

Sept. 12, 1967

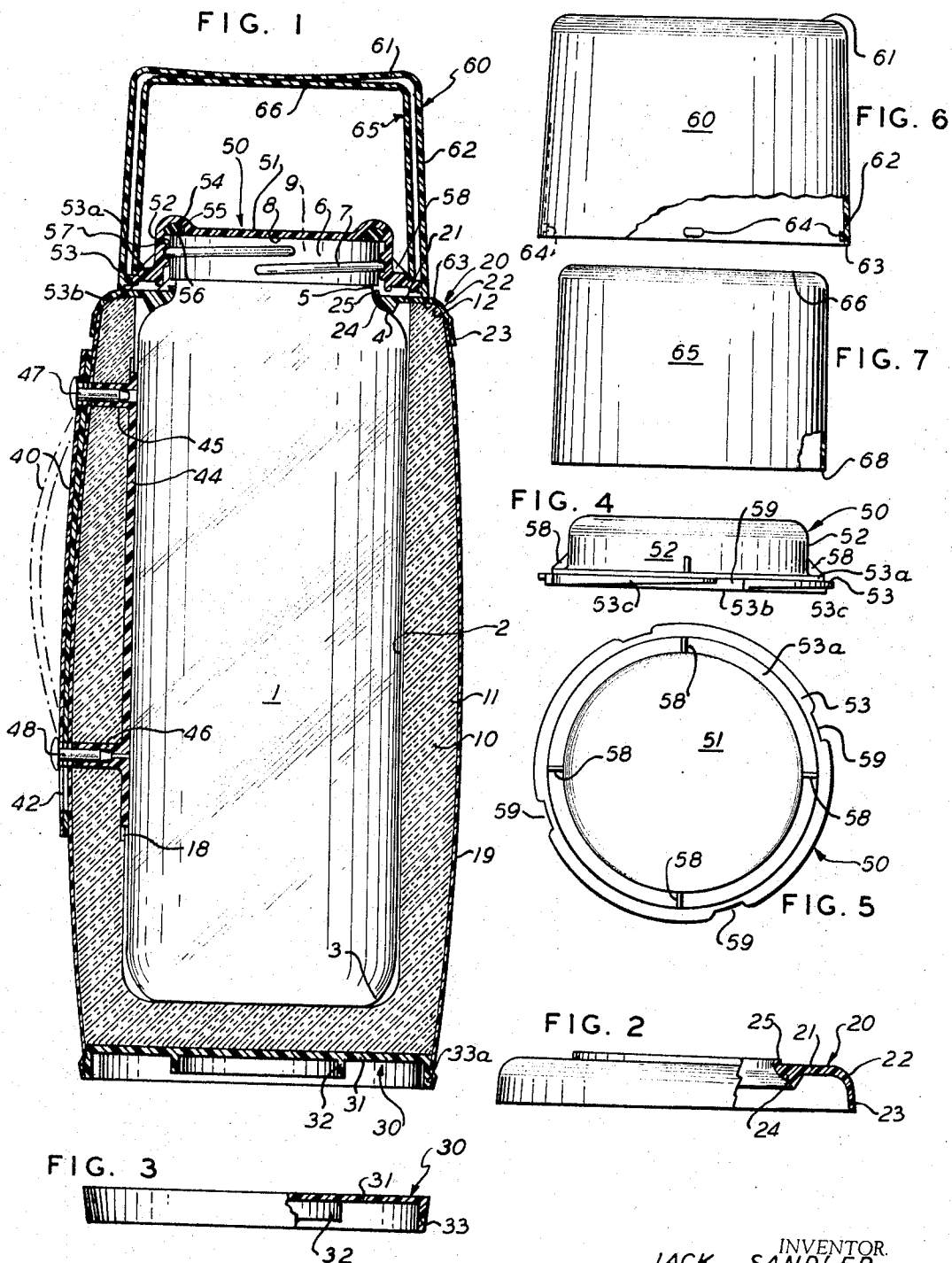
J. SANDLER

3,341,045

HEAT INSULATED BOTTLE.

Filed Aug. 13, 1963

3 Sheets-Sheet 1



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HEAT INSULATED BOTTLE

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FIG. 8

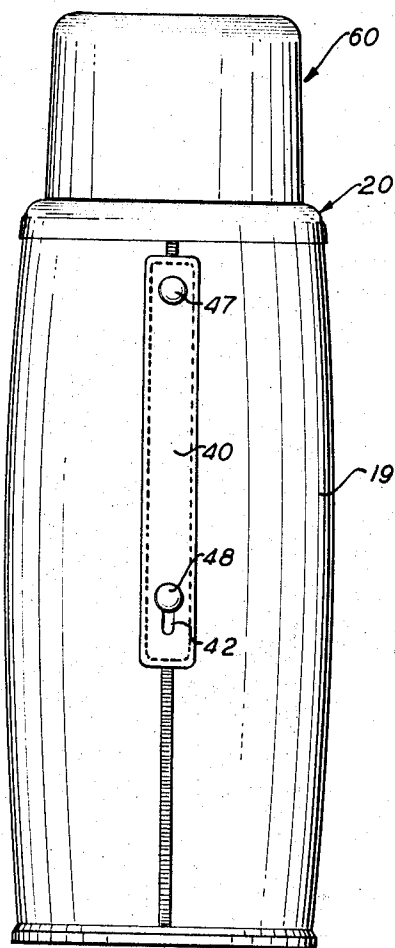


FIG. 9

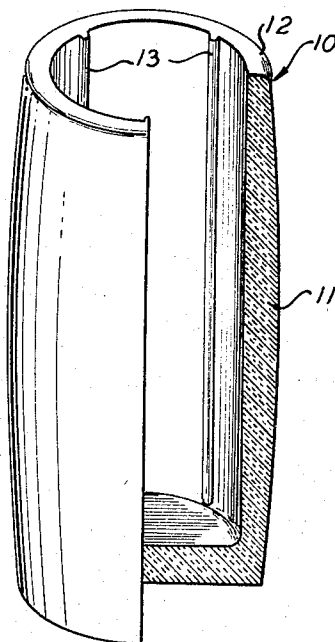
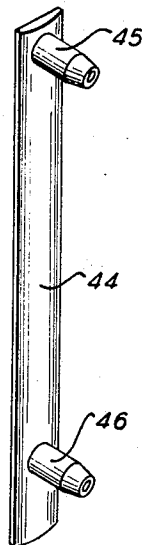


