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SINK STRUCTURE

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Fig. 1

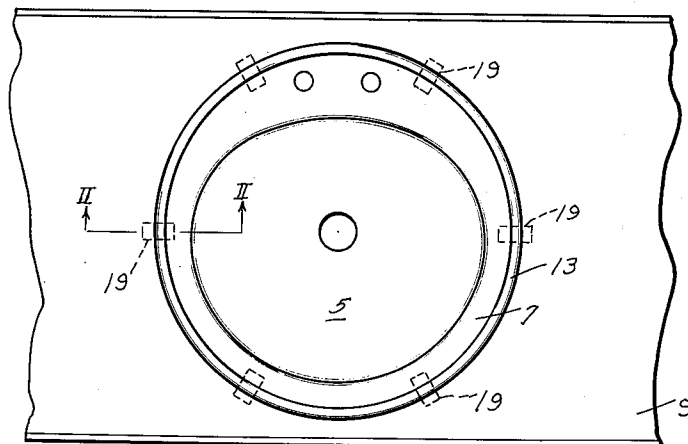


Fig. 2

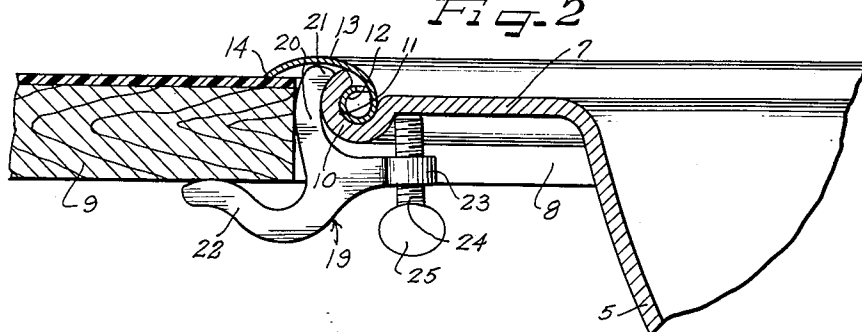
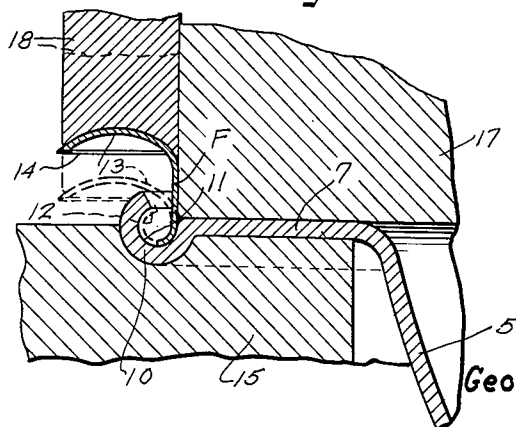


Fig. 3



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SINK STRUCTURE

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The present invention relates to improvements in sink structures and more particularly concerns improvements in sinks of the rigid rim flange type especially adapted for use as bar sinks, kitchen sinks, lavatory washbowls, and the like.

In rigid rim flange sinks it is desirable to have the terminus of the rim flange reinforced, but on the other hand it is essential that there be a thoroughly sealed joint between the rim flange and the supporting drain-board or cabinet top or counter top, any of which will be referred to herein as counter top.

An important object of the present invention is to provide an improved sink structure wherein a sink provided with a rigid rim flange is equipped with novel joint-sealing and supporting frame molding means engageable with a counter top providing supporting structure for the sink.

Another object of the invention is to provide an improved sink construction having a rigid rim flange carrying permanently assembled therewith and providing a functionally integral extension thereof a resiliently tensionable sheet metal strip molding frame member to provide a sink-supporting and joint-sealing member with respect to a counter top with which the sink may be assembled.

A further object of the invention is to provide a sink having a novel rigid rim flange terminal reinforcement providing an interlock groove for a supporting and joint-sealing molding frame strip member.

Still another object of the invention is to provide an improved mutually interlocked sink rim flange and molding frame strip construction.

Yet another object of the invention is to provide a novel sink structure including a rigid rim flange having a groove terminal structure with which is permanently assembled by curling assembly a curled interlock and reinforcing bead of a supporting and joint-sealing molding frame strip member.

Other objects, features and advantages of the present invention will be readily apparent from the following detailed description of a preferred embodiment thereof taken in conjunction with the accompanying drawing, in which:

FIGURE 1 is a top plan view of a sink structure embodying features of the invention;

FIGURE 2 is an enlarged fragmentary sectional elevational detail view taken substantially on the line II-II of FIGURE 1; and

FIGURE 3 is a fragmentary vertical sectional detail view through the sink rim and molding frame strip showing the same in a die assembly wherein the novel method of assembling the sink components is adapted to be practiced.

