

F. E. BALDWIN.
CLOSURE.
APPLICATION FILED JAN. 10, 1922.

1,423,592.

Patented July 25, 1922.

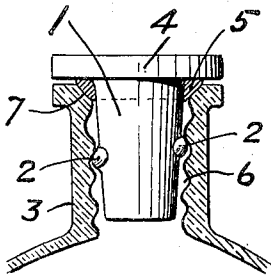


FIG. 1.

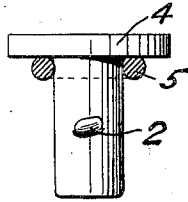


FIG. 2.

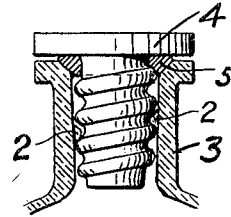


FIG. 3.

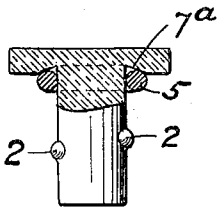


FIG. 4.

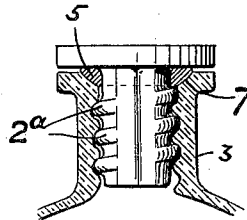


FIG. 5.

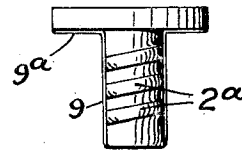


FIG. 6.

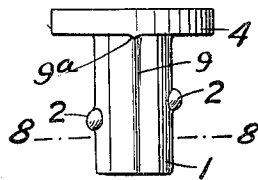


FIG. 7.

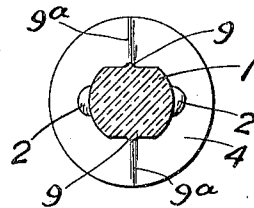


FIG. 8.

WITNESS:

Robt. R. Litchel.

INVENTOR

Frederic E. Baldwin

BY

Augustus B. S. Brighton.
ATTORNEY.

UNITED STATES PATENT OFFICE.

FREDERIC E. BALDWIN, OF PHILADELPHIA, PENNSYLVANIA.

CLOSURE.

1,423,592.

Specification of Letters Patent.

Patented July 25, 1922.

Application filed January 10, 1922. Serial No. 528,216.

To all whom it may concern:

Be it known that I, FREDERIC E. BALDWIN, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a new and useful Improvement in Closures, of which the following is a specification.

The principal object of this invention is to provide a closure of glass or other cast or moulded substances, which can be produced without excessive loss such as is due to deformation of the moulded surfaces.

The invention will be claimed at the end hereof and will be first described in connection with the accompanying drawings forming part hereof and in which—

Figure 1 is a view, principally in section, illustrating a closure embodying features of the invention with parts in closed position.

Fig. 2 is an elevation of the stopper element showing also the gasket in section.

Fig. 3 is an elevation of a closure with the parts reversed in respect to Fig. 1.

Fig. 4 is an elevation of a stopper element embodying a modification and showing the gasket in section.

Fig. 5 is a sectional view of a closure embodying a modification.

Fig. 6 is a detached view of a stopper substantially like that shown in Fig. 5, and

Figs. 7 and 8 are an elevation and a section on line 8—8 of a modified form of stopper element.

The closure comprises a columnar element 1 having on its curved surface one or more lugs 2 located and arranged to engage the thread of the socket 3, the diameter of the column being less than the diameter of the socket. As shown the element 1 is provided with a head or seat 4 adapted to make a tight closure with the socket by means of the gasket 5. Good results are attained by the use of an internally tapering neck 6 having an inside thread which may well be of coarse pitch and of undulating form in cross-section. The lug or lugs 2, according to the diameter of the socket, are formed and located to engage the thread in the socket loosely. The gasket 5 may well be of easily deformable material and circular in cross-section. On either the mouth or lip of the orifice, as at 7, Fig. 1, or on the under surfaces of the head of the plug as at 7^a, Fig. 4, or on both, a seat for the gasket is formed and adapted to prevent the gasket from unduly expanding away from the center of the

closure under pressure. In one form of embodiment of my invention this seat is cut at an angle so as to force the gasket when under pressure towards the center of the closure.

I do not limit my invention to the above arrangement as it might be reversed by placing the lug in the neck of the closure and the thread on the plug, Fig. 3, or instead the lugs may assume the form of one or more partial threads 2^a, Figs. 5 and 6, as the same results will be obtained.

On account of the deformation in manufacture of the moulded surfaces the head of the plug frequently contacts at an angle with the seat on the socket. By using a readily deformable gasket of circular cross-section, so held in its seat that it cannot unduly expand away from the center under pressure, the substance of the gasket is forced away from the point of greatest pressure and as it cannot expand outwardly because of the form of the seat, it moves, or might be said to flow, to the point of least compression and occupies more space where the head of the plug is furthest away from the seat, thereby correcting for the angle of the seat. Thus a tight closure is obtained which would be otherwise impossible.

