



Dec. 25, 1945.

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2,391,756

MAGAZINE FOR FIREARMS

Filed Jan. 23, 1942

4 Sheets-Sheet 2

FIG. 5.

FIG. 6.

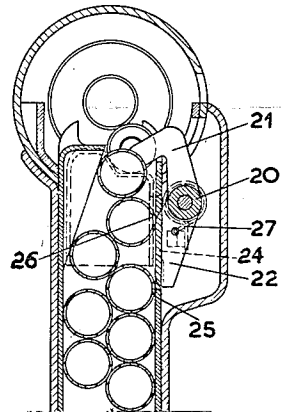
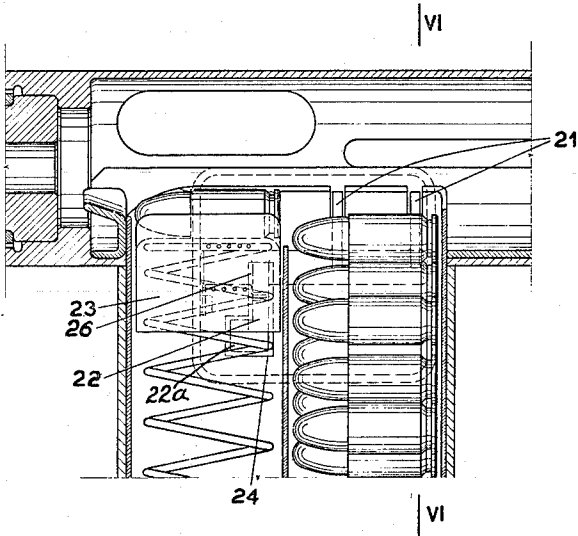
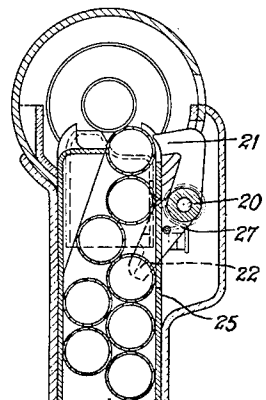
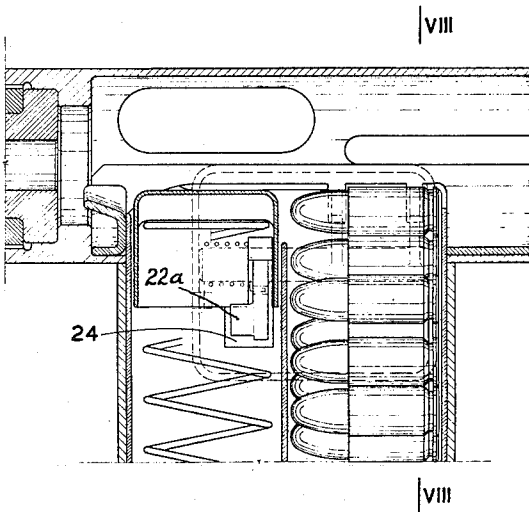


FIG. 7.

FIG. 8.



