

[54] LAVATORY MOUNTING STRUCTURE
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[58] Field of Search..... 4/187 A, 187 R, 166

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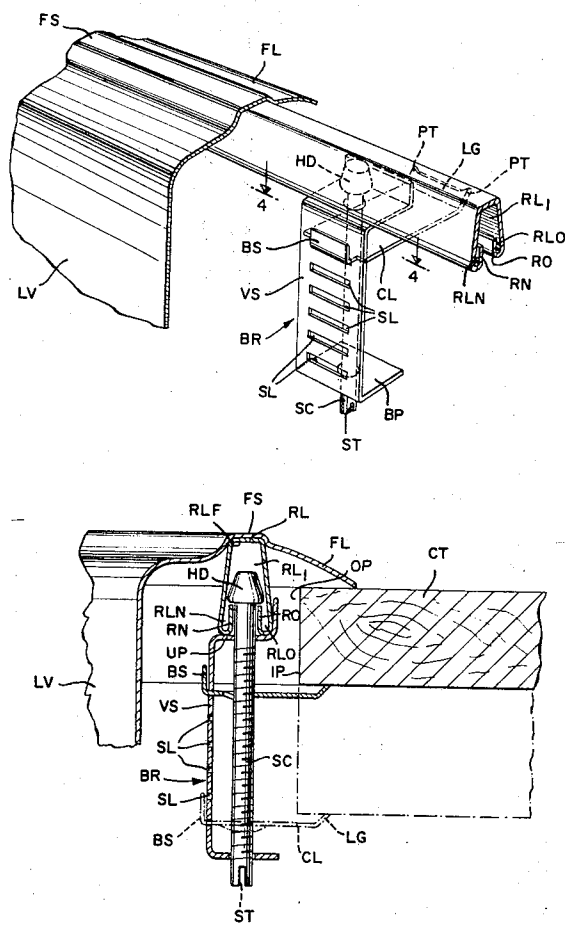
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[57] ABSTRACT

This application covers an arrangement for connecting a sink or lavatory within the opening of a countertop, the connecting means including a clamp structure for establishing a firm connection between the units regardless of the thickness or depth of the countertop. A rail or rails may be welded or otherwise affixed to the underside of the lavatory and each such rail includes two similar U-shaped members for receiving between them and supporting the head of an elongated screw. The screw is adjustably mounted on an elongated bracket of uniform width which provides a plurality of narrow rectangular openings along its length for receiving one end of a clip of slightly lesser width which has an opening threadedly adjustable along the shank of the screw. The clip has an upturned end which has an angular disposition so that it may be driven against or into the underside of the countertop when the screw is adjusted in position. The other end of the clip is normal to the central segment of the clip and parallels the bracket. By having a plurality of similar narrow parallel openings in the bracket, the clip may be readily inserted through any one of the openings to meet the geometrical requirements for attachment to any countertop regardless of the thickness or depth of the countertop within a wide limiting range.

