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H. H. SEFRIED II, ET AL

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REMOVABLE MAGAZINE FOR REPEATING GUN

Filed March 24, 1964

4 Sheets-Sheet 1

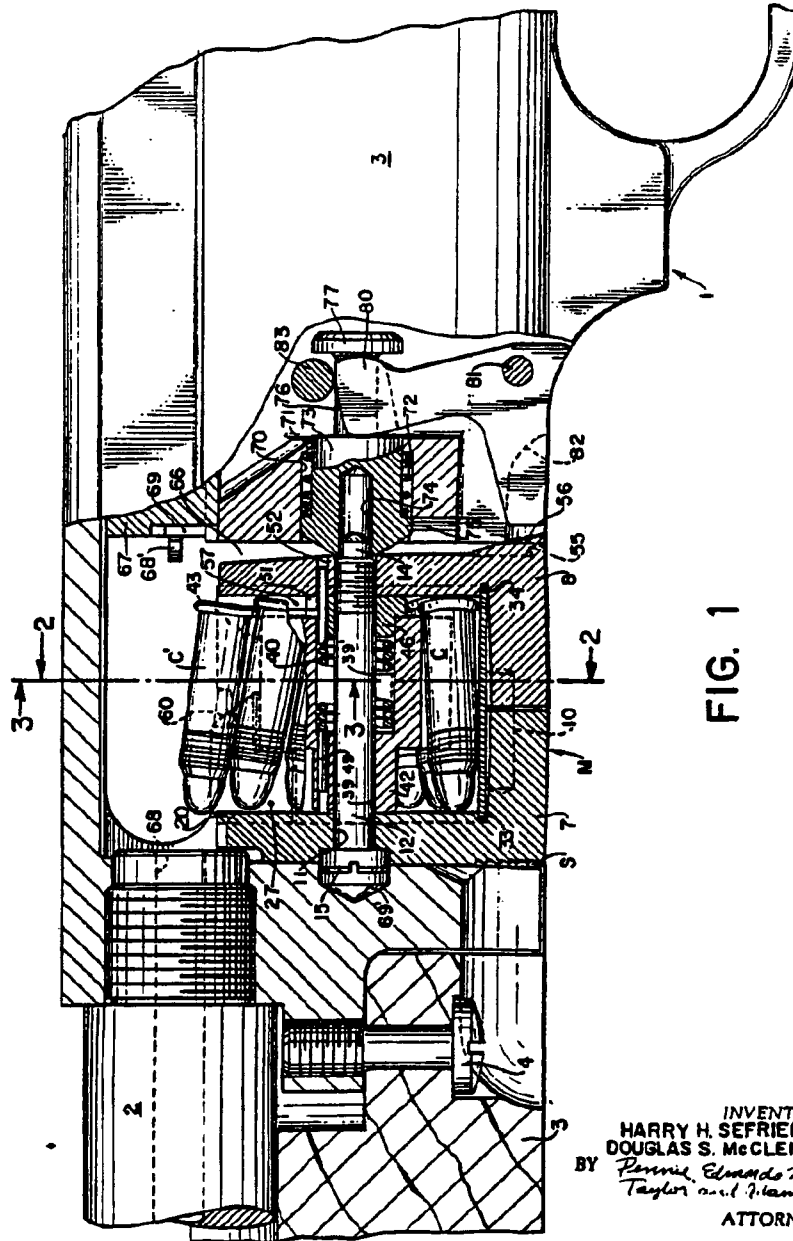


FIG. 1

