

Oct. 23, 1951

P. T. HAURY ET AL
MAINTENANCE BRACKET

2,572,617

Filed Feb. 11, 1950

3 Sheets-Sheet 1

FIG. 1

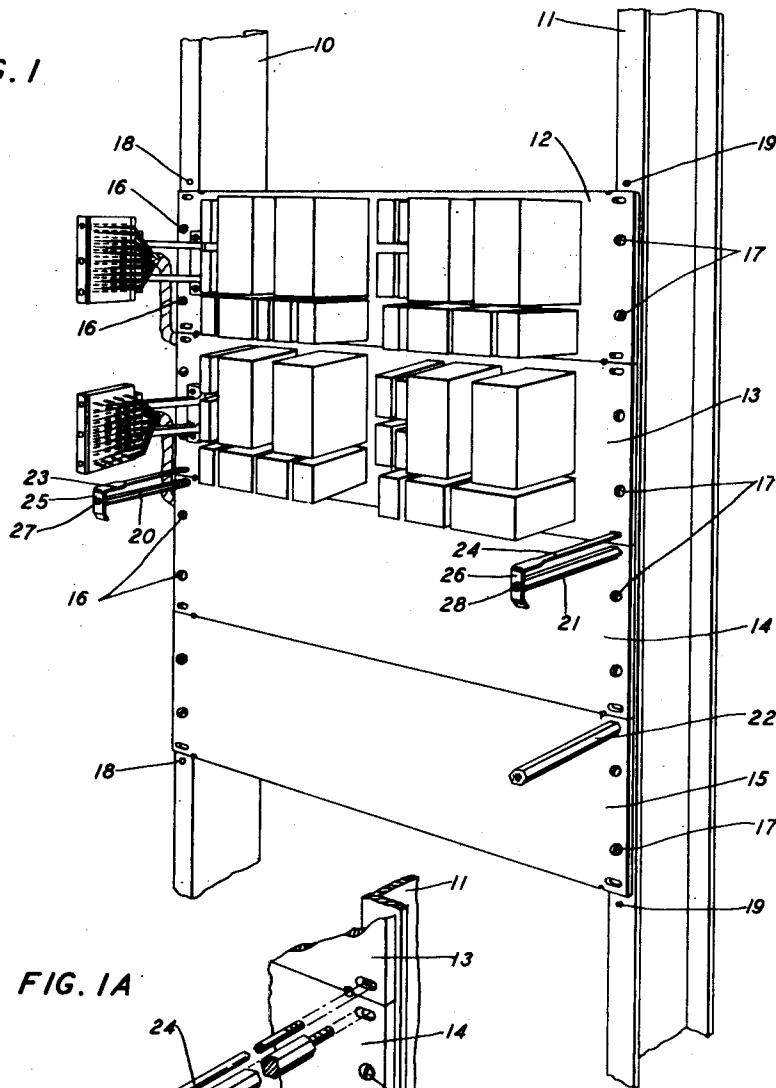
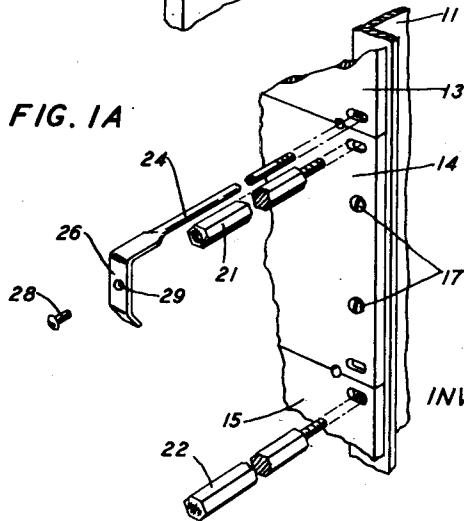


