

- [54] **TUBULAR MAGAZINE AND DISPENSER THEREFOR**
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- [73] Assignee: **Olin Corporation**
- [22] Filed: **Dec. 2, 1970**
- [21] Appl. No.: **94,386**

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- [52] U.S. Cl.42/49 R, 42/1 R, 42/88, 227/9
- [51] Int. Cl.F41c 25/08, F41c 25/00, B25c 1/10
- [58] Field of Search42/87-89, 49 R, 42/1 R; 227/9-11

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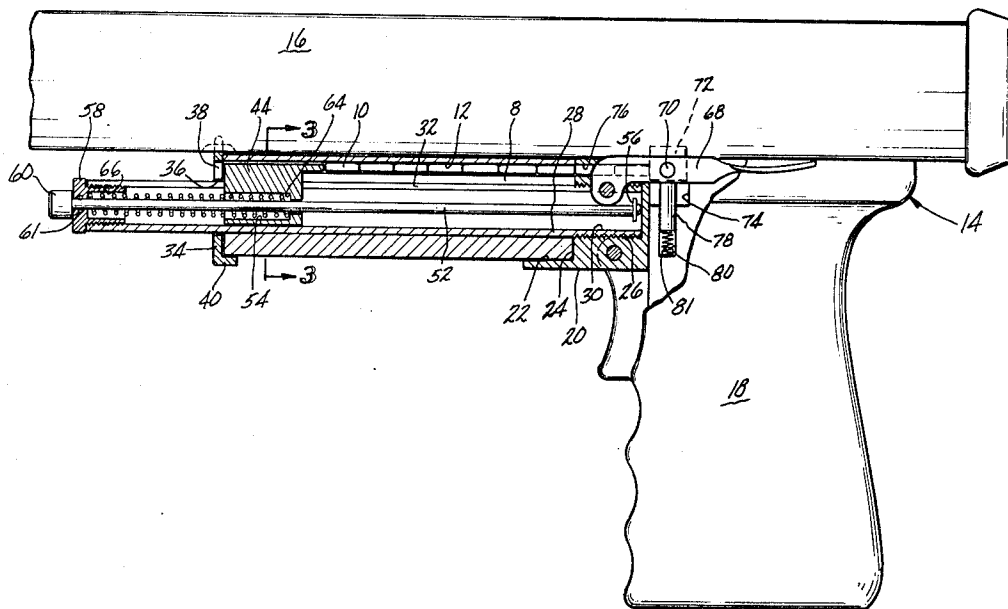
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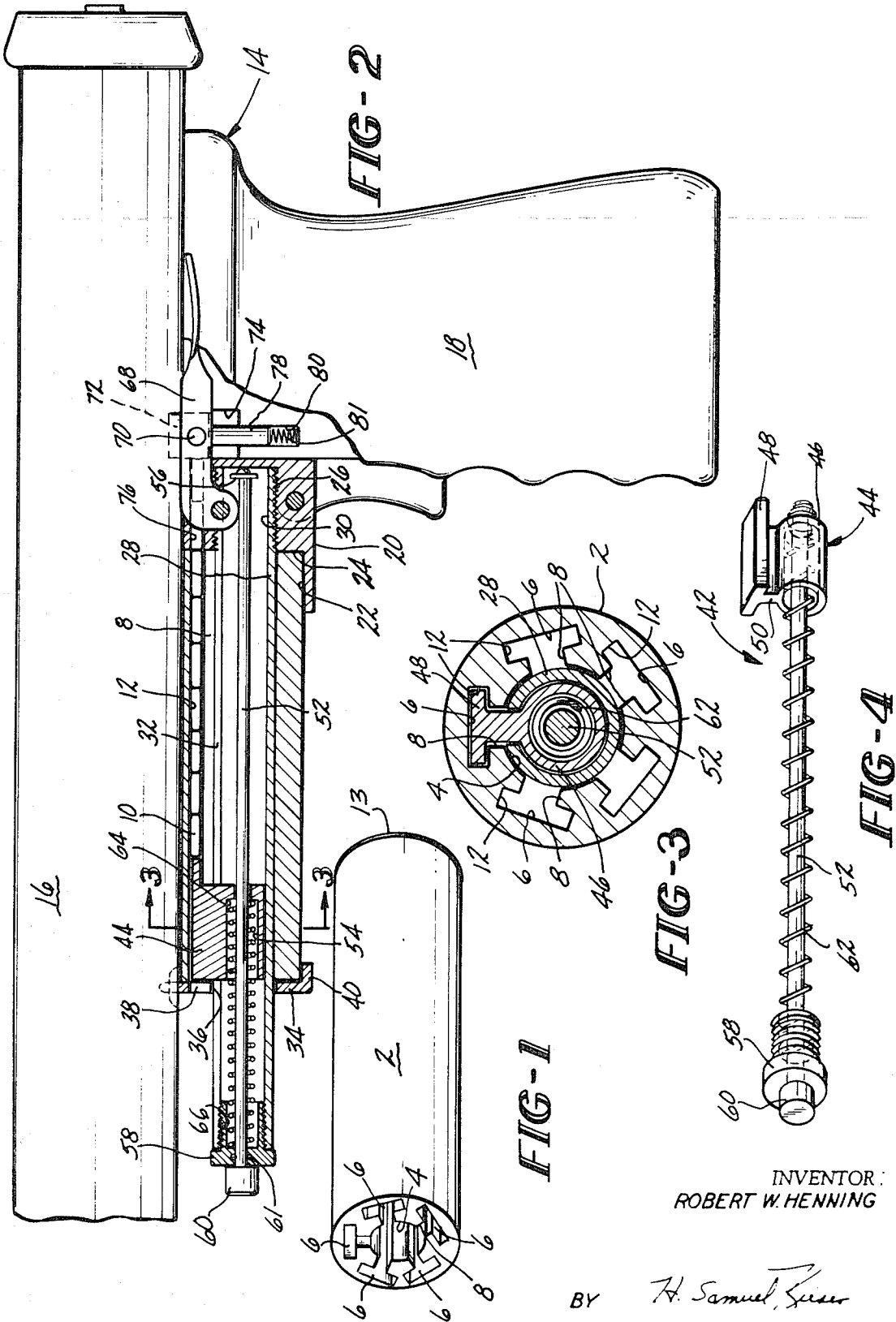
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[57] ABSTRACT

