

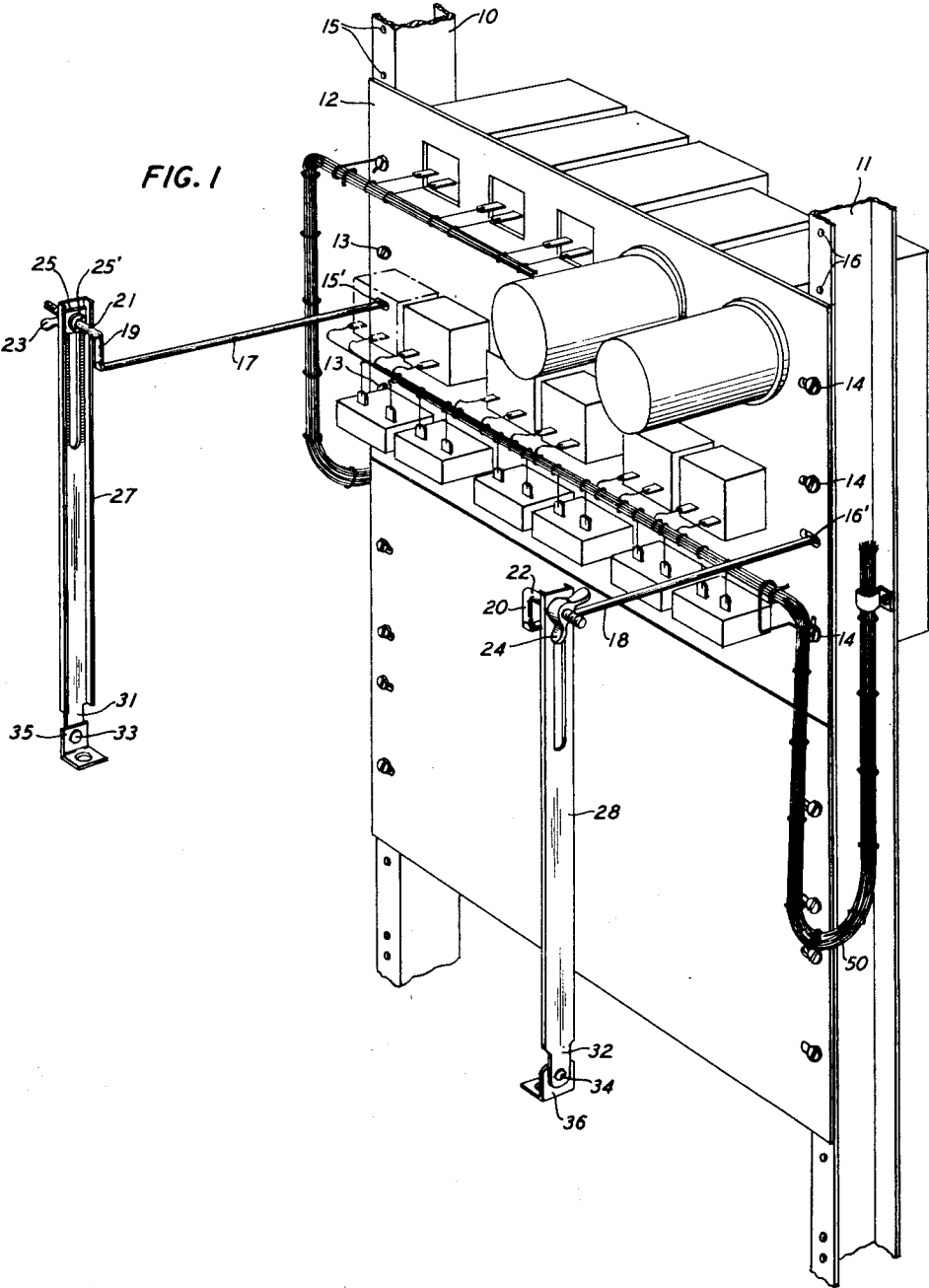
Oct. 23, 1951

P. T. HAURY ET AL
MAINTENANCE BRACKET

2,572,618

Filed Feb. 11, 1950

3 Sheets-Sheet 1



INVENTORS: P. T. HAURY
A. J. WIER

J. G. Smith

ATTORNEY

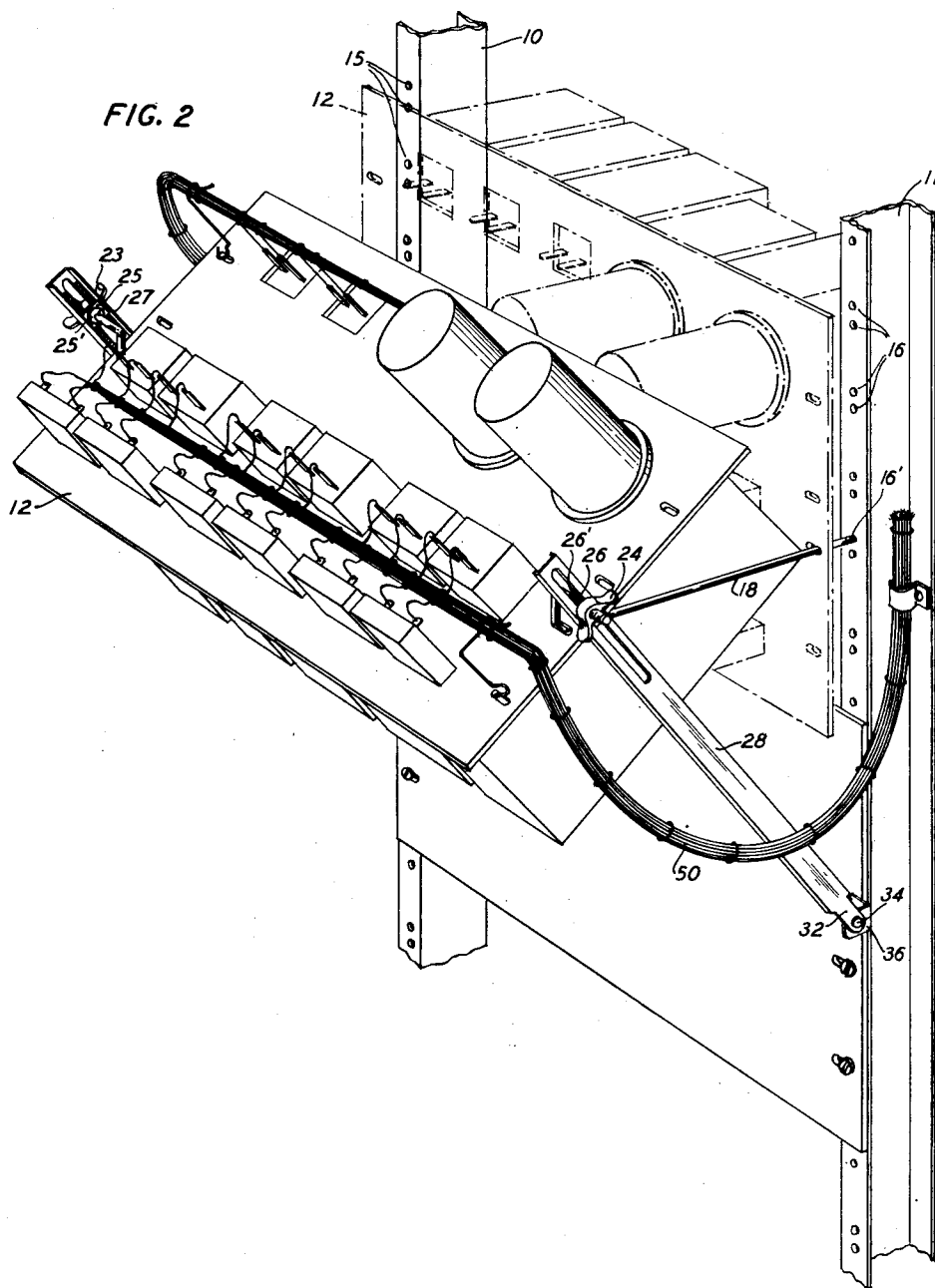
Oct. 23, 1951

P. T. HAURY ET AL
MAINTENANCE BRACKET

2,572,618

Filed Feb. 11, 1950

3 Sheets-Sheet 2



INVENTORS: P. T. HAURY
A. J. WIER

J. J. Wier

ATTORNEY

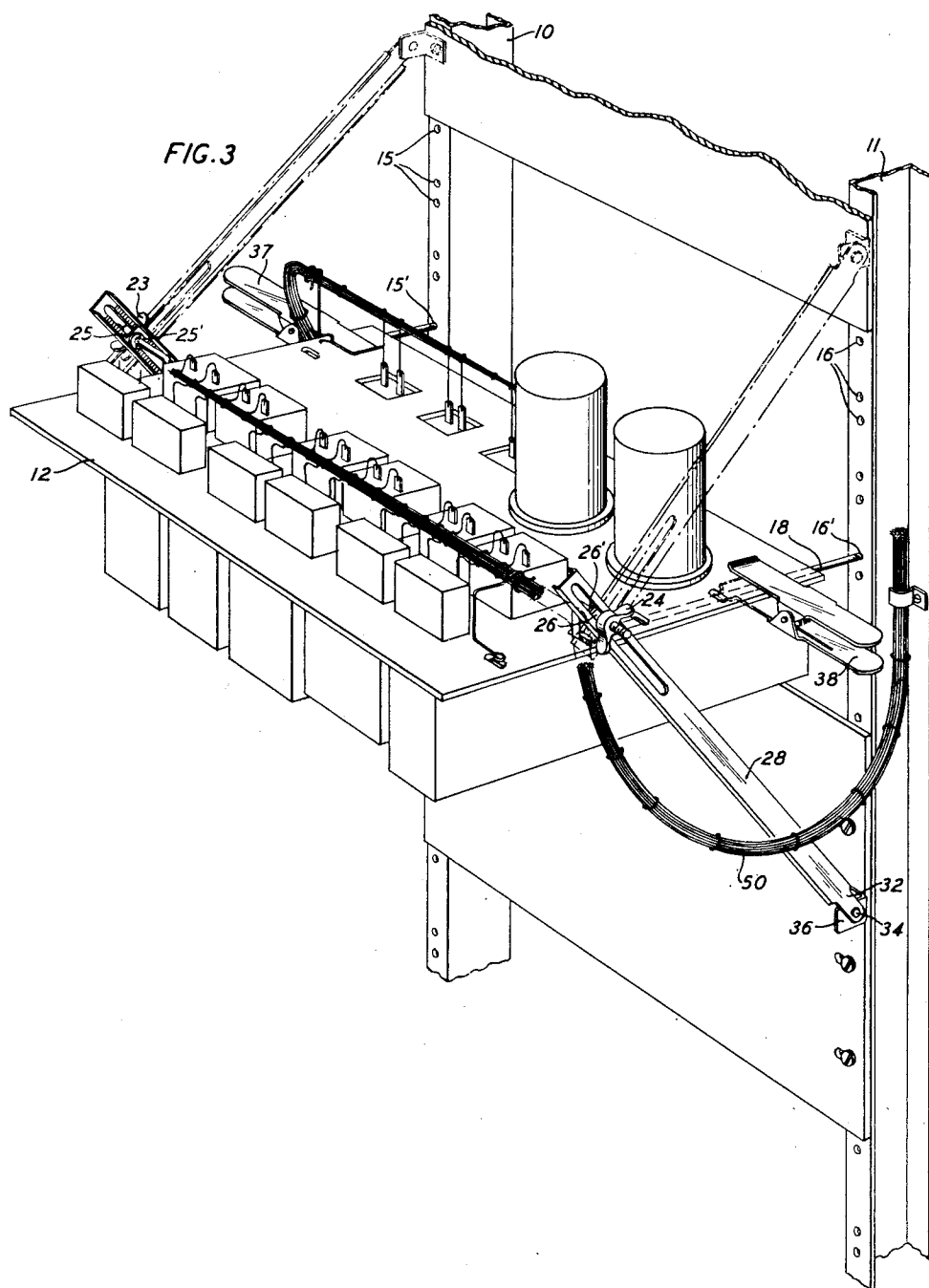
Oct. 23, 1951

P. T. HAURY ET AL
MAINTENANCE BRACKET

2,572,618

Filed Feb. 11, 1950

3 Sheets-Sheet 3



INVENTORS: P. T. HAURY
A. J. WIER

A. J. Wier
ATTORNEY

UNITED STATES PATENT OFFICE

2,572,618

MAINTENANCE BRACKET

Paul T. Haury, Raritan Township, Middlesex County, and Anthony J. Wier, Cranford, N. J., assignors to Bell Telephone Laboratories, Incorporated, New York, N. Y., a corporation of New York

Application February 11, 1950, Serial No. 143,792

8 Claims. (Cl. 175-298)

1

This invention relates to mounting racks for panel mounted electrical equipment units and more particularly to a bracket assembly for temporarily supporting the panel.

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

