July 31, 1962 H. A. HOLBERSON 3,046,569

RIMLESS MOUNTING FOR SHEET STEEL ENAMELED SINKS, LAVATORIES AND THE LIKE

Filed July 25, 1961

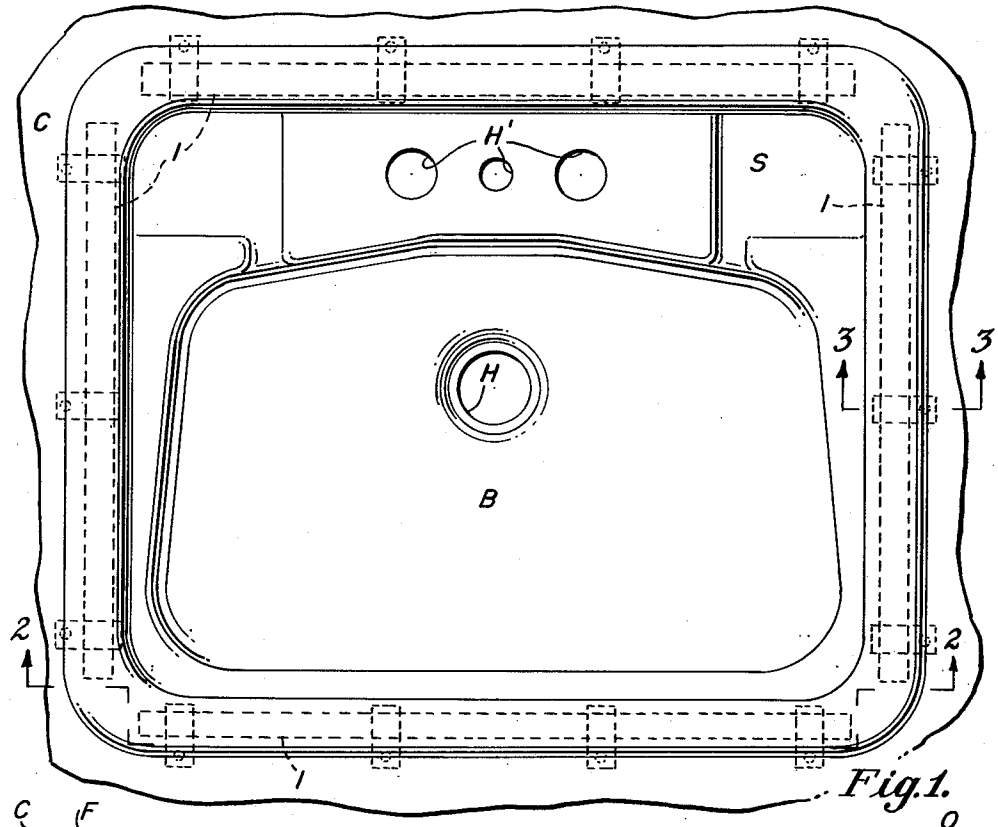


Fig. 1.

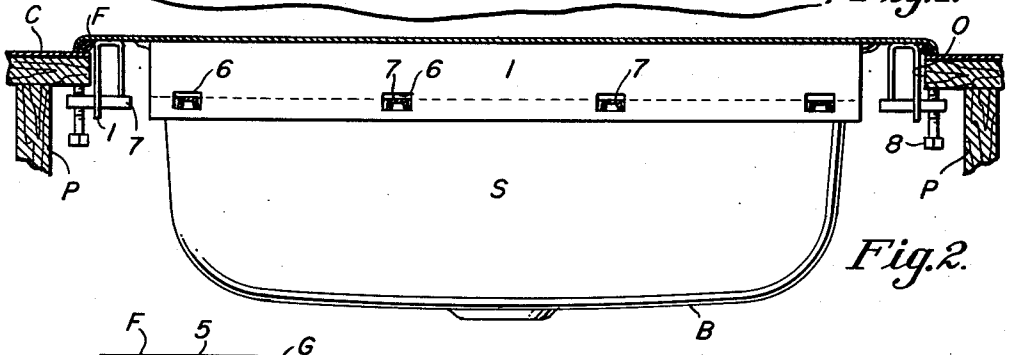


Fig. 2.