11 Claims, 5 Drawing Figures



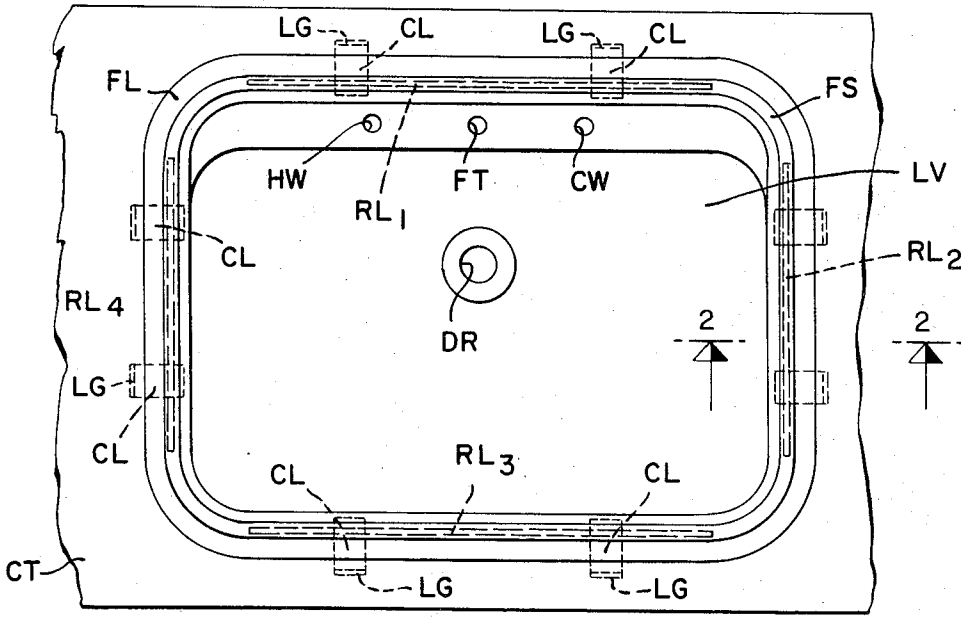


FIG. 1

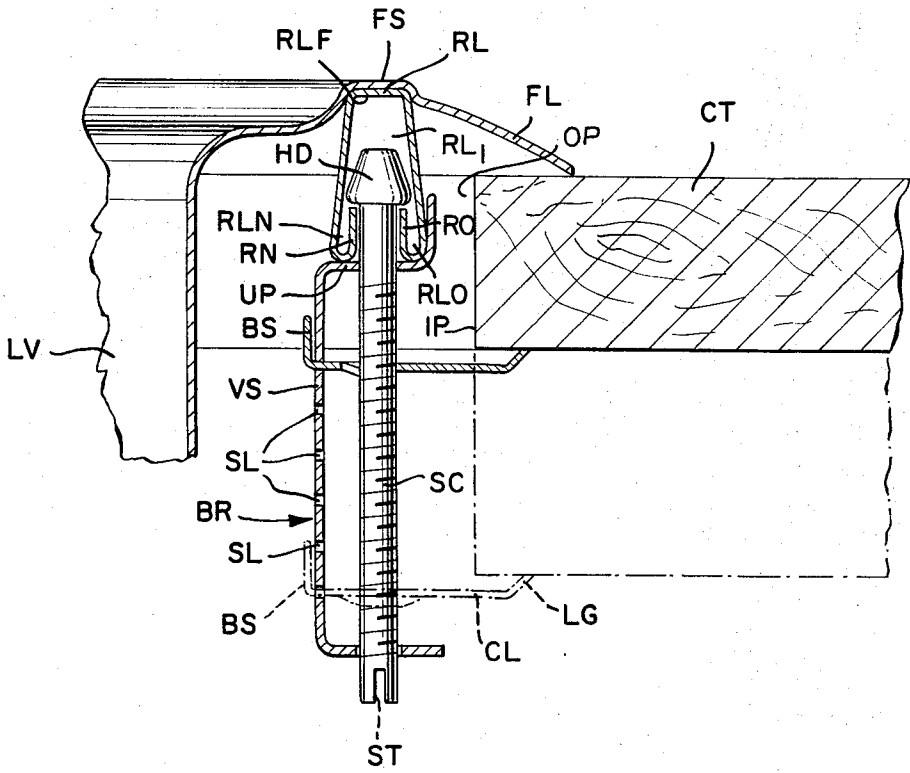
