

Nov. 29, 1960

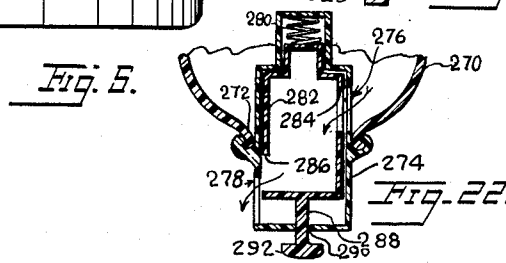
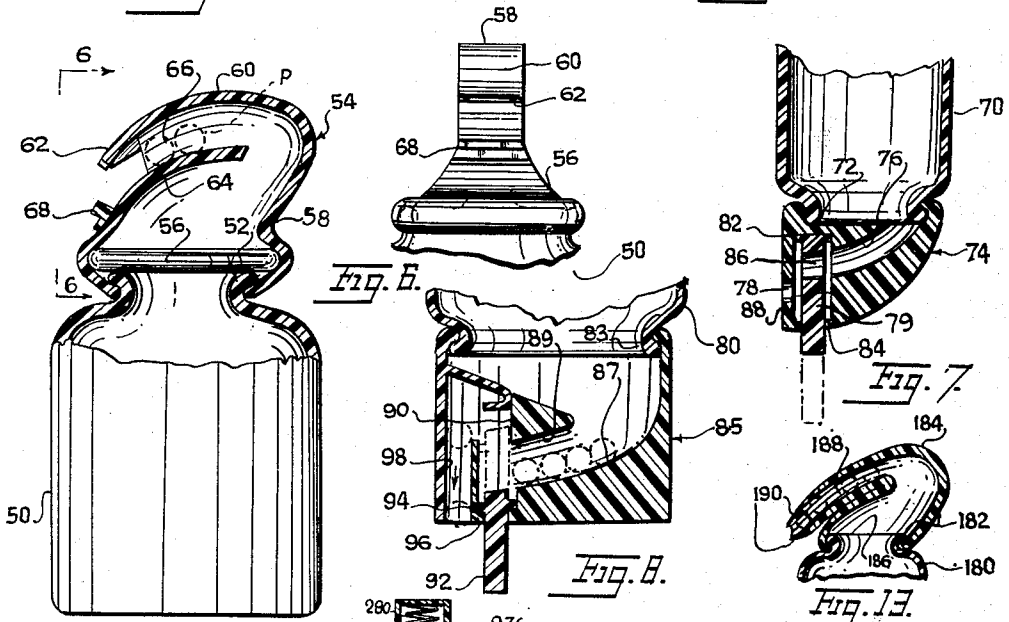
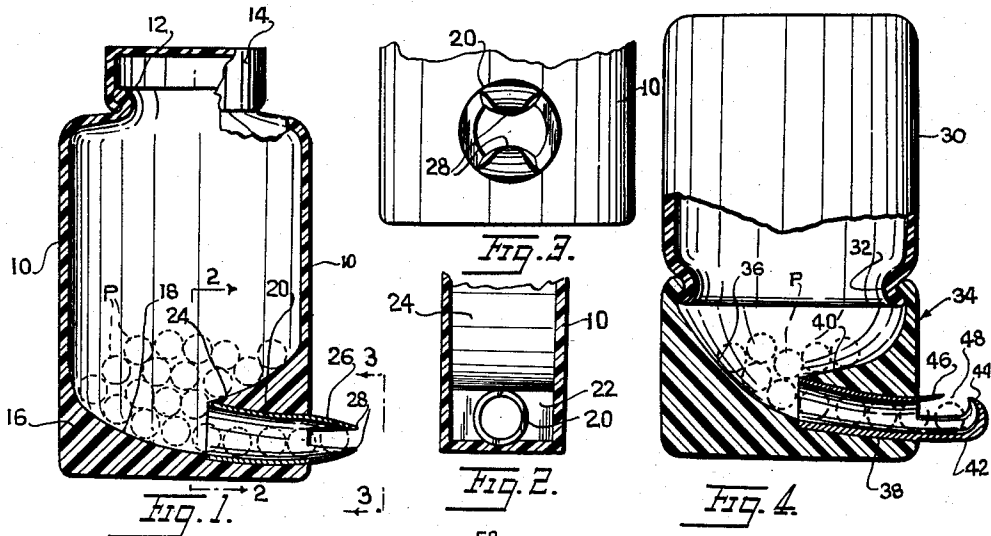
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2,962,190

