

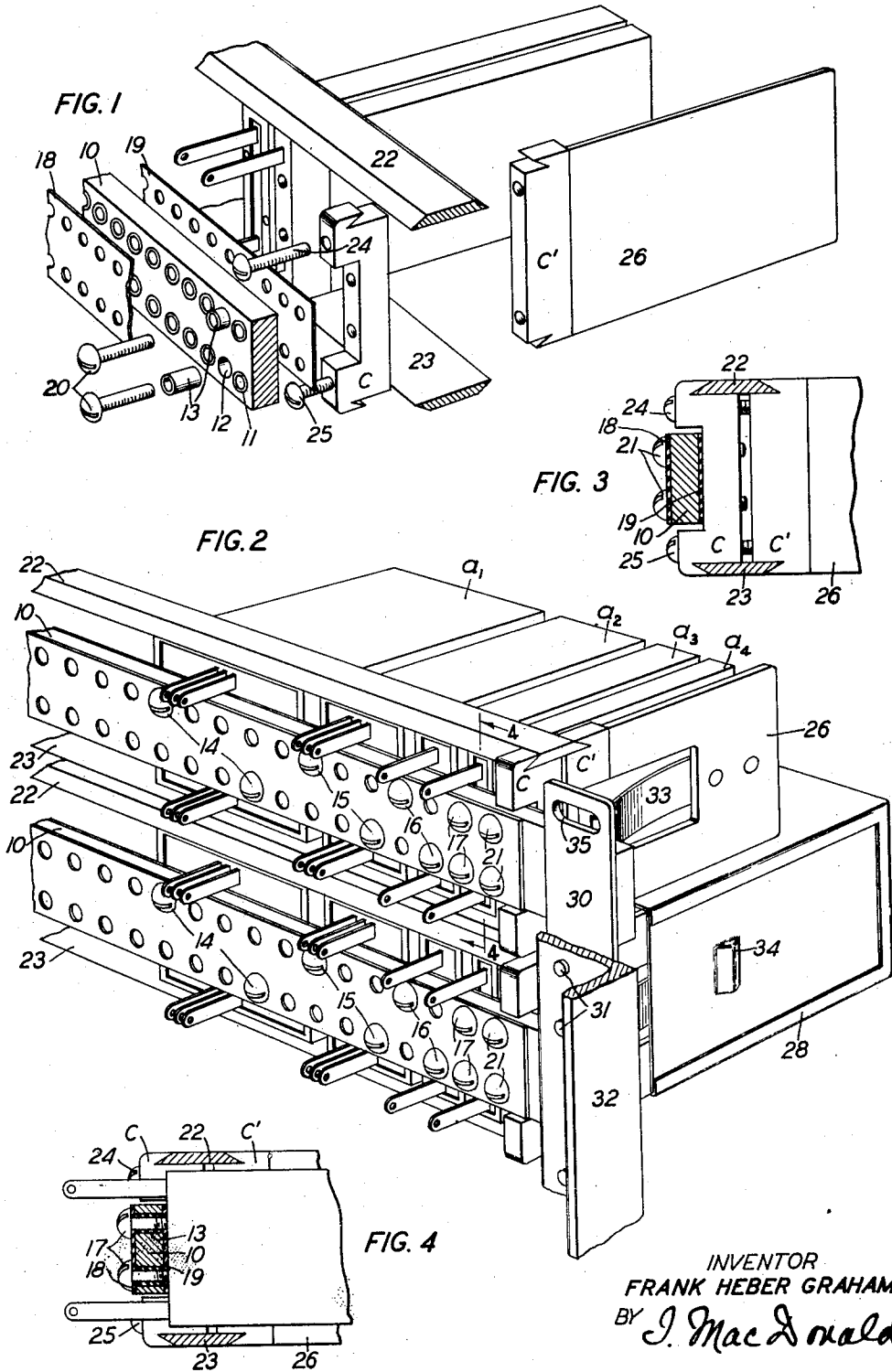
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F. H. GRAHAM

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MOUNTING FRAME FOR ELECTRICAL APPARATUS

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INVENTOR  
FRANK HEBER GRAHAM  
BY *J. MacDonald*  
ATTORNEY

## UNITED STATES PATENT OFFICE

FRANK H. GRAHAM, OF NEW YORK, N. Y., ASSIGNOR TO BELL TELEPHONE LABORATORIES, INCORPORATED, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK

## MOUNTING FRAME FOR ELECTRICAL APPARATUS

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This invention relates to supporting frames and more specifically to a frame for mounting telephone apparatus.

In certain types of framework used in telephone exchanges, for example, it is customary to mount a plurality of horizontally disposed mounting plates in close proximity to each other on two upright supports which form part of the framework proper. On these horizontal plates are mounted in pre-assigned places electrical apparatus such as relays, resistances, condensers of different types and sizes, depending upon certain requirements, the plates being previously drilled or otherwise perforated to receive such apparatus.

In such mounting frames, however, it is frequently necessary to transpose these pieces of apparatus on the plates, such transposition in turn necessitating the replacement of the plates thus affected by other differently perforated plates to receive a new combination of pieces of apparatus. It should be understood that such plates are therefore of necessity perforated only upon the determination of the requirements.

Furthermore, each relay, resistance or other piece of apparatus had associated with it to insulate the metal plate from the equipment, a pair of plates of insulating material. These plates were also perforated, each one in a particular manner, to suit the associated piece of apparatus.