Referring to FIGURES 1 and 2, a sink 5 is depicted which is of the heavy gauge pressed steel, enameled type wherein the upper end of the bowl is provided with a rigid outwardly projecting rim flange 7 of a diameter to

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be received freely within an opening 8 provided therefor in a counter top 9 which may be of the currently popular wooden base type having an upper wear surface which may comprise a lamina of a thermosetting plastic. In this instance, the sink 5 is provided with a generally oval bowl while the rim flange 7 is of circular perimeter providing a widened rear plumbing shelf portion. However, other bowl and rim perimeter shapes may be provided.

On its outer, free margin, the rigid sink rim flange 7 is formed with a turned reinforcing flange 10 of generally hook-shaped cross-section angularly depressed below the upper surface of the rim flange and at its free edge projecting upwardly and inwardly opposite to the juncture of the flange with the body of the rim flange 7. Within the rim terminal flange 10 is provided an upwardly and inwardly opening groove 11 of transversely curved form, the inner side of which drops off at juncture of the terminal flange with the rim flange 7, and the outer side of which is formed by the free portion of the flange 10 which is turned inwardly over the groove 11 and projects above the upper face of the rim flange 7. Through this arrangement, the length of the flange 10 is such as to extend through more than 180° of a circle and the gap between the ends of the flange affording entry into the groove 11 is less than 180°.

In addition to serving as terminal reinforcement, the terminal flange 10 provides interlock structure coactive with an inner marginal reinforcing and interlock bead 12 on the inner margin of a molding frame strip member 13 which arches over the tip of the flange 10 and projects as an outward extension of the rim flange 7. At its outer side, the frame strip member 13 has a downturned edge 14 which is engageable in sealing, sink supporting relation upon the counter top 9 adjacent to the opening 8. Stainless steel or other suitable metallic strip material may be utilized in making of the molding frame strip member 13 by rolling or other suitable method of manufacture. As will be observed in FIGURE 1, the molding frame strip member 13 comprises a continuous ring. By having the bead 12 continuous it affords a rigid reinforcing rib for the frame strip member 13 and also affords a solid sink-supporting rib on which the sink is, in effect, hung by engagement of the turned lip of the terminal flange 10 of the sink rim upon the upwardly and outwardly facing shoulder portion of the underturned flange providing the bead.

It is desirable that the frame member bead 12 not only provide an effective supporting interconnection with the sink rim terminal flange 10 but that it also provide a sealed joint therewith. While, of course, sealing material may be packed in the groove-bead joint, it is better, or at least also advantageous to have the bead 12 sized to fit as uniformly and snugly as practicable to the surface defining the groove 11. To this end, the method of assembling the molding frame member 13 with the sink rim terminal flange 10 as depicted in FIGURE 3 is efficient. That is, the bead 12 of the frame ring member is curled into the sink rim flange groove 11, using the surface of the terminal flange 10 defining the groove 11 itself as the curling die. To this end, the sink rim flange 7 is supported upon an anvil die member 15 which is grooved to receive the rim terminal flange 10 nestably. A hold-down and back-up die member 17 firmly clamps the sink rim flange 7 against the anvil die member 15

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and provides a guide for a relatively reciprocable pusher or pressure die member 18 which is contoured on its thrust face to receive the preformed arched body portion of the frame ring member 13 in nested relation.

In its preformed shape, before assembly with the sink, the inner marginal portion of the frame ring member 13 which is to provide the bead 12 is in the form of a generally axially extending flange F which is substantially straight and of a diameter to fit within the inner side of the rim flange groove 11 and slidably about a back-up perimeter of the die member 17 coincident with the inner side of the groove 11. By preference the free end portion of the flange F is slightly turned in the curling direction as a starter. This condition is shown in full outline in FIGURE 3.

After assembly of the sink 5 with the supporting anvil die member 15, and with the die members 17 and 18 backed off for clearance, the preformed frame molding ring member 13 is assembled with the sink by registering the free end portion of the flange F within the innermost, drop-off portion of the groove 11. The hold-down and back-up die member 17 is next brought into holding engagement with the sink rim flange 7 and into backing relation to the inner surface of the flange F. This is followed by thrusting of the pressure die member 18 against the body of the frame ring member 13 to thereby drive the flange F endwise into the groove 11, serving as a curling die and until curling of the bead 12 has been completed, as indicated in dash outline in FIGURE 3. As a result, the surface of the bead 12 engages the surface defining the groove 11 with a firm, close-fitting, wiping coaction and in tight sealing engagement. After backing off of the die members 17 and 18, the unitarily joined sink and rim flange molding frame extension 13 can be removed from the die assembly and is ready to be assembled with the counter top 9.

