April 12, 1960 V. T. MANAS 2,932,037

FIXTURE CARRIER AND SOIL LINE CONNECTION

Filed Oct. 30, 1956 4 Sheets-Sheet 1

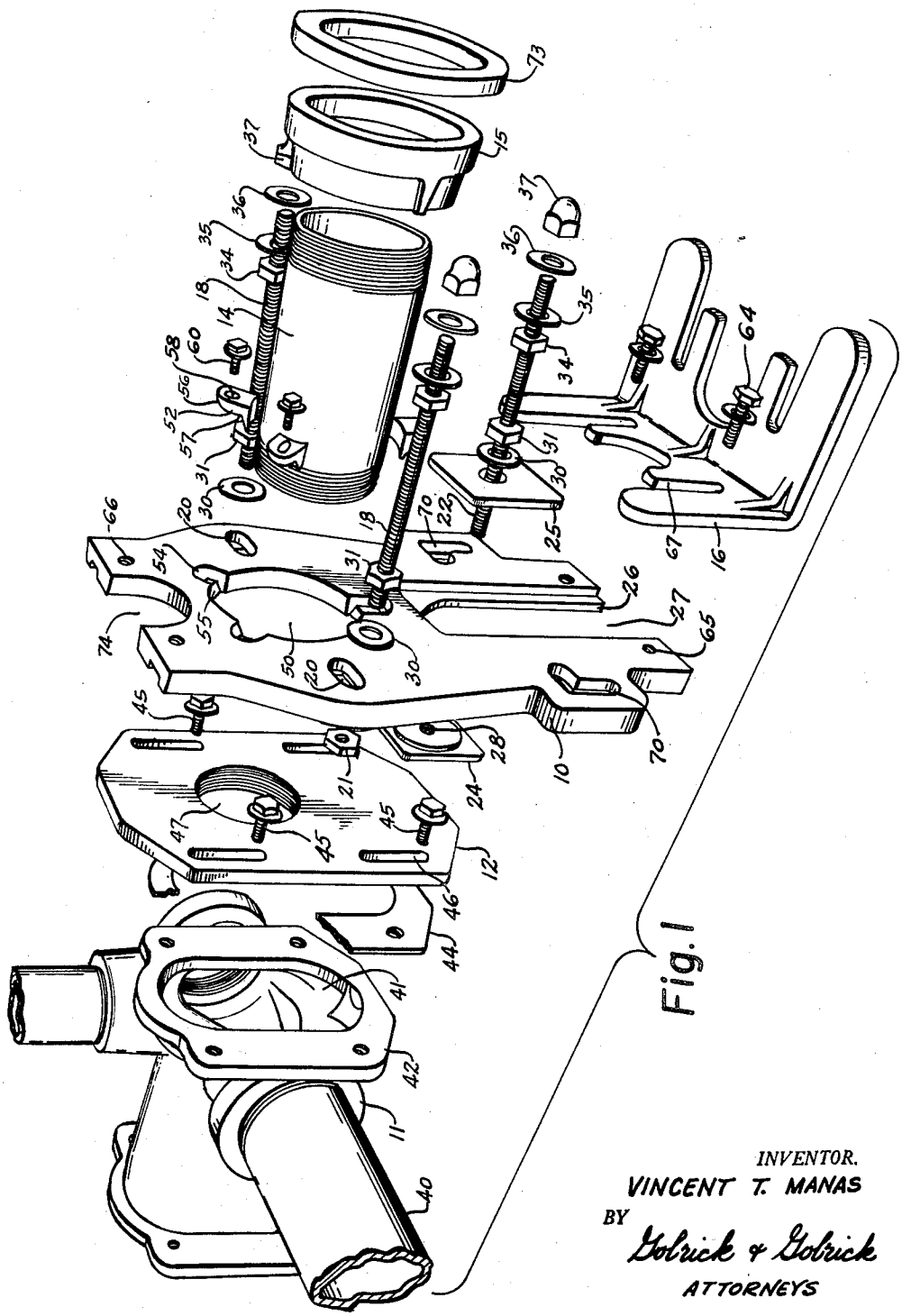


Fig. 1

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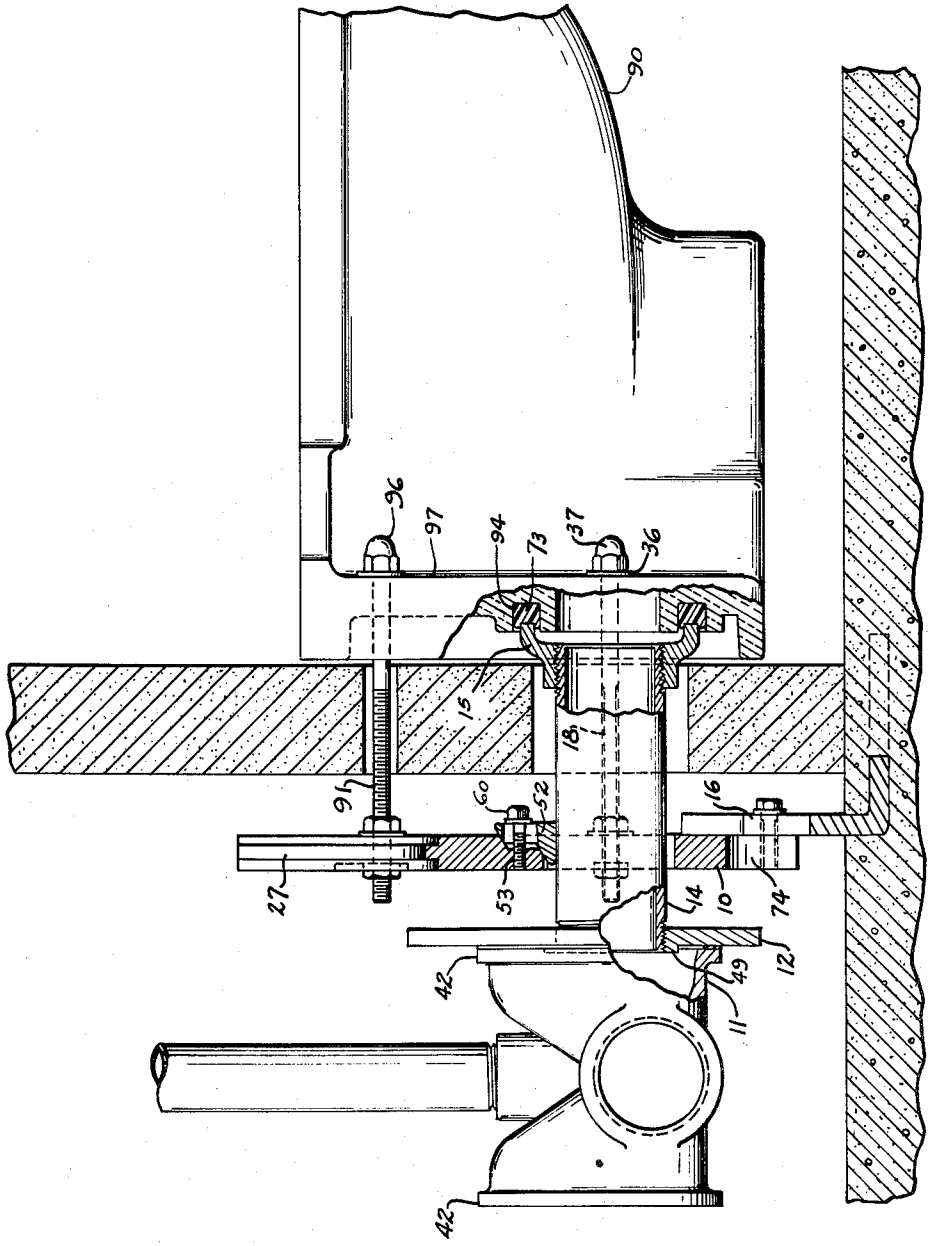


