

June 22, 1965

I. G. DUTCHER ETAL

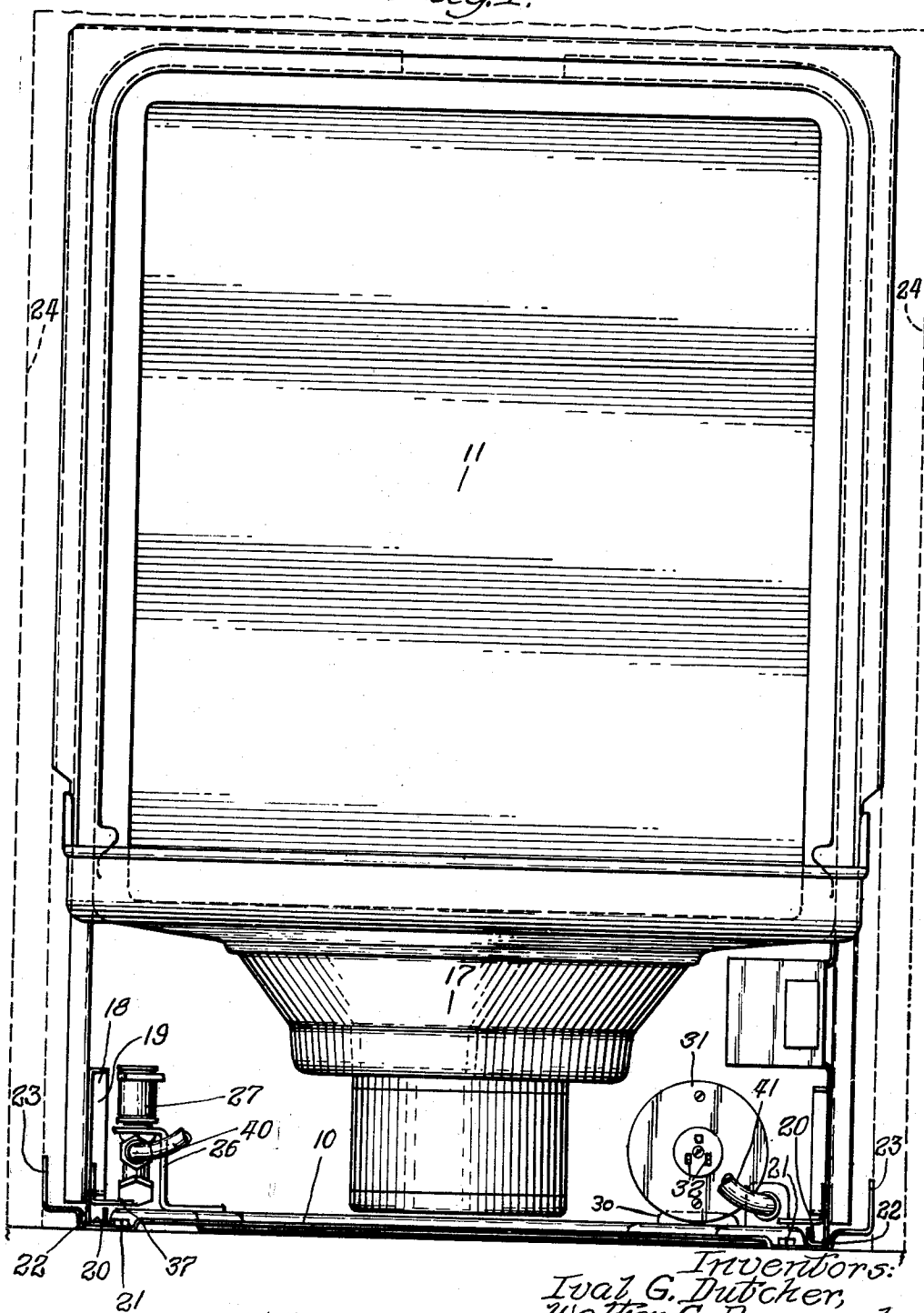
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DISHWASHER MOUNTING APPARATUS

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3 Sheets-Sheet 1

Fig. 1.



