

[72] Inventors **Kay L. Ruggles;**
Dale B. Gunnerson; Howard S. Clark, Salt
Lake City, Utah
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[73] Assignee **American Standard, Inc.**
New York, N.Y.

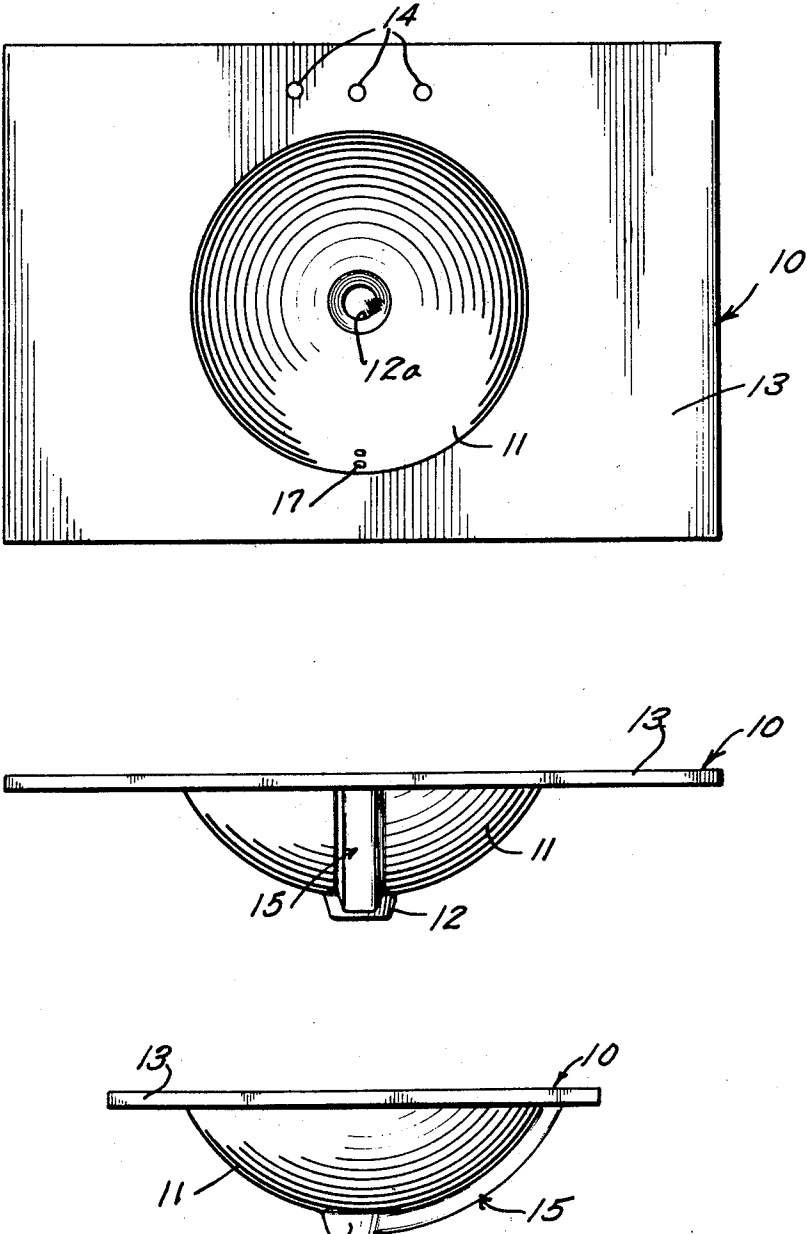
[54] **INTEGRAL LAVATORY BOWL AND VANITY TOP**
COMBINATION
