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CARTRIDGE FOR MISSILES OF WEAPONS

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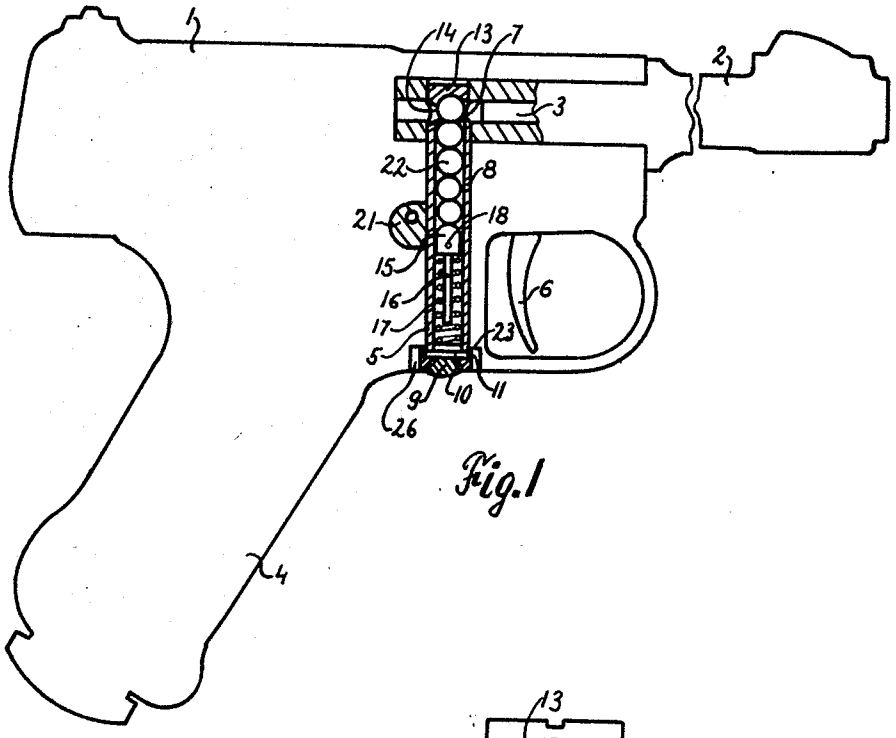


Fig. 1

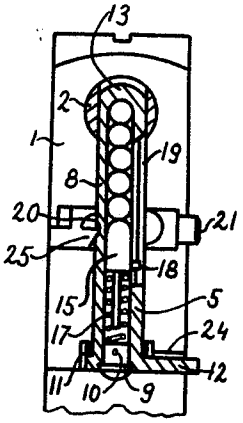


Fig. 2

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CARTRIDGE FOR MISSILES OF WEAPONS

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ABSTRACT OF THE DISCLOSURE

A pellet carrying magazine adapted to be used in an air gun or similar weapon using compressed gas as a propellant, which is formed by a tubular member adapted to hold a column of pellets. The tubular member is closed at the top and bottom and has a pair of oppositely arranged openings adjacent to the top wall. The opening spaced farthest from the barrel includes a conically shaped passage and has a minimum diameter which is larger than the corresponding diameter of one of said pellets. A rubber ring is mounted on the tubular member and serves to hermetically seal the opening in the body of the air gun through which the magazine is inserted into the weapon. Spring biased retention means are operatively mounted in the body of the air gun for maintaining the magazine in operative position therein.

This invention relates to a magazine for pellets of weapons actuated by air or gas pressure.

Magazines of weapons where the pellets are propelled by compressed air or gas, for instance by CO_2 gas from a pressure vessel as used at present, have usually the shape of a tube, containing a spring and a feeder. In the prior art, these magazines are arranged in the weapon longitudinally with respect to the barrel, whereby the introduction of the pellets into the bore of the barrel is accomplished by a transfer device provided with an opening for one pellet and performing a straight to and fro movement between the magazine and the bore of the barrel, so that in one position, where the opening of the transfer device is opposite the mouth of the magazine, it entrains the pellet from the magazine, whereas in the second position, which it achieves after performance of the straight movement parallel to the barrel, the transfer device is with its opening situated opposite the bore of the barrel. The movement of the transfer device is generally performed by the person using the weapon either manually, or more frequently automatically, usually by a lever system controlled by some of the mobile mechanisms of the weapon.

