Jan. 14, 1969 R. W. HANSON 3,421,662

DISPERSAL DEVICE

Filed March 7, 1967

FIG. 1

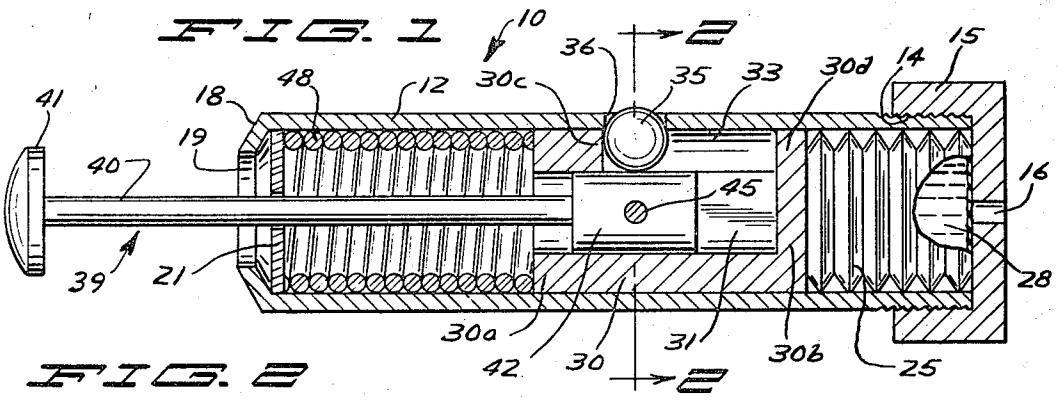
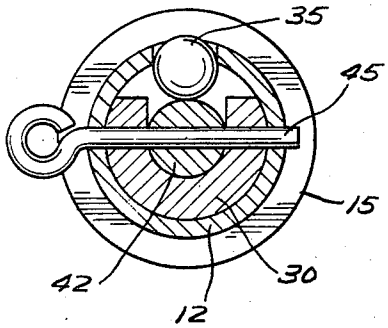


