July 10, 1962 B. DARSIE ET AL 3,043,198

SADDLE TYPE MAGAZINE FEED

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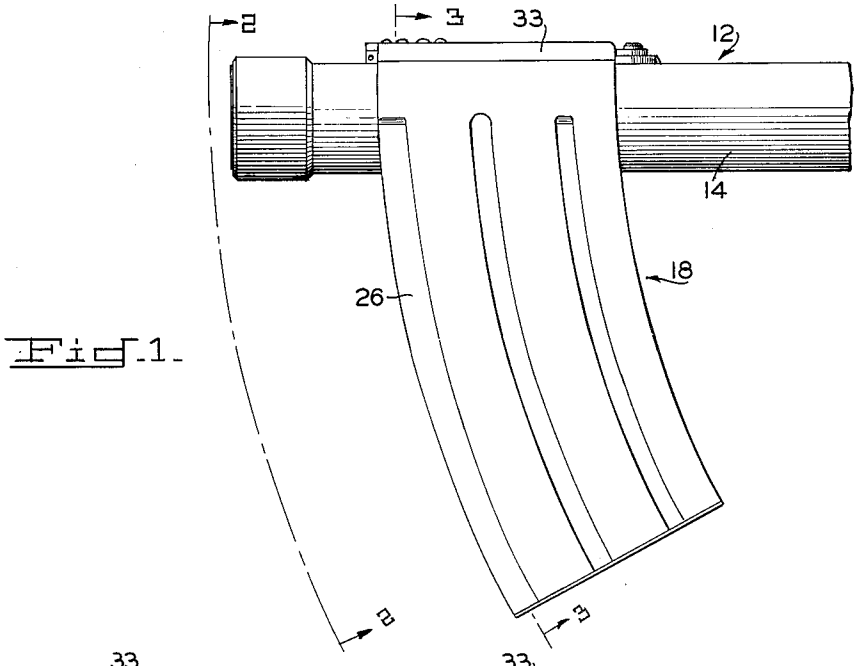


Fig. 1.

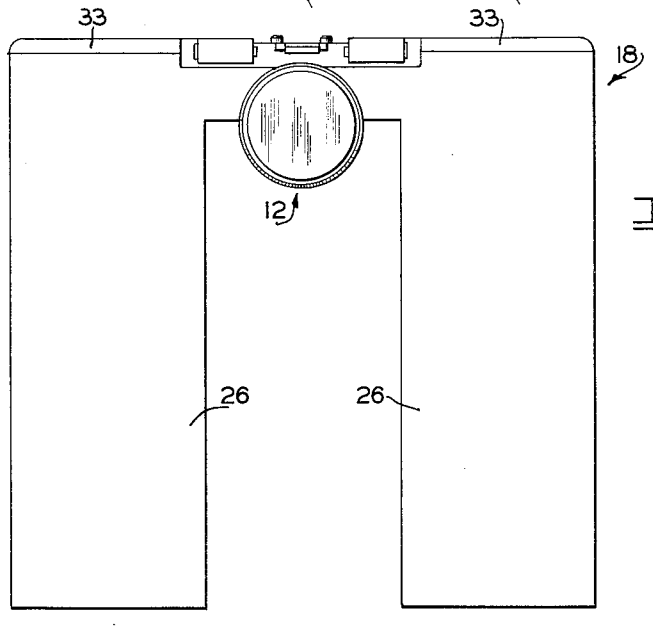


Fig. 2.

