March 23, 1954 R. S. KNAPP 2,673,004

PRESSURE BULB AND HOLDER

Filed June 25, 1949

Fig. 1.

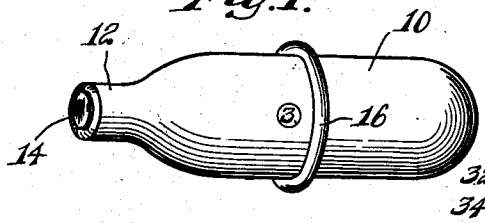


Fig. 5.

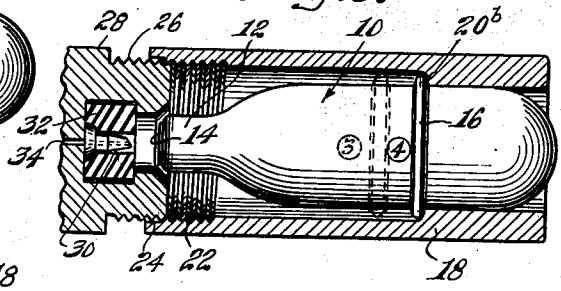


Fig. 2.

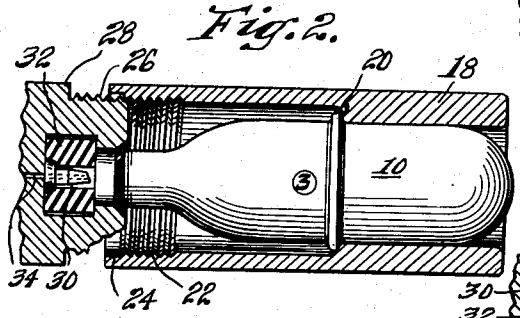


Fig. 6.

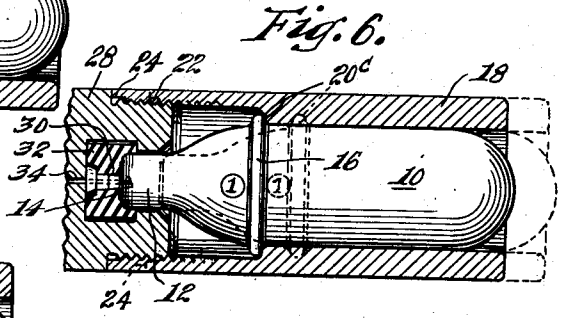


Fig. 3.

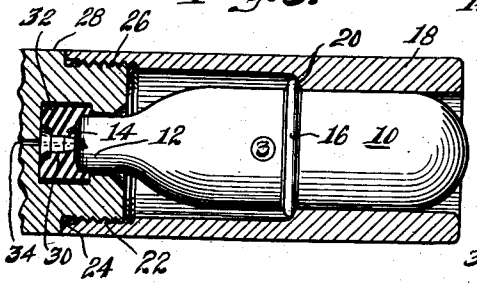


Fig. 7.

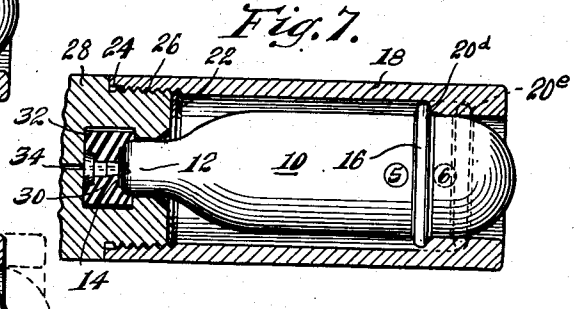
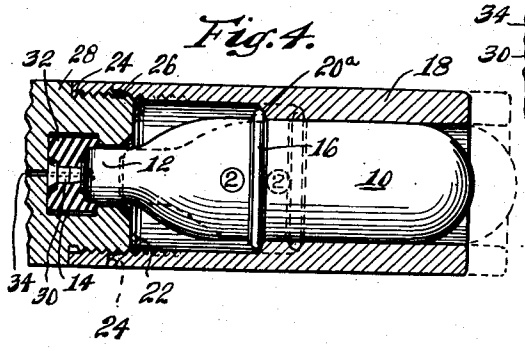


Fig. 4.