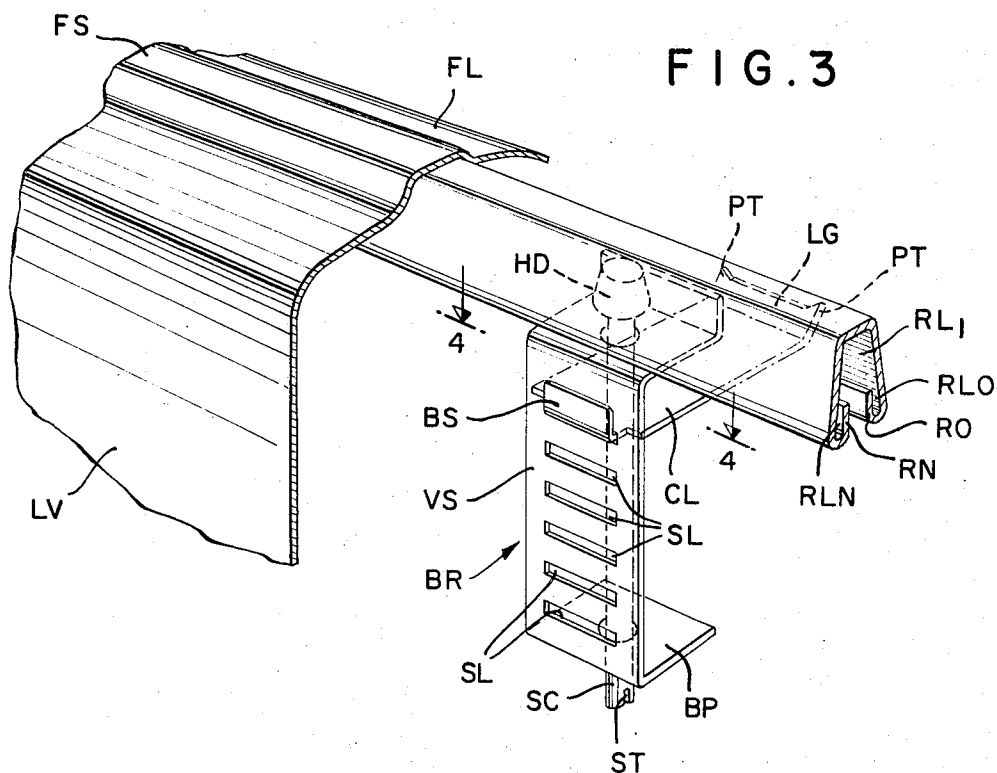
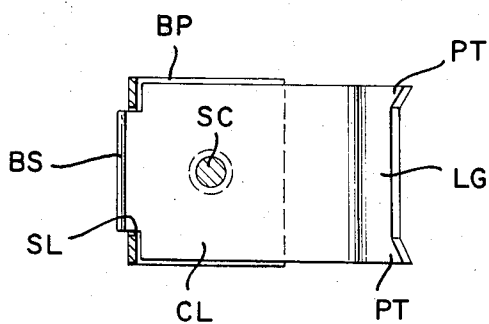


