April 1, 1969 G. J. FLEGEL ET AL 3,435,467

TOILET BOWL CARRIER

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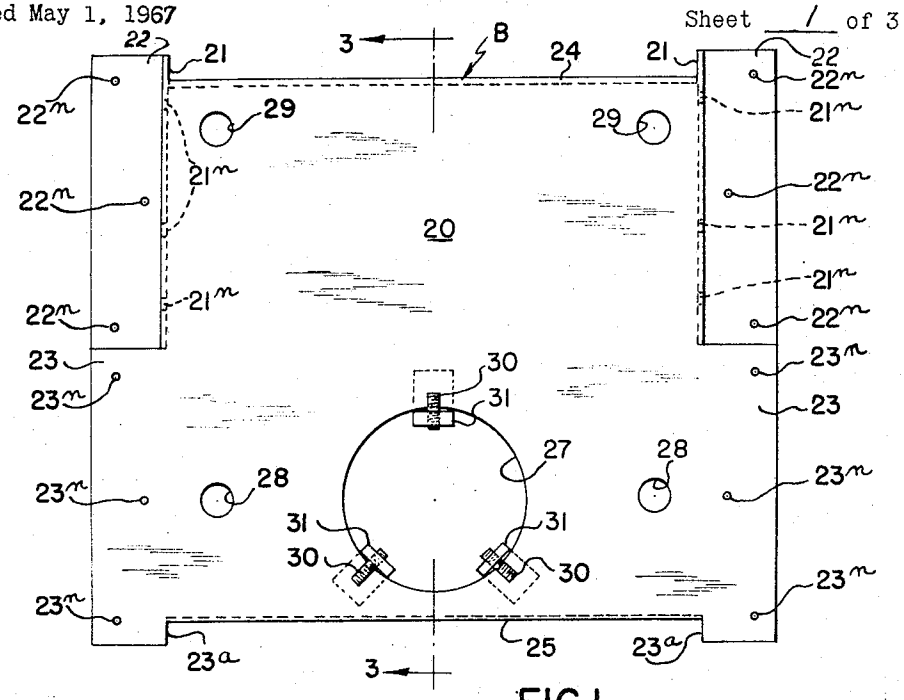