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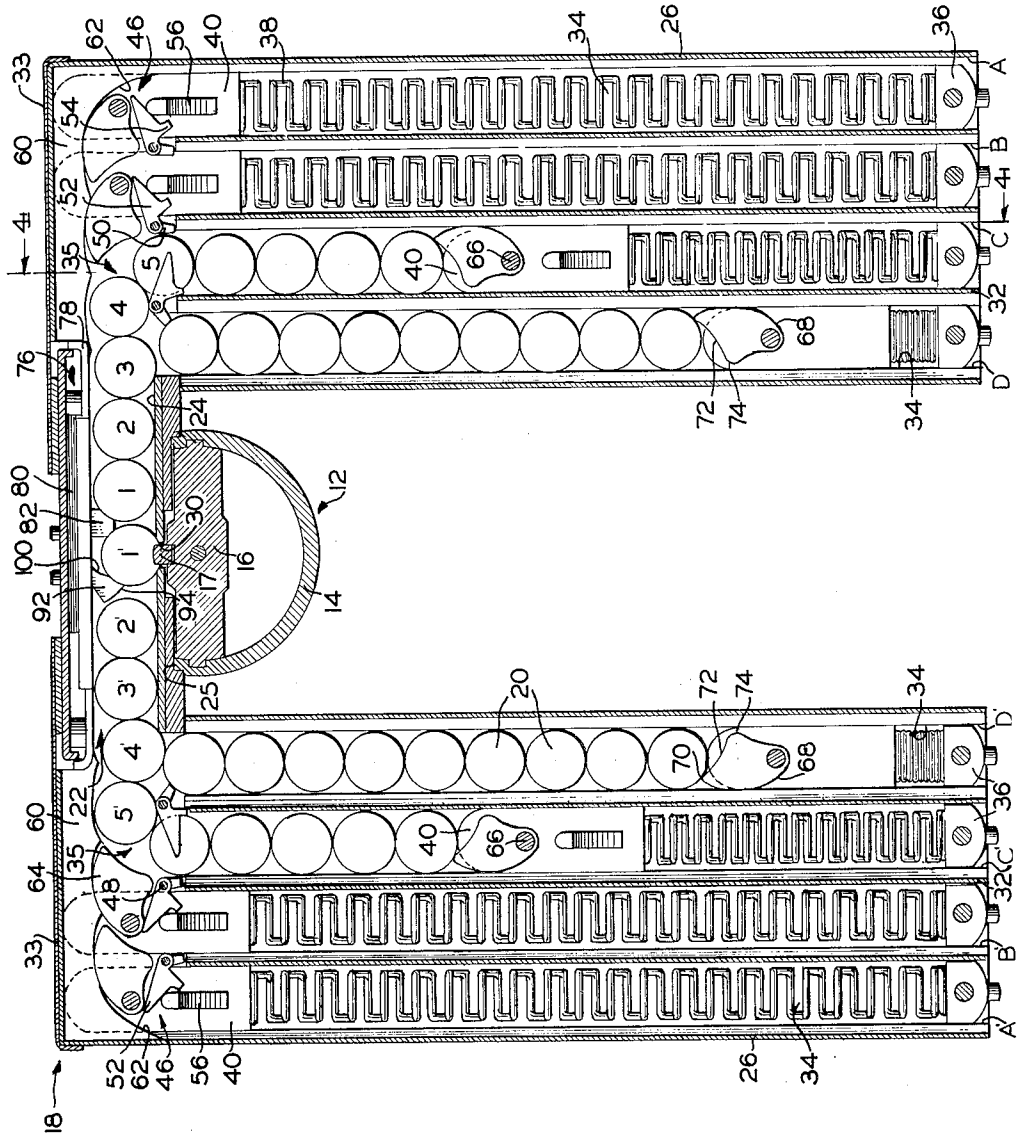


Fig. 2

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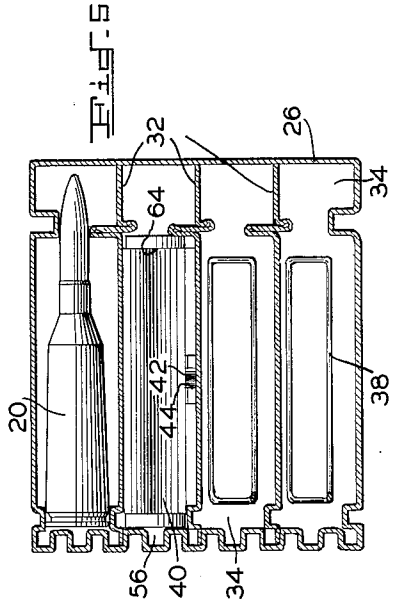


