March 6, 1945. A. H. JOHNSON 2,370,732

BOTTLE STOPPER

Filed April 7, 1943

Fig. 1.

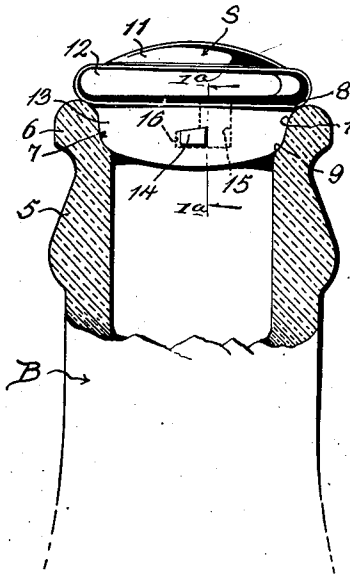


Fig. 1a.

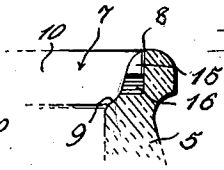
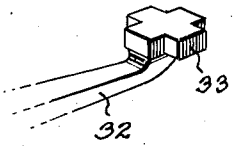


Fig. 4.



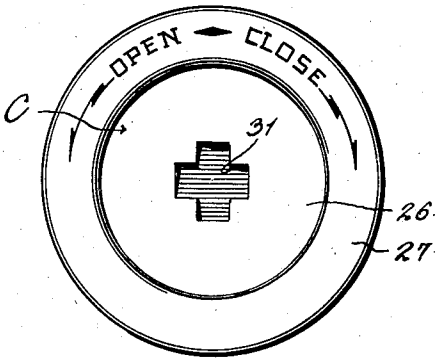


Fig. 2.

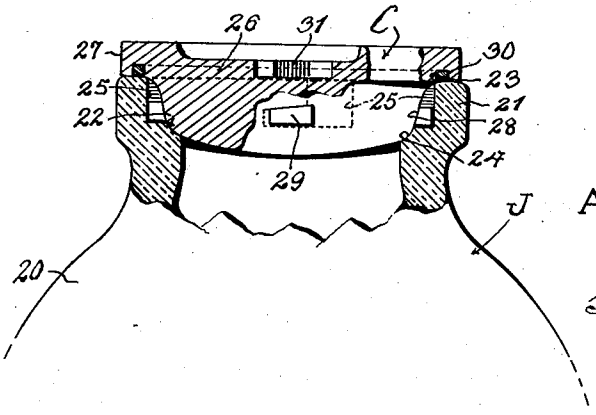


Fig. 3.

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UNITED STATES PATENT OFFICE

2,370,732

BOTTLE STOPPER

Alexander H. Johnson, Chicago, Ill., assignor of three-tenths to Frederick T. Johnson, Milwaukee, Wis., one-fifth to Raymond J. Johnson and one-fifth to Joseph J. Johnson, both of Chicago, Ill.

Application April 7, 1943, Serial No. 482,079

2 Claims. (Cl. 215—40)

This invention appertains to bottle and jar stoppers and more particularly to a reuseable closure for effectively sealing a bottle or other container irrespective of any internal pressure therein.

Much difficulty is now being experienced in tightly sealing bottles and other containers due to the scarcity of war critical materials, such as metals, and it is therefore one of the primary objects of my invention to provide a novel stopper or closure, which can be formed from non-critical war materials, (such as glass, plastic and the like) for locking engagement with the bottle or other container.

Another salient object of my invention is to provide a bottle stopper or jar closure, in which the stopper or other closure and the bottle or jar are provided with like wide, mating, sealing faces with cooperating means in the stopper and bottle, or closure and jar, for drawing said faces into intimate sealing engagement, whereby loss of the contents due to leakage or spoilage is prevented.

