

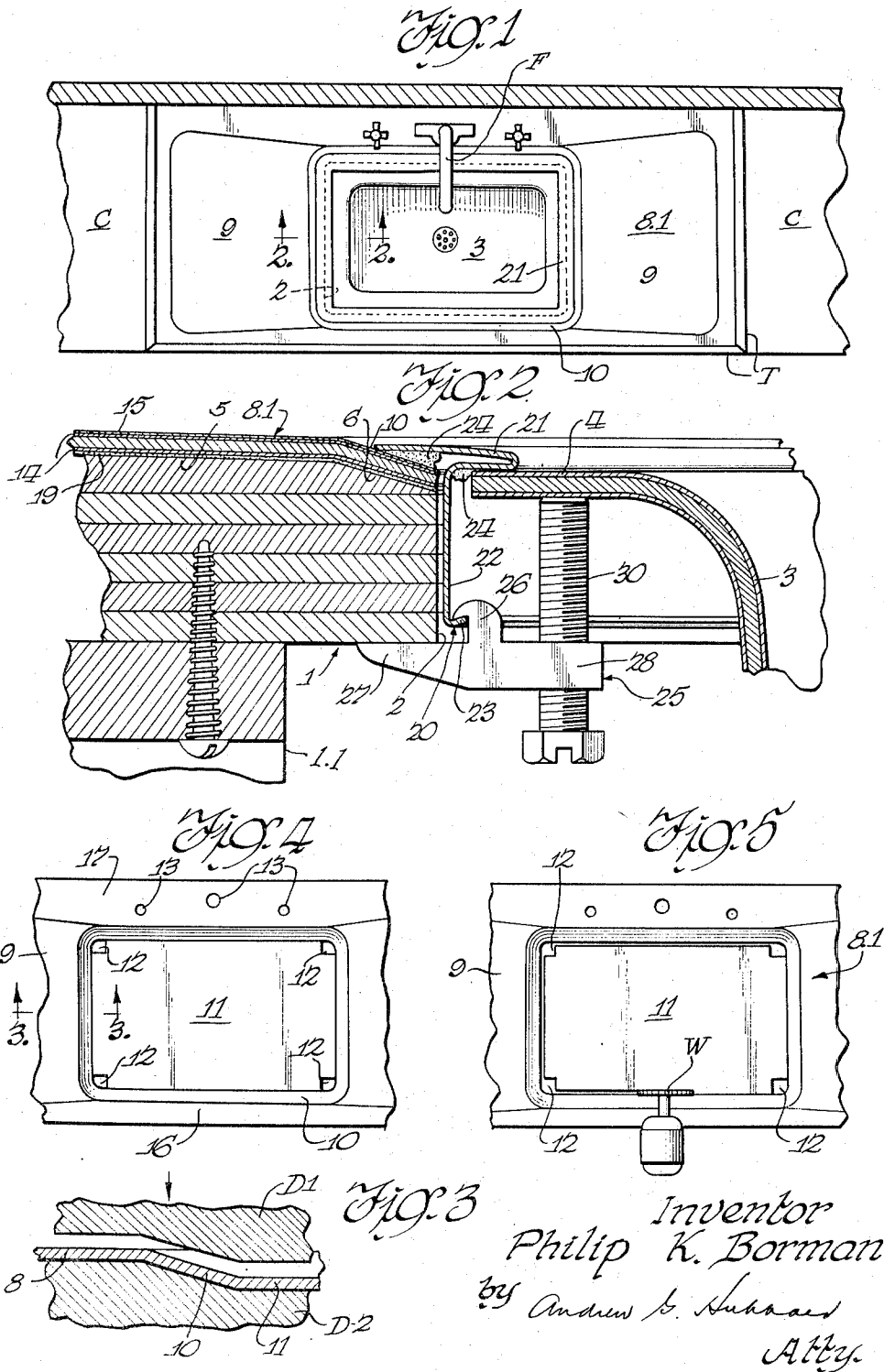
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METHOD OF MANUFACTURING COMPOSITE SINK TOPS

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METHOD OF MANUFACTURING COMPOSITE SINK TOPS

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2 Claims. (Cl. 29-458)

This invention relates to an improved vitreous enamelled sink top and to the method of manufacturing the same.