FIG. 1A



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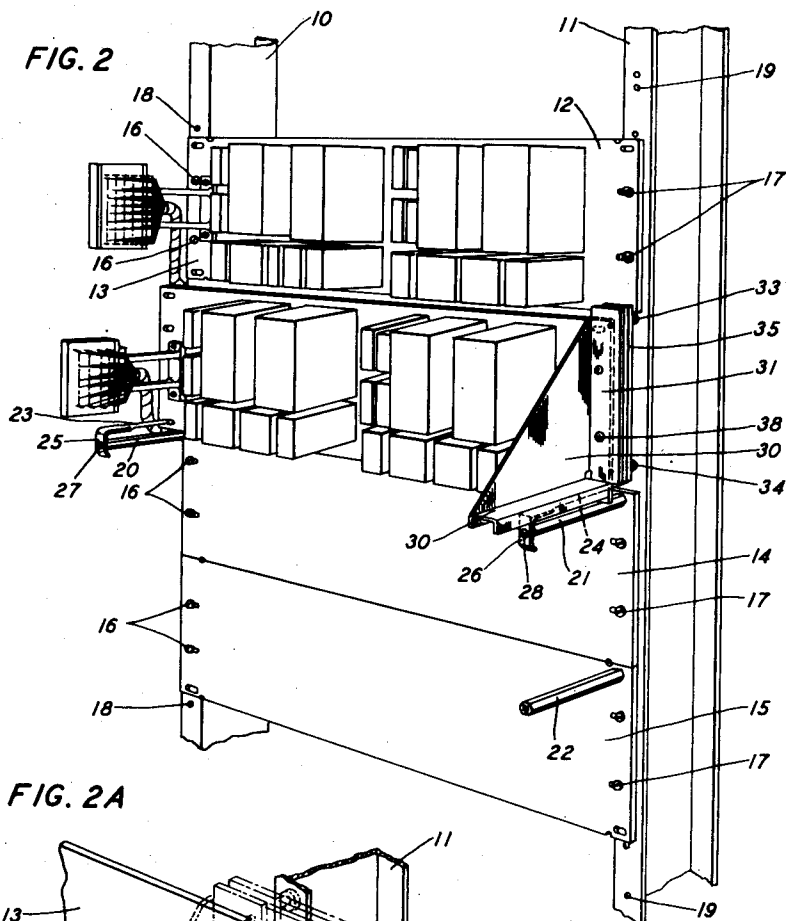
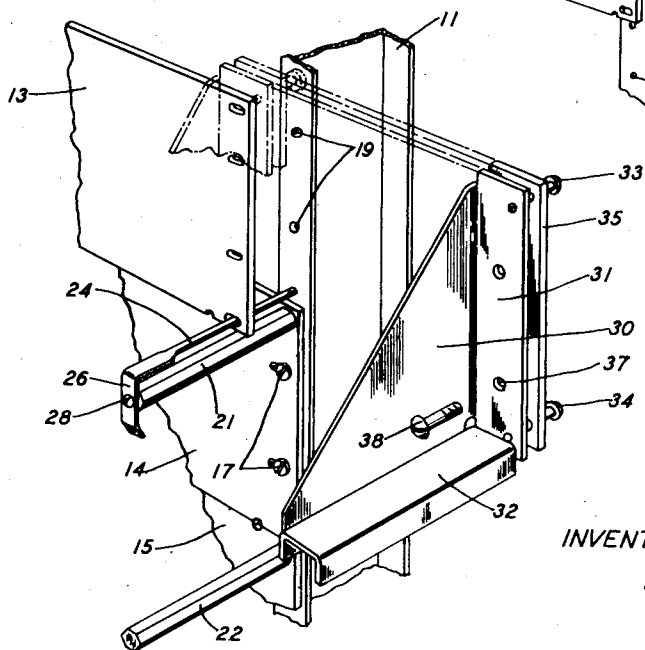


FIG. 2A



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2,572,617

MAINTENANCE BRACKET

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Application February 11, 1950, Serial No. 143,791

5 Claims. (Cl. 175—298)

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This invention relates to racks for supporting electrical apparatus panels and more particularly to a bracket assembly for temporarily supporting such panels in a horizontal position.

One object of the invention is to provide a bracket assembly which will facilitate the removal and the support of the panel and its associated apparatus during servicing and inspection.

Another object of the invention is to provide an improved method and apparatus for temporarily supporting an apparatus panel and its associated electrical apparatus during servicing and inspection which permit ready access to all parts of the equipment.

A further object of the invention is an improved method and apparatus for temporarily supporting an apparatus panel and its associated electrical apparatus during servicing and inspection which will prevent accidental displacement of the panel during servicing.

The invention in its application involves inserting through the uppermost apertures in the ends of the panel, immediately below the panel to be removed, and into engagement with the threaded apertures in the vertically disposed side rails of the rack, horizontally extending supporting rods. An additional rod is positioned in an aperture in the next succeeding lower panel and into threaded engagement with the side rail. Suitable guide rods are positioned in the lowermost apertures in each corner of the panel to be removed and into threaded engagement with the side rails of the rack. These rods, at their free ends, are provided with flattened, bent-over, downwardly extending portions which are in alignment with the horizontally extending supporting rods in the next adjacent panel and are secured thereto by suitable means which pass through the bent-over portion of the rods and into engagement with the ends of the lower horizontally extending supporting rods.