Fig. 5

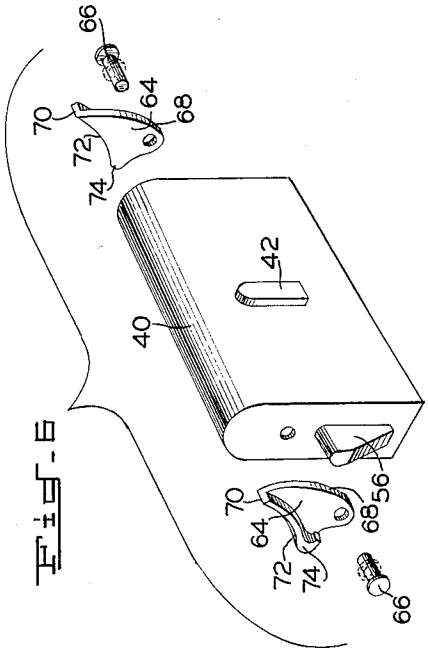


Fig. 5

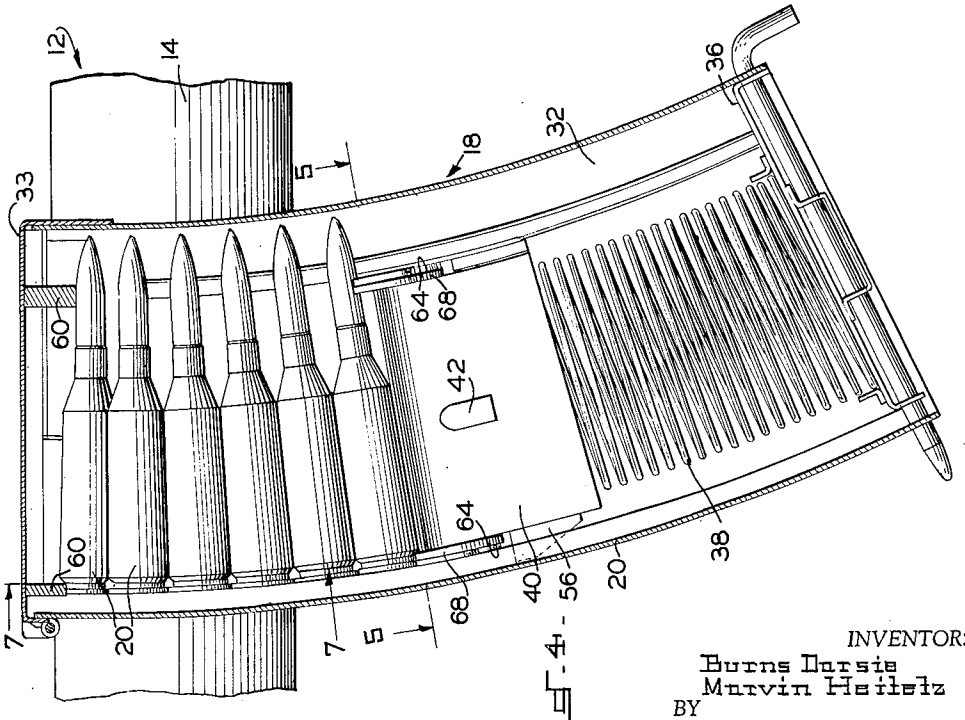


Fig. 4

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July 10, 1962 B. DARSIE ET AL 3,043,198

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Fig. 7

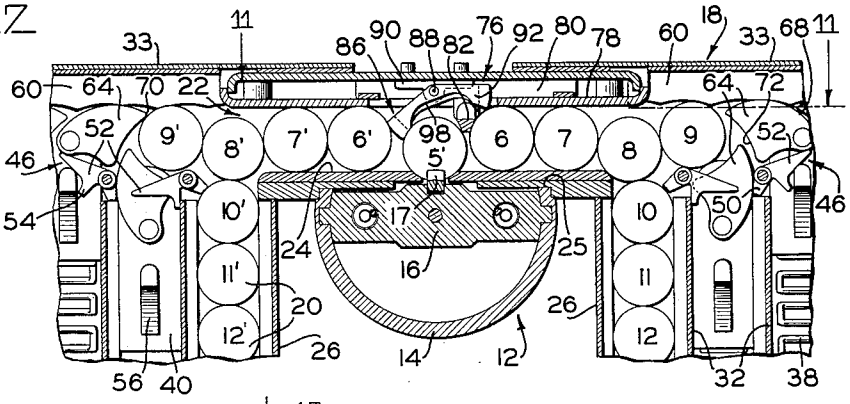


Fig. 8

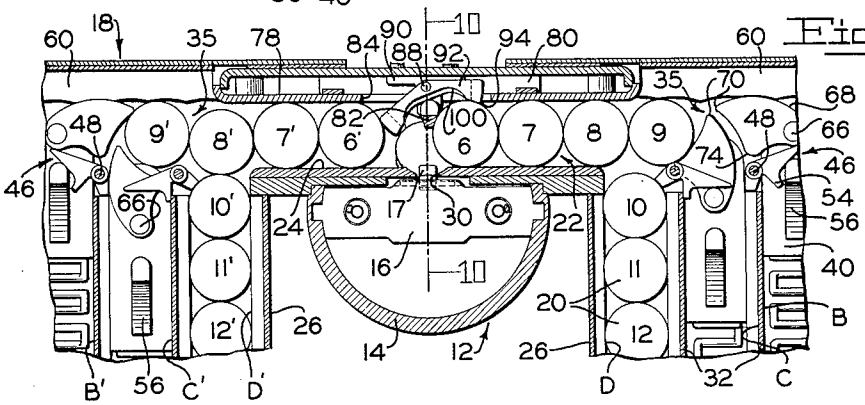
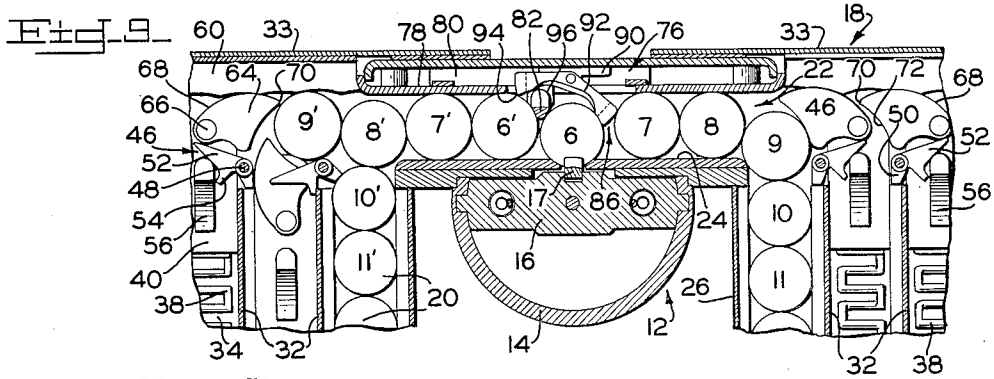