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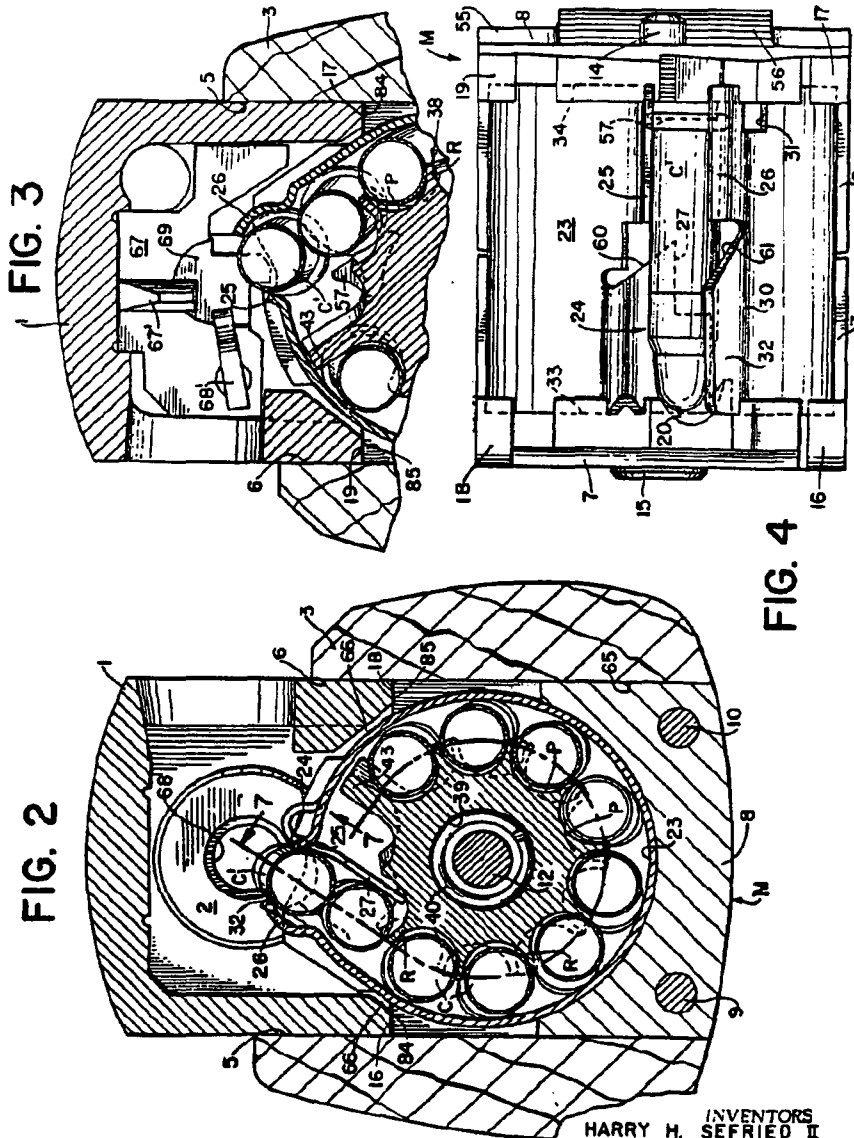
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4 Sheets-Sheet 2



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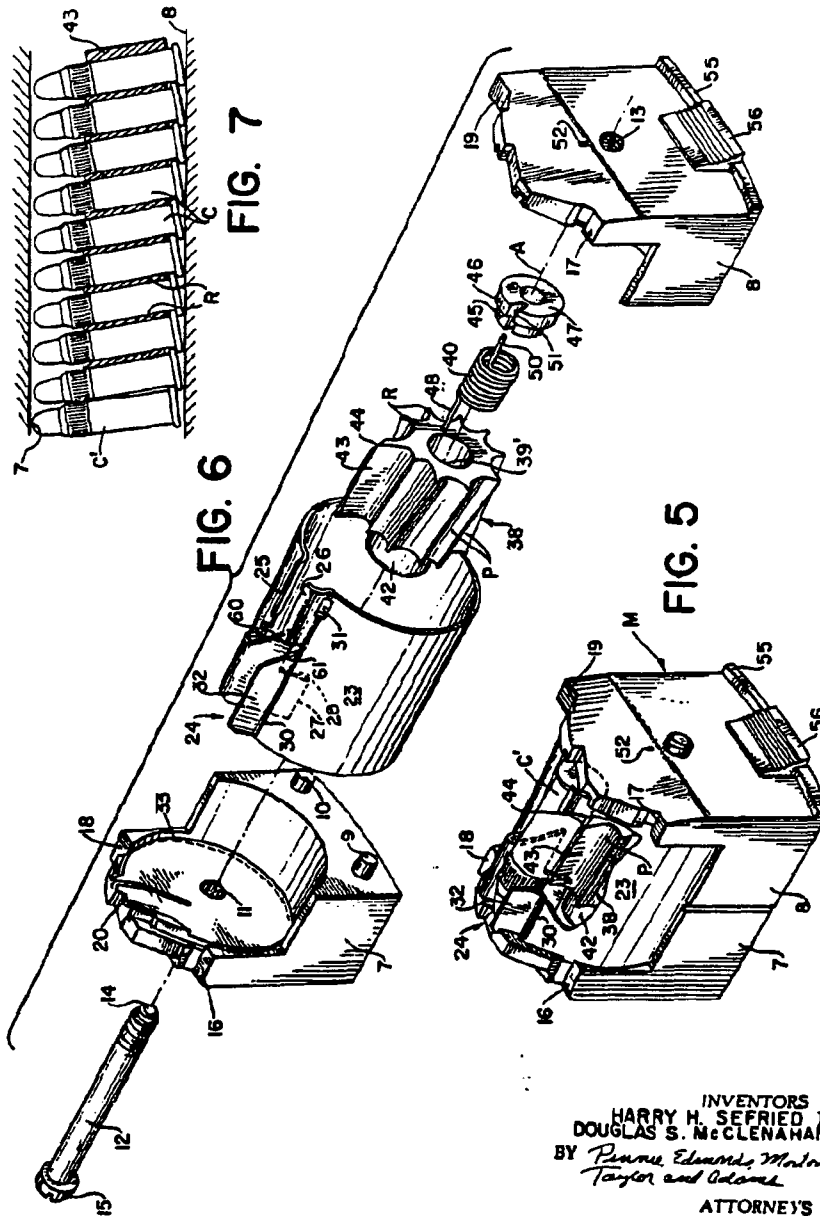
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4 Sheets-Sheet 3