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A47k 1/04
[50] Field of Search **4/166, 167,**
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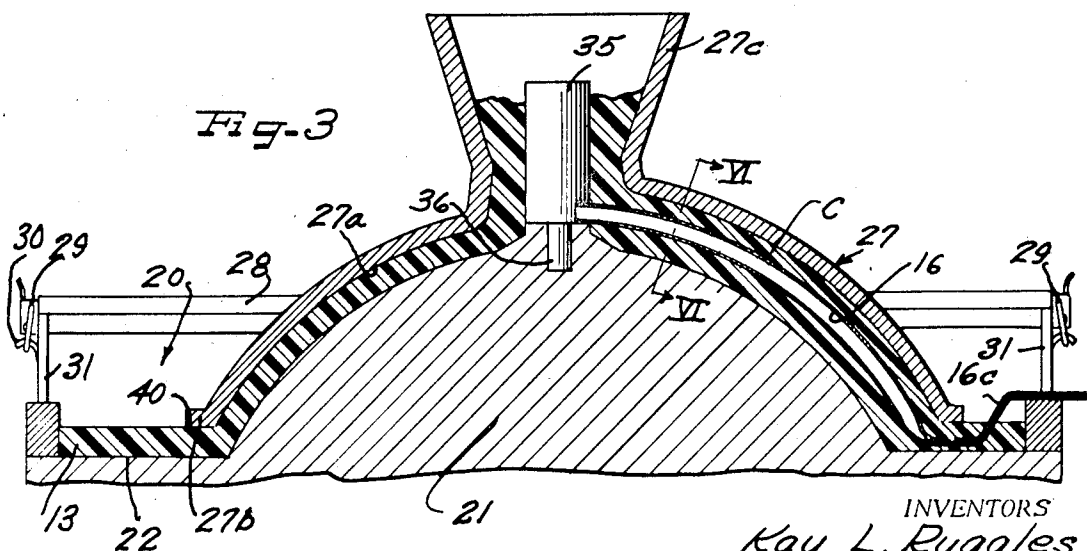
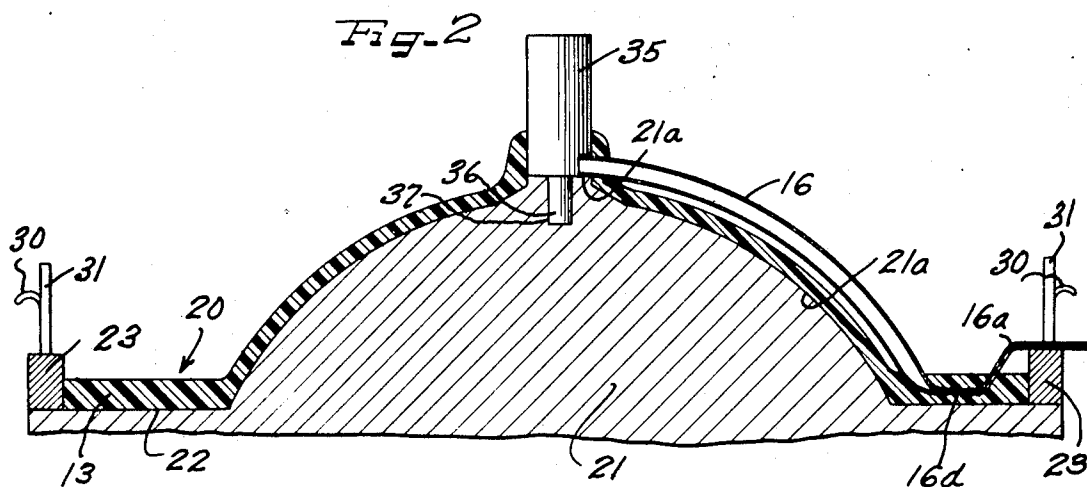
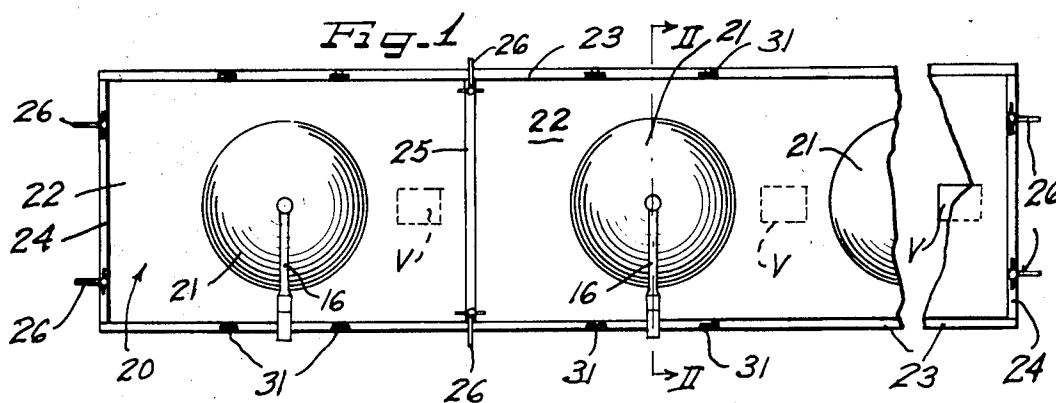