Fig. 9



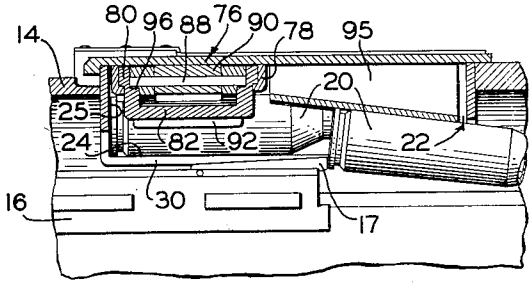


Fig. 10

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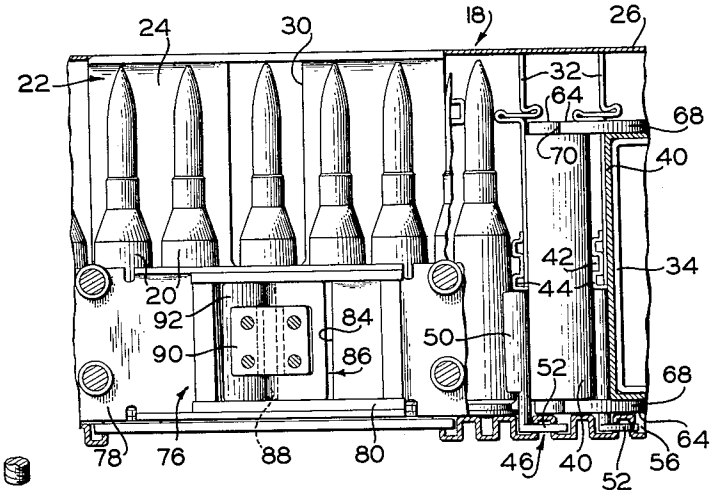
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July 10, 1962 B. DARSIE ET AL 3,043,198

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Fig. 11.



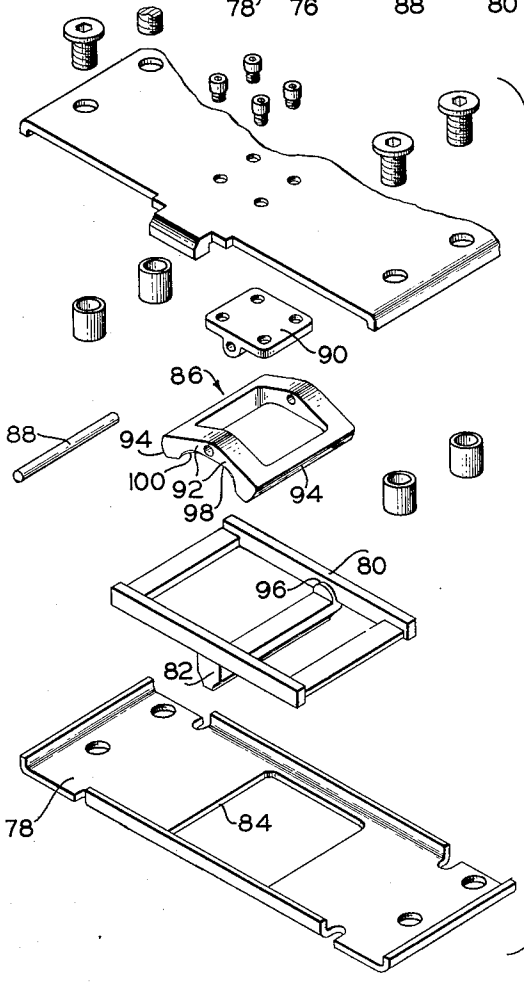


Fig. 12.

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United States Patent Office 3,043,198 Patented July 10, 1962

3,043,198

SADDLE TYPE MAGAZINE FEED

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Filed May 3, 1960, Ser. No. 26,663
4 Claims. (Cl. 89—33)

This invention relates to magazines for firearms and more particularly to magazines which are mountable to firearms and which are adapted to store a relatively large number of cartridges.

It is an object of this invention to provide a firearm mounted magazine which stores a relatively large number of cartridges and which feeds the cartridges so as not to unbalance the firearm.

It is another object of this invention to provide such a magazine which is of inverted U, or saddle, configuration and includes a pair of containers which depend on the opposite side of the firearms from a central pathway to maintain a low silhouette so as not to interfere with the sighting of the firearm.

It is still another object of this invention to provide such a magazine wherein an escapement-shuttle device, which is actuatable by the bias of the cartridges from the pair of containers, selects cartridges alternately therefrom to maintain the balance of the firearm.

It is a further object of this invention to provide such a magazine wherein the cartridges are stored in the containers in laterally spaced chambers and wherein the last cartridge in each of the chambers is indexed past the first cartridge in the chamber next towards the firearm receiver and the colums of cartridges in such next succeeding chamber is simultaneously released to continue the flow of cartridges to the firearm.

