United States Patent

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[54] DISH FOR MIXING DENTURE REPAIR MATERIALS

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[51] **Int. Cl.** **B01f 13/00**

[58] **Field of Search** ..... 259/72, 54, 60, 18, 36, 4; 220/17, 9 R

[56] **References Cited**

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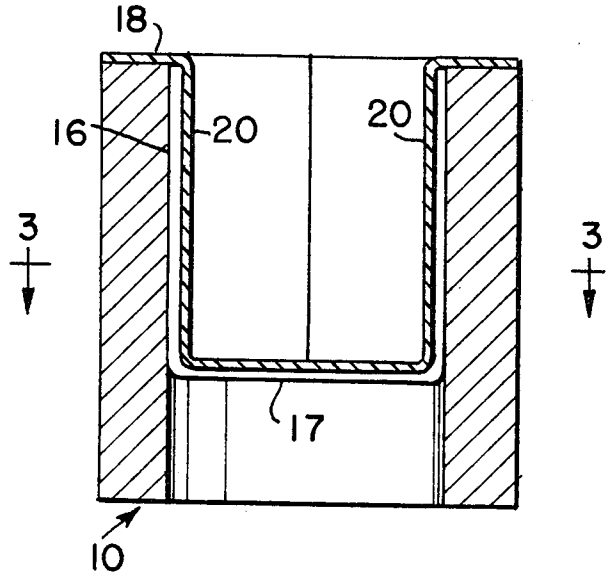
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[57] **ABSTRACT**

A dish including a heavy walled cylindrical holder and a relatively light walled receptacle removably disposed within said holder.

6 Claims, 6 Drawing Figures



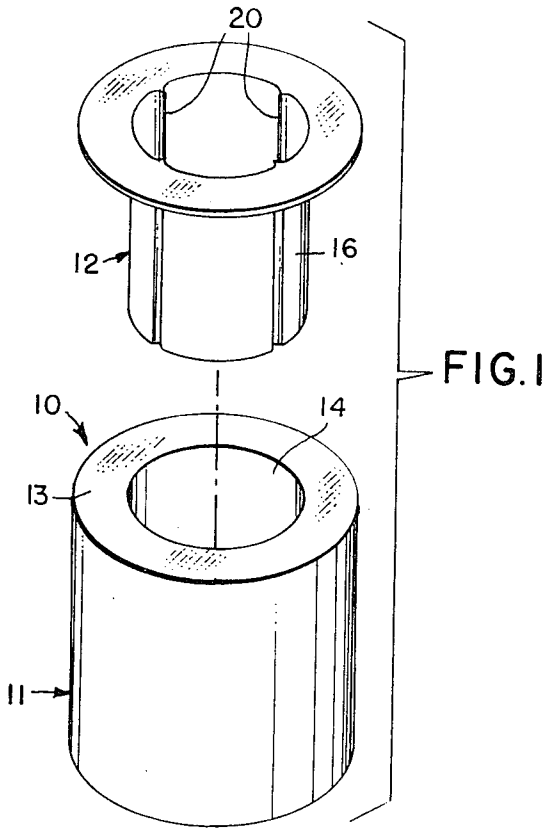


FIG. 1

FIG. 2

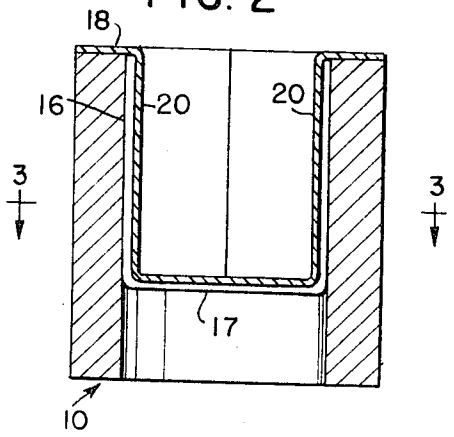
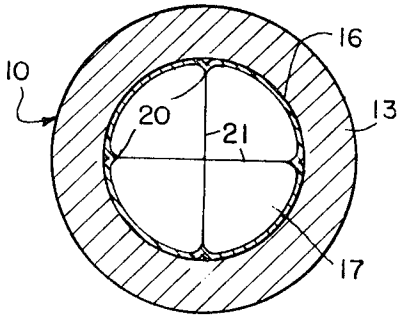