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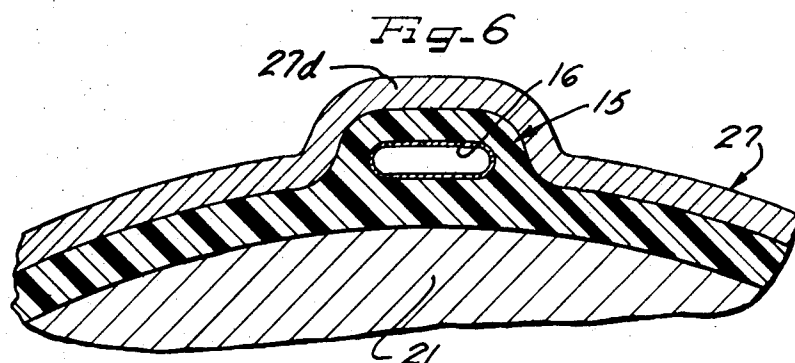
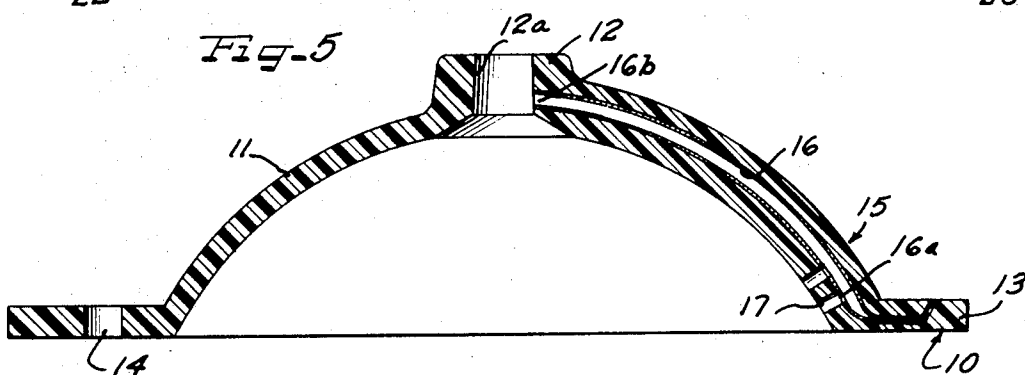
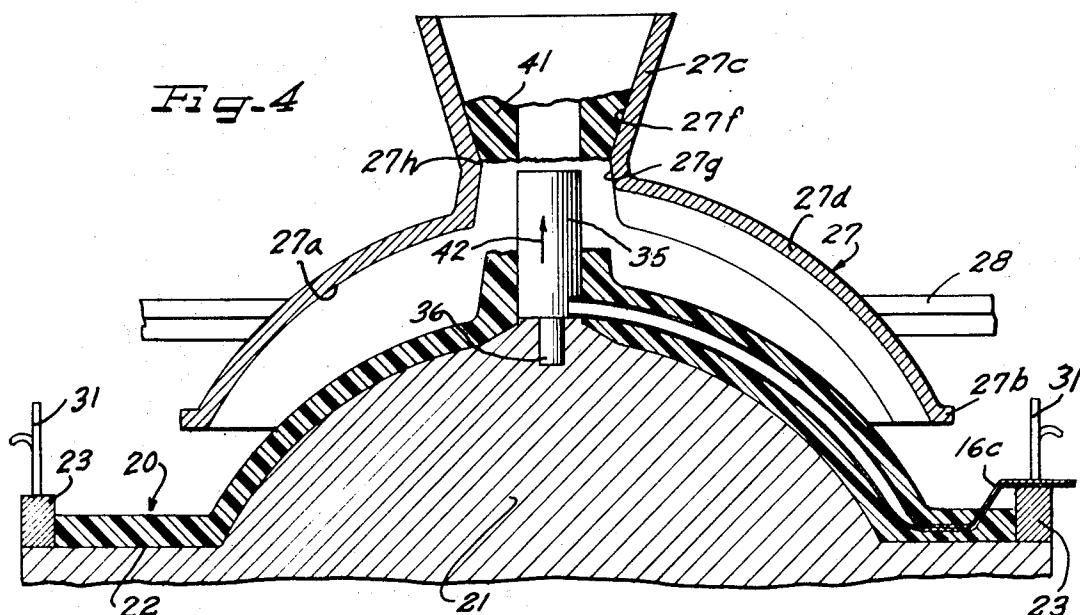
Primary Examiner—Laverne D. Geiger
Assistant Examiner—Henry K. Artis
Attorneys—Hill, Sherman, Meroni, Gross and Simpson,
Tennes I. Erstad and Robert G. Crooks