A further important object of my invention is to provide a bottle or jar neck having a reversely curved stopper seat extending from the lip of the bottle or jar inwardly into the neck a material distance and a stopper adapted to fit in said neck having its outer surface shaped to correspond to said seat and to intimately contact therewith, with locking cam lugs and grooves formed respectively on the stopper and neck for drawing the stopper into sealing contact with the seat when the stopper is inserted in the neck and turned a portion of a revolution.

A still further important object of my invention is to provide a bottle stopper or jar closure of the above character which is durable and efficient in use, one that is simple and easy to manufacture, and one that can be placed upon the market at a low cost.

With these and other objects in view, the invention consists in the novel construction, arrangement, and formation of parts, as will be hereinafter more specifically described, claimed, and illustrated in the accompanying drawing, in which drawing:

Figure 1 is a fragmentary, side elevational view, partly in section, of a bottle neck showing my novel stopper connected therewith.

Figure 1*a* is a fragmentary, detail, sectional view of the bottle neck illustrating one of the locking grooves formed in the stopper seat.

Figure 2 is a fragmentary, side, elevational view, partly in section, showing a preserving jar and closure therefor constructed in accordance with my invention.

Figure 3 is a top, plan view of the jar closure.

Figure 4 is a detail, fragmentary, perspective view of a tool which can be utilized for opening and closing the fruit jar.

Referring to the drawing in detail, wherein similar reference characters designate corresponding parts throughout the several views, the letter B generally indicates a bottle, and S my novel stopper therefor.

The bottle B can be of any desired size, shape or character, and as illustrated the same includes a neck 5 having the usual annular head or lip 6 on its upper end. In accordance with my invention the interior of the neck at its upper end is provided with a novel seat 7 for the stopper S. As illustrated, the seat 7 takes substantially the form of a reverse curve in cross section, similar to an ogee curve. Hence, in effect, the reversely curved seat 7 forms a continuous sealing surface from the upper face of the lip 6 down into the interior of the neck for a considerable distance. By referring to Figures 1 and 1*a*, it can be seen that the seat 7 provides upper and lower annular shoulder seats or surfaces 8 and 9 respectively with an intermediate sealing surface 10.

The stopper S can be formed from any desired material and can be advantageously molded from glass or other desired plastic material. The stopper consists of a solid circular body 11 having an annular peripheral bead 12 which is adapted to seat against the outer surface of the bottle lip 6. Below the annular bead 12, the stopper S has formed on its outer surface the reversely curved face 13 which corresponds identically with the seat 7 so that when the stopper is inserted in the neck the curved surface 13 will intimately contact with the seat 7 throughout its entire area. The lower face of the stopper is preferably of a convex form.

The curved face 13 of the stopper has formed thereon at diametric opposite points radially extending locking cam lugs 14. It is to be noted that the upper faces of the lugs 14 are inclined or of a wedge shape.

The interior of the bottle neck is provided at diametric opposite points with bayonet slots or grooves 15 and the lugs 14 are adapted to be inserted in said grooves when the stopper is associated with the bottle. Attention is called to the fact that the grooves 15 are in the seat 7 and substantially between the shoulder seats 8 and 9 so that leakage through the grooves will be prevented.

When the stopper S is inserted in the bottle neck with the wedge shaped lugs 14 in the grooves 15, the stopper is given a slight turn and the wedge shaped lugs will be moved in the right-angular portions 16 of the bayonet slots and the wedge shape of the lugs will forcibly draw the curved face 13 down into intimate contact with the seat 7. Thus the stopper will be locked on the bottle neck and will be drawn into intimate sealing contact with the bottle neck. Obviously the stopper will be held on its seat by the engagement of the cam or wedge lugs 14 with the walls of the grooves and hence the stopper cannot be blown off of its seat by internal pressure in the bottle.

In Figures 1 and 1*a* I have shown the features of my invention incorporated with a bottle neck and stopper and obviously the various features of my invention can be incorporated with various types of closures for other containers. In Figures 2 and 3 I have shown the principles of my invention utilized in a fruit or similar jar. Referring to these figures the fruit jar is indicated by the reference character J and my novel closure by the reference character C.

