Dec. 1, 1931. C. H. BELL 1,833,928

RECEPTACLE CLOSURE

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FIG. 1

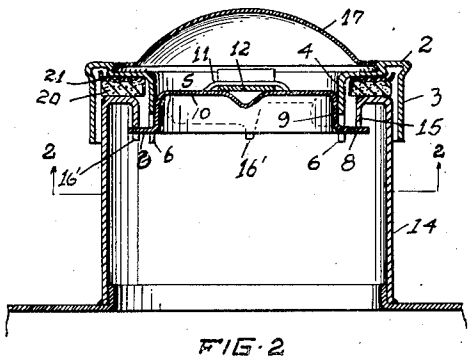


FIG. 2

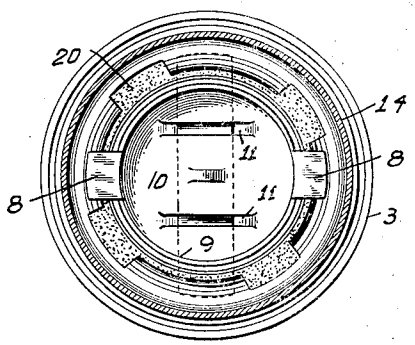


FIG. 3

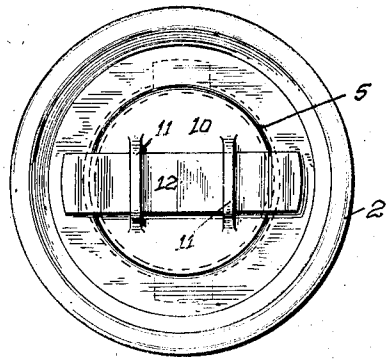


FIG. 4

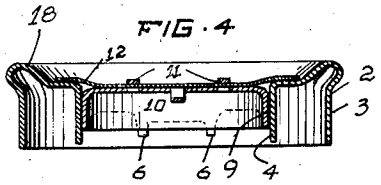


FIG. 5

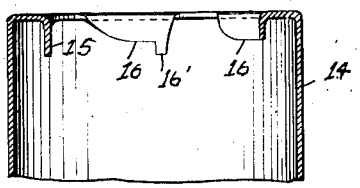


FIG. 6

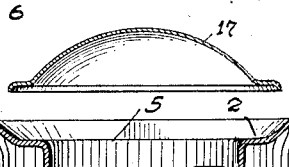


FIG. 7

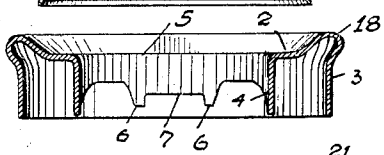


FIG. 8

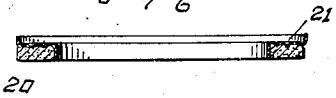


FIG. 9

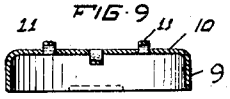


FIG. 10

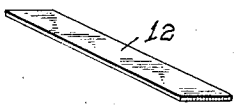
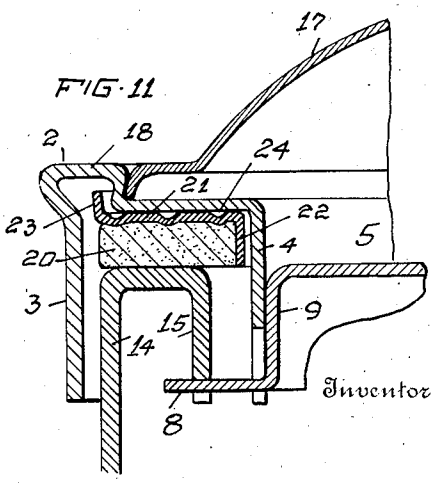


