May 19, 1953 R. E. GUNTHER 2,638,613

COMBINATION RECEPTACLE CLOSURE AND DISPENSING DEVICE

Filed July 27, 1948

FIG. 1.

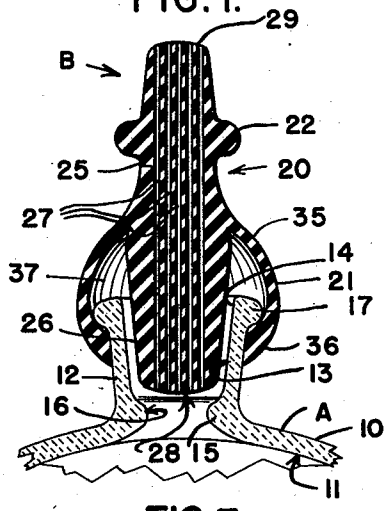


FIG. 2.

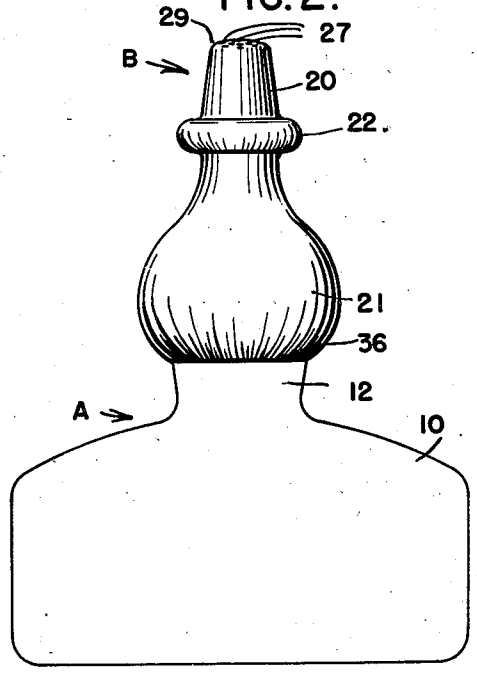


FIG. 3.

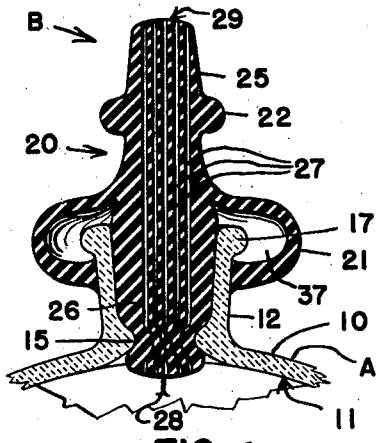


FIG. 4.

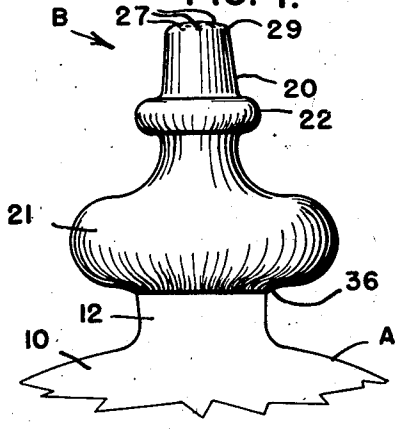
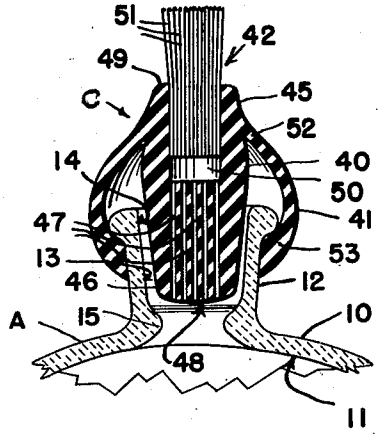


FIG. 5.