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FIG 9

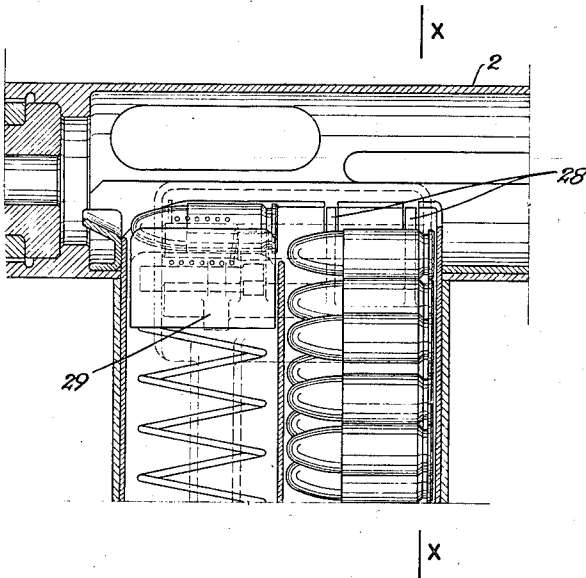


FIG 10

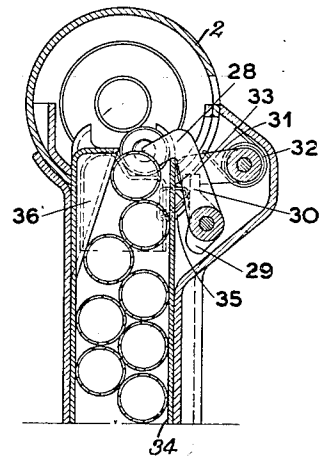


FIG 11

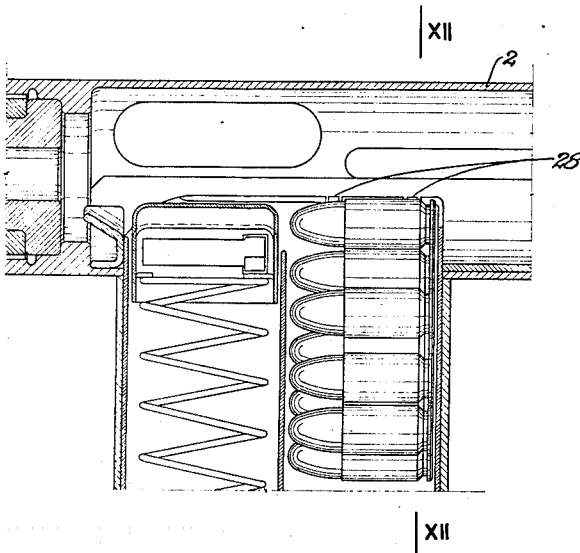
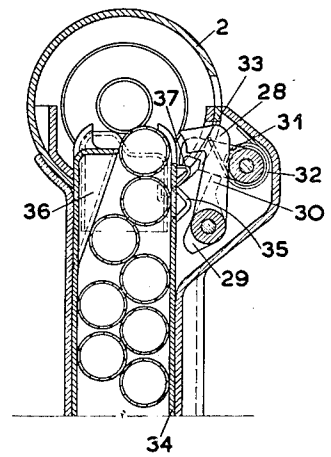


FIG 12



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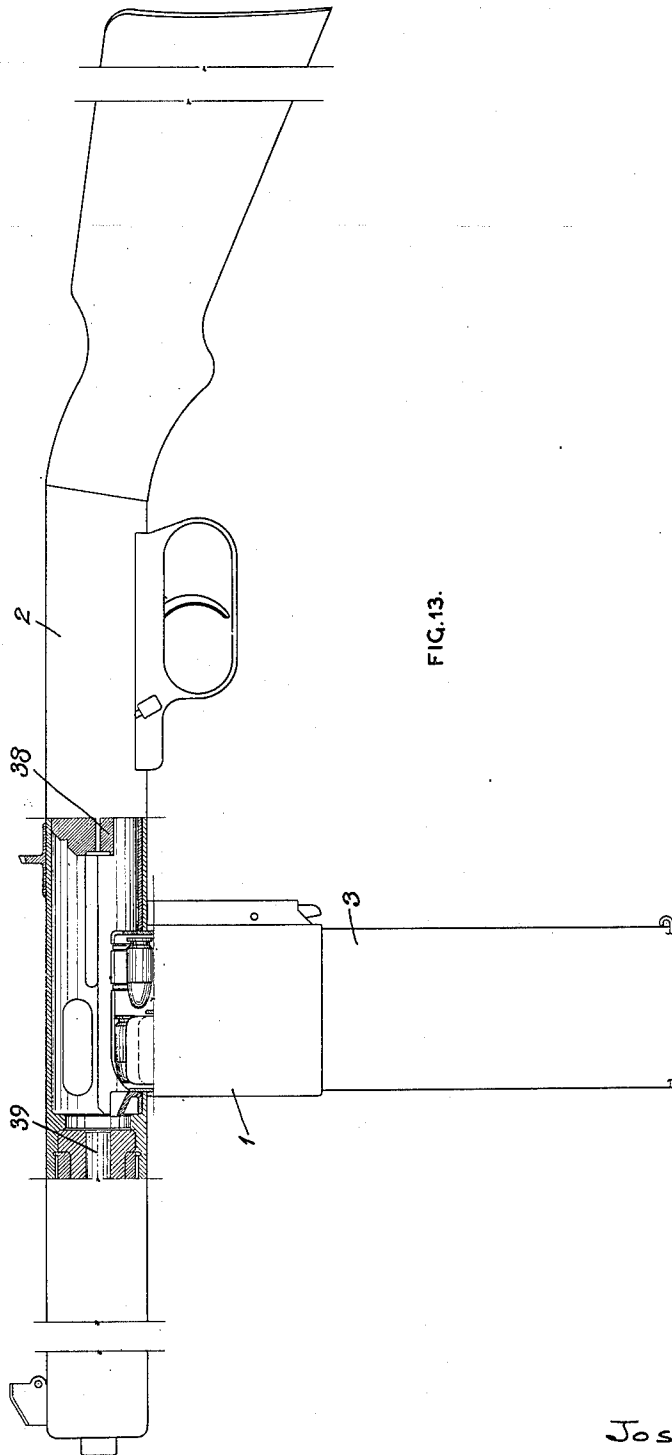


