

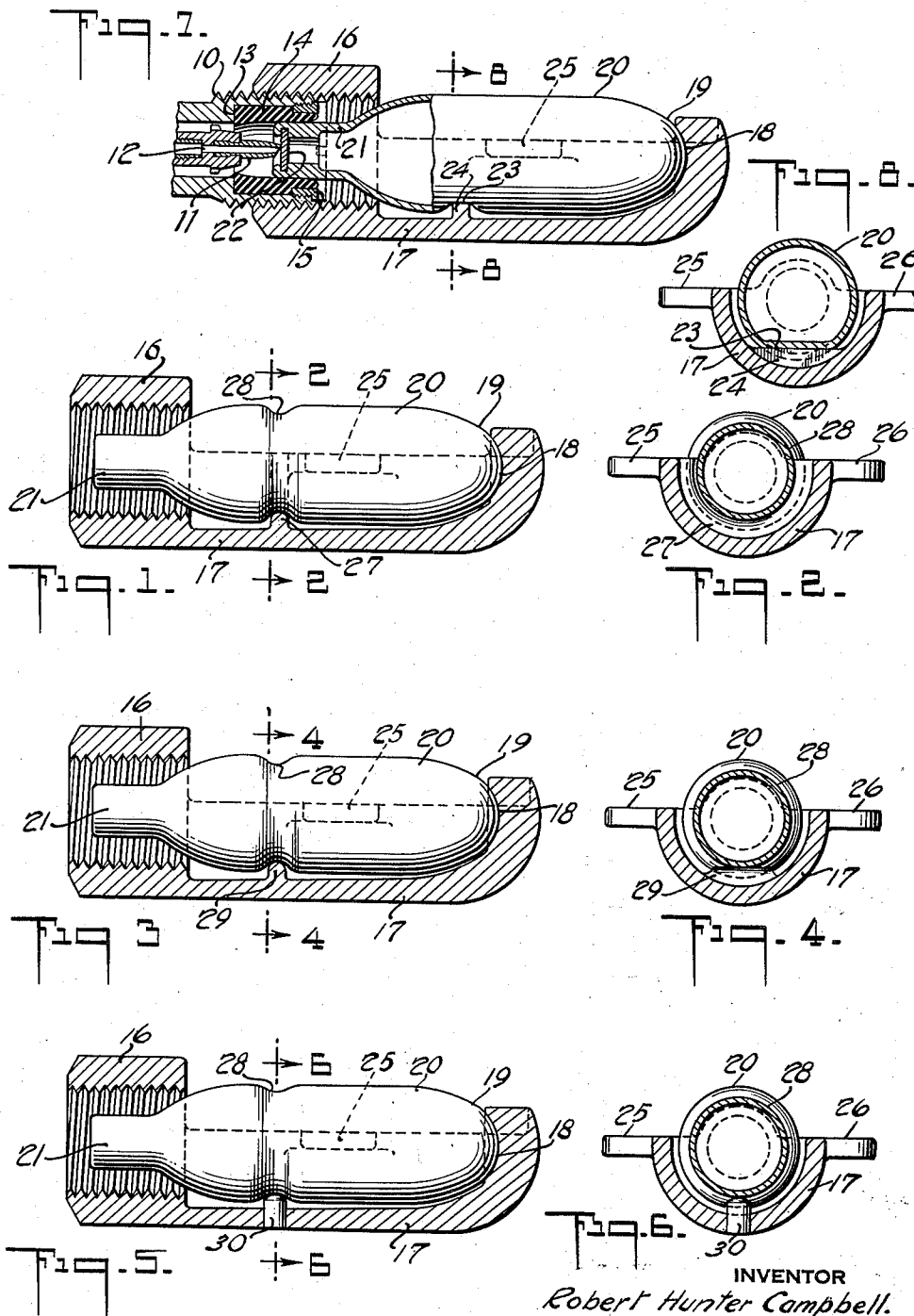
Jan. 5, 1937.

R. H. CAMPBELL

2,066,517

METALLIC BULB AND HOLDER

Filed Nov. 22, 1935



INVENTOR
Robert Hunter Campbell.

BY

Henry J. Savage
ATTORNEY

UNITED STATES PATENT OFFICE

2,066,517

METALLIC BULB AND HOLDER

Robert Hunter Campbell, Upper Edmonton, London, England, assignor to Sparklets, Limited, London, England, a corporation of Great Britain

Application November 22, 1935, Serial No. 51,037

9 Claims. (Cl. 225-18)

My invention relates to metallic bulbs or capsules for containing compressed or liquefied gases and a holder for holding and directing a perforable part of the bulb against a piercing pin for discharging the gas from a bulb.