A readily deformable gasket, especially one having a circular cross section, performs a most important function. It has been found in commercial practice, no matter how carefully and accurately the threads in an all glass or like closure are moulded, when using the hard or semi-hard flat gasket, always heretofore employed to make the closure, that the friction between the two glass surfaces seize or freeze together so that it is impossible to open the closure. It is for this reason that there is not on the market for sale today a glass bottle having an interior glass screw stopper which is adapted to make a tight closure. By the use of my easily deformable gasket circular in cross section, when the stopper is locked in as tightly as possible, the friction produced by the glass to glass movement, prevents the gasket being compressed to its maximum amount, although the pressure is sufficiently great to produce a tight closure; consequently should the stopper freeze or stick a downward pressure on the top of the stopper owing to the formation of my thread, will permit the stopper to sink further into the neck and thus break the bind-

ing action of the glass to glass, and the stopper can be released with ease. The above cannot be accomplished with the semi-hard gaskets in commercial use. Furthermore when manufacturing all glass closures of this type commercially in large quantities, the mouth of the container is always more or less deformed. The usual commercial gasket will not conform to these inequalities and the closure leaks. My construction of the gasket will so conform.

The stopper is cast in a mould which leaves a ridge or mould seam or mark up the side of the stopper, as shown at 9, and as shown at 9^a across the head or seat of the gasket. With the usual semi-hard commercial gasket this leaves a passage along the mould mark 9 and 9^a through which the liquid may leak and commercially it is too expensive to grind off this mould mark. With my easily deformable gasket, circular in cross section and compressed toward the center of the closure, the mould mark is easily embedded and surrounded by the round surface of the gasket and a perfectly tight closure without additional expense. This mould mark is a source of trouble in casting a thread on the stopper as it enlarges the diameter of the stopper at these points and makes a screw thread very difficult to cast as they enlarge the portions of the thread where they occur and they cannot be commercially removed. I overcome this by reducing the diameter of the element 1 where the mould marks occur sufficiently to prevent the highest mould marks interfering with the closing action.

The tapered thread in the tapered neck Fig. 1, enables the lug or lugs to pass without contact with the first threads at the mouth of the socket which are those most often deformed in manufacture, and make contact with those located in the middle of the socket, which investigation has shown to be generally uniform in shape. This cannot be done with a continuous thread. Furthermore this tapered socket enables the plug to seat at once, forming as it does a species of bayonet joint, thus the closure may be effected by a three quarter turn of the plug instead of requiring three or four turns of the plug as is commonly necessary with a straight threaded neck and a continuous thread on the plug.

As an article of manufacture this tapered interior thread has a great advantage especially when bottles are machine made as it is found extremely difficult to withdraw the forming tool when several revolutions of the tool have to be made before it can be withdrawn. With my construction by proper design of the taper of the neck and the pitch of the thread the tool will release and can be withdrawn after three-fourths

to one full turn, instead of requiring three or four full turns as would be necessary did the neck have parallel sides, thus increasing the speed of manufacture and reducing the cost.

It will be obvious to those skilled in the art that modifications may be made in details of construction and arrangement without departing from the spirit of the invention which is not limited as to such matters or otherwise than as the prior art and the appended claims may require.

I claim:

1. A closure having in combination a tapering socket of glass, a glass thread on the inside of the socket, a moulded glass plug having means adapted to loosely engage the thread, the plug being free for endwise movement provided by clearance between said means and thread, the wall of the plug where the mould seams occur being of such diameter as will provide space between the seams and the thread and to prevent the mould seams interfering with the closing action, a readily deformable gasket circular in cross-section, and a seat for the gasket adapted to compress the gasket toward the center of the closure, the gasket being capable of further compression by endwise pressure on the plug after the closure has been fully completed by screwing and said gasket adapted for the embedment of the mould seam therein.

2. A closure having in combination a glass socket and an entering glass plug having means adapted to loosely engage the walls of the socket with a rotary motion, the plug being free for endwise movement provided by clearance in said loosely engaging means, the wall of the plug where the mould seams occur being of such diameter as will provide space between the seams and the wall of the socket to prevent the seams interfering with the closing action, a readily deformable gasket capable of further compression after the closure has been fully effected, and a seat for the gasket formed to prevent undue outward expansion of the gasket under pressure.

3. A closure having in combination a glass socket and an entering moulded glass plug having means adapted to engage the wall of the socket with a rotary closing action, the wall of the plug where the mould seams occur being of such diameter as will provide space or clearance and prevent the seams from interfering with the rotary closing action.

4. A screw closure having in combination moulded glass elements formed to loosely engage the one with the inside of the other by a rotary closing action, the elements being free for endwise movement provided by clearance, and a gasket arranged between the

elements and capable of further compression after the closure by rotation has been fully completed.

- 5 A closure for glass elements of which one enters the other and which are provided respectively with confronting threads of which one is wider than the other to provide clearance in combination with a compressible gasket stressed by turning motion sufficient-
10 ly to form a closure and capable of further compression by endwise pressure to relatively shift the threads in the clearance provided, thus clearing the threads to permit of reverse turning of the parts.

6. A screw closure having in combination 15 a socket member provided at its lip with a seat, a gasket, a plug provided with a head which compresses the gasket axially of the plug and onto the lip, there being threads of different widths between the plug and 20 socket to afford further entering movement of the plug after the closure is completed, the increased pressure on the gasket necessary for such further entering movement of the plug being relieved by expansion of the 35 gasket above the socket.

FREDERIC E. BALDWIN.