PILL DISPENSING UNIT

Filed April 21, 1958

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

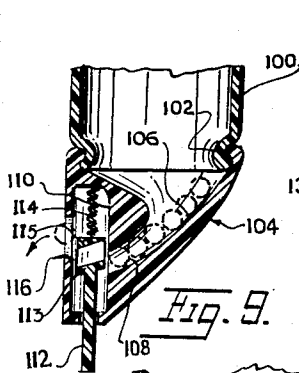


Fig. 9.

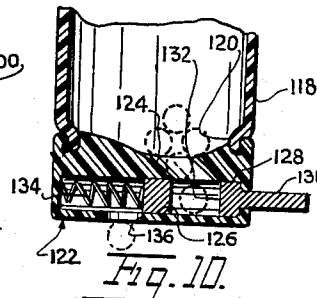


Fig. 10.

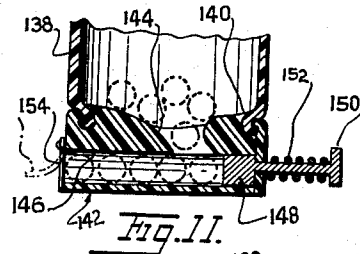


Fig. 11.

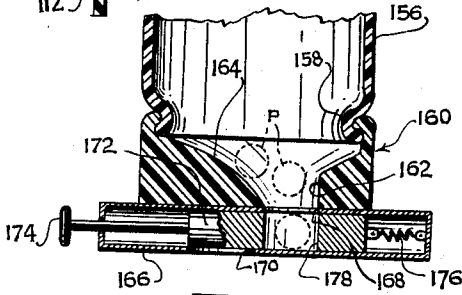


Fig. 12.

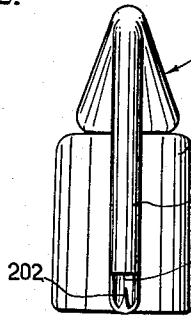


Fig. 13.

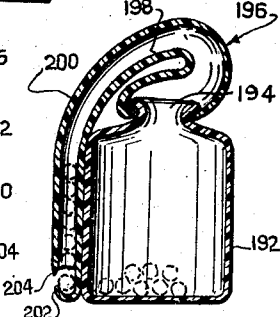


Fig. 14.

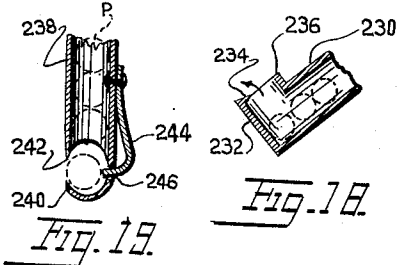


Fig. 15.

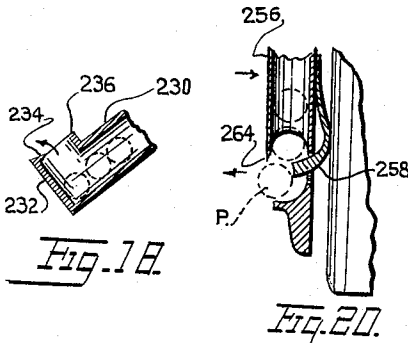


Fig. 16.

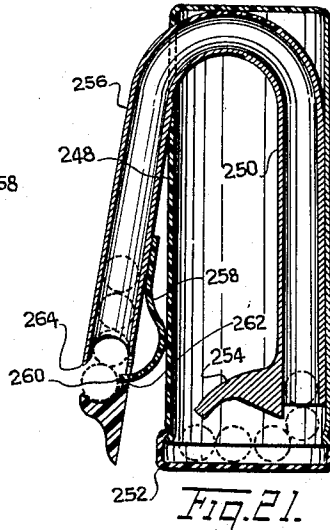


Fig. 17.

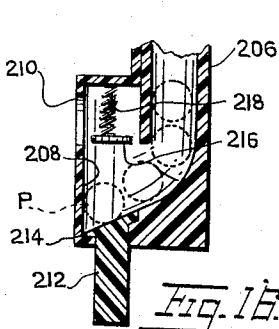


Fig. 18.