FIG. 10



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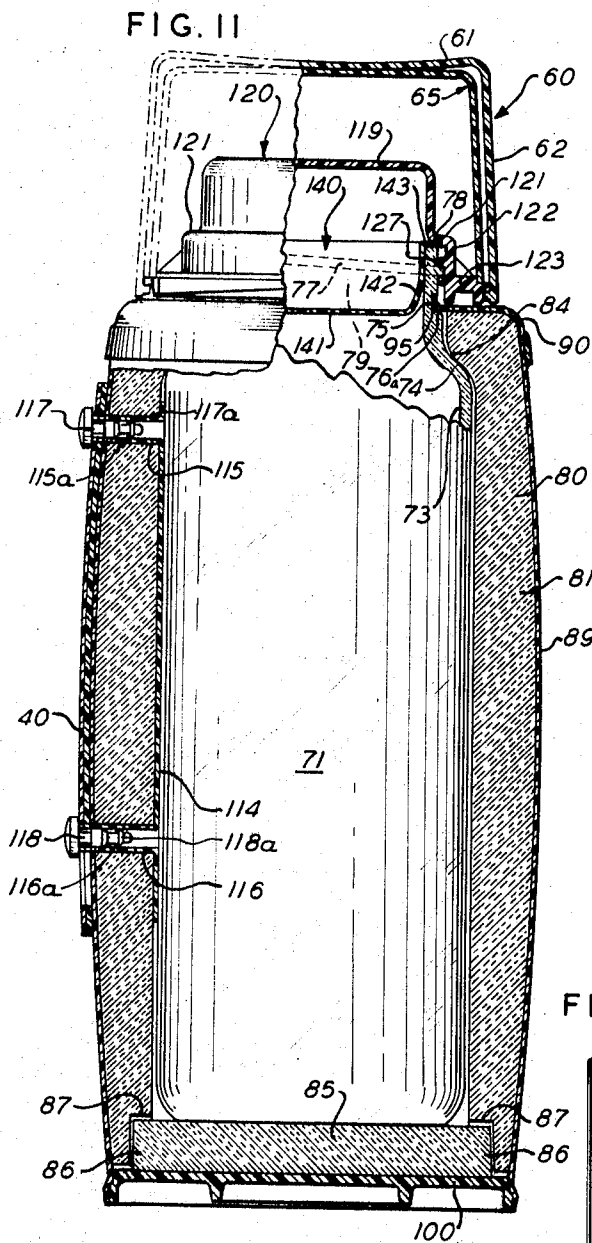
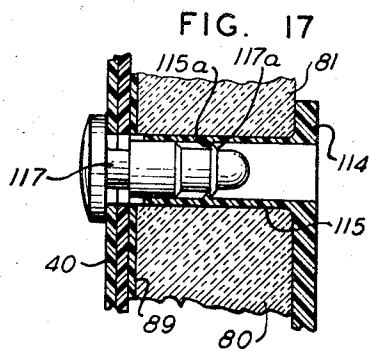
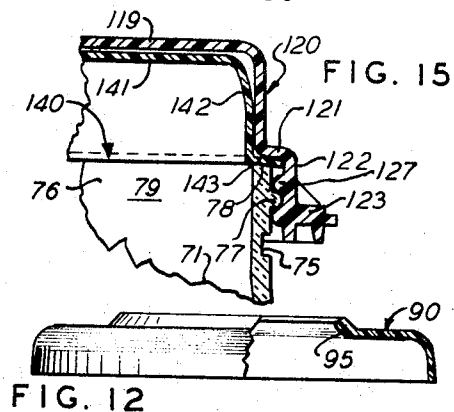
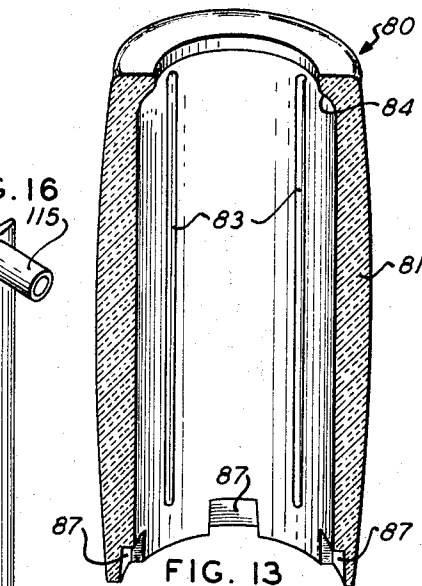
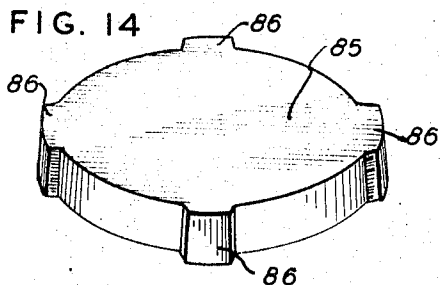
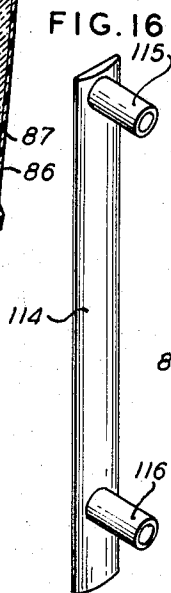


FIG. 12



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HEAT INSULATED BOTTLE

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17 Claims. (Cl. 215-13)

This invention relates to a heat-insulated bottle. It is a general object of the invention to provide for a bottle an insulating covering which is very simple and highly economical, while at the same time attractive and readily cleanable.