FIG. 2



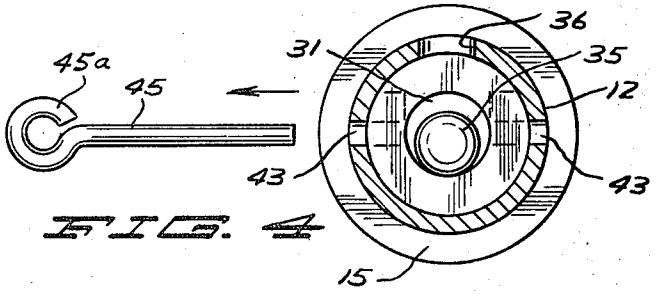


FIG. 4

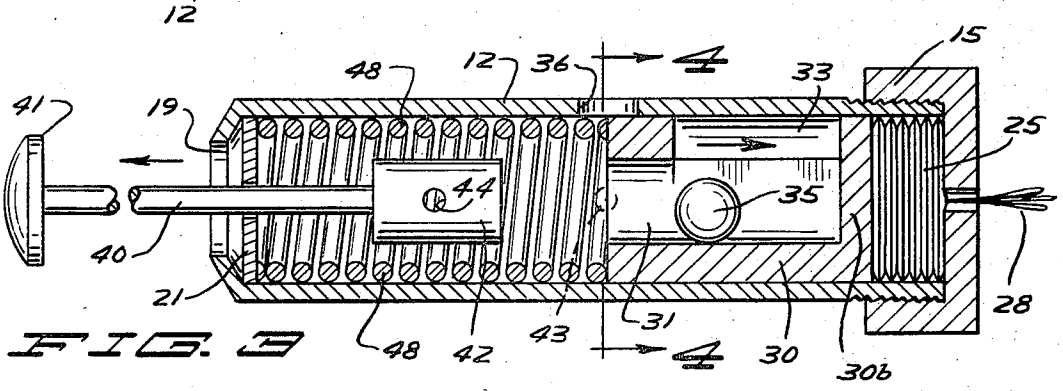


FIG. 3

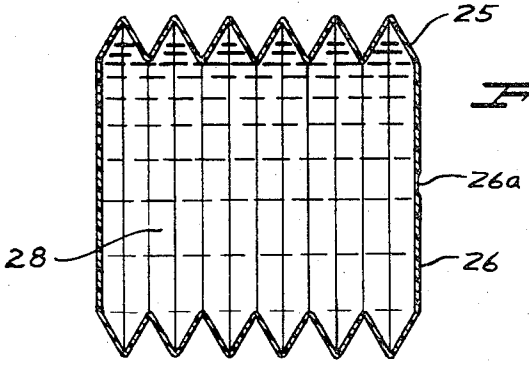


FIG. 5

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DISPERSAL DEVICE

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ABSTRACT OF THE DISCLOSURE

A relatively small spring loaded plunger actuated device for ejection of a dispersal fluid. The device consists of a casing which houses the plunger, the spring, the release mechanism for the plunger, and a collapsible capsule for the dispersal fluid. The front wall of the capsule is weakened at its center and this weakened area is aligned with a discharge opening in the front wall of the casing. Actuation of the release mechanism allows the spring to drive the plunger forward against the rear wall of the capsule. The capsule ruptures at the weakened central area in its front wall and the fluid in the capsule is forced through the discharge opening in the front wall of the casing.

Background and summary of the invention

Related devices are disclosed in U.S. Letters Patent 1,877,710, 2,432,791, 3,084,466 and 3,174,245. The devices of the art developed employ cartridges for propulsion and have chambers to contain in bulk quantities of dispersal fluid. The device herein is distinguishable from the indicated art in the relatively simplicity of its construction, the absence of the use of a cartridge and by the use of a sealed preloaded capsule containing the dispersal fluid. The device herein is intended to be used as a relatively safe and easy to handle defensive mechanism to ward off attackers or trespassers.

It is an object of this invention therefore to provide a simply constructed spring actuated dispersal device of a size to be readily carried within the pocket or a purse.

It is another object of this invention to provide a dispersal device adapted to use a preloaded sealed capsule of dispersal fluid.

More specifically it is an object of this invention to provide a relatively small dispersal device comprising a preloaded capsule of dispersal material, a spring load plunger, means maintaining said device in operating position, and actuating means requiring very minimal effort to operate the device.

These and other objects and advantages of the invention will be set forth in the following description made in connection with the accompanying drawings in which like reference characters refer to similar parts throughout the several views and in which:

FIG. 1 is a view in longitudinal vertical section;

FIG. 2 is a view in vertical cross section taken on line 2—2 of FIG. 1 as indicated;

FIG. 3 is a view similar to FIG. 1 showing the device in another position;

FIG. 4 is a view in vertical cross section taken on line 3—3 of FIG. 3 as indicated; and

FIG. 5 is a view in vertical section showing a detail.

Description of a preferred embodiment

Referring to the drawings, the device herein is indicated generally by the numeral **10** and comprises a housing or barrel **12** which is substantially cylindrical in form. The forward end portion **14** of said barrel is externally threaded to have removably secured thereon an end cap **15** having a central aperture **16** of relatively small size extending therethrough.

The rearward end portion of said barrel has a crimped shoulder **18** having an aperture **19** centrally therethrough. Disposed within said barrel and seated against said shoulder **18** is a washer **21**.

Disposed within the forward end portion of said barrel is a collapsible capsule **25** which in the embodiment here shown is indicated as being formed of a suitable plastic or metal material of a bellows-like construction to be readily collapsed for the ejection of the dispersal fluid **28** therein under pressure. The front wall **26** of said capsule is shown having a weakened central area **26***a* which will be in alignment with the aperture **16**. The dispersal fluid **28** with which the capsule will be preloaded may very suitably comprise a very noticeable dye and an effective stench material such as butyric acid.

Disposed within said barrel adjacent said capsule is a cylindrical hammer or plunger **30** having a rearward end portion **30***a* and a forward end portion **30***b*. An axial bore **31** forming a chamber extends into said hammer through the rearward end portion thereof to a point short of the forward end portion **30***b* whereby the forward end portion **30***b* forms a forward end wall. Said bore in effect forms a chamber. A slot **33** is formed in the upper portion of said plunger extending from a rear wall portion **30***c* to the forward wall portion **30***d*. Said slot opens into said chamber **31**. A ball **35** is provided having a diameter somewhat less in length than the width of said slot and fully receivable into said chamber **31**. An aperture **36** is formed in the upper wall of said barrel **12** to be aligned with said slot **33** and having a width of a lesser extent than that of the diameter of said ball whereby less than one-half of said ball will be able to extend into said aperture **36**.

