Oct. 18, 1966 G. R. HUTCHINS 3,278,950

CARRIER

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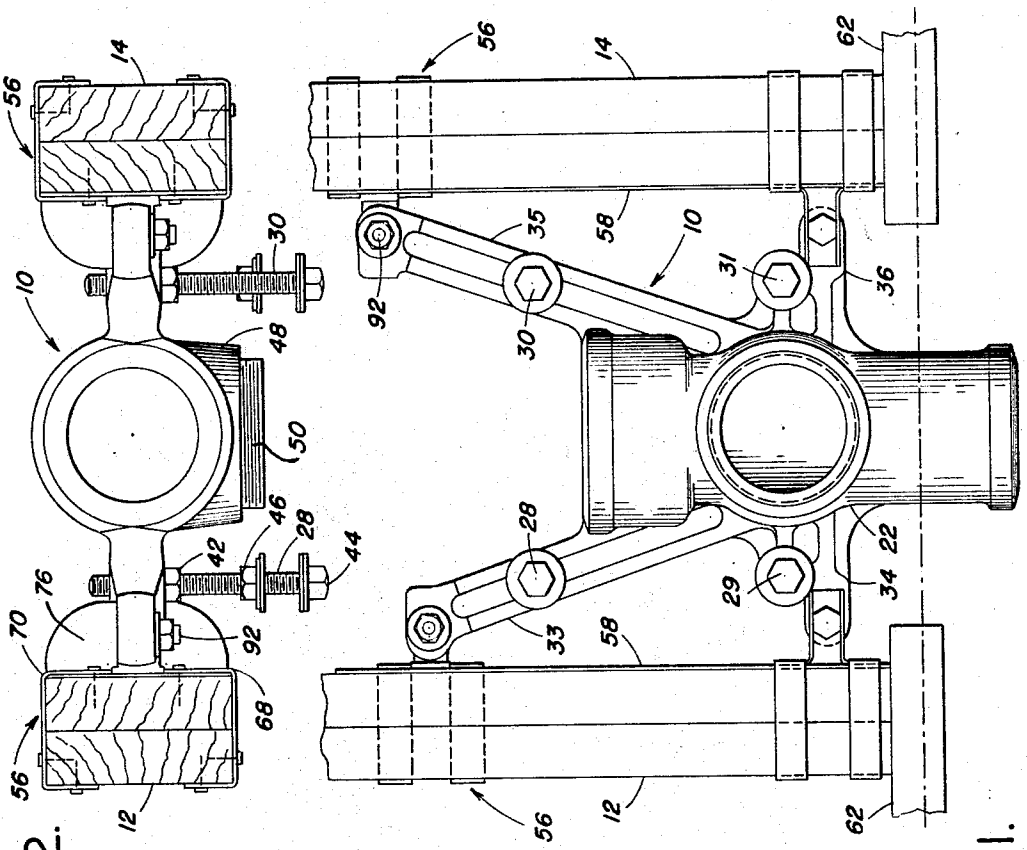

Fig. 2.

Fig. 1.

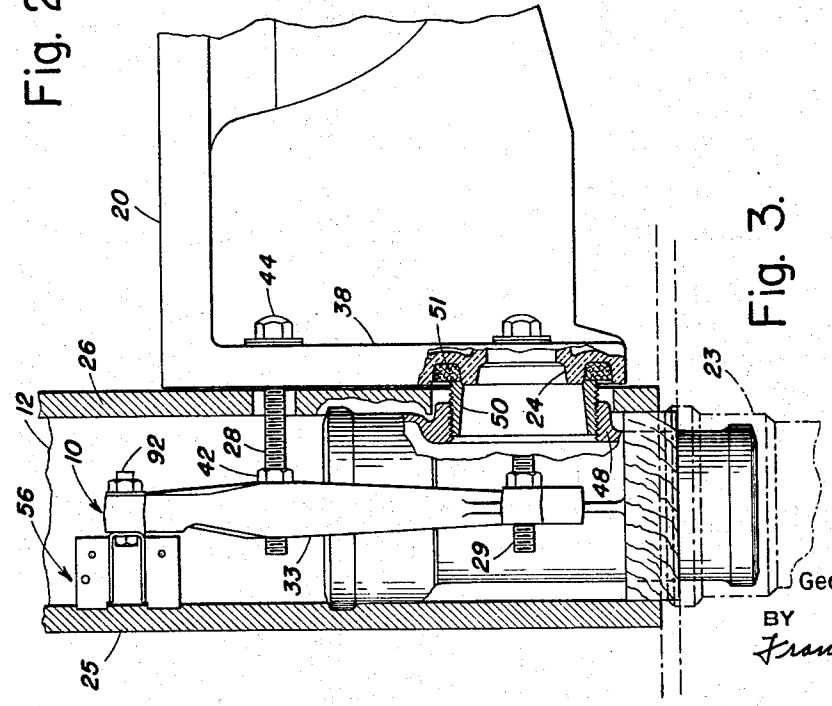

Fig. 3.