FIG. 13.

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# UNITED STATES PATENT OFFICE

2,391,756

## MAGAZINE FOR FIREARMS

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Application January 23, 1942, Serial No. 427,957  
In Great Britain December 31, 1940

12 Claims. (Cl. 42—18)

The present invention relates to improvements in magazines for fire-arms and more particularly those for automatic or semi-automatic fire-arms.

The main object of the invention is to increase the limited capacity of the at present known cartridge magazines without adverse effect upon reliability and ease of handling.

The capacity of hitherto known cartridge magazines is limited by the length thereof, which is usually dependent upon the kind of ammunition used and on the cartridge feeding device, usually a feeding spring, employed in the magazine.

It has already been proposed to employ two separate magazines disposed either one on each side of the gun or adjacent one another, but these arrangements have not proved satisfactory, since the reliability in operation of the gun and magazine has been adversely affected and the manipulation made more complicated.

The improved cartridge magazine according to the invention achieves the desired objects without these disadvantages. The improved magazine comprises a structure embodying two channels or compartments arranged one behind the other for the reception of two groups of cartridges, the cartridges of one group being fed first from the one compartment hereinafter termed the first compartment, and the cartridges of the other group being retained in the other compartment in a position where they are out of the path of the member, usually a part of the breech mechanism, feeding cartridges into the firing chamber, until the cartridges in the first compartment are exhausted, whereupon the cartridges in said other compartment, hereinafter termed the second compartment, are automatically released to move into the path of the member feeding the cartridges into the firing chamber.

In a preferred embodiment of the invention the two compartments are arranged in a common magazine casing and are each provided with an independent magazine feed consisting of a feeder moved by a spring.

A retaining member is provided on the gun, in a position for co-operation with the leading cartridge in the second compartment in such a manner as to retain the cartridges in that compartment out of the path of the member feeding cartridges to the firing chamber until the first compartment has been emptied.

This retaining member may be in the form of a detent disposed within the gun casing and journalled on the gun for rocking movement about an axis disposed longitudinally thereof, so that its free end may move into and out of engagement

with the cartridges in the second compartment of the magazine.

The cartridge feeder of the first compartment is provided with a releasing member which, when the feeder of the first compartment has reached its final position, i. e. when the cartridges from the first compartment have been exhausted, serves to release the said detent or releasing member from engagement with the leading cartridge in the second compartment so that the cartridges in the second compartment may be fed singly in succession into the path of the member feeding cartridges to the firing chamber.

In order to ensure correct feeding of cartridges from the second compartment of the magazine into the firing chamber, means may be provided in said second compartment to ensure discharge of all the cartridges in succession from this compartment at the same point, whence they may be moved by the breech mechanism over an appropriately formed part of the feeder in the front compartment of the magazine to guide them into the firing chamber.