The specific nature of the invention as well as other objects and advantages thereof will clearly appear from a description of a preferred embodiment as shown in the accompanying drawings in which:

FIG. 1 is a side view of a firearm with the magazine of this invention mounted thereto;

FIG. 2 is a developed view looking at the rear end of FIG. 1;

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

FIG. 4 is a view taken along line 4—4 of FIG. 3;

FIG. 5 is a view taken along line 5—5 of FIG. 4;

FIG. 6 is an exploded perspective view of the follower assembly;

FIG. 7 is a view taken along line 7—7 of FIG. 4;

FIGS. 8 and 9 are views similar to FIG. 7 and are added thereto to show the relationship of the parts in the magazine as the escapement-shuttle device selects cartridges alternately from the two containers and places the last cartridge in a container chamber in front of the first cartridge in the chamber next towards the firearm receiver;

FIG. 10 is a view aken along line 10—10 of FIG. 8;

FIG. 11 is a view taken along line 11—11 of FIG. 7; and

FIG. 12 is an exploded, perspective view of the escapement-shuttle device.

Shown in the figures is a firearm 12 having a receiver 14 and a reciprocable bolt 16 provided with a rammer 17 on the top thereof. A magazine 18 for storing a quantity of cartridges 20 and supplying them to firearm 12 is replaceably mounted on receiver 14. Magazine 18 is of inverted U, or saddle, configuration and includes a transversal feedway 22 with a floor 24. Feedway 22 is receivable in a mating opening 25 provided in the upper portion of receiver 12 so that floor 24 is disposed slightly above

the pathway of bolt 16. A pair of similar containers 26 are joined to the ends of feedway 22 and depend therefrom on opposite sides of receiver 14. The cartridges 20 are stored in the containers 26 so as to be longitudinally disposed therein, respective to firearm 12, and are moved in such longitudinal position along feedway 22 as hereinafter described.

Feedway 22 has communication with both of the containers 26 and floor 24 slidingly supports the cartridges 20 when moved thereonto from the containers. A feed throat 30 is centrally located in floor 24 to permit the engagement of rammer 17 with a cartridge 20 positioned in the feed throat during counterrecoil travel of bolt 16 for transferring such cartridge into the chamber of the firearm barrel (not shown).

As the containers 26 are similar, only one thereof will be described in order to simplify the description thereof. Each of the containers 26 is provided with three longitudinally disposed and laterally spaced partitions 32 which extend from the bottom thereof to position approximately on a level with floor 24 and are spaced from covers 33 of the containers to provide a pathway 35 for the passage of the cartridges 20 to feedway 22. It is obvious, however, that the number of the partitions 32 is optional and is determinable by space limitations and convenience. The three partitions 32 form four chambers 34 each of which slidingly holds a plurality of cartridges 20 in a single column. The cases of the cartridges 20 are tapered accordingly to conventional design and, therefore, in order to have full contactual support between the cartridges in the columns, container 26 and the partitions 32 are arcuately formed, as best shown in FIG. 4, to conform to the angular taper of the cartridge cases.

The bottom of each of the chambers 34 is releasably closed by a closure member 36 which provides support for a magazine spring 38. The energy of each of the springs 38 is transferred to the column of cartridges 20 disposed thereabove by means of a follower 40. Each of the followers 40 is of boxlike construction with a semicircular top having approximately the same diameter as that of the larger section of cartridge 20 and is open at the bottom to receive the upper portion of the related spring 38. The front ends of the followers 40 are spaced from the front of the chambers 34, for a reason to be hereinafter explained. Therefore, in order to prevent the forward displacement of the followers away from contact with the rear end of their respective chambers, a tongue 42 extends from one side of each of the followers for sliding engagement with a channel 44 formed to extend between the top and bottom of the adjacent partition 32. The channels 44 are of rectangular formation so as to also provide guiding support for the columns of cartridges 20 in the chambers 34 into which the channels project.

The cartridges are successively fed from container 26, first starting with the outside chamber 34 and then progressing inwardly as the outer chambers are depleted. The columns of cartridges 20 waiting to be transferred to feedway 22 are releasably held within their chambers 34 by sears 46 one of which is pivotally mounted on the upper end of each of the partitions 32 by means of a rod 48 that extends longitudinally through the channel 44 formed in the associated partition.

