

March 9, 1937.

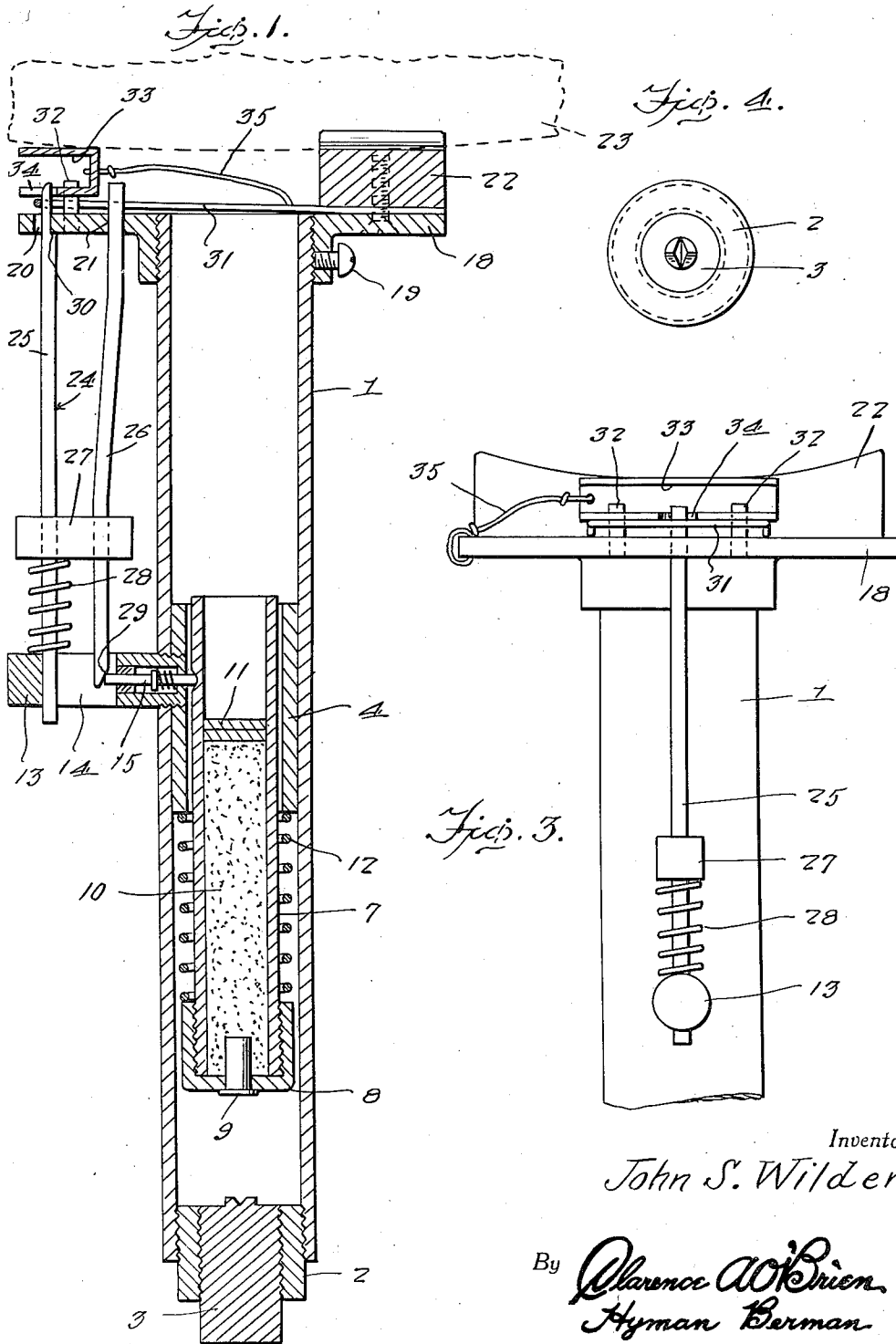
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2,072,914

SIGNAL

Filed April 2, 1936

3 Sheets-Sheet 1



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Fig. 2.