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COMBINATION RECEPTACLE CLOSURE AND DISPENSING DEVICE

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4 Claims. (Cl. 15—138)

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This invention relates to closures for receptacles, which closures may be additionally employed as applicators of the fluent contents of the receptacles. An example of such a closure is one for closing the mouth of a container (as a bottle) of soldering flux.

An important object of the invention is to provide a closure which need not be bodily removed, from the mouth of the receptacle by which it is carried, in order to permit discharge of the contents of the receptacle.

Another important object is to provide such a closure which is reciprocable with respect to the mouth of a receptacle in order to close the mouth or in order to permit flow of the contents of the receptacle thru the mouth.

Still another important object is to produce a closure of this kind so constructed that after a portion of the fluent contents of the receptacle has passed into the passageway of the closure and the greater part has been discharged therefrom, that part remaining in the passageway will be carried back into the receptacle so as not to remain in the passageway and interfere with subsequent discharges.

In addition, a further major object is to provide a closure as described which may also be employed as an applicator of the contents of the receptacle.

Other objects and advantages of the invention will appear in the following detailed description, taken in connection with the accompanying drawing, forming a part of this specification, and in which drawing:

Fig. 1 is a vertical section of the novel closure mounted upon the neck portion of a receptacle shown in vertical section, with the closure in position for discharge of the contents of the receptacle.

Fig. 2 is an elevation of the novel closure mounted upon the neck portion of a receptacle.

Fig. 3 is a vertical section somewhat like that of Fig. 1 but illustrating the closure in a receptacle mouth-closing position.

Fig. 4 is an elevation of the new closure in its receptacle mouth-closing position.

Fig. 5 is a vertical section of a modified form of the closure.

In the drawing, wherein for the purpose of illustration are shown a preferred and a modified embodiment of the invention, and wherein similar reference characters designate corresponding parts thruout the several views, the letter A designates a receptacle or container, the letter B one form of the novel closure, and C a modified form of the closure.

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The receptacle or container A is provided with a hollow body portion 10 defining a reservoir 11 and a neck portion 12 extending from the body portion and defining a passageway 13 leading from the reservoir 11 to a mouth 14. At a location remote from the mouth 14, at substantially the juncture of the neck portion with the body portion there is provided an inwardly extending projection or bead 15 which constricts a portion of the passageway 13. This projection has a rounded surface 16 for a purpose later detailed. The neck portion may be provided with the conventional outer bead 17 at the mouth 14.

Referring mainly to Figs. 1 to 4, the form of the closure B (which, as stated, may also be employed as an applicator) comprises a body portion 20 and skirt portion 21. It may also include a bead 22 extending outwardly from the body portion 20.

The body portion 20 comprises an outer or upper section 25, outwardly of the neck portion 12, and lower or inner section 26 normally within the neck portion 12, and the combined lengths of these sections (or length of the body portion 20) is greater than the length of the neck portion 12. At least the lower section 26 is of elastic material, as rubber, and it is preferred that the upper end portion of the upper section be of a conventional heat-resistant rubber.

Referring mainly to Fig. 1 it may be seen that the outer surface of the body portion 20, at the lower section 26, converges downwardly, and that the greatest diameter of the section 26, when this section is free of compression, is slightly greater than the diameter of the passageway 13 at the projection 15. By the term "slightly less" is meant that this diameter of section 26 is such that when the closure B is forced into the neck portion 12 as in Fig. 3, the elastic material forming the section 26 will fill the passageway 13 because of the compression of the extreme lower part of the section 26 by the projection 15. Not only does this association of projection 15 with the section 26 cause the lateral extension of the wall of the section 26 to fill the passageway 13 but the projection 15 with the fanned-out material below the projection (as in Fig. 3) prevents the closure from creeping upwardly.

Extending thru the body portion 20 are a plurality of spaced-apart passageways 27 extending from the lower end face 28 to the upper or outer end face 29 of the body portion. In the form B, these passageways are of substantially the same diameter thruout their lengths. The upper or outer end face 29 is preferably outwardly convex so as to provide means for applying and spread-

ing the material flowing out of the passageways 27. The walls of the passageways provide means for conducting fluent material from the reservoir 11 to the exterior of the closure B.