It is becoming increasingly popular in residence construction to provide "built-in" sinks and lavatories; that is to say, to set the sink bowl or basin into a recess provided for it in a counter top. This permits an installation in which the counter top finish may be harmonious with the decorative treatment of the room. A disadvantage of present arrangements resides in the fact that the rim of the mounting flange which is used to support the sink bowl and close the gap between the bowl and counter top inevitably projects above the adjacent counter top area and prevents the complete drainage of liquid into the sink bowl. It is necessary for the user to wipe up the liquid on the counter top; for unless this is done, the seepage of water below the rim may cause damage to the surfacing material of the counter top or to the wood or other base material of the top. A vitrified metal surface in which the vitreous enamel is of proper composition is proof against attack by almost any household liquid, and it has heretofore been proposed that the wood or other non-metallic base panels be surfaced with vitreous enamelled sheets. Even with the use of vitreous enamelled metal sheets, however, the upstanding ridge or rim of the sink mounting structure has prevented the complete drainage from the counter top into the sink bowl, and although there is little danger of deterioration of the surfacing by water or other bland liquids, acid or alkaline liquids may, by remaining in contact with the surface for an appreciable time, damage the enamelled surface or the adjacent flange material.

It is therefore an object of the invention to provide a method of making a sink top having a thin, rigidly supported vitrified metal surface in which the area engaged by the mounting flange slopes downwardly to place the upper surface of the mounting flange below the remainder of the sink top, and thus insure drainage into the sink bowl.

It is another object of the invention to provide a method of manufacturing the vitreous enamelled sheet metal surfacing for such sink tops expeditiously and with a minimum of rejects from warping or other damage resulting from the firing operation.

In practicing the invention, the sheet metal, usually enamelling grade iron, is embossed to form a depressed area representative of the eventual opening within which the sink bowl is to be inserted, and the marginal areas about said embossed portion are sloped at a desired angle to provide the drainage facility while nevertheless insuring secure engagement by the mounting flange. The sink bowl opening is cut out after the enamel firing operation. The cut-out may be done either before or after the sink bowl opening is mounted on a suitably

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configured base panel and cemented or otherwise secured thereto. It will thus be seen that the sheet remains a strong, self-supporting and warp-resistant structure during all stages of vitreous enamelling, and it is possible to provide the desired angle of drainage slope without the danger of cracking the vitreous enamel coating.

Other features and advantages of the invention will be apparent from the following detailed description of a presently preferred embodiment thereof, read in connection with the accompanying drawing in which:

Fig. 1 is a plan view of a completely assembled sink embodying the invention;

Fig. 2 is a sectional elevation taken on lines 2-2 of Fig. 1;

Fig. 3 is a somewhat schematic representation showing the method of embossing the enamelling iron in a press;

Fig. 4 is a plan view of the embossed sheet prior to enamelling; and

Fig. 5 indicates a method of cutting out the sink bowl area following the enamelling of the base metal sheet.

A sink top constructed according to the invention comprises a non-metallic base panel 1, usually of plywood. Said panel will eventually comprise the upper member of a counter-height cabinet construction having any appropriate sub-framing or sub-structure 1.1. It is presumed that such sub-framing may form a part of, or be otherwise associated with, counter-height cabinets C which may be located on either or both sides of the sink top. Said last-named cabinets are presumed to be of conventional construction in all respects.

