April 27, 1965 H. MENNEKING ET AL 3,180,046

MAGAZINE FOR AUTOMATIC FIREARMS

Filed March 28, 1963 2 Sheets-Sheet 1

Fig. 1

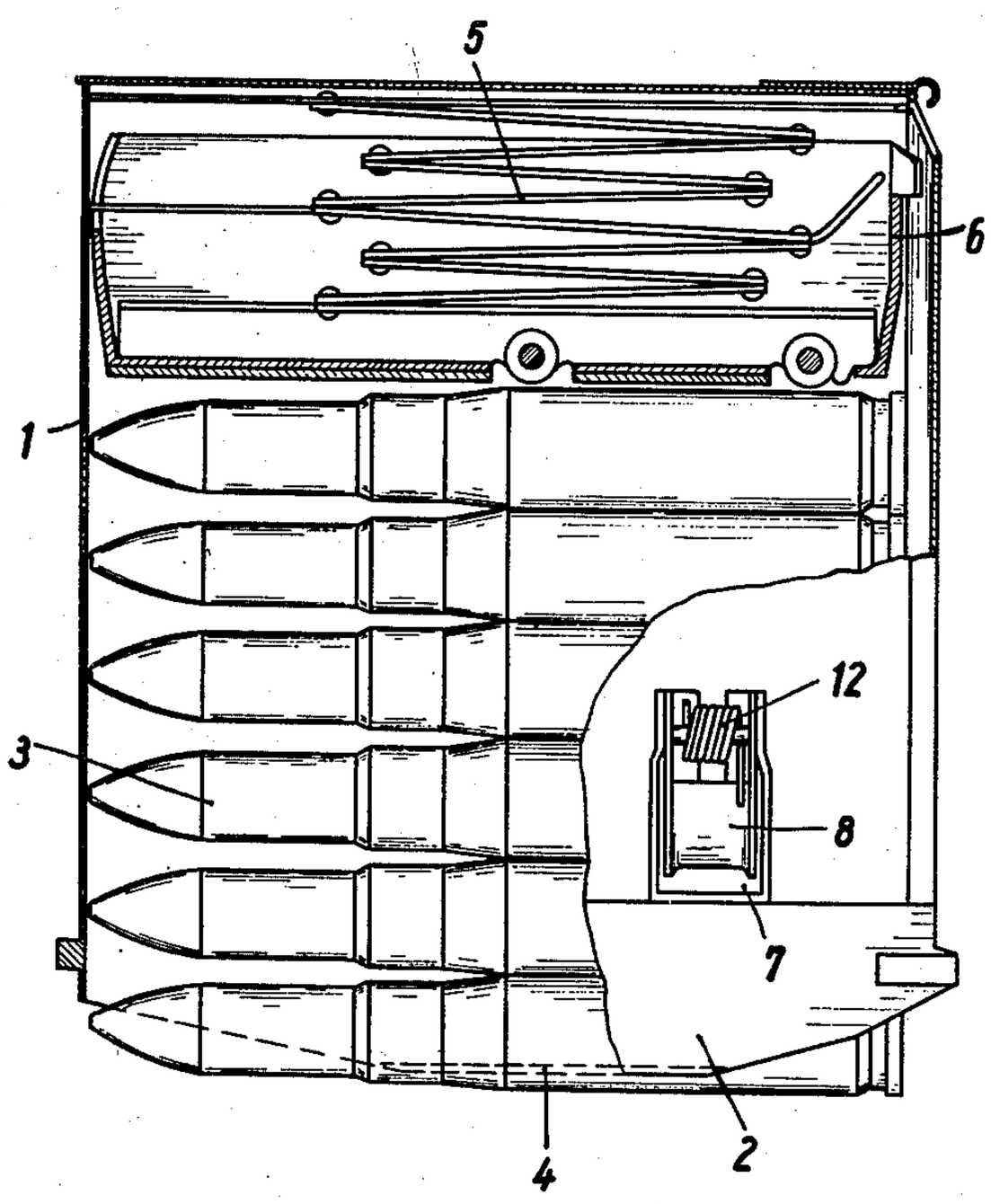

