

Sept. 4, 1945.

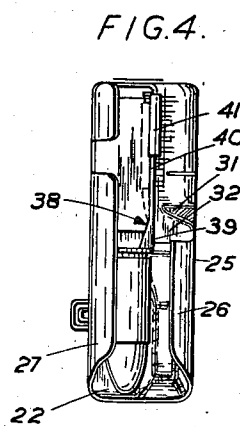
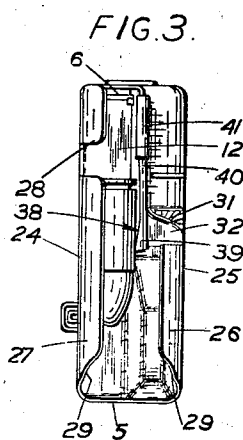
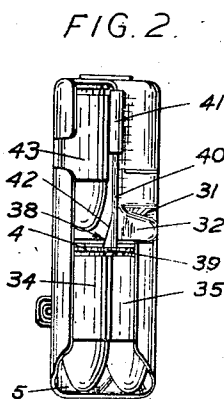
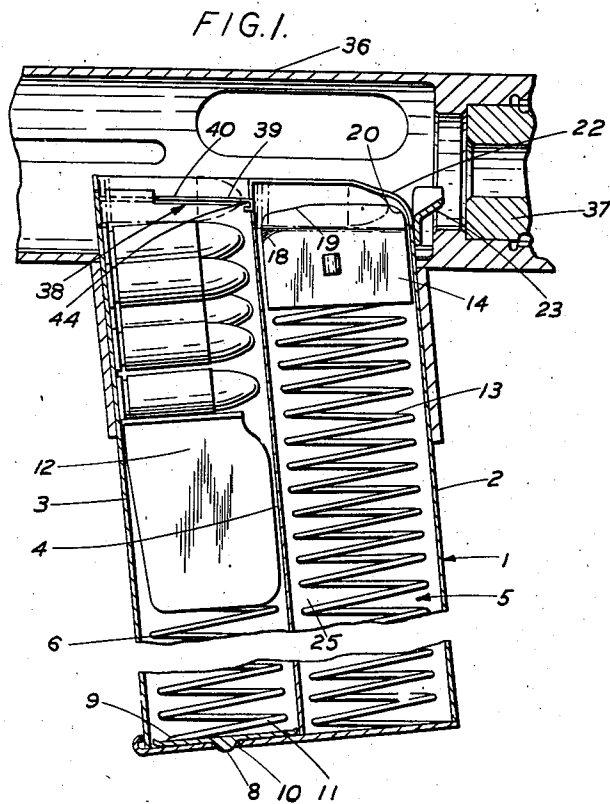
J. VESELY

2,383,998

MAGAZINE FOR FIREARMS

Filed Aug. 5, 1943

2 Sheets-Sheet 1



Josef Vesely
Inventor

By *Atty*
his Attorney.

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J. VESELY

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2 Sheets-Sheet 2

FIG. 5.

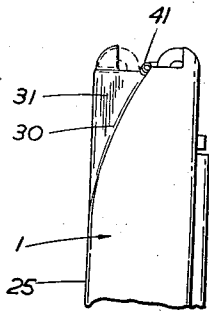


FIG. 6.

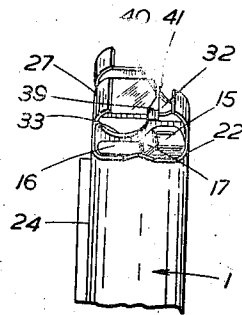


FIG. 7.

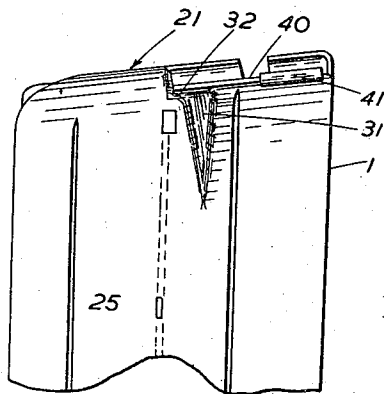


FIG. 8.