FIG. 2



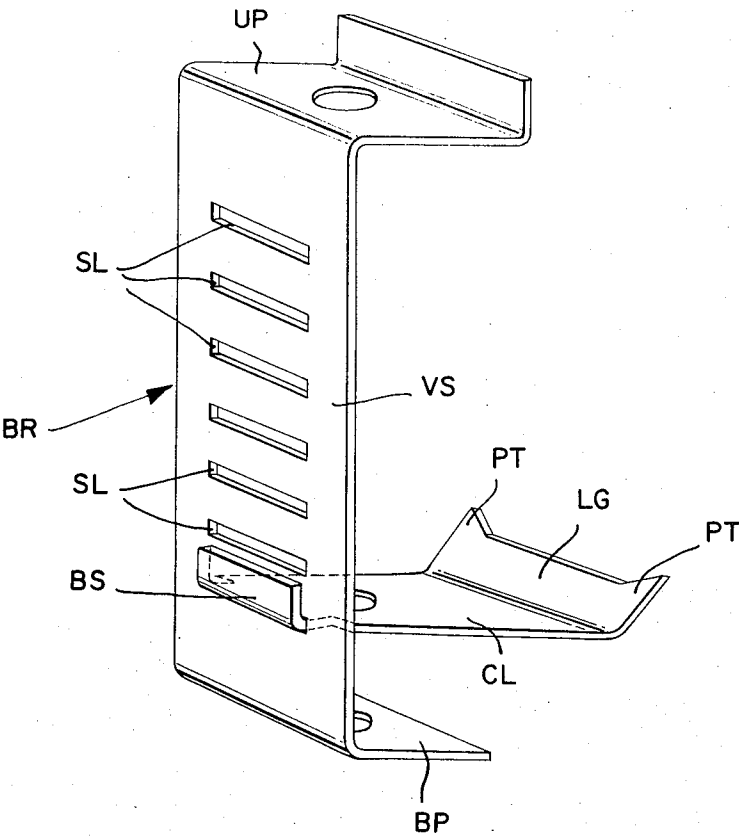


FIG. 5

LAVATORY MOUNTING STRUCTURE

This invention relates to mounting mechanisms for sink or lavatory structures and, more particularly, to mounting mechanisms for so-called self-rimming sink or lavatory structures and, still more particularly, to devices and apparatus for attaching sink or lavatory structures to countertops of a wide variety of thicknesses or depths that may be encountered in practice.

A self-rimming sink or lavatory usually embodies a rather deep basin having a drain at a convenient location within the basin, together with a uniform outwardly extending rim or flange usually extending around the entire periphery of the basin. The sink or lavatory is intended to be set and installed within a prepared or pre-cut opening in an already existing countertop so that the rim or flange will support the sink or lavatory against the countertop in a fixed, unchangeable position for a long period of time. A close-fitting relationship is generally desired between the rim or flange and the countertop so as to substantially seal the rim or flange against the countertop to bar the collection of dirt, dust and other foreign matter under the rim or flange and, moreover, to bar the leakage of fluids such as water via the very narrow gap between the rim or flange and the countertop. The better and the more permanent the seal, the better the installation and the freer the arrangement will be of foreign matter whether liquidus or solid. A caulking compound may be interposed between the underside of the rim and the top of the countertop.

It is the present experience with the installation of self-rimming sinks or lavatories that a wide variety of materials and thicknesses of the countertops are encountered in homes and offices. Some countertops are made of solid wood, some of laminated wood, some of plastic materials, etc., and, moreover, some countertops have also a surface layer material, such as linoleum, or a solid vinyl coating. Because of the different materials and different thicknesses of the materials used as countertops and because of the added surface layer materials, the hardware presently available for holding the sink or lavatory in a stationary position permanently against the countertop has not been suitable for all or almost all conditions encountered.

Accordingly, it is an object of this invention to provide improved devices and apparatus for attaching a sink or lavatory to a countertop of a wide variety of thicknesses that may be encountered in practice.

According to the present invention, the hardware for affixing a self-rimming sink or lavatory to a countertop will include an elongated substantially vertical bracket having a plurality of horizontal parallel apertures of rectangular shape and a substantially horizontal clip having a substantially vertical back segment which is to be inserted through one of the horizontal apertures and a turned-up leg at the front end of the clip for contacting and, if possible, biting into the undersurface of the countertop to hold the sink permanently in position against the countertop with minimal space between the flange of the sink or lavatory and the upper or contacting surface of the countertop.

This invention will be better and more clearly understood from the following more detailed disclosure and explanation hereinafter given when read in connection with the accompanying drawing generally and schemat-

ically illustrating one form of the invention, as follows:

FIG. 1 illustrates a top plan view of a sink or lavatory mounted in a countertop;

FIG. 2 represents a cross-sectional view, taken along liner 2—2 of FIG. 1, showing the mechanism employed for attaching a flanged sink or lavatory to a countertop which may have any desired thickness;

FIG. 3 shows schematically a partial perspective view of the clamping mechanism of this invention in relation to rail structure affixed to the underside of a sink or lavatory;

FIG. 4 shows a top plan view of a clip which is one of the components used in the mechanism of this invention; and

FIG. 5 shows a perspective view of a bracket and a clip in their relative positions when employed to connect a sink or lavatory to a countertop of very large thickness or depth.