ABSTRACT: The Article of Manufacture comprises an integral lavatory bowl and vanity top combination of a thermosetting synthetic plastic composition, preferably of the polyester resin type, wherein the bowl area is integrally formed with the vanity top area. The bowl area may be provided with a preformed overflow tube which is embedded within the material of the sidewall of the bowl.





INVENTORS
 Kay L. Ruggles
 Dale B. Gunnerson
 Howard S. Clark
 ATTORNEYS



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 Howard S. Clark
 ATTORNEYS

Fig. 7

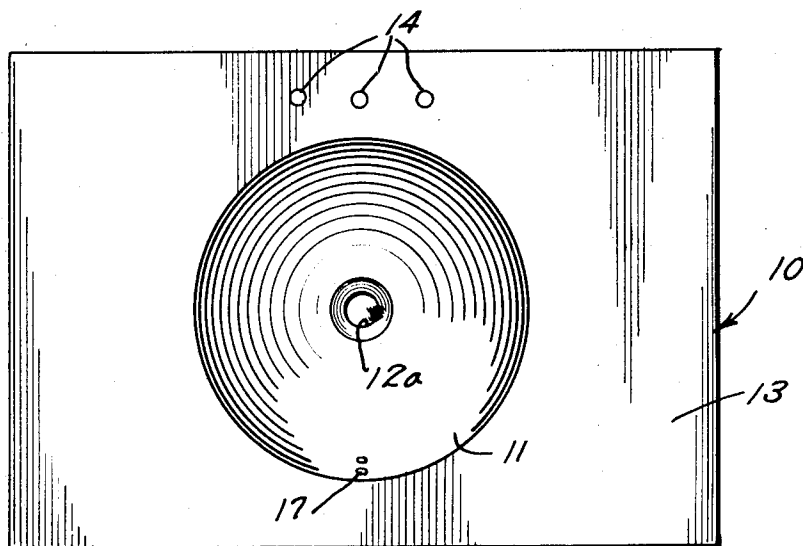


Fig. 8

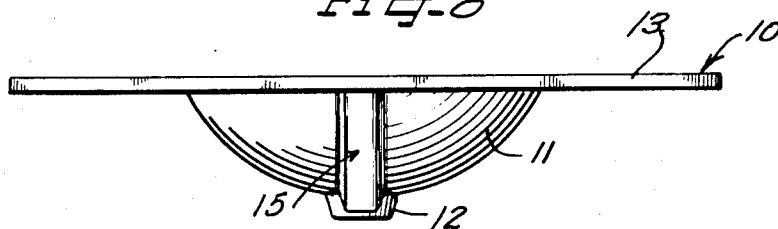
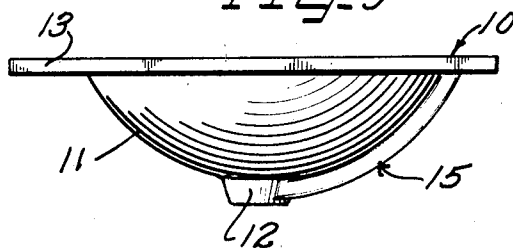


Fig. 9



INVENTORS
 Kay L. Ruggles
 Dale B. Gunnerson
 Howard S. Clark.
 ATTORNEYS

INTEGRAL LAVATORY BOWL AND VANITY TOP COMBINATION

A method of manufacturing a lavatory bowl and vanity top combination is disclosed in U.S. application Ser. No. 606,324, filed Dec. 30, 1966, now U.S. Pat. No. 3,433,860 and entitled: "Sink and Vanity Top Combination and Method and Apparatus for Manufacturing Same," of which this is a division.