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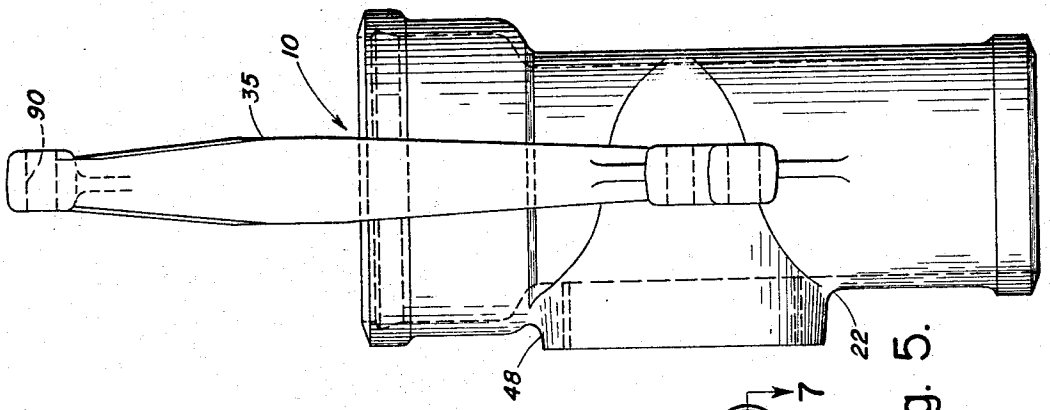

Fig. 5.

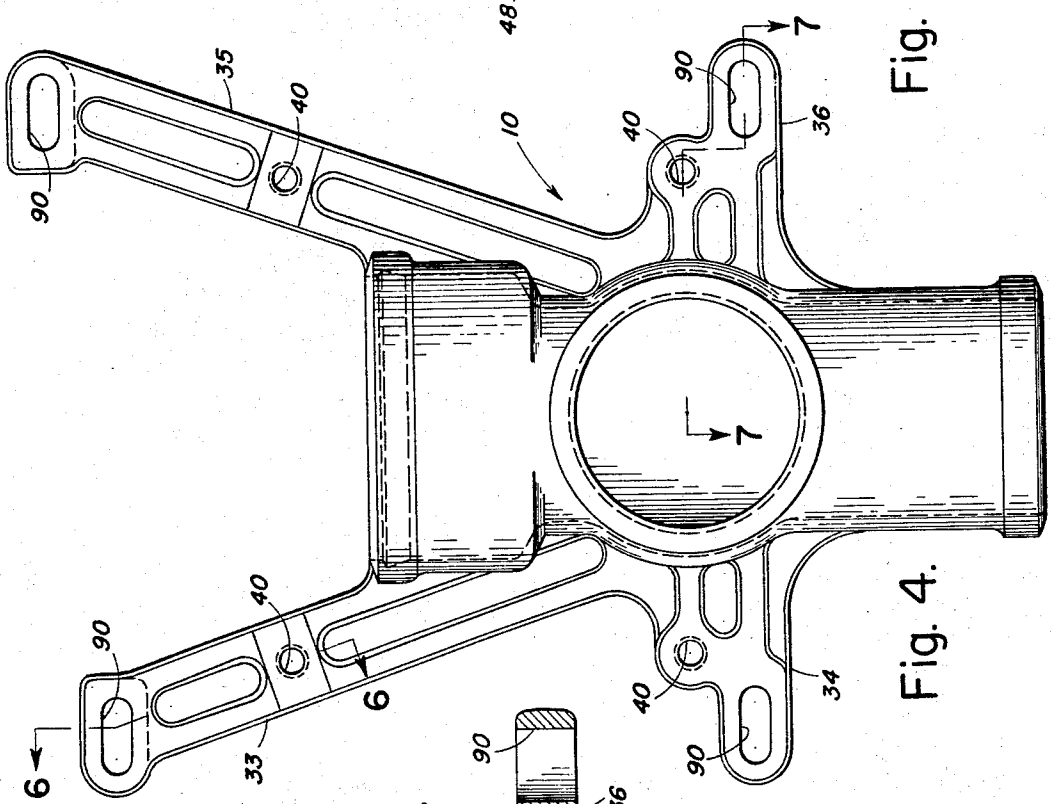

Fig. 4.

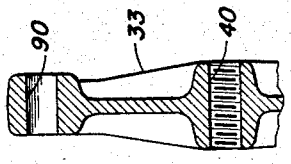

Fig. 6.