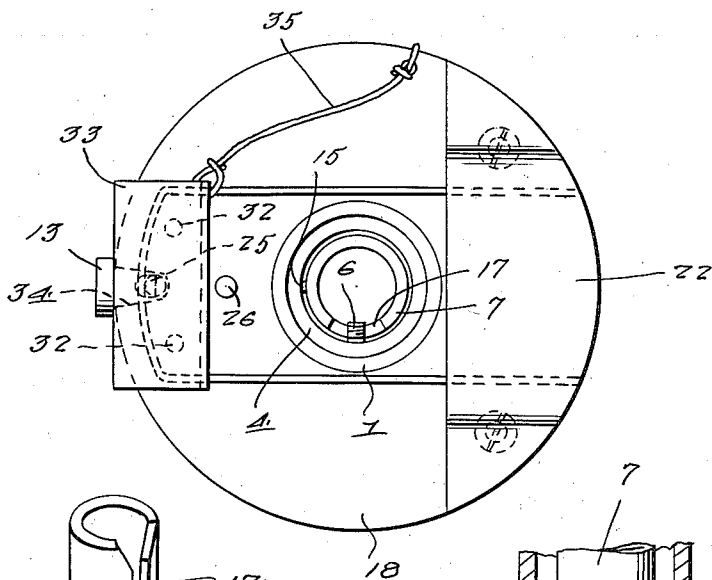


Fig. 5.

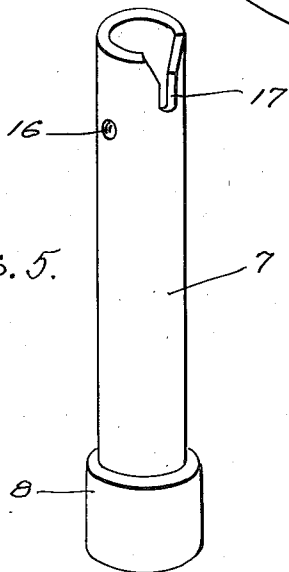


Fig. 7.

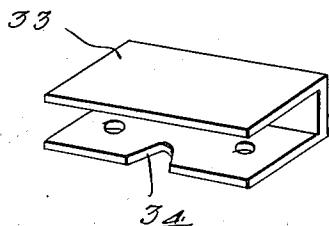
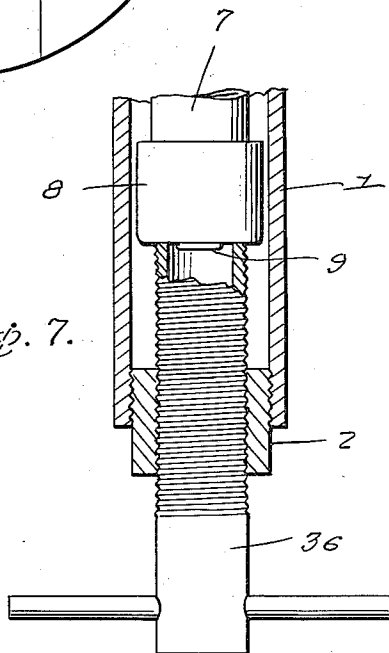


Fig. 6.

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Fig. 9.