This may be accomplished in various ways. For example a wall or the walls of the second compartment adjacent to the discharge opening may be arranged at an inclination, so that the final part of the passage for the cartridges is progressively restricted in the direction towards the said opening. Thus cartridges, originally accommodated for example in a double row, may be moved successively into a single row to finally emerge from the second compartment at the same point. From this point they are moved by the moving breech mechanism over an appropriately formed cartridge guiding portion of the feeder of the first compartment.

Any other suitable means may however be employed to bring the cartridges in the second compartment into register with the guiding portion of the feeder of the first compartment.

The form of the magazine feeder of the first compartment is such as to permit smooth travel of the cartridges from the second compartment over said feeder into the firing chamber.

Three embodiments of the invention are shown by way of example in the accompanying drawings, in which,

Fig. 1 is a view in longitudinal sectional elevation of one example of a magazine according to the invention attached to a gun, the first compartment being shown as still in operation and the second compartment not yet operative.

Fig. 2 is a transverse sectional view taken on the line II—II of Fig. 1 showing the position of

the cartridge retaining and releasing members at the same stage of operation.

Fig. 3 is a view in longitudinal sectional elevation similar to Fig. 1 but showing the second compartment in operation, the first compartment being exhausted.

Fig. 4 is a transverse sectional view taken on the line IV—IV of Fig. 3 showing the position of the parts of the mechanism during operation of the second compartment.

Fig. 5 is a view in longitudinal sectional elevation of another embodiment of the invention, the first compartment again being still in operation.

Fig. 6 is a transverse sectional view on the line VI—VI of Fig. 5.

Fig. 7 is a view in sectional elevation similar to Fig. 5, but showing the first compartment exhausted and the second compartment in operation.

Fig. 8 is a transverse sectional view on the line VII—VII of Fig. 7.

Fig. 9 is a view in longitudinal sectional elevation of still a further embodiment of the invention, the first compartment being again shown in action, the second compartment not yet operative.

Fig. 10 is a transverse sectional view taken on the line X—X of Fig. 9.

Fig. 11 is a view in longitudinal sectional elevation similar to Fig. 9, but showing the first compartment exhausted and the second compartment in operation.

Fig. 12 is a transverse sectional view on the line XII—XII of Fig. 11.

Fig. 13 is a part sectional side elevation showing a gun with a magazine according to the present invention disposed at the underside, and illustrating the means whereby the cartridges are fed from the magazine to the firing chamber.

In the example shown in Figs. 1-4 a protective holder 1 is mounted at the underside of the body 2 of the gun, said holder 1 serving for the reception of the magazine. The magazine comprises a casing 3, adapted to be inserted within the holder 1 and to be held in proper position by suitable means relatively to the gun. The casing 3 is divided by a partition wall 4 into two compartments arranged one behind the other and indicated generally by the reference numerals 5 and 6, the compartment 5 being the first or front compartment and 6 the second or rear compartment. Each compartment is adapted to hold a column of cartridges, the cartridges of each column being disposed substantially parallel to one another in a double row. A feeder 7, loaded by a spring 8 is arranged in the first compartment and another generally similar feeder and spring (not shown) are arranged in the second compartment. The upper surface of the feeder 7 in the first compartment is shaped so as to permit smooth travel of the cartridges from the second compartment over said feeder into the firing chamber when said feeder is in its raised position.

The feeder 7 in the first compartment is provided with a plunger 9, arranged so as to be capable of sliding in the transverse direction in a suitable guide 10 in the body of the front feeder 7, a spring 11 tending to urge the plunger 9 outwards from the side of the feeder in the direction towards the right in Figs. 2 and 4. A ball 12 may be mounted in the outer or projecting end of the plunger 9 to reduce friction when the magazine is being manipulated in a manner which will be apparent from the following description.

An aperture 13 (Figure 1) is provided in the

wall of the casing 3 of the magazine in a position to coincide with that of the plunger 9 when the feeder 7 in the first compartment has reached its final raised position when all cartridges in compartment have been exhausted. In position the plunger is urged by the spring 11 outwards and through the aperture 13 in the magazine casing into the position shown in Fig. 4.