FIG. 1

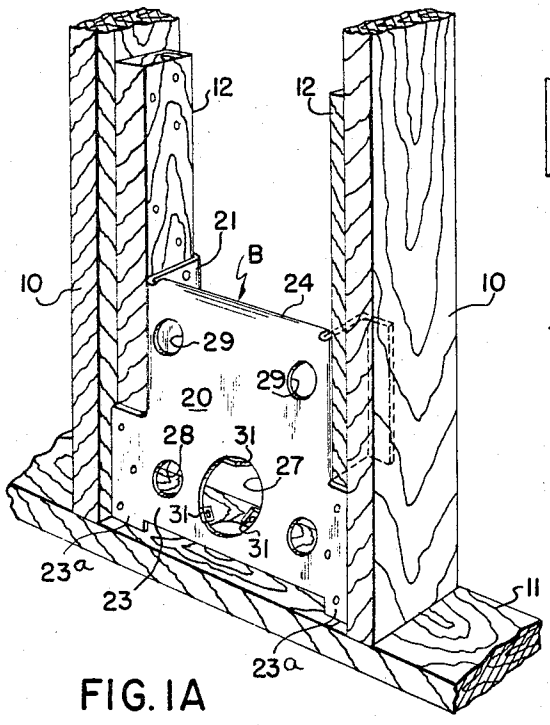


FIG. 1A

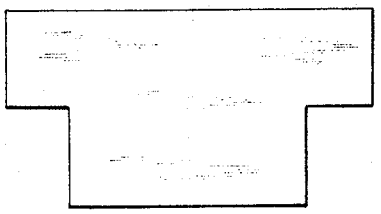


FIG. 4

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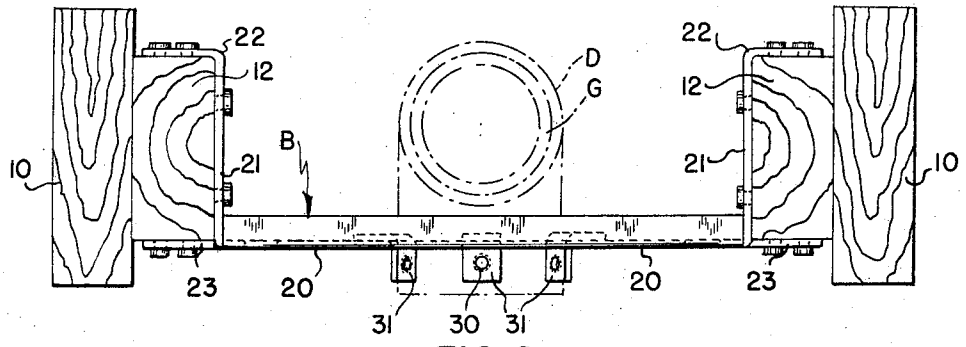


FIG. 2

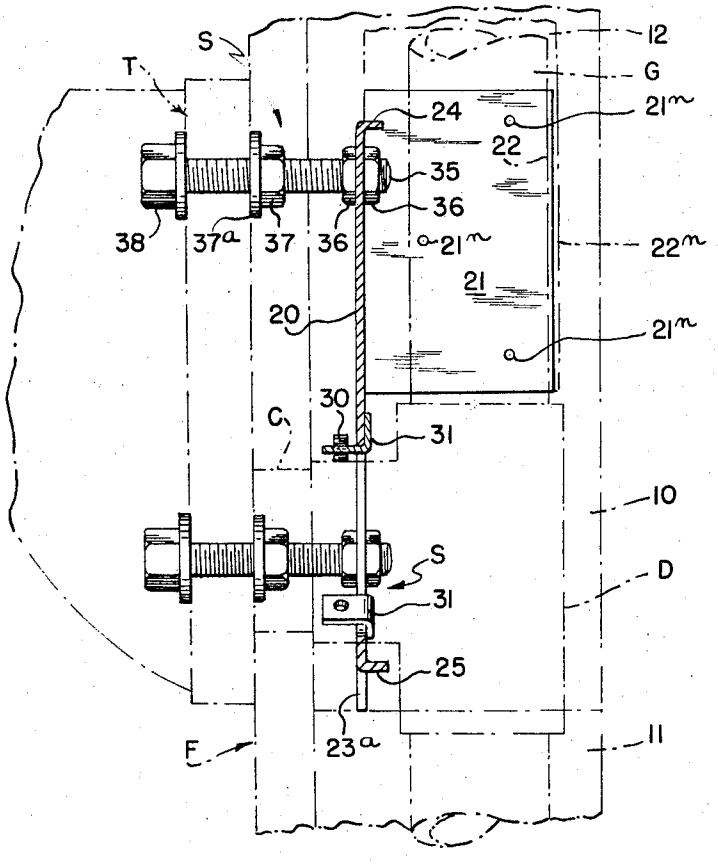


FIG. 3

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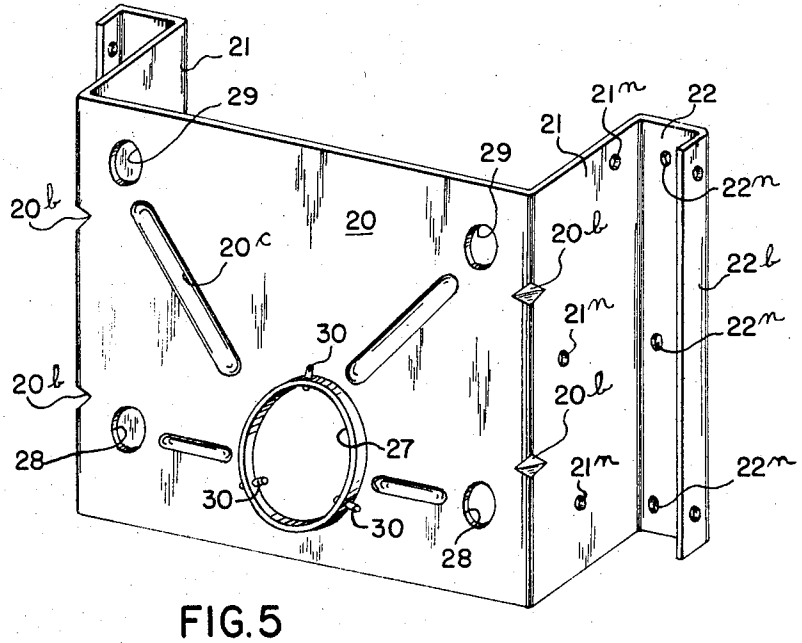


FIG.5

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TOILET BOWL CARRIER

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Int. Cl. A47k *13/00*; E03d *11/00*
U.S. Cl. 4—252 7 Claims

ABSTRACT OF THE DISCLOSURE

A sturdy stamped and formed heavy sheet metal carrier for a wall hung toilet bowl fixture and accommodating building frame structure; the carrier adapted to nailed securement to frame elements within a wall and to provide strong support of fixture and soil stack bowl inlet fitting relative to the framing and each other.