In some other weapons of the prior art the tube magazines in the weapon are arranged pivotally behind the barrel in order to enable the introduction of the pellets into the barrel. It is also known to arrange tube magazines alongside the barrel in which case the transfer of the pellets to the bore of the barrel is achieved by revolving a cylindrical drum provided with channels having a bed for each pellet.

Furthermore, it is known in the prior art to introduce the magazines into the weapon perpendicularly to the bore of the barrel whereby the barrel has the shape of a tube containing a spring supported feeder, resting with one end against a stable or removable bottom of the magazine, and the magazine tube is provided at its opposite end with an open mouth, whereby the tube of the magazine contacts with this open mouth the bore of the barrel in its rear part. Due to the action of the spring

and of the feeder, the column of pellets is pressed towards the bore of the barrel so that the first pellet can enter the bore of the barrel where it is shifted at least the distance of one diameter of one pellet in the direction towards the mouth of the barrel by means of a tube which simultaneously covers the mouth of the magazine in order to seal the pressure of air or gas in the bore.

A drawback of the aforementioned magazines of the prior art which are arranged alongside the barrel or behind the barrel lies in the necessity having to provide kinematic systems, particularly transfer devices and of pivotable levers which substantially increase the intricacy of design and difficulties of manufacturing the weapon with a concomitant increased possibility of failures of the functional mechanisms.

A drawback of the aforementioned magazines of the prior art which are introduced perpendicularly to the bore of the barrel lies in the circumstance that when removing the magazine from the weapon when it still contains some pellets, these pellets are, due to pressure of the spring of the magazine, pushed into the open space. Magazines having a removable bottom, require the removable bottom to be removed prior to the weapon being released and then be removed together with the spring and feeder, and the pellets have then to be poured out of the magazine. This manipulation is tedious and makes the task of the shooting the weapon difficult. Another drawback of these types of magazines lies in that they require a tube engaging into the bore of the barrel in order to cover the mouth of the magazine and in order to seal the bore of the barrel. The tube is generally fixed to the piston. This arrangement is rather difficult to manufacture due to the rather narrow tolerances of the respective elements.

It is a general object of this invention to substantially eliminate all of the aforementioned drawbacks in the prior art devices. The essential feature of the device of this invention consists in that the tube is closed in the direction of the action of the feeder by a solid front wall, whereby the tube is provided closed to this front wall with a mouth and with a channel allowing the passage of compressed air or gas so that the mouth and channel are, after introduction of the magazine into the body of the weapon, in axial alignment with the bore of the barrel, whereas at its opposite end, the tube is provided with a rubber ring resting against an extension, whereby the opposite end with the rubber ring engages with the front part of a circular recess in the body of the weapon.

An advantage of the magazine according to this invention lies in its easy removal from the weapon without the danger of spilling the pellets. Another advantage lies in the simplicity with which the magazine can be sealed in the weapon in order to prevent any pressure reduction of air or gas in the bore of the barrel.

The aforementioned as well as additional objects, features and advantages of the present invention will become more clearly apparent from the following detailed description thereof, which is to be read with reference to the accompanying drawing, in which:

FIG. 1 is a schematic front elevation of a pistol having incorporated therein a magazine according to this invention, said magazine being illustrated as an axial section; and

FIG. 2 is another cross-sectional view of the magazine according to this invention.