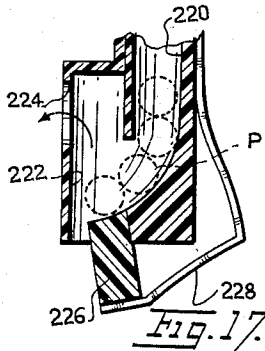


Fig. 19.

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2,962,190

PILL DISPENSING UNIT

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1 Claim. (Cl. 221-202)

This invention relates to a device for dispensing pills, tablets, powder and granules, and more particularly has reference to a pill dispenser so designed as to permit pills or tablets, particularly those of pellet-like rounded form, to be individually dispensed from a pill bottle or other container.

The main object of the present invention is to provide an improved pill dispenser, which will be designed to facilitate the dispensing of pills or tablets individually without possibility of accidental dispensing of an excessive number thereof.

Another object is to provide a pill dispensing device of the character described which will be formed in a manner such that it will be especially well designed for the dispensing of pellet-like, small pills.

Another object is to provide a pill dispensing assembly which will be especially designed to cause a pill to be located at all times for dispensing, that is, as each pill is dispensed, another takes its place, ready to be dispensed.

Still another object is to provide a pill dispensing means the design of which is such as to permit manufacture of the same at a comparatively low cost.

Still another object of importance according to various forms of the invention is to provide a pill dispenser which will be capable of being embodied directly in a bottle cap, so that the dispenser can be placed on any of various types of bottles, and can be permanently retained, to be applied to a bottle in place of a regular cap of that bottle.

For further comprehension of the invention, and of the objects and advantages thereof, reference will be had to the following description and accompanying drawings, and to the appended claims in which the various novel features of the invention are more particularly set forth.

In the accompanying drawings forming a material part of this disclosure:

Fig. 1 is a longitudinal sectional view through a dispenser made according to the present invention, part being shown in elevation.

Fig. 2 is a longitudinal sectional view on line 2-2 of Fig. 1.

Fig. 3 is an enlarged, fragmentary elevational view of the dispenser as seen from the line 3-3 of Fig. 1.

Fig. 4 is a view like Fig. 1, showing a modification.

Fig. 5 is a view partly in elevation and partly in longitudinal section of another modification.

Fig. 6 is an elevational view of the Fig. 5 modification, as seen from the line 6-6 of Fig. 5.

Fig. 7 is a fragmentary longitudinal sectional view of another modification, a dispensing slide being shown in full and dotted lines in its normal and use positions, respectively.

Fig. 8 is a view like Fig. 7 showing another modification, in which the dispensing slide is shown in dotted and full lines in its operative and inoperative positions respectively.

Fig. 9 is a view like Fig. 7 showing still another modification.

Fig. 10 is a view like Fig. 7 showing another modification.

Fig. 11 is a view like Fig. 7 showing another modification.

Fig. 12 is a view like Fig. 7 showing another modification.

Fig. 13 is a view like Fig. 7 showing another modification.

Fig. 14 is a longitudinal sectional view of a dispenser, showing another modification.

Fig. 15 is a front elevational view of the modification shown in Fig. 14.

Fig. 16 is a view like Fig. 7 showing another modification.

Fig. 17 is a view like Fig. 7 showing another modification.

Fig. 18 is a fragmentary longitudinal sectional view of a modified dispensing tube.

Fig. 19 is a view like Fig. 18 showing another modified dispensing tube.

Fig. 20 is a fragmentary view partly in section and partly in elevation of another modification in dispensing position.

Fig. 21 is an enlarged longitudinal sectional view of the dispenser shown in Fig. 20, in its normal, inoperative position.

Fig. 22 is a longitudinal sectional view of a dispenser embodying still another modification.

Referring to the drawings in detail, in the form of the invention shown in Figs. 1-3, the dispenser comprises a yieldable plastic container in the form of a bottle 10 having a neck 12 and open top to which is applied a movable cap 14.

The bottom wall 16 of the container within the container is thickened at one side providing a slope 18 declining toward the inlet end of an integral dispensing tube 20. The inlet end of tube 20 opens upon a vertical wall 22 of an abutment 24 that is in confronting relation to slope 18. Thus, pills in the container fed in through neck 12 all tend to gravitate toward the inlet end of tube 20.