FIG. 3



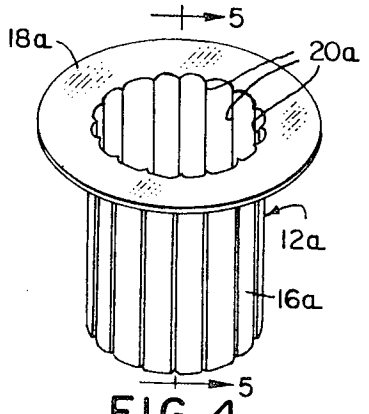


FIG. 4

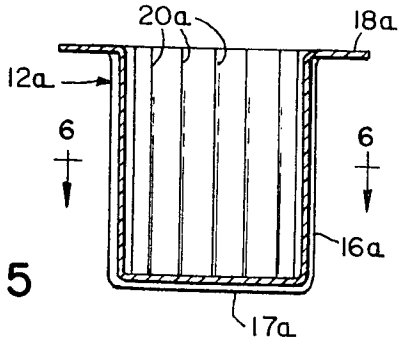


FIG. 5

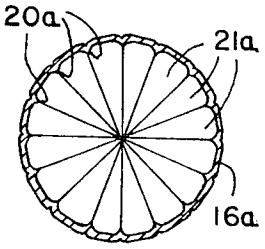


FIG. 6

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DISH FOR MIXING DENTURE REPAIR MATERIALS

BACKGROUND OF THE INVENTION

In the practice of dentistry, there are numerous occasions where various materials must be mixed, for example in the formation of artificial stone, plaster, and frequently in the mixing of denture repair material, say of the two-part type employing a plastic ingredient and a catalyst.

The quantities of such materials involved in a single mixing, as well as the weights and forces necessary to achieve a uniformity of mixing, all heretofore dictated the use of permanent, relatively staunch and durable containers. Of course, such containers involve considerable initial expense, in addition to repeated, time-consuming maintenance, as in cleaning, sterilizing, et cetera.

SUMMARY OF THE INVENTION

It is an important object of the present invention to provide a dish construction for mixing dental materials, such as denture repair materials, and the like, wherein relatively large quantities of material may be mixed at a single mixing, the dish construction having sufficient weight for stable location on a supporting surface during the mixing operation and permitting of optionally being held in the hand of a user, wherein maintenance and labor involved in cleaning and sterilization is substantially completely eliminated, and further wherein the mixing operation is effectively accelerated by enhanced agitation to achieve a uniform mixture more quickly and with less effort than heretofore possible.

It is a further object of the present invention to provide a dish construction of the type described wherein a relatively inexpensive receptacle is replaceably supported in a staunch and sturdy holder to provide a container for the mixing operation, which receptacle or container is extremely inexpensive for economic discard after a single use, and wherein the receptacle formation provides both rigidifying reinforcement enabling utilization of relatively light gauge sheet material, and simultaneously affords enhanced agitation in the mixing operation.

It is a further object of the present invention to provide a dish construction having the advantageous characteristics mentioned in the preceding paragraph, which is relatively simple for economy in manufacture, and wherein the permanent holder part is durable and reliable throughout a long useful life.

Other objects of the present invention will become apparent upon reading the following specification and referring to the accompanying drawings, which form a material part of this disclosure.

The invention accordingly consists in the features of construction, combinations of elements, and arrangements of parts, which will be exemplified in the construction hereinafter described, and of which the scope will be indicated by the appended claims.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is an exploded top perspective view showing a dish construction in accordance with the teachings of the present invention.

FIG. 2 is a vertical sectional elevational view showing the assembled dish construction of FIG. 1.

FIG. 3 is a horizontal sectional view taken generally along the line 3—3 of FIG. 2.

FIG. 4 is a top perspective view illustrating a slightly modified embodiment of disposable receptacle constructed in accordance with the teachings of the present invention.

FIG. 5 is a sectional elevational view taken generally along the line 5—5 of FIG. 4.

FIG. 6 is a horizontal sectional view taken generally along the line 6—6 of FIG. 5.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now more particularly to the drawings, and specifically to FIGS. 1–3 thereof, a dish construction is there generally designated **10**, and includes a relatively thick or heavy walled cylindrical holder **11** and a removable receptacle, cup or container, generally designated **12**.

The holder **11** is of an open ended tubular or cylindrical formation having a relatively thick wall **13** surrounding an open ended through bore **14**. In practice, the holder **11** may be advantageously formed of metal, say stainless steel, to achieve a substantial weight, and ease of sterility or cleanliness without corrosion. For stability on a horizontal supporting surface, such as a table, or the like, the cylindrical holder **11** may have its height or cylinder length of the same order of magnitude or approximately equal to its external diameter. These proportions also permit of convenient introduction of a stirring or agitating implement, as will appear presently.

The receptacle or container **12** includes a generally cylindrical side wall **16** configured for conforming engagement into the interior of the holder **11**, the external diameter of the side wall approximating the internal diameter of the holder. This condition is seen in FIG. **2**, wherein the receptacle side walls **16** extends downwardly or inwardly a substantial depth or distance into the holder **11**.

Extending across and in closing relation with respect to the lower end of the receptacle side wall **16** is a receptacle bottom wall **17** of generally circular outline configuration. That is, the receptacle bottom wall **17** extends entirely across the interior of the holder **11**, being adjacent to and spaced above the lower end thereof, see FIG. **2**.