The skirt portion 21 has a body portion-connected end 35 and this end extends outwardly from the body portion 20 intermediate the end faces of the latter. The free end 36 of the skirt portion extends inwardly toward the body portion 20, as in Figs. 1 and 3 and in gripping relationship with the neck portion 12. Preferably this skirt portion is of elastic material, as rubber.

A bead 22 may extend outwardly of the body portion 20 above and spaced from the body-connected end 35 of the skirt portion to afford means for grasping while reciprocating the closure B as will be described.

After the receptacle A is charged with a fluent material which is capable of flowing thru the passageways 27 of Fig. 1, the closure may be applied as is clear in Fig. 1 and then forced into the neck portion 12 as in Fig. 3. It will be noted that the passageways 27 are now closed at their lower or inner end portions. The skirt portion 21 has now mushroomed but there is no compression of air within the area 37 defined by the skirt portion 21, adjacent body portion 20 and neck portion 12.

Upon drawing the closure B outwardly to the position shown in Fig. 1 and inverting or tipping the receptacle A, a portion of the fluent material (not shown) will flow thru the passageways 27 and be discharged. The discharged material may be spread by the convex end face 29.

Now, upon again turning the receptacle A neck-upwardly, most of the material on the end face 29 and that within the passageways 27 will drain back into the receptacle. Most of the remaining material within the area 37 will be forced into the receptacle as the closure B is now pressed downwardly into its position as in Fig. 3 and any material within the lower end portions of the passageways 27 will be squeezed from these lower end portions.

It has been found that when the closure B is moved from its position, as in Fig. 3, to the position as in Fig. 1, the elastic material will expand and the lower end portions of the passageways 27 will open, even if the fluent material has some adhesive qualities and a minute film remains upon the walls of the passageways 27.

In the form shown in Fig. 5 the closure C comprises a body portion 40 and skirt portion 41 together with an applicator means 42 differing from that of form B.

The body portion 40 comprises an outer or upper section 45, outwardly of the neck portion 12, and lower or inner section 46 normally within the neck portion 12, and the combined lengths of these sections (or length of the body portion 40) is greater than the length of the neck portion 12. Like the form B, at least the lower section 46 is of elastic material, as rubber.

What has been said as to the diameters of the body portion 20 as compared with the diameters of the neck portion 12 and with projection 15 apply to the body portion 40. Extending through the lower section 46 of the body portion 40 are a plurality of spaced-apart passageways 47 which extend from the lower end face 48 toward the upper or outer end face 49 of the body portion 40.

In this form C these passageways end intermediate the faces 48 and 49 and open into a well or socket 50 from which extend a bundle of suitable bristles 51 that are wedged, for example, at their

inner end portions into the well and have their outer end portions extending outwardly of the end face 49 and these provide the applicator means 42. The walls of the passageways 47 and well 50 and interstices defined by adjacent bristles 51 provide means for conducting fluent material from the reservoir 11 to the exterior of the closure C.

The skirt portion 41 is substantially like the skirt portion 21 and comprises a body portion-connected end 52 and this end extends outwardly from the body portion 40 intermediate the end faces of the latter. Its free end 53 extends inwardly toward the body portion 40 as in Fig. 5 in gripping relationship with the neck portion 12. It is preferred that this skirt portion be of elastic material, as rubber.

The closure C is applied and reciprocated like the form B but in the form C, the method of spreading the fluent material is different.

Various changes may be made to the forms of the invention herein shown and described without departing from the spirit of the invention or scope of the claims.