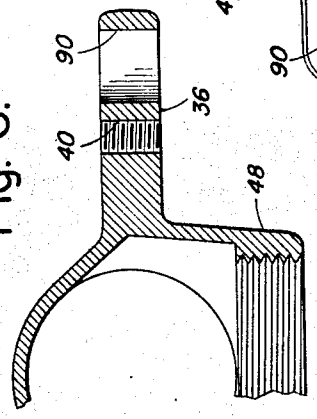

Fig. 7.

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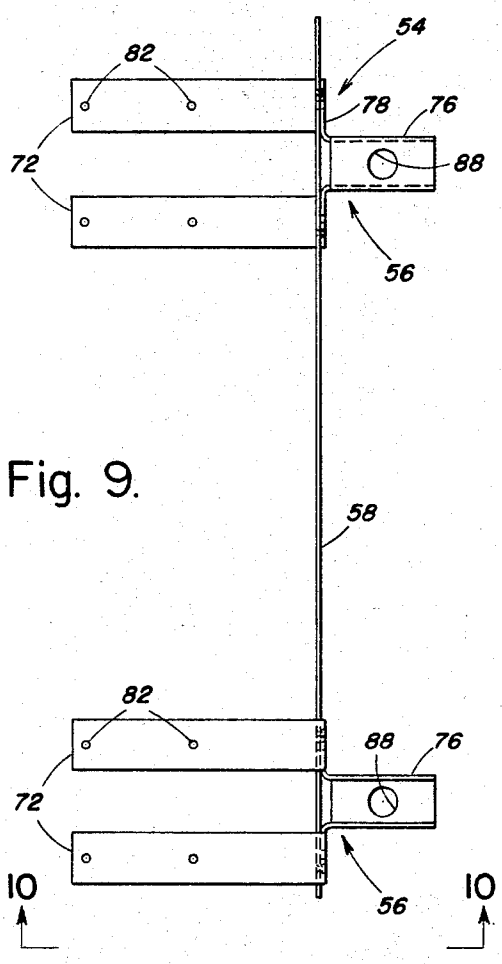

Fig. 9.

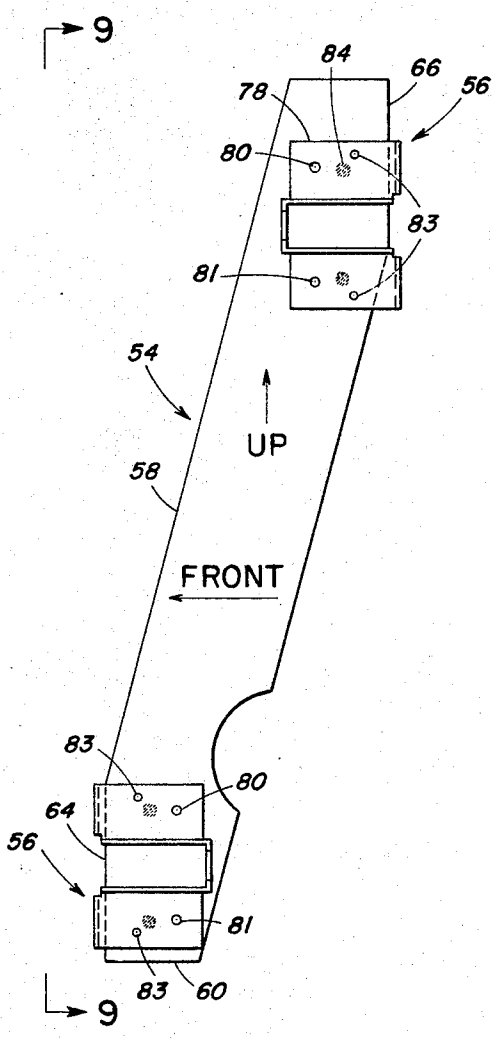

Fig. 8.

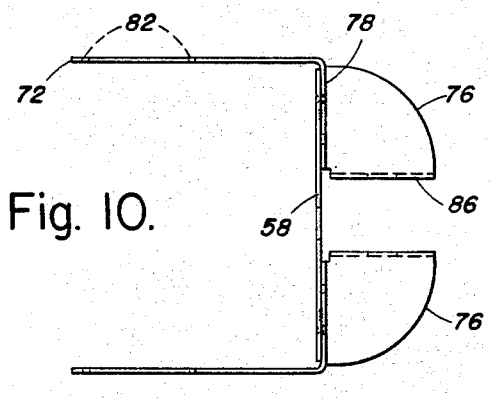

Fig. 10.