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REMOVABLE MAGAZINE FOR REPEATING GUN

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4 Sheets-Sheet 4

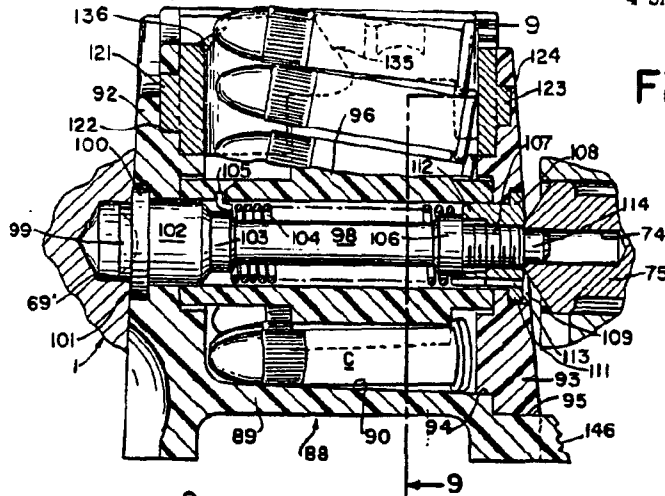


FIG. 8

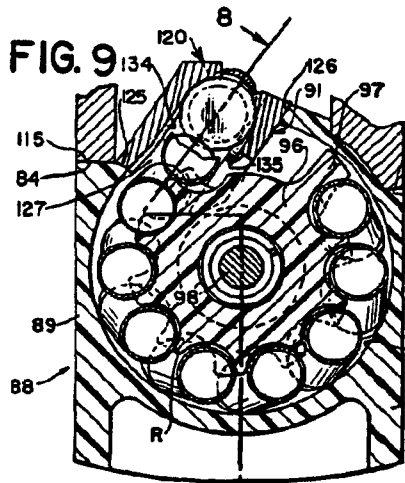


FIG. 9

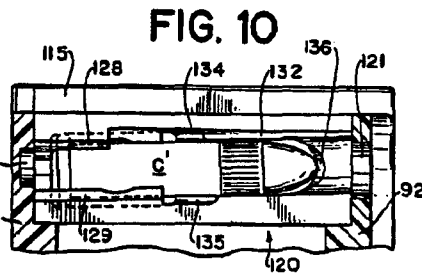


FIG. 10

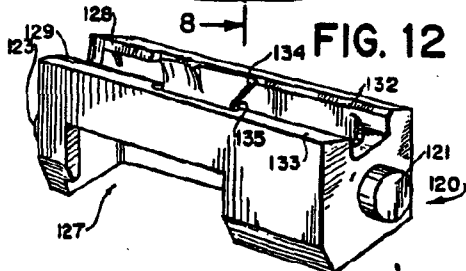


FIG. 12

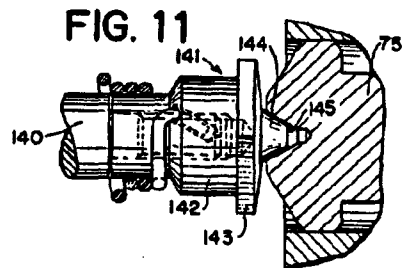


FIG. 11

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REMOVABLE MAGAZINE FOR REPEATING GUN
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port, Conn., assignors to Sturm Ruger and Company,
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17 Claims. (Cl. 42—19)

This invention relates to repeating guns of the type having rotary magazines and provides an improved rotary magazine which is insertable into and removable from the gun receiver, and a magazine-receiver combination.

The magazine of the invention comprises a rotor having several peripheral skew pockets for the cartridges mounted within a frame which secures the cartridges in the pockets and a pin on which the rotor is mounted extending through the housing. The housing includes a gate or chute through which the cartridges are loaded into the pockets and from which they are fed into the barrel chamber. The magazine is advantageously applicable for use with rimmed cartridges, such as the .22 caliber cartridges, and the rotor pockets have a skewed axis, inclined such an amount with respect to the rotor axis that the rim of one cartridge lies ahead of the rim of the next cartridge in the direction of feeding into the barrel chamber, whereby the cartridges are positioned, from bullet nose to base, between parallel transverse planes and are not progressively advanced as in a helix.

The cartridge loading and feed gate includes lips for holding the leading cartridge, and oppositely facing gate walls between which the cartridges are guided in a tangential direction from the rotor to a position before the barrel chamber. One wall of the gate serves as a guide plate or baffle for the advancing cartridge. The walls include upwardly sloping edges or ramps on which the rim of the leading cartridge slides when being pushed forward by the breechblock whereby the rim of the cartridge moves up into the cartridge head recess of the breechblock and under the extractor. These walls, lips and ramps position the cartridge in substantially axial alignment with the barrel chamber when the nose of the cartridge is about to enter the chamber.