After the rods have been positioned as heretofore described, the screws which secure the panel to the right side rail of the rack are removed to permit the panel to be moved outwardly a sufficient amount to permit a bracket to be secured to one edge thereof with a portion thereof in engagement with the uppermost rods, after which the screws securing the panel to the left hand rail may then be removed.

The panel is moved outwardly from the rack, riding on the two guide rods which are positioned in the apertures in the lowermost corners of the panel to be removed, until the bottom edge of

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the panel engages the bent-over portions of the rods on the outer ends thereof. The top of the panel is then swung outwardly, pivoting on the bent-over portions of the rods, until the panel is substantially horizontal with the bottom corner of the bracket in engagement with the lowermost extending horizontal rod, thereby supporting the panel securely in a horizontal position and providing access to the equipment on both sides of the panel.

The invention will be more clearly understood from the following detailed description read in conjunction with the appended drawing in which:

Fig. 1 is a perspective view of a portion of a mounting rack with apparatus panels mounted thereon and shows guide rods, and bracing rods passing through the panel and into threaded engagement with the side rails of the rack;

Fig. 1A is an enlarged fragmentary exploded view, in perspective, of the guide rods, and the bracing rods shown in Fig. 1;

Fig. 2 is a view similar to Fig. 1, but shows the panel moved outwardly and with a supporting bracket clamped thereto;

Fig. 2A is an enlarged fragmentary exploded view, in perspective, of a portion of the panel together with the supporting bracket;

Fig. 3 is a fragmentary view similar to Fig. 2 and shows the panel moved to the end of the guide rods and rotated approximately 45 degrees; and

Fig. 4 is a view similar to Fig. 2 but shows the panel moved outwardly, rotated approximately 90 degrees to assume a horizontal position, with the lower portion of the supporting bracket in engagement with the lower rod.

Referring now to the drawings in which like numbers identify like elements:

The supporting rack to which this invention is particularly applicable but not necessarily limited, comprises, a pair of vertically extending parallel channels or U-shaped side rails 10 and 11, which may be the standard relay rack uprights, which are connected together at their bottoms (not shown) to provide a unitary structure as shown in the various figures.

Apparatus panels as shown at 12 and 13 and panel blanks 14 and 15 are secured to the side rails 10 and 11 by screws 15 and 16 which pass through suitable apertures in the panels and into engagement with threaded apertures 18 and 19 in the side rails 10 and 11 as shown.

As shown in the various figures, the apparatus panels 12 and 13 have mounted on each side thereof various pieces of electrical equipment which may comprise vacuum tubes, relays, coils,

condensers, resistors, transformers and the like, which are wired together and which must be inspected and serviced from time to time.

In order to facilitate inspection and servicing of the equipment on each side of the panels 12 and 13, means are provided for expeditiously and safely removing the panels from the rack so that both sides thereof are readily accessible.

As shown in Fig. 1, the first step in the removal of a panel, for example panel 13, is to remove the screws 16 and 17 from the lowermost apertures in the apparatus panel 13 and from the uppermost apertures in the blank panels 14 and 15. After these screws have been removed, supporting rods 20, 21 and 22 are threadedly secured to the side rails 10 and 11 through the uppermost apertures in the panel blanks 14 and 15. Guide rods 23 and 24 are then positioned in the lowermost apertures of the panel 13 and into threaded engagement with the side rails 10 and 11. After the guide rods 23 and 24 have been secured in place, the bent-over end portions 25 and 26 thereof are aligned with the ends of the rods 20 and 21 and secured thereto by screws 27 and 28 which pass through apertures 29—29 in the bent-over portions to threadedly engage the ends of the rods 20 and 21 as shown in the various figures and in detail in Figs. 1A and 2A.

After the guide rods 23 and 24 and the supporting rods 20, 21 and 22 and have secured as above described, the remaining screws 16 and 17 on the right side of panel 13 are removed, which permits the panel to be moved outwardly on the guide rods 23 and 24, as shown in Fig. 2 and more in detail in Fig. 2A, a sufficient distance to permit the supporting bracket 30 to be secured thereto.