Each of the sears 46, as is best shown in FIGS. 3 and 7–9, includes a holding arm 50 and a trigger 52 which extend oppositely from rod 48 into the chambers 34 on opposite sides of the supporting partitions 32. The holding arms 50 extend into the chambers 34 which are on the sides of the supporting partitions 32 closest to receiver 14 and are arranged to extend into such chambers slightly above where the top cartridges 20 in the columns contact the partitions. The holding arms 50 ex-

tend into the chambers 34 only far enough to block upward movement of the columns to keep the lengths of the holding arms to a minimum. The holding arms 50 are also arranged so as to release the seared columns when the holding arms are pivoted downwardly and inwardly towards the supporting partitions 32. A stop portion 54 depends from each of the triggers 52 and such stop portions are contactable with the adjacent partitions 32 to prevent upward movement of the holding arms 54 past the cartridge blocking positions thereof. The stop portions 54 resiliently engage the adjacent partitions 32 through the bias of the columns of cartridges 20 against the blocking holding arms 50. The holding arms 50 are pivoted inwardly to release positions by the triggers 52 which extend across the chambers 34 on the sides of the supporting partitions 32 farthest from receiver 14. The triggers 50 extend across the chambers 32 rearwardly of the rear ends of the followers 40 therein so as to be engageable by a lug 56 provided on each of such rear ends. The lugs 56 are disposed so that when the last one of the cartridges 20 in the column being transferred to feedway 22 is disposed in pathway 35, trigger 52 of the sear 46 blocking the column in the succeeding chamber 34 is engageably pivoted for the release of the cartridges therein. The distance from rods 48 to the point on triggers 52 where contacted by the associated lugs 56 is much greater than the length of holding arms 50 to provide a mechanical advantage for insuring the pivotal displacement of the sear 46.

A pair of guide bars 60 extend laterally from the top of feedway 22 over pathway 35 and are spaced to permit the projection of the top of the followers 40 therethrough and to slidingly engage the cartridges in the pathway to assist in controlling the movement of the cartridges to such feedway. The guide bars 60 are terminated at the outer ends by integral cam guides 62 which are disposed above the outer ones of the chambers 34 and are arcuately formed over such outer chamber to convert the vertical thrust of the cartridges moved thereagainst from such outer chamber of lateral thrust along pathway 35. The last cartridge 20 in each of the chambers 34 is indexed past the first cartridge in the chamber next towards receiver 14 by means of a pair of guide pawls 64 which are pivotally mounted by headed pins 66 to each of the front and rear ends of the followers 40.

As the followers 40 and the guide pawls 64 mounted thereto are the same for all chambers 34, reference hereinafter will be made to the follower and associated guide pawls in only one of the chambers. Each of the guide pawls 64 includes a convex cam surface 68 which has sliding contact with the partition 32 farthest from receiver 14. Cam surface 68 forms the outer side of an indexing finger 70 which is contactable with the last cartridge in chamber 34 on the side of the cartridge farthest from receiver 14 so that when the pair of guide pawls on follower 46 are pivoted inwardly the last cartridge is actuated towards feedway 22 in pathway 35.

The opposite side of indexing finger 70 forms a concaved guide surface 72 which has approximately the same radius as cam guides 62. Guide surface 72 also forms one side of a prong portion 74 which slidingly engages the inner one of the partitions 32 to cooperate with cam surface 68 in preventing oscillation of the guide pawl 64 and in positioning indexing finger 70. The prong portions 74 of the pair of guide pawls 64 are disposed so as to be free of the top of the inner partition 32 when the last cartridge 20 in chamber 34 is positioned by follower 40 in pathway 35. Whereby guide pawls 64 are free to be pivoted inwardly to index the last cartridge in chamber 34 past the first cartridge in the next one of the chambers towards receiver 14 as hereinafter described.

The guide pawls 64 mounted on the follower 40 in the outermost chamber 34 are pivoted to index the last cartridge 20 therein past the first cartridge in the next succeeding chamber through the engagement of the cam surfaces 68 with the cam guides 62. The guide pawls 64 mounted on the followers 40 in the other chambers 34 are pivoted to index the last cartridges therein past the first cartridge in the next succeeding chamber through the engagement of the cam surfaces 70 with the guide surfaces 72 on the guide pawls mounted on the follower in the next outer chamber.

As the cartridges 20 are spring-biased towards feed throat 30 from both containers 26, an escapement-shuttle device 76 is provided within feedway 22 to select cartridges alternately from the containers and cage the selected cartridge in the feed throat for pickup by bolt 16. Whereby, the balance of firearm 12 is maintained during the feeding of cartridges from the containers 26.

Escapement-shuttle device 76 includes a guide plate 78 which is fixedly mounted to the ceiling of feedway 22 and which is arranged to slidingly support a shuttle 80 for lateral reciprocation in the feedway. Shuttle 80 includes a longitudinally disposed lug 82 which extends through an opening 84 in guide plate 78 so as to be engageable by the cases of the cartridges 20 which lead the columns from both containers 26. Opening 84 is formed so as to permit movement of lug 82 from one side of feed throat 30 to the other with such movement being sufficient to guidingly support on either side the cartridge 20 indexed therein.