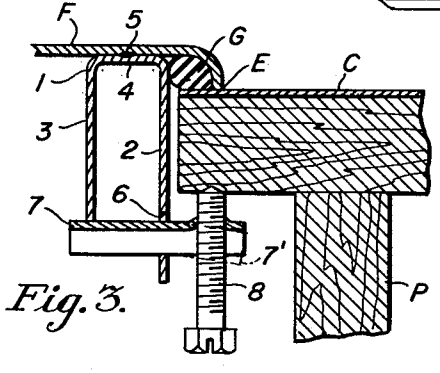


Fig. 3.

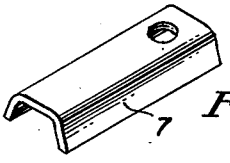


Fig. 4.

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United States Patent Office 3,046,569 Patented July 31, 1962

3,046,569

RIMLESS MOUNTING FOR SHEET STEEL ENAMELED SINKS, LAVATORIES AND THE LIKE

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Filed July 25, 1961, Ser. No. 126,544
5 Claims. (Cl. 4—187)

This invention relates to mountings for sinks, lavatories and the like and is particularly directed to improved means for mounting articles of that type which are made from sheet steel coated with vitreous enamel.

Enameled sheet steel sinks and lavatories, herein generically designated sinks, possess many advantages over cast iron ones formerly widely used but because of the brittleness of their vitreous enamel coatings they must be handled carefully and mounted in such way as to avoid flexing of the metal base beneath the coating thereby causing the coating to crack, spall or chip off.

Formerly when mounting such sinks in a table, counter top or the like it was customary to use a metal mounting strip or rim adapted to overlie the peripheral edge of the sink and the counter surface adjacent to it and clamps or other devices engaging the under side of the counter to hold the rim to it and to the sink and hence the latter in fixed position in the counter opening provided for it.

More recently, however, a demand has developed for flanged enameled sinks having downwardly curved peripheral edges which present an attractive finish and bear directly against the counter or against a gasket or other caulking material interposed between the sink flange edges and counter, thus doing away with a mounting rim overlying the said edges. It has been difficult, however, prior to the present invention to secure such a sink in the counter opening provided for it without risk of damage to the vitreous enamel coating, since available clamps is set up tightly enough to insure a water impermeable joint between the curved peripheral edge of the sink and the counter tend to cause localized flexing of the base metal with resultant cracking, spalling or chipping of the vitreous coating.

Moreover the strains induced in the metal during its formation from a flat sheet into the desired ultimate shape tend to make the bowl-surrounding flange and particularly its peripheral edge uneven, a condition frequently accentuated by the heat requisite during application of the vitreous coating, with the result that it is difficult if not impossible to effect a snug fit between said edge and the counter since with such sinks it is of course not feasible to compensate by local bending or distortion either before or during installation for lack of straightness in the flanges.

It is therefore a principle object of the present invention to provide means for removably mounting a vitreous enameled sheet metal sink or the like to a counter or other horizontal support in an opening in which it is recessed yet without material risk of localized flexing of the metal of the sink and resultant injury to its coating while insuring a water impermeable joint between its edge and the counter.

A further object is to provide mounting means of the above character especially adapted for use in situations in which, because of obstructing structures or other reason, installation space is limited and the use of some types of securing means thereby rendered extremely difficult if not impossible.

A still further object is to preserve the straightness of the peripheral edges of the flanges of porcelain-on-steel sinks by eliminating or markedly reducing warping thereof from the high temperature heating incident to application of the vitreous coating.