Rigid plastic "foam," or expanded plastic, is shown as an insulating material to be interposed between discrete elements which are to be insulated from each other, such for example as an inner bottle and an outer shell. In conventional such arrangements the outer shell would be a rigid or self-supporting one; in turn it is to it that there would be secured any handle or the like intended for manipulation of the inserted bottle. I have observed, however, that a rigid expanded-plastic receptacle may be used not merely for its insulating effect but also as the principal strength-providing element of the insulating covering—the toughness of the covering being augmented, and a desired exterior appearance and smoothness and cleanability being provided, by an itself-not-rigid skin which tightly surrounds the expanded-plastic receptacle and may typically be of flexible plastic. The resulting very inexpensive product, beside being attractive and readily cleanable, is at once exceptionally light and extraordinarily resistant to mechanical shock.

According to one general aspect of the invention the covering is constituted by a rigid expanded-plastic receptacle member, a flexible plastic skin by which the receptacle member is tightly surrounded, the bottle fitting within the receptacle member and having a restricted neck protruding from the top extremity of that member and therebelow a shoulder, and a flexible plastic inverted saucer centrally apertured for and tightly surrounding the bottle neck and peripherally secured to the skin. Preferably the bottle neck is provided with an undercut and the inverted saucer tightly surrounds the neck within the undercut. A flexible plastic base may be peripherally secured to the skin and may extend across the bottom of the receptacle member.

According to another general aspect of the invention the bottle is retained within a rigid expanded-plastic receptacle member which is surrounded by a flexible plastic skin, and an external handle is secured to and at the side of the receptacle member which then forms both an insulation for the bottle and a coupling between the bottle and the side handle. More specifically, a portion of the inner surface of the receptacle member may be spaced from the bottle, and there may extend along that portion a retaining strip from which a pair of spaced-apart studs extend through the wall of the receptacle member, an external handle being secured to those studs.

In one embodiment of the invention the inverted saucer mentioned above may bear against the bottle shoulder and may form a means retaining the bottle within the receptacle member. In another embodiment the receptacle member may be a tubular one again tightly surrounded by a flexible plastic skin and having an inwardly extending shoulder adjacent its top extremity; the bottle may fit within the receptacle member with its restricted neck protruding from the top extremity of that member and with its shoulder therebelow bearing against the member shoulder, and a flexible plastic base may be peripherally secured to the skin and may bear against the bottom of the bottle while remaining free of direct contact with the

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tubular receptacle member itself. A rigid expanded-plastic disc may extend freely across the receptacle member at its bottom extremity and it may be through that disc that the base bears against the bottom of the bottle. Although longitudinally free of the tubular receptacle member, the disc may be keyed thereto as to rotary movement and may further be adherent to the bottom of the bottle, whereby to retain the bottle against rotation within the receptacle member.

The neck of the bottle may protrude from the receptacle and a closure member may be removably attachable to the top of the bottle, and in turn a cup may be fastenable in inverted orientation about the attached closure member. According to an aspect of the invention the periphery or lip of the cup may then press against the inverted flexible plastic saucer mentioned above, which thus forms a sealing means for the cup periphery. Multiple camming means may advantageously be used to fasten the cup in the position mentioned above wherein it presses against the inverted saucer.

It is sometimes desirable with an insulated bottle to provide a second cup which may be held within the first cup on top of the bottle. According to an aspect of the invention the closure member which is attached to the top of the bottle and about which the first cup is fastened in inverted orientation is provided with a peripheral flange, and the second cup is held in inverted orientation within, and with its lip resiliently pressed against that flange by, the fastened first cup. Cam means in the angle between the sidewall and flange of the closure member may guide the second cup into position before the fastening of the first cup.

For the tight sealing of the mouth of the bottle the closure member may be provided with a gasket which is compressed against the lip of the bottle when the closure member is attached; alternatively a stopper separate from the closure member may be used. According to an aspect of the invention the stopper may be in the form of a flanged pan of which when in upright orientation the upper peripheral wall fits tightly within the bottle mouth upon pressing of its flange downwardly toward the bottle lip; the closure member may have an annular surface which constrains the flange downwardly toward the lip; and means may be provided within the closure member for removably retaining the stopper flange substantially in that position relative to the closure member which it occupies when the closure member is attached to the bottle over the stopper.

It is sometimes desirable that the bottle proper at the time of assembly into the receptacle be already filled with some commodity which is to remain therein until after the sale of the insulated bottle, and in such a case the bottle proper will ordinarily be sealed at least by a disc, of paper or plastic, extending across its mouth and adherent to its lip. In such a case it is, then, impossible to assemble the stopper in upright orientation. According to an aspect of the invention the closure member may be upwardly recessed to accommodate the body of the stopper, whereby optionally to permit the closure member to be attached to the bottle with the stopper in inverted orientation on top of the bottle. The means for removably retaining the stopper flange, terminally mentioned in the preceding paragraph, may perform its function whichever be the orientation of the stopper.

According to a process aspect of the invention a pre-stretched partially open-ended sock of flexible plastic material such as vinyl may be shrunk onto a rigid expanded-plastic receptacle member with its partially open end at the top extremity, and with its other end open and overhanging the bottom extremity, of that member; a flexible plastic base may be inserted within the overhanging por-

tion of the sock; and the base may be peripherally welded to the sock. The final step just mentioned may include the trimming off of the excess of the sock overhanging the inserted base. The sock may first have been formed by welding the periphery of a centrally apertured flexible plastic saucer to one end of a flexible plastic sleeve.