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Fig. 2

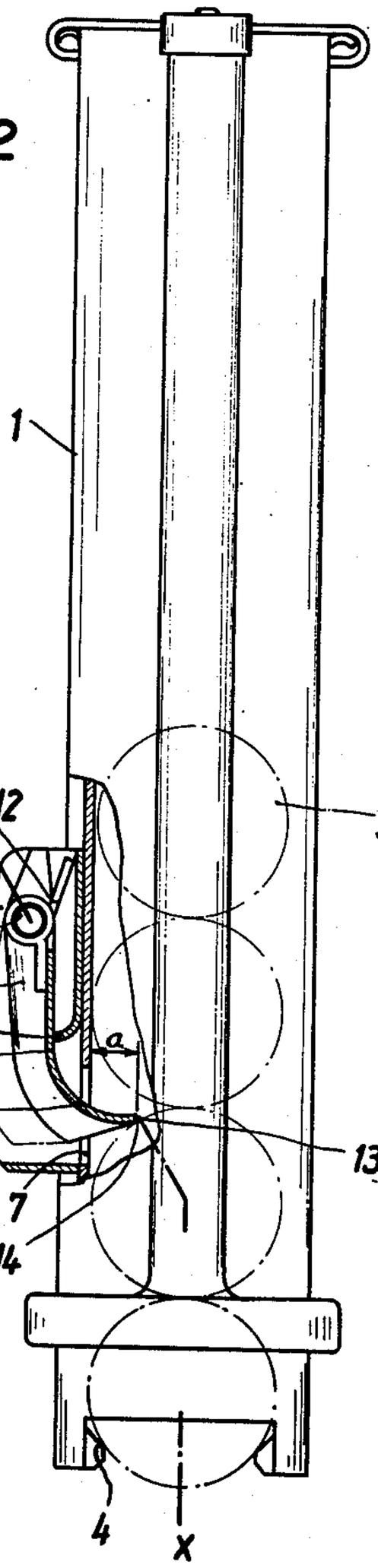


Fig. 3

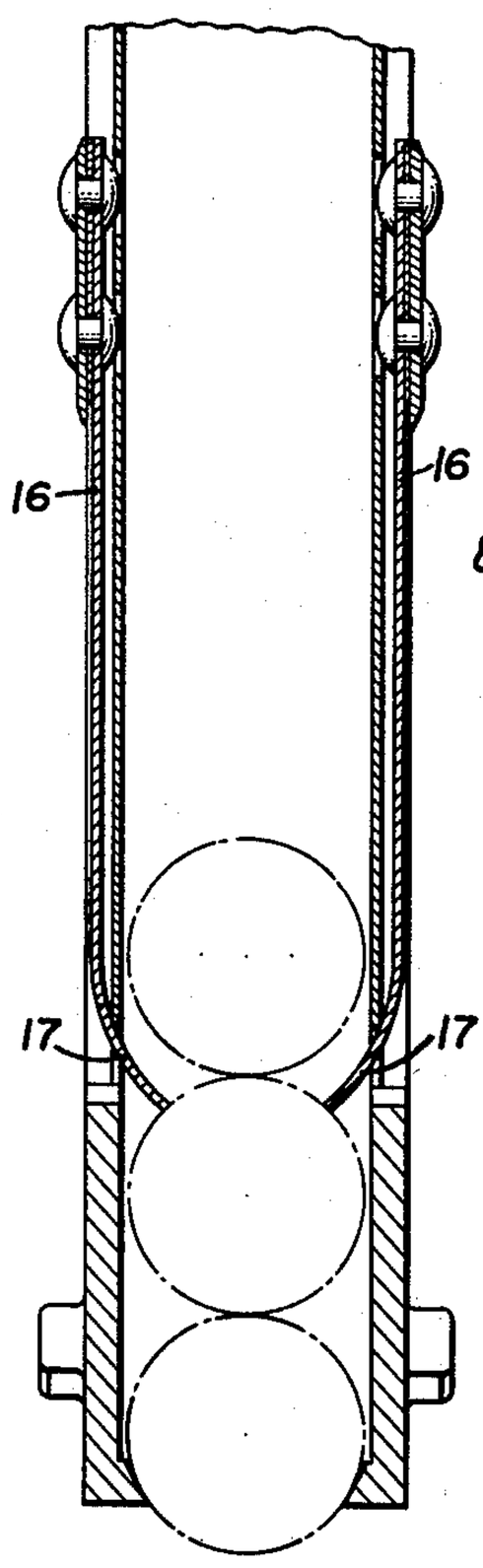
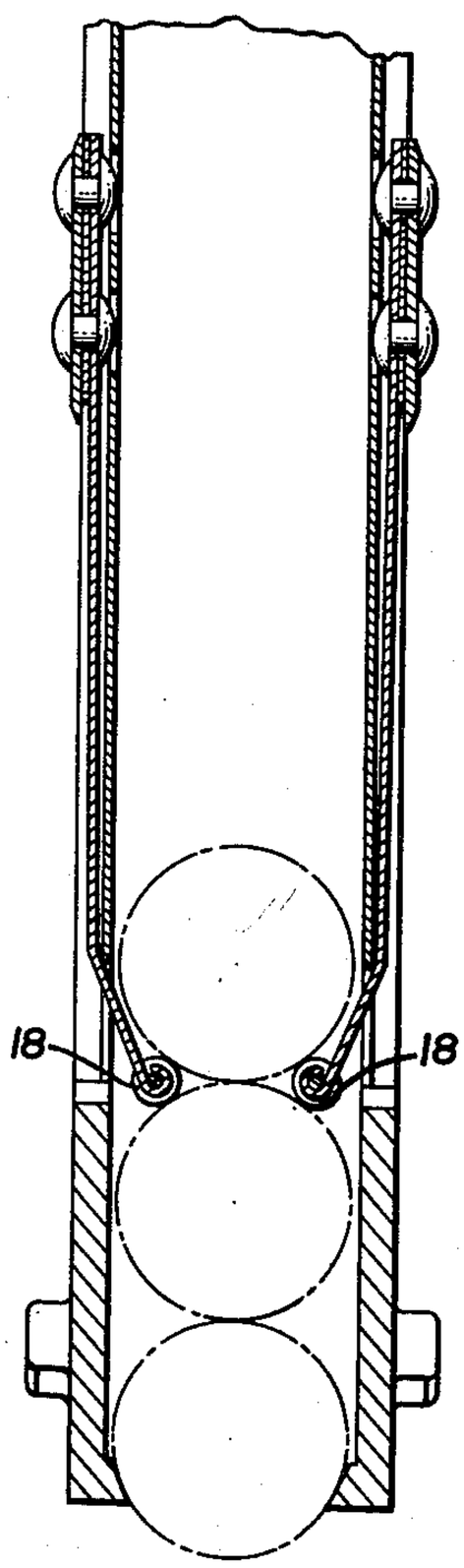