What is claimed is:

1. In a closure for a receptacle for fluent material which receptacle has a neck defining a passageway and a mouth and a bead extending into said passageway at a location remote from said mouth, said closure including a body portion having a length greater than the length of said neck, an upper section of said body portion extending outwardly of said neck and having an upper end face, and a lower section of said body portion within said neck and having a lower end face, at least said lower section being of elastic material and of a greatest diameter, when said lower section is within said passageway and is free of compression by said bead, slightly less than the greatest diameter of said passageway, and of a diameter, when said lower section is within said passageway and is free of compression by said bead, greater than the diameter of said passageway at said bead, means to permit flow of fluent material from said receptacle to said upper end face, when said elastic material is free of compression by said bead, said compression occurring when said closure is inserted into said neck with the free end of said lower section extending below said bead, said means including the walls of a plurality of spaced-apart passageways within said body portion extending from said lower face toward said upper face, and an elastic skirt portion, having a body portion-connected end and a free end, said skirt portion extending from said body portion intermediate said end faces and with its free end extending inwardly toward said body portion in gripping relationship with said neck.

2. In a closure for a receptacle for fluent material which receptacle has a neck defining a passageway and a mouth and a bead extending into said passageway at a location remote from said mouth, said closure including a body portion having a length greater than the length of said neck, an upper section of said body portion extending outwardly of said neck and having an upper end face, and a downwardly converging lower section of said body portion within said neck and having a lower end face, at least said lower section being of elastic material and of a greatest diameter, when said lower section is within said passageway and is free of compression by said bead, slightly less than the greatest diameter of said passageway, and of a diameter, when said lower section is within said passageway and is free of compres-

sion, greater than the diameter of said passageway at said bead, means to permit flow of fluent material from said receptacle to said upper end face, when said elastic material is free of compression by said bead, said compression occurring when said closure is inserted into said neck with the free end of said lower section extending below said bead, said means including the walls of a plurality of spaced-apart passageways within said body portion extending from said lower face toward said upper face, and an elastic skirt portion, having a body portion-connected end and a free end, said skirt portion extending from said body portion intermediate said end faces and with its free end extending inwardly toward the lower section of said body portion in gripping relationship with said neck.

3. In a closure for a receptacle for fluent material, said receptacle including a neck defining a passageway and a mouth and a bead extending into said passageway at a location remote from said mouth, said closure including a body portion having a length greater than the length of said neck, an upper section of said body portion extending outwardly of said neck and having an upper end face, and a lower section of said body portion within said neck and having a lower end face, at least said lower section being of elastic material and of a greatest diameter, when said lower section is within said passageway and free of compression, slightly less than the greatest diameter of said passageway, and of a diameter, when said lower section is free of compression by said bead, said compression occurring when said closure is inserted into said neck with the free end of said lower section extending below said bead, greater than the diameter of said passageway at said bead, means to permit flow of fluent material from said receptacle to said upper end face, when said elastic material is free of compression, said means including the walls of a plurality of spaced-apart passageways within said body portion extending from said lower face toward said upper face and a bundle of bristles extending outwardly from said upper face and providing interstices between said bristles with said interstices in communication with said plurality of passageways, and an elastic skirt portion, having a body portion-connected end and a free end, said skirt portion extending from said body portion intermediate said end faces and with its free end extending inwardly toward said body portion in gripping relationship with said neck.

4. In a closure for a receptacle for fluent material, said receptacle being of the class having a neck defining a passageway and a mouth, a bead remote from said mouth and extending into said passageway and a body defining a reservoir and having shoulders extending to said neck at a location adjacent said bead, said closure including a body portion having a length greater than the length of said neck, an upper section of said body portion extending outwardly of said neck and having an upper end face, and a lower section of said body portion within said neck and having a lower end face, at least said lower section being of elastic material and of a greatest diameter, when said lower section is within said neck and above said bead and is free of compression, slightly less than the greatest diameter of said passageway, and of a diameter, when said lower section is free of compression, greater than the diameter of said passageway at said bead, means to permit flow of fluent material from said receptacle to said upper end face, when said elastic material is free of compression, said means including the walls of a plurality of spaced-apart passageways within said body portion, and an elastic skirt portion having a body portion-connected end and a free end, said skirt portion extending from said body portion intermediate said end faces and with its free end extending inwardly toward said body portion in gripping relationship with the outer surface of said neck above said shoulders.

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