Fig.2

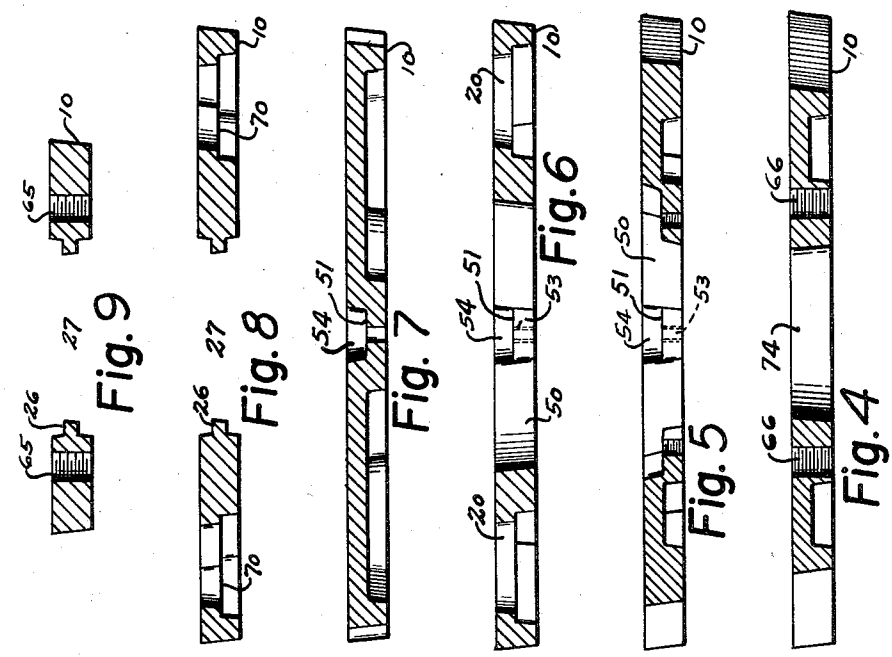
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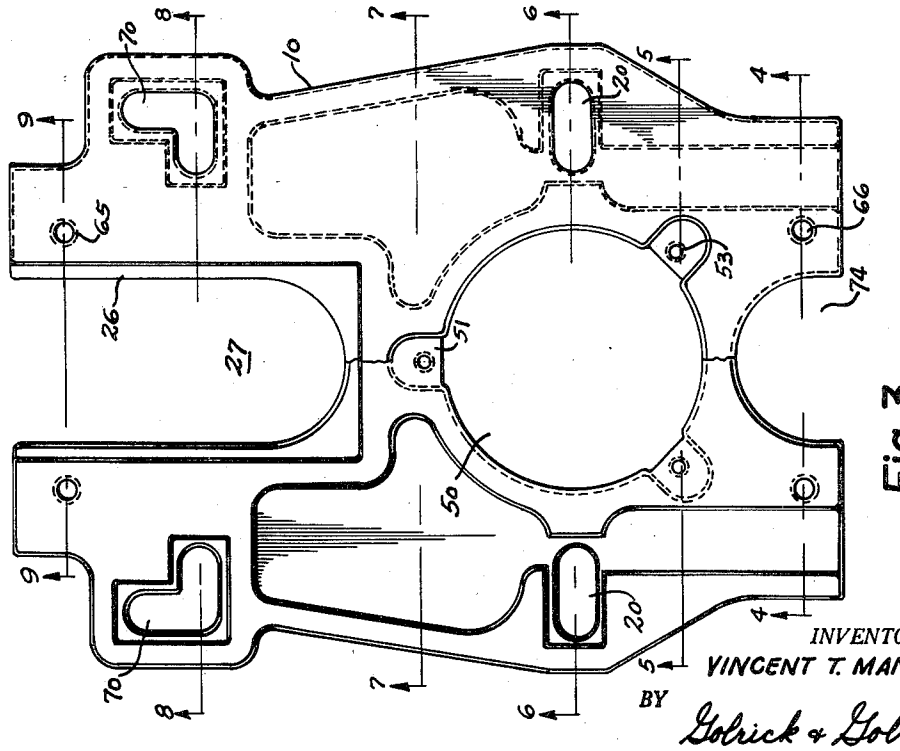
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FIXTURE CARRIER AND SOIL LINE CONNECTION

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FIXTURE CARRIER AND SOIL LINE CONNECTION