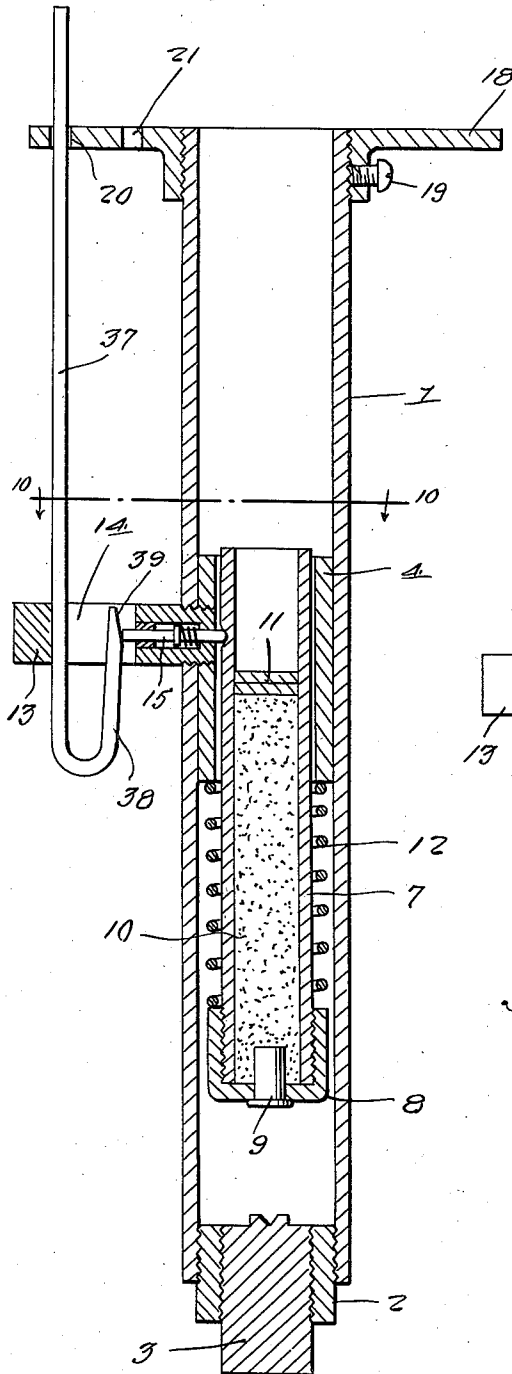


Fig. 8.

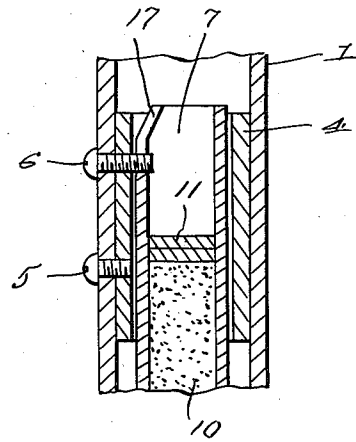


Fig. 10.

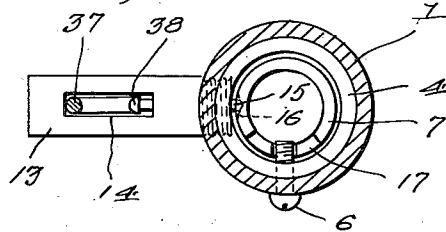
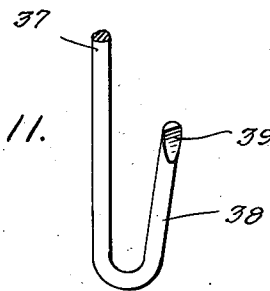


Fig. 11.



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UNITED STATES PATENT OFFICE

2,072,914

SIGNAL

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Application April 2, 1936, Serial No. 72,381

5 Claims. (Cl. 116—98)

The present invention relates to new and useful improvements in signals of the detonating type for use particularly in gardens for giving warning of the presence of thieves and other unauthorized persons, although it is to be understood, of course, that the invention may be used for any purpose and in any other manner for which it may be found adapted and desirable.

The primary object of the invention is to provide, in a manner as hereinafter set forth, a signal of the aforementioned character which is adapted to be concealed in the ground in a garden and which embodies a novel construction and arrangement whereby the device will be set off by the thief or other unauthorized persons.

Another very important object of the invention is to provide a signal of the character described which, when set off, will partially disable the thief temporarily by discharging into the air in the vicinity tear gas, pepper or some other medium of a generally similar nature.

Other objects of the invention are to provide a signal of the character set forth which will be comparatively simple in construction, strong, durable, highly efficient and reliable in use, compact and which may be manufactured at low cost.

All of the foregoing and still further objects and advantages of the invention will become apparent from a study of the following specification, taken in connection with the accompanying drawings wherein like characters of reference designate corresponding parts throughout the several views and wherein:—

Figure 1 is a vertical sectional view through an embodiment of the invention.

Figure 2 is a top plan view thereof.

Figure 3 is a view in front elevation of the upper portion of the device.

Figure 4 is a detail view in top plan of the firing pin and the bushing in which said firing pin is mounted.