The jar J includes a body 20 of any preferred size and configuration having the neck 21 on its upper end. The interior of the neck is provided with the reversely curved seat 22 and this seat is of the same shape and configuration as the seat 7 previously described and hence upper and lower annular shoulder seats 23 and 24 are respectively provided with an intermediate curved face therebetween. The inner surface of the neck can be provided, at quarters, with the bayonet slots or grooves 25 and these slots or grooves 25 are formed between the seats 23 and 24.

The jar closure C includes a body 26 having formed on its upper end the annular outstanding flange 27 which is adapted to extend over the seat 23 and over the outer lip of the neck. The body of the stopper C, below the flange, has its outer surface provided with the reversely curved face 28 which corresponds directly with the shape of the curved seat 22 for intimate sealing engagement therewith. The bottom surface of the stopper C is also preferably of a convex form.

The body of the closure below the flange 27 is provided, at quarters, with radially extending cam or wedge shaped locking lugs 29 which are adapted to be inserted in the bayonet slots or grooves 25.

In use of my closure the jar is filled in any approved manner after which the closure C is inserted in the jar neck with the cam or wedge shaped lugs inserted in the bayonet slots. The closure is now given a slight turn so as to move the wedge shaped lugs in the right-angular portions of the bayonet slots or grooves, and the contacting of the wedge or cam lugs with the walls of the grooves will forcibly bring down the closure within the jar neck so that the curved sealing face 28 thereof will be brought into tight engagement with the curved seat 22 in the jar.

By forming the stopper and closure in the manner described and by providing the bottle and jar neck with the reversely curved seat a wide, sealing surface of great area is provided and this gives a positive seal.

If preferred a sealing gasket 30 can be placed between the flange 27 of the closure C and the jar neck. If desired the gasket can take a circular shape in cross section and the lower face of the flange 27 can be provided with an annular groove to receive the gasket.

For convenience in turning the closure C, the same can be provided with a cross shaped depression 31 and a tool 32 having a cross shaped head 33 can be provided. The head 33 can be inserted in the depression 31 and upon rotation of the tool the closure can be conveniently turned in either direction.

From the foregoing description, it can be seen that I have provided an exceptionally simple and durable closure which can be effectively formed from non-critical war materials. Obviously the stoppers and closures can be continuously reused and as the same are formed from glass or plastic, cleaning thereof is easily effected.

Changes in details may be made without departing from the spirit or the scope of my invention, but what I claim as new is:

1. The combination with a container having a neck provided with an interior reversely curved closure seat, said seat extending from the outer surface of the neck into the interior of said neck and defining an upper annular shoulder seat and a lower annular shoulder seat of less diameter than the upper annular shoulder seat and an intermediate connecting curved surface, of a closure removably fitted in the neck having a curved surface shaped to correspond to said seat for contact therewith, said closure and neck having cooperating cam lugs and grooves for drawing the curved surface of the closure into tight sealing contact with the upper and lower shoulder seats and the intermediate curved surface of the neck upon the insertion of the cam lugs in the grooves and the turning of the closure.

2. The combination with a bottle having a neck provided with an annular lip and an interior annular seat extending from said lip into the neck, said seat having a reverse curve in cross section defining upper and lower annular shoulder seats and an intermediate connecting curved surface, of a stopper insertable in said neck including a body provided with an annular bead and a reversely curved annular surface below said bead for contacting with the interior annular seat, said bead engaging the outer face of the lip, the seat having formed therein in the intermediate curved surface between the upper and lower shoulder seats L-shaped grooves, and radially extending cam lugs formed on the curved surface of the stopper for insertion in said grooves, whereby upon turning of the stopper and movement of the lugs in the lower ends of the grooves, the curved surface of the stopper will be drawn into intimate sealing engagement with the upper and lower shoulder seats and the intermediate curved surface and the bead into engagement with the lip.

ALEXANDER H. JOHNSON.