

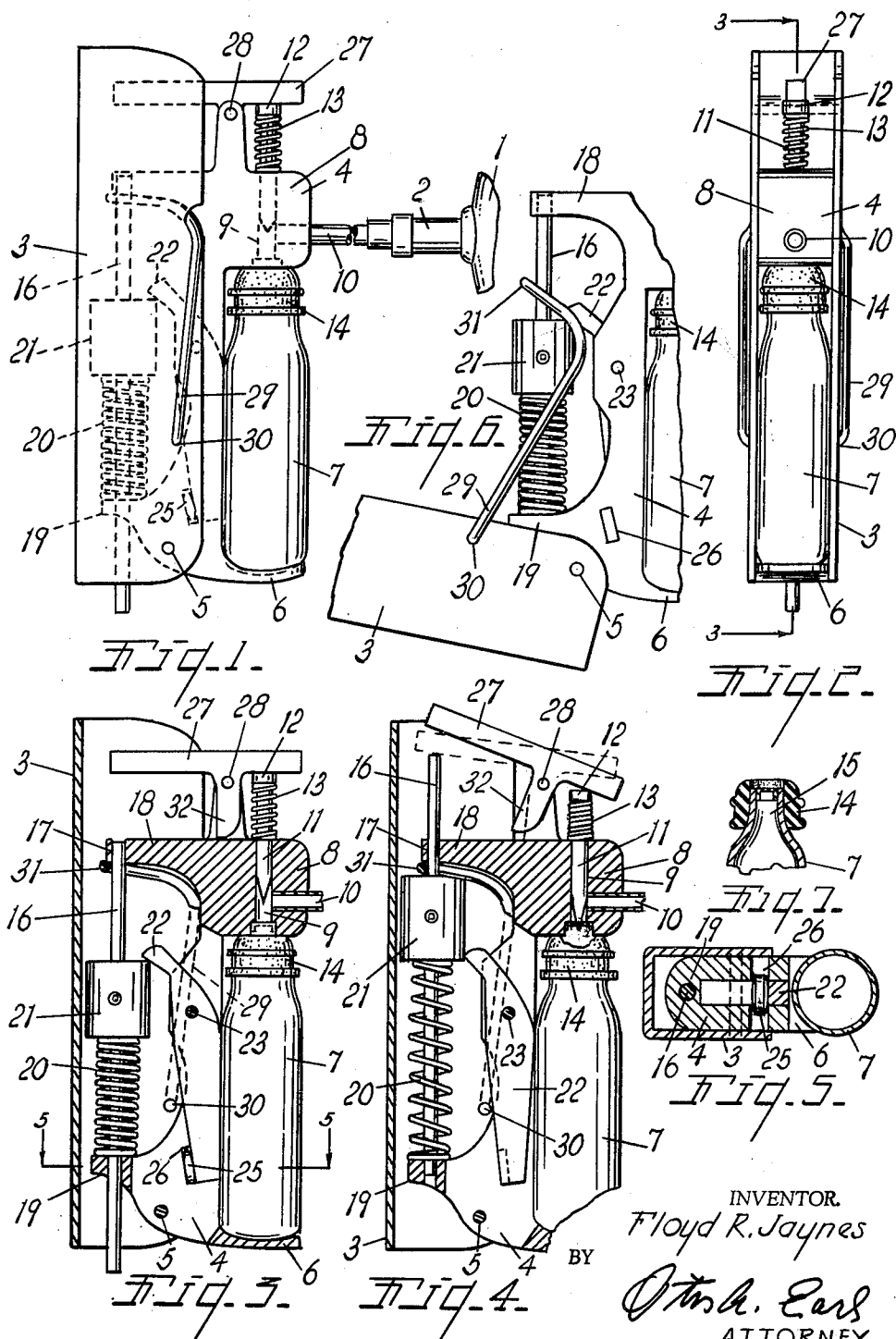
July 13, 1965

F. R. JAYNES

3,194,436

PRESSURE BOTTLE HOLDER AND OPENER

Filed Nov. 6, 1962



1

3,194,436

PRESSURE BOTTLE HOLDER AND OPENER
Floyd R. Jaynes, 1930 Oakland Drive, Kalamazoo, Mich.
Filed Nov. 6, 1962, Ser. No. 235,665
9 Claims. (Cl. 222-5)

This invention relates to a holder and opening means for containers or bottles, or other containers for gaseous material such, for example, as CO₂.