A further object of the invention is the provision of an improved method and apparatus for temporarily supporting panel mounted electrical equipment during inspection and servicing operations which permits ready access to all portions of the equipment.

A still further object of the invention is an improved method and apparatus for temporarily supporting panel mounted electrical equipment during inspection and servicing operations which will prevent the panel from being dislodged from its support with the consequent damage thereto.

The present invention relates to a method and apparatus for removing and temporarily supporting, from a rack or the like, an apparatus panel having electrical equipment mounted thereon, during inspection and servicing operations. The invention contemplates inserting in apertures in each end of the panel and into engagement with threaded apertures in the side rails of the rack, horizontally extending rods having offset portions on the free ends thereof. The offset ends of the rod are provided with suitable wing nuts for holding downwardly extending arms in slidable and pivotal engagement therewith.

The lower or free ends of the downwardly extending arms are provided with suitable brackets for securing the free ends of the downwardly extending arms, to the side rails of the rack some distance below or above the horizontally extending rods.

The panel is disengaged from the rack by removing the screws which secure it to the side rails and sliding it outwardly on the horizontal extending rods until the ends of the panel engage the offset portions of the rods. The panel may then be rotated 90 degrees or until the back of the panel engages the upper sides of the horizontal extending rods. In order to assure the secure positioning of the panel, clips or clamps are provided which are adapted to engage the upper side of the panel and the underside of the extending rods.

The invention, its organization and the mode of operation will be more fully understood from the following detailed description when read in

2

conjunction with the following drawings of which:

Fig. 1 is a view in perspective of a portion of a mounting rack with the apparatus panel in position thereon and a pair of horizontally extending rods readily secured to the side rails of the rack through suitable apertures at the ends of the panel and a pair of downwardly extending arms pivotally secured to the free ends of the horizontally extending rods;

Fig. 2 is a view similar to Fig. 1 but shows, in dot dash lines, the panel loosened from the rack and in full lines the downwardly extending arms secured to the side rails of the rack and the panel rotated approximately 45 degrees on the offset ends of the horizontally extending rods;

Fig. 3 is a view similar to Figs. 1 and 2 but shows the panel rotated approximately 90 degrees, the rearside thereof in engagement with the top portion of the horizontally extending rods and clamps holding the panel in engagement with the rods to prevent it from dislodgement, and shows in dot and dash lines an alternate position of the bracing arms.

Referring now to the drawing 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 vertical extending parallel channel or U-shaped side rails 10 and 11. These rails may be the standard relay rack uprights which are connected together at their bottom (not shown) to provide a unitary structure.