An operating member **39** is provided and is shown here comprising a shaft **40** having a terminal handle **41** thereon shown here in the form of a button and at the inner end of said shaft is a head portion **42** of a diameter to be readily slidable into said bore or chamber **31**. Said head portion will support said ball **35** as shown in FIG. 1, and may be advanced into or withdrawn from said chamber **31** to permit said ball to drop completely below said aperture **36**.

A locking member **45** is provided in connection with said head portion which in the present embodiment is shown in the form of a pin disposed through opposed apertures **43** in the walls of the barrel **12** and through a bore **44** extending through said head portion **42** aligned with said apertures **43**. Said pin is shown having an eyelet end portion **45***a*.

Disposed between the end portion **30***a* of said plunger and said washer **21** is a coil spring **48**.

Operation

The device as shown in FIG. 1 is in a cocked position ready for operation and is held in check by the locking member or safety pin **45**. The capsule **25** is loaded with a suitable dispersal material. The spring is compressed between the plunger **30** and the washer **21**. Said plunger is positioned to compress said spring and is held in such position by the ball **35** serving as a check member and being held partially disposed into said aperture **36** and having the wall portion **30***c* bear thereagainst. The head portion **42** holds the ball in operating position as shown in FIG. 1.

Said operating member **39** is readily manipulated. When the device is prepared for ready use, the pin **45** will be pulled out. The head **42** very nicely fits into said bore **31** with a portion thereof remaining within the rearward end wall portion **30***a* as illustrated. The head portion **42** by operation of the handle **40** is very readily advanced into the chamber **31** or retracted therefrom to release the ball **35** which will be forced downwardly into said chamber

31 by the pressure of the end wall 36, which action is quite obvious. With said ball fully received within the bore or chamber 31, the plunger 30 is thrust forwardly by the spring 48.

The weakened portion 26*a* of the front wall of said capsule 25 will rupture under the pressure exerted and the dispersal material 28 will be ejected with considerable force out of the aperture 16.

To reload and cock the device, the end cap 15 will be removed and the depleted capsule 25 discarded. The plunger will be moved inwardly to compress the spring 48. With the aperture 36 facing downwardly, the ball is readily positioned. The operating member 39 will be positioned as shown in FIG. 1, the pin 45 will be inserted, a new filled capsule will replace the depleted capsule and the end cap 15 will be threaded onto the end of the barrel.

The device employs no cartridge and represents no dangerous risk in being carried about one's person or in a purse.

Thus it is seen that I have provided a safe and simply constructed dispersal device which provides an effective means for affording a substantial measure of protection for the body of a person and his property.

It will of course be understood that various changes may be made in the form, details, arrangement and proportions of the parts, without departing from the scope of applicant's invention which, generally stated, consists in a device capable of carrying out the objects above set forth, in the parts and combinations of parts disclosed and defined in the appended claims.

What is claimed is:

1. A device for ejecting dispersal material having in combination:
- a barrel having a wall at either end thereof and a chamber therein,
- a collapsible capsule disposed in one end of said chamber,
- the forward end wall of said barrel having an aperture therein and being engaged by the adjacent wall of said capsule,
- a plunger slidably disposed within said chamber, said plunger having a chamber therein and a slot in a side wall thereof open to said chamber in said plunger,
- a ball receivable through said slot into said chamber in said plunger,
- an aperture in the wall of said barrel positioned to have said slot in alignment therewith, said aperture being of a size to permit less than one-half of said ball to be disposed thereinto,
- a coil spring disposed between said plunger and the rearward end wall of said barrel, and
- externally operable means within said chamber supporting said ball partially within said slot and partially within said aperture to hold said plunger in operative position against said coil spring in compressed condition.

2. The structure set forth in claim 1, wherein:
- said operable means comprises,
- a head portion disposable into said chamber to underlie and support said ball, and
- a shaft extending from said head portion outwardly of said barrel to move said head portion away from a supporting position with respect to said ball.

3. The structure set forth in claim 2, including:
- a pair of opposed apertures in the side walls of said barrel in vertical alignment with said first mentioned aperture,
- a transverse bore through said head adapted to be aligned with said opposed apertures, and
- a pin disposable through said opposed apertures and said bore in said head therebetween.

4. The structure set forth in claim 1, including:
- locking means securing said operable means in operative position.

5. The structure set forth in claim 1, wherein:
- said forward end wall comprises a cap member, and means removably secure said cap member to said barrel.

6. The structure set forth in claim 1, wherein:
- said capsule comprises a forward wall having a readily ruptured area in alignment with said aperture in said forward end wall of said barrel.

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222—105, 153, 327, 340, 541; 239—309, 323, 328