BACKGROUND OF THE INVENTION

1. Field of Invention

The field of invention to which this disclosure is directed pertains to an integral sink and vanity top combination.

2. Description of the Prior Art

In the past, a number of different types of kitchen and bathroom sinks have been commercially marketed which have been of a metallic composition or of a ceramic composition. In the past, where resins have been used, the vanity top has been formed as a separate unit apart from the bowl, and attaching devices have been employed for mounting the bowls onto a countertop or vanity top. A large number of different systems have been utilized for attaching the bowl to the countertop, and it is well known that a great deal of difficulty has been encountered in an effort to develop a leakproof system of attachment of the bowl to the countertop of a type that can be conveniently installed and disassembled with a minimum of effort and expense.

SUMMARY OF THE INVENTION

An important object of this invention is to provide a new and improved integral sink and vanity top combination where the sink bowl is formed integral with the vanity top and wherein the overflow tube is embedded within a wall of the bowl area.

Still another feature of this invention is concerned with an integral sink and vanity top combination wherein a plurality of sink bowls may be formed in integral assembly with the vanity top thereby eliminating any requirement for attachment rings to join the bowl area with the vanity top.

Another object of this invention is to provide a sink and vanity top combination comprised of a new and improved composition that is resistant to stain, impact, abrasion, cigarette burns, and is nonabsorbent and generally impervious to normal abuse found in bathrooms.

Yet a further object of this invention is to provide a new and improved article of manufacture comprising a monolithic, seamless sink and vanity top combination.

Other objects and features of this invention will more fully become apparent in view of the following detailed description taken in conjunction with the accompanying drawings illustrating therein a single embodiment.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a fragmentary top plan view of an apparatus for the manufacture in integral sink and vanity top combinations;

FIG. 2 is a vertical section taken on the line II-II looking in the direction of the arrows, as seen in FIG. 1, only showing certain parts in elevation and illustrating a preliminary step in the formation of our method;

FIG. 3 is a vertical section similar to FIG. 2 only with the bonnet shown in assembly with a mold and illustrating a subsequent step of our invention;

FIG. 4 is an exploded view similar to FIG. 3 only illustrating the manner in which the bonnet is removed from the mold after the poured material has gelled;

FIG. 5 is a vertical section illustrating our integral sink and vanity top combination similar to FIG. 4 only illustrating the finished product;

FIG. 6 is an enlarged fragmentary vertical section taken substantially on the line VI-VI looking in the direction indicated by the arrows as seen in FIG. 3;

FIG. 7 is a top plan view of an integral sink and vanity top combination;

FIG. 8 is a front elevation of the combination; and

FIG. 9 is a side elevation of the combination.

DESCRIPTION OF ONE PREFERRED EMBODIMENT

Article of Manufacture

The reference numeral 10 indicates generally an integral sink and vanity top combination embodying certain important features of this invention. The combination includes a sink bowl area 11 having an outlet 12a defined by the sink bowl boss 12. Integral in one piece with the sink bowl area 11 is a vanity top 13 (see FIG. 5). At the rear side of the bowl are a series of openings 14 for the plumbing fixtures. Mounted on the front side of the bowl is an arcuate overflow tube area 15 having an arcuate overflow tube 16 (FIG. 5) embedded therein. This tube 16 is of an oval cross-sectional configuration and of an arcuate shape to follow the contour of the bowl. The sidewall of the bowl has an overflow outlet as indicated at 17 in communication with an opening 16a in the overflow tube to permit fluids to be drained through the overflow outlet 17 and then discharged through a lower end 16b of the overflow tube which is in communication with sink outlet 12a.

Method and Apparatus for Manufacture of Monolithic Sink and Vanity Top Combinations