Filed Oct. 30, 1956 4 Sheets-Sheet 4

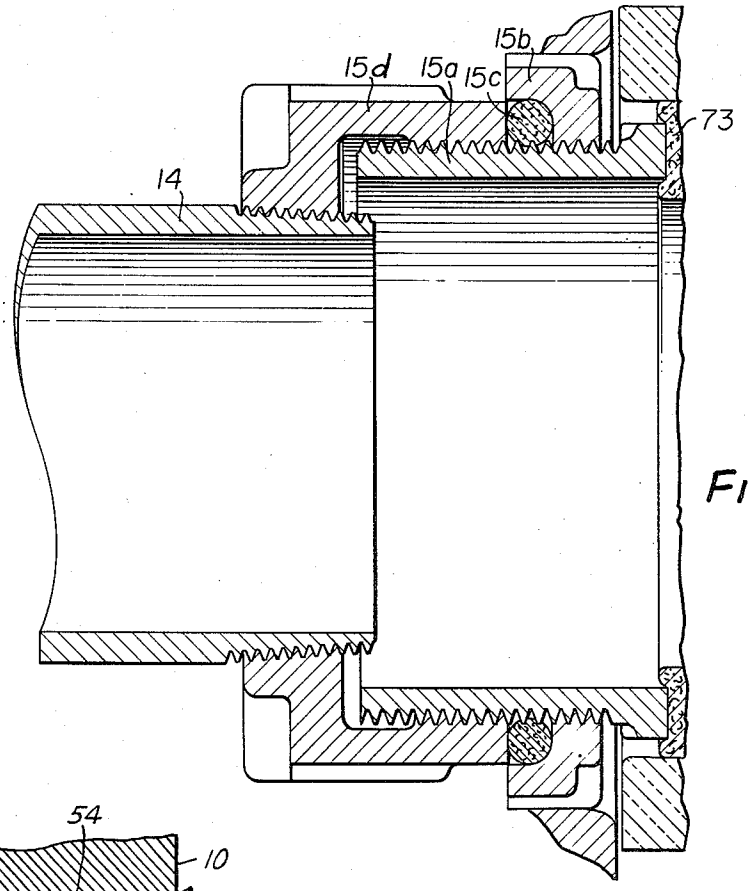


Fig. 11

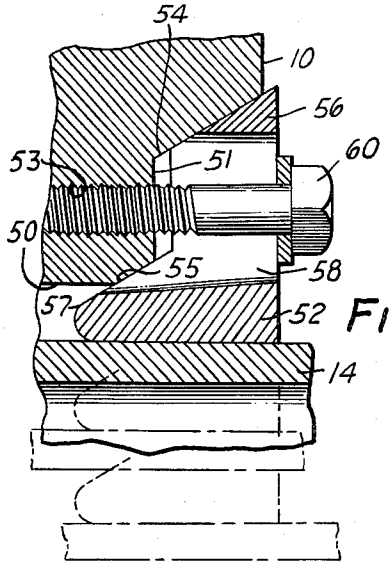


Fig. 10

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United States Patent Office

2,932,037

Patented Apr. 12, 1960

2,932,037

FIXTURE CARRIER AND SOIL LINE CONNECTION

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Application October 30, 1956, Serial No. 619,215

5 Claims. (Cl. 4—252)

This invention is directed to plumbing installations and particularly to the multiple installation of toilet bowl fixtures connected to a horizontally sloping soil pipe line and relates to support and fittings for all types of plumbing fixtures for off of the floor installation.

A large variety of mountings have been proposed having adjustability characteristics for meeting the variations in the relatively heavy plumbing installations involved especially when the fixtures have to be connected to a sloping soil pipe line. The installations usually require the use of a utility wall for housing the plumbing and whereby the fixtures can be installed on both outer faces of the wall structure. The fixtures come from various sources and the variation in the bowl structures require some adaptability of the hanger or bowl supporting means to support the fixtures in horizontal alignment without loading the utility wall structure. Also there are present in the industry blow out type and syphon jet type toilet bowls, the former being supported or attached by the use of three suspending bolts and the latter by four bolts attached to a chair or carrier, thus requiring different carrier structures. Furthermore the size of the soil pipe extension or branch between the bowl outlet and the sloping soil pipe line may be 3" or 4" depending upon the size of the bowl outlet and code requirements.

Other varying conditions exist which with the foregoing involve the plumbing specialty manufacturer in carrying in stock a comparatively large number of fittings and hangers or carriers to meet the requirements of the market.

Wherefore the general object of the present invention is the provision of a hanger or carrier structure which will meet the requirements of a variety of conditions of installation.

Another object of the present invention is a novel carrier construction adaptable to the support of either a jet type of syphon blow out type of toilet bowl.

A further object of the present invention is the provision of a carrier construction of minimum weight and of simple construction but which is adaptable for use with the same fittings, plates, supports and nipples under a variety of conditions of installation.

A still further object of the present invention is the provision of a carrier construction which will fulfill its purpose efficiently while requiring a minimum of utility wall thickness.

Still another object of the present invention is the provision of an installation which is universal in its adaptability to the positioning and supporting of the fixtures in a horizontal plane in a labor-saving manner.

Other objects of the invention will become apparent from the following descriptions referring to the accompanying drawings and the essential characteristics thereof are summarized in the claims.

