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2,897,516

MOUNTING CLAMP AND FRAME FOR SINKS AND LAVATORIES

Filed Aug. 8, 1955

2 Sheets-Sheet 1

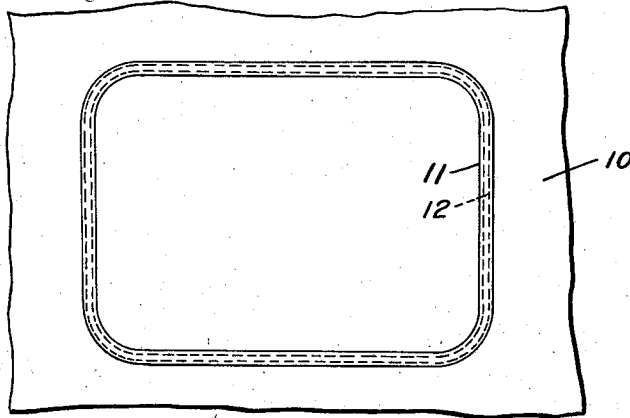


FIG. 1

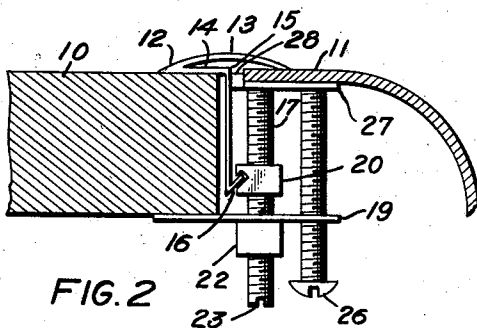


FIG. 2



FIG. 4

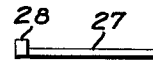


FIG. 5

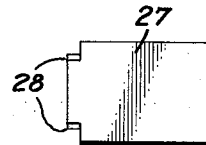


FIG. 6

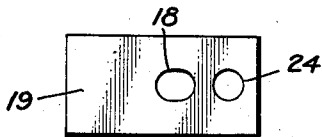


FIG. 3



FIG. 7



FIG. 8

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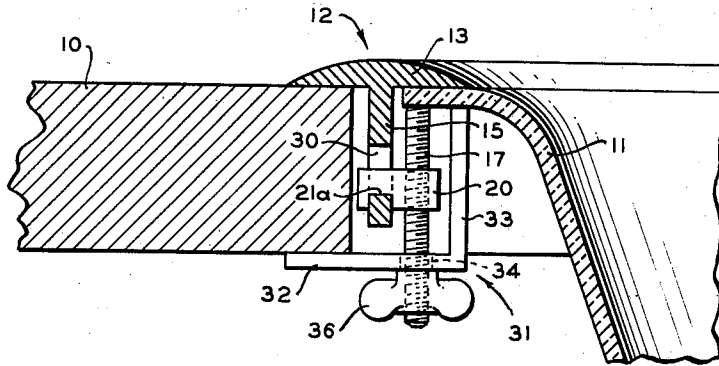


FIG. 10

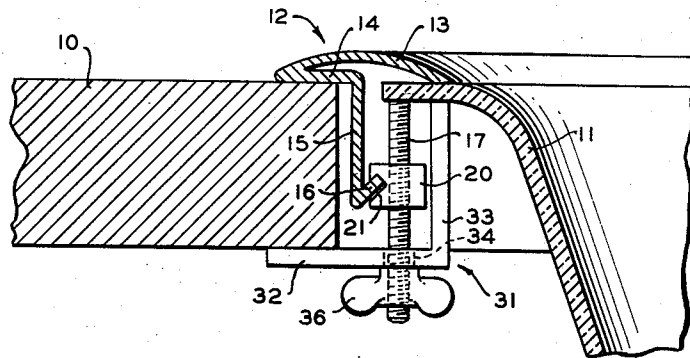


FIG. 9

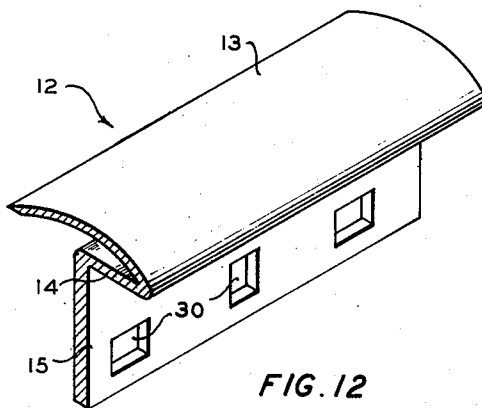


FIG. 12

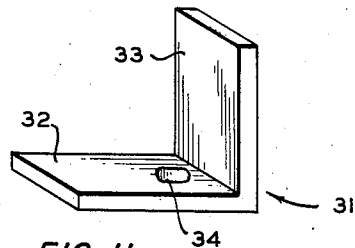


FIG. 11.