Figure 5 is a detail view in perspective of the slidable explosive container.

Figure 6 is a detail view in perspective of an element constituting a part of the trigger mechanism.

Figure 7 is a view in vertical section through the lower portion of the device, showing the explosive container being set.

Figure 8 is a vertical sectional view through intermediate portion of the invention.

Figure 9 is a view in vertical section through a modification.

Figure 10 is a view in horizontal section, taken substantially on the line 10—10 of Figure 9.

Figure 11 is a perspective view of the lower end portion of the trigger used in that form of the invention shown in Figures 9 and 10.

Referring now to the drawings in detail, it will be seen that the reference numeral 1 designates an elongated barrel of suitable metal having threadedly mounted in its lower end portion a bushing 2. Threadedly mounted in the bushing 2 is a removable firing pin 3. The reference numeral 4 designates a metallic sleeve which, as best seen in Figure 8 of the drawings, is secured in an intermediate portion of the barrel 1 by screws 5 and 6. The screw 6 projects into the sleeve 4 for a purpose which will be presently set forth.

Slidably mounted in the sleeve 4 and the lower portion of the barrel 1 is a tubular explosive container 7 which is closed at its lower end by a cap 8 having an opening therein for the reception of a rim fire cartridge shell 9. The explosive container 7 is removable from the barrel 1 by removing the bushing 2. The reference numeral 10 designates an explosive in the container 7 which is retained by a wad 11. A coil spring 12 encircles the container 7 for yieldingly urging same downwardly for engaging the cap of the cartridge shell 9 with the firing pin 3, one end of said spring being engaged with the lower end of the sleeve 4, the other end of said spring being engaged with the cap or closure 8.

Threadedly mounted in an intermediate portion of the barrel 1 and projecting horizontally therefrom is a guide 13 having a vertical opening 14 therein. It will be observed that the guide 13 is threaded through the sleeve 4. Slidably mounted in the inner portion of the guide 13 is a spring retracted locking pin or detent 15 which is engageable in a socket 16 which is provided therefor in the explosive container 7 for securing said container in set position against the tension of the coil spring 12. The screw 6 is engageable in a guide slot 17 in the upper end portion of the container 7 for positioning the socket 16 to receive the detent 15 when the device is being assembled or set. It will be noted that the detent 15 projects into the opening 14 in the guide 13.

The barrel 1 is open at its upper end and threadedly mounted thereon is a flange 18 which is secured by a set screw 19. The flange 18 has formed therein openings 20 and 21. Rising from the side of the flange 18 which is remote from the openings 20 and 21 is a platform 22 for supporting a watermelon 23.

The reference numeral 24 designates generally

a trigger mechanism. The trigger mechanism 24 includes a pair of resilient rods 25 and 26 which are fixed, at an intermediate point, in a metallic block 27. The rod 25 extends into the opening 14 in the guide 13 and is engaged with the outer end wall of said opening. A coil spring 28 has one end engaged with the guide 13 and its other end engaged with the block 27 for yieldingly urging the rod 25, together with the rod 26, upwardly. The rod 26 terminates in a bevelled lower end portion 29 which is engaged with the outer end of the detent 15 for securing said detent in the socket 16. The upper end portions of the rods 25 and 26 extend slidably through the openings 20 and 21 respectively. The upper end portion of the rod 25 is reduced in a manner to provide a shoulder 30 which is engageable beneath the flange 18.

The trigger mechanism 24 further includes a substantially U-shaped spring 31 having its end portions secured between the platform 22 and the flange 18, the bight portion of said spring being engageable over the upper end portion of the rod 25 for releasably securing the shoulder 30 in engagement with the lower side of the flange 18. Stud 32 rises from the flange 18 adjacent the openings 20 and 21 and slidably mounted on said studs is a substantially U-shaped plate 33 on which the watermelon 23 rests and which is adapted to releasably secure the spring 31 in engagement with the rod 25. The substantially U-shaped plate 33 is provided with a recess 34 in its lower portion which accommodates the upper end portion of the rod 25. A flexible stand 35 secures the plate 33 to the flange 18. The reference numeral 36 designates a setting tool which, with the firing pin 3 removed, is threaded upwardly through the bushing 2 for setting the explosive container 7 against the tension of the coil spring 12.