The same or similar reference characters will be employed throughout the drawing to designate the same or similar parts wherever they may occur in the drawing.

Referring to FIGS. 1 and 2 of the drawing, there is shown a countertop CT, usually in the form of a horizontal board which is ordinarily longer than it is wide, in which an opening OP is cut or otherwise provided of sufficient size so as to receive the downwardly extending basin of the sink or lavatory LV or like structure (hereinafter called a "lavatory"). The lavatory LV, preferably made of metal, such as stainless steel, has an outwardly extending flange FL which may be turned downwardly as shown and extends about and beyond the periphery of the basin of the lavatory LV and reaches out over the inner perimeter IP of the countertop CT (see FIG. 2). A flattened segment FS of the flange FL of the lavatory LV is interposed in the metallic lavatory LV between the basin of the lavatory LV and the flange FL, and the segment FS receives a rail structure RL. The flattened segment RLF of the rail structure is affixed to the flattened segment FS of the lavatory LV by brazing, welding, soldering or the like.

As shown schematically and generally by FIG. 1, the rail structure RL may be composed of four linear or curved rail segments RL1, RL2, RL3 and RL4 as shown. These linear segments have no curvatures at the four rounded corners of the lavatory LV, as shown in FIG. 1, and simplify the procedure in making the clamping installation of the lavatory within the opening OP of the countertop CT. As is also shown in FIG. 1, some eight clips CL may be employed to firmly fix the position of the lavatory LV within the countertop CT, two of the clips CL being employed for the attachment of the lavatory LV to each of the linear rail segments RL 1, RL2, RL3 and RL4. The lavatory LV, shown in FIG. 1, may have three openings, an opening HW for hot water, an opening CW for cold water and an intermediate opening FT for a faucet. The basin of the lavatory LV also embodies a drain DR to release water into a drain pipe and the sewer system (not shown).

As is better shown by FIGS. 2 and 3, a rail segment, such as RL1, affixed to the flattened segment FS on the underside of the lavatory LV, has one or more connector mechanisms associated therewith for affixing the lavatory LV to the countertop CT, each connector mechanism embodying, in addition to a rail segment,

such as RL1, a bracket BR, a screw SC and a clip CL. The rail segment RL1 includes two U-shaped rails, that is, an inner U-shaped rail RLN and an outer U-shaped rail RLO, both connected by the flat segment RLF. The head HD of the screw SC rests on and against the inner and outer segments RN and RO of the rail RL1 (see FIG. 2). The bracket BR has a plurality of parallel rectangular openings or slots SL in its vertical segment VS for receiving the back segment BS of the clip CL. The back segment BS may be turned up as shown, or it may be turned down. The longitudinal length of each bracket BR and its many slots facilitate the rapid spacial adjustment of each clip CL to accommodate the depth or thickness of the countertop CT however large or small it may be. The bracket BR also includes an upper platform UP which is to be held against the undersides of the two U-shaped rails RLN and RLO and a bottom platform BP, both platforms having circular openings to receive the threaded shank of the screw SC. The upper platform UP of bracket BR also has a turned-up segment BU which mates with the outer rail RLO and serves to prevent the movement of the rail RL1 relative to the screw SC. The clip CL includes, in addition to the vertical back segment BS, a turned-up front leg LG having pointed ends PT for biting into the underside of the countertop CT. The clip CL also has an opening TD which is aligned along, and substantially coaxial with, the circular openings in the upper and lower platforms UP and BP of bracket BR. The clip opening TD may be internally threaded, or it may be formed into what is sometimes called a Tinnerman fastener, for receiving and meshing with the threads of the screw SC.