Escapement-shuttle device 76 also includes a rocker 86 which is pivotally mounted on a pin 88 which extends longitudinally through a bracket 90 fixedly secured to the ceiling of feedway 22. Pin 88 is positioned vertically above feedway 22 and rocker 86 is symmetrically disposed thereon. Rocker 86 includes a pair of laterally disposed arms 92 which are centrally mounted on the ends of pin 88 for pivotal movement thereon and a pair of longitudinally disposed detents 94 which are integrally joined to the corresponding ends of the arms. The geometry of rocker 86 is such that when pivoted to one of the two alternate positions thereof, one of the detents 94 is raised sufficiently so that the leading cartridge from the container on the corresponding side of feed throat 30 may pass under such detent to the feed throat while the opposite detent is lowered to block the movement of the cartridges from the other container. The detents 94 are also arranged so that the one thereof in the blocking position cooperates with lug 82 in caging the cartridge 20 indexed in feed throat 30 for controlled passage therethrough when engaged by rammer 17 of bolt 16 during movement thereof to battery position. A depressor 95 is mounted on the ceiling of feedway 22 to guide the cartridges 20 downwardly through feed throat 30 into receiver 14.

Rocker 86 is pivoted to the two alternate positions thereof responsive to the reciprocation of shuttle 80 through the cooperation of a pair of followers 96 which extend upwardly from the ends of lug 82 for cooperation with aligned camways 98 in the arms 92. Camways 98 are terminated at opposite ends by arcuate portions 100 which are so disposed that the detent 94 on the side of feed throat 30 wherein lug 82 is positioned is cammed to the elevated position so that the opposite detent is held in the blocking position to cooperate with the lug in caging the cartridge indexed in the feed throat.

The operation of magazine 18 can best be understood by referring to FIGS. 3 and 7–9 wherein the cartridges are sequentially numbered with the cartridges from the left one of containers 26 being given the primes of the numbers for the corresponding cartridges from the right container. The chambers 34 have also been similarly identified with reference letters and their primes.

Thus, in FIG. 3, chambers A and B in the right container 26 and A' and B' in the left are shown emptied

with the cartridges being fed into firearm 12 from chambers C and C' by the followers 40 in those chambers. The cartridges in chambers D and D' are blocked from entering pathway 35 by the related sears 46. Cartridge 1' is shown indexed in feed throat 30 and caged between lug 82 and the left one of the detents 94. When bolt 16 goes forwardly to battery position during cyclic operation of firearm 12, rammer 17 will contact the base of cartridge 1' to transfer the cartridge through feed throat 30 into the firearm barrel (not shown). When cartridge 1' is clear of feedway 22, the bias of spring 38 in chamber C presses cartridge 1 under the raised detent 94 and against lug 82. With cartridge 1' removed, lug 82 is free to be actuated to the opposite side of feed throat 30 as the column of cartridges from the left container 26 is blocked by the engagement of the left one of the detents 94 with the front of cartridge 2'. Lug 82 carries shuttle 80 with it when actuated to the opposite side of feed throat 30 and, therefore, the followers 96 on the shuttle pass along the camways 98 in rocker 86. When cartridge 1 is indexed in feed throat 30, the followers 96 engage the arcuate portions 100 which terminate the left ends of the camways 98 to pivot rocker 86 for lowering the right one of the detents 94 in front of cartridge 2 to block the movement of the cartridges from the right one of the containers 26 and assist lug 82 in caging cartridge 1.

As the column of cartridges from the right one of the containers 26 was advanced, the vertical thrust of the cartridges within chamber C was converted to lateral thrust for moving the cartridges along pathway 35 and feedway 22 through the engagement of cartridge 5 with the cam surfaces 68 and cartridge 4. Referring to FIGS. 7–9, when cartridge 9 the last cartridge in chamber C is pressed into feedway 35, the cam surfaces 68 of the guide pawls 64 mounted on the follower 40 in such chamber engage the guide surfaces 72 of the guide pawls 64 mounted on the follower in chamber B. Whereby, the guide pawls in chamber C are pivoted towards receiver 14 to index cartridge 9 past cartridge 10 which is the first cartridge in chamber D. At the same time, lug 56 on follower 40 in chamber C contacts trigger 52 of the sear 46 mounted on the partition 32 between chambers C and D, whereupon holding arm 50 of such sear is pivoted to release the column of cartridges in chamber D under cartridge 9 to continue the movement of the cartridges from the right one of the containers 26 to firearm 12. Of course, the cartridges in the left of the containers 26 are advanced alternately in a similar manner so that the balance of firearm 12 is maintained as magazine 18 is emptied. Moreover, because the cartridges are fed from both the containers 26, the average rate of feed from either is one-half the gun rate which is another advantage of magazine 18.

From the foregoing it is clearly apparent that there is provided herein a firearm mounted magazine which may store a relatively large quantity of cartridges while maintaining a low silhouette and which supplies the cartridges so as not to unbalance the firearm. It is also evident that the magazine is positive in operation, rugged in construction and easy to manufacture.

Although a particular embodiment of the invention has been described in detail herein, it is evident that many variations may be devised within the spirit and scope thereof and the followng claims are intended to include such variations.