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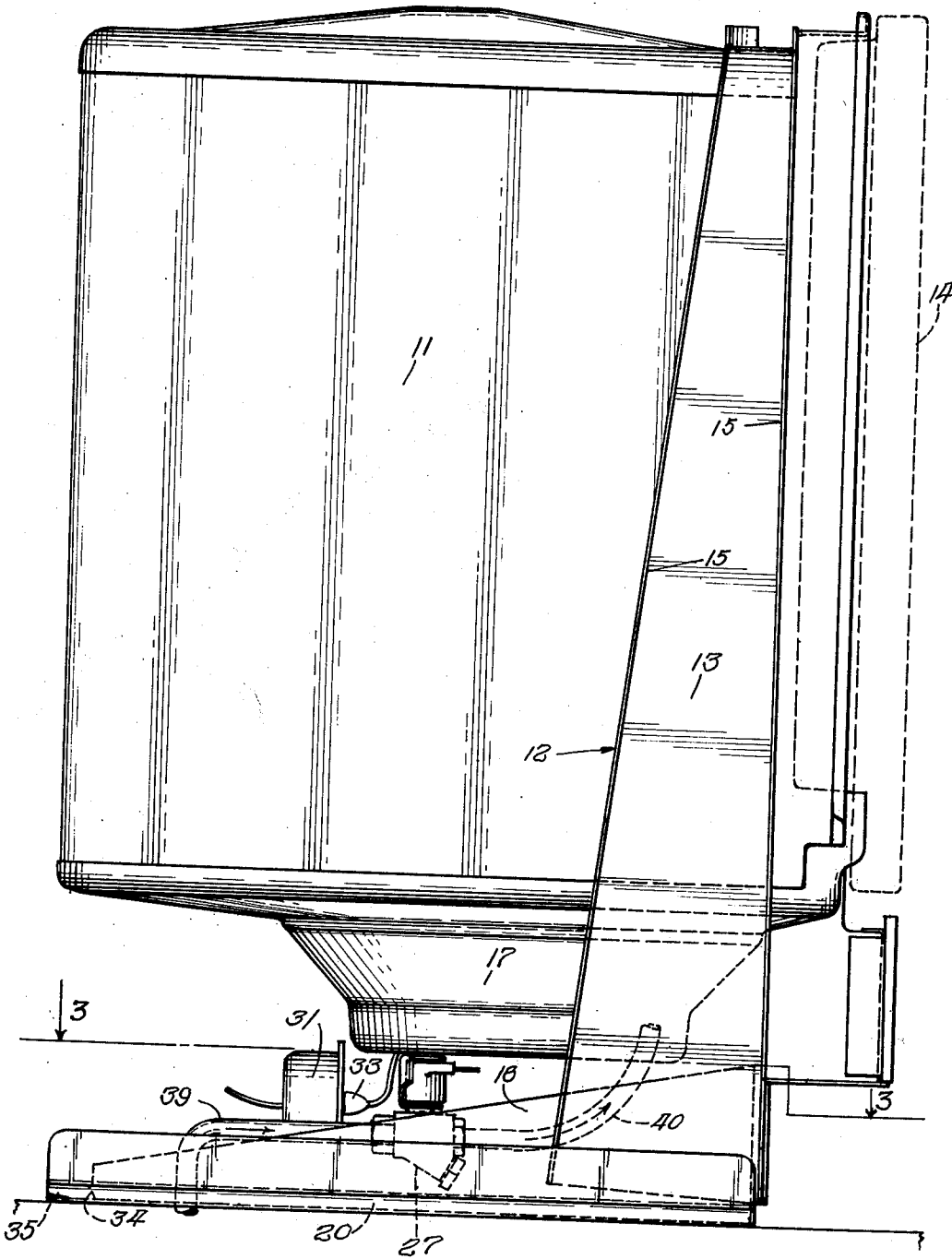


Fig. 2.

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Fig. 3.