The screw SC has, in addition to its tapered or frustoconical head HD and its longitudinal threaded shank, an end slot ST for receiving the bit of a screw-driver which may be used to advance the relative position of the clip CL so as to bring its pointed teeth PT in fixed contact with the underside of the countertop CT and thereby assist in preventing any movement of the bracket structure with respect to the countertop CT and the rail RL1.

When a lavatory LV is to be installed in a countertop CT, the countertop would be cut away sufficiently so as to establish an opening OP to receive the basin of the lavatory LV. The lavatory LV, to which the linear rails RL1 to RL4 are solidly affixed, is then inserted into the opening OP ready to receive the adjustable clamping hardware. The back segment BS of the clip CL will then be passed through the selected, most appropriate slot SL in the bracket BR. Then the screw member SC will be inserted through the unthreaded opening of the upper platform UP of the bracket BR, then through the threaded opening of the clip CL and then through the unthreaded opening of the bottom platform BP. The head HD of the screw member SC will then be inserted, at the open end of a rail structure, such as RL1, into the space between the inner and outer rails RLN and RLO so that the head HD rests against the latter rails (see FIG. 2). A screw-driver may then be inserted into the slot SL in the bottom of the screw member SC to elevate the clip CL sufficiently to bring the turned up leg LG into contact with, and at considerable pressure against, the underside of the countertop CT. If the underside of the countertop CT is made of a material which may be penetrated by the pointed projections PT

of the clip CL, the pointed projections will bite into the countertop CT.

Thus, the threaded opening TD of clip CL will hold the screw SC in place and prevent movement of the lavatory LV relative to the countertop CT. Thus, the countertop CT will be gripped firmly between the flange FL of the lavatory LV and the leg LG of clip CL, exerting mechanical pressure against flange FL. This will effectively seal the downwardly extending flange FL against the countertop CT to prevent the entrance or insertion of foreign matter into the underside of flange FL, whether the foreign matter be in a solid or liquid state.

Although the lavatory LV has been exemplified as made of stainless steel, it may be made of other metal or of plastic material or other suitable material. Likewise, the countertop CT may be made of wood, as already noted, or of metal or plastic or other suitable material.

The rails, such as RL1 and RL2, may be straight or curved and are not joined to each other. The spacing between the pair of rails, such as RL1 and RL2, facilitates the insertion into each of the rails of the tapered head HD of each screw SC, so that the screw may be rapidly slid to any desired position along the rail. The clip may then be adjusted by axially turning the screw SC, as already described, to tightly couple the countertop CT to the lavatory LV. Once the clip CL is brought into solid contact between the underside of the countertop CT and the bracket BR, the physical connection therebetween will remain firmly established to prevent movement of the lavatory LV. When so held at various points along the rails, the flange FL of the lavatory LV will be held down under substantial pressure against the upper side of the countertop CT, thereby establishing an effective seal against entrance of foreign matter throughout the entire periphery of the flange FL.

As is best shown by FIG. 2, the longitudinal vertical bracket BR embodies an upper platform UP upon which the two U-shaped inner and outer rails RLN and RLO are seated and are held from sliding off the upper platform UP by means of the turned-up bracket segment BU. The longitudinal vertical screw SC is held within appropriate openings in the upper platform UP and in the bottom platform BP and hence the screw SC is maintained parallel to and within the bracket BR. The spacing of the bracket BR from the countertop CT is determined by the vertical back segment BS of clip CL. Thus, the lavatory CL and the countertop CT will remain affixed to each other. It will also be observed from FIG. 2, as shown in dotted lines, that the clip CL is readily insertable into any one of the various parallel slots SL of the bracket BR, the selected slot being determined merely by inspection of the thickness or depth of the countertop CT.

Although it has been indicated above that two bracket structures may be associated with each of the several rails RL1 to RL4, it will be apparent that one bracket structure may be found sufficient in many cases and, moreover, that more than two bracket structures may be employed with each of the linear rails, if so desired. Furthermore, if so desired, a lock nut (not shown) may be added to each screw SC near its slot ST to more firmly fix the bracket mechanism between the lavatory LV and the countertop CT.