As illustrated in FIG. 1, the apparatus for manufacture of the combination 10 includes a lower bonnet 20 having a female mold surface 21 of an inverted sink bowl with a large, smooth tabletop mold surface 22. As shown, the tabletop 22 has fixed longitudinal dikes or strips 23 that extend the length thereof. Also, at opposite ends of the tabletop are a pair of transverse dikes or strips 24 which cooperate with the longitudinal strips 23 to contain any material poured onto the mold area. Intermediate of the transverse strips are a series of polished metal transverse bars 25 which are movable longitudinally along the length of the tabletop 22 to permit vanity tops to be poured having variable longitudinal dimensions. These bars are adjustable by releasing C-clamps 26 at opposite ends thereof and moving the bars 25 longitudinally to adjusted positions and then securing bars 25 by means of the C-clamps 26. The height of the dikes and bars, as illustrated, corresponds to the thickness of the vanity top 13. In addition to the lower fixed bonnet 20, the mold apparatus includes a generally hemispherical upper bonnet 27 that is used as a mold that determines the backside surface of the sink mold. The thickness of the bowls is the measure of the cavity between the bowls when the upper bonnet 27 is aligned and clamped with the lower bonnet 20. In order to mount the upper bonnet with respect to the lower bonnet, the upper bonnet is provided with upper bonnet mounting bars 28-28. The opposite ends of the bars 28-28 are provided with buckle-type clamps 29 which are cooperable with hooks 30 that are supported on mounting posts 31 supported on the longitudinal strips 23.

In the process of manufacture of integral sink and vanity top combinations the end casting bars 24-24 are placed on the table 22 and the bars 25 are positioned at intervals corresponding to the desired lengths of the vanity tops. The ends of the bars 24 and the transverse bars 25 are squared in relation to the dikes or strips 23 in production of the combinations like those illustrated, although it will be appreciated the vanity top may be irregularly shaped at its perimeter if an irregularly shaped countertop is desired. The transverse bars and strips 24 and 25 are then clamped to the tabletop to hold them in adjusted position. The bonnet surface 21, the table top surface 22 and upper bonnet inner surface 27a are then cleaned, waxed and sprayed with a release agent. The bowl mold area 21 and tabletop area 22 are then gel-coated.

The overflow tube 16 is provided for disposition on the fixed bonnet 21 and when mounted is supported on fixed bonnet ledge 21a at a radially inner end of the tube 16. A drain outlet forming plug 35 is provided for securement on the fixed bonnet at the area of the ledge 21a and held in position by means of a pin 36 as its lower end which extends into a socket 37. In assembly the pin 36 is disposed beneath the ledge 21a of the fixed bonnet 21. The weight of the outlet forming plug 35

bears against a radially inner end of the tube 16 to cooperate with the ledge 21a in resisting separation of the overflow tube. It will be noted that the overflow tube 16 has an angular hook-shaped tip end 16c engaged on longitudinal bar 23 which supports the radially outer end of the overflow tube 16 in spaced relation to the tabletop mold surface 22 and in spaced relationship to the exterior surface 21a of the fixed bonnet 21. As indicated at the right side of FIG. 1, the lower bonnet 20 has a pair of female mold surfaces 21 for forming a pair of sink bowls 11 on a single vanity top 13. Two or more of these bowls can be formed on a single vanity top 13 by removing one or more of the transverse bars 25, when desired, depending on the number of bowls desired on the vanity top.

Prior to the securing of the overflow tube 16 on the fixed bonnet 21, the molding mix is then prepared, as later described herein, and then poured over the mold area 21 and the tabletop mold area 22. This pour can be made along the entire length of the tabletop or lower mold 20 so that a plurality of sink and vanity top combinations can be contemporaneously poured. After the material is poured and while the material is in liquid form, the overflow tube 16 is mounted on the fixed bonnet 21, as above described, and tube section or radially outer end portion 16d of the hooked end 16c is pushed into the mix and embedded within the material, thereby locking the outer end of the tube in a fixed position upon gelling of the mix comprising the initial pour. The material poured over the bowl mold area will remain on the bowl surface to the thickness of only one-eighth inch to three-sixteenth inch while the tabletop mold area 22 may be poured to a depth of three-fourths inch, as desired. The first mix is then allowed to gel until firm for no more than 30-40 minutes. As the mix is allowed to become firm the table is vibrated by vibrator V until the mix is gelled. The upper bonnet 27 is clamped over the fixed bonnet 21 before the mix is gelled and is held in position by the clamps 29. In the placement of the upper bonnet over the fixed bonnet, it should be noted that the upper bonnet has an arcuate section 27d which is provided for the purpose of enabling the overflow tube 16 to be embedded in the sidewall of the sink and that this arcuate section is bulged in a direction away from the fixed bonnet. As the upper bonnet 27 is mounted over the fixed bonnet 21, the arcuate section 27d must be properly aligned in overlying spaced relation with respect to the overflow tube 16. It will be noted that when the upper bonnet 27 is mounted in position for the final pour, its outer bonnet rim 27b is seated on the top side of the tabletop material previously poured, as indicated at 40. In order to obtain a seal between the upper bonnet rim 27b with the material previously poured at 40, the upper bonnet should be clamped in position while the mix comprising the initial pour is in a liquid state before it becomes tacky so that a seal may be established between the outer rim 27b of the bonnet 27 at 40 to prevent the mixture comprising the second pour from escaping at the outer rim juncture of the upper bonnet 27 at 40. A measured second mix is then poured into a funnel 27c and a cavity C between the fixed and upper bonnets 21 and 27 is then filled with the second mix. The vibrator V is operated to settle the mix in the cavity C. The vibrator may be of any suitable type.