The main objects of this invention are—

First, to provide an automatically operated apparatus for supporting and opening gaseous containers and adapted for uses such as on life belts, markers, buoys and the like.

Second, to provide a structure having these advantages which includes a soluble trigger member which acts to hold the parts in set position so that they are quickly and automatically released, and the container pierced when the apparatus is submerged.

Third, to provide an inflating apparatus for belts and the like in which the parts are arranged so that the trigger or detent for holding the parts in actuated position is housed and not likely to be accidentally released or broken.

Fourth, to provide a structure having these several advantages which is compact, light in weight, and may be repeatedly used.

Objects relating to details and economies of the invention will appear from the description to follow. The invention is defined and pointed out in the claims.

A preferred embodiment of the invention is illustrated in the accompanying drawing, in which:

FIG. 1 is a side elevational view of a structure embodying my invention, certain of the housed parts being shown by dotted lines and a fragment of a belt or other part to be inflated being conventionally illustrated.

FIG. 2 is an elevational view looking from the right of FIG. 1 with the part to be inflated removed.

FIG. 3 is a fragmentary view mainly in vertical section on a line corresponding to line 3-3 of FIG. 2, the parts being shown in set position.

FIG. 4 is a similar sectional view with the parts in actuated position.

FIG. 5 is a cross sectional view on a line corresponding to line 5-5 of FIG. 3.

FIG. 6 is an enlarged fragmentary view with the body members in open position.

FIG. 7 is a fragmentary sectional view of the upper end of one type container which the present embodiment is designed to receive.

In the accompanying drawing, 1 represents an inflatable life belt or the like provided with an inlet nipple 2. The body member 3 of the embodiment of my invention illustrated is of channel cross section formed of sheet stock. The body member 4 is a casting. These body members are proportioned so that at least portions of the body member 4 may be telescoped into the body member 3, as is illustrated in the drawings, the body members being pivotally connected at 5 so that they may be adjusted to erected or use position, as is illustrated in FIGS. 1 to 5 inclusive, or to open position relative to each other as indicated in FIG. 6.

The body member 4 is provided with a seat 6 for a container 7 of gaseous material under pressure such, for example, as CO₂. The body member 4 has a combined punch and container support member 8 disposed in vertically spaced aligned relation to the container seat or support 6. This member 8 constitutes a punch support as well as an outlet passage member and has a combined punch support and guide and outlet passage 9 and into which the conduit 10 opens.

The punch 11 is provided with a head or collar 12 at

2

its outer end which constitutes a thrust member for the spring 13 arranged on the punch and seated on the second body member, as is illustrated. The resilient gasket or coupling member 14 is sleeved upon the upper end of the neck portion 15 of the container 7, and being of resilient material serves as a conduit and to hold the container or receptacle 7 on its seat. It may be in form of a sleeve or a cap which is punctured by the punch.

It will be understood that the upper end of the container 7 is sealed and is punctured by the punch when the punch is actuated. The punch is actuated by the rod-like actuating member 16, the upper end of which is slidably mounted in a bore 17 provided therefor in the upper laterally projecting arm 18 of the body member 4 and its lower end in the laterally projecting arm 19. This rod is actuated by the spring 20 mounted thereon and seated on the arm 19 with its upper end in engagement with the combined thrust member and detent 21.

The actuating member 16 is held in its retracted or set position by the detent 22 which is pivotally mounted at 23 on the second body member with its upper end positioned to engage the keeper member 21, as is illustrated in FIG. 3.

This detent is held in set position by means of the soluble disk-like holder 25 disposed in the pocket or socket 26 in the body member. When this soluble holder is dissolved or moistened to the extent that it fractures, the detent 24 is released, thereby releasing the actuating rod 16, which engages and actuates the trip or coupling member 27 which is pivoted at 28 on the second body member with one end thereof disposed in overhanging relation to the punch member 11 and the other end to the actuating rod 16. The socket for the soluble element 26 is positioned so that it is housed within the first body member when the body members are in their closed position and it cannot slip out of its seat or holder, as the side portions of the first body member are in overlapping relation thereto.