The rotor may have any desired number of pockets, for example ten or twelve between which are dividing ribs. An important feature of the rotor is that the ribs between the pockets and the gate are so constructed and arranged that the ribs push the cartridge into the gate in a tangential direction to the position where the leading cartridge is moved from a skew position with respect to the rotor axis and barrel base to a position in substantial axial alignment with the barrel. The rib which engages the last cartridge is extended in the form of a finger which cams the last cartridge against the baffle on the gate and elevates it into position for entry into the chamber.

The frame includes a housing having a generally cylindrical inner surface which secures the cartridges in position in the rotor pockets. The housing may be a metal or plastic casting or include a metal shell secured between housing members. When the housing includes a metal shell it is secured between end closure members held together by a pin on which the rotor is mounted, and the shell has an integral feed gate.

When the housing is a casting or like member one end is preferably integral with the housing and the other end has a removable closure. The housing, including its removable end, forms the frame for the magazine. The integral end and the removable end have holes through which a pin is inserted to mount the rotor and hold the removable end in position.

In each form of magazine the pin has centering means for engaging recesses in the receiver to removably secure the magazine in the receiver.

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In the embodiment of the invention in which the frame is formed with an integral cylindrical surface for confining the cartridges, it is advantageous to provide a cartridge gate in the form of a casting, preferably of metal which is secured in the frame casting by the removable end.

The pin on which the rotor is mounted performs several functions. In one embodiment, it makes threaded engagement with one of the frame halves and holds them together while in another embodiment it engages a nut having a centering end which is equivalent to an extension of the pin. The head of the pin and the threaded end of the pin, or its attached nut extension, extend beyond the ends of the frame to engage securing and aligning recesses in the receiver, and the invention accordingly provides a magazine and receiver combination. The forward end of the pin has a cylindrical or tapered projecting head which engages a recess in the forward part of the receiver in which it makes a close fit. The rearward end of the pin or the nut has a tapered or a cylindrical projection which makes a close fit with a recess in a resiliently yieldable member mounted in the rear of the receiver. The yieldable member is a latch mounted in a recess in the receiver and includes a finger-operated means to retract the member and release the magazine.

The magazine can be inserted into the recess of the receiver by pressing it upward to cause the tapered rearward end of the pin to engage a beveled surface on the yieldable member and push it rearward to a position where the forward end of the pin can enter the forward recess in the receiver. When the magazine is fully inserted the rearward end of the pin enters the recess in the yieldable member which snaps forward to lock the magazine in position. In order to release the magazine, the finger-operated means is pressed inward to retract the yieldable member and release the magazine.

The receiver is constructed to have a forward wall with a recess for the pin end, a rearward wall for mounting the yieldable member, and under surfaces against which side edges of the magazine frame make bearing contact. The magazine frame preferably has side and top edges which engage the under surfaces on the receiver to hold the magazine in axial alignment. It is accordingly unnecessary to provide any side wall or holding means on the sides of the receiver, and the magazine recess may be a transverse recess in the receiver open below and on the sides.

These and other novel features of the invention will be better understood with reference to the accompanying drawings and the following discussion in which

FIG. 1 is a side view, with parts in section, of the receiver portion of a gun in combination with the magazine of the invention;

FIG. 2 is a sectional view at 2—2 of FIG. 1 looking forward;

FIG. 3 is a sectional view at 2—2 of FIG. 1 looking rearward;

FIG. 4 is a plan view of a magazine of the invention;

FIG. 5 is a perspective of the magazine of FIG. 4 with parts removed;

FIG. 6 is an exploded perspective view of the magazine of FIG. 4;

FIG. 7 is a rectilinear development of the peripheral portion of the magazine rotor and cartridges;

FIG. 8 is a cross-section at 8—8 of FIG. 9 illustrating another embodiment of the invention;

FIG. 9 is a cross-section at 9—9 of FIG. 8;

FIG. 10 is a fragmentary plan view of FIGS. 8 and 9;

FIG. 11 is a fragmentary enlargement of a modification of centering nut of FIG. 8, and

FIG. 12 is a perspective of the cartridge feed gate of FIGS. 8 and 9.

The improvement in firearms illustrated in the drawings comprises, as shown in its more complete embodiment in FIG. 1, a unitary receiver-trigger guard 1. It is to be understood however that the receiver and trigger guard may be formed of two or more connected parts in an integral construction. Hereinafter, for convenience the entire structure which includes a trigger guard will be referred to as a receiver. The barrel 2 is in threaded connection with the receiver and it will be noted that it does not have the usual bullet ramp to guide the cartridge into the chamber. The stock 3 is secured to the receiver by the screw 4. As best shown in FIGS. 1, 2 and 3, the cartridge magazine M is mounted in a recess or rectangular hole, preferably a transverse slot S in the receiver which is open below and the receiver advantageously has no side walls engaging the magazine. The magazine may extend almost to the inner sides 5 and 6 of the stock (FIG. 2) which permits the magazine to be relatively wide in a receiver of conventional dimensions.