FIG. 11



Inventor

CHARLES H. BELL

By Fisher, Moser & Moore, Attorney

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FIG. 12

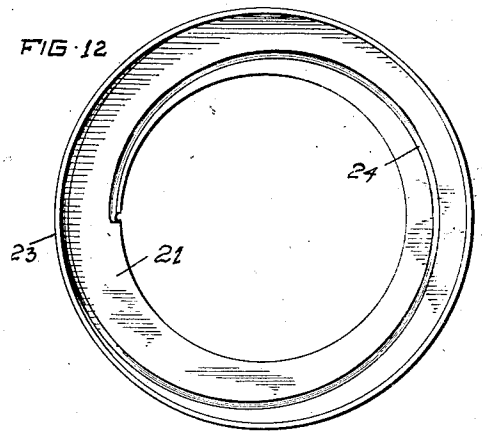


FIG. 14

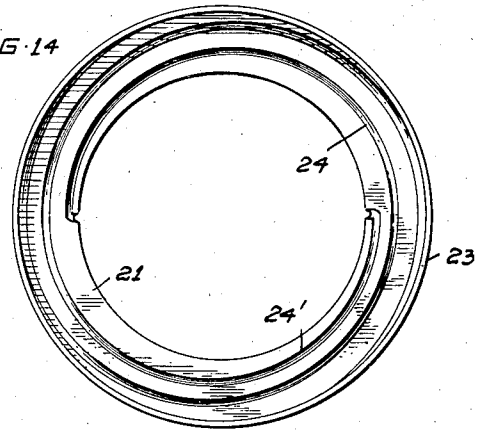


FIG. 13

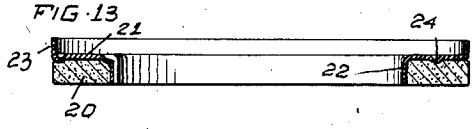


FIG. 15

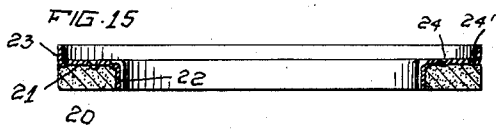


FIG. 16

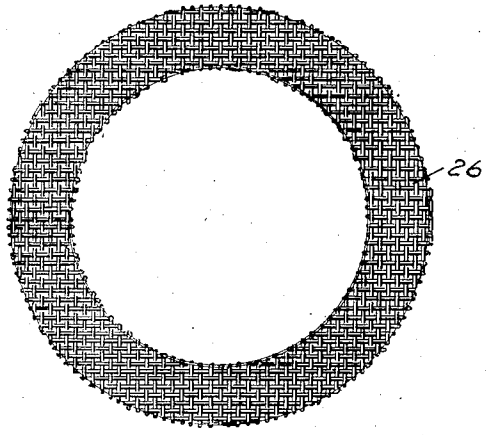
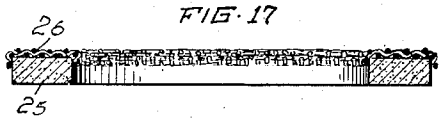


FIG. 17



Inventor

CHARLES H. BELL

By

Fisher, Moser & Moore, Attorney

Patented Dec. 1, 1931 1,833,928

UNITED STATES PATENT OFFICE

CHARLES H. BELL, OF CLEVELAND, OHIO, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE EATON AXLE & SPRING COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO

RECEPTACLE CLOSURE

Application filed August 11, 1927. Serial No. 212,183.

This invention relates to an improvement in a closure for a metallic receptacle, and more particularly in a closure of the bayonet lock type, cognizance being taken of Letters Patent of the United States to P. Henry, No. 1,399,345, dated December 6, 1921. In general the object of the present invention is to provide a simple structure in which a bayonet locking member is yieldingly secured to a cap or closure member solely by a spring. The parts are also particularly constructed to permit convenient assembly and to so interlock that torsional stresses may be applied without injury to or displacement of the parts as assembled. The closure is also particularly constructed for use with a separate venting washer of special design, particularly when a venting closure is required for a tank from which the contents are withdrawn or fed by vacuum suction, or gravity. Other objects of the invention are embodied in the details of construction as hereinafter shown and described and more concisely pointed out in the claims.

In the accompanying drawings, Fig. 1 is a sectional view of a closure constructed according to my invention and secured to the filling neck of a receptacle, and Fig. 2 is a transverse section of the neck on line 2—2 of Fig. 1 looking upwardly into the bottom of the closure members. Fig. 3 is a top view of the closure device as it appears before a cover plate is applied. Fig. 4 is a sectional view of the parts shown in Fig. 3. Fig. 5 is a sectional view of the tubular neck of the receptacle. Figs. 6, 7, 8, and 9 are sectional views of the cover plate, closure ring, venting washer, and the bayonet locking member, respectively. Fig. 10 is a perspective view of the locking spring. Fig. 11 is a sectional view and detail, on an enlarged scale, of a portion of the closure device and venting washer affixed to a receptacle neck. Fig. 12 is a top view of a metal venting washer, and Fig. 13 is a sectional view thereof, together, with a resilient sealing gasket, while Figs. 14 and 15 are similar views showing a venting washer with a plurality of spiral grooves. Figs. 16 and 17 are top and sectional views, respectively, of a venting washer made of woven wire.