The present invention is concerned generally with the art of plumbing fixture carriers, and more particularly with a carrier for wall-hung plumbing fixtures such as a wall-hung toilet bowl.

Hitherto in the plumbing fixture carrier art, even in the patented art, there have appeared numerous carriers intended to be enclosed more or less ccompletely within a wall for giving primary support to wall-hung type toilet bowl fixtures. It has been the purpose or function of such carriers to support the fixture independently of the wall facing, though usually through fixture securing means extending through the facing, with transmission of its weight and the weight of the user to the sturdier structural elements in the wall, such as studding, sole plates or the equivalents thereof, or in some cases to the sub-floor structure by hidden carrier feet projecting from the wall region. Generally the carrier devices have at least secured the soil stack fitting to which the toilet bowl outlet is connected, in a fixed horizontal relationship to the intended wall location of a closet bowl, and at times afforded some support locally to a soil stack, usually by engagement with the stack fitting.

Some prior art carrier devices have been indeed quite successful in attaining the basic fixture support functions, while having the further desirable characteristic of being located entirely within the wall except, of course, for projecting fixture clamping stud bolts and bowl discharge connecting means. These have, however, generally involved relatively heavy cast iron components requiring to be bolted to wall studs or sole plate, or have comprised heavy welded steel constructions secured in a similar manner; or at times though utilizing heavy sheet metal have involved additional bracing members secured to the wall studs or the like and in turn bolted to the primary carrier components.

The present invention attains the desirable object of providing a carrier which by its shape and geometry may be relatively light but yet is readily and securely mounted in the wall in a relatively simple manner to afford a stable toilet bowl support. Further the structure of the carrier as hereinafter disclosed is such that it may be fabricated from heavy gauge sheet or light steel plate stock by common shearing, bending, perforating, and like forming operations and equipment; and, where used, with a minimum of welding which generally is noncritical in the required precision. Except for certain minor points of structure, the basic carrier construction according to the invention preferably is in effect an integral one piece heavy stamped metal structure. A carrier fabricated in accordance with the present invention accordingly has the advantages of a relatively low cost while attaining a sturdy stable structure readily installed with a minimum of labor.

The arrangement hereinafter described is particularly suitable for use in association with copper drainage line installations with sweated or soldered fittings in residential building.

Other objects and advantages will appear from the following description and the drawings wherein:

FIG. 1 is a front elevational view of the primary carrier component or bracket;

FIG. 1A is a perspective view of the bracket and wall framing environment;

FIG. 2 is a plan view of the carrier component of FIG. 1;

FIG. 3 is a vertical central section taken as indicated by the lines **3—3** in FIG. 1, but further showing a typical bowl clamping stud bolt arrangement, while in fragmentary dashed outline appears a portion of the toilet bowl and of environmental structure of the building frame and of the soil stack;

FIG. 4 is an example of a blank shape which may be used for production of the bracket member of FIGS. 1–3; and

FIG. 5 shows in perspective view a modification of the carrier bracket element.

A preferred form of the present invention, shown in FIGS. 1–3 of the drawings, is comprised of a primary carrier element or bracket B mounted between the wooden wall studs **10** above the sole plate **11** with the aid of the sleepers **12** for support, by means of fixture clamping and supporting stud bolt assemblies S, of a wall-hung toilet bowl fixture T shown in fragmentary dashed outline form with the bowl back close to but not bearing upon the finished wall surface F for discharge through a connector sleeve C to a sanitary T fitting D in a vertical soil stack G.