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MOUNTING CLAMP AND FRAME FOR SINKS AND LAVATORIES

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21 Claims. (Cl. 4—187)

The present invention relates to an apparatus for mounting a sink and lavatory and it consists in the combinations, constructions and arrangements of parts herein described and claimed.

This application is a continuation-in-part of my co-pending applications Serial No. 366,327, filed July 6, 1953, and Serial No. 417,627, filed March 22, 1954, both now abandoned.

The invention provides a novel mounting clamp for affixing in position a sink or lavatory frame of that type adapted to cover the marginal edges of a sink or a lavatory and the cabinet in which it is mounted. The device utilizes several novel features which will be described herebelow.

It is accordingly an object of the invention to provide a device of the character set forth which is simple in construction, inexpensive to manufacture, and yet effective and efficient in use.

Another object of the invention is to provide a clamp of the character set forth having novel means whereby a frame may be rigidly attached to a sink or the like prior to its installation in a cabinet or table top.

Another object of the invention is to provide a mounting frame, hanger assembly, and clamping device, which in combination facilitate rapid mounting of a frame on a sink rim and fixation of the frame and sink assembly in a cabinet top in a minimum time.

It is also an object of the invention to provide a novel spacer and bearing plate for a sink support assembly.

Other and further objects of the invention will become apparent from a consideration of the accompanying disclosure.

The invention in its broadest aspect comprises a mounting frame of generally T-shaped cross section, the vertical section of the T forming a depending hanger flange adapted to be positioned between the edge of the cabinet top around the sink opening and the edge of the sink rim, means on said flange for supporting an adjustable element designed to cooperate with a vertical supporting and clamping rod which rigidly attaches the frame to the sink rim for mounting in the cabinet opening (using four or more adjustable element-and-rod assemblies). The adjustable element comprises a slotted or grooved nut threaded on the supporting and clamping rod, the slot or groove of which engages an upwardly directed supporting element on the hanger flange. This supporting element on the hanger flange may comprise an upturned member on the lower margin of the flange, an upwardly facing edge of an opening in a lower section of said flange, or any similar upwardly directed supporting element adapted to cooperate with a groove in a vertically adjustable element in supporting a clamping rod to which the adjustable element is attached. The preferred adjustable element comprises a nut threaded on the clamping rod and the groove in the nut may be in either an edge or the bottom face thereof, depending upon the character of the supporting member on the depending hanger flange.

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A more complete understanding of the invention may be had by reference to the schematic drawing in which:

Figure 1 is a plan view of a sink mounted in a cabinet or table top by means of the sink frame and mounting clamp of the invention,

Figure 2 is a vertical sectional view, partly in elevation, illustrating an embodiment of the invention,

Figure 3 is a plan view of a metal plate forming a part of the invention,

Figure 4 is an end elevational view of a metal spacer and bearing plate forming a part of the invention,

Figure 5 is a side elevational view of the spacer and bearing plate illustrated in Figure 4,

Figure 6 is a plan view of the spacer and bearing plate illustrated in Figures 4 and 5,

Figure 7 is a plan view of a nut forming a part of the invention,

Figure 8 is a side elevational view of the nut illustrated in Figure 7,

Figure 9 is a vertical section similar to Figure 2 showing another embodiment of the clamping device of the invention,

Figure 10 is a vertical section similar to Figures 2 and 9 showing another embodiment of the hanger and support means of the invention,

Figure 11 is a pictorial view of an L clamp of Figures 9 and 10, and

Figure 12 is a pictorial view of a section of a sink mounting frame such as that shown in Figure 10. Corresponding elements of the different figures are correspondingly numbered.