The material comprising the first and second mixes is then allowed to cure for a minimum of 3 to 4 hours, and overhead heaters can be utilized to accelerate the hardening process. Once the combination 10 has been fully cured, the upper bonnet 27 is unclamped and removed from the tabletop, as shown in FIG. 4. Due to the angular configuration of the funnel surfaces, as indicated at 27f and 27g, any excess material at the outlet of the sink bowl above the neck 27e may be removed by scalpel to curing by a suitable scalpel or may be broken free and removed with the upper bonnet 27. This excess material is indicated generally at 41 in FIG. 4. It will be noted that the internal funnel surface 27f has a larger diameter at an upper end of the funnel as opposed to its lower end and that the upper end of inner funnel surface 27g has a smaller diameter at its juncture 27h with funnel surface 27f than at its lower end. In

view of the shape of these inner funnel surfaces 27f and 27g, the excess material 41 readily removed by a scalpel prior to curing to facilitate its generally being broken at the juncture of the inner funnel surfaces, as indicated at 27h.

In order to remove the formed combination from the tabletop the end casting bars 24 are detached from the table. Since there is some tendency for the formed combination to stick to the table, the angular end 16c of the overflow tubes 16 may be used as pull tabs to cause the combination to be lifted and detached from the tabletop. At the time the combination is removed from the mold, the outlet forming plug 35 remains integral with the thus formed part and may be freed therefrom by striking the pin end 36 of the plug and causing the plug to be moved in a direction indicated by the arrow 42, as shown in FIG. 4. After the combination has been removed from the mold, it is finished by grinding any excess material from the outlet boss 12. The angular end 16c of the overflow tube is cut off. The overflow holes 17 and 16a are then bored, as shown in FIG. 5. Still further, the drain outlet 12a is also bored to cut off the inner end of the overflow tube that projects into the drain outlet.

Formulations for Filled Polyester Mix Used In Integral Sink and Vanity Combinations

In connection with the mixtures used in the first and second pours previously described, it will be appreciated that the same mixture can be used throughout, if desired. In other words, both pours can be of a solid color mix or both pours can be made of a marble mix, if desired. Preferably, however, the first pour is made with a marble mix which includes pigments for creating a desired marbled effect in the upper surface of the vanity top. Various types of pigments may be used to achieve different pigmented effects in the upper surface of the vanity top. Listed below are three different mixes which can be used with excellent results, depending on the type of product or combination to be produced.

	Percent
I. Marble mix for first and second pours:	
a. Base mix:	
1. Polyester, epoxy or other thermosetting resin.....	30-35
2. 140-150 mesh ground silica flour.....	20-35
3. Onyx sand fines, 150 to 10 mesh random selection.....	25-30
4. Colloidal silica (thixotropic agent).....	.2
5. Inorganic pigment.....	4-6
b. Marble veining mix:	
1. Polyester, epoxy or other thermosetting resin.....	30
2. Onyx sand fines, 150 to 10 mesh random selection.....	60
3. Inorganic pigment.....	10
II. Solid color mix for first and second pours:	
a. Polyester, epoxy or other thermosetting resin.....	30-35
b. 60 mesh silica sand.....	20-35
c. 140-150 mesh ground silica flour.....	20-35
d. Colloidal silica thixotropic agent.....	.2
e. Inorganic pigment.....	4-6
III. Aggregate mix for first and second pours:	
a. Polyester, epoxy or other thermosetting resin.....	30-35
b. Natural colored aggregate #0 size to 16 mesh.....	20-35
c. 140 mesh ground silica.....	20-35
d. Colloidal silica thixotropic agent.....	.2-.5
e. Inorganic pigment.....	