In use, the bushing 2 and the firing pin 3 are removed to permit the removal of the container 7 from the barrel 1 for loading. After the explosive 10 and the wad 11, together with the shell 9, have been mounted in the container 7, said container is inserted in the barrel 1 from the lower end thereof, care being taken to align the guide slot 17 with the inner end portion of the screw 6. The bushing 2 is then threaded into the barrel 1 and the tool 36 is then threaded through said bushing and engaged with the container 7 for forcing said container upwardly against the tension of the coil spring 12 until the screw 6 seats in the lower end of the slot 17. When the container 7 is in this position the socket 16 will be aligned with the detent 15. A disabling medium such as pepper, tear gas, etc., may then be inserted in the barrel 1 through the open upper end thereof and secured by suitable wadding. With the set screw 19 loosened, the flange 18 may be rotated on the barrel 1 to facilitate slipping the rods 25 and 26 upwardly through the openings 20 and 21. The flange 18 is then rotated to bring the rods 25 and 26 into vertical alignment with the opening 14 in which the lower end portions of said rods are engaged, the set screw 19 now being tightened to secure the flange 18 in this position. The rods 25 and 26 are forced downwardly into the opening 14 of the guide 13 against the tension of the coil spring 28 to permit the shoulder 30 to be engaged beneath the flange 18. Also, when in this position the lower end of the rod 26 is engaged with the detent 15 for securing said detent in the socket 16. The substantially U-shaped spring 31 is then

flexed downwardly into engagement with the upper end portion of the rod 25 for securing the shoulder 30 in engagement with the flange 18 and the substantially U-shaped plate 33 is then slipped on studs 32 above the spring 31. The plate 33 may be secured on the studs 32 in a manner to retain the spring 31 by any suitable means such as a substantially U-shaped clip engageable with the lower portion of said plate and the flange 18. The device is then buried in the ground with the top thereof substantially flush with the surface of said ground. The watermelon 23 is then mounted in position on the platform 22 and the plate 33, after which the aforementioned retaining clip for said plate 33 is removed and said device is ready for operation.

It will be understood that the weight of the watermelon 23 is sufficient on the plate 33 to retaining the spring 31 in engagement over the upper end portion of the rod 25. Now, if the watermelon 23 is removed the spring 31 swings upwardly to its normal position, thereby releasing the rod 25 and permitting the upper end portion thereof to spring outwardly in a manner to disengage the shoulder 30 from beneath the flange 18. When the spring 31 moves upwardly in this manner the substantially U-shaped plate 33 is lifted off of the studs 32. With the shoulder 30 disengaged from beneath the flange 18 the spring 28 elevates the rods 25 and 26 which are fixed in the block 27, thereby disengaging said rod 26 from the detent 15 for releasing the container 7. When thus released the container 7 is moved downwardly by the coil spring 12 for engaging the cap of the cartridge shell 9 with the firing pin 3 thereby exploding the charge 10. Of course, this results in a loud report and the aforementioned tear gas, pepper or the like will be spread in the air in the vicinity of the device for temporarily disabling the thief.

In the modification shown in Figures 9, 10, and 11 of the drawings, a vertical rod 37 is slidably mounted in the openings 20 and 14 and terminates, at its lower end, in an upturned arm 38 having a bevelled free end portion 39 which is engageable with the outer end of the detent 15 for releasably securing said detent in the socket 16. When the upper end of the rod 37 is stepped on, said rod is forced downwardly in the openings 20 and 14 in a manner to disengage the arm 38 from the detent 15, thereby releasing said detent for permitting the spring 12 to force the container 7 downwardly to engage the cartridge shell 9 with the firing pin 3 for exploding the charge 10. It may be well to here state that the rod 37 with the arm 38 are of resilient material and that when said arm is engaged with the detent 15 as shown in Figure 9 of the drawings it is under tension.