The present closure device comprises a ring 2 of stamped sheet metal having an annular depending skirt 3 at its periphery and an annular depending flange 4 bordering its central round opening 5. Flange 4 is formed with prongs or fingers 6 at spaced intervals, and two pairs of such fingers provide notched seats or recesses 7 adapted to admit a pair of rigid locking projections or lugs 8 which extend laterally from and are integral portions of the circular wall 9 of a dished member 10 also stamped of stiff sheet metal. The flat top of dished member 10 is provided with two loops 11 struck upwardly therefrom at equal distances from the center, which loops are disposed opposite one another to permit a flat leaf spring 12 to be slipped therethrough to connect member 10 with member 2 when said parts are assembled with the locking lugs or projections 8 seated within recesses 7. Spring 12 is relatively longer than the diameter of opening 5 so that its flat extremities may overlap and rest under tension upon the flat top of ring 2, thereby supporting dished member 10 in a yielding position within ring 2. Thus member 10 is locked yieldingly to ring 2 and free to move longitudinally or axially with respect thereto, whereby a clamping movement may be effected when the complete closure device is seated upon the upper end of a filling tube, neck or spout 14 having an inturned flange or reverted portions 15 which is provided with cam surface 16 and stops 16′ adapted to be engaged by the locking lugs 8 of member 10. A thin plate or disk 17 is secured to the upper side of ring 2 to close opening 5 and to cover spring 12, and this cover plate may be soldered to the top of ring 2 or fastened thereto in any suitable mechanical way. As shown an annular portion 18 of ring 2 is beaded to provide a recess or cavity adapted to receive the edge of plate 17, and this protector plate is permanently attached to the top of the ring by contracting the bead portion according to old and well known mechanical practices.

In the use of these closures it is desirable

to seal the joint between the end of the neck of the device to be closed and the closure applied thereto. Moreover, for the sake of appearance or for other reasons it is sometimes desirable to have the outer shell of the closure imperforate, but nevertheless a vent may be necessary or desirable, and with an imperforate closure shell such vent must be around the edge of the shell and not through it. A leather or cork washer or gasket may be employed to obtain an air-tight seal between ring 2 and the top of neck 14, but in applying the present closure device to a tank having vacuum or suction feed connections or in any place where the use of the closure on a tank or other receptacle dictates an imperforate outer shell for the closure, a vent for the tank may be obtained by using a leather or cork gasket 20 and a venting washer 21. See Fig. 11. Washer 21 may be made of a hard material, fiber or metal, and formed with a downwardly extending flange 22 at its inner circumference and an upwardly-extending flange 23 at its periphery. One flat seating face of the washer may be provided with a spiral venting groove 24 extending from the inner to the outer flanged edges thereof, and Figs. 12 and 13 show a single spiral groove 24 in the seating face, while Figs. 14 and 15 show a washer having two such spiral grooves 24'. The upwardly-extending flange 23 projects into the annular space within beaded portion 18 of ring 2, and the flange is spaced apart from the surrounding walls of the ring to permit venting at all times. Flange 23 functions as a guard to prevent the escape of liquid entering the groove, although the spiral groove itself prevents a free escape of the liquid from neck 14. In Figs. 16 and 17, I show a leather or cork gasket 25 and a venting washer 26 mode of closely woven wire. Any one of these venting washers may be permanently secured to the gasket, made a separable part thereof, or used independently. All of these forms of vent permit the closure to have an imperforate shell and nevertheless provide a vent from the inside of the neck to the outside atmosphere, which is around the edge of the shell, and in the specific form shown is also around the edge of the skirt of the shell, as well as beneath the annular seat of the cap on which the gasket rests, to wit, the annular wall of the closure against which the washer 21 is pressed, and is also above both the gasket 20 and the washer 21.

What I claim, is:

1. A receptacle closure of the bayonet lock type, comprising an open ring having a flange, an axially-movable member mounted within said ring having locking projections interlocked with said flange, and a leaf spring bridging the opening in said ring and connected with said axially-movable member.

2. A receptacle closure of the bayonet lock type, comprising a ring having a flange at its inner circumference provided with recesses, an axially-movable member having locking projections lying within said recesses and a supporting spring carrying said member and having portions seated upon said ring.

3. A receptacle closure cap of the bayonet lock type, comprising an open ring having a notched flange, an axially-movable member within said ring having locking projections engaging in the notches of said flange, a spring connected to said member having free ends seated upon said ring, and a cover plate for said ring.

4. A receptacle closure of the bayonet lock type, comprising a flanged ring, an axially-movable member within said ring having locking projections, a leaf spring seated upon said ring and connected with said member, and a cover for said spring and member.

5. A receptacle closure of the bayonet lock type, comprising a ring having a skirting and a notched flange, a dished member axially-movable within said ring having locking projections seated within said notched flange, a leaf spring seated upon said ring and connected with said dished member, and a cover fixed to said ring enclosing said spring and dished member.

6. A receptacle closure of the bayonet lock type, comprising a ring having a beaded border portion, an axially-movable member mounted within said ring having locking projections, a spring spanning said ring and supporting said member, and a cover for said parts secured within said beaded portion.

In testimony whereof I affix my signature.

CHARLES H. BELL.