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PRESSURE BULB AND HOLDER

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2 Claims. (Cl. 222—5)

1

This invention relates to a special type of pressure bulb and a special holder therefor whereby different designs of pressure bulbs may be provided and a specific one of the designs will interfit operationally with only a specific holder designed particularly therefor while at the same time none of the bulbs will fit a standard holder.

One object of the invention is to provide means to prevent inadvertent discharge of a certain gas from a pressure bulb into a container that is not supposed to receive such gas. For instance, some pressure bulbs contain a gas for processing foods while others may contain gas and sometimes liquid also, either of which may be of toxic nature, and it is obviously undesirable to discharge such into a container of food. By way of a specific example, cream aerators are designed to have a bulb of CO_2 and/or nitrous oxide discharged into the container of cream whereas some bulbs contain a quantity of insecticide, and a charge of CO_2 for discharging the insecticide. Obviously it is desirable to provide means to prevent inadvertent discharging of the insecticide into the cream container.

One object of my present invention therefore is to provide a design of bulb which cannot be inserted into a standard bulb holder for syphons or food processing containers and the like, but which can be used in a holder especially designed for the bulb, means of cooperation being provided between various bulbs and their respective holders for permitting coaction and operation of only a certain design of bulb with a certain design of holder.

Another object is to provide a simple means to prevent coaction of an undesirable bulb with a standard bulb holder for syphons or for food processing comprising a rib formed around the bulb.

Still another object is to provide a special holder for the particular bulb just described which has a shoulder at the proper place for engaging the bead and propelling the bulb against the piercing pin for the bulb.

A further object is to provide bulbs with beads at different positons therealong and holders having shoulders at different locations corresponding thereto, the arrangement being such that only a predetermined holder will coact with and properly operate a predetermined bulb.

With these and other objects in view, my invention consists in the construction, arrangement and combination of the various parts of my pressure bulb and my holder therefor whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claims and illustrated in the accompanying drawings, wherein:

2

Figure 1 is a perspective view of one form which my improved pressure bulb may take.

Figure 2 is a side elevation thereof showing a holder designed for this particular bulb, and showing the parts prior to the holder being screwed down for effecting piercing of the bulb.

Figure 3 is a similar view showing the holder screwed down to the final position for sealing the bulb with respect to a receiver therefor and piercing the bulb for escape of the gas therefrom.

Figure 4 is a similar view showing by means of solid lines a different bulb and holder; and

Figures 5, 6 and 7 are similar views showing still other designs of bulbs and holders to illustrate the range of possibilities for interfitting bulbs and holders with each other in such manner that bulbs of a design not intended for a particular holder can either not be received far enough into the holder or are received too far thereinto so that the bulb cannot be pierced when the holder is screwed down.

In Figure 1, I show a bulb 10 having the usual neck 12 having a puncturable diaphragm 14 sealing the outer end of the neck. The bulb thus far described is a standard bulb sold under the Sparklet trade-mark. It is designed to be received in a holder that substantialy fits it and the majority of uses are for syphons and cream aerators.

The invention in the present case contemplates the addition of a bead 16 around the bulb so that the bulb cannot be received in a standard holder and the provision of a special holder 18 which will accommodate the bead. This bead would be provided on any bulb charged with a gas not intended for use in a syphon or cream aerator.

In Figure 2, I show the holder 18 for the bulb 10, a shoulder 20 being provided therein to engage the bead 16 as illustrated and the holder having threads 22 terminating in a pilot portion 24. The threads 22 are adapted to coact with threads 26 of a receiver 28 which may be a fitting on a container or, where the bulb contains both a liquid to be dispensed and a compressed gas for providing the dispensing pressure, the fitting 28 may be a control valve structure or merely a discharge nozzle such as a capillary tube. The fitting 28 may extend from a suitable container to receive the gas such as a container of liquid to be dispensed under the pressure produced by the gas. In any case, the fitting would include a piercing pin 30 and a sealing gasket 32

with a suitable passageway **34** leading to the container, nozzle or capillary tube. In Figure 2, a portion of the lower right corner of the fitting has been broken away to illustrate more clearly the pilot portion **24** of the holder **18**.