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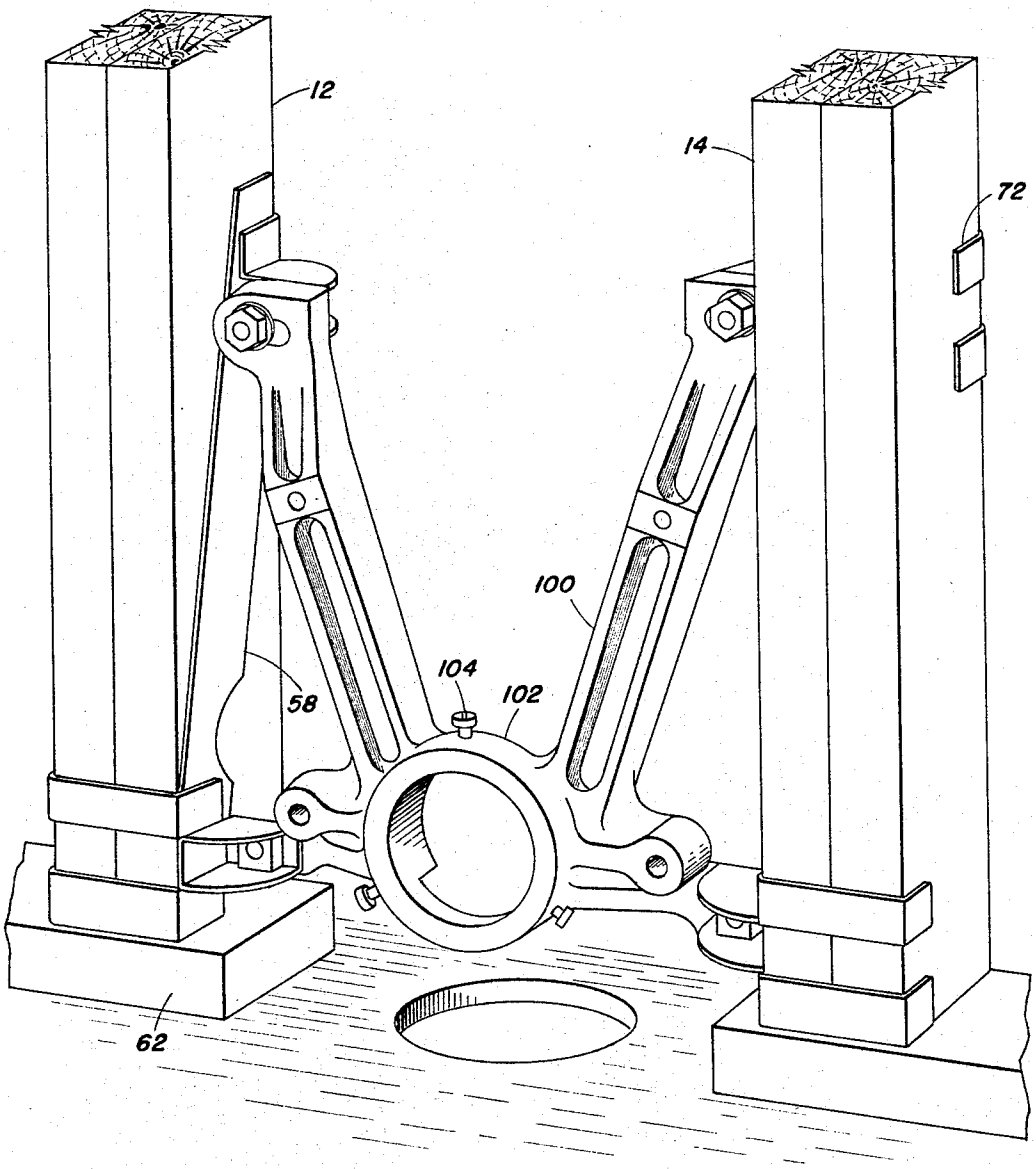

Fig. 11.

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United States Patent Office 3,278,950 Patented Oct. 18, 1966

3,278,950

CARRIER

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Filed Oct. 9, 1963, Ser. No. 315,069
22 Claims. (Cl. 4—252)

This invention relates to a mounting device for a wall hung plumbing fixture such as a water closet.

Heretofore, installation of a wall hung plumbing fixture such as a water closet required various rather involved procedures, including the use of special tools, which were responsible for a large part of the total installed cost. For example, in one known method of installing a wall hung water closet, after insuring that the studs in the building wall were accurately spaced, it was required to locate and drill bolt holes through the studs and floor-sill, and to locate and notch the studs in order to affix the mounting device in its proper position. Not only was this time consuming, but frequently it required the special skills of both a plumber and carpenter.

According to the present invention these problems are eliminated and a complete and adequate structural support for a wall hung plumbing fixture may be installed without requiring any critical procedures or special tools, while at the same time providing flexibility to handle normal dimensional variations in stud spacing.

According to the present invention, mounting brackets, which are accurately positioned on the wall studs such as by the use of a template which eliminates the need for any measuring, are designed such that only a very small percentage of the load supported by the mounting brackets is carried by the fastening means used for securing the brackets to the studs. The mounting brackets support a carrier and the design of the mounting brackets and the carrier supported thereby is such that the load is transmitted from the pumbing fixture, to the carrier, to the mounting brackets, and thence to the studs.