Bulbs of this kind heretofore have been made generally cylindrical in shape with one hemispherical or rounded end and the other end contracted to form a neck that is closed by a perforable metal disc or seal, as shown for example in the patents granted to me, Nos. 986,135, 1,038,285, 1,387,451, 1,661,997, and 1,686,405. These bulbs are filled with compressed or liquefied carbon dioxide and are used for charging soda syphons, fire extinguishers, life belts, dental sprays, and other apparatus, and the bulbs and holders herein illustrated are adapted particularly for use with the well-known Sparklets syphons and Hygienators, but, of course, are not limited to use with those devices. In charging these devices with carbon dioxide from bulbs, the bulb is inserted in a holder which is actuated to force the disc that seals the neck of the bulb against a hollow piercing pin which perforates the disc and permits the escape of gas from the bulb through the hollow pin into the apparatus being charged. The gas is under very high pressure in the bulbs, usually between 500 and 900 pounds per square inch, so that the metal of the bulb is under great stress, and if the gas escapes from the bulb too rapidly, it may build up too great a pressure in the apparatus. Also the holders receive the bulbs very loosely and since the disc in the neck is very small, it frequently does not align perfectly with the piercing pin. The principal objects of the present invention, therefore, are to strengthen the walls of the bulbs without the use of additional metal, to control the discharge of the gas from the bulb so as to prevent the formation of too high pressure in the apparatus being charged, and to provide a cooperating bulb holder that will accurately center the bulb with the piercing pin. Another object of the invention is to cause a tight seal in the nature of a ground joint to be formed between the piercing pin and perforable disc of the bulb so as to prevent the escape of gas on the outside of the pin.

The accompanying drawing shows several embodiments of my invention for attaining the above and other objects, that will be apparent to those skilled in this art, and are but illustrative of the invention and not limitations on its adaptation. In the drawing, Figs. 1 and 2 are longitudinal and cross sectional views of a bulb

and holder wherein the walls of the bulb are strengthened by a transverse depression or depressed band around the body and the bulb holder has a cooperating rib that holds the bulb so that its neck lies centrally in the bulb holder.

Figs. 3 and 4, and 5 and 6 are similar views wherein the rib in the bulb holder assumes a different form.

Figs. 7 and 8 show a bulb that has a depression or channel on one side that cooperates with a flat topped rib in the holder to cause the bulb and holder to rotate together, as well as to hold the neck of the bulb aligned with the piercing pin.

In each of Figs. 2, 4, 6 and 8, the view is taken looking in the direction of the arrows on Figs. 1, 3, 5 and 7 respectively.

Referring first to Figs. 7 and 8, 10 indicates a screw threaded nipple forming part of the charging head of a syphon or other apparatus to be charged with the compressed gas. Within this nipple there is mounted a hollow piercing pin 11 having a passage 12 leading to the apparatus to be charged. The nipple 10 has a shoulder 13 providing a seat for a sealing ring 14 which preferably is made of rubber and is held in place by the retaining ring 15. The nipple is exteriorly threaded to receive the nut 16 on one end of the bulb holder 17, which, at its opposite end, is provided with a seat 18 which is rounded on the inside to receive the hemi-spherical end 19 of metallic bulb or capsule 20. The bulb 20 is generally cylindrical in shape and at the opposite end is contracted to form a neck 21 that is closed by the metallic sealing disc 22.

Bulb 20 fits loosely in the bulb holder 17 and in order to accurately align the sealing disc 22 with the piercing pin 11, the bulb is provided with a flattened depression 23 which rests on a flat topped rib 24 formed in the bulb holder. As clearly shown in Fig. 8, this rib in cooperation with the flattened recess in the bulb not only centers the sealing disc with respect to the piercing pin but also prevents rotation of the bulb holder with respect to the bulb. When it is desired to charge a syphon or other device with the carbon dioxide or other gas contained in the bulb, a bulb will be inserted in the holder with its neck lying within the nut 16. The nut 16 is then threaded on to the nipple 10 and the disc 22 is held in alignment with the piercing pin 11. As the holder and bulb are fed toward the piercing pin by rotation of the holder 17, the pointed end of the piercing pin will contact with the metal disc 22 and cut or bore through it due to the rotation

of the bulb, as distinguished from a punching action if the bulb were not rotated. This boring action of the pin and relative rotation of the disc with respect to the pin causes the pin to make a clean bore through the disc and effect a ground joint connection between the two so that there will be no escape of gas between the disc and the outside of the piercing pin.