Josef Vesely
Inventor
By *Old Munk*
his Attorney

UNITED STATES PATENT OFFICE

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MAGAZINE FOR FIREARMS

Josef Veselý, London, England

Application August 5, 1943, Serial No. 497,447
In Great Britain August 14, 1942

4 Claims. (Cl. 42—50)

The present invention relates to magazines for firearms, and more particularly to magazines for automatic weapons such as, for example, sub-machine guns wherein two or more channels or compartments are provided in the magazine one behind the other in the longitudinal direction of the cartridges for the reception of two or more groups of cartridges, one group being arranged in each channel or compartment, and the cartridges being adapted to be fed from the magazine into the gun in the direction of their axes under the action of a reciprocating feed member, for example, the breech block of the gun.

The invention may be applied to magazines of this kind whether they are of the box or drum or other type and irrespective of whether the magazine is arranged under, above, or at the side of the breech of the gun; also the magazine according to the invention is suitable for use with any type of ammunition.

However, the invention is especially applicable to magazines such as are described in the specification of my co-pending patent application, Serial No. 427,957 of January 23, 1942. Such a magazine briefly and broadly speaking comprises an elongated box-like casing of rectangular cross-section having two compartments (although there could be more than two) arranged one behind the other and each adapted to receive a group or pile of cartridges, each group or pile consisting either of a single column of cartridges or of two side by side columns of cartridges, the cartridges of one column in the latter case alternating in position or being laterally offset with those of the other column of the same group. In such a magazine the front compartment of the casing is provided at its breech end and in its front wall with a cartridge discharge mouth or opening through which cartridges are fed axially (in the direction of their own axes) into the gun. The magazine casing is partially open at its breech chamber end, i. e. the end disposed in the body of the gun, and the cartridges of each pile or group are fed along the length of the magazine (more or less perpendicular to the axis of the breech chamber) to the breech end thereof by spring urged feeders arranged in the said compartments, and the arrangement is such that a reciprocating cartridge feeding member, e. g. the breech block of the gun, feeds all the cartridges, one at a time, from the forward group in the magazine before feeding those in the rearward compartment or compartments of the magazine, means (for instance those described in the specification of my said application Serial No.

427,957) being provided to depress upper cartridges in this or these rearward compartments to enable the breech block to slide over them and through the breech end of the magazine casing to feed the cartridges of the front group axially into the gun. In the said magazine the breech end of the magazine casing is provided with inwardly curved longitudinal guide lips to prevent the cartridge leaving the casing in a direction transverse to their axes under the pressure of the feeders and to guide the cartridges to the mouth of the magazine as they are fed axially forwards by the reciprocating feed member. In the case of a magazine in which each group of cartridges contains two columns as above mentioned, the cartridge discharge mouth of the magazine may be offset from the longitudinal central plane of the magazine casing and the latter may be provided with guide surfaces to urge the cartridges of that column of cartridges, in each compartment, which is not in alignment with the discharge mouth of the magazine, laterally into position into alignment with the discharge mouth.

With magazines of the form described in the last paragraph, and which will, for the purpose of brevity, hereinafter be spoken of as "box-magazines of the kind referred to," it has been found that jamming of the cartridges sometimes occurs when feeding from the front compartment of the magazine. Investigation of this failure has shown that as a result of the friction between the reciprocating feed member, i. e. the recoiling breech block, where that is the reciprocating feed member of the gun, and the uppermost cartridge (over which the breech block slides on recoiling) in the front compartment of the magazine, the said uppermost front cartridge is liable to be pulled backwards or even tilted thus causing jamming of the gun.

An object of this invention is to overcome this drawback of the earlier magazines and at the same time to provide improved means for guiding the cartridges from the rearward compartment or compartments of the magazine in their axial movement to the front compartment and the gun barrel. A further object of the invention is to provide an improved and more efficient magazine.