Tube 20 opens at its outlet end 26 exteriorly of container 10, and said outlet end is slotted forming diametrically opposed, elongated, tapering spring tongues 28 the distal extremities of which extend in converging relation, being normally spaced apart a distance less than the diameter of a pill P.

Thus, the pills roll into the tube 20, traveling to the outer extreme thereof in the space between the tongues 28. In this outer position, the pills may be grasped individually between the thumb and index finger and pulled out. Tongues 28 yield and spread slightly to permit the pills to pass out of the conduit.

In Fig. 4, there is shown a modification including an inverted yieldable plastic container 30 provided with a wide neck 32 to which is detachably connectable a cap of similar material 34 containing the dispensing means of the invention. Cap 34 has a thickened end wall forming a slope 36 along which the pills P roll into a dispensing tube 38, in the inlet end of which opens upon a vertical wall of an abutment 40 of the cap.

In this form, the outlet end 42 of the dispensing tube has a reversely curved or hook-like portion 44 forming a spring tongue disposed in close proximity to a straight spring tongue 46, thus defining an upward opening dispensing opening 48 between the tongues. In this form, the pellet is grasped by the fingers and pulled upwardly, temporarily flexing the tongues 44, 46 to permit extraction of the pill.

In Figs. 5 and 6, there is shown another modification, wherein the plastic container 50 has a neck 52 to which

is detachably connected a dispensing cap 54 of similar material provided with a circular, generally flat, peripherally flanged base 56 that engages the neck 52. Projecting upwardly from base 56 is a relatively narrow dispensing head 58 having an upwardly bowed top wall 60, terminating in a spring tongue 62 that is generally parallel to and is spaced upwardly from a front wall 64, thus defining between tongue 62 and wall 64 a dispensing tube 66 into which the pills P move. Secured to the outer surface of front wall 64 is a transversely extending abutment 68 spaced from tongue 62. In this form when the container is inverted and righted, a pill will be expelled and will move into position against abutment 68, and one merely grasps the pill, by inserting the thumb and forefinger through the open sides of the outlet end portion of the dispensing tube 66. Spring tongue 62 flexes as necessary to permit extraction of the pill.

In Fig. 7 there is shown an arrangement in which the plastic container 70 is inverted, and has a neck 72 to which is detachably connectable a cap 74 formed from a solid block of plastic material bored to provide a sloping tube or passage 76 into which pills move from the container 70. In this form, tube 76 extends to a discharge passage 78 in which is a slide 79 movable between the full and dotted line positions shown in Fig. 7. Slide 79 at its inner end has a collar 82 engageable against an abutment 84 of the cap to limit outward movement of the slide. The slide could be spring pressed if desired.

The slide has a transverse opening 86 registering with passage 76 in the inner, full line position of the slide or plunger. Offset from passage 76 is a discharge opening 88 of the cap. Therefore, with the plunger in the full line position of Fig. 7, the pill is free to move into the opening 86. The plunger is now pulled down to the dotted line position, and the opening 86 will now register with the opening 88, so that the pill rolls out.

In Fig. 8, an inverted container in the form of a plastic bottle 80 has a wide, flanged neck 83 to which is connected the dispensing cap 85, of similar material having a slope 86 merging into a dispensing passage 89, which opens into a dispensing chamber 90 in which is slidable a plunger or slide 92 having a collar 94 engageable with an abutment 96 of the cap to limit outward movement of the plunger.

In its outer, full line position, the plunger is disposed clear of passage 89, so that a pill can roll onto the end of the plunger. Then the plunger is shifted to the dotted line position of Fig. 8. This shifts the pill into the chamber 90, and the pill rolls off the beveled inner of the plunger into a discharge passage 98. Plunger 92 could be spring pressed if desired.

In Fig. 9 there is shown a plastic container 100 having a neck 102 to which is connected a plastic cap 104 having a sloped inner surface 106 merging into a dispensing passage 108 that opens into a discharge chamber 110. A plunger 112, sliding in the discharge chamber, is movable upwardly against the restraint of a spring 114 secured to the top wall of the chamber. The plunger has a slanting collar 113 to limit outward movement thereof. The plunger may be pushed upwardly within the chamber so as to shift upwardly a pill P resting upon the top of the plunger. The arrangement is such that upon downward movement of the plunger 112 the slanting collar 113 will force a pill to move outwardly through a side dispensing opening 116 in the cap.