According to one specific procedure the steps mentioned above are followed by stretching to greater openness the partially open end of the sock, inserting the bottle bottom-first into the receptacle member through the thus stretched sock end, and shrinking the sock end into engagement with the bottle neck. According to another specific procedure, useful when the receptacle member is internally shouldered adjacent its top extremity and is open at its bottom extremity, the step of shrinking the sock onto the receptacle is followed by the step of inserting the bottle neck-first through the open member extremity until its shoulder abuts against the shouldering of that member; that insertion step may be followed by the inserting of a rigid expanded-plastic receptacle bottom within the overhanging sock portion and against the bottom of the bottle.

Various particular objects of the invention, which importantly include the accommodation of the structure and process to such variations of dimensions of the elements (and especially of the bottle) as are to be expected in mass production, have been made apparent by or are implicit in the foregoing brief description. Allied and other objects will be apparent from the following detailed description and the appended claims.

In the detailed description reference is had to the accompanying drawings, in which:

FIGURE 1 is a vertical view, in central cross section except for the bottle proper, of one form of insulated bottle according to the invention;

FIGURE 2 is a view, principally elevational but partly in section, of the inverted centrally apertured saucer incorporated in the structure of FIGURE 1;

FIGURE 3 is a similar view of the base incorporated in the FIGURE 1 structure before its incorporation therein;

FIGURE 4 is an elevational view of the closure member incorporated in the structure of FIGURE 1;

FIGURE 5 is a plan view of that closure member;

FIGURE 6 is a view, principally elevational but partly in section, of the first or outer cup of the FIGURE 1 structure;

FIGURE 7 is an elevational view of the second or inner cup of that structure;

FIGURE 8 is an elevational view of the FIGURE 1 structure;

FIGURE 9 is a perspective view of the receptacle member incorporated in the FIGURE 1 structure, with one quadrant of the receptacle broken away for purposes of better illustration;

FIGURE 10 is a perspective view of the retaining strip incorporated in the FIGURE 1 structure for the securing of the handle to the receptacle member;

FIGURE 11 is a vertical view, generally similar to FIGURE 1, of another form of insulated bottle according to the invention, the upper lefthand portion of the figure being elevational (with the cups omitted other than for dash-dot indications of their positions);

FIGURE 12 is a view, generally similar to FIGURE 2, of the inverted centrally apertured saucer incorporated in the FIGURE 11 structure;

FIGURE 13 is a perspective view of an arbitrary half of the receptacle member incorporated in the FIGURE 11 structure;

FIGURE 14 is a perspective view of the receptacle bottom incorporated in the FIGURE 11 structure;

FIGURE 15 is a fractional vertical cross-sectional view of the top portion of the FIGURE 11 structure with the stopper thereof in an inverted orientation within the closure member;

FIGURE 16 is a perspective view of the retaining strip incorporated in the FIGURE 11 structure; and

FIGURE 17 is an enlarged vertical cross-sectional view through the means securing the lower end of the handle to the receptacle member of the FIGURE 11 structure.

Reference being had to FIGURES 1 and 9, there will be seen an upright generally cylindrical receptacle member 10 having a closed bottom, the sidewall 11 of the member being preferably slightly convex in its exterior course from the top to the bottom extremity and the upper outer corner 12 being preferably rounded off. This member may be of plastic "foam," or expanded plastic; typically it may be of expanded polystyrene, but polyurethane (preferably with its voids containing a gas such as Freon) may for example be substituted with some increase both of thermal insulation efficiency and of cost. This receptacle member may have a plurality (for example four) of narrow longitudinal ribs 13 each extending for a limited distance inwardly, these ribs being for example uniformly spaced angularly from each other.

The bottle 1, which among other things may have a cylindrical sidewall 2 terminating at its bottom in a rounded (i.e. progressively bevelled) lower corner 3, fits within and is laterally supported by the ribs 13, which will be made of sufficient radial dimension to touch the smallest-diameter bottle encountered in production. The material of the member 10 renders very strong any section of it of substantial dimension; the ribs being narrow, however, they will yield with progressive crushing to the localized camming force of the lower corner 3 of a slightly-greater-diameter bottle during an operation of progressive insertion thereof into the receptacle member from the top—though once the bottle is inserted the ribs are amply strong to resist any distributed lateral force of the bottle, and will therefore not further yield in a bottle-loosening manner.

The reference of the preceding paragraph to the bottle 1 does not imply that it is inserted into the receptacle member 10 as an initial operation in the assembly of the insulated bottle, and is here included simply to explain the ultimate good fit of bottle within receptacle member in spite of production variations in dimensions of the two elements (and particularly of the diameter of the bottle).

A flexible plastic skin 19 tightly surrounds the receptacle member 10—i.e., encircles its sidewall. This skin may typically be of flexible vinyl (i.e. polyvinyl chloride), and its surface may be grained and finished to provide any desired appearance. It may conveniently be "seamed" into the form of a sleeve prior to its assembly to any other element, this seaming being done by overlapping and by welding, by the passage of high-frequency electric current through the overlap, between appropriate electrodes (at least one of which may if desired be a roller) in manner itself well known in the art.

At the top of the receptacle member 10 there may extend across it a flexible plastic inverted saucer 20 which is centrally apertured to pass the neck of the bottle 1; this saucer may typically be of flexible vinyl. It may be peripherally secured to the skin 19—typically by the overlapping of its peripheral portion over the top edge portion of the sleeve-formed skin and the welding of the overlapped portions (not yet in contact with the receptacle member 10) in appropriate electrode-constituting dies by the use of high-frequency electric current. This saucer 20, which may be formed by molding and is hereinafter more detailedly described, is separately illustrated in FIGURE 2.

This securing of the inverted saucer 19 to the sleeve-formed skin 20 may be considered to result in a partially open-ended "sock." This sock may be stretched by known techniques and while stretched drawn over and then shrunk onto the receptacle member 10, with its partially open end at the top extremity, and with its other end open and overhanging the bottom extremity, of that member.