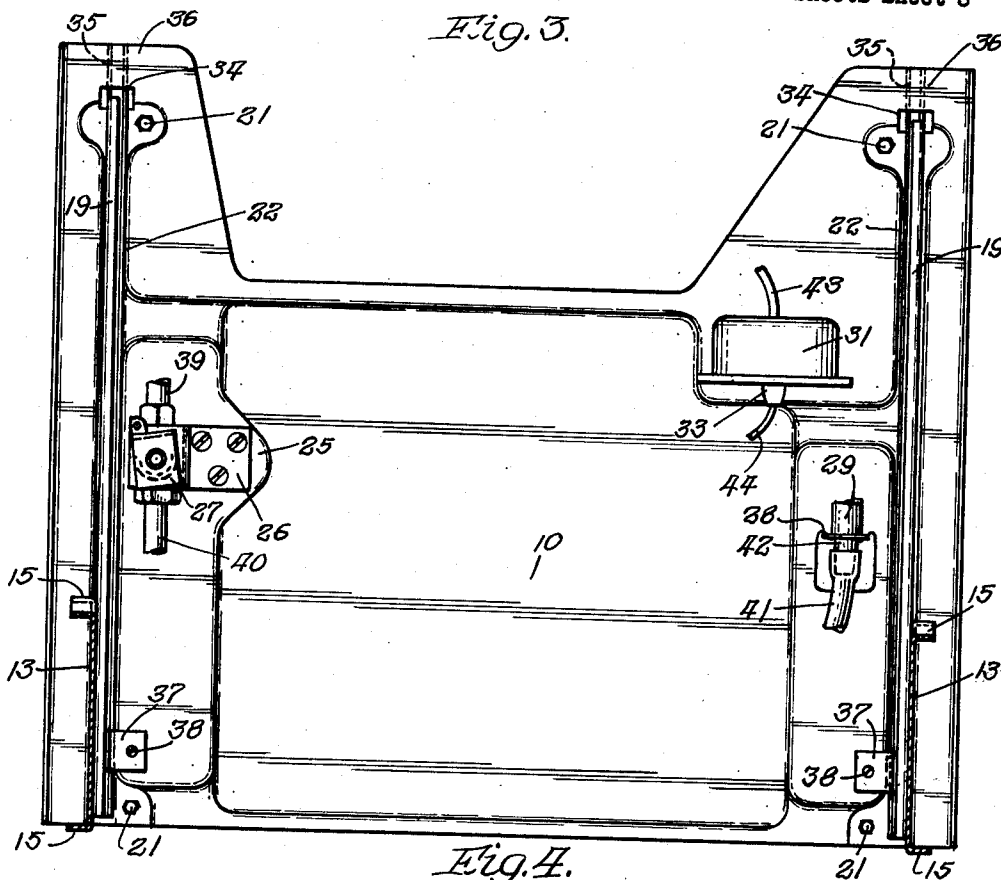
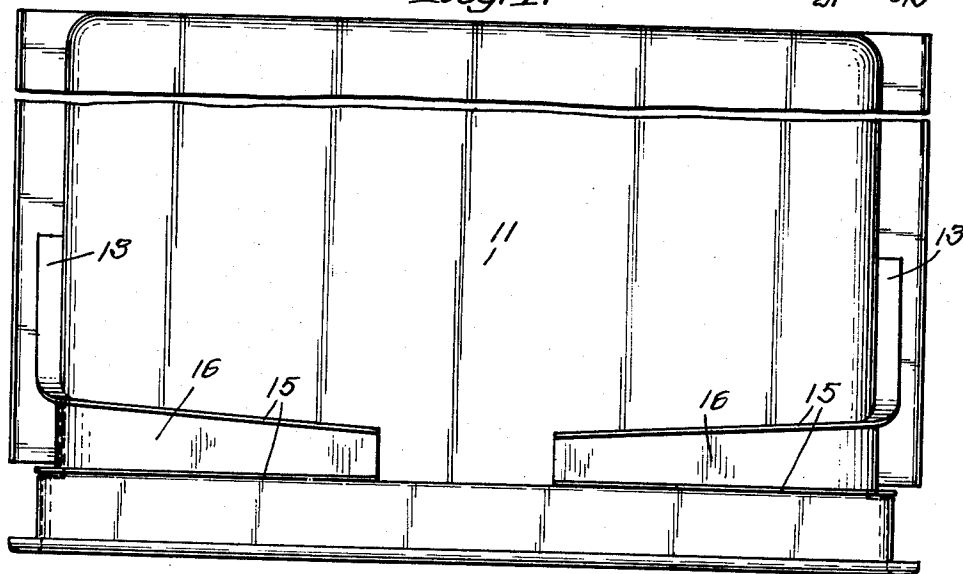


Fig. 4.



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DISHWASHER MOUNTING APPARATUS

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8 Claims. (Cl. 312-228)

This invention relates to mounting apparatus for a device that is accessible primarily from one side when installed for normal operation and that requires service connections.

One example of a device that is accessible primarily from one side, such as the front, and that requires service connections is an undercounter dishwasher. The dishwasher is designed to occupy as small an amount of space in the kitchen as possible and is customarily accessible only from the front side. In a normal operation all that is required is that it be loaded with dirty dishes, operated and then the clean dishes removed. In the customary installation the undercounter dishwasher includes a unitary supporting frame for a liner tub assembly which is installed within an opening beneath a kitchen counter.