In Fig. 10 a plastic bottle 118 for holding a predetermined quantity of pills, granules, powder or liquid, has a neck 120 to which is connected a plastic cap 122 having an obliquely disposed, short, tapering dispensing passage 124 opening into a transverse bore 126 in which is slidable a plunger or slide 128 having an exteriorly projecting handle 130 and a transverse opening 132 registrable with passage 124. A compression, coil spring 134 normally biases the plunger to its retracted position shown in Fig. 10, so that a pill can roll into the opening 132.

The plunger is then manually shifted to the left against the restraint of the spring, bringing opening 132 into registration with a dispensing aperture 136 in the cap so that the pill rolls out of the opening 132.

In Fig. 11 there is shown a modification wherein a plastic bottle 138 for a purpose similar to bottle 118, has a neck 140 to which is detachably connected a plastic cap 142 provided with an obliquely disposed tapering discharge passage 144 opening into a bore 146 in the cap in which is slidable a plunger 148. The plunger has a headed shank 150 projecting exteriorly of the cap. Circumposed about the shank of the plunger is a compression coil spring 152 held under compression between the head of the shank and the cap so as to normally retract the plunger to the Fig. 11 position thereof.

A closure flap 154 normally extends across the end of the bore 146 and is movable to the open dotted line position shown in Fig. 11. Thus, pills may roll into the bore 146, and will extend in a row within the bore. On slight forward movement of the plunger, the forwardmost pill pushes open the flap 154 and falls out. The flap is a spring member which normally returns to the full line position shown in Fig. 11. When the plunger is retracted, another pill enters the bore to take the place of the one that was dispensed.

In Fig. 12 there is shown another modification in which the plastic bottle or container 156 for holding a predetermined quantity of pills, granules, powder and liquid, has a neck 158 to which is detachably connectable a plastic cap 160 having a discharge passage 162 at the inlet end of which is a flared and sloping entranceway 164 to guide pills P into the passage. Fixedly secured within the cap, as by being embedded therein, is an elongated, cylindrical, metal plunger housing 166 having intermediate its ends a side opening 168 registered with passage 162.

Housing 166 also has an outlet or dispensing opening 170 offset longitudinally of the housing from opening 168 and disposed at the opposite side of the housing. A plunger 172 has a headed stem 174 projecting exteriorly of the housing, and at its inner end is connected to one end of a contractile spring 176, that is connected between the plunger and the adjacent end of the housing. Spring 176 normally pulls the plunger to the Fig. 12 position, so that an opening 178 of the plunger registers with the passage 162. On pulling the plunger to the left in Fig. 12, a pill in opening 178 will fall out through opening 170. Plunger 172 could be spring-pressed from the outside if desired.

In Fig. 13 a plastic bottle or similar container 180 has a neck 182 to which is connectable a plastic cap 184 formed with a tortuous passage 186 terminating in a dispensing tube 188, the outlet end of which has opposed, convergent spring tongues 190 similar to those shown in Fig. 1. Pills move into the tube 188, and the forwardmost pill may be grasped and pulled out, residually spreading tongues 190.

In Figs. 14 and 15 there is shown a plastic bottle 192 containing pills P and having a reduced neck 194 to which is connectable a plastic cap 196 having a tortuous discharge passage 198 terminating in an elongated dispensing tube 200. At the outlet end of the tube, there is provided an arrangement similar to that in Fig. 4, including a hook-like spring tongue 202 opposing a straight spring tongue 204 so that a pill may be readily extracted by the fingers.

In Fig. 16 there is shown another modification wherein the plastic container has a discharge tube 206 opening into a discharge chamber 208, the wall of which has a side opening 210 offset upwardly from the lower end of the tube 206. A plunger 212 has a slanting collar 214 limiting movement of the same outwardly of the dispenser. The plunger may be pushed upwardly within the chamber, so as to shift upwardly a pill P resting upon the top of the plunger. The pill is brought up against a disc 216 spring-pressed in a downward direction by a

5

compression, coil spring 218. The arrangement is such that the pill tends to shift the disc 216 rearwardly so as to build up the pressure of the spring, so that eventually the spring causes the plunger to move to the side of the pill forcing the pill to move outwardly through the opening 210, the slant of collar 214 facilitating such movement.