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A flexible plastic base 30, which may for example be of flexible vinyl and which is separately illustrated in FIGURE 3, may be inserted within the overhanging portion of the sock and into abutment against the bottom of the receptacle member 10. This base may for example comprise a relatively thin disc 31, an intermediate downwardly extending circular flange 32, and a peripheral downwardly expending flange 33 whose exterior surface as originally formed in the molding of the base may be slightly inwardly tapered in the downward direction. The base 30 may be peripherally secured to the skin 19 by welding in appropriate electrode-constituting dies by the use of high-frequency electric current; these dies may desirably be arranged slightly to reshape the lower portion of the peripheral flange 33 (and the skin 19 in contact with that portion) during the welding, to result in a slight expansion of that lower portion seen at 33a in FIGURE 1. As an incident to the welding of the base to the skin, and either before or after the actual welding (afterward being preferred), the excess of the sock may be trimmed off.

At the top of its sidewall 2 the bottle 1 may be rounded inwardly to form the shoulder 4, above which the bottle may comprise the neck 6; preferably immediately above the shoulder the neck will be provided with an undercut 5. The height of the shoulder 4 from the bottom of the bottle, relative to the internal height of the receptacle member 10, is such that the shoulder 4 of the inserted bottle will be disposed slightly below the level of the top of the receptacle member. The centrally apertured inverted saucer 20 mentioned above comprises the peripheral flange portion 23 which is the portion welded to the skin 19 as above described; a flat washer-shaped portion 21 which when the sock of which it forms a partially open end has been drawn over the receptacle member 10 will lie against the top of the receptacle member; and an intervening rounded portion 22 which will then lie against the rounded upper outer corner 12 of the receptacle member. The saucer 20 may further comprise on top of the flat portion 21 at its inner edge a slight upwardly extending flange 25, and on the bottom of that flat portion for a distance outwardly from the inner edge a boss 24 shaped complementarily to the shoulder 4 of the bottle.

When the bottle has been inserted (for example in manner next described) the inner periphery of the centrally apertured inverted saucer 20, including the flange 25, will tightly surround the neck of the bottle—within the undercut 5 if that be provided as preferred. At the same time the boss 24 of the saucer will bear downwardly against the bottle shoulder 4, so that the saucer forms a means retaining the bottle within the receptacle member, or in other words a cap for that member.

The illustration of FIGURE 1 may be considered to portray the minimum bottle-shoulder height and the maximum receptacle-member height; increases of the former or decreases of the latter due to production variations will be accommodated by a resilient upward displacement (relative to the outward portions of the saucer 20) of the inner portion, including the boss 24 and flange 25, of the saucer.

The receptacle member 10, skin 19, saucer 20 and base 30 having first been assembled together, for example in manner above described, the bottle 1 may be inserted into the receptacle member. This insertion may be accomplished by stretching to greater openness the partially open end of the sock (i.e. the central aperture of the saucer 20), which may be done by the use of techniques themselves known; next inserting the bottle bottom—first into the receptacle member through the thus-stretched sock end (i.e. saucer 20); and then shrinking that sock end (i.e. saucer 20) into the tight contact with the bottle neck which has been described above.

The foregoing procedure, in which the bottle 1 is inserted only after the assembly together of the receptacle member, skin, saucer and base, is particularly advantageous when for any good reason—for example a require-

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ment that the bottles first be filled with some commodity and thereafter subjected to minimum handling, or a requirement that the bottle insertion be effected at a location where it is inconvenient to carry on plastic operations, or the like—it is desired to defer the bottle insertion to the latest practicable time. While for such reasons that procedure is preferred, the process aspects of the invention are not in all respects necessarily limited thereto; thus in an alternative procedure the bottle may first have been inserted to within the receptacle member before there is performed the step of shrinking the pre-stretched sock onto that member.

It is to be noted that both the preferred and the alternative procedures permit the securing together of the skin 19 and saucer 20—i.e. the creation of the sock—while those elements remain unassembled to the receptacle member 10. This permits access during the securing operation to both sides of the overlap of those elements—which is a great facilitation to a good joint, however made, and is indispensable to high-frequency inter-electrode welding.

Attention may be directed to the provision of a handle for the insulated bottle; in such provision the covered expanded-plastic receptacle member may perform, beside its insulating function, the function of providing a coupling between the bottle and the handle. To this end the inner surface of the receptacle member 10 may have a portion spaced from the bottle; although the inter-rib areas are inherently so spaced, it may be desirable to provide such a portion even further recessed and this has been indicated in FIGURE 1 as the longitudinally extending recessed portion 18. Fitting partially into this recessed portion is a retaining strip 44 from which there extend at least almost through the receptacle-member sidewall 11 upper and lower studs 45 and 46, suitable holes having been drilled through the skin 19 and the sidewall 11 to pass such studs. The retaining strip 44 and studs 45 and 46 may conveniently form a single piece, itself illustrated in FIGURE 10, integrally molded of plastic such for example as linear polypropylene. Large-headed rivets 47 and 48 may extend from externally into these respective studs and be secured therein as by cement, and a handle 40, itself preferably a lamination of two layers of flexible plastic such as vinyl, may be held under the rivet heads. Preferably the top end of the handle will be tightly held under the head of the upper rivet 47, while the lower end will be loosely held under the head of the lower rivet 48 and will be provided with an elongated hole 42 about the rivet shank to permit the handle to be either flat or bowed.

There remain to be dealt with further details of the bottle neck 6, which protrudes upwardly from the receptacle member 10 and inverted saucer 20, and the parts around and above that protruding neck. The neck of course encircles the open mouth 9 of the bottle, the neck and mouth terminating in a lip 8 which forms the uppermost surface of the bottle. The neck may be externally provided with an outwardly formed coarse screw thread 7, for example of a little over 360° in angular extent, and onto the thus-threaded neck there may be removably attachable a closure member 50.