The magazine M of FIGS. 1 to 7 comprises a base structure or frame preferably formed of two mating parts 7 and 8 joined preferably along a central transverse plane and held in alignment by dowel pins 9 and 10 in part 7 which enter holes in part 8. The frame parts 7 and 8 may be formed as die castings or as plastic moldings. The frame half 7 has a hole 11 for the pin 12 and the frame half 8 has a threaded hole 13 for receiving the threaded end 14 of the pin. The opposite end of the pin has a head 15 which has a screwdriver slot. This pin secures the frame halves together and the projecting end 14 and head 15 provide securing means as hereinafter described.

The frame has, on the oppositely extending longitudinal sides, upper ledge surfaces 16, 17 and 18, 19 which engage surfaces in the receiver to be described hereinafter. The upper part of half 7 has a chamfered edge 20 which guides the nose of the cartridge as it enters the barrel.

The magazine housing part 23 is a case or shell, preferably formed of spring steel, and is generally cylindrical having at the top a cartridge gate 24 for loading and feeding cartridges. The gate includes lips 25 and 26 which hold the leading cartridge from being pushed upward out of the magazine. The forward right side of the gate as viewed in FIG. 6 has a folded-over part which forms a gate wall 27 to engage the forward part of the cartridge and a cutout at 28 which is a clearance for the ribs R. The opposite side of the gate has a longitudinal inward rib 30 in which is cut a slot 31 for clearance of the cartridge rim when the leading cartridge is in the position of FIGS. 1, 3, 4 and 5. The forward upper projection 32 of the gate cooperates with the gate wall 27 to guide the cartridge into the barrel chamber.

The frame members 7 and 8 have arcuate cuts 33 and 34 into which the end edges of the case 23 are inserted and secured when the pin 12 holds the frame halves together as in FIG. 5.

The magazine rotor 38 can be formed of metal or a plastic as by casting, machining, molding or extrusion and has a central cylindrical hole 39 for its rotatable mounting on the pin 12, and an enlarged diameter part 39' (FIG. 1) for receiving a spring 40 and ring 46. The forward end has a hub 42 which bears on the inner face of frame part 7 as shown in FIG. 1 and provides an annular clearance for the bullets. The rotor has a plurality of peripheral cartridge pockets P and dividing ribs R, one of the ribs being extended to form a finger 43, the rear edge portion of which has a surface 44 beveled with respect to the longitudinal axis A of the magazine. The pockets and ribs have a skew alignment with respect to the axis A as best shown in FIGS. 6 and 7.

In the rearward part of the rotor the neck portion 45 of the bushing 46 is located in the hole 39. The bushing is mounted on the pin 12. The flange portion 47 of the bushing holds the rotor spaced away from the rearward wall of the frame part 8 to provide clearance for the cartridge rims as best shown in FIG. 1. The coil spring 73

40 is mounted over the pin and in the hole 39', one projecting leg 48 of the spring enters a hole 49 in the rotor (FIG. 1) and the other projecting leg 50 of the spring enters a slot 51 in the bushing and extends into a hole 52 of the frame half 8. Before assembling the various parts of the magazine as shown in exploded position in FIG. 6, the spring is loaded by turning the rotor with respect to the bushing 46 and inserting the leg 50 into the hole 52. The rotor is accordingly urged in a clockwise direction but is prevented from turning beyond the contact of finger 43 with the gate wall 27. When the magazine is completely assembled as shown in FIGS. 1 and 3 the end 14 and the head 15 of the pin 12 extend beyond the outer walls of the magazine frame as shown in FIG. 1. The frame is relatively narrow longitudinally in the upper part and fits loosely in the recess S, a transverse pocket in the receiver, and has a projecting shoulder 55 and a ribbed finger-engaging projection 56, the functions of which will be described hereinafter.

FIG. 7 is a rectilinear development of the cartridges as they lie in the magazine around the rotor and in the gate, as shown in FIG. 2. This development illustrates that the pockets can receive a plurality of rimmed cartridges arranged in an angularly offset direction with respect to the longitudinal axis A. Cartridge C' will be in contact with lips 25 and 26, ready to be pushed forward into the chamber. Cartridge C' is held in position against lips 25 and 26 by the preceding cartridge which is in turn positioned by a skewed rib R of the rotor, as are all the remaining cartridges. As shown in FIG. 2, torsion spring 40 provides the force to hold cartridge C' against lips 25 and 26. The skewed ribs and pockets of the rotor minimize the diameter of the magazine for any given capacity by allowing the rims to overlap. As a result of the skewed axis of the cartridges engaged by the rotor, cartridge C' when pressed against lips 25 and 26 will have its bullet end somewhat elevated toward the mouth of the chamber, thus eliminating the need for a long guide ramp on the barrel.