Referring to Figure 1, numeral 10 designates a cabinet or other supporting device for a sink having a rim 11. A frame 12 covers the margins of the sink rim and cabinet opening and, together with the supporting assembly of Figure 2, supports the sink.

In Figure 2 of the drawing, there is shown a marginal edge portion 10 of a cabinet and a marginal edge portion of a sink or lavatory 11 adapted to be mounted in such cabinet. Sink frame 12 comprises an elongated member adapted to cover both of the marginal edge portions of the cabinet 10 and sink or lavatory rim 11. Viewed in cross section as shown in Figure 2, the frame 12 consists of a convex or upwardly arcuate cover strip 13 one edge of which is adapted to rest upon the marginal edge of the sink or lavatory 11 and the other edge of which is adapted to rest upon the marginal edge portion of the cabinet 10. Frame 12 has integrally formed therewith an inwardly extending horizontal portion 14 from which depends a wall or flange 15 having an upturned lower edge 16.

One embodiment of the present invention comprises a threaded rod 17 which extends through an oval or oblong opening 18 in a rectangular horizontally extending plate 19 (Figure 3) in slidable relation therewith and which has threaded thereon above the plate 19 a nut 20 having a downwardly directed or oblique slot 21 in one face thereof at such angle as to guide threaded rod 17 into a final mounting position parallel to flange 15 and perpendicular to the rim of the sink or lavatory 11. The rod 17 has threaded thereon a nut 22 below the plate 19 and the lower end of the rod is provided with a transverse slot 23 for the reception of a screwdriver or other means for turning rod 17.

The plate 19 is also provided with a circular threaded opening 24 in which is threadably mounted a bolt 25 provided with the usual slotted head 26 or other turning means.

Also included in the mounting clamp is spacer and bearing plate 27, shown in Figures 4, 5 and 6, which distributes the pressure of rod 17 and bolt 25 on the underneath portion of the sink or lavatory rim 11. This ele-

ment has two legs 28 perpendicular to the main body of plate 27 which separate flange 15 for sink or lavatory rim 11 and center the sink or lavatory in the opening for same. The spacer and bearing plate is not essential to the clamping or hanger assembly and bolts 17 and 25 may directly engage sink rim 11.

In use, when it is desired to mount the sink or lavatory 11 in an opening in the cabinet, the marginal edges 10 forming the sides of such opening, it is only necessary to mount the frame 12 upon the face edge of the sink 11 with its upturned edge 16 received in the slot 21 of nut 20 mounted on rod 17. By properly turning rod 17, utilizing a screwdriver in the slot 23 for this purpose or merely with the fingers, the nut 20 is moved away from the sink rim so as to force rod 17 against spacer and bearing plate 27 to hold the frame 12 securely upon the sink rim 11. This work is done while the sink 11 and the frame 12 are in an upside-down position. Caulking compound is then applied to the underside of the portion 14 (as it was to the underside of the portion 13 which rests upon sink rim 11) of the frame 12 whereupon the sink and its attached frame are now reversed to upright position and lowered into the opening in the cabinet until the portion 14 comes to rest upon the marginal portion 10 of such cabinet, whereupon the plate 19 is placed against the underside of the marginal portion 10 with the rod 17 extending through the opening 18 in said plate. By tightening the nut 22 on rod 17, the plate 19 is now brought into a substantially horizontal position with the outer end section in engagement with the underside of the cabinet 10 after which the bolt 25 is threaded through the opening 24 until it comes into engagement with spacer and bearing plate 27 against the underside of the sink 11. Then either nut 22 or bolt 26 (or both) is further adjusted so as to force plate 19 into clamping engagement with the supporting cabinet structure 10. The clamping assembly, of course, functions in cooperation with frame or cover member 12 to grip the surrounding adjacent cabinet structure. It is understood that a sufficient number of the clamping assemblies are used in each installation to properly support and retain the sink in fixed arrangement with the cabinet top.