The body members are held in their erected position by means of the looped detent 29, which is desirably formed of rod or wire stock and the arms of which are pivotally mounted on the body member 3 at 30 and has a laterally projecting bight portion 31 extending into the body member 3 and disposed in retaining engagement with the actuating rod 16, see FIGS. 1, 2 and 6. This serves to hold the body members in their erected position and also cocks the spring 20 by outward or opening movement. With this arrangement of parts, the complete structure is quite compact when the parts thereof are in erected position as illustrated in FIGS. 1 to 5 of the drawings. The only replaceable parts required are the receptacle and the soluble detent holder member which, as stated, is desirably a soluble tablet, certain medicinal tablets being usable if desired. The gaseous container 7 is effectively supported without clamping means other than the rubber gasket-like holder 14 which may be repeatedly used.

In the embodiment of my invention illustrated, the member 27 is provided with a downwardly projecting arm-like stop 32 which engages the upper end portion 8 of the second body member, as is illustrated in FIG. 3, when the parts are in their set position.

I have illustrated and described my invention in a highly practical embodiment thereof. I have not attempted to illustrate or describe other embodiments or adaptations, as it is believed that this disclosure will enable those skilled in the art to embody or adapt my invention as may be desired.

Having thus described the invention, what is claimed as new and desired to secure by Letters Patent is:

1. A structure of the class described comprising an elongated first body member of channel cross section,

3

an elongated second body member having a portion disposed between and pivotally connected to the side portions of said first body member and having an outwardly projecting container seat disposed at the outer side of said pivotal connection for said first and second body members, said second body member also having an outwardly projecting container support and outlet member disposed in upwardly spaced aligned relation to said container seat, said container seat and container support and outlet member being spaced to supportedly receive a container between them, said container support and outlet member having a container outlet and punch guide bore therein, said bore having a discharge spaced from its lower end, a punch member reciprocally mounted in said outlet and punch guide bore and having sealing engagement therewith above said outlet and having a portion projecting outwardly from said container support and outlet member, a retracting spring for said punch member mounted on and connected thereto at its outer end with its inner end in supported engagement with said punch support member, said second body member also having spaced inwardly projecting arms, a rod-like actuating member reciprocally mounted on said arms and having a thrust and keeper member disposed between and spaced from both of said arms, a coiled actuating spring for said rod mounted thereon in supported engagement with the arm of said second body member adjacent its pivotal connection to said first body member and in thrust engagement with said spring thrust and keeper member, a punch actuating member pivotally mounted on said second body member to coact with said actuating member and with said punch member, said punch actuating member having a stop engageable with said second body member for limiting the actuation thereof by said spring on said punch, a detent pivotally mounted on said second body member to coact with said keeper member on said actuating member, said second body member having a socket therein adapted to receive a soluble keeper for said detent, and a springably resilient latch member pivotally mounted on said first body member and having a laterally offset bight portion with which said actuating member is in sliding engagement and coacting therewith for limiting the opening movement of said body members relative to each other.

2. A structure of the class described comprising an elongated first body member of channel cross section, an elongated second body member having a portion disposed between and pivotally connected to the side portions of said first body member and having an outwardly projecting container seat disposed at the outer side of said pivotal connection for said first and second body members, said second body member also having an outwardly projecting container support and outlet member disposed in upwardly spaced aligned relation to said container seat, said container seat and container support and outlet member being spaced to supportedly receive a container between them, said container support and outlet member having a container outlet and punch guide bore therein, said bore having a discharge spaced from its lower end, a punch member reciprocally mounted in said outlet and punch guide bore and having sealing engagement therewith above said outlet and having a portion projecting outwardly from said container support and outlet member, a retracting spring for said punch member mounted on and connected thereto at its outer end with its inner end in supported engagement with said punch support member, said second body member also having spaced inwardly projecting arms, a rod-like actuating member reciprocally mounted on said arms and having a thrust and keeper member disposed between and spaced from both of said arms, a coiled actuating spring for said rod mounted thereon in supported engagement with the arm of said second body member adjacent its pivotal connection to said first body member and in thrust

4

engagement with said spring thrust and keeper member, a punch actuating member pivotally mounted on said second body member to coact with said actuating member and with said punch member, said punch actuating member having a stop engageable with said second body member for limiting the actuation thereof by said spring on said punch, and a detent pivotally mounted on said second body member to coact with said keeper member on said actuating member, said second body member having a socket therein adapted to receive a soluble keeper for said detent.