As shown in FIGS. 1 and 3 the inner wall of the frame part 8 has a projecting deflector 57 against which the rim of the cartridge travels and is held and prevented from moving away from the finger 43 whereby the continued rotation of the rotor causes the beveled edge 44 to engage the rim and elevate the cartridge so that the case can bear against the outward edge of the finger. This action raises the base of the last cartridge to a position where it can be engaged by the advancing breechblock. The advancing breechblock pushes the cartridge forward and the rim engages the sharply sloping ramp edges 60 and 61 of the gate walls and the base is lifted to bring the cartridge into alignment with the barrel.

The receiver which may have any suitable shape or proportion and the transverse slot or recess portion 65 eliminates the sides of the under part of the receiver which is closed by the engagement of sides 5 and 6 of the stock. The upper recess portion 66 of the receiver slopes inwardly (FIG. 2) and together with the lower cutout portion 65 forms the recess S for the insertion of the magazine M as shown in FIGS. 1, 2 and 3. The upper part of the receiver has any suitable type of breechblock 67 which pushes the leading cartridge C' into the barrel chamber 68. As shown in FIGS. 1 and 3, the breechblock has a firing pin 67', an extractor 68' and a cartridge recess 69. The lips of the gate are offset with respect to the barrel axis to facilitate entrance of the cartridge base into the recess 69. When the bolt pushes the cartridge forward the base engages the ramp edges 60 and 61 is raised for position to enter the barrel chamber.

The forward upright wall of the receiver has a bore hole 69' into which the head 15 makes a snug engagement. The rearward wall of the receiver has an opening 70 and an annular shoulder 71 against which the coil spring 72 bears. The resiliently yieldable member 73 having a central hole 74 and a shoulder 75 is mounted in the hole

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70 and is urged towards the left as shown in FIG. 1 by the spring 72 bearing on the shoulder 75. The yieldable member 73 has an extended neck portion 76 and a head 77 which is engaged by the end of the operating lever 80. This lever is mounted on the pin 81 and projects into an arcuate cut 82 in the receiver for the insertion of a finger to depress the lever and retract the yieldable member and release the magazine. This permits one to engage the ribbed edge of the projection 56 and pull the magazine out of the recess.

As stated above, the upper portion of the magazine is smaller than the upper portion 66 so that it can be angularly inserted into the recess and pushed upwardly so that the head 15 can enter the hole 69' and the tapered end 14 can push the yieldable member 73 rearward by engagement with its conical end until it enters the hole 74 at which time the spring 72 pushes the yieldable member to the position shown in FIG. 1 into locking engagement with the pin 12. The cross-pin 83 provides a stop for the head 77 preventing the spring from pushing the yieldable member 73 too far forward when the magazine has been removed. When the magazine is in this operative position of FIG. 1 the bearing edges 16, 17 and 18, 19 of the magazine are in engagement with the longitudinal ribs 84 and 85 and these engagements hold the magazine against turning out of position. In this position the rib 55 (FIG. 1) bears against the lower rearward portion of the receiver and holds the magazine snugly against the forward inner wall of the receiver.

In order to remove the magazine one presses a finger against the lower end of the lever 80 to force it into the recess 82 to retract the yieldable member 73 and release the magazine.

The magazine illustrated in FIGS. 8 to 12 is an especially desirable embodiment of the invention. The frame 88 is a casting, made of metal or plastic and comprises a housing part 89 having a cylindrical inner wall 90, having an opening 91 at the top, and an integral end closure 92. The opposite end of the frame is closed by a removable end closure 93 having an exterior recessed edge 94 which engages a recess 95 in the housing part.

The cartridge rotor 96 is also a plastic casting having a plurality of skewed pockets, intervening ribs R and a finger 97 as illustrated in FIG. 9. The rotor is mounted in the housing on pin 98 and the cartridges are confined in the pockets by the wall 90. The pin has a head consisting of a projection 99, an annular shoulder 100 which fits into an annular recess 101 in the wall 92, and a bearing part 102 for one end of the rotor. The reduced part 103 is a centering part for the spring 104, one end of which is anchored in a hole 105 in the rotor.

The opposite end of the pin 98 has a spring centering part 106 for the spring and a threaded end 107 for the nut 108. This nut has a head with a square or hexagonal end 111 which fits into a similarly shaped recess 109 in the end 93 to prevent nut rotation. The nut serves as a means to hold the end 93 in pressed contact with the frame 88 and the inner extension 112 serves as a bearing for the rotor 96. The nut has a hole 113 for anchoring the other end of the spring 104. When the spring end is in the hole 113 and the nut end 111 is out of the recess 109, the nut may be turned to apply the desired loading on the spring and then pressed into recess 109 and secured by tightening threaded pin 98.

The non-threaded projecting end 114 engages the recess 74 in the retractable member 75. The opposite end of the projection 99 enters the centering recess 69' in the receiver. As shown in FIG. 9, the longitudinal edges 115 and 116 make bearing contact with the longitudinal edges of the receiver 1 to hold the magazine in proper alignment in the receiver.

The magazine loading and feeding gate is a removable member 120 preferably formed as a casting of metal. The gate has projection 121 which centers in a hole 122 in the wall 92 and a projection 123 which centers in the

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hole 124 in the end closure 93. The gate member is held in stable position in the frame by the engagements at the contacting surfaces 125 and 126 (FIG. 9).