Although under some circumstances it may be possible to afford ample retaining downward pull on the sink 5 by means of attached plumbing to effect adequate sealing thrust of the rim flange extension edge 14 against the counter top, in other instances it will be desirable to provide suitable retaining clamps or clips such as the clips 19 shown in FIGURES 1 and 2 for retaining the sink in place and affording the desirable downward pull thereon and more particularly on the rim flange frame member extension 13. There may be as many of the clips as preferred, six being shown in FIGURE 1 equidistantly spaced about the perimeter of the sink. Each of the clips 19 includes three arms projecting from a common body. An upstanding arm 20 has an inwardly turned head projection 21 arranged to engage retainingly upon the upwardly and outwardly facing shoulder afforded by the turned lip of the terminal flange 10 under the frame member body 13. The arm 20 projects up through the gap afforded between the terminal flange 10 and the edge of the counter top 8. Extending outwardly from the clip body at the lower end of the arm 20 is an outwardly projecting and upwardly directed clamping arm 22 engageable thrustingly against the underside of the counter top 9 adjacent to the opening 8. Projecting inwardly from the clip body and more particularly the lower end portion of the arm 20 is an arm 23 for underlying the rim flange 7 and projecting inwardly beyond the rim terminal flange portion 10. A movable thrust member, conveniently in the form of a screw 24 threaded through the arm 23 engages at its upper end or tip against the underside of the rim flange 7 adjacent to the reentrant corner defined at juncture of the terminal flange 10 with the body of the rim flange 7. At its lower end the screw 24 has a digitally or tool engageable wing head 25. It will be observed that the clip arms 20 are dimensioned to be inserted into the gap between the rim flange terminal 10 and the edge defining the opening 8 by an upward assembly swinging movement about the curved surface of the rim terminal

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flange 10. Thereafter, the initially retracted retaining screw 24 is turned up to engage at its tip against the rim flange 7. As tightening of the screw 24 progresses, the clip 19 is caused to rock outwardly in the lower portion thereof as the clip arm 20 and the head projection 21 slidably rides up on the circular shoulder provided by the lip portion of the rim flange 10. Thereby, the thrust arm 22 is caused to engage in clamping upward thrusting relation against the underside of the counter top 9 and continued tightening of the screw 24 draws downwardly on the rim flange and thus on the rim flange frame ring extension 13 to pull the sealing edge 14 tightly against the upper face of the counter top. Any tendency for the clip 19 and more particularly the retaining shoulder 21 to escape from engagement with the rim terminal flange 10 is precluded by engagement of the tip of the screw 24 with the inner side of the depressed rim flange terminal portion 10 as shown in FIGURE 2.

It will be understood that modifications and variations may be effected without departing from the scope of the novel concepts of the present invention.

I claim as my invention:

1. In a sink structure including a sink member having a downwardly dished bowl with an upstanding wall provided with a rigid upper lateral rim flange entirely thereabout having a terminal portion providing an upwardly and inwardly opening groove of rounded cross-section, and a sheet metal molding frame strip flange ring extension projecting upwardly away from the downwardly dished bowl having an inner marginal reinforcing bead formation interlockingly substantially conformingly engaging within said groove, said strip flange extension projecting outwardly beyond said terminal portion for engagement upon a counter to thereby afford a suspension support for the sink member, the locking engagement between the bead formation and the groove being disposed on the lateral rim flange outwardly of the upstanding wall of the bowl.

2. In a sink structure including a counter top having an opening therein, a sink member comprising a bowl having an upwardly extending wall defining the same and from the upper end of which wall projects outwardly entirely about the wall a rigid rim flange, the outer terminus of the rim flange having a terminal provided with an upwardly and inwardly opening cross-sectionally arcuate groove extending entirely about the rim flange and defined on its outer side by an upwardly and inwardly curved flange of a length to extend into partial overlying relation to the upwardly facing portion of the groove and defining with the inner side of the groove an entry which is less than 180°, and a rim flange extension molding strip ring having an inner margin curled conformably into the groove and locked under said curved flange, said molding strip ring projecting over said curved flange and outwardly and engaging upon the counter top.

3. In a sink structure including a sink member having an upwardly opening bowl provided with a lateral outwardly projecting rigid rim flange entirely thereabout, said rim flange having extending throughout the outer margin of said rim flange a depressed upwardly opening groove defined on the underside of the rim flange by a depending rib, said groove being defined at its outer side by an upwardly and inwardly turned lip, said lip partially overlying the groove and defining with the opposite edge of the groove an entry opening, a frame molding strip ring having an inner margin interlockingly engaged within said groove behind said lip and projecting over the lip outwardly therebeyond, a counter top having an opening within which the sink bowl is received, said opening being defined by a margin engaged by the outwardly projecting portion of the molding frame ring, and means for retaining the sink member in place including a clip having a shoulder resting on said lip and having a portion engaging under the counter top and another portion underlying the rim flange and provided with a movable

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member engaging the rim flange inwardly adjacent to said rib and thrusting against the rim flange to draw said lip-engaging portion downwardly and thereby shift said counter top engaging portion into upwardly thrusting engagement with the underside of the counter top to thereby draw said projecting portion of the ring firmly against the counter top, said movable member being held by said rib against slipping outwardly from the rim flange.

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