3. A structure of the class described comprising an elongated first body member of channel cross section, an elongated second body member having a portion disposed between and pivotally connected to the side portions of said first body member and having an outwardly projecting container seat disposed at the outer side of said pivotal connection for said first and second body members, said second body member also having an outwardly projecting container support and outlet member disposed in upwardly spaced aligned relation to said container seat, said container seat and container support and outlet member being spaced to supportedly receive a container between them, said container support and outlet member having a container outlet and punch guide bore therein, said bore having a discharge spaced from its lower end, a punch member reciprocally mounted in said outlet and punch guide bore and having sealing engagement therewith above said outlet and having a portion projecting outwardly from said container support and outlet member, a retracting spring for said punch member mounted on and connected thereto at its outer end with its inner end in supported engagement with said punch support member, said second body member also having spaced inwardly projecting arms, a rod-like actuating member reciprocally mounted on said arms and having a thrust and keeper member disposed between and spaced from both of said arms, a coiled actuating spring for said rod mounted thereon in supported engagement with the arm of said second body member adjacent its pivotal connection to said first body member and in thrust engagement with said spring thrust and keeper member, a punch actuating member pivotally mounted on said second body member to coact with said actuating member and with said punch member, and a detent pivotally mounted on said second body member to coact with said keeper member on said actuating member, said second body member having a socket therein adapted to receive a soluble keeper for said detent.

4. A structure of the class described comprising a first body member of channel cross section, a second body member having a portion disposed between and pivotally connected to the side portions of said first body member and having a container seat disposed at the outer side of said pivotal connection for said first and second body members, said second body member also having a container support and outlet member disposed in spaced relation to said container seat, said container support and outlet member having a container outlet and punch guide bore therein, said bore having a discharge spaced from its lower end, a punch member reciprocally mounted in said outlet and punch guide bore in sliding engagement therewith above said outlet and having a portion projecting outwardly from said container support and outlet member, a retracting spring for said punch member mounted and connected thereto at its outer end with its inner end in supported engagement with said punch support member, said second body member also having spaced inwardly projecting arms, a rod-like actuating member reciprocally mounted on said arms and having a thrust and keeper member disposed between and spaced from both of said arms, a coiled actuating spring for said rod mounted thereon in supported engagement with the arm of said second body member adjacent its pivotal connection to said first body member and in thrust en-

5

gagement with said spring thrust and keeper member, a punch actuating member pivotally mounted on said second body member to coact with said actuating member and with said punch member, said punch actuating member having a stop engageable with said second body member for limiting the actuation thereof by said spring on said punch, a detent pivotally mounted on said second body member to coact with said keeper member on said actuating member, said second body member having a holder therein adapted to receive a soluble keeper for said detent, and a latch member pivotally mounted on said first body member and having a portion with which said actuating member is in sliding engagement and coacting therewith for limiting the opening movement of said body members relative to each other.

5. A structure of the class described comprising a first body member of channel cross section, a second body member having a portion disposed between and pivotally connected to the side portions of said first body member and having a container seat disposed at the outer side of said pivotal connection for said first and second body members, said second body member also having a container support and outlet member disposed in spaced relation to said container seat, said container support and outlet member having a container outlet and punch guide bore therein, said bore having a discharge spaced from its lower end, a punch member reciprocatingly mounted in said outlet and punch guide bore in sliding engagement therewith above said outlet and having a portion projecting outwardly from said container support and outlet member, a retracting spring for said punch member mounted and connected thereto at its outer end with its inner end in supported engagement with said punch support member, said second body member also having spaced inwardly projecting arms, a rod-like actuating member reciprocatingly mounted on said arms and having a thrust and keeper member disposed between and spaced from both of said arms, a coiled actuating spring for said rod mounted thereon in supported engagement with the arm of said second body member adjacent its pivotal connection to said first body member and in thrust engagement with said spring thrust and keeper member, a punch actuating member pivotally mounted on said second body member to coact with said actuating member and with said punch member, and a detent pivotally mounted on said second body member to coact with said keeper member on said actuating member, said second body member having a holder therein adapted to receive a soluble keeper for said detent.