Additionally, circumposed about and projecting radially outward from the upper or outer end of the receptacle side wall **16** is a supporting rim **18**. The supporting rim **18** is of a generally constant radial extent about its circumference, being approximately equal to the constant radial dimension of the holder wall **13**, so as to overlie and substantially completely cover the upper end surface of the holder wall. Thus, as seen in FIG. **2**, the supporting rim **18** seats on the upper end of the holder **11**, effectively covering the upper end of the holder, and thereby serves to support the receptacle side wall **16** and bottom wall **17** in position within the holder.

Formed in the receptacle side wall, extending longitudinally thereof, are a plurality of inwardly projecting ribs or creases, as at **20**, being shown for purposes of illustration in FIGS. **1–3** as being four in number, and equally spaced approximately 90° apart. Additionally, the bottom wall **17** is formed with radially or diametrically extending upward projections or ribs **21**, which may cross centrally of the bottom wall, each terminating at and merging with the lower end of opposite side wall ribs **20**.

In practice, the receptacle or container **12** is advantageously fabricated of relatively light gauge plastic, say thermoplastic sheet material, and may be heat formed from a flat sheet to the above-described and illustrated configuration. Of course, the receptacle **12** may be otherwise formed, say by injection molding, if desired.

However, a relatively light gauge wall thickness has been found satisfactory for use even in relatively large receptacles **12**, by reason of the substantial support afforded the receptacle by the holder **11**, and the further support and reinforcement afforded by the ribs **20** and **21**.

Not only do the ribs **20** and **21** reinforce and rigidify the receptacle **12**, but the ribs being internal projections within the receptacle serve to aid in the mixing operation by enhancing the intermixture of component parts and effectively increasing the mixing speed and assuring a high degree of uniformity of mixtures.

Where still additional structural reinforcement and/or mixture agitation is desired, the slightly modified embodiment of receptacle **12*a***, see FIGS. **4–6**, may be employed. It will there be seen that a generally cylindrical receptacle side wall **16*a*** has its lower end closed by a generally circular bottom wall

17*a*, and a radially outstanding rim or circumferential flange **18***a* extends about the upper or open end of the side wall **12***a*. As thus far described, the receptacle **12***a* may be essentially similar to the receptacle **12**, and may be suitably formed of an integral sheet of plastic material.

However, increased rigidity and mixture agitation may be obtained by the multitude of longitudinally extending, inwardly projecting ribs or creases **20***a* formed in the side wall **16***a*. Additionally, the bottom wall **17***a* may be formed with a multitude of diametral inwardly projecting ribs or creases **21***a* extending between lower ends of diametrically opposed side wall ribs **20***a*.

As the receptacles **12** and **12***a* are sufficiently economic to justify disposal after a single use, thereby eliminating the time previously required to maintain mixing receptacles sanitary, clean and sterile, the utilization of a plurality of agitating internal ribs may be employed to achieve a more rapid and more thoroughly intermixed material, without long and arduous cleanup time. Also, the ribbed formations permit of lighter or thinner receptacle walls, for greater economy of manufacture of the receptacles.

From the foregoing, it is seen that the present invention provides a dish construction for mixing dental materials which fully accomplishes its intended objects and is well adapted to meet practical conditions of manufacture and use.

Although the present invention has been described in some detail by way of illustration and example for purposes of clarity of understanding, it is understood that certain changes and modifications may be made within the spirit of the invention.

What is claimed is:

1. A mixing dish for mixing denture repair material comprising a thick walled relatively heavy open ended cylindrical holder of generally constant cross-sectional configuration throughout its length, and a disposable receptacle removably replaceable in said holder, said receptacle comprising a generally cylindrical side wall of generally constant cross-sectional configuration throughout its length, snugly frictionally engageable throughout its length in said holder extending inwardly from one end thereof, a generally circular bottom wall extending across and closing the inner end of said side wall, internal material agitating ribs on at least one of said side and bottom walls, and an annular supporting rim extending externally about the outer end of said side wall for seating engagement and substantially complete covering relation with said one holder end.

2. A dish according to claim **1**, said bottom and side walls and said supporting rim being integrally formed of stiff resilient plastic sheet material.

3. A dish according to claim **2**, said internal ribs being located on both said side and bottom walls.

4. A dish according to claim **1**, said bottom and side walls and said supporting rim all being integrally formed from a single sheet of resilient plastic material, and said ribs being defined by creases formed in said sheet.

5. A dish according to claim **1**, said ribs extending longitudinally of said side wall and radially of said bottom wall.

6. A dish according to claim **5**, said bottom and side walls and said supporting rim all being integrally fabricated from a single sheet of relatively thin plastic material, said ribs serving to rigidify and strengthen said sheet.

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