A retaining member or detent 14 is mounted in the body 2 of the gun for rocking movement on a pivot 15, the axis of which is parallel to that of the gun. This detent 14 includes one, two or more limbs 16, adapted to engage the leading cartridge in the second compartment 6 in the manner shown in Figs. 1 and 2, to retain it, against the urge of the feeder in the said second compartment, in a position where it is slightly below the path of the usual moving breech block 38, Fig. 13, which thrusts cartridges into the firing chamber. The detent also includes a controlling lever 17 mounted rigidly on the forward end thereof in a position for engagement by the plunger 9 to rock the detent when the said plunger is projected outwards by the spring 11 in the final or raised position of the feeder 7 in the first compartment. A spring 18 is provided when necessary, to bias the detent into the position shown in Fig. 2 in which its limbs 16 are in engagement with the cartridges in the second compartment.

To bring all the cartridges of the two rows in the second compartment into one discharge position in succession in order to ensure proper feeding of cartridges from that compartment, an inclined surface 19 is provided within the rear or second compartment and so disposed as to progressively restrict the passage for the cartridges in the direction towards the discharge opening at the upper end of the compartment.

The arrangement described above operates as follows:

An empty magazine is filled by inserting cartridges in both compartments 5 and 6, the feeder in each compartment being lowered and its spring compressed as this operation proceeds. In order to enable the feeder 7 in the first or front compartment to be lowered, the plunger 9 must, of course, first be pushed back by hand into the feeder body. The magazine when full may be thrust into the magazine holder 1 of the gun 2. The detent 15 on the gun is held, e. g. by the spring 18, in the position in which the limbs 16 are opposite the leading cartridge in the second compartment, so that as the magazine becomes fully inserted in the gun, the cartridges of the second compartment are depressed by the limbs 16 to a position out of or below the path of the breech block as shown in Figs. 1, 2 and 13.

During firing of the gun, the breech block 38 (Fig. 13) first transfers cartridges from the first compartment into the firing chamber 39. The feeder 7 in the first compartment thus rises until the last cartridge has been removed from that compartment. The feeder in the first compartment has now reached its final or fully raised position and the plunger 9 is projected outwards from the feeder 7, as shown in Fig. 4. The end of the plunger thus strikes against the controlling lever 17 of the detent 14 to swing the latter in an anti-clockwise direction from the position shown in Fig. 2 to that shown in Fig. 4, whereby the limbs 16 are moved from engagement with the leading cartridge in the second compartment 6. The cartridges in this compartment are thus rendered free to move in succession into the path

of the breech block 38 under the influence of the spring loaded feeder in said second compartment, and the cartridges are carried from this compartment by the breech block being moved over the front feeder 7 into the firing chamber 39.

When the magazine is empty it can be removed from the gun, whereupon the detent 15 is returned by the spring 18 into its original position, ready for the insertion of a new and full magazine.

Figs. 5-8 show another embodiment of the invention. The magazine in this case is substantially similar to that previously described, but the form of the detent and the releasing means therefor is varied.

The detent 20 in this example includes one, two or more limbs 21 of generally cranked formation, the free extremities of which are adapted to engage the leading cartridge in the second compartment of the magazine. The detent further includes a controlling lever 22 provided at its lower end with a lateral projection 22a adapted to bear against the wall of the feeder 23 in the first compartment of the magazine or against the cartridges therein through an aperture 24 provided in the wall 25 of the magazine, and in some cases also through an opening 26 arranged in the wall of the front feeder 23, under the urge of a biasing spring 27.

In this construction when a full magazine is inserted into the gun, the feeder 23 or the cartridges in the first compartment maintain the lever 22 in the outward position shown in Fig. 6 so that the limbs 21 retain the leading cartridge in the second compartment depressed out of the path of the breech block 38. When the first compartment is exhausted of cartridges, the aperture 26 in the feeder 23 in that compartment comes into register with the lever 22 of the detent, and, as soon as the lower edge of the feeder 23 passes above the upper edge of the lateral projection 22a, the lever 22 becomes free to rock, as seen in the drawings, in a clockwise direction under the pressure of the feeder spring beneath the cartridge column in the second compartment. The limbs 21 of the detent are therefore brought out of engagement with the cartridges in the second compartment, which cartridges thus become free for feeding in succession into the firing chamber. Upon removal of the magazine from the gun, the detent is automatically returned to the position originally described.