6. A structure of the class described comprising a first body member of channel cross section, a second body member having a portion disposed between and pivotally connected to the side portions of said first body member and having an outwardly projecting container seat disposed at the outer side of said pivotal connection for said first and second body members, said second body member also having a projecting container support and outlet member disposed in spaced aligned relation to said container seat, said container seat and container support and outlet member being spaced to supportably receive a container between them, said container and punch support member having a container outlet and punch guide bore therein, said bore having a discharge spaced from its lower end, a spring retracted punch member reciprocatingly mounted in said outlet and punch guide bore and having sealing engagement therewith above said outlet and having a portion projecting outwardly from said container support and outlet member, said second body member also having spaced inwardly projecting portions, a spring actuated actuating member reciprocatingly mounted on said second body member and having a thrust and keeper member, a punch actuating member pivotally mounted on said second body member to coact with said actuating member and with said punch member, said punch actuating member having a stop engageable with

6

said second body member for limiting the actuation thereof by said spring on said punch, a detent pivotally mounted on said second body member to coact with said keeper member on said actuating member, said second body member having a holder therein adapted to receive a soluble keeper for said detent, and a latch member mounted on said first body member and having a portion with which said actuating member is in sliding engagement and coacting therewith for limiting the opening movement of said body members relative to each other.

7. A structure of the class described comprising a first body member of channel cross section, a second body member having a portion disposed between and pivotally connected to the side portions of said first body member and having an outwardly projecting container seat disposed at the outer side of said pivotal connection for said first and second body members, said second body member also having a projecting container support and outlet member disposed in spaced aligned relation to said container seat, said container seat and container support and outlet member being spaced to supportably receive a container between them, said container and punch support member having a container outlet and punch guide bore therein, a spring retracted punch member reciprocatingly mounted in said outlet and punch guide bore and having a portion projecting outwardly from said container support and outlet member, said second body member also having spaced inwardly projecting portions, a spring actuated actuating member reciprocatingly mounted on said second body member and having a thrust and keeper member, a punch actuating member pivotally mounted on said second body member to coact with said actuating member and with said punch member, said punch actuating member having a stop engageable with said second body member for limiting the actuation thereof by said spring on said punch, a detent pivotally mounted on said second body member to coact with said keeper member on said actuating member, said second body member having a holder therein adapted to receive a soluble keeper for said detent, and a latch member mounted on said first body member and having a portion with which said actuating member is in sliding engagement and coacting therewith for limiting the opening movement of said body members relative to each other.

8. A structure of the class described comprising a first body member of channel cross section, a second body member having a portion disposed between and pivotally connected to the side portions of said first body member and having an outwardly projecting container seat disposed at the outer side of said pivotal connection for said first and second body members, said second body member also having a projecting container support and outlet member disposed in spaced aligned relation to said container seat, said container seat and container support and outlet member being spaced to supportably receive a container between them, said container and punch support member having a container outlet and punch guide bore therein, said bore having a discharge spaced from its lower end, a spring retracted punch member reciprocatingly mounted in said outlet and punch guide bore and having sealing engagement therewith above said outlet and having a portion projecting outwardly from said container support and outlet member, said second body member also having spaced inwardly projecting portions, a spring actuated actuating member reciprocatingly mounted on said second body member and having a thrust and keeper member, a punch actuating member pivotally mounted on said second body member to coact with said actuating member and with said punch member, and a detent pivotally mounted on said second body member to coact with said keeper member on said actuating member, said second body member having a holder therein adapted to receive a soluble keeper for said detent.

9. A structure of the class described comprising a first

7

body member of channel cross section, a second body member having a portion disposed between and pivotally connected to the side portions of said first body member and having an outwardly projecting container seat disposed at the outer side of said pivotal connection for said first and second body members, said second body member also having a projecting container support and outlet member disposed in spaced aligned relation to said container seat, said container seat and container support and outlet member being spaced to supportedly receive a container between them, said container and punch support member having a container outlet and punch guide bore therein, a spring retracted punch member reciprocatingly mounted in said outlet and punch guide bore and having a portion projecting outwardly from said container support and outlet member, said second body member also having spaced inwardly projecting portions, a spring actuated actuating member reciprocatingly

8

mounted on said second body member and having a thrust and keeper member, a punch actuating member pivotally mounted on said second body member to coact with said actuating member and with said punch member, and a detent pivotally mounted on said second body member to coact with said keeper member on said actuating member, said second body member having a holder therein adapted to receive a soluble keeper for said detent.

References Cited by the Examiner

UNITED STATES PATENTS

701,329	6/02	Graham et al.	222—5
1,704,944	3/29	Johann	222—5
2,684,784	7/54	Fox	222—5
3,014,619	12/61	Moran	222—5
3,023,932	3/62	Hennis et al.	222—135 X

RAPHAEL M. LUPO, *Primary Examiner.*