The gate member has an opening 127 into which the cartridges are pushed in a tangential direction from the rotor and the last cartridge is pushed up to the top position by the finger 97 to a position where the base or rim of the cartridge engages the rear lips 128 and 129 and is held from rising and the front part of the case enters between the front guide lips 132 and 133. The cartridge in this position is ready to be engaged by the advancing breech-block. As the cartridge is pushed forward the rim passes beyond the lips 128 and 129 to engagement with the steeply inclined ramp surfaces 134 and 135 and the base of the cartridge is thereby elevated to a position practically in line with the barrel chamber. The angle of the ramp surfaces 134 and 135 help to raise the rim of the cartridge into the breechblock recess 69 (FIG. 3). It is advantageous, in view of the tangential movement of the cartridge, to have the feed gate lips on an angle of say two or three degrees from alignment of the barrel axis as shown in FIG. 10.

The front of the gate has a bullet ramp 136 which guides the bullet into the barrel. As the rim of the bullet moves upward over the ramps 134 and 135 the rim enters the breech bolt recess 69 and moves under the extractor 68' (FIG. 3).

FIG. 11 illustrates a modification of the magazine of FIGS. 9 to 10 in which the rotor pin 140 has a threaded end engaging the nut 141. This nut has a cylindrical part 142 which is a bearing for one end of the rotor and a hexagonal nut part 143 which fits into a close fitting hexagonal recess in the end closure 93 to prevent the nut from turning. The nut has a truncated conical projection 144 which enters a conical recess 145 in the retractable member 75. The magazine frame of FIGS. 8 to 10 has the end closure 93 sloped towards the top to provide clearance inside the receiver so that it may be tilted when being inserted to facilitate the entrance of the end 99 into its recess in the receiver. The lower end also has the serrated finger-engaging part 146 to pull the released magazine out of the receiver.

The invention provides a compact magazine which can hold, say, ten .22 caliber cartridges, insertable into the under part of the receiver and which does not require a receiver of greater width than the usual receiver. From a manufacturing standpoint, the elimination of the barrel cartridge ramp is a material improvement. Another manufacturing improvement is the provision of the finger on the rotor to push out the last cartridge, thus eliminating the more complicated members heretofore used for this purpose.

We claim:

1. A magazine for rimmed cartridges which comprises a frame, a pin extending into the frame, a rotor mounted on the pin, a spring for driving the rotor which is loaded by feeding cartridges into the magazine and which reverses the rotation of the rotor when cartridges are being fed from the rotor into the barrel, skew pockets for the cartridges on the rotor, a housing having an inner cylindrical surface for holding the cartridges in the pockets, a feed gate in the frame having lips to hold the leading cartridge and gate walls through which the leading cartridge travels to the lips, the skew axis of the pockets being such with respect to the axis of the pin that the rim of each successive leading cartridge overlies the case of the adjacent cartridge, and a finger on the rotor for pushing the last cartridge through the gate walls to the lips.

2. A magazine according to claim 1 in which said pin projects through the frame and has forward and rearward extending ends for engaging the receiver of the gun into which the magazine is inserted to hold the magazine in position.

3. A magazine according to claim 1 in which the walls of the feed gate have inclined ramp edges to elevate

the rim of the cartridge as it is being pushed forward by a breechblock.

4. A cartridge magazine for rimmed cartridges which comprises a frame formed of two mating halves, a rotor, a shell overlying the rotor and in engagement with the halves, a pin extending through the frame which secures the two halves together and on which the rotor is mounted, a spring in operative connection with the rotor and the frame which rotates the rotor in feeding the cartridge into a barrel chamber, a plurality of cartridge pockets on the rotor each having a skew axis with reference to the axis of the pin, the skew axis being such that the rim of each leading cartridge lies in front of the rim of the next adjacent cartridge, a feed gate integral with the shell having opposite facing gate walls for guiding the leading cartridge tangentially from the rotor to a position in line with the barrel chamber, and means on the gate to elevate the leading cartridge when pushed forward by an advancing breechblock.

5. A magazine as defined in claim 4 in which the pin is also a screw holding the two frame halves together.

6. A magazine for rimmed cartridges which comprises a frame formed of two mating halves forming an open center with closed bottom sides and end walls, a pin extending through the end walls one end of which has a tapered head projecting from one end wall and the other end is in threaded connection with the other end wall holding the frame halves together and extending beyond the end wall, the head and projecting end form means for securing the magazine to a gun receiver, a rotor mounted on the pin having several cartridge pockets in skew alignment with respect to the axis of the pin whereby the rim of the leading cartridge lies over the case of the next adjacent cartridge, a spring in operative connection with the rotor which is loaded by loading the magazine and which reverses the rotation of the rotor as the cartridges are fed into the barrel chamber, a shell overlying the cartridges in the pockets secured to the frame, said shell having a cartridge loading and feeding gate including lips for holding the leading cartridge in position to enter the barrel chamber, said gate having guide means to direct the leading cartridge into position to enter the barrel chamber, and a finger on the rotor for engaging the last cartridge in the magazine and pushing it through the gate and into position to be pushed forward by a breechblock.