According to the invention there is provided a magazine for firearms of the kind adapted to contain at least two groups of cartridges arranged one behind the other in the longitudinal direction of the cartridges and for discharge therefrom one at a time in an axial direction by a reciprocating feed member on the firearm,

the groups of cartridges being discharged in succession commencing with the front group, wherein means are provided for supporting and retaining the leading cartridge against backward axial movement in the magazine under the action of the reciprocating feed member of the firearm during its return stroke.

In a magazine having only two compartments arranged one behind the other such cartridge supporting or retaining means would be provided for preventing the leading cartridge or cartridges of the front compartment from moving backwardly, but where more than two compartments are provided one behind the other said cartridge supporting or retaining means would be provided for all compartments except the rearmost one.

Preferably the said supporting or retaining means comprise a stop member adapted to abut the base or bases of the cartridge or cartridges uppermost in the magazine compartment directly in front of such stop member.

According to a further feature of the invention the said cartridge supporting or retaining means also preferably include or serve as means for assisting in guiding, along their discharge paths and over the feeder or feeders of a preceding compartment or compartments, cartridges being fed forwardly from a compartment to the rear of the front compartment of the magazine.

The said supporting or retaining means are preferably movable transversely of the axes of the cartridges (i. e., their direction of feed) in a plane passing through the bases of the upper cartridges of the two or more columns in front of the retaining or supporting means, and such plane being parallel to the axes of the said cartridges. Making the said supporting or retaining means movable in this way permits the ready discharge of a cartridge from a rearward compartment to and over the feeder of the compartment or compartments in front thereof.

The said cartridge supporting or retaining means may conveniently comprise a stop adapted to engage the bases of the cartridge or cartridges in front of the stop, such stop being movable transversely of the axis or axes of said cartridges (i. e. transversely of the length of the magazine) and transversely of the direction of movement of the spring urged cartridge feeders of the magazine. The said stop may, for example, be carried at one end of a spring stem or blade to which it is attached or with which it is made integrally, and such stem or blade may be secured at the other end to, or be made integrally with, the cartridge magazine preferably near the breech end thereof. To prevent any undesirable deflection of the stop in the direction of the length of the magazine (i. e., in the direction of movement of the said feeders) interengaging means may be provided on the magazine wall and the stop, such interengaging means leaving the stop free to make the required movement in the lateral or transverse direction. The interengaging means may, for example, comprise a rib or flange on a wall or partition portion of the magazine casing which engages in a groove or over a flange provided upon the stop, or the arrangement may be vice versa, so that whilst the stop is permitted to move crosswise with respect to the cartridges it is unable to move in any other direction.

Where the cartridges are arranged and emerge from the magazine compartment in two or more substantially side by side columns the transverse

width of the said transversely movable stop should be such as to ensure that the stop will positively engage the bases of both the right and the left-hand cartridges in the compartment of the magazine in front of the stop and the stop should be elastically mounted so as to be capable of being laterally deflected by a cartridge to the rear of it during the passage of this cartridge from one compartment of the magazine to the next compartment in front of it. Moreover, whether each compartment has a single or double column group of cartridges, the stop should yieldingly press the leading cartridge of a rear compartment being fed forwardly against the guiding surface of the magazine, thus securing correct feed of the cartridge. The stop should preferably also be suitably shaped at the side which comes into contact with the longitudinal surfaces of the cartridges so as properly to engage such cartridges.