Referring now to the drawing, there is schematically illustrated a pistol comprising a body 1, supporting firmly the barrel 2 having a bore 3. Furthermore, there extends downwardly from the body 1 a hand grip 4. The usual air pistol mechanisms are arranged within the body 1 within the hand grip 4 and are not illustrated in detail. Particularly there are arranged therein the not shown

trigger mechanism with the trigger 6, a pressure vessel, valves, the breech mechanism, the tensioning device, a safety lock and possibly some other known accessories. In addition to these mechanisms the body 1 contains a tube shaped magazine 5 orientated with its longitudinal axis at least approximately perpendicularly to the barrel 2. This magazine 5 is removably arranged between the trigger 6 and the hand grip 4 so that it engages with one of its ends provided with the mouth 7, the rear part of the barrel 2. The magazine 5 is composed of tube 8 provided at its other end with a cover 9 extending into the tube 8 and secured against removal by a pin 10 passing across the cover 9 and across the tube 8. A rubber ring 11 is co-axially arranged on the tube 8 and secures the pin 10 from loosening. The rubber ring 11 rests against the extension 12 which has a rectangular shape and which is fixed to the end of the tube 8 of the magazine 5 so that, in case the magazine 5 is introduced into the body 1 of the pistol, the extension 12 fits into a rectangular recess 24 provided in the body 1 and slightly protrudes beyond the outer periphery of the body 1, thereby making easy to the manual removal of the magazine 5 from the body 1.

As previously mentioned, the opposite end of the tube 8 is provided with a mouth 7 having a circular opening facing the mouth of the barrel 2. The tube 8 is in the axial direction of the magazine 5 closed at its upper end by a solid front wall 13 integral with the tube 8. The tube 8 is provided at the side opposite to the mouth 7 with a channel 14, of preferably conical shape, having its smaller diameter closer in proximity to the mouth 7. A feeder 15 of cylindrical shape is slidingly arranged within the tube 8 and is provided with a shoulder 16 supporting one end of a spring 17 resting with its other end against the cover 9. The feeder 15 is provided with a transversely arranged guiding bolt 18 engaging into a longitudinal groove 19 longitudinally extending in the walls of the tube 8. The tube 8 is furthermore provided with a groove 20 designed for engagement with the extension 25 of a spring loaded lock 21, arranged transversely slidingly in a transverse passage provided for within the pistol body 1. Pellets 22 are arranged in the magazine 5 in a column; the column of pellets rests with one end against the feeder 15 and with its other end against the fixed front wall 13 of the tube 8. The rubber ring 11 bears against the top wall of a circular recess 26 in the body 1 when the magazine 5 is introduced into the body extends from the circular recess 26 and is adapted to receive the rectangularly shaped extension 12. The rubber ring 11 seals the opening in the body 1 for the tube-shaped magazine 5, thereby preventing the escape of air or gas under pressure in the bore 3 of the barrel 2 and in the internal space of the magazine 5. The magazine 5 can be manually filled by a person using the weapon by taking hold of the magazine 5 with his left hand and pulling down with his thumb by means of the guiding pin 18, the feeder 15 against pressure of the spring 17. Then the pellets 22 can be introduced with the right hand via the mouth 7. After introduction of the the pellets 22 the guiding pin 18 is released, causing the pellets 22 to be pressed by action of the spring 17 against the fixed front wall 13 of the magazine 5. The magazine can thereafter be manually introduced into the pistol body 1, whereby due to pressure exerted upon the extension 12 in the direction of the longitudnidinal axis of the magazine 5, for instance by means of the thumb, an elastic deformation of the rubber ring 11 resting against the bottom wall 23 of the circular recess 26 is achieved. The magazine 5 is thus secured in the pistol body 1 by means of the extension 25 of the spring loaded lock 21, which enters the groove 20 of the tube 8 of the magazine 5 and thereby locks the latter in position. The magazine 5 is thus introduced into the body 1 and locked in a position in which it extends with the end having the solid front wall 13, the mouth 7 and the channel 14, into the barrel 2, whereby the mouth 7 is axially aligned with the bore 3 of the barrel 2.

