R. H. CAMPBELL.

CAPSULE OR CONTAINER FOR GASES OR LIQUIDS UNDER PRESSURE.

APPLICATION FILED OCT 23, 1919.

1,387,451.

Patented Aug. 16, 1921.

2 SHEETS—SHEET 1.

Fig 1.

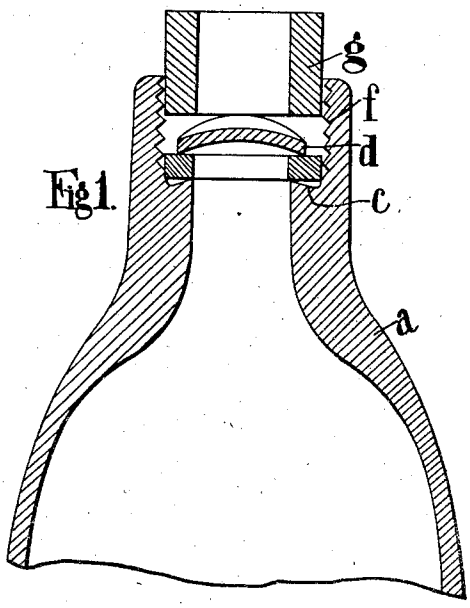
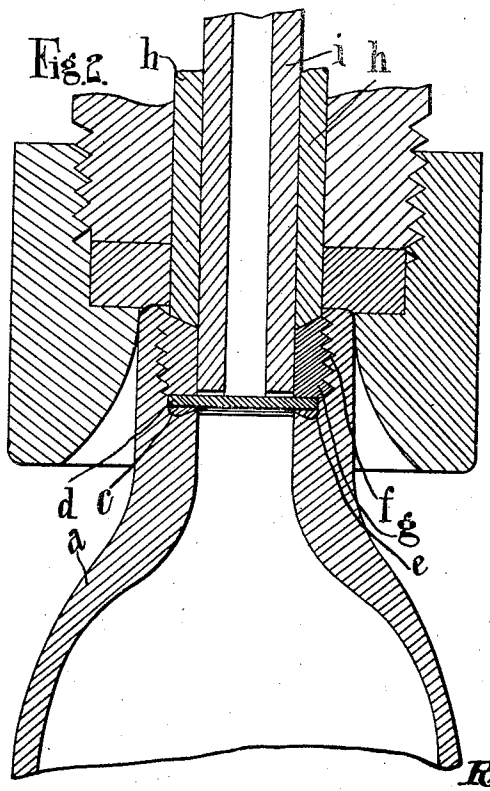


Fig 2.



Inventor
R. H. Campbell,
By K. R. Koralak
Attorney

R. H. CAMPBELL.

CAPSULE OR CONTAINER FOR GASES OR LIQUIDS UNDER PRESSURE.

APPLICATION FILED OCT 23, 1919.

1,387,451.

Patented Aug. 16, 1921.

2 SHEETS—SHEET 2.

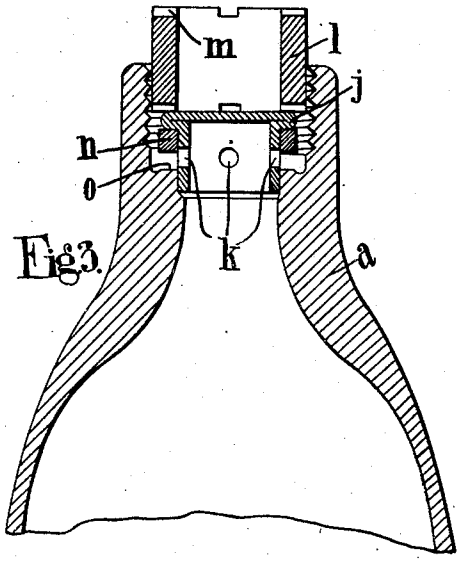


Fig3.

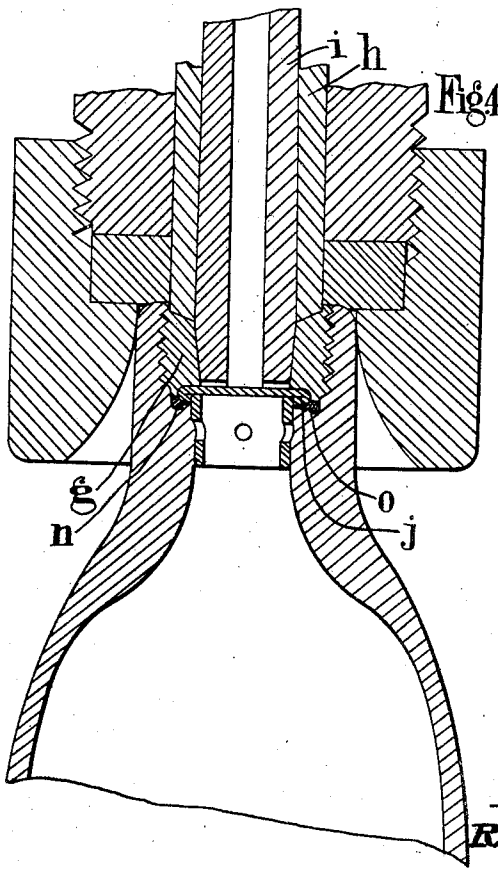


Fig4.

Inventor
R.H.Campbell
By K.R. Kerslake
Attorney

UNITED STATES PATENT OFFICE.

ROBERT HUNTER CAMPBELL, OF UPPER EDMONTON, ENGLAND.