Figs. 9 to 12 illustrate still a further embodiment of the invention. The magazine itself is again of substantially similar form to that employed in the previously described examples, only the retaining and releasing mechanism therefor being modified.

The detent, which is pivoted in the gun body, includes suitable limbs 28 for making retentive engagement with the cartridges in the second compartment of the magazine, and a control lever including a cam member 29 and a tooth 30. A pawl 31 is mounted for rocking movement within the body 2 of the gun, and is biased by a spring 32 tending to urge it into engagement with tooth 30. The pawl 31 is recessed as shown at 33, said recess being adapted to receive the tooth 30 and to hold the detent in the position shown in Fig. 10.

The wall of the magazine casing 34 is provided with an outward projection 35 which, as the magazine is inserted into or removed from the gun, wipes across the cam 29 and swings the detent in an anti-clockwise direction.

The side wall of the feeder 36 in the front or

first compartment is provided with a projection 37, extending through a suitable slot provided in the wall of the magazine casing 34. This projection 37 is adapted to engage the end of the pawl 31 to swing it in a clockwise direction about its pivot and out of engagement with the tooth 30.

The operation of this construction is as follows:

If the limbs 28 have not already been brought into the position shown in Figure 10 by the previous withdrawal of a magazine, then when the magazine 34 is inserted into the gun, the detent is rocked in an anti-clockwise direction by engagement of projection 35 with cam 29 and the ends of the limbs 28 are brought against the leading cartridge in the second compartment of the magazine, being held in this position by the engagement of the tooth 30 of the cam member in the recess 33 in spring biased pawl 31.

As the feeder 36 in the front compartment moves into its fully raised position, corresponding to exhaustion of that compartment, the extension 37 on the wall of the front feeder 36 engages the end of pawl 31 to raise it, thereby disengaging the tooth 30 on cam member 29 from the recess 33 in the pawl so that the detent is freed to rock under the pressure of the spring loaded cartridge column and the limbs 28 are moved to the position shown in Fig. 12 to free the cartridges in the second compartment.

When the magazine is withdrawn from the gun, the projection 35 on the wall of the magazine casing 34 engages the cam 29 and swings the detent back into its originally described position, in which it is retained by the engagement of the tooth 30 on the cam member in the recess 33 in the spring biased pawl 31.

The invention is adapted for use in weapons employing any known kind of cartridge, either rimless or with rims and of any calibre.

I claim:

1. A fire-arm having a magazine housing, a detachable magazine insertable in said housing and including a plurality of cartridge holding compartments, feeding means in each magazine compartment for feeding the cartridges therefrom, movable cartridge retaining means carried by said housing and having a part disposed adjacent the discharge end of one of said compartments to engage in one position thereof the leading cartridge in said one compartment to thereby prevent emergence of cartridges therefrom, and a spring loaded plunger arranged to be maintained under load whilst cartridges are being fed by the feeding means in another compartment and to be freed as said last mentioned feeding means takes the position corresponding to exhaustion of said other compartment, to engage and move the said cartridge retaining means into a position permitting emergency of cartridges from said one compartment.

2. A fire-arm having a magazine housing, a detachable magazine insertable in said housing and including a plurality of cartridge holding compartments, feeding means in each magazine compartment for feeding the cartridges therefrom, movable cartridge retaining means carried by said housing and including a finger mounted movably adjacent the discharge end of one of said compartments to engage in one position thereof the leading cartridge in said one compartment to thereby prevent emergence of cartridges therefrom, an operating arm connected with said finger and located adjacent another magazine compartment, a spring loaded plunger arranged to be

maintained under load whilst cartridges are being fed by the feeding means in said other magazine compartment and to be freed, as said last mentioned feeding means takes the position corresponding to exhaustion of said other compartment, to engage and move said operating arm and the finger of the retaining means into a position permitting emergence of cartridges from said one compartment.