Since it is necessary that the dishwasher assembly be both level and rigidly positioned, it is frequently difficult for the installing mechanic to make a proper installation because of the limited space available for access. To further complicate the installer's problems, it is necessary for him to connect to the dishwasher assembly the various service connections including the water inlet line, the electric service line and the drain line. Here again, because of the usual limited access to the bottom and rear of the dishwasher assembly, it is quite difficult for the installer to make the proper connections. Furthermore, once the dishwasher assembly is properly installed the problem is not eliminated, as for any repair service it is often necessary to remove the dishwasher which means that all these connections for service must be disconnected.

One of the features of the present invention is to provide a device that is accessible primarily from a front when installed and that requires service connections, such as a dishwasher, having improved means for assembling the various components of the device assembly and service means in which adequate space is provided for the assembly, simple means are provided for connecting the service connections and ample space is provided for disassembling the device assembly including the service connections when such becomes necessary.

Other features and advantages of the invention will be apparent from the following description of one embodiment of the invention as shown in the accompanying drawings. Of the drawings:

FIGURE 1 is a front elevational view of a standard front opening liner tub for an undercounter dishwasher and the supporting framework with the normal door for the liner tub and the lower closing panel for the framework removed for clarity of illustration.

FIGURE 2 is a side elevational view of the assembly of FIGURE 1 with the front being to the right and indicating the positions of the front door and the bottom lower panel.

FIGURE 3 is a horizontal sectional view taken substantially along line 3-3 of FIGURE 2.

FIGURE 4 is a broken plan view of the assembly.

As stated above, the specific embodiment of the invention is an undercounter dishwasher. However, the principles of this invention can be used for any device that is accessible primarily from the front when installed for normal operation and that requires service connections. Such a device of this invention includes a base member

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10 which may be a sheet metal stamping as illustrated, a working section 11, here illustrated as the liner tub for the dishwasher, in which the actual washing occurs, spaced means 12 such as the illustrated framework supporting the working section or tub assembly 11 above and from the base member 10 and releasable from the base member. Also included are service means such as the illustrated water and drain lines and electric lines described in more detail hereinafter on the working section. There are included cooperating service members for these lines on the base member, also to be described in greater detail hereinafter, releasably receiving the service means with these service means and service members which are adapted to cooperate to provide service to the working section being accessible exteriorly of the spaced supporting means and between the base member and working section for releasable interconnection.

As stated, the illustrated working section is the liner tub assembly 11 for the dishwasher. The framework for supporting the tub 11 in elevated position above the base member 10 comprises a pair of oppositely located vertical beams 13 attached as by welding or by screws (not shown) to the opposite sides of the tub 11 adjacent the front of the tub which contains the access door 14 as indicated in FIGURE 2. These beams 13 are wider at the bottom and taper toward a narrower top and may be made of sheet steel as illustrated with side outwardly extending strengthening flanges 15. As shown in FIGURE 4, the top 16 of each beam is curved over toward each other to lie along the top of the tub 11 and attached thereto as by welding or by screws (not shown) so that the attachment of the sides and top of each beam to the sides and top of the tub produces an extremely strong structure. As can be seen from FIGURE 2, the tub 11 is mounted as a cantilever extending rearwardly of the beams 13 and the front access door 14. Furthermore the tub assembly 11, including the usual sump 17 for the pump and other elements of the dishwasher which are not shown because they form no part of the present invention, is supported well above the base member 10 so that free access may be had to the space between the base member 10 and tub 11 around and between the beams 13.

In addition to the two side beams 13 adjacent the front of the dishwasher assembly the framework 12 includes bottom supports 18 also of generally triangular shape in that they taper from a relatively wider front to a relatively narrow rear. Each bottom support 18 is attached at its front to the bottom of a cooperating beam 13 as by welding so that the combination of a beam 13 and a bottom support 18 forms a generally right angle construction as shown in FIGURE 2.

As can be noted, the supporting framework 12 not only supports the tub 11 as a cantilever but is capable of supporting the tub or any supporting surface while the remaining elements of the dishwasher assembly are being placed in position.