It is believed that the many advantages of a signal constructed in accordance with the present invention will be readily understood and although preferred embodiments of the device are as illustrated and described, it is to be understood that changes in the details of construction and in the combination and arrangement of parts may be resorted to which will fall within the scope of the invention as claimed.

What is claimed is:—

1. A signal of the class described comprising a barrel open at one end, a firing pin in the other end of said barrel, an element projecting into the barrel, a container, for the reception of an explosive, slidably mounted in the barrel and including an igniting cap engageable with the

firing pin, a coil spring operatively engaged with the container for driving said container toward the firing pin, said container having a socket therein, a slidably mounted detent engageable in the socket for releasably securing the container against the action of the spring, and a trigger for releasably securing the detent in the socket, said container further having a substantially tapered slot extending thereinto from one end thereof for the reception of the element for positioning the socket in alignment with the detent.

2. A signal of the class described comprising a barrel open at one end, a firing pin in the other end of said barrel, a sleeve mounted in the barrel at an intermediate point, securing elements for anchoring the sleeve in the barrel, one of said elements projecting into the sleeve, a container, for the reception of an explosive, slidably mounted in the barrel and extending into the sleeve, a coil spring encircling the container and operatively engaged therewith for driving said container toward the firing pin, said container including an igniting cap engageable with the firing pin, said container having a socket therein, a spring retracted detent slidably mounted on the barrel and engageable in the socket for releasably securing the container against the action of the coil spring, and a trigger engaged with the detent for releasably securing said detent in the socket, the container further having a substantially tapered guide slot extending thereinto from one end thereof for the reception of said one element for aligning the socket with the detent.

3. A signal of the class described comprising an elongated barrel open at one end, a firing pin threadedly mounted in the other end of said barrel, a sleeve mounted in the barrel at an intermediate point, screws for securing the sleeve in the barrel, one of said screws projecting into the sleeve, a container, for the reception of an explosive, slidably mounted in the barrel and extending into the sleeve, said container including an igniting cap engageable with the firing pin, a coil spring encircling the container and operatively engaged therewith for driving said container toward the firing pin, said container having a socket therein, a guide projecting at right angles from the barrel and having an opening therein, a spring retracted detent slidably mounted in the guide and engageable in the socket for releasably securing the container against the action of the coil spring, a flange mounted on the open end of the barrel, said flange having an opening therein, and a trigger slid-

ably mounted in the first and second named openings and engaged with the detent for releasably securing said detent in the socket, the container having a slot extending thereinto from one end thereof for the reception of said one screw for positioning the socket for the reception of the detent when said container is set in the barrel against the tension of the coil spring.

4. A signal of the class described comprising a barrel open at one end, a firing pin in the other end of said barrel, a container, for the reception of an explosive, slidably mounted in the barrel, a coil spring operatively engaged with the container for driving same toward the firing pin, said container including an igniting cap engageable with the firing pin, a guide projecting from the barrel, a detent slidable in said guide and engageable with the container for releasably securing said container against the action of the coil spring, a flange on the open end of the barrel, a rod slidably mounted in the guide and the flange, a spring operatively connected to said rod for yieldingly urging said rod in one direction, a shoulder on the rod engageable with the flange for securing said rod against the action of the second named spring, a resilient member mounted on the flange and engaged with the rod for releasably securing the shoulder in engagement with the flange, studs rising from the flange, a substantially U-shaped plate, for receiving a weight, slidably and removably mounted on the studs for releasably securing the resilient element in engagement with the rod, and a second named rod mounted on the first named rod and operatively engageable with the detent for releasably securing said detent in operative engagement with the container.

5. A signal of the class described comprising a barrel open at one end, a firing pin in the other end of said barrel, a container, for the reception of an explosive, slidably mounted in the barrel, said container including an igniting cap engageable with the firing pin, a coil spring operatively connected to the container for driving said container toward the firing pin, a guide projecting from the barrel, a flange mounted on the open end of said barrel, a detent slidably mounted in the guide and engageable with the container for releasably securing said container against the action of the coil spring, a rod slidably mounted in the guide and the flange, and an arm on said rod engageable with the detent for releasably securing said detent in operative engagement with the container.

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