In order that the invention may be thoroughly understood and readily be carried into practice drawings are appended hereto and illustrate one embodiment of the invention and a modification of that embodiment, by way of example, and in these drawings:

Figure 1 is a fragmentary view showing, in partial vertical cross-section, a magazine constructed in accordance with this invention attached to the body of a sub-machine gun;

Figure 2 is a plan view of the magazine according to the invention, this magazine being shown as having its rear and front compartments fully loaded with cartridges;

Figure 3 is a view similar to Figure 2 showing the front compartment of the magazine completely exhausted and a cartridge being fed forwardly from the rear magazine;

Figure 4 is a view similar to Figure 3 but shows a cartridge still further advanced in its forward movement;

Figure 5 is a rear elevation of the upper part of the magazine;

Figure 6 is a front elevation of the upper part of the magazine;

Figure 7 is a side elevation of the upper portion of the magazine;

Figure 8 is a plan view of a modified form of the magazine constructed in accordance with the invention.

Referring to Figures 1 to 6 of the drawings it will be seen that the magazine is a box-magazine of the kind referred to consisting of an elongated casing 1 formed of sheet metal and of rectangular shape in cross-section. The front and rear transverse walls 2 and 3 of this casing are parallel, and centrally between them the casing has a partition wall 4 which is parallel to the front and rear walls 2 and 3 and divides the magazine casing into two compartments, a front compartment 5 and a rear compartment 6 of similar form.

The bottom of the magazine is closed by a removable slide-on cover plate 7 retained releasably in position by means of a protuberance 8 on a plate 9 and engaging in a hole 10 in the cover plate 7. The plate 9 is acted upon by a feed spring 11 in the rear compartment 6 and this spring carries, at its upper end, a cartridge feeder 12 of approximately inverted U-shape.

In the front compartment 5 of the magazine casing is arranged a further feed spring 13, similar to the feed spring 11, which bears, at its lower end, upon the cover plate 7 and, at its upper end, carries a further cartridge feeder 14 of hollow

form but having its upper surface shaped to provide cartridge guiding surfaces. As will be seen from the drawings, and particularly from Figures 1 and 6, the top surface of the feeder 14 is stepped so as to have two surfaces 15 and 16 at different levels, the surface 15 being higher than the surface 16 and the two surfaces being joined by an inclined surface 17. The rear ends of the surfaces 15 and 16 incline or curve downwardly as shown at 18 and 19 (Figure 1) and the surface 15 is rounded off at its front end as shown at 20 (Figure 1).

At its upper or breech chamber end 21 the magazine casing 1 is open and its front wall 2 is provided, at the breech chamber end, with a cartridge discharge opening 22 through which cartridges may be fed in the direction of their axes on to a cartridge guide 23 which leads the cartridge into the barrel of the gun.

At the open end 21 of the magazine casing the latter is provided, on its longitudinal side walls 24 and 25 with inturned guide lips. Thus, as is clearly seen from the drawings, the longitudinal side wall 25 of the magazine is provided, at the upper end of the front compartment 5, with an inwardly curved lip 26 whilst an inwardly curved lip 27 extends almost all the way from the front to the back edge of the longitudinal side wall 24 of the magazine, the lip, however, being gapped at 28 and, like the lip 26, cut away at 29. The cutting away at 29 of the lips 26 and 27 is to facilitate the discharge of the cartridges from the magazine and the gap 28 in the lip 27 is to provide for the operation of mechanism hereinbefore referred to for maintaining the cartridges in the rear compartment 6 depressed during the feeding of the cartridges in the front compartment of the gun.

The rear portion of the longitudinal side wall 25 of the magazine casing 1 is also provided with an inwardly curved portion 30 commencing some little distance down the wall as is clearly seen, for example, in Figures 2 to 4, 5 and 7. Forming the wall in this way provides, on the interior of the magazine, a guide surface for urging cartridges towards the opposite wall 24 of the magazine as the cartridges move towards the upper end thereof. Forming the wall 25 with the incurved portion as above described also provides the magazine with a small approximately right-angled triangular-shaped transverse partition or web 31 and this partition has a flange 32 parallel to the top edge of the magazine and extending from the central partition 4 a short distance rearwardly.