Numerous variations of the structure described are within the scope of the invention. Depending flange 15 may be fixed directly to convex cover 13. In such a modification frame 12 may have a lateral cross section in the form of T in which the cross on the T is preferably slightly convex. The modification of cover member 13 shown in Figure 2 is preferred because of the spring action of this arcuate cover member against the rim of sink 11. Depending flange 15 may be in sections instead of extending continuously as a unit entirely around the sink frame. In such a modification the depending sections are spaced according to the clamping assembly requirements, such as every 4 to 12 inches along the frame. Likewise, depending element 15 is not necessarily unitary with frame 12 but may comprise a series of spaced hangers of any type, such as rods hung from frame 12 by any suitable fastening device including a threaded connection, or a series of slots in horizontally extending member 14 and rivet-type rods suspended from said slots by their heads. In such an arrangement the lower end of said rods must of course have an upwardly and inwardly extending section for engagement with slot 21. The rods may be of circular, rectangular, square, oval or other suitable cross section.

In a further modification of the invention the element 16 on depending member 15 may comprise a rolled edge, a series of spaced-apart upturned sections of depending flange 15, or a series of bolts or rods threaded obliquely into a lower section of the flange or depending member.

Another modification of the invention comprises a series of small grooves, furrows, or ridges in the clamping end of plate 19 where it contacts the lower side of the

supporting structure 10. These irregularities should run transversely to provide gripping means on the clamp and render the structure more stable and rigid.

Figure 9 shows an embodiment of the invention utilizing a one-piece clamping member 31 of which horizontal arm 32 contacts the underside of cabinet top 10, while vertical arm 33 engages the underside of the sink rim 11. A slot 34 in arm 32 permits insertion of rod 17 therethrough. This type of clamp is not adjustable as is that of Figure 2 (members 19 and 25) but it is simpler and appreciably cuts down on assembly time as well as manufacturing costs.

Figure 10 shows an embodiment of the invention utilizing the one-piece clamping member 31 of Figure 9 and supporting means on the lower section of flange 15 comprising the upwardly directed lower edge of an opening 30 in the flange. A slot 21a in nut 20 engages the lower edge of the opening in supporting arrangement which permits the application of pressure between rod 17 and sink rim 11 by turning rod 17 so that the assembly, comprising frame 13, nut 20 and rod 17, is readily rigidly mounted on sink rim 11 in an upside-down position (or upright, if desired) prior to insertion of the sink in the opening. The arrangement shown in Figure 10 lends itself to rapid mounting without any tools (prior to insertion of the sink in the opening) and rigid attachment of the mounted assembly to the supporting cabinet top by merely placing clamps 31 in position and turning up wing nuts 36 with the fingers.

The detail of the clamp of Figures 9 and 10 is shown in Figure 11 and, likewise, the detail of the frame shown in Figure 10 is shown in Figure 12. Openings 30 in flange 15 may be any suitable shape which provides an upwardly directed edge for engagement with the slot 21a of nut 20. This type of hanger support means may also be used on the type of frame shown in Figure 10.

While several forms of the invention have been shown and described herein, it will be readily apparent to those skilled in the art that many minor modifications may be made without departing from the spirit of the invention or the scope of the appended claims.

I claim:

1. In combination with a sink having a horizontal rim and a cabinet top having a sink opening slightly larger than the margin of said rim, a frame around said rim comprising an upwardly arcuate member adapted to engage along one edge the upper surface of said cabinet top and along the other edge the upper surface of said rim so as to bridge the space between said cabinet top and said rim; a flange along the underside of said arcuate member having an L-shaped cross section integral with said member along its outer edge, one arm of said L extending horizontally inwardly in spaced-apart relation to said member along a portion of its width and the other arm extending downwardly between the outer edge of said rim and the edge of the cabinet top surrounding said opening; an upwardly and inwardly turned edge on the lower portion of the downwardly extending arm; a series of clamping plates at spaced intervals along the lower surface of said cabinet top and extending toward said sink, each of said plates comprising a substantially flat member having a pair of spaced-apart openings therein, one directly below the outer edge of said rim and the other closer to the body of said sink; a threaded rod extending vertically through said hole directly under said rim edge in slidable relation with said plate and engaging the lower side of said sink rim; a nut on said threaded rod above said plate having a horizontal slot in one of its edges adapted to engage the upturned edge of said downwardly extending arm; a nut on said rod below said plate adapted to exert upward force on same; a bolt threaded through the other of said holes engaging the bottom of said sink and adapted to apply a downward pressure on said plate and cooperate with the nut below said plate in applying a

clamping action between said plate and the horizontal arm of said flange and hold said arcuate member in close engagement with said cabinet top and said sink rim.