Each bottom support 18 is also like the beams 13 in the form of a sheet steel stamping and is provided with an upper strengthening flange 19. The bottom edge of each support 18 is shaped to form a generally U-shape runner 20. Because the bottom supports 18 are parallel to each other and are arranged vertically, the runners 20 are parallel to each other and extend from the front to the rear of the assembly.

The base member 10 may also be formed of sheet steel and is preferably stamped to the required shape. This base member is provided with openings adjacent the four corners for the attaching bolts 21 in order that the base member may first be mounted on a support such as the kitchen floor and leveled before the remainder of the dishwasher is assembled. This aids in installation because

once the base member 10 is rigidly mounted and leveled then the rest of the dishwasher may be assembled with no leveling problems.

The base member 10 is stamped to provide substantially parallel track sections 22 in which the runners 20 are slidably received. The base member or base pan 10 comprises upwardly extending side flanges 23 against which counter members as indicated at 24 in FIGURE 1 may be arranged. On the left side of the base pan as viewed in FIGURE 3 there is a raised mounting area 25 for a right angled bracket 26 on which is retained a water fill valve 27. On the right side of the base pan, also as viewed in FIGURE 3, there is a turned up tab 28 for supporting a flexible drain hose 29. To the rear of the tab 28 is another upwardly embossed area 30, as shown in FIGURE 1, on which is mounted as by welding an electrical service box 31 having electrical connection openings 32 for an electric plug 33.

As mentioned earlier, and as shown in FIGURE 1, each track section 22 is embossed below the surface of the remainder of the base pan 10. At the end of each track section 22, as shown in FIGURE 3, there is a cut-out opening 34 which is on the slope of the rear of the track section embossing, as shown in FIGURE 2. Each runner 20 at the rear thereof has an extended end 35 that extends through the opening 34 and is wedged beneath the extreme rear section 36 of the base pan in the region immediately rearwardly of the opening 34. In order to aid the runner ends entering the openings 34 when the assembly of the liner tub 11 and supporting framework 12 is slid rearwardly in the track sections 22, these runner ends are tapered as indicated in FIGURE 2.

Thus, when the supporting framework is in proper position the rear of the framework is locked in position by the runner ends 35 being wedged beneath the rear base pan section 36. The front of the framework is held in position by means of a pair of front side tabs 37 each in the form of an angle welded to the bottom supports 18 with the bottom of the angle attached to the base pan 10 as by screws 38.

The service lines to the dishwasher assembly include an inlet water hose 39 to the control valve 27, a flexible water hose 40 from the valve 27 to the tub 11, the previously described drain hose 29 leading to the sewer and a drain hose 41 from the tub 11 and adapted to be connected on the nipple 42 which is mounted on the tab 28 and to which the drain hose 29 is attached. The electrical connections include the previously described service box 31 to which an electric line 43 from the electrical supply is attached and the previously described electric plug 33 on the line 44 leading to the motor (not shown) that operates the dishwasher proper.

To install the dishwasher of this invention the base pan 10 is securely attached as by bolts 21 to the kitchen floor and leveled with shims or spacers as required. During this installation the dishwasher proper may be placed aside securely supported by the framework 12. Because the base pan is installed separately, the installer has plenty of room to secure and level the base pan as well as attach the inlet hose 39 to the valve 27, the drain line 29 to the tab 28 and the electric lead 43 to the service box 31. When these operations plus the attachment of the valve 27 and the service box 31 are completed, the dishwasher assembly itself may be placed in position.

In placing the dishwasher in position the rear of the runners 20 are placed in the front of the track sections 22 and the dishwasher assembly is slid rearwardly in these track sections. At the end of its movement the runner ends enter the openings 34 and become jammed and securely held beneath the pan sections 36. Then the screws 38 are placed in position to attach the tabs 37 to the base pan so that the entire dishwasher assembly including the framework 12 and liner tub 11 is locked in position. As can be seen the only removable securing

means are the two front screws 38 which are easily accessible.

To allow for proper alignment of the front of the dishwasher with counter members 24, the dishwasher assembly may be flexed slightly by applying a shear force to either of the side beams 13. To allow for this distortion, the openings (not shown) in tabs 37 for screws 38 may be elongated.

After placement of the screws 38 the service second members including the water line 40, electric plug 33 on the electric line 44 and drain line 41 are placed in position as previously described to complete the connections. Of course, electrical connections will also be made to water fill valve 27.

