof toward said mouth, a curved section extending upwardly and inwardly from each of said bottom sections to form said mouth therebetween, and an outwardly flaring section of each of said curved sections located respective to said divider to permit outward displacement of the two double columns responsive to division of the four columns by said divider, follower means slidably disposed in said case for biasing the cartridges together toward said mouth, and means for converting each of the two double columns to a single column and controlling the sequence with which the cartridges are positioned from the single columns at said mouth whereby two cartridges are positioned thereat from one of the single columns by two consecutive cartridges from the other one of the single columns.

2. The magazine as defined in claim 1 wherein said means for controlling the sequence with which the cartridges are positioned from the single column at said mouth include, a

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bulbous section extending longitudinally along the length of said divider, a first cam surface formed by said bulbous section on one side of said divider, a second cam surface formed by said bulbous section on the opposite side of said divider, and the respective said curved sections.

3. The magazine as defined in claim 2 wherein said first and second cam surfaces are so located vertically on said divider that when the leading cartridge located at said mouth for pickup by the bolt is from one of the innermost columns of the two double columns the next cartridge in the same innermost column has contact with the high point of the related said cam surface as an aid in moving the cartridges consecutively in pairs from alternate ones of the single columns to said mouth.

4. The magazine as defined in claim 2 and including a retainer mounted on said case for translational displacement between an upper operative position and a lower loading position and for pivotal displacement between positions on opposite sides of said divider, said retainer including a bar disposed along said divider in cooperation with said curved sections so that when said retainer is in its loading position the spaces between said bar and said curved sections are greater than the diameter of the cartridges and when said bar is in the operative position the spaces are less than the diameter of the cartridges, and so that when located in a position on one side of said divider the leading cartridge on that side is held between said bar and the related said curved section away from contact by said bolt and the leading cartridge on the opposite side of said divider is held in position for contact by the bolt, and so that said retainer is pivoted to the opposite side of said divider by contact of the leading cartridge when moving

to said mouth and there is no other cartridge on the opposite side of said retainer.

5. The magazine as defined in claim 1 wherein said follower means comprises a follower and a circular coiled spring acting against said follower for biasing said cartridges toward said mouth, and including a pair of last-round positioners pivotally mounted on said follower for transferring the bias of said spring to the four columns of the cartridges and successively to the double columns, to the single columns and finally to the last one of the cartridges in the single columns, and humps formed on said follower for positioning said last-round positioners initially so as to form the four columns in oblique relationship.

6. The magazine as defined in claim 5 wherein one of said last-round positioners is disposed for camming cooperation with a respective one of said curved sections and the other one of said last-round positioners is disposed for camming cooperation with said divider for displacing the last cartridges in each of the single columns relative to said follower to said mouth for pickup by said bolt.

7. The magazine as defined in claim 6 wherein each of said last-round positioners is of oval configuration in cross section and comprises a cylindrical surface having the same radius as the cartridges at each end and a channel of the same radius extending symmetrically along each side of each of said last-round positioners between said cylindrical surfaces, and including means for pivotally connecting said follower to each of said last-round positioners at the axis of one of said cylindrical surfaces thereof.

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