2. The device of claim 1 in which said hole directly under said rim edge is oval in shape to provide adjustment of said plate in mounting same.

3. The device of claim 1 including a spacer and bearing plate positioned between the upper ends of said rod and bolt and the under side of said rim, said bearing plate having means on its edge adjacent said frame for spacing said frame in relation to said rim.

4. A frame and mounting clamp for a sink having a horizontally extending rim, comprising an upwardly arcuate cover member adapted to engage along its inner edge the top surface of said sink rim and along its outer edge the top surface of a supporting structure such as a cabinet top so as to cover completely an opening between said sink rim and said supporting structure; a downwardly depending flange intermediate the edges of said cover member and integral therewith, at least a portion of the lower edge being upturned toward said sink rim; a clamping plate having a pair of spaced-apart holes one of which is threaded, said plate being adapted to engage the lower side of said supporting structure below said cover member; a threaded rod adapted to slidably extend through the unthreaded hole in said plate and apply pressure to the lower surface of said sink below the inner edge of said cover member; a nut on said rod above said plate having a horizontal slot in one of its edges adapted to engage the upturned section of the lower edge of said flange and apply a downward pressure on said flange when said threaded rod is turned; a nut on said threaded rod below said plate adapted to apply pressure on the underside of said plate; a bolt extending through the threaded hole in said plate in adjustable relation therewith so as to apply pressure to the lower surface of said sink rim nearer said sink than said threaded rod and adapted to cooperate with the nuts on said threaded rod and with said flange in applying a clamping pressure on said supporting structure and on said sink rim.

5. A frame and mounting clamp for a sink or similar device having a horizontally extending rim, comprising a relatively flat cover member adapted to frame said sink and cover the space between said rim and a surrounding adjacent supporting structure in which said sink is to be mounted; hanger means extending downwardly intermediate the edges of said cover member along the length thereof at least at spaced intervals, said hanger means having an upturned element adapted to engage a hereinafter described receptacle in an adjustable element; a clamp assembly for supporting said sink on said structure, comprising a clamping plate having a pair of spaced-apart openings therein adapted to receive a pair of threaded rods extending upwardly to the lower side of said sink rim when said plate is parallel to said rim and positioned so as to apply pressure to the lower side of said supporting structure, the threaded rod near said hanger means being in slidable relation with said plate and the rod more remote being threaded through the opening in said plate, a vertically adjustable element on the rod adjacent said hanger and above said plate having a receptacle therein to engage said upturned element and support the rod to which it is attached, and a nut below said plate on the rod adjacent said hanger adapted to apply clamping pressure on said supporting structure in cooperation with the threaded rod more remote from said hanger.

6. The device of claim 4 in which the hole in said plate nearer said hanger has a greater diameter along the common center line of said holes than the transverse diameter.

7. In combination a relatively flat frame for supporting a sink having a substantially horizontal rim, said frame having a depending hanger means intermediate its edges along its length at least at spaced intervals; supporting means on a lower section of said hanger means adapted to engage in supporting relation a hereinafter described

receptacle in an adjustable element; a threaded rod having an adjustable threaded element thereon, said threaded element having a receptacle therein in engagement with said supporting means and said hanger means, adjustable element, and threaded rod being adapted to support a sink in a sink opening.

8. The device of claim 7 in which said supporting means comprises an upturned lower edge of said hanger means and said threaded element comprises a nut having a lateral slot in at least one of its edges.

9. In combination a relatively flat sink frame and a hanger assembly for attaching said frame to the rim of a sink comprising a flange depending from the under side of said frame intermediate its edges, said flange having upturned sections spaced along its lower edge, a series of slotted nuts each having a threaded rod therethrough with the slot therein engaging said upturned sections so as to support said nuts and provide for clamping said frame to the rim of said sink upon adjustment of said threaded rods.