The base panel 1 must have sufficient rigidity to withstand the loads normally imposed on a counter in a kitchen or bathroom, or other locations, and it is usual to use three-quarter inch thick plywood for the purpose. The panel 1 is formed with an opening 2 of suitable shape and size to receive the sink 3. It will be understood that the sink may be of any desired shape in plan and in elevation; the illustrated rectangular plan shape is by way of example only. It is contemplated, however, that the sink will have a peripheral flange 4 which will reach to the margin of the opening 2 with relatively small clearance, as later described. As clearly appears in Fig. 2, the upper face of the flange 4 is below the surface 5 of the base panel 1 and said panel is chamfered as at 6, to provide a boundary area of the opening 2 which slopes downwardly toward the opening on all sides. A chamfered area approximately three-eighths of an inch wide, having a slope of not substantially less than 15° or more than 20° from the horizontal, gives proper drainage and adequate support for the sink mounting means as later described. If desired, and as illustrated in Figs. 1 and 2, the area of the plywood base extending on each side of the sink opening may be given a three to five degree slope toward the chamfer 6 to provide drainage areas 9 in the ultimate sink top.

The present invention provides for surfacing the base panel 1 with a vitreous enamelled metal sheet, which will give to custom built sinks—that is to say, sinks which are made a part of kitchen or bathroom base cabinet construction—all of the advantages of the conventional vitreous enamelled sink top.

In practicing this aspect of the invention, a relatively thin sheet 8 of metal, such as good grade enamelling iron, is cut to the length, width and other dimensional or shape factors of the base panel 1. It is then embossed between the upper and lower die elements D1, D2 of a press, or otherwise mechanically acted upon to provide an embossed section characterized by major areas 9,

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having the slope area and shape of the ultimate drainage areas of the completed sink top; the boundary areas 10 having the slope, area, shape, and relative position of the chamfered portions 6 of the base panel; and the area 11 within the boundary areas 10, said area 11 being ultimately removed to accommodate the sink bowl, as presently described. At the time of forming the emboss, or at any other time prior to the enamelling operation, the area 11 is pierced at its corners to provide the substantially D-shaped openings 12, and also to provide any openings 13 which may be necessary to accommodate a faucet F and its associated control valves.

The sheet 8 is then vitreous enamelled, pursuant to conventional enamelling techniques. There may be, for example, a standard ground coat 14 (Fig. 2) on the upper and lower surfaces of the sheet and a finish coat 15 on the upper surface only. Said finish coat may be in white or any other desired color, and it is preferably of the acid resistant type, now well known in the art.

The enamelled sheet 8.1 is now available for the removal of the central area 11. The removal of this area is done after the enamelling operation is complete, rather than before, in order to reduce to the degree of substantial elimination, warpage of the sheet during the firing operation. By leaving the sheet 8 as a whole, except for the comparatively small openings 12 and 13, the coated sheet may be fired in any conventional manner. The sheet 8 is at maximum strength, and the embossed areas 10 and 11 make the sheet especially rigid in the precise areas in which it would be detrimental to have warpage. On the other hand, if the central area 11 were removed before firing, the relatively narrow and weak front and rear portions 16 and 17 of sheet 8 would constitute certain warpage areas, because they would be incapable of adequately resisting the strains incident to the high temperature firing operation. It would be impossible to restore the warped sheet to the condition required for mounting on the base panel.

The enamelled sheet 8.1 may be adhesively applied to the base panel 1 either before or after the removal of the central area 11. Because of the relatively weak areas 16 and 17 above noted, obvious advantages accrue when the sheet is handled while it is still in its strongest form. Assuming that the sheet is to be applied while the center portion remains intact, the upper surface of the base panel 1 is given a coating 19 of a suitable cement; for example, a phenol-resorcinol which, as is well known, will set at room temperature, and under moderate pressure. The vitreous enamelled sheet is laid upon the prepared base panel and the composite structure placed in a press, which may be similar to that in which the sheet 8 was embossed. The structure remains under pressure therein until the sheet 8.1 has become securely bonded to the base panel. The assembled sheet and base panel structure is then removed from the press and the section 11 cut out by passing a suitable motor-driven cutting wheel W along the base of the bevelled portion 10, running a line between the D-shaped openings 12, as schematically shown in Fig. 5. The composite top may then be sent to a cabinet manufacturer, or to the site of the kitchen or bathroom construction.