As is obvious, in order to provide repair service the dishwasher assembly dismantling can be accomplished by merely disconnecting the various water, drain and electric service connections, as previously described, removing the two screws 38 at the front and pulling the dishwasher proper forwardly on the base pan 10. The runners 22 of course automatically become disconnected from the base pan as soon as the ends 35 are pulled out of the openings 34.

Because of the elevated cantilever construction the various service lines are accessible from either the front, side or back before the surrounding kitchen cabinets or the like are built in. As is obvious, the only supports that hold the tub liner 11 in elevated position are the front beams 13 so that all the rest of the bottom space around the assembly is open.

Not all of the necessary elements of the dishwasher are illustrated in the drawings or described herein, as only those necessary to the invention are included in order to keep the description as simple as possible.

Having described our invention as related to the embodiment shown in the accompanying drawings, it is our intention that the invention be not limited by any of the details of description, unless otherwise specified, but rather be construed broadly within its spirit and scope as set out in the accompanying claims.

The embodiment of the invention in which an exclusive property or privilege is claimed is defined as follows:

1. In a device accessible primarily from a front when installed for normal operation and requiring service connections, apparatus comprising: a base member attachable to a support; a working section; spaced means supporting said working section above and from said base member and releasable from said base member whereby access space is provided between said working section and base member; service means on said working section; and service members on said base member releasably receiving said service means, said service means and service members being accessible exteriorly of said spaced supporting means and in said access space that is between said base member and working section for releasable interconnection.

2. The apparatus of claim 1 wherein said spaced means are located on either side of said front.

3. The apparatus of claim 1 wherein said spaced means include side supports adjacent and on either side of said front from which said working section is suspended as a cantilever.

4. In a device accessible primarily from a front when installed for normal operation and requiring service connections, apparatus comprising: a base member attachable to a support; a working section; a support member having spaced sides attached to said working section and a bottom releasably secured to said base member to position said working section above said base member whereby access space is provided between said working section and base member, said support member being capable of supporting said working section independently of and out of contact with said base member; service means on said working section; and service members on said base member releasably receiving said service means, said

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service means and service members being accessible exteriorly of said spaced means and in said access space that is between said base member and working section for releasable interconnection.

5. The apparatus of claim 4 wherein said sides are located adjacent the front of said working section on opposite sides thereof with said section suspended from said sides as a cantilever.

6. In a device accessible primarily from a front when installed for normal operation and requiring service connections, apparatus comprising: a base member attachable to a support; a working section; a support member having spaced sides attached to said working section on opposite sides of the front thereof with said section suspended from said sides as a cantilever and a bottom releasably secured to said base member to position said working section above said base member whereby access space is provided between said working section and base member, said bottom including a pair of substantially parallel runners on opposite sides thereof releasably and slidably received in track sections in said base member; means adjacent the rear of said base member releasably but securely engaging the rear ends of said runners; means adjacent the front of said apparatus for interconnecting said support member and base member; service means on said working section; and service members on said base member releasably receiving said service means, said service means and service members being accessible exteriorly of said spaced means and in said access space that is between said base member and working section for releasable interconnection.

7. In an undercounter dishwasher and the like accessible primarily from a front and requiring a plurality of service connections, apparatus comprising: a base member attachable to a support; a tub member; a support member having a bottom and a pair of generally vertical side front beams to which the front of said tub member is attached as a cantilever, said bottom including a pair of side runners slidably received in track sections in said base member; means on the rear of said runners and said base member automatically engageable on rearward

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sliding movement of said runners to lock the runners to the base member; means adjacent the front of said apparatus for interconnecting said support member and base member; a plurality of service first members on said base member; and a plurality of service second members on said tub member releasably interconnectable with said first members to complete said service connections when said base and support members are thusly assembled.

8. In an undercounter dishwasher and the like accessible primarily from a front and requiring a plurality of service connections, apparatus comprising: a base member attachable to a support; a tub member; a support member having a pair of generally vertical side beams with their tops attached to said tub member on opposite sides thereof adjacent the front and their bottoms attached to a pair of rearwardly extending side runners to suspend said tub member as a cantilever from said runners; means on said base member forming track sections slidably receiving said runners and terminating at the rear in socket means into which the rear of said runners are received on rearward sliding movement of said runners in said track sections to lock the rear of said runners on said base member; means adjacent the front of said apparatus for interconnecting said support member and base member; a plurality of service first members on said base member; and a plurality of service second members on said tub member releasably interconnectable with said first members to complete said service connections when said base and support members are thusly assembled.

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