The supporting bracket 30, which as shown in Figs. 2, 2A, 3 and 4, is secured to the right-hand vertical edge of the panel 13 and comprises a substantial triangular-shaped plate having a flange 31 along one edge and a channel 32 formed along the other. Adjustably mounted on the outer surface of the flange 31 by the studs 33 and 34 is the plate 35 which has a threaded aperture 36 therein which is in alignment with a clearance aperture 37 in the flange 31 and one of the mounting holes 19 in the panel 12. The bracket 30 is secured to the edge of the panel 12 by positioning the panel between the plate 35 and the top of the flange 31 with the edge of the panel 13 abutting the studs 33 and 34 and the aperture 37 in alignment with a corresponding aperture 19 in the panel 13 and then clamping the panel between the plate 35 and the flange 31 by means of a screw 38 which passes through the flange 31, the aperture 19 and into threaded engagement with the plate 35 as shown in Figs. 2 and 2A. When the panel 13 is secured to the support 30 as shown in the various figures, the underside of the channel 32 will be in alignment with and will rest on the supporting rod 22.

After the panel 13 has been secured to the bracket 30, as heretofore described, the remaining screws holding the left side of the panel are removed. The panel is then moved outwardly from the rack until the lowermost apertures in the panel 13 engage the bent-over portions 25 and 26 of the guide rods 23 and 24. The panel is then swung downwardly approximately 90 degrees so that the inside bottom portion of the channel 32 bears against the supporting rod 22 and the panel 13 assumes a horizontal position as shown in Fig. 4 and the apparatus mounted on both sides thereon is readily accessible.

While we have shown and described the preferred embodiment of our invention, it is to be understood that various changes and modifications may be made therein without departing from the scope of the invention.

What is claimed is:

1. Apparatus for removing a vertically mounted panel from a pair of supporting members and positioning it horizontally which comprises, a pair of guide rods inserted through apertures in each end of the panel and threadedly secured to each supporting member and extending outwardly therefrom, said rods having at their free ends, bent-over portions, a pair of supporting rods in threaded engagement with said supporting members, said supporting rods extending parallel with said guide rods and having their ends secured to the bent-over portion of said guide rods, a bracket secured to said panel, and a supporting rod in threaded engagement with one of said supporting members some distance below one of said first supporting rods and engaging said bracket when said panel is swung outwardly into a horizontal position.

2. Apparatus for removing a vertically mounted panel from a pair of supporting members and positioning it horizontally which comprises, a pair of guide rods inserted through apertures in each end of the panel and threadedly secured to each supporting member and extending outwardly therefrom, said rods having at their free ends, bent-over portions, a pair of supporting rods in threaded engagement with said supporting members, said supporting rods extending parallel with said guide rods and having their ends secured to the bent-over portion of said guide rods, a bracket, clamping means on said bracket for securing it to said panel, and a supporting rod in threaded engagement with one of said supporting members some distance below one of said first supporting rods and engaging said bracket when said panel is swung outwardly into a horizontal position.

3. Apparatus for removing a vertically mounted panel from a pair of supporting members and positioning it horizontally which comprises, a pair of guide rods inserted through apertures in each end of the panel and threadedly secured to each supporting member and extending outwardly therefrom, said rods having at their free ends, bent-over portions, a pair of supporting rods in threaded engagement with said supporting members, said supporting rods extending parallel with said guide rods and having their ends secured to the bent-over portion of said guide rods, a bracket, a clamping plate on said bracket for securing said bracket to said panel along one edge thereof, and a supporting rod in threaded engagement with one of said supporting members some distance below one of said first supporting rods and engaging said bracket when said panel is swung outwardly into a horizontal position.

4. Apparatus for removing a vertically mounted panel from a pair of supporting members and positioning it horizontally which comprises, a pair of guide rods inserted through apertures in each end of the panel and threadedly secured to each supporting member and extending outwardly therefrom, said rods having at their free ends, bent-over portions, a pair of supporting rods in threaded engagement with said supporting members, said supporting rods extending parallel with said guide rods and having their ends secured to the bent-over portion of said guide rods, a bracket

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having a channel portion thereon, secured to said panel, and a supporting rod in threaded engagement with one of said supporting members some distance below one of said first supporting rods and engaging the channel on said bracket when said panel is swung outwardly into a horizontal position.

5. Apparatus for removing a vertically mounted panel from a pair of supporting members and positioning it horizontally which comprises, a pair of guide rods inserted through apertures in each end of the panel and threadedly secured to each supporting member and extending outwardly therefrom, said rods having at their free ends, bent-over portions, a pair of supporting rods in threaded engagement with said supporting members, said supporting rods extending parallel with said guide rods and having their ends secured to the bent-over portion of said guide rods, a bracket, a flange positioned along one edge of said

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bracket and a channel on the other, said flange having clamping means thereon for securing it to said panel, and a supporting rod in threaded engagement with one of said supporting members some distance below one of said first supporting rods and engaging the channel on said bracket when said panel is swung outwardly into a horizontal position.

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