In the drawings:

Fig. 1 is an exploded view of my invention when used to mount a blow out type of toilet bowl;

Fig. 2 is a cross sectional view of the invention is used to mount a syphon jet type bowl;

Fig. 3 is a composite elevation of a reversible bowl carrier; the representation showing the outline of the carrier, with the left side showing the form of the front face and the right side the form of the back face, since the faces are each symmetrical about a vertical centerline;

Fig. 4 is a cross sectional view of the carrier plate;

Figs. 5–9 inclusive are cross sectional views of the carrier plate corresponding to lines 5—5 to 9—9 of Fig. 3 respectively;

Fig. 10 is a diagrammatic representation of the bowl centering characteristics of my invention; and

Fig. 11 is a cross sectional view of an adjustable coupling adaptable to all types of bowl structures.

This invention contemplates the provision of a bowl fixture carrier, universal in its adaptability to the mounting of bowls of a variety of constructions while being restricted in its bulk and weight whereby utility walls serving to enclose the soil line plumbing may be held to a minimum in thickness, thereby permitting the reduction of the heretofor thickness of such walls from 17¼ inches to 11⅜ inches where a duplex installation of the fixtures, disposed in different rooms, is being made and for single fitting installations a reduction of the wall thickness from 8⅝ inches to 5$^{11}/_{16}$ inches. This is accomplished by the use of a cast carrier plate of minimum thickness which is centered upon the soil pipe branch or nipple connecting the bowl fixture to a sloping soil pipe line. The carrier is in the form of a flat bolt supporting plate which is vertically reversible in structure so that a four bolt attachment and support for a syphon jet type bowl is afforded for one vertical position of the plate and a three bolt attachment and support is afforded when the plate is vertically reversed to support a blow out type of bowl fixture.

I find that by providing countersunk slots in the plate structure at certain locations relative to the center of the nipple or branch I can match the bolt openings in bowl fixtures made by different manufacturers while affording a levelling of a battery of fixture bowls.

I accomplish the foregoing by providing independent carrier means which will permit of the installation of the required sloping soil pipe line and branches or nipples which can be inspected and tested for leaks before the fixture is installed.

The forward face of the carrier plate is flat without protrusions thereby to facilitate the finishing of the room surface of the utility wall and to permit of the inclusion of the carrier plate within the structure of the wall face structure so that upon completion of the wall surface with tile, plaster or otherwise only the fixture bolts and nipple coupling are exposed at proper length for the mounting and leveling of the fixture.

I also provide a special fitting connected in the sloping soil pipe line and having a wall structure which will prevent back pressures in the sloping soil pipe line. The fitting structure is such that the nipples or branches leading from the fixtures can be adjustably connected to the sloping soil pipe line whereby the centers of the nipples can be disposed in a common horizontal plane.

In Fig. 1 I show an exploded view of the assembly of my carrier plate **10**, special fitting **11** for duplex fixture connection, reversible nipple plate **12**, fixture connection nipple **14**, coupling **15** and carrier foot **16**. The representation of this figure is for the mounting of a toilet bowl of the blow out type where three suspension bolts are used to support the fixture on the carrier **10** when a 3 inch nipple is used. The positions of the two upper bolts **18** are located by the practice of all bowl manufacturers of locating the bolt holes in a horizontal plane passing through the center of the outlet or horn of the

fixture at each side of the fixture horn. However, there is variation in the horizontal distance between the bolts **18** as determined by the practices of the various manufacturers of the fixtures and accordingly I have determined the extent or limits of such variations and have provided horizontally extending slot shaped openings **20** in the carrier plate **10** which are countersunk or internally shouldered on the rear side of the openings for retaining the bolt nuts **21**.

To provide for the attachment of the third or lower bolt **22**, two plate members **24** and **25** are shaped to ride upon a shoulder **26** centrally located in a vertically extending marginal opening **27** of the carrier plate **10**. The plate **24** disposed at the back of the carrier plate **10** has a threaded opening **28** to receive the rear end of the lower bolt **22** passing freely through the forward plate **25** which is clamped by washer **30** and nut **31** disposed forwardly of the carrier plate. Upper bolts **18** have like washers **30** and nuts **31** for securing the bolts **18** to the carrier plate in countersunk openings **20** when nuts **21** are held in the countersunk openings **20**.

On the forward portions of bolts **18—22** are adjustable nuts **34** and washers **35** against which the flange of the fixture is held by washers **36** and acorn nuts **37** thrusting against the outer face of the flange on the fixture.