7. A magazine as defined in claim 6 in which the gate has oppositely facing gate walls and an upwardly sloping ramp for engaging the said rim of the leading cartridge and elevating the base of the cartridge as it is being advanced towards the barrel chamber.

8. A rotary magazine which comprises a frame, a pin in the frame, a rotor for a plurality of rimmed cartridges mounted on the pin, a spring for operating the rotor, a housing forming part of the frame having an inner curved surface spaced from the rotor to secure the cartridges on the rotor, means providing a cartridge loading and feeding gate including lips for holding the leading cartridge at a skew position relative to the axis of the barrel chamber and wall means for receiving the leading cartridge from the rotor and directing it tangentially to its position held by the lips, said wall means having an angular edge providing a ramp over which the rim of the leading cartridge is raised into position to enter the barrel chamber by an advancing breechblock, and a finger on the rotor for pushing the last cartridge in the magazine upward through the gate.

9. A rotary magazine as defined in claim 8 which comprises a small ramp on the inner rearward wall of the frame over which the rims of the cartridge travel as they enter the lips.

10. The combination of a gun receiver and a magazine which comprises a magazine having a frame, a pin extending into the frame, a rotor having a plurality of cartridge pockets rotatably mounted on the pin, a spring

for rotating the rotor, gate means for loading the magazine and for feeding cartridges into the chamber of the gun, a recess in the receiver having forward and rearward walls and open below for the upward insertion of the magazine, one of the walls having a hole, a projection on the frame for insertion into the hole, a yieldable member in the other wall having a hole therein, another projection on the frame for insertion into the yieldable member, said projections and said holes being arranged to secure the magazine in the receiver, laterally spaced edges on the under portion of the receiver facing downward, and edges on the opposite sides of the magazine frame which engage the edges on the receiver to secure the magazine in a non-turning position.

11. The combination of claim 10 in which the yieldable member is retracted to release the magazine by a finger-pressed latch.

12. The combination of a receiver and a detachable rotary magazine which comprises a recess in the receiver having transverse forward and rearward upright walls, two spaced longitudinal bearing surfaces in the receiver, a rotary magazine having a frame and a rotor together with means to feed cartridges into the gun barrel, a pin extending through the frame on which the rotor is mounted to form receiver-engaging end projections, openings in the forward and rearward walls for receiving the end projections to hold the magazine in position, means on one of the walls for releasing a projection whereby the magazine can be removed from the recess, and bearing surfaces on opposite side portions of the frame which engage the bearing means in the receiver and hold the magazine in stable alignment when the projections are in engagement with the openings in the receiver walls.

13. The combination of claim 12 in which the pin has a head projecting forward of the frame and enters a centering hole in the forward wall and the opposite end of the pin includes a rearward projection, a resiliently yieldable member having a hole therein mounted in the rearward wall of the receiver for receiving the rearward projection of the pin, and a finger operated latch for retracting the yieldable member to release the magazine, whereby the magazine can be inserted into the recess and secured or removed.

14. The combination of claim 12 which comprises a transverse rib on the lower rearward part of the frame which engages the rearward wall of the receiver to secure the magazine against longitudinal misalignment, the upper part of the frame being smaller than the recess which permits tilting the magazine against the yieldable member in inserting and removing the magazine.

15. A rotary magazine for .22 caliber rim cartridges which comprises a frame having an inner curved wall, an end closure integral with the frame and having a hole therein, a removable closure for the opposite end having a hole therein, a pin mounted in the holes, a rotor mounted on the pin having a plurality of cartridge pockets which are held in the pockets by the curved wall, said pockets having a skew axis with respect to the axis of the pin, a spring on the pin for operating the rotor, a nut set in a recess in one of the end closures into which one end of the pin is threaded to secure the pin in position and hold the removable closure in contact with the frame, one end of the pin having a head for engaging a hole in the receiver of the gun in which the magazine is inserted, means projecting from the other end of the pin for engaging another hole in the receiver, a removable cartridge-loading and cartridge-feeding gate secured in the frame having gate walls for directing the leading cartridge from the rotor to a position for entering the barrel chamber, said gate being constructed to receive the leading cartridge at the skew axis and orient the cartridge to a position in substantial alignment with the barrel chamber when the leading cartridge is released from the gate.

16. A rotary magazine as defined in claim 15 in which

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the gate is an integral member having gate walls for directing the leading cartridge from the rotor to a position to be engaged by a breechblock, lips for holding the leading cartridge in the gate, and ramp means in the gate for engaging the rim of the leading cartridge to elevate the base end as the cartridge is being pushed forward.

17. A rotary magazine as defined in claim 16 in which the gate has a ramp for engaging the nose of the leading cartridge to direct it into the barrel chamber.

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