Accordingly, it is an object of the present invention to facilitate installation of a wall mounted plumbing fixture wherein no critical procedures or special tools are required to make a sound installation.

Another object is to provide a mounting device for a wall mounted plumbing fixture wherein only a small percentage of the load is carried by the fastening means used for securing the mounting brackets to the studs.

A further object is to provide a mounting device for a wall mounted plumbing fixture which has flexibility to handle normal dimensional variations in stud spacing so that the installer or plumber does not have to do any carpentry work.

Yet a further object is to provide a mounting device which reduces installation time and installation cost of a wall hung plumbing fixture.

Other objects and features of the invention will appear as the description of the particular physical embodiment selected to illustrate the invention progresses.

For a better understanding of the present invention reference should be had to the accompanying drawings, wherein like numerals of reference indicate similar parts throughout the several views and wherein:

FIGURE 1 is a front elevational view of one embodiment of the mounting device of the present invention.

FIGURE 2 is a plan view of FIGURE 1.

FIGURE 3 is an elevational view of the mounting device of FIGURES 1 and 2 taken through the wall with the left hand mounting bracket assembly removed and also showing a broken away portion in section and a portion of a water closet.

FIGURE 4 is a front elevational view of the carrier shown in FIGURE 1.

FIGURE 5 is a side view of the carrier shown in FIGURE 4.

FIGURE 6 is a partial sectional view taken along the line 6—6 of FIGURE 4.

FIGURE 7 is a partial sectional view taken along the line 7—7 of FIGURE 4.

FIGURE 8 is an elevational view of the mounting bracket and template.

FIGURE 9 is a side view looking along the line 9—9 of FIGURE 8.

FIGURE 10 is an end view looking along the line 10—10 of FIGURE 9.

FIGURE 11 is a perspective view of a modified mounting device shown installed between the studs of a building.

Before explaining the present invention in detail, it is to be understood that the invention is not limited in its application to the details of construction and arrangement of pairs illustrated in the accompanying drawings, since the invention is capable of other embodiments and of being practiced or carried out in various ways. Also it is to be understood that the phraseology or terminology employed is for the purpose of description and not of limitation.

Referring to the drawings, a member 10, hereinafter referred to as a carrier, is shown as being supported by the upright studs 12 and 14 of a building wall. Although each stud 12, 14 is shown as being made up of two members, a single member or any number of members may be employed. The carrier 10, which may be formed as a single integral member, is supported from the studs 12, 14 and a plumbing fixture, such as a water closet 20 partially shown in FIGURE 3, is in turn supported from the carrier. The carrier 10 may have formed integrally therewith a T 22 having one conduit portion connected to a waste soil pipe 23 (FIG. 3), another conduit portion connected to the flush outlet 24 of the water closet, and a third conduit portion either connected to an upper vertical stack pipe (not shown) or provided with a plug (not shown).

The carrier 10 is mounted between the studs within the building wall so that the water closet 20 supported thereby will project outwardly from the wall. FIGURE 3 shows the relationship wherein two finished wall sections 25, 26 are carried on either side of the studs and the water closet 20 projects outwardly from the finished wall section 26. With the carrier 10 suitably supported from the studs 12, 14 by means to be hereinafter described, suitable attachment means such as threaded rods or studs 28, 29, 30, 31 provide a support connection between the generally radiating arms 33, 34, 35, 36 respectively, of the carrier and a flange 38 at the rear of the water closet 20. One end of each rod, such as the rod 28, may be threaded to a suitable opening 40 (FIGURE 4) in the carrier arm 33 and a nut 42 provided to lock the rod in position. The other end of the rod 28 may be suitably secured to the water closet flange 38 by providing a cap nut 44 at the end of the rod 28 and a nut 46 adjacent thereto so that the water closet flange 38 will be held between the two nuts 44 and 46. Suitable washers may be provided adjacent the nuts.

With the water closet 20 supported on the carrier 10 by the rods 28 to 31, the flush outlet 24 of the water closet 20 will be in general alignment with the conduit portion forming the side inlet 48 of the T 22. Accordingly, a threaded adapter or coupling member 50 may be threaded to suitable threads in the side inlet 48 of the T 22 and suitable packing 51 may be provided to make up a water tight seal and connection between the water closet 20 and the carrier T 22.

The means for supporting the carrier 10 from the studs 12, 14 comprise two mounting bracket assemblies each of which is indicated generally at 54. Each of these

assemblies is comprised of a pair of mounting brackets or clips indicated at **56**, and a connecting member or template **58**.

Before a mounting bracket assembly **54** is positioned on a stud, it appears generally a shown in FIGURES 8 to 10 wherein a pair of straps, e.g., **72** and a lug, e.g., **76** of the mounting clip **56** extend laterally from opposite sides of the template **58**. Th straps **72** and the base **78** of the lug **76** may be made to meet at a generally right angle as best shown in FIGURE 10.