The special fitting **11** is shown connected to a sloping soil pipe line **40**. This fitting has branches flaring outwardly and upwardly that terminate in vertically extending openings **41** with surrounding vertical flanges **42**. If desired this fitting may be used with a single branch. The nipple connecting plate **12** is adapted to be vertically adjustable when connected to the flange **42** of the fitting by bolts **45** with an interposed gasket **44**, the bolts passing through vertically extending slots **46**. The vertically adjustable plate **12** has a threaded opening **47** for the connection of the inner end of the nipple or branch **14**.

The nipple connecting plate **12** is reversible i.e. from front to back whereby the opening **47** may be threaded for a three-inch nipple or a four-inch nipple in accordance with the code requirements of the locus of the installation and a flange **49** is provided (see Fig. 2) for this purpose which extends forwardly toward the carrier when a four-inch branch or nipple is used. The plate **10** is shown as receiving a 3 inch nipple.

In practice the soil pipe line **40** and properly spaced fittings **11** are assembled and the assembled line adjusted for the desired drainage slope relative to the roughed-in flooring structure or to a bench mark or line. The nipples **14** with couplings **15** and connecting plates **12** are attached to the fitting flanges **42**. The connecting plates are then vertically adjusted to dispose the center lines of the nipples in a common horizontal plane. The carrier plate **10** is then slipped over each nipple, there being provided a main opening **50** in the carrier plate. The carrier plate is then centered upon the nipple **14**.

For centering purposes I provide three forwardly disposed socket formations **51** equi-angularly spaced. These sockets receive nipple engaging lugs **52** which fit in the sockets. The socket walls **54** and **55** are camming surfaces complementary to lug end **56** and lug protrusion **57** respectively. Slotted openings **58** are provided in the lugs for the passage of bolts **60** therethrough and the bolts **60** are threaded into the carrier plate at the bottom of the sockets in openings **53**. Thus by tightening of the bolts **60** upon the lugs the carrier plate **10** and particularly the slots **20** and **27** become radially centered with respect to the nipple or branch pipe **14**. The carrier plate opening **50** for the free passage of the nipple may be for a three-inch nipple or a four-inch nipple or the opening may be in all instances for a four-inch nipple with lugs made for a three-inch nipple or for a four-inch nipple as indicated in Fig. 10. In either event the fixture bolt openings of the carrier will be properly centered with relation to the center of the fixture horn.

The carrier, once it is centered with respect to the nipple **14**, is disposed or set vertically, i.e., with the surfaces of the marginal extending opening **27** disposed vertically; and the foot structure **16** is then attached to the bottom part of the carrier plate by bolts **64** fitting threaded openings **65** formed in the bottom region of the carrier plate. The bolts **64** pass through vertical slots **67** formed in the foot. The foot structure **16** is then adjusted to the roughed-in floor surface and the bolts **64** are then tightened. Grouting of the foot to the roughed-in floor structure may be used if desired. The nipple **14** is thus supported at the special fitting **11** and at the carrier plate **10**.

The cup or coupling **15** which is the connection of the fixture outlet or horn to the pipe nipple **14** is made in three-inch and four-inch sizes to be adaptable to all sizes of toilet bowls and urinals. An impregnated gasket **73** comprises the water tight seal between coupling and horn and will fit all types of currently made fixture horns and be air-tight when compressed by the tightening of the nuts **37** bearing upon the bolting flange of the fixture. The positioning of the nuts **34** will be such that a small space will be present between the finished wall surface and the inner face of the bowl flange thus assuring no loading or pressure upon the finished wall surface.

Referring to Figs. 1 and 3 it will be noted that I have provided L-shaped slots **70** countersunk or internally shouldered at the back side of the carrier plate **10**. The shape of these slots **70** comprises a composite of more than twenty-five bolt hole openings of fixtures made by more than twenty-five different manufacturers of syphon jet type fixtures. When the carrier plate **10** is vertically reversed as shown in Fig. 2 for the support of a syphon jet type bowl which requires four supporting bolts, the positioning and adjusting of the bolts and clamping nuts will be as described with respect to the mounting of the blow out type bowl. In this instance no supporting bolts are below the center line of the nipple **14** but the centering of the bolt openings in the carrier plate will be effected as hereinbefore described.

The carrier plate **10** has a marginal opening **74** for the passage of a fresh water supply line and when the carrier plate is reversed as shown in Fig. 2 for syphon jet type mounting the shouldered slot **27** serves the same purpose. The threaded openings **66** afford attachment of the foot structure **16** by bolts **64** to the reversed carrier plate.