The central partition 4 of the magazine casing terminates short of the upper end of the latter and is provided, as clearly seen in Figure 6, with a semi-circular recess 33 which extends from the longitudinal side wall 24 of the magazine casing approximately half way across the partition. This recess is to facilitate the passage of cartridges from the rear compartment 6 of the magazine to the front compartment 5.

The magazine illustrated in Figures 1 to 6 of the drawings is intended to receive, in each of its compartments 5 and 6, a group or pile of cartridges, each group or pile consisting of two columns of cartridges arranged with the cartridges of one column slightly staggered and alternating with the cartridges of the other column. Thus, as the cartridges are fed upwards towards the breech chamber end of the magazine casing, in the case of the front compartment the cartridges are successively fed, by the co-operation of the cartridges, the feeder 14 and the lips 26 and 27,

into the position in which the cartridge marked 34 is shown in Figure 2 of the drawings. This is therefore the leading cartridge in the magazine and to one side of it and slightly below is disposed the second cartridge 35 in the magazine. When the magazine is full, as shown in Fig. 2, other cartridges are arranged directly below the cartridges 34 and 35 and the rear compartment is full of cartridges.

In the embodiment of the invention illustrated in the drawings reliance is placed on the action of the reciprocating breech block (not shown) of the gun 36 for feeding the cartridges into the barrel 37 and it will be understood clearly from Figure 1 that it is necessary, whilst the cartridges of the front compartment 5 are being discharged, to retain the cartridges in the rear compartment 6 depressed below the level of the breech block so that these cartridges do not interfere with the action of the breech block upon the cartridges in the front compartment 5. This may be effected, for example, as previously explained herein by any of the means described in my copending U. S. patent applications, Serial No. 427,957, or Serial No. 497,448.

In feeding a cartridge from the front compartment 5 of the magazine the breech block of the gun engages the rear of a cartridge in the position occupied by cartridge 34 (Figure 2) and urges this cartridge forwards in the direction of its own axis on to the guide member 23 by which it is deflected upwardly into the barrel 37. When the cartridge 34 has left the magazine a new cartridge, such as 35, takes the uppermost place in the magazine compartment but on the other side, i. e. if the cartridge 34 has been on the left hand side of the compartment (as shown in Fig. 2), the next uppermost cartridge such as 35 will lie on the right hand side, so that the position shown in Fig. 2 will be restored symmetrically to the longitudinal axis of the compartment. On the return movement of the breech block, however, there is a tendency for the breech block, due to frictional engagement with the cartridge in the position of cartridge 34, to cause this cartridge to slide backwardly in an axial direction from the front compartment 5 of the magazine towards the rear compartment 6 and this, as previously explained, is liable to jam the gun or interfere with its proper functioning. The frictional engagement of the cartridge, such as 34, with the other cartridge, such as 35, also tends to cause the latter cartridge to move out of its proper position and in a rearward direction, should the cartridge 34 be free to move rearwardly under the action of the recoiling breech block. Therefore to obviate these dangers a stop 38 is provided and comprises a flat piece of metal constituting a heel of approximately right-angled triangular form 39 which is formed integrally with a spring stem 40 having its rear end encircled and gripped by a cylindrically turned-over portion 41 of the longitudinal side wall 25 of the magazine casing, clearly seen in end view in Figures 5 and 6. The spring stem 40 lies longitudinally along the upper edge of the inwardly curved portion 30 of the side wall 25 of the magazine casing, and the spring stem is incapable of movement in the direction either of the axial feed of the cartridges or of their transverse feed through the magazine casing under the action of the feeders 12 and 14.

The heel portion 39 of the stop 38 has a rectilinear front edge which is perpendicular to the side walls 24 and 25 of the magazine casing and is, when there is more than one cartridge in the

front compartment 5, adapted to engage behind the bases of both the right and the left-hand upper cartridges in the front compartment of the magazine as is clearly shown in Figure 2 of the drawings. As explained above the cartridge 35 lies a little below the cartridge 34. The stop 38 thus supports the bases of the cartridges 34 and 35 or the base of the cartridge 34 alone when it is the last cartridge in the front compartment 5, and prevents these cartridges or this cartridge from being moved backwardly in an axial direction during the recoil of the breech block.