CAPSULE OR CONTAINER FOR GASES OR LIQUIDS UNDER PRESSURE.

1,387,451. Specification of Letters Patent. Patented Aug. 16, 1921.

Application filed October 23, 1919. Serial No. 332,822.

To all whom it may concern:

Be it known that I, ROBERT HUNTER CAMPBELL, a subject of the King of Great Britain and Ireland, residing at Angel Road, Upper Edmonton, in the county of Middlesex, England, have invented certain new and useful Improvements Relating to Capsules or Containers for Gases or Liquids Under Pressure, of which the following is a specification.

This invention relates to capsules or containers for gases or liquids under pressure, and is especially directed to improvements in the type of closure device described in British Patent No. 9652 of 1910, in which a soft metal plug is utilized to retain in position a hard metal closing element.

The objects of the invention are to simplify the construction, and to facilitate the re-use of the capsules or containers.

The invention consists broadly in forming an internal thread in the neck of the capsule or container, above the shoulder or the like against which sealing is effected, and in retaining the closing element by a plastic element flowed into this thread.

The invention further consists in employing in conjunction with the above a buckled disk of hard metal as the closing element.

The invention also consists in forming notches or other engaging devices in the plastic metal, preferably simultaneously with the flowing of the plastic metal into the thread, these notches or the like being adapted to engage a suitable tool used for screwing out the plastic metal when it is desired to refill the capsule or container.

Referring to the accompanying drawings:

Figures 1 and 2 are sections of a capsule illustrating one form, and

Figs. 3 and 4 are sections of a modified form of closure device according to the present invention.

In carrying the invention into effect in the form shown by way of example in Figs. 1 and 2, as applied to containers for carbonic acid gas under pressure, we utilize capsules made preferably in accordance with British application No. 19573 of 1918 having thickened necks. The neck *a* is provided with a recess *b* having a shoulder *c* upon which the closing disk *d* is adapted to seat, a packing ring *e* being preferably provided, to facilitate the effective sealing of the capsule. The cylindrical wall of the recess is provided with a screw thread *f*, so that the neck is internally screwed. A ring *g* of plastic metal which fits loosely inside the screw-threaded portion *f* of the recess *b* is placed into position on the top of the closing disk *d*, which is preferably of hard metal, and is buckled, so that it does not seat upon the shoulder or the ring washer *e* provided thereon, until some considerable pressure has been applied to it. The plastic metal ring *g* is held in place by a suitable plunger *h*, preferably with a projecting pin *i* which passes into the hole formed through it, and before pressure is applied, the gas can be filled into the capsule by the usual means. When the capsule has been filled to the pressure required, the plunger *h* is advanced, pressing up the soft metal ring, and expanding it laterally into the threads formed in the wall of the recess, the projecting pin *i* at the same time advancing the closing disk into a sealing position on the capsule neck.

The plunger *i* can if necessary be provided with four projecting feathers which form longitudinal grooves in the internal surface of the ring *g* as the plunger is advanced. The capsule is available for use of its contents by perforation of the closing disk in the usual way.

When it is desired to re-use the capsule, it is only required to hold the capsule in a suitable appliance to prevent it turning, and to apply to it a spindle corresponding to a screw-driver, and having a male end adapted to engage with the grooves formed in the plastic metal ring. When this is advanced against the ring, and rotated in the direction to unscrew that ring, the whole closing device is readily removed, and the capsule is ready for re-use.

Instead of employing the buckled disk above described, we may use a dished metal cup having its edge serrated or corrugated or provided with projections as described in British Patent No. 9652 of 1910.

In Figs. 3 and 4 is shown a capsule provided with a dished metal cup *j* having its wall perforated with four holes *k* and furnished with a plastic element *l* having grooves *m* to facilitate filling.

It will be noticed that these grooves *m* are provided at both ends of the element *l* the object being to render it impossible for the latter to be placed incorrectly in position in the neck of the capsule.

Beneath the dished cup *j* is placed a washer *n* which upon application of pres-

sure to the cup is pressed firmly upon the seating *o* and provides a good joint between the latter and the flange of the cup *j*.

In Fig. 3 the different parts are shown in the position occupied during filling of the capsule and Fig. 4 shows the corresponding positions on completion of this operation.

For re-use of the capsule similar means may be employed for the removal of the plastic element *l* as are described above with reference to Figs. 1 and 2.

We may also employ either ebonite fiber or metal sealing washers, with such cupped closing disks, or with the buckled type disk above indicated.

Having now described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. A capsule or container for gases or liquids under pressure including an internally threaded neck, a seating, sealing means co-acting with said seating and a plastic element expanded into said internally threaded neck to retain said sealing means on said seating.

2. A capsule or container for gases or liquids under pressure including a neck, a seating and a screw thread in said neck, a packing ring, a plastic element expanded into said screw thread to retain said packing ring upon said seating and a metallic member between the plastic element and said packing ring.

3. A capsule or container for gases or liquids under pressure including a neck, a seating and a screw thread in said neck, packing means, a plastic element in said neck, and a buckled plate between the plastic element and said packing means.

4. A capsule or container for gases or liquids under pressure including a neck, a seating and a screw thread in said neck, packing means, a plastic element in said neck, and a metallic cup-shaped member between the plastic element and said packing means.

5. A method of retaining sealing means upon a seating in a capsule or container which includes expanding a separate plastic element into a threaded neck of the capsule by applying pressure to the plastic element.

In testimony whereof I have signed my name to this specification.

ROBERT HUNTER CAMPBELL.