A magazine for holding a plurality of disc-shaped articles comprising a tubular body having a plurality of annularly spaced, T-shaped tracks communicating with the interior of the body. Also, a dispenser whereby an article may be individually dispensed from the magazine.

9 Claims, 8 Drawing Figures





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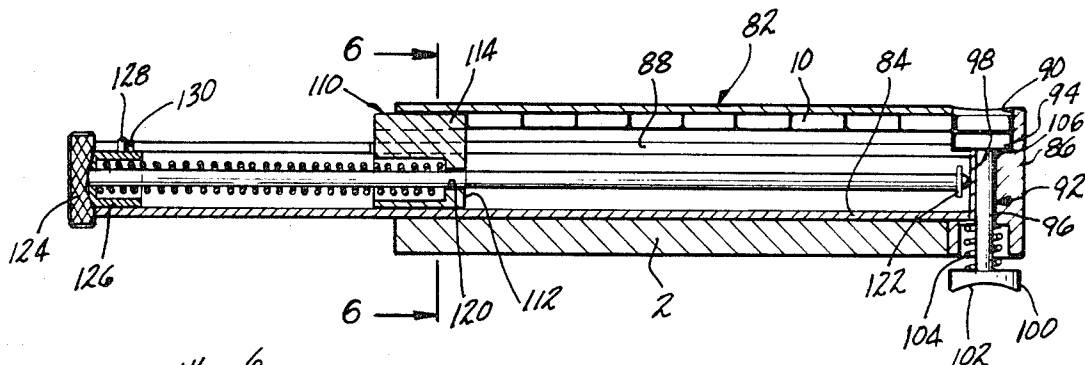


FIG-5

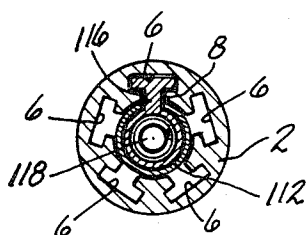


FIG-6

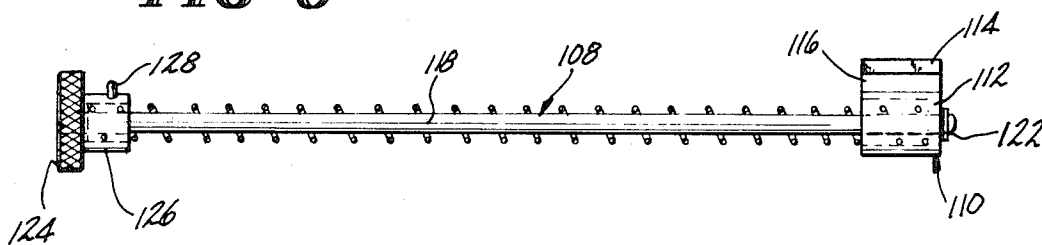


FIG-7

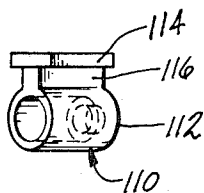


FIG-8

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TUBULAR MAGAZINE AND DISPENSER THEREFOR

This invention relates generally to a tubular magazine for holding a plurality of articles.