10. In combination with a sink having a horizontal rim and a cabinet top having a sink opening slightly larger than the margin of said rim, a flat mounting frame of T-shaped transverse cross section bridging the space between said rim and said cabinet top with the depending flange of the T-shaped frame positioned between said rim and said top; hanger means on said depending flange at spaced intervals adapted to engage and support the hereinafter described adjustable elements; clamping means comprising horizontal clamping elements engaging the underside of said top and extending inwardly toward said sink and vertical clamping elements extending from adjacent the inner end of each horizontal clamping element into contact with the underside of said rim; a vertical threaded rod extending loosely through a slot in each horizontal clamping element into contact with the underside of said rim nearer the edge thereof than said vertical element; a threaded adjustable element on each rod having a receptacle therein adapted to engage said hanger means on said flange and be supported thereby so that rotation of said rod rigidly attaches said frame to said sink rim; and a nut on said rod outside of each said horizontal clamping element adapted to force same against the underside of said top and said vertical clamping element against the underside of said rim so as to rigidly attach said sink to said cabinet top.

11. The combination of claim 10 wherein said vertical clamping element comprises a threaded rod engaging a threaded opening in said horizontal clamping means.

12. The combination of claim 10 wherein said horizontal and vertical clamping elements are integral, forming an L-shaped clamp.

13. The combination of claim 10 wherein said hanger means comprises openings through said flange and said adjustable element on said threaded rod comprises a nut having a slot in its lower face adapted to receive a lower edge of said opening.

14. The combination of claim 10 wherein said hanger means comprises an oblique flange on the lower section of said depending flange extending upwardly toward said sink rim and said adjustable element on said threaded rod comprises a nut having a slot therein adapted to receive said oblique flange.

15. In combination, an L-shaped clamping member having an opening in one of its arms; a threaded rod extending thru said opening in slidable relation with said arm; an adjustable element having a receptacle therein threaded on said rod inside the L; and a nut threaded on said rod outside the L, said combination being adapted to receive an adjustable supporting element of a sink frame in said receptacle and clamp the sink frame to a supporting cabinet top.

16. The combination of claim 11 wherein said adjustable element comprises a nut having a slot therein

for engaging a supporting element on a sink frame hanger.

17. In combination a relatively flat mounting frame for supporting a sink having a substantially horizontal rim, said frame having a depending flange intermediate its edges along its length at least at spaced intervals; an oblique flange on the lower section of said depending flange extending upwardly toward said sink rim; a vertical threaded rod adapted to engage the lower surface of a sink rim; and vertically adjustable nut on said rod having a slot therein in receiving engagement with said oblique flange, both said rod and said nut being positioned on the sink side of said flange.

18. In combination, a flat mounting frame of T-shaped transverse cross section adapted to bridge the space between a sink rim and a cabinet top with the depending flange of the T-shaped frame positioned between said rim and said top; hanger means on said depending flange at spaced intervals adapted to engage and support the hereinafter described adjustable elements; clamping means comprising horizontal clamping elements adapted to engage the underside of said cabinet top and extend inwardly toward said sink and vertical clamping elements adapted to extend from adjacent the inner end of each horizontal clamping element into contact with the underside of said sink rim; a vertical threaded rod extending loosely thru a slot in each horizontal clamping element to the position of the underside of said sink rim nearer the edge thereof than said vertical element; a threaded adjustable element on each rod having a receptacle therein adapted to engage said hanger means of said frame and be supported thereby so that rotation of said rod rigidly attaches said frame to said sink rim; and a nut on said rod outside of each said horizontal clamping element adapted to force same against the underside of said cabinet top and said vertical clamping element against the underside of said sink rim so as to rigidly attach said sink to said cabinet top.

19. In combination, a relatively flat endless mounting frame for supporting a sink with a horizontal flat rim in a cabinet top; hanger means comprising a flange depending from said frame intermediate its edges at least at spaced intervals along the length of said frame; upwardly extending supporting means on said flange; a threaded rod extending parallel with said flange on the sink side thereof supported on said support means by a vertically adjustable threaded element on said rod having a groove therein receiving said supporting means by hooking over said supporting means so as to be self supporting and hold said rod in vertical position preventing vertical rotation thereof, said hanger and a plurality of said supporting means being adapted to attach said frame to a sink rim before positioning the sink-frame assembly in a cabinet top opening, whereby said assembly is fully supportable in said opening preparatory to permanent fastening.

20. The combination of claim 19 wherein said upwardly extending supporting means comprises the lower horizontal edge of an opening in said flange and said threaded element comprises a nut having an upright groove in its bottom surface.

21. The combination of claim 19 wherein said upwardly extending supporting means comprises a section of said flange extending obliquely toward said threaded rod and said groove is an oblique groove in said threaded element.

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