Other objects, purposes and advantages of the invention will hereinafter more fully appear or will be understood from the following description of a preferred embodiment of it illustrated in the accompanying drawing in which:

FIG. 1 is a top plan view of a sheet steel vitreous enameled sink mounted in a counter, fragmentarily illustrated, with the aid of means embodying the invention;

FIG. 2 is a fragmentary vertical staggered section on line 2—2 in FIG. 1;

FIG. 3 is an enlarged detail in vertical section on line 3—3 in FIG. 1 showing one of the clamps and associated parts utilized in the structure illustrated in the preceding figures, and

FIG. 4 is a perspective view of one of the clamp bars apart from said structure.

The said drawing to which reference will now more particularly be made shows a sink S having an integral peripheral flange F the outer edge E of which is curved downwardly in the direction of the depressed center of the sink forming the usual bowl B in which water may be retained. A hole H in the bottom is provided for connection to a drain; likewise holes H' in the flange to receive water supply and control fixtures (not shown). A counter C supports the sink from its flange, having an opening O in which the bowl of the sink is received and a gasket G between the flange edge and the counter is representative of yieldable caulking material forming a water impermeable joint where flange edge and counter meet but its nature and configuration constitute no part of the invention and are not material thereto.

For mounting the sink in the counter the former is provided during the course of its manufacture and before the enamel coating has been applied, with a plurality of elongated channels 1 generally U-shaped in cross section but preferably with one leg 2 of each considerably longer than its other leg 3; each of these channels has its base 4 firmly welded as by closely spaced spot welds 5 to the under side of flange F near its outer edges and hence when the sink is in normal position the channels may be considered as inverted and depending from the flange. The form of the channels, which may be produced from strip steel of fairly heavy gauge, imparts to them extreme rigidity particularly in directions transverse to base 4 and so after they are welded in place they materially stiffen the flange throughout its length and not only contribute to maintenance of the rectitude of its edges by resisting its warping under the influence of the heat, usually in the neighborhood of 1500° F., to which it is subjected during application of the enamel coating but thereafter as well. The channels also fulfill a further function during installation of the sink in counter C and the steps and mechanisms for effecting such installation will now be described.

As perhaps most clearly shown in FIGS. 2 and 3, the longer leg 2 of each channel 1 has a series of spaced rectangular openings 6 each having an edge nearest to and paralleling base 4 substantially aligned with the edge of leg 3 in relation to the base. A clamp bar 7 desirably made of channel stock with divergent legs is provided for reception in each of openings 6 and each bar near one end has an appropriately threaded hole which receives a screw 8 the considerable length of which permits installation in counters of different top thicknesses. These clamp bars with screws 8 fairly well retracted in their holes usually are inserted in openings 6 after the sink has been disposed in the counter with gasket G in place and screws 8 then set up to impinge their ends against the under side of the counter and thereby clamp the latter between them and sink flange F.

The several bars acting as levers of the second class

with the edge of leg 3 as a fulcrum and the lower edges of openings 6 as the load thus resolve the power of the screws bearing on the under side of the counter in a downwardly direction against channel leg 2 and hence tend to draw the sink flange toward and hold it tightly against the upper surface of the counter or, more specifically, against gasket G. The bars desirably are fairly short so they can be properly disposed even in close quarters, as when a vertical partition P closely approaches the sink opening in which case the bars without screws 8 may be entered into openings 6 from within outer leg 2 of the channel and the screws then inserted in the holes provided for them in the bars. Moreover, if the latter are made of slightly yieldable material as distinguished from an extremely brittle one a bar can bend slightly, as indicated with some exaggeration in broken lines at 7' in FIG. 3, when its screw 8 is set up so forcefully against the under side of the counter as to jeopardize the integrity of enamel coating on the sink flange; this affords the installer a visual indication of the approach of the safe limit beyond which further tightening of the screw may be inimical.

The invention also contemplates making clamp bars 7 of material other than steel and even of non-metallic materials such as plastic or the like as a further precaution against an installer inadvertently setting up screws 8 too far and when made of such materials the bars may be considered expendable in that they may be designed to break instead of flex before transmitting to the sink flange forces sufficient to cause damage to the vitreous coating.