The primary member of the carrier arrangement, the bracket B, is shown as formed from a single steel plate or sheet symmetrical about a vertical center line to provide a flat vertical body or plate portion **20** for disposition parallel to the wall face and having at each side along its top half a respective rearwardly extending portion **21** bent at right angles to the plate to terminate in a flange portion **22** in turn bent at right angles outwardly into parallelism with body plate **20**; while on the bottom half at each side there is an extension **23** of substantially the width of the flange **22**, so that in front elevation as seen in FIG. 1, the bracket B appears to be generally of rectangular outline.

The spacing between the parallel planes of the inner faces of **22** and **23**, and of the edges of **22** and **23** from the outer face plane of **21**, correspond to the standard dimensions of say nominal 2 x 4 lumber to be used for sleepers, preferably the latter space being slightly less, to avoid interference with the studs. That is, the width of the bracket is slightly less than the standard spacing between opposed faces of adjacent studs. (See FIG. 1A.)

The plate **20** is also bent at right angles inwardly or rearwardly in rigidifying top and bottom flanges **24** and **25**; flange **24** extending between the two rearwardly bent parts **21** and flange **25** being actually slightly longer as shown in the drawings by about twice the thickness of the plate, so that the ends of the flange **25** terminate respectively in the plane of the outer faces of portions **21**. Hence the extensions or projections **23** of the plate **20** terminate in respective foot portion **23*a*** substantially equal in width to the flange **22**, so that bracket B has undersupport on the building frame sole plate **11** or like structure only at the two widely spaced extreme points represented by **23*a***.

Each part **21**, **22** and **23** is provided with three spaced small perforations or nail holes **21*n***, **22*n***, **23*n***, while the body or plate portion **20** has a large central aperture **27**, located on the vertical center line for accommodation of the toilet bowl connector sleeve C or the lateral branch

soil stack fitting D; a pair of lower stud bolt receiving apertures **28** lying on the horizontal center line of aperture **27**; and, equi-spaced vertically thereabove, the upper stud bolt receiving apertures **29**; apertures **28** and **29** being equi-spaced from the vertical center line.

To afford a place for threaded insertion of the set screws **30** clamping and centering the drainage fitting D or toilet bowl connector C in the bracket, there are three equi-angularly spaced small angle iron pieces or L's **31** each with one leg welded to the back face of the plate **20** and the other extending through the aperture **27** and threaded for a respective set screw **30**. Alternatively an outward circumferential flange **27***a* about the aperture **27** could be formed in a drawing operation, which flange in turn would be threaded at equi-angularly spaced locations for a like purpose, as in FIG. 5.

Each stud assembly comprises a stud **35** extending through and secured in a plate aperture by a pair of clamping hex nuts **36**; a further fixture flange back clamping hex nut **37** usually backing a pressure distributing washer **37***a* positioned at the wall finish line F; and a decorative blind nut clamping the fixture's mounting flange.

Inspection of the bracket B in FIGS. 1–3 shows that FIG. 4 represents the basic area and shape of metal required, or a basic blank shape from which it could be fabricated. Since the vertical heights and widths of flange **22** and of projection **23** are equal, a blank such as that of FIG. 4 may be sheared successively from a sheet or strip of appropriate width without waste. For fabrication of bracket B, the actual procedure stepwise as to the order of punching the several aforementioned apertures, and the bending or flanging or **21**, **22**, **24** and **25** are dictated by ordinary metal stamping or forming considerations and the equipment available or desired to be used. In any event after the general form of bracket B is obtained, the L's or angle pieces **33**, preferably already perforated and threaded for the set screws, are then welded in place; or where a flange **27***a* is provided as in FIG. 5, this is then drilled and tapped for the set scerws at the appropriate places.

At the time of installation, with the sole plate **11** already cut for and the lower part of the sanitary or drain line roughed in, the sleepers **12**, nominally 2 x 4 preferably and at least as long as the height of the bracket B, are centered on and secured to the opposed faces of respective wall studs. The form of the bracket permits quite adequate securement by nailing through the described apertures, screw nails or the like being preferable. The sanitary drainage T of the stack is placed in position and sweated to at least the lower portion of the soil stack; the carrier bracket is slid down into position from above with the portions **21**, **22** and **23** embracing respective sleepers, and then secured in proper position by twist nails or the like driven through the aforementioned nailing apertures **21***n*, **22***n*, and **23***n*. Thereafter the closet connecting sleeve C is adjusted to proper relation to the extended plane of the wall face, and sweated or soldered into the branch of the drainage T; the set screws **31** being first drawn up on the connector C or the end of the lateral branch of the fitting to center and hold the same. Further drainage piping or the like is then completed in the installation. Thereafter a closet bowl fixture clamping stud assembly S is assembled at each of the apertures **28** and **29**.