As shown in Fig. 8, the body of the bulb holder is semi-cylindrical but it may be of any shape suitable to hold the bulb and is provided with the wings 25, 26, or any other suitable means for rotating it.

Referring now to Figs. 1 and 2, the bulb holder 17 has the same spherical seat 18 and nut 16 as in Fig. 7, but instead of the flat topped rib 23 it has a semi-circular rib 27 which engages in a circumferential depression or groove 28 formed in the bulb intermediate its ends. The bulb 20 is hemi-spherical at one end and at its opposite end is contracted to form a neck 21 sealed by a disc the same as shown in Fig. 7. The depressed band or groove 28 in this bulb cooperates with the rib 27 to hold the neck of the bulb centrally in the nut of the bulb holder and in alignment with the piercing pin, but in this form of the invention the bulb will be advanced against the piercing pin without rotation so that the sealing disc will be perforated by a punching action. With the bulb as shown in Fig. 1, it is not necessary that it be inserted in the holder in any particular relation with respect to the rib 27, while with the bulb shown in Fig. 7 the flattened depression must always be on the side toward the rim 24.

In Figs. 3 to 6, the bulb 20 is the same as in Figs. 1 and 2 but the ribs for holding and centering the bulb are of different forms. In Figs. 3 and 4 the rib 29 has a flattened top while in Figs. 5 and 6 it takes the form of a cylindrical pin 30 having a rounded end to engage in the groove 28.

I have shown only the bulb 20 with the flattened depression 23 in the bulb holder 17 of Fig. 1, but it will be apparent that bulbs such as shown in Figs. 1, 3 and 5 can also be used with the bulb holder of Figs. 7 and 8.

While I have shown and described several specific forms in which my invention may be embodied, it will be understood that the invention is not limited thereto but I claim all modifications and equivalents thereof that come within the scope of the following claims.

I claim:

1. A bulb holder having an open side, a seat at one end of the holder and a threaded nut at the other end, and an upstanding rib between the nut and seat accessible through said open side.

2. A bulb holder open on one side, a seat at one end of the holder and a threaded nut at the other end, and an upstanding semi-circular rib between the seat and nut and accessible through said open side.

3. A bulb holder open on one side, a seat at one end of the holder and a threaded nut at the other end, and a transverse rib having a flat top between said seat and nut and accessible through said open side.

4. In combination, a bulb holder having an open side and a seat at one end and a threaded nut at the other, a bulb removably positioned therein and having one end bearing on said seat, the other end of said bulb having a neck lying within said nut, the open side of the holder being arranged to permit the insertion and removal of the bulb, and a rib in said holder engaging said bulb and positioning said neck centrally within said nut.

5. In combination, a bulb holder having an open side and a seat at one end and a threaded nut at the other, a bulb removably positioned therein and having one end bearing on said seat, the other end of said bulb having a neck lying within said nut, the open side of the holder being arranged to permit the insertion and removal of the bulb, said bulb having a transverse depression, and a rib in said holder engaging in said depression to hold the bulb with its neck centrally disposed within said nut.

6. In combination, a bulb holder having an open side and a seat at one end and threaded nut at the other, a bulb removably positioned therein and having one end bearing on said seat, the other end of said bulb having a neck lying within said nut, the open side of the holder being arranged to permit the insertion and removal of the bulb, said bulb having a depressed band intermediate its ends, and a semi-circular rib in said holder engaging in said depressed band to hold the bulb with its neck centrally disposed within said nut.

7. In combination, a bulb holder having an open side and a seat at one end and threaded nut at the other, a bulb removably positioned therein and having one end bearing on said seat, the other end of said bulb having a neck lying within said nut, the open side of the holder being arranged to permit the insertion and removal of the bulb, said bulb having a flattened portion intermediate its ends, and a flat topped rib in said holder engaging in said flattened portion and preventing rotation of said holder with respect to said bulb.

8. A metal bulb for compressed gas having a generally cylindrical body with closed ends, one of said ends being hemi-spherical and the other end contracted to form a neck, a channel extending across and confined to one side of the bulb and having a flattened bottom, the opposite ends of the channel merging into the cylindrical sides of the bulb and forming an entrance and exit to permit the passage of a retaining member into or out of the channel.

9. In combination, a bulb holder having an open side and a seat at one end and a threaded nut at the other, a bulb removably positioned therein and having a reduced neck at one end lying within said nut, the open side of the holder being arranged to permit the insertion and removal of the bulb to and from the holder, the holder having an internal projection engaging in and cooperating with a depression provided in the bulb.

ROBERT HUNTER CAMPBELL.