Figure 2 illustrates the pilot portion **24** engaged on the threads **26** of the fitting **28**. The fitting is then screwed down as in Figure 3 which first engages the outer end of the neck **12** and the diaphragm **14** with the sealing washer **32** and then engages the diaphragm with the piercing pin **30** for the purpose of piercing the diaphragm to permit the gas to be dispensed through the passageway **34**. In the final position of Figure 3 the holder has caused the bulb to be sealed and properly pierced for complete discharge of its contents.

The bead **16** around the bulb **10** may be placed in different positions, Figures 1, 2 and 3 illustrating what I will term as the "third" (**3**) position. This is indicated by **3** within a circle. In Figure 4, I illustrate the bead **16** slightly ahead of that in Figure 3 and refer to it as the second position (**2**). The dotted position in this figure illustrates the position of the bulb (**2**) and holder **18** before the holder is screwed down on the fitting **28**. The shoulder indicated at 20^a in this instance, is at a different position in the holder **18** than shown in Figure 3, in order to properly cooperate with the bead **16** at the (**2**) position.

In Figure 5, I show the bead **16** in solid lines at the fourth (**4**) position and the shoulder 20^b changed in position to correspond thereto. By means of dotted lines, I show the relative position of a (**3**) bead in relation to the (**4**) bead and it is obvious that the holder **18** in this particular figure can be screwed all the way down before it contacts the (**3**) bead so that a bulb of the kind shown in Figure 3 could not be operated in a holder of the kind shown in Figure 4. On the other hand, if a bulb with the bead at position (**3**) is placed in the holder of Figure 4, the left end of the holder could not even be engaged with the threads **26** of the fitting **28**. It is obvious, therefore, that the mere change in position of the bead **16** and its corresponding shoulder **20** eliminate the possibility of the wrong bulb being received in and operated by a holder not intended for it.

As a further extension of the idea, I show in Figure 6 how the bead may be in a first position (**1**), and by means of dotted lines the position of the parts prior to the threads of the holder engaging the threads of the fitting. In this instance, the shoulder 20^c is still closer to the threads than the shoulder 20^a of Figure 4. On the other hand, the bead **16** may be at the (**5**) position illustrated in Figure 7 or even at the position (**6**) illustrated therein by dotted lines which would call for a shoulder at 20^d and 20^e respectively.

From the foregoing specification it is obvious that I have provided a simple means for preventing certain designs of pressure bulbs from being received in the holders for standard bulbs. Also, the bead around the bulb may be formed at different positions for proper coaction of different bulbs with only the holders designed therefor. Thus, it is possible to charge the bulbs with many different materials without danger of the wrong material being discharged into the wrong dispenser or discharge nozzle. Material such as deoderants, sun-tan solutions, perfumes, insecticides and the like could thus be dispensed from various dispensers without possibility of an error resulting from putting the wrong bulb in the wrong dispenser. At the same time, standard well known bulbs (predominantly CO_2) could be used as they now are and bulbs of the kind disclosed in this application could not be used in the holders for these standard bulbs.

By having the bead **16** at different positions along the axis of the bulb, and providing correspondingly designed holders, many different materials can be discharged without danger of mixing bulbs and dispensers. The means for accomplishing these ends are relatively simple from the manufacturing standpoint as the bead can be readily formed around the bulb (which is drawn from sheet metal) at any desired position.

Some changes may be made in the design of the bulbs and the holders therefor without departing from the real spirit and purpose of my invention, and it is my intention to cover by my claims any modified forms of structure or use of mechanical equivalents which may be reasonably included within their scope.

I claim as my invention:

1. In a pressure bulb and a holder therefor, a bulb having an enlargement surrounding the body thereof to prevent the reception of said bulb in a bulb holder for a bulb without such enlargement, and a holder specifically for said bulb having an internal shoulder for engaging said enlargement and thereby propelling the bulb against sealing and piercing means therefor, said shoulder being positioned for effecting sealing and piercing of only a bulb having an enlargement in a predetermined position along the length of said bulb.

2. In a pressure bulb and holder therefor, a bulb having a bead surrounding the body thereof and a tubular holder having a bore to receive and closely fit said bulb, said bore having a counterbore, the outer end of which serves as a shoulder for engaging said bead and thereby propelling the bulb against a sealing washer and a piercing pin of a pressure reception fitting, said shoulder of said counterbore being properly positioned in respect to said bead when the holder is operatively engaged with the pressure reception fitting to first effect sealing and then piercing of the bulb as the holder is further engaged with the fitting.

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