The fitting branches are adapted to be connected to the nipple or soil pipe branch **14** by reason of the vertical adjustability of the connecting plate **12**, and I find that a range of 4¼ inches of vertical adjustment of the plate **12** will provide for a battery of bowls the maximum number of which is limited in any one battery by code. The plate **12** is reversible from top to bottom to afford this range of adjustment.

To those skilled in the art it is clear that the fitting can be used with the plate **12** and carrier **10** for installations of bowls connected to vertically extending soil pipe lines since no vertical adjustment of the connecting branch or nipple **14** would be involved. I find that by using fixture bolts of ⅝ inch diameter there is sufficient play between fixture bolt openings and bolts to permit of a leveling adjustment of the fixtures relative to the bolts of about 1½° of turning of the fixture relative to the bolts, i.e. about the horn center.

Also it will be evident that the fixture bolts may be located by templates matching the openings in the bowl flange when fixing the bolts on the carrier if desired.

The thickness of the carrier plate **10**, the nipple connecting plate **12** and the special fitting **11** permits of the construction of a utility wall of an unusually narrow thickness even when the carrier plate **12** is to be disposed within the space defined by the face structures of the wall, i.e. when the carrier plate is not embedded in the wall surface structure. The entire assembly can

be effected for mounting of urinals and toilet bowls of practically all manufacture whether jet type or blow out type, the carrier being universal in its adaptability; and can be used with either a three-inch diameter or four-inch diameter of nipple or soil pipe branch. All of the foregoing is accomplished by the use of a minimum of sizes of special fittings, carrier, couplings and adjustable connecting plate to be carried in stock in the commercial distribution of the parts. Only two sizes of the coupling **15** and two sizes of lugs **52** need be carried in stock and the connecting plate **12** may be carried with a three-inch tapped pipe thread and a four-inch pipe thread.

In Fig. 2 I show in cross sectional elevation the carrier plate **10** reversed from top to bottom relative to the position of the carrier plate as used in Fig. 1 for the mounting of a syphon jet type bowl **90**. In this arrangement the bolt plates **24** and **25** are omitted and top bolts **91** are shown mounted in the L shaped openings **70** of the carrier plate. The bolts **18** are disposed in carrier plate openings **20** and set as hereinbefore described and bolts **91** are set in a like manner in the L shaped openings **70**. Connecting plate **12**, nipple **14**, coupling **15** are adjusted to a horizontal plane common to other connected bowls or to a branch line as heretofore described with reference to adjustment of the connecting plate **12**, and the packing ring **73** is compressed in the horn groove **94** of the syphon jet type bowl **90**. The bowl may be swung to a horizontal level while the acorn nuts **37—96** are slightly compressed on the flange **97** of the bowl structure.

While I have shown the carrier **10** in Fig. 2 spaced rearwardly of the wall facing structure it is to be understood that the carrier **10** in most instances would be built into the facing structure F of the wall when it is desired to economize on floor space and accordingly the carrier would be disposed closer to the bowl than as shown.

In Fig. 10 I show the relation of the centering lugs **52** to the nipple **14**. These lugs are to be furnished in sets depending upon the diameter of the nipple to be used as indicated by the dot and dash lines. Regardless of the size of the nipple if the correct lugs are used the carrier plate will always be centered with respect to the bowl horn and the bolt openings in the flange of the bowl to be installed regardless of the type of bowl or urinal fixture to be installed. The lugs shown in full line drawing are for engagement with a four-inch nipple and the dot and dash lines in Fig. 10 indicate the sizes of lugs for a three-inch nipple and a two-inch nipple.

In Fig. 11, I show a modified coupling **15*d*** on the nipple **14**. The coupling is provided with an internal straight thread and is provided with an adjustable straight threaded sleeve **15*a*** for more convenient connection of the bowl horn to the nipple **14**. A packing ring **15*c*** is pressed upon the exposed end of the coupling by a collar **15*b*** shaped to engage the ring and to also compress the packing ring into the threads of the sleeve thereby to seal the adjustable connection. This connection may have an overall effective adjustment of about three-fourths of an inch and may be effected at the utility wall face without cutting into the wall face.

It will be noted that the structural characteristics of the carrier, the foot, the connecting plate and cup involve simple foundry practice in the production thereof and the special fitting is of such construction as to fall within the practical limits of foundry production.