Each mounting bracket assembly **54** may be installed by placing the template **58** thereof along side the studs **12** or **14** and locating its proper position by the use of suitable referenced indicia. The vertical position of each assembly may be determined by resting the bottom edge **60** (FIG. 8) of the template **58** against the upper surface of the floor sill **62** (FIG. 1) while the horizontal position may be determined by placing the inside flat surfaces of the laterally extending straps **72** against respective front and rear faces of the studs so that the portion of the template underlying the base **78** of the lug **76** will rest against one face of the stud and the adjacent portion of the strap **72** will rest against another perpendicular face of the stud. (As an alternate means, not specifically illustrated, of locating the horizontal position of the mounting bracket assembly, front and rear edges, such as at **64** and **66** respectively may be provided on the template to align with the front and rear corners **68** and **70** respectively (FIG. 2) of the studs.) Each mounting bracket assembly **54** is designed such that when it is located on a stud as described above, the mounting clips **56** will be disposed in the correct location for supporting the water closet at the desired position. As will be noted in FIGURE 8, the template **58** may be suitably marked, such as by the use of the words "up" and "front" to guide and aid the installer and to insure that the assembly is installed correctly on the studs.

Suitable fastening means are employed to secure the mounting clips **56** to the studs. Nails, for example, may be used for this purpose and accordingly, suitable holes may be pre-formed in the template **58** and mounting clips **56** to receive the nails.

The nails are driven in to the studs through the holes **80** provided in the lug base **78** and through aligned holes (not shown) in the template **58**. Holes such as at **81** may also be provided in the mounting clips so that the latter are interchangeable. The straps **72**, which are longer than the side faces of the stud, are then bent around the stud and nails are driven through the openings **82** in the bent over portions of the straps. The disposition of the straps after they have been bent around the stud and nailed can best be ascertained from FIGURE 2.

The mounting clips are designed so that they may be readily bent around the studs as described, and accordingly, they may be made of sheet metal, for example which allows them to be readily vent with a hammer. It will be observed that each mounting clip **56** is wrapped around two corners of the stud. This type of mounting transfers most of the applied load to the stud at these corners so that the shear load applied to the fastening means, e.g. nails, is correspondingly low. It will be further observed that the upper mounting clips **56** are wrapped around the two rear corners of the stud while the lower mounting clips are wrapped around the two front corners of the stud. Thus the load on each stud is distributed over the four corners of the stud and the use of fastening members, e.g., nails, for mounting each mounting clip provides a sufficiently sound connection for the intended purpose. Other fastening members such as threaded screws may also be used instead of nails if desired.

In the illustrated embodiment, the mounting clips **56** are shown as being secured to the template so that each mounting bracket assembly **54** is furnished to the installer as a unit. Accordingly, the template **58** may be secured to the mounting clips **56** at the factory by spot welding, such as shown at **84** (FIGURE 8), or by other suitable connecting means depending on the materials used. To provide desired alignment before the connection between the mounting clips **56** and template **58** are made, suitable openings in the mounting clips **56**, such as at **83**, may be made to mate with protrusions or dimples (not shown) on the template. It is observed that the mounting clips **56** are secured to the template **58** and provided as a unit assembly to provide convenience to the installer. Thus with the mounting clips **56** secured to the template **58** to form a unit assembly, it is a simple matter for the installer to observe the markings, as heretofore mentioned, on the template **58** and install the assembled unit very quickly and there is no problem that the template will be lost or misplaced or not properly aligned with the mounting clips. It is noted, however, that if desired, the template **58** may be furnished separately and suitable indicia provided thereon to align the mounting clips **56** therewith during installation. It will be readily understood, therefore, that the template need not form a structural part of the mounting device and accordingly, it may be of relatively inexpensive materials such as plastic or cardboard.

With the two mounting bracket assemblies **54** installed on the two studs **12** and **14** as aforesaid, the engaging faces **86** of the two projecting lugs **76** of each mounting bracket assembly **54** will face in opposite directions as best shown in FIGURE 10. Accordingly, the carrier **10** may be suitably placed adjacent the engaging faces **86** of the lugs **76** so that the engaging faces **86** of the lugs of the two upper mounting clips **56** will mate with one side of the carrier **10** and the engaging faces **86** of the lugs of the two lower mounting clips **56** will mate with the opposite side of the carrier.

Suitable means, such as the bolts **92**, may then be passed through openings **88** in the lugs **76** and through generally aligned slots **90** at the ends of the carrier arms **33** to **36**. Suitable nuts or the like threaded, or fastened to the bolts **92** will thereby affix the carrier **10** to the mounting clips **56**.