Apparatus panels such as shown at 12 are secured to the side rails 10 and 11 by suitable screws 13 and 14 which pass through apertures in the panel and into engagement with threaded apertures 15 and 16 in the side rails 10 and 11 as shown in Fig. 1.

As shown in the various figures, the apparatus panel 12 has mounted on each side thereof various pieces of electrical apparatus which may comprise vacuum tubes, relays, coils, condensers, transformers and the like, which are wired together and must be inspected and serviced from time to time.

In order to facilitate the inspection and servicing of the equipment mounted on each side of the panel 12, means are provided for expeditiously removing the panel from the rack and positioning it so both sides are available.

As shown in Fig. 1, the first step in the removal of the panel 12, is to remove one of the screws 13 and 14 from each end of the panel to expose

the threaded apertures in the side rails 10 and 11. A pair of rods 17 and 18 having threaded end portions are inserted in the apertures in the panel 12 and into threaded engagement with the threaded apertures 15' and 16' in the side rails 10 and 11, to provide the horizontally extending supports as shown.

The free ends 19 and 20 of the rods 17 and 18 are bent upwardly and outwardly at right angles to provide the extending axle portions 21 and 22 which are threaded on their ends to receive the wing nuts 23 and 24 and are provided with suitable washers 25 and 26 and collars 25' and 26'. Pivotably and slidably mounted on the extending axles 21 and 22 and confined between the collars 25 and 26 and the wing nuts 23 and 24, are the arms 27 and 28. These arms are substantially U-shaped in cross section and are provided with longitudinally extending slots 29 and 30 at their upper ends to permit the arm to freely slide on the axles 21 and 22.

The lower ends 31 and 32 of the arms 27 and 28 have pivotally mounted thereon, by means of the studs 33 and 34 angle brackets 35 and 36, which as shown in Figs. 2 and 3, are adapted to be secured to the side rails 10 and 11 through apertures in the next adjacent lower panel and some distance below the junctions of the rods 17 and 18 and the side rails 10 and 11.

After the arms 27 and 28 have been secured to side rails 10 and 11 as shown, the wing nuts 23 and 24 are tightened to clamp the arms securely to the horizontally extending rods 10 and 11 to prevent movement therebetween. The next step is to remove the remaining screws 15 and 16 from the panel 12 and side rails 10 and 11, thereby permitting the panel to become disengaged from the supporting rails 10 and 11, as shown in dot-dash lines in Fig. 2; and move outwardly to the ends 19 and 20 of the horizontally extending rods 17 and 18 and be rotated on the axles 21 and 22 to expose both the front and rear sides of the panel 12 and its associated apparatus as shown.

As shown in Fig. 3, the panel 12 has been rotated approximately 90 degrees with the rear side of the panel in engagement with the top portion of the rods 17 and 18. Suitable clamps 37 and 38 are provided for holding the panel 12 in firm engagement with the rods 17 and 18 to prevent accidental dislodgment of the panel.

As shown in the various figures, sufficient slack is provided in the cabling of the conductors so to permit the manipulation of the panels in the aforementioned manner without damage thereto.

While I have shown and described preferred embodiments of my invention, it is to be understood that various modifications may be made therein without departing from the scope and spirit of the invention.

What is claimed is:

1. Apparatus for removing a vertically mounted panel from a support and positioning it horizontally which comprises rods passing through apertures in each end of the panel to threadably engage the support and extend outwardly therefrom, said rods having at their free ends upwardly extending vertical portions, the ends of which are threaded and extend outwardly in a horizontal plane at right angles to said rods, downwardly extending arms pivotally mounted on said threaded portions, and means on said arms for securing said arms to said supports for bracing said rods to permit the pivotal rotation of said panel thereon.