3. A fire-arm having a magazine housing, a detachable magazine insertable in said housing and including a plurality of cartridge holding compartments, an apertured wall in one of said magazine compartments, feeding means in each compartment for feeding the cartridges therefrom, movable cartridge retaining means carried by said housing and having a part disposed adjacent the discharge end of another compartment to engage in one position thereof the leading cartridge in said other compartment to thereby prevent emergence of cartridges therefrom, a spring loaded plunger carried by the cartridge feeding means in said one magazine compartment and arranged to be maintained under load by engagement with the said wall of that magazine compartment whilst cartridges are being fed therefrom and to be freed by the registration of said plunger with the aperture in said wall as the feeding means carrying said plunger takes the position corresponding to exhaustion of said one magazine compartment, to engage and move said cartridge retaining means into a position permitting emergence of cartridges from said other compartment.

4. A fire-arm having a magazine housing, a detachable magazine insertable in said housing and including a plurality of cartridge holding compartments, an apertured wall in one of said magazine compartments, feeding means in each compartment for feeding the cartridges therefrom, movable cartridge retaining means carried by said housing and having a part disposed adjacent the discharge end of another compartment to engage in one position thereof the leading cartridge in said other compartment to thereby prevent emergence of cartridges therefrom, a spring loaded plunger carried by the cartridge feeding means in said one magazine compartment, an anti-friction device mounted at the free end of the plunger and arranged to engage the said wall of that magazine compartment whilst cartridges are being fed therefrom, to maintain the plunger under load, said plunger being freed by the registration of the end thereof carrying the anti-friction device with the aperture in said wall as the feeding means carrying said plunger takes the position corresponding to exhaustion of said one magazine compartment, to engage and move said cartridge retaining means into a position permitting emergence of cartridges from said other compartment.

5. A fire-arm having a magazine housing, a detachable magazine insertable into said housing and including a plurality of cartridge holding compartments, a feeder in each compartment for feeding cartridges therefrom, a movable detent carried by said housing adjacent the discharge end of one of said compartments and being arranged in one position thereof to engage the leading cartridge in said one compartment to thereby prevent emergence of cartridges therefrom, means biasing said detent for movement in the direction to free the cartridges for emergence from said one compartment, and a pawl movably mounted on said housing arranged to retain said

detent in position against said biasing means whilst cartridges are present in another compartment and to be rocked by engagement therewith of the feeder in another compartment as said feeder moves into the position corresponding to exhaustion of said other compartment, to free the detent for movement permitting emergence of the cartridges from said first compartment.

6. A fire-arm having a magazine housing, a detachable magazine insertable into said housing and including a plurality of cartridge holding compartments, a feeder in each compartment for feeding cartridges therefrom, a movable detent carried by said housing adjacent the discharge end of one of said compartments and being arranged in one position thereof to engage the leading cartridge in said one compartment to thereby prevent emergence of cartridges therefrom, means biasing said detent for movement in the direction to free the cartridges for emergence from said one compartment, a projection on the feeder in another magazine compartment and a pawl movably mounted on said housing arranged to retain said detent in position against said biasing means whilst cartridges are present in said other magazine compartment and to be rocked by direct engagement therewith of the said projection on the feeder in said other compartment as said feeder moves into the position corresponding to exhaustion of said other compartment, to free the detent for movement permitting emergence of the cartridges from said first compartment.

7. A fire-arm having a magazine housing, a detachable magazine insertable into said housing and including a plurality of cartridge holding compartments, a feeder in each compartment for feeding cartridges therefrom, a movable detent carried by said housing adjacent the discharge end of one of said compartments and being arranged in one position thereof to engage the leading cartridge in said one compartment to thereby prevent emergence of cartridges therefrom, means biasing said detent for movement in the direction to free the cartridges for emergence from said one compartment, a pawl movably mounted on said housing arranged to retain said detent in position against said biasing means whilst cartridges are present in another compartment and to be rocked by engagement therewith of the feeder in another compartment as said feeder moves into the position corresponding to exhaustion of said other compartment, to free the detent for movement permitting emergence of the cartridges from said one magazine compartment and a cam on said detent arranged to be engaged by a part of the magazine as the latter is applied to or removed from the fire-arm, to re-set the detent in the cartridge retaining position.