After the wall is completed, then in usual fashion the completion of the toilet bowl installation is carried out by adjusting as may be needed the position of the nut **37** on each stud assembly; placing the usual compression sealing gasket on the horn or discharge of the bowl; and finally hanging the bowl on the four studs and securing it by application of the decorative external clamping nuts **38**, this drawing up the discharge outlet of the bowl against the compression gasket to seal the fixture outlet against the end of the connector C.

Another form of carrier adapted for fabrication by stamping or metal forming methods from light plate or heavy gauge sheet stock appears in FIG. 5 wherein corresponding parts are designated by reference numerals similar to those used in FIGS. 1–3. This form of the invention is intended primarily for installation directly upon suitably spaced studs and accordingly at each margin is bent at right angles rearwardly from top to bottom in the rearward extension **21**, which in width is selected somewhat less than the depth of the stud to provide suitable clearance for the vertical body plate **20** and projecting flange **27***a* relative to the back surface of the wall covering material to be applied, such as lathe and plaster, dry wall construction, etc. The flange **22** is the width of the nominal stud thickness and terminates in a forwardly reflected portion **22***b* bent at right angles to be parallel to **21**, so that the studs are embraced at the opposed faces, the rear end on the other side by the rearwardly flanged or extending portions **21**, flanges **22** and **22**^{b} respectively. The carrier is generally assembled to the studs and nailed in place in similar fashion to that previously described for the first form.

However, for structural reenforcement, there may be further formed in the bracket at the dihedral edges between **20** and **21** the angular inward indentations **20***b*, with the stamped ridges or rounded channels **20***c* disposed as indicated for reenforcement against flexing.

We claim:

1. For support of a wall hung toilet bowl fixture having a pair of horizontally spaced upper mounting flange apertures and at least one lower mounting flange aperture, and an outlet for discharge connection to a soil stack,

a fixture carrier adapted for installation in a wall in the space between a pair of successive vertical wall frame elements comprising;

a single piece metal bracket including a vertically extended generally flat body portion having a large aperture for extension therethrough of a means connecting to a soil stack the outlet of a bowl supported by the carrier, smaller upper and lower stud bolt receiving apertures, corresponding to said flange apertures in number and location relative to each other and to the large aperture, vertically extended formations on each side of said body adapted to embrace a respective one of said pair of elements on at least two adjacent vertical faces, said formations perforated to provide holes for bracket securing means driven into said elements;

means on the bracket for securing the first said means in said large aperture; and

stud bolt means secured in said bolt receiving apertures and adapted to clamp said fixture at said mounting flange apertures thereof.

2. A fixture carrier as described in claim **1**, the said means on the bracket comprising a plurality of at least three equi-spaced lugs with inner ends secured on said body portion adjacent the large aperture and extending outwardly therefrom, and respective clamp screws threaded through said lugs for engaging a said connecting means extending through said large aperture.

3. A fixture carrier as described in claim **1**, the said means on the bracket comprising an outward flange integrally formed continuously about said large aperture and respective clamp screws threaded through said flange for engaging a said connecting means extending through said large aperture.

4. In combination with a fixture carrier as described in claim **1**, a wall framing construction providing a horizontal sole plate, a pair of studs extending upwardly therefrom and respective sleepers rigidly secured to and narrower than opposed faces of the studs, said sleepers extending upward from said sole plate to above the said body portion secured thereto as said vertical wall frame sleepers.

5. In a fixture carrier as described in claim **1**, said

bracket, a stamped single metal sheet having: a generally flat vertical major portion as a body to span the space between the opposed faces of two successive wall studs as vertical wall elements, formed lateral portions extending first rearwardly at right angles to the major portion and affording parallel vertically extended flat portions and then sidewise respectively at right angles to the last said portions and in coplanar relation, as said vertically extended formations.

6. A fixture carrier as described in claim 5, having rearward flanges formed along the top and bottom edges of said major portion over substantially the entire width thereof.

7. A fixture carrier as described in claim 6 wherein bottom lateral coplanar extensions of said major portion

respectively provide at each side with said formed lateral portions as further parts of said vertically extended portions whereby three faces of said vertical frame elements are embraceable.

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