The inner edge 42 of the stop 38 is preferably contoured so as to more or less match the shape of the noses of the cartridges being used in the magazine, so that as a rear cartridge 43 moves from the position shown in Figure 2 (after the complete discharge of cartridges from the front compartment 5 has been effected) the resilient stop engages first against the nose of the cartridge and then along its longitudinal surface as shown in Figure 3 to assist in guiding the cartridge in its axial movement and to maintain it in contact with the guide lip 27 of the magazine casing, and as the stop 38 is arranged to move transversely of the magazine in a plane passing through the longitudinal axis of the uppermost cartridges in the magazine, the action of the stop is to urge a cartridge, such as 43, horizontally across the magazine. At the same time, however, the yielding character of the stop 38 ensures that the stop will not impede the movement of the cartridge from the rear to the front compartment of the magazine.

To ensure that the stop 38 may not move in any direction other than transversely across the magazine, and particularly to ensure that it may not be moved in the direction of the length of the magazine, means are provided positively to constrain the stop to its transverse line of movement, such means comprising a groove or channel 44 provided on the underside of the heel part 39 of the stop for the reception of the forward edge portion of the flange 32 previously referred to which serves to guide the stop 38 in its movement and to constrain it to movement only in a direction transverse to the length of the magazine.

In the embodiment of the magazine shown in Figure 8 the arrangement is the same as that already described with the exception that the magazine is narrower from side to side than the magazine shown in Figures 1 to 6, as this magazine is intended to contain, in its front and rear compartments, only a single column of cartridges instead of a double column as shown in the other figures. Since the parts are all the same in form as those already described the same references have been used on this figure as in the other figures.

It should, of course, be understood that, although certain embodiments of the invention have been described in some detail above for the

purpose of illustrating how the invention may be carried into practice, the invention is not restricted to the particular form of the magazine and stop means above described, since the form of the magazine and the stop may be modified without departing from the scope of the invention as hereinafter claimed.

I claim:

1. A cartridge magazine for firearms comprising an elongated rectangular box-like casing containing two compartments arranged one behind the other in the axial direction of the cartridges and each constructed to receive a group of cartridges piled upon one another in their compartment, each compartment being open at the breech end of the magazine and having guide lip means to retain the cartridges against discharge from the magazine transversely of their axes and to guide the cartridges axially in their passage, under the action of a reciprocating feed member of the firearm moving parallel to the axes of said cartridges, to a discharge mouth provided at the front and breech end of the magazine, feeding means to urge said cartridges towards the breech end of the magazine, stop means arranged behind the front compartment of the magazine and at the breech end of the latter, a resilient stem having its rear end secured to said magazine at a distance rearwardly from said front compartment and extending forwardly adjacent one side of the uppermost cartridge in said rear compartment and substantially in a transverse plane containing the axis of said uppermost cartridge, and a heel portion on the front end of said resilient stem including an abutment face normally located directly behind the rear end of the uppermost cartridge in said front compartment to prevent any backward movement of such cartridge, and means to prevent said stop means from carrying out any movements except in said transverse plane.

2. A magazine for firearms according to claim 1, wherein the said resilient stem is anchored to the magazine by a portion of the wall thereof of encircling the stem.

3. A cartridge magazine, as claimed in claim 1, in which said heel portion of said stop means is provided with a cam surface to effect a temporary transverse displacement of said stop means when a cartridge is advanced from said rear compartment to said front compartment.

4. A cartridge magazine, as claimed in claim 1, in which said means to prevent said stop means from carrying out any movements except in said transverse plane includes a transverse flange on said magazine extending partially across the latter, said transverse flange engaging a transverse groove provided in said heel portion of said stop means to guide the latter positively for movements in said plane.

JOSEF VESELY.