One of the factors which inhibit securing threaded studs or the like to a sink flange before coating it with vitreous enamel is that the firing heat essential to application of the enamel is destructive of precision where close tolerances are required, as in screw threads, while some of the enameling material may through an operative's carelessness or inadvertence come in contact with and be fused to the threads, rendering them unserviceable. On the other hand, any enamel which may fuse to channels 1 merely forms a protective coating thereon which is entirely harmless, and may even be deemed beneficial as providing permanent though usually unnecessary corrosion resistance to them. Moreover the substantial continuity of the channels which except at the corners are coextensive with the peripheral edges of the sink tends to evenly distribute longitudinally of said edges stresses exerted by clamp bars 7 when screws 8 are set up whereas individual relatively short spaced brackets secured to the under side of a sink flange tend to localize corresponding stresses resulting from means associated with them to secure the sink to a counter.

It will of course be apparent that the spacing of openings 6 and the number of them provided in each channel and hence the number of clamp bars required for each sink may be varied depending to some extent on the size of the sink and, further, that instead of threaded holes in the clamp bars, smooth bores may be provided large enough to pass the threaded shank of a screw to receive a nut threaded thereon against the upper surface of the clamp bar whereby to subject the latter to substantially the same stresses in performing its identical function as when the screw is threaded in the bar.

Moreover the legs of channels 1 may be made of equal rather than unequal length measured from base 4 and openings in the inner leg 3 corresponding to and registering with openings 6 in leg 2 then provided for reception of the inner end portions of the clamp bar to afford fulcrums for the latter.

For a sink having a flange the peripheral edge of which is other than substantially rectangular, or one having one or more non-rectilinear edges, the channels to be associated with such edges may be shaped to conform with them before being welded to the flange and after enameling the sink then installed in a counter having opening of suitable, preferably corresponding shape substantially in accordance with the foregoing.

While I have herein described and in the drawing illustrated a preferred embodiment of my invention and suggested certain changes which may be adopted if desired, it will be understood that other changes in the form, properties, arrangement, location and relationship of the various elements employed will readily occur to those skilled in the art and may be utilized without departing from the spirit and scope of the invention as defined in the appended claims.

Having thus described my invention, I claim and desire to protect by Letters Patent of the United States:

1. A sink for mounting in a counter or the like having a hole therein, said sink comprising a sheet steel vitreous enameled body formed to define a bowl receivable in the hole and an integral peripheral downturned flange adapted to overlie and engage the counter proximate the periphery of the hole, an elongated inverted U-channel-shaped member rigidly fixed to the under side of the flange between its edge and the bowl adapted to maintain the flange and its edge in spaced parallel flat planes, one leg of said member having an opening and the other leg providing a fulcrum, a clamp bar adapted to enter said opening and bear against said fulcrum, and adjustable means cooperative with the bar engageable with the under side of the counter operable to clamp the flange to the latter.

2. A sink as defined in claim 1 in which said cooperative means comprise a screw threaded into a hole in the bar.

3. A sink as defined in claim 1 in which the bar is yieldable under stress insufficient to cause damage to the flange when subjected thereto by said cooperative means.

4. A sink as defined in claim 1 in which an elongated channel member as therein defined parallels an edge of the flange proximate the bowl, is welded to the flange at intervals and is substantially coextensive with said edge and the channel member has a plurality of said openings for reception of a corresponding number of clamp bars.

5. A sink comprising a sheet steel vitreous enameled body providing a bowl and a peripheral flange adjacent thereto, the edge of the flange being turned down, an elongated U-shaped inverted channel member substantially coextensive in length with said edge depending from and welded to the flange at intervals between the bowl and said edge and maintaining rectilinearity in the flange, the channel member having one leg providing spaced openings and the other forming a fulcrum, a clamp bar disposed in each said opening and engaging said fulcrum, and means carried by each bar outwardly from the opening cooperative with the peripheral edge of the flange to embrace a support for the sink and operable to draw said edge against the support.

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