The object of this invention is to provide a universal mounting element for equipment such as relays and the like, whereby the rearrangement of the electrical apparatus or the addition of such equipment may be effected in a simple and convenient manner without necessitating the replacement of the plate or mounting element and which obviates the necessity of using the insulating plates referred to, and consequently does not necessitate their removal and replacement by differently perforated plates, while accomplishing their function.

In accordance with this invention I employ a bar preferably of metal and of rectangular cross-section, having two rows of equally spaced perforations along its length, and two

flat plates of insulation correspondingly perforated, the holes in the bar being larger than those in the plates; and I mount the various dissimilar pieces of equipment, such as relays, resistances, etc., by providing them with screw threaded holes, so arranged that one piece of equipment will have a pair of holes directly above each other and receive a pair of screws passing through a pair of holes in the plates and bar located one directly over the other, and another piece of equipment will have diagonally disposed holes to receive a pair of screws passing through one hole in the bottom row of the plates and bar and another hole diagonally related to it in the upper row of the plates and bar.

In the drawing,

Fig. 1 is an exploded partial view of the bar shown in perspective;

Fig. 2 is a partial assembly view also shown in perspective;

Fig. 3 is a cross-sectional view showing the clamping device attached to the main mounting bar and to the reinforcing bars; and

Fig. 4 is a cross-sectional view taken approximately on line 4—4 of Fig. 2.

In the drawing, 10 indicates a main mounting bar in which are drilled two parallelly disposed rows of holes 11 and 12 as shown in Figs. 1 and 2. In these holes are inserted insulating bushings 13 in which the pairs of screws such as 14, 15, 16 and 17 extend in threaded engagement with their respective pieces of apparatus such as  $a_1$ ,  $a_2$ ,  $a_3$  and  $a_4$  for holding them securely on the bar 10, and on two opposite sides of this bar are placed the insulating strips 18 and 19 for insulating the apparatus and their fastening screws from the bar.

On the bar 10 is mounted a number of clamping devices consisting of the elements C and C' and screws 24 and 25. Elements C of these devices are held securely on the bar 10 by a pair of screws such as 21 shown in Figs. 2 and 3. These clamping devices cooperate for securing a pair of bars 22 and 23 on the bar 10 for reinforcing this bar in a direction at right-angles to its width, thus forming a mounting bar of unit-structure.

On elements C' of the clamping devices

are mounted as by welding the plates 26 on which a cover 28 is mounted for housing the apparatus on the bar, a spring 33 being associated with the plates 26 at each end of the bar 10 for locking the cover 28 in place through the engagement of the spring 33 in a depression 34 at the end of the casing as shown in Fig. 2.

The pieces of electrical apparatus  $a_1$ ,  $a_2$ ,  $a_3$  and  $a_4$ , for example, are each of a different width and their fastening screws disposed either in straight relation as shown by the screws 17 associated with the apparatus  $a_4$  or in diagonal relation as indicated by the sets of screws 14, 15 and 16, serving to secure their respective pieces of apparatus  $a_1$ ,  $a_2$  and  $a_3$  on the bar 10.

Through this arrangement any of the various types of apparatus can be mounted any place along the bar 10 where the screw threaded holes in the apparatus register with corresponding holes in the bar 10 in the relation above mentioned without requiring the replacement of the bar 10 by another bar which formerly was specially made and perforated to receive the electrical apparatus.

At each end of the bar 10 there is secured as by welding a plate 30 each having a pair of elongated apertures 35 for receiving screws, as 31 for securing the bar on two upright supports such as 32 shown in Fig. 2.

In the mounting bar of this construction due to the relatively small thickness of the bar 10 and that of the insulating strips 17 and 18 and the fact that the reinforcing bars 22 and 23 do not extend over the terminals, the soldered connections to these terminals are made with a maximum of convenience and a corresponding saving of time and labor, while the positioning of the bars 22 and 23 at right-angles to the width of the main mounting bar 11 affords a construction of great rigidity.

What is claimed is:

1. A mounting for electrical apparatus comprising a supporting frame, a bar having a plurality of holes along its length, a pair of reinforcing bars, clamping devices engaging said reinforcing bars, means extending through said holes for securing the clamping devices on the first mentioned bar, and means for securing said mounting on said supporting frame.

2. A mounting for electrical apparatus comprising a bar having a plurality of rows of equally spaced holes along its length, a pair of reinforcing bars, clamping devices engaging said reinforcing bars, means extending through a number of the holes in the first mentioned bar for securing the clamping devices thereto, and means extending through the other holes in threaded engagement with the electrical apparatus for securing them on said bar.

3. A mounting for electrical apparatus

comprising a bar having a plurality of rows of equally spaced holes along its length, a pair of reinforcing bars, clamping devices engaging said reinforcing bars, means extending through a number of holes in the first mentioned bar for securing the clamping devices thereto, means extending through the other holes in threaded engagement with the electrical apparatus for securing them on said bar, a housing for the apparatus, and means carried by each of said clamping devices for supporting said housing.

4. A mounting for electrical apparatus comprising a main bar, a plurality of other bars disposed in parallel relation to said main bar, a plurality of clamping devices interconnecting each of said bars for reinforcing the main bar and means for securing the apparatus on the first mentioned bar.

5. In combination, a metal bar having two equally spaced rows of perforations, two insulating plates, correspondingly perforated and located one on each side of said bar, a support, means for securing said bar and plates thereto, electrical equipment of various types each having threaded holes adapted to register with certain of the perforations in the bar and plates, and screws passing through the bar and plates and into the equipment.

In witness whereof, I hereunto subscribe my name, this 1st day of December, 1931.

FRANK H. GRAHAM.