I claim:

1. A carrier construction comprising a plate of uniform thickness throughout its construction whereby the forward face of the plate is confined to a common plane, said carrier plate having an opening formed therethrough for the passage of a horizontally disposed soil pipe branch adapted to connect a toilet fixture to a sloping soil pipe line, wedge sockets formed in the plate about the perimeter of said opening and bolt held wedging members disposed in said sockets adapted to engage the soil pipe branch when disposed in said plate opening, said carrier plate having an elongated marginal opening formed therein to extend upwardly from the bottom edge in vertical alignment with said soil pipe branch opening, the elongated opening of the carrier plate having vertically extending shouldered walls adapted to support a bolt plate adjustably slidable along said walls, said carrier plate having horizontally extending bolt receiving slots disposed at the horizontal sides of the branch receiving opening and a foot member adjustably attached to the end of the plate structure having the elongated opening.

2. A carrier construction comprising a plate of uniform thickness throughout its construction whereby the forward face of the plate is confined to a common plane, said carrier plate having an opening formed therethrough for the passage of a horizontally disposed soil pipe extension adapted to connect a toilet fixture to a sloping soil pipe line, wedge sockets formed in the plate about the perimeter of said opening and bolt held wedging members disposed in said sockets adapted to engage the soil pipe extension when disposed in said plate opening, said carrier plate having an elongated opening formed therein to extend upwardly from the bottom edge in vertical alignment with said soil pipe opening, a bolt plate, the elongated opening of the carrier plate having vertically extending shouldered walls adapted to support the bolt plate adjustably slidable along said walls, said carrier plate having horizontally extending bolt receiving slots disposed at the horizontal sides of the extension receiving opening and a foot member adjustably attached to the end of the plate structure having the elongated opening.

3. In a fixture carrier and soil line connection to a soil pipe line, a substantially horizontal soil pipe line adaptable for poistioning in a utility wall, a connecting fixture in the line having a lateral vertically extending flanged opening, a vertically adjustable plate bolted to the flange of the opening, a pipe nipple adaptable for connection at one end to a toilet bowl and with the opposite end pipe thread connected to the vertically adjustable plate on the soil line fixture, a toilet bowl carrier slidable longitudinally on the nipple, said carrier having an opening therethrough substantially greater than the diameter of the nipple, adjustable means on the carrier disposed about the said carrier opening for centering the carrier opening on the nipple, fixture supporting bolts on the carrier for supporting a toilet bowl on the carrier independently of a utility wall structure, coupling means adapted for connecting one end of the nipple to the horn of a toilet bowl and an adjustable foot on the carrier adaptable for supporting the carrier on a roughed in floor.

4. The combination of a fixture carrier soil line and closet bowl connection for a battery of toilet bowls connected to a slightly sloped soil line comprising a sloped soil line with fittings forming parts thereof, said fittings having branches with lateral vertically elongated openings, said openings being surrounded by flanges extending parallel to the line of flow in the soil pipe, vertically adjustable closure plates bolted to said flanges to close the openings, the closure plates having pipe threaded openings extending therethrough, pipe nipples in threaded engagement on the said closure plate openings, closet bowl carriers slidable along the nipples with the nipples extending through openings formed in the carriers, bowl fixture bolts carried by the carrier for supporting the bowl fixtures independently of a utility wall, said closure plates with the nipples thereon being adjustable vertically to a horizontal plane, centering means acting between the nipple and carrier for centering the carrier openings through which the nipples extend relative to the centers of the nipples.

5. The combination of a fixture carrier soil line and closet bowl connection for a battery of toilet bowls connected to a slightly sloped soil line comprising a sloped soil line with fittings forming parts thereof, said fittings having branches with lateral vertically elongated openings, said openings being surrounded by flanges extending parallel to the line of flow in the soil pipe, vertically adjustable closure plates bolted to said flanges to close the openings, the closure plates having pipe threaded openings extending therethrough, pipe nipples in threaded engagement to the said closure plate openings, closet bowl carriers slidable along the nipples, with the nipples extending through openings formed in the carriers, bowl fixture bolts carried by the carriers for supporting the bowl fixtures independently of a utility wall, said closure plates with the nipples thereon being adjustable vertically to a horizontal plane, centering means acting between the nipple and carrier for centering the

carrier openings through which the nipples extend relative to the centers of the nipples, and bolt supporting slide plates centrally located on slideways on the carriers.

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