While this invention has been shown and described in certain particular arrangements merely for illustra-

tion and explanation, modifications will be apparent to those skilled in the art.

What is claimed is:

1. Mechanism for installing a flanged plumbing fixture, such as a stainless steel sink or lavatory, on any of a plurality of countertops having widely different depths or thicknesses, comprising a rail member affixed to the underside of the flange of the fixture, an elongated screw member having a head which may be slid along and supported by the rail member, a flat clip having a threaded opening to receive and grip the screw member, said clip having one end turned-up to contact the undersurface of the countertop, an elongated bracket having a plurality of substantially horizontal slots any one of which may receive the other end of said clip, the bracket having a platform to be positioned in contact with the rail member, the screw member being rotatable to change the relative position of the clip with respect to the underside of the countertop.

2. Mechanism according to claim 1 in which the bracket has a second platform, both platforms having aligned openings through which the screw member passes to maintain the screw member aligned with said openings.

3. Mechanism according to claim 2 in which the screw member has a slot which is to be rotated to change the position of the clip relative to the countertop.

4. Mechanism for controlling a plumbing fixture having a peripheral flange to any countertop regardless of variations in its depth over a wide range, the countertop having an opening in which its basin of the fixture may be inserted and installed so that the flange of the fixture will be locked against the countertop, comprising a rail member having two substantially parallel horizontal rails affixed to and along the underside of the flange, a screw member having a head which may be slid along and supported by said rails, a bracket having substantially horizontal upper and lower platforms interconnected by an elongated segment which has a plurality of substantially horizontal slots therein, each platform having an aperture therein through which the screw member may be passed to restrict the lateral movement of the screw member, and a clip having a substantially flat segment having a threaded aperture aligned with the apertures in both platforms and threadedly engageable with the screw member, said clip also having a turned-up segment at one of its ends for entering a selected slot in said bracket and having a turned-up segment at its other end to contact and continuously press against the underside of the countertop.

5. Mechanism according to claim 4 in which the upper platform of the bracket also includes an extension

abutting one of the rails.

6. Mechanism according to claim 5 in which two turned-up end segments of the clip have different angular positions, one end segment being inserted through a slot in the bracket so as to be closely paralleled to the elongated section of the bracket, the other end segment of the clip having pointed projections for gripping the underside of the countertop.

7. Mechanism according to claim 6 in which the screw member includes means which may be turned to move the clip in either direction along the axis of the screw member.

8. Mechanism for connecting a plumbing fixture, such as a lavatory, having a basin to any countertop having thicknesses that may vary over a wide range, said countertop having an opening of sufficient size to receive the basin of the fixture, the fixture having a peripheral flange which is turned down so that it may meet and be tightly locked against the upper surface of the countertop, said mechanism including a first elongated member affixed to the underside of the flange and providing a rail structure beneath the flange, a second member having an elongated threaded shank having a head at one end which is slidable on and along said rail structure, a third member having an elongated segment with a plurality of closely spaced substantially parallel horizontal slots therein and also having an upper substantially horizontal segment and a lower substantially horizontal segment, the upper segment of said third member being positioned so as to abut the rail structure, both horizontal segments having apertures through which the threaded shank of the second member may be passed, and a fourth member having a threaded opening for receiving the threaded segment of the second member, one end of the fourth member entering one of the slots of the third member, said fourth member also having a turned-up end to be held in contact with and apply pressure to the underside of the countertop.

9. Mechanism according to claim 8 in which the upper segment of the third member also includes an extension contacting one side of the rail structure.

10. Mechanism according to claim 9 in which the fourth member has one of its ends turned-up so as to abut the elongated segment of the third member and its other end turned up so as to establish substantially point-like contact with the underside of the countertop.

11. Mechanism according to claim 10 in which the second member includes means which may be rotated about the axis of the second member to change the longitudinal position of the fourth member.

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