2. Apparatus for removing a vertically mounted panel from a support and positioning it horizontally which comprises rods passing through apertures in each end of the panel to threadably engage the support and extend outwardly therefrom, said rods having at their free ends upwardly extending vertical portions, the ends of which are threaded and extend outwardly in a horizontal plane at right angles to said rods, downwardly extending arms pivotally mounted on said threaded portions, means on said threaded portions for securing said arms thereon, and means on said arms for securing said arms to said supports for bracing said rods to permit the pivotal rotation of said panel thereon.

3. Apparatus for removing a vertically mounted panel from a support and positioning it horizontally which comprises rods passing through apertures in each end of the panel to threadably engage the support and extend outwardly therefrom, said arms having at their free ends upwardly extending vertical portions, the ends of which are threaded and extend outwardly in a horizontal plane at right angles to said rods, downwardly extending arms, having longitudinal slots at their upper ends, mounted on said threaded portions, and means on the lower ends of said arms for securing said arms to said supports for bracing said rods to permit the pivotal rotation of said panel thereon.

4. Apparatus for removing a vertically mounted panel from a support and positioning it horizontally which comprises rods passing through apertures in each end of the panel and threadable to the support and extending outwardly therefrom, said arms having at their free ends upwardly extending vertical portions, the ends of which are threaded and extend outwardly in a horizontal plane at right angles to said rods, downwardly extending arms, having longitudinal slots at their upper ends, mounted on said threaded portions, means on said threaded portion for securing said arms thereon, and means on the lower ends of said arms for securing said arms to said supports for bracing said rods to permit the pivotal rotation of said panel thereon.

5. Apparatus for removing a vertically mounted panel from a support and positioning it horizontally which comprises rods passing through apertures in each end of the panel to threadably engage the support and extend outwardly therefrom, said rods having at their free ends upwardly extending vertical portions, the ends of which are threaded and extend outwardly in a horizontal plane at right angles to said rods, downwardly extending arms pivotally mounted on said threaded portions and brackets on the lower ends of said arms for adjustably securing said arms to said supports for bracing said rods to permit the pivotal rotation of said panel thereon.

6. Apparatus for removing a vertically mounted panel from a support and positioning it horizontally which comprises rods passing through apertures in each end of the panel to threadably engage the support and extend outwardly therefrom, said rods having at their free ends upwardly extending vertical portions, the ends of which are threaded and extend outwardly in a horizontal plane at right angles to said rods, downwardly extending arms pivotally mounted on said threaded portions, means on the lower ends of the said arms for securing said arms to said supports for bracing said rod to permit the pivotal rotation of said panel thereon, and means

5

in engagement with said extending rods and said panel for preventing displacement of said panel.

7. Apparatus for removing a vertically mounted panel from a support and positioning it horizontally which comprises rods passing through apertures in each end of the panel to threadedly engage the support and extend outwardly therefrom, said rods having at their free ends upwardly extending vertical portions, the ends of which are threaded and extend outwardly in a horizontal plane at right angles to said rods, downwardly extending arms pivotally mounted on said threaded portions, means on said threaded portions for securing said arms thereon, means on the lower ends of said arms for securing said arms to said supports for bracing said rods to permit the pivotal rotation of said panel thereon, and means in engagement with said horizontally extending rods and said panel for preventing displacement of said panel.

8. Apparatus for removing a vertically mounted panel from a support and positioning it horizontally which comprises rods passing through apertures in each end of the panel to threadedly engage the support and extend outwardly therefrom, said arms having at their free ends up-

6

wardly extending vertical portions, the ends of which are threaded and extend outwardly in a horizontal plane at right angles to said rods, downwardly extending arms, having longitudinal slots at their upper ends, mounted on said threaded portions, means on the lower ends of said arms for securing said arms to said supports for bracing said rod to permit the pivotal rotation of said panel thereon, and means in engagement with said horizontally extending rods and said panel for preventing displacement of said panel.

PAUL T. HAURY.
ANTHONY J. WIER.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,322,901	Heinlein	Nov. 25, 1919
2,111,903	Rona	Mar. 22, 1938
2,144,772	Plants	Jan. 24, 1939
2,486,764	Singer	Nov. 1, 1949