A correct positioning of the magazine 5 with respect to the axial alignment of the mouth 7 with the bore 3 is achieved by having the extension 12 of the magazine 5 properly engage the rectangular recess 24 of the body 1. After inserting the magazine 5 the shooting of the weapon can proceed, so that after cocking the weapon and after pressing the trigger 6, compressed air or gas enters the rear part of the barrel 2 and reaches by way of the channel 14 into the magazine 5, wherefrom the pellet 22 is taken, due to the gas or air pressure, by way of the mouth 7 into the bore 3 of the barrel 2 and from there towards the mouth of and out of the barrel 2. Due to the action of compressed air or gas upon the column of pellets 22 in the magazine 5 the spring 17 with the feeder 15 remains pressed down, so that another pellet 22 is prevented from entering the track of the stream of pressured air or gas. After the shooting has been finished, the magazine 5 can be removed from the body 1 by pressing backwards the spring loaded lock 21, for instance by means of the thumb, so that the extension 25 of the spring loaded lock 21 comes out of engagement with the groove 20 of the tube 8 of the magazine 5 and the thus released magazine 5 is, due to the elastic deformation of the rubber ring 11, automatically slightly moved out of the pistol body 1 whereafter the magazine 5 can be completely removed from the body 1 by manually pulling at the extension 12.

The magazine according to this invention can be used in conjunction with a large number of different types of weapons actuated by air or gas such as pistols, guns, machine guns and automatic rifles.

Although our invention has been illustrated and described with reference to one preferred embodiment thereof, we wish to have it understood that it is in no way limited to the details of said one embodiment but is capable of numerous modifications within the scope of the appended claims.

What we claim is:

1. In an air gun, wherein pellets are propelled out of a barrel of said gun by compressed gas, an improved magazine, which comprises in combination:
   - a tube removably mounted in said gun and adapted to hold a column of pellets;
   - said tube having tubular side walls, a closed top wall and a bottom wall, said tubular side walls having a pair of oppositely arranged openings adjacent to said top wall, one opening of said pair of openings having a diameter slightly larger than the corresponding diameter of one of said pellets; the other opening having a diameter slightly smaller than the corresponding diameter of one of said pellets; said pair of openings being axially aligned with said barrel when said magazine is operatively positioned in said weapon and being adapted to have said compressed gas pass therethrough and entrain one of said pellets and propel it through said barrel;
   - and retention means operatively mounted in said gun for maintaining said tube in operative position therein.

2. The improved magazine as set forth in claim 1,
   - wherein the opening of said pair of openings which is in closer proximity to the mouth of said barrel has said slightly larger diameter,
   - and the other opening of said pair of openings is formed as a conically shaped passage extending through said tubular side walls, said slightly smaller diameter being a minimum diameter of said conically shaped passage.

3. The improved magazine as set forth in claim 1,
   - wherein said tube has flange means radially extending therefrom adjacent to said bottom wall,
   - and elastomeric gasket means disposed between said flange means and said weapon, and adapted to prevent the escape of compressed gas from said weapon.

4. The improved magazine as set forth in claim 3,
   - wherein said elastomeric gasket means consist of a rubber ring disposed around said tube and in abutting contact with said flange means.

5. The improved magazine as set forth in claim 1,

including spring biased feeder means disposed in said tube and biased against said column of pellets at one of its ends and against said bottom wall at the other one of its ends, thereby urging said column of pellets towards said top wall of said tube.

6. The improved magazine as set forth in claim 1, wherein said bottom wall comprises an annular cover removably axially mounted at the bottom end of said tube,

and a pin extending through said side walls of said tube and said cover, thereby holding said cover in position.

7. The improved magazine as set forth in claim 3, wherein said retention means comprises a spring-biased bolt reciprocally mounted in said weapon in a direction substantially perpendicular to the lonigtudinal axis of said tube,

said tube walls having a notch and said bolt being adapted to engage said tube by projecting into said notch after said tube has been manually axially pressed into said weapon by compressing said elastomeric gasket, thereby operatively positioning said tube in said weapon.

8. The improved magazine as set forth in claim 7, wherein said gun has a recess, and

wherein said flange means comprise an extension laterally projecting therefrom, said extension being adapted to fit into said recess of said weapon and slightly project from the outer periphery thereof when said tube has been operatively positioned.

9. The improved magazine as set forth in claim 1, wherein the longitudinal axes of said tube and said barrel are substantially perpendicular with respect to each other.

10. The improved magazine as set forth in claim 1, wherein said top wall of said tube is integral with said side walls thereof.

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