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APPARATUS TRANSPORTING HANDLE
Murray H. Feigenbaum, Jackson Heights, N.Y., assignor to Polaron Electronics Corporation, Long Island City, N.Y.
Filed May 3, 1963, Ser. No. 277,999
5 Claims. (Cl. 312—320)

The present invention relates to handles by which electrical apparatus of various types may be transported and particularly to a handle which may be utilized with bench type apparatus as well as with rack mounted apparatus and which does not require that the front panel of the apparatus be changed in order to adapt it for bench or rack mounting.

In the past many units of electrical apparatus such as signal generators, frequency standards, power supplies, amplifiers, counters, etc. have been made with interchangeable front panels which require that an entirely different front panel be utilized on an apparatus unit which was to be used on a bench than that which was utilized when the apparatus unit was to be mounted on a rack.

Since in most instances various of the controls extend beyond the front panel this meant, in practice, that the instrument or other apparatus unit was shipped to the customer, adapted to one or the other types of use, and was not suitable for use in the alternate manner without a time consuming operation of changing the entire panel. In many instances this panel change required reconnection of certain of the controls which were mounted on the front panel.

By the present invention a single instrument is provided, the two handles mounted thereon being capable of being removed and repositioned if the instrument is to be converted from bench to rack mounting.

It is therefore an object of this invention to provide a transporting handle for electrical apparatus units whereby a single unit may be readily converted for use on a bench or on a rack and there is no necessity to provide different front panels for a unit in order to convert it from one type of mounting to the other.

The invention provides for such a handle arrangement which is inexpensive and which does not substantially alter the appearance of the unit panel in either condition of use.

Other objects and features of the invention will be apparent when the following description is considered in connection with the annexed drawing, in which:

FIGURE 1 is a fragmentary perspective view of a prior art electrical apparatus unit showing that unit provided with a front panel having a handle on either side thereof as commonly supplied for bench use. The particular unit chosen for illustration is a statistical digital voltmeter.

FIGURE 2 is a perspective view of the instrument of FIGURE 1 showing the front panel replaced by a longer front panel having handles mounted thereon thereby adapting the instrument for rack mounting;

FIGURE 3 is a fragmentary perspective view of the same illustrative instrument provided with the handles of my invention, the handles being installed in a manner adapting the instrument to bench use;

FIGURE 4 is a fragmentary perspective view of an instrument rack showing an instrument having the handles of my invention positioned thereon in a manner adapting the instrument to rack mounting and showing the same illustrative instrument mounted on the rack. This view also shows the cover plates for the handles in position, these cover plates being normally supplied with standard instrument mounting racks;

FIGURE 5 is a detail showing the mode of affixing a handle member in accordance with my invention to the instrument when the instrument is to be used on a bench; and

FIGURE 6 is a fragmentary cross-sectional view taken on the plane of the line 6—6 of FIGURE 4 showing the mode of mounting the handle of my invention to the instrument when the instrument is to be rack mounted and showing also the manner of mounting the instrument on a rack.

Referring now to the drawings, and particularly to FIGURES 1 and 2, there is shown at 10 an electrical apparatus unit, in this instance a statistical digital voltmeter, having a front panel 11 on which are fixed handles 12 which handles are permanently fixed to the panel and are placed slightly inwardly of the ends of the panel leaving the major portion thereof free for the mounting of controls, meters and the like. It is to be noted that in this showing of prior art arrangements of transporting handles the panel 11 has the same width as the width of the instrument chassis 13.

In FIGURE 2 the same instrument is shown when adapted to the rack mounting. In this instance the panel 11 is replaced with a panel 14 which extends beyond the sides of the chassis 13 and has handles 12 mounted thereon in substantially the same position as in FIGURE 1. In this instance, however, as stated, the panel extends outwardly beyond the sides of the chassis 13 and is provided with notches 14' in its outer edges by means of which, through the use of cooperating fasteners, the entire unit 10 may be mounted on the usual apparatus rack.

Referring now to FIGURE 3, the same apparatus unit 10 is shown with a panel similar to that of FIGURE 1 and here designated 15. This panel 15 differs from the panel 11 in that there are no handles mounted thereon. The panel is, however, of the same width as the width of the chassis 13. In accordance with my invention I provide an angle piece 16 on which a handle 12, identical to the handles discussed in connection with the prior art arrangement of FIGURES 1 and 2, is mounted. The angle 16 has a height identical to the height of the front panel 15 and is fixed in position with the handle portion spanning the panel end as seen in FIGURE 3.

When the apparatus unit 10 is to be used as a bench unit the angle 16 is fixed to the side of the chassis by any suitable means as for example by means of the screws 17 which extend through elongated openings 19 in one leg of the angle 16. In this instance the angle 16 is placed against the chassis 13 with the outer surface of the angle against the chassis and with the inner surface of the other leg of the angle piece overlapping the front panel 15. Since the angle pieces are symmetrical, identical angle-handle combinations may be utilized for mounting at the ends of the chassis by merely reversing the angle piece at one end with respect to the angle piece at the opposite end.

When the apparatus unit 10 is to be rack mounted the angles 16 are reversed in such a manner that the outside of the leg of the angle which extends in a plane parallel to the handle is mounted against the side wall of the chassis as indicated particularly in FIGURE 6. Thus the remaining leg of the angle extends outwardly beyond the panel 15 with its front surface flush with the panel surface. As indicated particularly in FIGURES 3 and 6, the notches 18 formed in the handle bearing leg of the angle 16 are thus faced outwardly and positioned to receive mounting screws as indicated at 20 in FIGURE 6. The mounting screws 20 extend through the notches 18 and through the upright angle members 21 forming part of the rack generally designated 22, FIGURE 4.