More particularly, this invention relates to a tubular magazine for holding a plurality of disc-shaped articles in side-by-side relationship and also to a dispenser assembly for dispensing a single article from the magazine.

The magazine of the present invention is particularly adapted to hold a plurality of disc-shaped, caseless, propellant charges of the type used to generate gas upon ignition to perform work such as driving a fastener.

It is an object of the present invention to provide an improved tubular magazine for holding disc-shaped articles.

More particularly, it is an object of the present invention to provide a tubular magazine which can compactly hold a relatively large number of disc-shaped articles.

Yet another object of the present invention is the provision of a tubular magazine and a dispenser assembly therefor so constructed that an article can be discharged one at a time.

These and other objects of the present invention will become more apparent by reference to the following description and to the accompanying drawings in which:

FIG. 1 is an isometric view of a tubular magazine constructed in accordance with the present invention;

FIG. 2 is a side view partially in section of a powder-actuated tool equipped with the tubular magazine of FIG. 1 and showing the details of the dispenser assembly;

FIG. 3 is a sectional view taken along the lines 3—3 of FIG. 2;

FIG. 4 is an isometric view of a portion of the dispenser assembly shown in FIG. 2;

FIG. 5 is a cross sectional view of a tubular magazine and a hand dispenser;

FIG. 6 is a sectional view taken along the lines 6—6 of FIG. 5;

FIG. 7 is a side view of a portion of the dispenser assembly of FIG. 5; and

FIG. 8 is an isometric view of the follower of the dispenser assembly of FIG. 5.

Referring to the drawings, FIG. 1 shows a tubular magazine 2 having a cylindrical shape. Although the magazine 2 may be constructed from any suitable material, in the preferred form, the magazine is constructed from a plastic such as polyethylene. The magazine has a cylindrical bore 4 extending axially throughout its length. A series of T-shaped grooves or tracks 6 are spaced annularly about the cylindrical bore 4 with the leg portion 8 of each T-shaped track 6 extending radially from the axis of the bore 4 and in communication therewith. Each of the T-shaped tracks 6 extend the entire length of the magazine 2. Although the number of tracks 6 may vary, in the preferred embodiment, five tracks are provided spaced annularly apart from each other 72°.

As was stated before, the magazine 2 is especially adapted to contain pellets 10 of caseless propellant which have a disc-like shape. The pellets 10 are loaded

in the crossbar portion 12 of the T-shaped track 6 in side-to-side relationship. If desired, both ends of the tubular magazine 2 may be closed with a removable end closure 13 such as an adhesive-backed, waterproof paper or plastic which can be peeled off to expose the interior of the magazine 2.

In FIG. 2, the tubular magazine 2 is shown in conjunction with a power tool 14 of the type adapted to drive fasteners into a work surface. The tool 14 normally contains a barrel portion 16 and a handle portion 18. A socket member 20 is mounted on the handle portion 18 and includes a counterbore 22 terminating in a shoulder 24 and a threaded, reduced bore portion 26. The counterbore 22 has a diameter substantially equal to the diameter of the magazine 2. An elongated support tube 28 having a rearward threaded end portion 30 is threadedly attached to the reduced bore portion 26 of the socket member 20 and extends toward the muzzle end of the tool in a direction parallel to the axis of the barrel portion 16. A slot 32 extends from the open end of the tube 28 rearwardly to the threaded end portion 30.

The end closures 13 of the tubular magazine 2 may be removed and the magazine 2 inserted onto the support tube 28 until the end of the magazine 2 abuts the shoulder 24. The elongated support tube 28 passes through the bore 4 of the magazine 2 with the walls of the bore 4 in engagement with the tube 28. An end bracket 34 having an aperture 36 for passage of the support tube 28 and an opening 38 to expose the uppermost track 6 of the magazine may be clipped onto the tool 14. A projection 40 on the bottom of the bracket 34 helps to keep the magazine 2 in place on the tool 14.