The closure member 50 may for example be an inverted dish-like member of relatively rigid plastic, such for example as linear or high-density polypropylene or polyethylene. It may comprise a generally disc-like portion 51, a sidewall 52 extending downwardly from the portion 51, and a flange portion 53 extending outwardly from the sidewall 52. Adjacent the sidewall 52 the portion 51 may be provided with an upward bulge 54 and upwardly into this bulge there may extend from within the closure member an undercut groove 55 whose cross section may for example be a slightly truncated ellipse and into which there may be forced a gasket 56 of flexible plastic such as vinyl. The sidewall 52 may be internally provided with an inwardly formed coarse screw thread 57, for example of

about 540° in angular extent, by means of which the closure member 50 may be screwed downwardly onto the bottle neck 6 until the gasket 56 is tightly seated on the bottle lip 8; under these conditions the bottom of the sidewall 52 will still remain slightly spaced above the inverted saucer 20. The closure member, besides appearing in cross section in FIGURE 1, is shown in elevation in FIGURE 4 and in plan in FIGURE 5.

A cup 60 may be fastenable in inverted orientation about the attached closure member 50 and may then peripherally (i.e. at its lip) press downwardly against the flexible inverted saucer 20 to seal the space within the fastened cup. To provide for such fastening the flange 53 of the closure member may be provided with a number, for example four, of inward notches 59 uniformly spaced angularly about its periphery, and from each of those notches clockwise toward the next (as seen from the top) the thickness of the flange 53 adjacent its periphery may be gradually increased to form a respective camming surface 53c; the several thus-downwardly-thickened portions of the flange 53 may merge into a small circular rib 53b extending downwardly from the flange a little inwardly of its periphery.

The cup 60 (seen separately in FIGURE 6) may itself be of simple formation, with the slightly tapered sidewall 62 terminating in a lip 63 and with a base 61 which for a purpose hereinafter apparent may be externally slightly convex; it may be formed of relatively rigid though resilient plastic similar to that mentioned above for the closure member 50. Close to its lip 63 the cup 60 may be internally provided with four small inward protrusions or lugs 64, which as the cup is being moved into place over the closure member 50 will pass downwardly through the respective notches 59; thereafter a clockwise rotation of the cup will carry the lugs 64 along the respective camming surfaces 53c to force the cup gradually downwardly and its lip thus into increasing pressure against the top of the flexible inverted saucer 20.

The flange 53 may be provided with an upwardly thickened inner portion 53a, among other things for strength. When a second and slightly smaller cup is to be provided that portion 53a may act as a slight upward protrusion about which the mouth of that second cup may be fitted with the cup in inverted orientation. Such a second cup has been illustrated in FIGURE 1 (and separately in FIGURE 7) as 65; except for its slightly smaller size, and for a preferably plane base and an absence of any lugs, it may be quite similar to the cup 60. It will of course be placed in position prior to the moving into place of the first cup 60; its vertical dimension relative to that of the first cup may be such that as the fastening of the first cup (as above described) is being completed the central inner surface of the first-cup base 61 will come into contact with the central outer surface of the second-cup base 66, so that the final completion of the first-cup fastening will be attended by a slight yielding of the cup bases and will resiliently press the second-cup lip 68 against the flange 53 of the closure member. Smoothly and certainly to guide the second cup into position a number, for example four, of triangular camming means 58, each in the form of a thin vertical triangular web, may be provided in the angle between the closure-member sidewall 52 and the flange 53.

FIGURES 11 through 17 illustrate a modified form of insulated bottle according to the invention. The structure of these figures employs a receptacle member 80 (separately seen in FIGURE 13) of material similar to that of receptacle member 10 but of tubular form and having adjacent its top extremity an inwardly extending shoulder 84; again the sidewall, now 81, of the receptacle may be slightly convex, and again the receptacle member is provided with longitudinal ribs, now 83, which function similarly to the ribs 13 of the earlier structure. The bottle proper, which in this embodiment is to be inserted

into the receptacle member from the bottom, is designated as 71. It may be generally similar to the bottle 1 of earlier figures, but its shoulder 74 may be somewhat lower relative to its lip 78 and the rounded (i.e. progressively bevelled) corner which first contacts the ribs 83 during insertion of the bottle is the corner 73 just below the shoulder 74. The neck 76 of the bottle is now rendered longer by the inclusion of a lower neck portion 76a, which may be of slightly greater diameter, with the undercut 75 intervening between that portion and the rest of the neck.

The receptacle member 80 is covered with a flexible plastic skin 89, quite similar to the skin 19 of earlier figures. Again at the top of the receptacle member there may extend across it a flexible plastic inverted saucer, now 90, which is centrally apertured to pass the neck of the bottle. This, seen unassembled in FIGURE 12, may be generally similar to the inverted saucer 20, but it will omit any such boss as 24 of that saucer and the small flange 25 of that saucer may be replaced by a slightly thickened and upwardly curved portion 95 adjacent the central aperture; the portion 95, in slightly stretched state, will tightly grip the bottle neck within the undercut 75.

It will be understood that in correspondence with the earlier procedure the inverted saucer 90 will be peripherally secured to the skin 89 to result in a partially open-ended sock, which will be stretched and drawn over and then shrunk onto the receptacle member 80, with its lower end overhanging the bottom extremity of that member. Thereafter the skin and receptacle member may be suitably apertured for the studs 115 and 116 of the handle-retaining strip 114; this strip (separately shown in FIGURE 16) may be generally similar to the strip 44 above described, but it may for example be thinner so as not to require extra recessing such as 18, and its studs may be provided with a specifically different bore for different handle-attaching means as hereinafter described.

At this stage the bottle (whether empty or filled) may be inserted upwardly, neck first, through the open bottom extremity of the receptacle member until its shoulder 74 abuts against the shouldering 84 of that member.