Fig. 4



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MAGAZINE FOR AUTOMATIC FIREARMS

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6 Claims. (Cl. 42—50)

This invention relates to magazines for automatic firearms in which a plurality of cartridges which are not coupled together, i.e. unbelted cartridges, are stored. Magazines of this kind are generally furnished with a spring-loaded, feed device by means of which the cartridges are fed to the loading device, i.e. the breech block or bolt of the firearm. To this end, the magazine has a mouthpiece which is insereted in a corresponding opening in the firearm.

The types of flat magazines of this kind heretofere known have not always met the increasing demands for higher rates of fire, and stoppages have occurred in the feed of the cartridges. In order to increase the feed rate required by higher fire rates, the magazine spring was first strengthened. The result of this, however, was that the loading process was prejudiced owing to rebound of the cartridges and, furthermore, due to the cartridges striking the lips of the mouthpiece, deformation occurred and this also resulted in loading stoppages.

For those reasons, strengthening of the magazine spring was abandoned and instead the magazine was fitted with an accelerating arrangement adapted to be tensioned by the magazine spring in opposition to the pressure of a return spring. Thus, the side walls of the magazine were equipped with elastically resilient portions above the mouthpiece.

The present invention relates to a magazine for automatic firearms having an accelerating arrangement for the cartridges in which the accelerating arrangement consists of one or more members projecting through the side walls of the magazine into the interior of the latter.

Preferably, the accelerating member or members consist of an angular lever or levers pivotable about an axis or axes located parallel to the axes of the cartridges, the or each lever having a bent end projecting into the interior of the magazine.

Further details of an embodiment of the invention will now be explained in the following description with reference to the accompanying drawings, of which:

FIGURE 1 is a side elevation partly in section is an end elevation on a larger scale and also partly in section,

FIGURE 2 is an end elevation on a large scale also partly in section.