We claim:

1. For a firearm having a receiver with a longitudinally reciprocating bolt, a magazine for storing a supply of disconnected cartridges and for feeding them to the firearm, the magazine including a lateral feedway for passage of a single column of longitudinally disposed cartridges therethrough from opposite ends to a central feed throat, an opening in the upper portion of the receiver for receiving said feedway, a pair of similar containers joined to opposite ends of said feedway for communication therewith and so as to depend from the ends of said feedway on opposite sides of the receiver, a plurality of laterally spaced partitions extending from the bottom of each of said containers to positions approximately on a level with a floor of said feedway to form chambers for receiving single columns of the cartridges, a spring-biased follower disposed in each of said chambers for biasing the column of cartridges therein upwardly into a lateral pathway extending over the tops of said partitions to said feedway, a pair of guide pawls pivotally mounted on each of said followers and operationally disposed for moving the last cartridge in the associated column in front of the first cartridge in the next succeeding column and converting vertical movement of the cartridges in the next succeeding column to lateral movement along the feedway to the feed throat, and an escapement-shuttle device disposed within said feedway for actuation by the bias of the cartridges from said containers to select a cartridge alternately from said containers and cage the selected cartridge over said feed throat for pickup by the bolt.

2. A magazine for a firearm having a receiver with a longitudinally reciprocating bolt, the magazine including a lateral feedway partially received by an opening in the upper part of the receiver to maintain a low firearm silhouette, a pair of similar containers joined to opposite ends of said feedway for communication therewith and so as to depend from said feedway on opposite sides of the receiver, means in said containers for biasing a supply of cartridges therein into said feedway, and an escapement-shuttle device disposed within said feedway for actuation by the bias of the cartridges from said containers to select a cartridge alternately from said containers and cage the selected cartridge over a feed throat in said feedway for pickup by the bolt, said escapement-shuttle device including a shuttle mounted in said feedway for lateral reciprocation over the feed throat, said shuttle being provided with a lug disposed for engagement by the leading cartridges from said containers and for displacement to opposite sides of the feed throat responsive to differences in the bias of the cartridges delivered to said feedway from said containers, means for limiting the displacement of said lug to positions wherein a cartridge indexed in the feedway is supported on either side by said lug, a rocker disposed in said feedway for pivotal displacement on a longitudinally disposed pin, said rocker being provided with a pair of detents disposed on opposite sides of the pin for simultaneous and alternate movement between an elevated and a blocking position, said detents being disposed when in the elevated positions for passage of the leading cartridge from said container on the corresponding side of the feedway to the feed throat and when in the blocking positions for cooperation with said lug in caging the cartridge indexed in the feed throat for pickup by the bolt and for blocking movement of the cartridges from said container on the corresponding side of the feed throat, and cam means operationally disposed between said shuttle and said rocker whereby the displacement of said lug from one side of the feed throat pivots said rocker for moving said detent on the side of the feedway opposite that to which said lug is displaced to the blocking position.

3. For a firearm having a receiver with a longitudinally reciprocating bolt, a magazine for storing a supply of disconnected cartridges and for feeding them to the firearm, the magazine including a lateral feedway for passage of a single row of longitudinally disposed cartridges therethrough from opposite ends to a central feed throat, an opening in the upper portion of the receiver for partially receiving said feedway, a pair of similar containers joined to opposite ends of said feedway for communication therewith and so as to depend from said feedway on opposite sides of the receiver, a plurality of laterally spaced partitions extending from the bottom of each of said containers to positions approximately on

a level with a floor of said feedway to form chambers for receiving single columns of the cartridges and a pathway leading over said partitions to said feedway, a spring loaded for upward extension in each of the chambers, a follower slidingly disposed in each of the chambers for transferring the energy of said spring therein to the corresponding column of cartridges, a sear pivotally mounted on the top of each of said partitions, said sear including a holding arm which extends into the chamber on the side of the supporting one of said partitions closest to said feedway for releasably blocking the displacement of the first cartridge in such chamber and a trigger which extends into the chamber on the opposite side of the supporting one of said partitions for engagement by a lug on said follower in such chamber when the last cartridge therein is transferred into said pathway, means for directing the last cartridge in each of the chambers past the first cartridge in the next succeeding chamber, and an escapement-shuttle device disposed within said feedway for actuation by the bias of the cartridges from said containers to select a cartridge alternately therefrom and cage the selected cartridge in the feed throat for pickup by the bolt.

4. For a firearm as defined in claim 3 wherein said means for directing the last cartridge in each of the chambers past the first cartridge in the next succeeding chamber includes a pair of guide pawls pivotally mounted

on each of said followers for displacement against the last cartridge in the respective one of the chambers, each of said guide pawls including a convex cam surface and a concave guide surface which define therebetween a finger disposed for indexing the last cartridge in a chamber past the first cartridge in the succeeding chamber next towards said feedway when the pair of said guide pawls contactable with such last cartridge are pivoted thereagainst, a pair of cam guides disposed above the one of the chambers farthest from said feedway for engagement by said cam surfaces of the pair of said guide pawls in such chamber for pivoting said guide pawls therein to index the last cartridge in such chamber past the first cartridge in the next succeeding chamber, and said guide surfaces of the pair of said guide pawls in each of the chambers disposed for engagement by the cam surfaces of the guide pawls in the next succeeding chamber for the pivotal displacement thereof.

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