A follower assembly 42 is provided to aid in the dispensing of an article from the magazine 2. The follower assembly 42 includes a follower member 44 comprising a counterbored tubular body portion 46 with a T-shaped projection 48 extending upwardly therefrom with the leg 50 of the T-shaped projection 48 connected to the body portion 46. The follower member 44 is mounted on an elongated rod member 52 with the reduced bore 54 of the follower member 44 in sliding contact with the rod member 52. One end of the rod member 52 is provided with a split washer 56 to limit the movement of the follower member 44. The other end of the rod member 52 extends through an externally threaded cap 58 and is provided with a head portion 60 which abuts the forward end of the cap 58. Two pin members 61 extend through the cap 58 and a groove in the rod member 52 to prevent axial movement of the cap 58 relative to the rod member 52. A spring member 62 extends between the cap 58 and a shoulder 64 in the follower member 44 to bias the follower member 44 toward the end of the rod member 52 opposite the cap 58.

With the magazine 2 inserted onto the support tube 28, the follower assembly 42 may be attached to the tool 14 by aligning the T-shaped projection 48 with the opening 38 in the end bracket 34 which is aligned with one of the T-shaped tracks 6 in the tubular magazine 2. The cap 58 of the follower assembly 42 may then be pushed toward the rear of the tool 14 and then threadedly attached to the internally threaded end portion 66 of the support tube 28.

The tool 14 may be provided with a loading lever 68 which is pivotably attached to the socket member 20 and connected by a pin member 70 to a cylindrical discharging member 72 mounted within a cylindrical bore 74 extending perpendicularly to the axis of the magazine 2 in the handle portion 18 of the tool 14. An opening 76 is provided in the socket member 20 to provide communication between the bore 74 and the uppermost track 6 of the magazine 2. An elongated rod portion 78 extends from the discharging member 72 into a reduced bore 80 in the handle portion 18 for the purpose of guiding the discharging member 72. A spring 81 is provided to bias the discharging member 72 into its upward position. In the case of a powder-actuated tool, the cylindrical bore 74 communicates with a powder charge receiving chamber (not shown).

As can be seen in FIG. 2, the follower member 44 urges the disc-shaped articles 10 within the magazine 2 toward the discharging member 72 of the tool which normally blocks the bore 74. When the loading lever 68 is depressed, the discharging member 72 is forced downwardly permitting an article in the track 6 to move into the cylindrical bore 74 above the discharging member 72 by virtue of the spring biased follower member 44. When the loading lever 68 is released, the discharging member 72 carries the article up into the tool and blocks the end of the magazine 2 preventing an article from moving into the bore 74. When all the articles within a given track 6 in the tubular magazine 2 have been discharged, the cap 58 may be unthreaded from the elongated support tube 28 and the cap 58, along with the rod member 52 and follower member 44, removed. The tubular magazine 2 may then be rotated about the axis of the elongated support tube 28 until a filled track 6 is in alignment with the opening 38 in the end bracket 34 whereupon the follower member 44 may be reinserted along with the rod member 52 and cap 58. The cap 58 may then be threaded to the support tube 28 whereupon the assembly is ready to dispense an article.

FIG. 5 shows a hand dispenser 82 for use with the tubular magazine 2 of FIG. 1. The hand dispenser 82 includes an elongated tubular support member 84 having a cylindrical end member 86 of larger diameter attached to one end thereof. A slot 88 extends the entire length of the support member 84 and has a width substantially equal to the width of the leg 8 of the T-shaped track 6 in the magazine 2. The end member 86 includes a cylindrical dispensing aperture 90 therein, the axis of which extends perpendicularly to the axis of the support member 84. A plunger member 92 includes an end disc 94 mounted within the dispensing aperture 90 and an elongated rod 96 extending from the disc 94 through a reduced bore 98 in the end member 86 and terminating in an enlarged disc member 100 having an outer concave surface 102. A spring member 104 normally biases the plunger member 92 into a position wherein the end disc 94 is abutting a shoulder 106 in the end member 86. With the tubular magazine of FIG. 1 inserted onto the support member 84 into abutment with the end member 86, the dispensing aperture is in communication with a track of the magazine.

A follower assembly 108 is provided to aid in the dispensing of an article from the magazine 2. The follower assembly 108 includes a follower member 110

comprising a counterbored tubular body portion 112 with a T-shaped projection 114 extending upwardly therefrom with the leg 116 of the T-shaped projection 114 connected to the body portion 112. The follower member 110 is mounted on an elongated rod 118 with the reduced bore 120 of the follower member 110 in sliding engagement with the rod 118. One end of the rod 118 is provided with a split washer 122 to limit the movement of the follower member 110 in one direction. The other end of the rod 118 is attached to a cap 124 having a reduced portion 126. The reduced portion 126 is provided with a transversely, outwardly extending pin 128 which is adapted to mate with a cutout 130 in the support member 84 extending circumferentially from the elongated slot 88 to provide a bayonet connection.