In Fig. 17 there is shown a plastic container in which the discharge passage 220 opens laterally at its lower end into a discharge chamber 222, having a side opening 224. In this form, the plunger 226 is mounted upon a leaf spring 228 of angular shape, that is anchored to the tube 220, so that the plunger is shifted upwardly, against the restraint of the spring 228, to force a pill P upwardly and out through the opening 224.

In Fig. 18 there is shown a discharge end portion of a tube which can be embodied in any of various forms of the invention. The dispensing plastic tube 230 has a lateral extension 232 provided with a small spring finger or tongue 234 opposing a tongue 236. A pill is grasped and pulled outwardly, temporarily moving out of the way the finger 234.

In Fig. 19 there is shown another plastic container in which a dispensing tube 238 receives pills P, and has a hooklike spring tongue 240 opposing a spring tongue 242. A small, angular leaf spring tongue 244 is anchored to the tube, and has a free end extending through an aperture 246. By pressing the tongue 244 inwardly, a pill is forced outwardly between the tongues 240, 242.

In Figs. 20 and 21, there is shown another form in which a flexible container 248 has an elongated, plastic dispensing tube 250 of inverted U shape, and also has a plastic filler cap 252. Tube 250 at its inlet end has a baffle 254 causing pills to be channeled into the tube 250. The tube 250 is of inverted U-shape, having a discharge portion 256 extending exteriorly of the container. A leaf spring 258 is secured to the tube 256, and has a free end 260 entering an opening 262 provided at the discharge end of the tube to hold a pile of pills in the tube. A pill may thus be forced through a discharge aperture 264 on to the tongue under aperture 264 merely by pressing the exposed extended part of tube 256 in the direction of the adjacent wall of the container, that is, by moving the tube 256 from its Fig. 21 to its Fig. 20 position. This causes spring 258 to be engaged by the container wall and be forced inwardly to its Fig. 20 position to expel a pill P through opening 264.

In Fig. 22, there is shown another form in which the plastic container 270 has a neck 272 which is closed by a removable plastic cap 274. The container is adapted to hold a predetermined quantity of powder, granules, liquid or pills. The cap is cylindrical and hollow and extends partly inside and partly outside the container. An inlet opening 276 is formed on its inner end and a dispensing outlet 278 is formed in the outer end of the cap. The inner end of the cap is reduced forming a seat for a compression spring 280 therein. A dispensing plunger device 282 similar in configuration to the cap is slidably mounted inside the cap and is formed with an inlet opening 284 and an outlet opening 286 adapted to

6

register with the dispensing outlet 278 of the cap. The plunger device 282 is formed with a stem 288 extending through an opening 290 in the outer end of the cap and with a knob 292 on the outer end of the stem for manipulating the plunger device. The plunger device moves inwardly against the action of spring 280 for receiving a pill through the inlet openings 276 and 284 and upon release of the plunger the pill will fall through the outlet opening 286 and dispensing opening 278.

In all forms of the invention there is the common characteristic wherein controlled dispensing of pills is provided, so that there can be no accidental loss of pills, permitting a pill or a tablet to be dispensed only as and when desired, and without danger of dispensing of an excessive number of pills.

While I have illustrated and described the preferred embodiments of my invention, it is to be understood that I do not limit myself to the precise constructions herein disclosed and that various changes and modifications may be made within the scope of the invention as defined in the appended claim.

Having thus described my invention, what I claim as new, and desire to secure by United States Letters Patent is:

25 A pill dispensing unit, comprising a generally cylindrical container for a quantity of pills, said container having closed and open ends, a removable cap closing the open end of the container, a flexible tube inserted through a side of the container near said closed end, said tube having one end portion opening inside the container near the cap, the tube having a portion extending along the outside of the container and terminating in an open end near the cap, a curved member at the open end of the tube providing a tongue to receive a pill discharged from the tube, a baffle secured to said one end of the tube inside the container for guiding pills into the tube, spring means normally spacing the open end of the tube from the side of the container, said spring means having an end projecting into a lateral opening in the tube near said open end thereof, whereby flexing of the tube in a direction toward the side of the container forces a pile of pills in the tube axially in the tube toward its open end and forces a pill at the end of the pile through the open end of the tube past said end of the spring means, whereupon the spring means engages the next pill of the pile to retain the pile of pills in the tube.

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