As is customary, the rack is provided with a covering of sheet metal or the like 23 and is provided with the
handle covering members 24 which extend throughout the height of the rack and are hinged by means of the hinge 25 to the sheet metal covering 23. The cover members 24 may thus be swung out of the way while the apparatus units are mounted on the rack and after the mounting is completed, swung back to the position shown in FIGURES 4 and 6 thereby covering the handles of all of the units or instruments mounted on the rack giving a finished, neat appearance to the assembly.

It will be seen from the above that a standard handle unit may be manufactured, this unit comprising the angle 16 with the handle 12 fixed thereto. A pair of these handles may then be utilized to adapt apparatus units for bench use or for rack mounting, there being no necessity for providing front panels of differing dimension in order to accomplish the conversion from bench to rack use.

Moreover, the handles are, in both instances, spaced apart substantially the width of the chassis and of the front panel and are positioned to be readily grasped so that the instrument can be moved when desired. Since the angles 21 of the rack 22 are provided with holes spaced apart by standard amounts the notches 18, provided in the angles 16, always mate properly with the mounting holes of the rack. Additionally, although it is preferable to have the height of the handle units equal to the height of the panels with which they cooperate, this is not essential and therefore a single standard handle may suffice for mounting all types of instruments and at the same time for providing transporting handles for those instruments when adapted to bench use.

While I have described a preferred embodiment of the invention, it will be understood that I wish to be limited not by the foregoing description, but solely by the claims granted to me.

What is claimed is:

1. A handle member for apparatus units of the type including a front panel of substantially the width of the unit, said handle unit adapting the unit for use on a bench or the like and for mounting on a rack wider than the unit, said handle member comprising, in combination, an angle piece having a substantial length adapted to extend along the panel end, a handle fixed to one leg of said angle piece, elongated openings in the other leg of said angle piece, said openings being adapted to receive fasteners to fasten said angle piece to the side of said unit with either the inner or outer surface of said other leg of said angle piece adjacent the side of said unit whereby said handle member may be mounted with said one leg of said angle overlying said panel for bench use or said one leg extending outwardly substantially flush with the panel for rack mounting.

2. A handle member for apparatus units of the type including a front panel of substantially the width of the unit, said handle unit adapting the unit for use on a bench or the like and for mounting on a rack wider than the unit, said handle member comprising, in combination, an angle piece having a substantial length adapted to extend along the panel end, a handle fixed to one leg of said angle piece, elongated openings in the other leg of said angle piece, said openings being adapted to receive fasteners to fasten said angle piece to the side of said unit with either the inner or outer surface of said other leg of said angle piece adjacent the side of said unit whereby said handle member may be mounted with said one leg of said angle overlying said panel for bench use or said one leg extending outwardly substantially flush with the panel for rack mounting.

3. A handle member for apparatus units of the type including a front panel of substantially the width of the unit, said handle unit adapting the unit for use on a bench or the like and for mounting on a rack wider than the unit, said handle member comprising, in combination, an angle piece having a substantial length adapted to extend along the panel end, a handle fixed to one leg of said angle piece, and extending parallel to the length thereof, elongated openings in the other leg of said angle piece, said openings being adapted to receive fasteners to fasten said angle piece to the side of said unit with either the inner or outer surface of said other leg of said angle piece adjacent the side of said unit whereby said handle member may be mounted with said one leg of said angle overlying said panel for bench use or said one leg extending outwardly substantially flush with the panel for rack mounting.

4. A handle member for apparatus units of the type including a front panel of substantially the width of the unit, said handle unit adapting the unit for use on a bench or the like and for mounting on a rack wider than the unit, said handle member comprising, in combination, an angle piece having a substantial length adapted to extend along the panel end, a handle fixed to one leg of said angle piece, and extending parallel to the length thereof, notches in said one leg of said angle piece extending inwardly from the edge thereof, said notches being spaced to receive fasteners for fastening said unit to a standard rack, elongated openings in the other leg of said angle piece, said openings being adapted to receive fasteners to fasten said angle piece to the side of said unit with either the inner or outer surface of said other leg of said angle piece adjacent the side of said unit whereby said handle member may be mounted with said one leg of said angle overlying said panel for bench use or said one leg extending outwardly substantially flush with the panel for rack mounting.

5. A handle member for apparatus units of the type including a front panel of substantially the width of the unit, said handle unit adapting the unit for use on a bench or the like and for mounting on a rack wider than the unit, said handle member comprising, in combination, an angle piece having a substantial length substantially equal to the height of the panel and adapted to extend along the panel end, a handle fixed to one leg of said angle piece, and extending parallel to the length thereof, notches in said one leg of said angle piece extending inwardly from the edge thereof, said notches being spaced to receive fasteners for fastening said unit to a standard rack, elongated openings in the other leg of said angle piece, said openings being adapted to receive fasteners to fasten said angle piece to the side of said unit with either the inner or outer surface of said other leg of said angle piece adjacent the side of said unit whereby said handle member may be mounted with said one leg of said angle overlying said panel for bench use or said one leg extending outwardly substantially flush with the panel for rack mounting.

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FRANK B. SHERRY, Primary Examiner.