From the above description will be observed that the lower mounting clips, which are wrapped around the front of the studs are bolted to the front of the carrier **10** while the upper mounting clips, which are wrapped around the rear of the studs, are bolted to the rear of the carrier. This design distributes the load carried by the mounting clips to the studs, and particularly to the corners thereof, such that only a small percentage is carried by the fastening means, e.g. nails, used for securing the mounting clips to the studs.

To demonstrate that the fastening means, such as nails for example, take only a small percentage of the load, all nails were removed from a mounting bracket assembly and the two straps of each mounting clip were held close to the stud by a block of wood with one nail driven through the block and passing through the space between the straps. A load of approximately 1000 pounds was then applied to the water closet and it was found that the mounting clips functioned completely satisfactorily. There was no distortion, slippage, or breakage of any type.

As shown in FIGS. 1 and 4, the carrier arm **33** may be made shorter than the carrier arm **35**. Accordingly, the mounting bracket assemblies **56** are provided with unequal length left and right-hand mounting bracket assemblies to match. This construction insures that the mounting clips will not be installed with the direction of loading the mounting clips reversed.

It is observed that in building construction, the spacing of studs is not always precise. For example, stud spacing which is designed to be 16 inches may vary anywhere from 15½ inches to 16½ inches. Accordingly, the provision of the elongated slots **90** in the carrier **10** will permit the carrier to be fitted to mounting clips

of varying spacing as determined by the variation in spacing of the studs.

FIGURE 11 illustrated a modified carrier **100** which is provided with an integral cylindrical ring **102** having suitable set screws **104** by which a separate T (not shown) may be secured. This modified carrier is useful, for example, when it is desired to use a carrier of one material e.g. cast iron and a separate T of another material, e.g. copper.

Instead of the T shown in the embodiment of FIGURES 1–10, a T (not shown) with a side inlet, left, right, or left and right may also be used.

From the above descriptions, it will be evident that no special tools are required to install the mounting device. The device may be installed between studs of various spacing therebetween. The design is such that only a small percentage of the load is carried by the fastening devices used for supporting the mounting clips on the studs. The requirements of prior cumbersome and time-consuming techniques, such as measuring, drilling bolt holes through the studs and sole plate, notching the wall studs, and setting studs on precision center lines are eliminated.

The only tools required are a hammer and an adjustable wrench or the like. The necessity of measuring and drilling holes have been eliminated. The design is such that reverse installation of the mounting clips and carrier is impossible, assuring that the load transmitted to the mounting clips is always in the proper direction. It provides structural support with load transferred to the wall rather than the plumbing. Normal shrinkage of the wall studs will not alter the strength and rigidity of the mounting.

The invention herein above described may be varied in construction within the scope of the claims, for the particular embodiments selected to illustrate the inventions are but two of many embodiments of the same. The invention, therefore, is not to be restricted to the precise details of the structures shown and described.

What is claimed is:

1. A mounting device for a wall hung plumbing fixture, comprising a carrier, means attached to said carrier supporting said plumbing fixture therefrom, means supporting said carrier on upright frame members, the last said means comprising a pair of bracket assemblies, each of said bracket assemblies comprising a pair of mounting clips and a template, said mounting clips being received on said template, each of said mounting clips having elongated straps extending generally around transverse portions of said frame members, and fastening members affixing said straps to the frame members, said templates serving to suitably position said mounting clips on the frame members such that by placing the templates on the frame members relative to predetermined references on the frame members, the mounting clips will be positioned and fastened in suitable positions on the frame member to receive the plumbing fixture at its proper position.

2. A mounting device as set forth in claim **1** wherein the straps of one mounting clip of one bracket assembly pass generally around a rear portion of a frame member and the straps of another mounting clip of said one mounting bracket pass generally around a front portion of the last said frame member.

3. A mounting device as set forth in claim **1** wherein the frame members have polygonal cross sections such that the straps of one mounting clip of one bracket assembly pass generally around two corners of the frame member and the straps of another mounting clip of said one bracket assembly pass generally around two other corners of the last said frame member.

4. A mounting device as set forth in claim **1** wherein each mounting clip has a projecting lug having a portion defining a face against which the carrier is mounted, the face portions of the lugs of a pair of mounting clips of a bracket assembly facing in opposite directions such that the load on one mounting clip of said pair is carried generally by the front section of the frame member and the load on the other mounting clip is carried generally by the rear section of the frame member.

5. A mounting device for a wall hung plumbing fixture comprising a carrier from which the plumbing fixture is supported, means for supporting said carrier from generally vertical frame members, the last said means comprising a pair of bracket assemblies each comprising a pair of spaced mounting clips carried on a connecting member, said bracket assemblies being positioned on said frame members relative to indicia determined with reference to the frame members so that the bracket assemblies will be located on side frame members in the desired position for receiving the carrier on which the plumbing fixture is supported, and means for securing said bracket assemblies to said frame members, the last said means comprising fastening members of the type adapted to be inserted into the material of the frame members.