With the magazine 2 inserted onto the support member 84, the follower assembly 108 may be attached to the dispenser by aligning the T-shaped projection 114 of the follower member 110 with the T-shaped track 6 of the magazine 2 which is in communication with the dispensing aperture 90. The cap 124 may then be pushed toward the end member 86 and attached to the support member 84 by means of the bayonet connection.

The T-shaped projection 114 of the follower member 110 serves to force the articles in the tubular magazine 2 toward the end member 86 with one article normally positioned in the dispensing aperture 90. When it is desired to utilize one of the articles, the plunger member 92 may be depressed forcing one of the articles out of the dispensing aperture 90. When the plunger returns to its normal position, the follower member 110 forces a new article into the dispensing aperture 90 ready for the next dispensing operation. After all the articles in the track 6 are disposed of, the follower assembly 108 may be removed, and the magazine 2 rotated about the axis of the support member 84 to a position wherein a filled track 6 is in alignment with the dispensing aperture 90. The follower assembly 108 may be replaced and the hand dispenser is ready for use again.

Through the provision of a plurality of tracks spaced annularly about the axis of the magazine, it is possible to store a large number of articles in a relatively small magazine. The particular design of the magazine is such that it can be used in connection with a specially designed dispensing assembly so that the contents of the magazine can be dispensed one at a time and each track of the magazine used without having to remove the magazine.

What is claimed is:

1. An ammunition magazine for holding a plurality of disc-shaped propellant charges, said magazine comprising a tubular body, a plurality of T-shaped tracks formed in an interior surface of said body, each track having a head portion and a radially extending leg portion, the head portion of each track extending the entire length of said body, and the leg portion of each track extending at least a portion of the length of said body and open to at least one end thereof.

2. An ammunition magazine for holding a plurality of disc-shaped propellant charges, said magazine comprising a tubular body, a plurality of T-shaped tracks having a head portion and a radially extending leg portion

formed in an interior surface of said body, each track extending the entire length of said body, and the leg portion of each track being open to the hollow interior of said body.

3. The magazine of claim 2 wherein the head portion of each T-shaped track is shaped to accommodate a preformed article.

4. In combination, a support member, a tubular magazine for holding a plurality of articles, said magazine being removeably mounted on said support member and having a plurality of T-shaped tracks formed in its interior surface each extending the entire length of the magazine with the leg portion of the T-shaped track opening into the interior of the magazine, follower means for urging articles in one of said tracks toward one end of said magazine, said follower means being releasably connected to said support member, and means connected to said support member adjacent said one end of said magazine for releasing an article one at a time.

5. The combination of claim 4 wherein said follower means includes a follower member having a T-shaped portion for insertion into one of said T-shaped tracks of said magazine.

6. The combination of claim 4 wherein said follower means includes an elongated rod member, a follower member comprising a tubular body mounted on said rod member and having a T-shaped projection extending outwardly from said body with the leg of said T-shaped projection attached to said body, one end of said rod member having cap means attached thereto for releasably connecting said follower assembly to said support member with the T-shaped projection of said follower member in alignment with one of said tracks,

and means biasing said follower member toward said one end of said magazine away from said cap.

7. The combination of claim 6 where said support member is hollow and said rod member extends into said support member when said cap means is attached to said support member.

8. The combination of claim 6 wherein said means connected to said support member adjacent said one end comprises an end member connected to one end of said support means, said end member having a discharging aperture therein communicating with one of the tracks of said magazine, a plunger having an end disc mounted in said aperture and having a rod portion attached thereto and extending out of said end member whereby when said plunger is activated, an article in said discharging aperture is released.

9. In combination with a power tool, a magazine comprising a tubular body for holding a plurality of disc-shaped propellant charges, a plurality of T-shaped tracks formed in the interior surface of said body and each extending the entire length thereof, a vertical leg portion of each of said tracks being open to the hollowing interior of said body, first means on said tool for releasably mounting said magazine, second means on said tool adjacent one end of said magazine for transferring one of said propellant charges from one of said tracks into the interior of said tool, follower means for urging one of said propellant charges into position to be transferred by said second means, said follower means being removeable from said tool, said first means for mounting said magazine permitting said magazine to be rotated to align a different track with said second means.

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