The features of the above formulations are:

1. Improved physical properties of the cast material through the use of silica fillers.
2. Stain moisture resistance is excellent as silica is nonabsorbent and inert.
3. Heat resistance (cigarette burns) is increased through using silica which acts somewhat as a heat-sink and is inert.

Typical physical properties are:

Tensile 1,500 p.s.i.
 Compression 13,000 p.s.i.
 Hardness 55-60 Barcol
 Abrasion Resistance 1.93 g. w/H18 wheel

The use of various meshes of filler allows proper stacking of the aggregate to reduce settling or classification due to mold vibration. The colloidal silica is used as an additive also to prevent settling. Settling is not desired as it will unbalance the

cast material, i.e., the lower surface will have a different density than the upper surface. This will also change the resin content through the strata of the casting. As resin shrinks 5—7 percent during cure, any change of resin content through the casting will cause differential forces to be present during cure. This will result in the part being warped unless restrained either by a matched mold or fixtures or through the shape of the part itself, i.e., two-way curvature.

The use of heavier aggregate in the marble mixture tends to break up the marble veining into a more decorative effect and approaches a natural look.

The top surface of the vanity can be made to simulate marble, travertine, slate or other natural textures by the use of different types of so-called veining mixture.

There is considerable advantage, from one standpoint of increasing the production rate of sink and vanity top combinations, in providing a fixed lower bonnet table which may be 30 to 40 feet long having a series of inverted bowl mold areas thereon supported by the transversely spaced bars 25 so that a series of sink and vanity top combinations can be contemporaneously formed. By practicing our method, it is no longer necessary for the mixtures comprising the first and second pours to be individually mixed for each sink and vanity combination. The disclosed molds enable 10 or more sink and vanity combinations to be contemporaneously formed, as desired.

One of the important advantages and features of the method here disclosed relates to our discovery that when the first and second pours of material are made in the manner described and where the second pour is applied to the first pour after the first pour becomes tacky, a complete bonding of the two pours occurs so that a single homogeneous combining of the materials of the first and second pours occurs. On examination of the finished product it is found that the materials of the first and second pours have completely merged together so that the resulting product is free of laminations and comprises a single layer of material. It has been found that the one-layered combination is not only attractive in appearance but also has great strength, thus enabling the product to be well adapted for use in its intended manner.

Although minor modifications might be suggested by those versed in the art, it should be understood that we wish to embody within the scope of the patent warranted hereon, all such

modifications as reasonably and properly come within the scope of our contribution to the art.

We claim:

1. As an article of manufacture, an integral sink and vanity top combination, the combination including
 - a bowl area having a bowl outlet and a vanity top area integral with the bowl area about its perimeter, the combination being comprised of a polyester resin, and an overflow tube embedded in a sidewall of the bowl area, the sidewall having an overflow drain in communication with an upper end of the overflow tube with the lower end of the overflow tube being in communication with the bowl outlet.
2. The article of manufacture of claim 1 further defined by a sidewall having a thickened sidewall area with the overflow tube embedded therein and by said combination being comprised of a substantially homogeneous mass of polyester resin and with the mass comprising a single layer of material.
3. The article of manufacture of claim 1 further defined by the overflow tube having its radially outer end embedded in the vanity top area of the combination.
4. The combination of claim 1 further defined by the bowl area having a thickened boss on its bottom side defining the bowl outlet and with the overflow tube having its radially inner end projected into the boss in communication with the drain outlet.
5. As an article of manufacture, an integral sink and vanity top combination having a plurality of bowl areas all being integral with the vanity top area, the combination including
 - each bowl area having a bowl outlet and a vanity top area integral with the bowl area about its perimeter, the combination being comprised of a polyester resin, and overflow tubes embedded in sidewalls of the bowl areas, the sidewall areas having overflow drains in communication with the overflow tubes with the lower ends of the overflow tubes being in communication with the bowl outlets.
6. As an article of manufacture, a lavatory bowl, a waste outlet formed in the bottom thereof, a vanity top integral with said bowl, the combination being composed of the group comprising polyester resins having a base mix, a marble veining mix, striations of solid color pigment and a filler composed of a member of the group comprising silica.

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