6. A mounting device as set forth in claim **5** wherein said fastening members are nails.

7. A mounting device as set forth in claim **5** wherein the said fastening members are screws screwed into the frame members.

8. A mounting bracket assembly securing a plumbing fixture support carrier to a generally vertical upright frame member, comprising a pair of spaced brackets received on a connecting member, said connecting member serving as a template such that the mounting bracket assembly when suitably positioned on a vertical upright frame relative to reference indicia on the frame, will be properly positioned to receive the carrier at an elevation of the latter will support the plumbing fixture in the desired position, said spaced brackets having straps wrapped at least partially around transverse sections of said frame member, said straps being secured to said frame member after the brackets have been properly positioned on the frame member by the template, and lugs on said brackets projecting generally transversely of the frame member considered when the brackets are secured to the frame.

9. A mounting bracket assembly as set forth in claim **8** wherein said spaced brackets are formed of sheet metal such that the strap members may be readily bent around the frame member as the brackets are installed thereon.

10. A mounting bracket assembly as set forth in claim **8** wherein one of said brackets of a spaced pair is wrapped around the front of one frame member and the other of said brackets of said spaced pair is wrapped around the rear of said one frame member.

11. A mounting bracket assembly as set forth in claim **10** wherein each of said brackets has a projecting lug having a face adapted to mate against a support carrier, the lug faces of each pair of brackets of a bracket assembly facing in opposite directions so that the carrier is thereby supported from two sides thereof.

12. In a mounting bracket assembly securing a plumbing fixture support carrier to a generally vertical upright frame member, comprising a template, and brackets received on said template, said template being constructed and proportioned such that it is positioned on the frame members in a predetermined vertical and horizontal disposition by aligning reference indicia on the template with specified structural characteristics of the frame member such that the brackets are thereby properly positioned on the frame members in both a vertical and horizontal disposition to receive the plumbing fixture support carrier on which the plumbing fixture is supported.

13. In a mounting bracket assembly as set forth in claim **12** wherein the bottom edge of said template serves as a reference indicia to determining vertical disposition of the template and side edges of the template align with corners of the frame member to determine horizontal disposition of the template on the frame member.

14. In a mounting bracket assembly as set forth in

claim **12** wherein said template extends diagonally of the upright frame member and has an upper portion with a vertical edge forming a reference indicia for alignment with one vertical corner of the frame member and a lower portion with a vertical edge forming a reference indicia for alignment with another vertical corner of the frame member.

15. A mounting device for a wall hung plumbing fixture, comprising a carrier disposed between two generally upright spaced frame members, said carrier supporting a plumbing fixture thereon, mounting brackets on said frame members having straps extending around transverse sections of said frame members and having lugs extending transversely from the frame members, fastening means securing said mounting brackets to said frame members, means extending from said lugs on which the carrier is mounted, the last said means cooperating with the carrier to provide horizontal adjustment of the carrier relative to the mounting brackets so that the carrier may be accurately positioned between the frame members for varying spacing of the frame members.

16. A mounting device as set forth in claim **15** wherein the last said means comprises threaded members extending between the mounting brackets and the carrier, said carrier, having openings in the form of slots elongated in a generally horizontal direction such that the threaded members may be received therein along varying positions of the slots.

17. A mounting device for a wall hung water closet comprising a carrier having a plurality of generally radiating arms terminating adjacent a pair of spaced upright wall frame members, mounting brackets supported on said frame members, means attaching the arms of said carrier to the mounting brackets, the last said means comprising elongated connected members and slots in the arms of the carrier enabling the carrier to be fitted to the mounting brackets by the connecting members for varying spacing of the mounted brackets as determined by inaccuracies in the spacing of the upright wall frame members to which the mounting brackets are affixed, and means on said carrier mounting a water closet thereon.

18. A mounting device as set forth in claim **17**, wherein said carrier has a T formed integrally therewith, said T being arranged so as to have a side conduit forming a water tight seal with the flush outlet of the water closet.

19. A mounting device as set forth in claim **17** wherein the carrier has an integral cylindrical portion, arranged to receive a flush drain conduit.

20. A mounting device as set forth in claim **17** wherein said carrier arms are provided with means supporting the water closet therefrom.

21. A mounting device as set forth in claim **17** wherein the vertical spacing between carriers arm to be connected to one frame member is different from the vertical spacing between carrier arms to be connected to another frame members, thereby aiding in insuring that the mounting brackets and carrier will be installed in a predetermined disposition.

22. The method of securing sanitary fixtures to studding which comprises providing a carrier extending in a generally vertical plane with a pair of outwardly extending brackets for gripping a pair of studs at a front portion of the studs and a second pair of brackets for gripping a rear portion of said pair of studs between which the carrier is mounted, and securing a sanitary fixture to said carrier to apply a force to the carrier and bracket which will lock the latter on said studs.

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