8. A fire-arm having a magazine housing, a detachable magazine insertable into said housing and including a plurality of cartridge holding compartments, a feeder in each compartment for feeding cartridges therefrom, a movable detent carried by said housing adjacent the discharge end of one of said compartments and being arranged in one position thereof to engage the leading cartridge in said one compartment to thereby prevent emergence of cartridges therefrom, means biasing said detent for movement in the direction to free the cartridges for emergence from said magazine compartment, a projection on the feeder in another magazine compartment, a pawl movably mounted on said hous-



ing arranged to retain said detent in position against said biasing means whilst cartridges are present in said other magazine compartment and to be rocked by direct engagement therewith of the said projection on the feeder in said other magazine compartment as said feeder moves into the position corresponding to exhaustion of said other compartment, to free the detent for movement permitting emergence of the cartridges from said one magazine compartment and a cam on said detent arranged to be engaged by a part of the magazine as the latter is applied to or removed from the fire-arm, to re-set the detent in the cartridge retaining position.

9. In combination with an automatic firearm having a breech chamber in its body and a cartridge feeding member arranged to move axially through said breech chamber, a magazine arrangement comprising a magazine housing mounted on the body of the firearm adjacent said breech chamber and opening into the latter, a detachable magazine insertable into said housing and including two cartridge compartments arranged one behind the other in the longitudinal direction of the cartridges, said compartments holding cartridges with their longitudinal axes all extending in the direction of the barrel of the firearm, each of said compartments having, at the breech end thereof, a discharge opening through which cartridges can be fed to the breech chamber, spring feeder means in each compartment to feed the cartridges therein towards said discharge opening, a cartridge retaining lever mounted on said housing adjacent one side of said magazine and movable at right angles to the longitudinal axes of the cartridges to engage in one position thereof the leading cartridge in one of said compartments so as to retain it out of the path of the cartridge feeding member whilst cartridges from the other compartment are being fired, and means including an element carried by the cartridge feeder means in said other compartment to control said lever for displacement from its cartridge retaining position when said last mentioned cartridge feeder means reaches a predetermined position in which no cartridge from said other compartment is disposed in the path of the cartridge feeding member of the firearm.

10. The combination claimed in claim 9, including means carried by the magazine to reset said control means and cartridge retaining lever to their cartridge retaining positions when the magazine is withdrawn from the housing.

11. In combination with an automatic firearm having a breech chamber in its body and a cartridge feeding member arranged to move axially through said breech chamber, a magazine arrangement comprising a magazine housing mounted on the body of the fire arm adjacent said breech chamber and opening into the latter, a detachable magazine insertable into said housing and including two cartridge compartments arranged one behind the other in the longitudinal direction of the cartridges, said compartments holding cartridges with their longitudinal axes all extending in the direction of the barrel of the fire arm, each of said compartments having, at the breech end thereof, a discharge opening through which cartridges can be fed to the breech chamber, spring feeder means in each compartment to feed the cartridges therein towards said discharge opening, a cartridge retaining lever mounted on said housing adjacent one side of said magazine and movable at right angles to the longitudinal axes of the cartridges to engage in one position thereof the leading cartridge in one of said compartments so as to retain it out of the path of the cartridge feeding member whilst cartridges from the other compartment are being fired, and means for moving said lever out of its cartridge retaining position rendered operative by the cartridge feeder means in said other compartment reaching a predetermined position.

12. The combination claimed in claim 11, including a spring pressed pawl mounted on said housing for engagement with said cartridge retaining lever to lock the same in said retaining position, and a projection on the spring feeder means of said other compartment arranged to act on said pawl when said spring feeder means reaches its position corresponding to an exhaustion of cartridges in said other compartment so as to disengage said pawl from said cartridge retaining lever and to permit swinging of the latter from its cartridge retaining position.

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