In preparation for installing the sink bowl, the raw edges of the wood panel about the opening may be sealed with varnish or the like, and a preformed mounting 20 installed in the opening. The mounting, as such, is not a part of the present invention. It may be, for example, of the type manufactured and sold by the Briggs Manufacturing Company, of Detroit, Michigan, under the trademark "Perm-O-Seal." Such mountings comprise a rust-resistant metallic structure formed to have a cap 21, a web 22, and bottom hook or flange 23. By butt-welding techniques, the mounting has the appearance and effect of an uninterrupted jointless structure which completely encircles the opening in the composite top. A suitable mastic or calking compound 24 is buttered into

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the portion of the mounting which overlies the surface 10 of the vitreous enamelled sheet and also the portion which will overlie the sink flange 4 as shown in Fig. 2. The mounting is then set into the opening and the entire top structure turned over and suitably supported, whereupon the inverted sink bowl is placed in position. There are then applied a plurality of rigid fastening clamps 25 about the mounting; usually two fastening clamps are placed at each corner and others are equidistantly spaced about the opening. Each clamp includes a hook portion 26 which engages the flange 23, a lug 27 which projects beneath the underside of the panel 1, and a threaded barrel 28 which receives a screw 30. It will be apparent that as the screws 30 are made up, the mounting 20 will be tightened against the top panel and the sink securely supported. The assembled sink and panel may then be positioned on and secured to the cabinet sub-frame. The usual edge-trim T may be applied at any convenient later time.

It will be noted from Fig. 2 that the width and slope of the chamfer 6 of panel 1 and the associated bevelled area 10 of sheet 8.1 places the mounting flange cap 21 below the areas 9, 16, and 17 of said sheet, and that the slope of the bevelled area will produce as the bolts 30 are tightened against the sink flange 4, a slight distortion of the cap to eliminate the usual slight crown of the cap and make the cap itself an effective part of the sink drainage area. A slope substantially less than 15° would be ineffective for this purpose, and a slope greater than 20° would impose too much strain on the cap 21 as the bolts are made up. The specified width and range of slope of the bevelled area 10 provides a very satisfactory balance between flexibility and rigidity which is advantageous in the embossing, firing, and final application operations.

While there has been described what is at present considered to be the preferred embodiment of the invention, it will be understood that various modifications may be made therein, and it is intended to cover in the appended claims all such modifications as fall within the true spirit and scope of the invention.

I claim:

1. The method of manufacturing composite sink tops, which includes the steps of forming a non-metallic, rigid base panel with an opening to receive a sink bowl and chamfering the portion of said panel bounding said opening to provide a wall portion sloping toward said opening at an angle of from 15° to 20° from the horizontal, forming a relatively thin metallic sheet having a shape and area equal to that of the base panel with a substantially imperforate depressed portion characterized by a continuous, downwardly sloping, strip equal in area and identical in shape to said chamfered portion of said base panel, vitreous enamelling said metallic sheet throughout its entire area, adhesively securing the vitreous enamelled metallic sheet in intimate relation to the upper surface of said base panel with the downwardly sloping strip portion of said metallic sheet in contact with and adhesively secured to the chamfered portion of said base panel, and, finally, removing the area of said metallic sheet defined by the edge of the sink-bowl receiving opening of said base panel.

2. The method of making composite sink tops, which includes the steps of forming a non-metallic, rigid, base panel with an opening to receive a sink bowl and chamfering the portion of said panel bounding said opening to provide a relatively narrow marginal wall portion sloping toward said opening at an angle of from 15° to 20° from the horizontal, forming a relatively thin metallic sheet having a shape like that of the base panel and an area at least equal thereto, said base panel, further, having a depressed portion equal in area and shape to that of the opening in said base panel and substantially the entire area of said depressed portion being imperforate, the marginal edge portions of said depressed portion having exactly the same slope, area, and contour of the

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chamfered portion of said base panel, vitreous enamelling said metallic sheet throughout at least the area corresponding to that of the base panel, removing said depressed portion along the marginal portions thereof to provide a sink receiving opening substantially identical to the base panel opening, and adhesively securing said vitreous enamelled metallic sheet to said base panel over the entire mating area thereof.

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