A flexible plastic base 100 is to be inserted within the overhanging portion of the sock (skin 89) at the bottom of the receptacle member and is to bear against the bottom of the bottle (which phrase I use in a broad sense to denote bearing of the bottle bottom and the base, either one against the other). It is, however, desirable that this bearing be through an intermediate insulating element. This element (separately seen in FIGURE 14) may be a receptacle bottom 85 in the form of a disc of expanded plastic similar to that of the receptacle member 80, fitting freely within the bottom end portion of the receptacle member; desirably it will be keyed to the receptacle member to preclude relative rotation, for which reason it is shown as including the outwardly projecting lugs 86 which freely fit within corresponding keying recesses 87 in the bottom end portion of the receptacle member. It will be inserted, following the insertion of the bottle, into abutment against the bottle bottom, preferably with a daub of cement first applied to one or the other of those elements in order to secure the bottle against rotation relative to the element 85 (and this, in view of the keying, relative to the receptacle member 80). It is after the insertion of the receptacle bottom 85 (if that be employed) that the base 100, itself seen separately in FIGURE 14 and generally similar to the base 30 of earlier figures, is inserted and welded to the skin 89 and the excess of that skin trimmed off, in correspondence with the earlier disclosure.

In order to accommodate bottles of slightly varying heights it is desirable that neither the base 100 or the receptacle bottom 85 bear upwardly against the receptacle member 80 (unless in the limiting case of the very small-height bottle); the receptacle member is made suffi-

ciently short, and its keying recessed sufficiently dimensioned vertically, to achieve this result.

At this stage the handle 40 may be attached to the studs 115 and 116, which are already in place. By way of example there have been illustrated (in enlarged detail in FIGURE 17) rivet-like fasteners 117 and 118 each having a shank which has a reduced-diameter portion toward its extremity and on that reduced-diameter portion a triangularly cross-sectioned peripheral bead 117a or 118a, while at an appropriate position within the bore of each stud is a co-acting triangularly cross-sectioned peripheral bead 115a or 116a. The act of insertion of the fastener is a forcing of its bead past the stud bead (which is accommodated by the flexible nature of the stud material), whereupon the fastener will be locked in place by the beads without the need for any cementing.

In the structure of FIGURES 11 through 17 there has by way of example been illustrated a closure member 120 from which there has been omitted any gasketing arrangements such as 54-55-56 of earlier figures, and with which there is employed a separate stopper 140; the latter may first be described. It is in the form of a flanged pan comprising a base 141, a peripheral wall 142 very slightly tapered at the top and somewhat more tapered at the bottom, and a flange 143 extending outwardly from the top of that wall. When the pan is in upright position the upper portion of the wall 142 may fit downwardly into and tightly within the bottle mouth 79, upon pressing of the flange 143 downwardly toward the bottle lip 78.

The closure member 120 may have a sidewall 122 and flange 123 entirely similar to those of the closure member 50, while the outward portion of its top may be a simple annular or washer-shaped portion 121. When the closure member is in place on the bottle the annular lower surface of the portion 121 is disposed over the stopper flange 143, and as the closure member is attached by screwing into place that surface constrains the flange 143 downwardly toward the bottle lip 78 to result in the tight fit of the stopper wall 142 in the mouth 79 of the bottle. Desirably the stopper may be so dimensioned as to permit the seating of the stopper flange 143 against the bottle lip 78 before the engagement of the stopper wall 142 with the bottle mouth becomes so excessively tight as to preclude further stopper movement, but this is not indispensable. On the other hand if the stopper wall 142 be excessively small or the bottle mouth excessively large, the stopper flange 143, acting as a gasket, will serve to seal the closure even in the absence of the intended tight engagement of stopper wall with bottle mouth.

It is desirable that when the closure member 120 is off the bottle, it be capable of retaining the stopper attached to its in order to minimize the number of separate elements to be handled. By making the diameter of the stopper flange 143 essentially as great as the internal diameter of the closure member above its thread 127 and just below the annular portion 121, the thread 127 is caused to be a means which removably retains the stopper flange substantially in that position relative to the closure member which it occupies when the closure member is attached to the bottle over the stopper. The retaining action may be made even more positive by relying as well on the internal upper surface of the closure-member wall 122 to frictionally engage the stopper-flange periphery, the stopper-flange diameter being appropriately established.

There are circumstances, such as the initial sale of the structure with the bottle proper filled with some commodity and then sealed by a disc over the bottle lip, under which the stopper cannot always be assembled in the position just described. To accommodate the stopper under such conditions the closure member may be upwardly recessed, starting at the inner limit of the annular por-

tion 121 and as indicated at 119, to accommodate the body of the stopper; this optionally permits the closure member to be attached to the bottle with the stopper in inverted orientation on top of the bottle, as fractionally illustrated in FIGURE 15. The means above described for removably retaining the stopper flange within the closure member will be equally effective in the case of this orientation of the stopper.

The cups 60 and 65 and the arrangements of the closure member for their retention may be the same as those of earlier figures, and need not be re-detailed.

It will be understood that in each of the embodiments of the invention the heat insulation provided by the receptacle member (and in the second embodiment by the receptacle bottom as well) is augmented to some degree by the space between the bottle and the receptacle member, and that a considerable heat-insulating effect is provided by the space between the closure member and the cup first encountered in an outward direction therefrom, as well as by the inter-cup space when two cups are provided. A particular merit of the disclosed embodiments is the high degree to which these spaces therein are rendered true dead-air spaces.

While the invention has been disclosed in terms of particular embodiments thereof, it will be understood that those embodiments are by way of example and that no unnecessary limitations are thereby intended. Modifications in many respects will be suggested by the disclosure to those skilled in the art, and such modifications will not necessarily constitute departures from the spirit of the invention or from its scope, which it is undertaken to express in the following claims.