FIGURE 3 is a cross sectional view of one end of the magazine showing modified springs, and

FIGURE 4 is a cross sectional view showing further modified springs.

Rferring to the drawings, the magazine **1** has at its lower end a mouthpiece **2** which is inserted in a corresponding opening in the firearm (not shown). Arranged in the magazine in a row one above the other are the cartridges **3**, the lowest one of which, to be introduced first into the firearm, rests on lips or abutments **4** formed at the lower end of the mouthpiece. From the position shown, the lowermost cartridge is introduced into the barrel by the breech block or bolt of the firearm in known manner. The cartridges are fed to the mouth piece and thereby to the firearm by a magazine spring **5** arranged in the upper part of the magazine. This spring is arranged in a box-like frame **6** forming part of the magazine platform and guided so as to be longitudinally slidable in the magazine.

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In the region of the mouthpiece there is provided, in one side wall of the magazine, an aperture **7** through which extends the inturned arm **9** of a lever **8**. The lever **8** consists of a U-shaped sheet-metal pressing whose limbs **8'** extend outwardly from the magazine and is pivotally mounted on a pin **10** held parallel to the side wall of the magazine in a bearing bracket **11** mounted on the side wall. By means of a coil spring **12** mounted on the pin **10** the lever **8** is held under tension in the position illustrated in FIGURE 2, in which position the arm **9** projects into the interior of the magazine, the depth of penetration *a* being limited by a stop **15**.

The lever **8** serves as an accelerating element when the cartridges are fed to the firearm. When the bottom cartridge resting on the lips **4** is pushed out of the magazine by the breech block or bolt of the firearm and is introduced into the barrel of the former, the rest of the cartridges contained in the magazine are driven forward towards the mouthpiece by the magazine spring **5**. As will be seen from FIGURE 2, during that process the lever **8** is urged outwardly by the cartridge immediately above the arm **9** under the pressure of the magazine spring and in opposition to the restoring force of the spring **12**. After the cartridge has passed the end **13** of the arm **9**, the lever **8** springs back, imparting to the cartridge a slight additional accelerating impulse, whereby the cartridge is moved more rapidly towards the mouthpiece. The accelerating impulse, however, is not so strong that deformation of the lips **4** occurs. The magnitude of the supplementary energy delivered can be varied by altering the depth of penetration *a* of the arm **9** into the magazine. Furthermore, by suitably shaping the arm **9** or varying the force of the spring **12**, it is possible to adapt the accelerating impulse to given conditions, for example the mass of the cartridge or the desired fire rate.

Furthermore, owing to the arrangement and design of the accelerating lever **8** described above, a self-checking action is obtained in that rebound movements of the accelerated cartridges are intercepted by the lever. To obtain a self-checking action of this kind, a certain minimum depth of penetration *a* of the accelerating lever is required, which is advantageously about one quarter of the diameter of the cartridge. An optimum self-checking action is obtained when the end **13** of the arm **9** is so formed and the pivot pin **10** of the lever is so located that the point of contact **14** between the accelerated cartridge and the arm **9** lies within the angle which is formed by the longitudinal axis X of the magazine and line Y drawn through the longitudinal axis of the cartridge and through the pivotal axis of the pin **10**.

Only one accelerating lever is illustrated in the drawing. This may be sufficient in many cases. However, it is also readily possible to provide another accelerating lever on the opposite side wall of the magazine. Furthermore, it may be advantageous in many cases to provide two such accelerating levers on one side wall or on both. In addition, the accelerating elements may be designed in different ways, for example as leaf springs **16**, FIG. 3, riveted to the side walls of the magazine and having a bent limb or arm **17**. Furthermore, the accelerating elements may also consist of a leaf spring wound spirally round the pin **10** and whose end is shaped in a manner similar to that of the arm **9**.

Finally, an advantageous development of the invention consists in that the pin **10** is in the form of a torsion bar spring on which the accelerating lever **8** is mounted. Of couse, in that case, the coil spring **12** can be dispensed with.

Furthermore, in order to make the friction conditions within the accelerating system particularly favourable,

the accelerating elements can be provided to very great advantage with rolling bodies, for example rollers 18 or the like, FIG. 4, at the end 13 thereof projecting into the interior of the magazine.