I claim:

1. In combination, a rigid expanded plastic receptacle member, a flexible plastic skin by which the receptacle member is tightly surrounded, a rigid glass bottle fitting within the receptacle member and having at its top a restricted neck protruding from the top extremity of that member and below said neck a shoulder, and a flexible plastic inverted saucer centrally apertured for and tightly engaging said neck and peripherally secured to said skin, wherein said flexible plastic inverted saucer bears against said shoulder and forms a means retaining the bottle within the receptacle member.

2. The subject matter claimed in claim 1 wherein said neck above said shoulder is provided with an undercut, and wherein said flexible plastic inverted saucer tight engages said neck within said undercut.

3. The subject matter claimed in claim 1 further including a flexible plastic base peripherally secured to said skin and extending across the bottom extremity of the receptacle member.

4. The subject matter claimed in claim 1, wherein said rigid expanded-plastic receptacle member has a plurality of inwardly extending narrow longitudinal ribs, and said bottle has a generally cylindrical main vertical portion terminating at one of its extremities in a bevelled corner, the ribs being sufficiently yieldable to accommodate with longitudinally progressive crushing the insertion into the receptacle with said one extremity first of said bottle slightly larger in cross-sectional area than the area available between the ribs but being strong enough to resist any distributed lateral force of the inserted bottle.

5. The subject matter claimed in claim 1, further comprising an external handle secured to and at the side of the covered receptacle member, said covered expanded-plastic receptacle member forming both an insulation for the bottle and a coupling between the bottle and said side handle, said handle extending radially from said receptacle member.

6. The subject matter claimed in claim 1, wherein said rigid expanded-plastic tubular receptacle member has top and bottom extremities and has an inwardly extending shoulder adjacent its top extremity, a flexible plastic skin by which the receptacle member is tightly surrounded,

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said bottle fitting within the receptacle member having at its top a restricted neck protruding from the top extremity of the receptacle member and below said neck a shoulder bearing against said member shoulder, and a flexible plastic base peripherally secured to said skin and positioned to be in bearing relationship to the bottom of the bottle but out of bearing relationship to the bottom portion of said tubular receptacle member.

7. The subject matter claimed in claim 1, further comprising a closure member removably attachable to the top of the bottle, and a cup fastenable in inverted orientation about the attached closure member and then peripherally pressing against said saucer.

8. The subject matter claimed in claim 7 further including multiple camming means for fastening said cup as stated in that claim.

9. The subject matter claimed in claim 1, further comprising a closure member, having a sidewall and a peripheral flange extending outwardly therefrom, removably attachable to the top of the bottle, a first cup fastenable in inverted orientation about the attached closure member, and a second and smaller cup held in inverted orientation within, and with its lip resiliently pressed against the flange of the closure member by the so-fastened first cup.

10. The subject matter claimed in claim 1, further comprising a closure member having a sidewall and a peripheral flange extending outwardly therefrom, removably attachable to the top of the bottle, a first cup fastenable in inverted orientation about the attached closure member, a second and smaller cup held in inverted orientation by and within the first cup with its lip against the flange of the closure member, and cam means in the angle between the sidewall and flange of the closure member for guiding the second cup into position before the moving of the first cup into position about the closure member.

11. The subject matter claimed in claim 1 wherein said bottle has at its top a mouth terminating in a lip, a stopper, for closing said mouth, in the form of a flanged pan of which when in upright orientation the upper peripheral wall fits downwardly into and tightly within said mouth upon pressing of its flange downwardly toward said lip, a closure member attachable to the bottle over said mouth and over the stopper and having a surface which when the member is thus attached constrains said flange downwardly toward said lip, and means carried within said closure member for removably retaining said flange substantially in that position relative to the closure member which it occupies when the closure member is attached to the bottle over the stopper.

12. The subject matter claimed in claim 1 wherein said bottle has at its top a mouth terminating in a lip, a stopper, for closing said mouth, in the form of a flanged pan of which when in upright orientation the upper peripheral wall fits downwardly into and tightly within said mouth upon pressure of its flange downwardly toward said lip, said closure member being upwardly recessed to accommodate the body of the stopper whereby optionally to permit the closure member to be attached to the bottle with the stopper in an inverted orientation on top of the bottle.

13. The subject matter claimed in claim 12, further including means carried within the closure member for removably retaining said flange, with the stopper in either

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upright or inverted orientation, in that position relative to the closure member which it occupies when the closure member is attached to the bottle over the stopper.

14. In combination, a rigid expanded-plastic cylindrical receptacle member, a bottle fitting within the receptacle member, a portion of the inner surface of the receptacle member being spaced from the bottle, a retaining strip extending longitudinally along said receptacle inner-surface portion, a pair of spaced-apart studs secured to said retaining strip and extending through the wall of the receptacle member, and an external handle secured to said studs.

15. In combination, a rigid expanded-plastic cylindrical receptacle member having inwardly extending longitudinal ribs, a bottle fitting within the receptacle member and against the ribs, a retaining strip extending longitudinally along the inner surface of the receptacle member between two of the ribs, a pair of spaced-apart studs secured to said retaining strip and extending through the wall of the receptacle member, and an external handle secured to said studs.

16. In combination, a rigid expanded-plastic tubular receptacle member having top and bottom extremities and having an inwardly extending shoulder adjacent its top extremity, a flexible plastic skin by which the receptacle member is tightly surrounded, a bottle fitting within the receptacle member and having at its top a restricted neck protruding from the top extremity of the receptacle member and below said neck a shoulder bearing against said member shoulder, and a flexible plastic base peripherally secured to said skin and positioned to be in bearing relationship to the bottom of the bottle but out of bearing relationship to the bottom portion of said tubular receptacle member, and a rigid expanded-plastic disc which extends across said receptacle member at its bottom extremity but out of bearing relationship to the bottom portion of that member and through which said base bears against the bottom of the bottle.

17. The subject matter claimed in claim 16 wherein said disc is keyed to said receptacle member as to relative rotation and is adherent to the bottom of the bottle, whereby to restrain the bottle against rotation within the receptacle member.

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