We claim:

1. An attachable magazine for automatic firearms comprising a casing with a mouthpiece for the magazine, the cartridges being stored in said casing in a row with their longitudinal axes lying side by side, said row including a foremost cartridge nearest to said mouthpiece and a hindmost cartridge and each cartridge having a longitudinal foreside looking in the direction to said mouthpiece and a longitudinal backside turned away from said mouthpiece, a slidably guided cartridge platform in said casing arranged behind the hindmost cartridge, a spring urging said platform towards said mouthpiece, said mouthpiece having abutments for the foremost cartridge along the longitudinal axis thereof and openings in the extension of said longitudinal axis of the foremost cartridge to allow said foremost cartridge to be urged to said abutments by said spring and is pushed out of said magazine in longitudinal direction sliding along said abutments, a cartridge-feed accelerating device for the cartridge motion in said magazine towards said mouthpiece, said accelerating device having at least one lever pivotably mounted on said casing about an axis substantially parallel to the axes of the cartridges in the magazine, an arm on said lever projecting towards the interior of said casing, resilient means for urging said lever into an inward position around its pivotal mounting, said arm projecting into the interior of said casing into the feed-path of cartridges therein between two cartridges in contact with a backside of that cartridge nearer to said mouthpiece, said arm and said resilient means being operative so that said arm on said lever is moved outwardly by the action of said cartridge platform spring over a foreside of the next cartridge passing said arm when said row of cartridges is moved gradually towards said mouthpiece after the foremost cartridge has been pushed out and that said arm after being passed by the foreside of said next cartridge being swung inwardly into contact with the backside of said next cartridge, thereby accelerating the feed of said next cartridge and of all cartridges in the part of the magazine between said next cartridge and said mouthpiece towards said abutments of said mouthpiece and checking the rebound of the cartridge abutting against said abutments.

2. An attachable magazine for automatic firearms according to claim 1, in which said resilient means is a torsion spring on which said lever is mounted.

3. An attachable magazine for automatic firearms according to claim 1, in which said lever and said arm integrally formed thereon consist of a U-shaped sheet-metal member having limbs extending outwardly from the magazine.

4. An attachable magazine for automatic firearms according to claim 1, in which said arm on said lever being formed so that after the foremost cartridge abuts on said abutments at the point of contact between said arm and the backside of the cartridge which has just passed said arm lying within an angle defined by the longitudinal axis of the magazine along said row of cartridges and a line drawn through the longitudinal axis of said cartridge which has just passed said arm and the pivot axis of said lever.

5. An attachable magazine for automatic firearms comprising a casing with a mouthpiece for the magazine, the cartridges being stored in said casing in a row with their longitudinal axes lying side by side, said row including a foremost cartridge nearest to said mouthpiece and a hindmost cartridge and each cartridge having a longitudinal foreside looking in the direction to said mouthpiece and a longitudinal backside turned off said mouthpiece, a slidably guided cartridge platform in said casing being arranged behind the hindmost cartridge, a spring urging said platform towards said mouthpiece, said mouthpiece having abutments for the foremost cartridge along the longitudinal axis thereof and openings in the extension of said longitudinal axis of the foremost cartridge to allow said foremost cartridge urged to said abutments by said spring to be pushed out of said magazine in longitudinal direction sliding along said abutments, a cartridge-feed accelerating device for the cartridge motion in said magazine towards said mouthpiece, said accelerating device having at least one leaf spring mounted on a wall of said casing, said wall having an aperture therein through which one end of said leaf spring projects into the interior of said casing and into the feed-path of cartridges therein between two cartridges in contact with the backside of that cartridge nearer to said mouthpiece, said leaf spring and said one projecting end thereof being formed so that said projecting end of said leaf spring is moved outwardly by the action of said cartridge platform spring over the foreside of the next cartridge passing said projecting end of said leaf spring when said row of cartridges is moved gradually towards said mouthpiece after the foremost cartridge has been pushed out and said projecting end of said leaf spring after being passed by the foreside of said next cartridge being swung inwardly into contact with the backside of said next cartridge, thereby accelerating the feed of said next cartridge and of all cartridges in the part of the magazine between said next cartridge and said mouthpiece towards said abutments of said mouthpiece and checking the rebound of the cartridge abutting against said abutments.

6. An attachable magazine for automatic firearms according to claim 5, in which said projecting end of said leaf spring has a roller thereon to contact the gradually passing cartridges.

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