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F. H. GRAHAM

2,169,727

DISTRIBUTING FRAME

Filed Dec. 21, 1937

FIG. 2

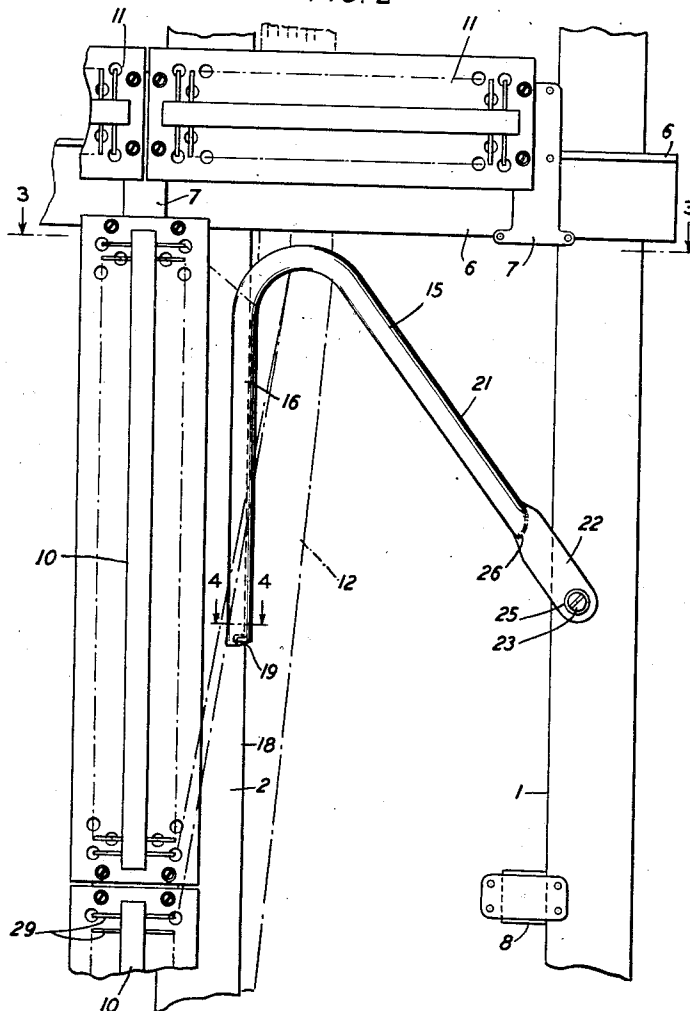


FIG. 1

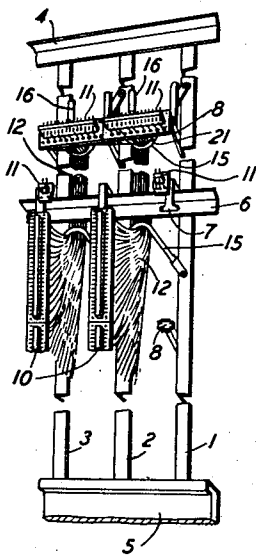


FIG. 4

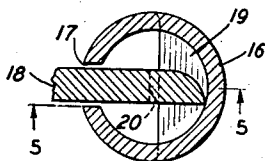


FIG. 5

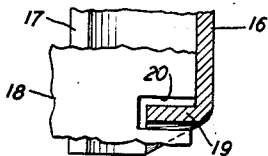
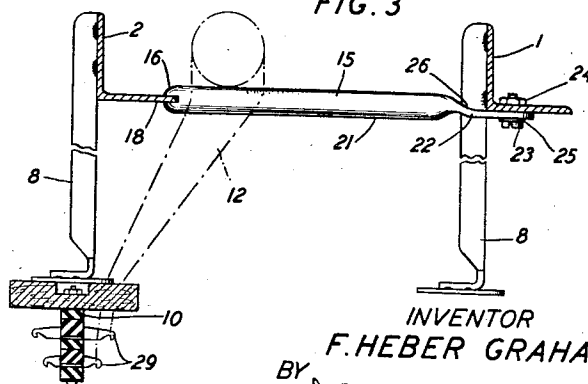


FIG. 3



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## UNITED STATES PATENT OFFICE

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## DISTRIBUTING FRAME

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7 Claims. (Cl. 179—98)

This invention relates to telephone systems and particularly to distributing frames for electrical conductors in such systems.

An object of this invention is the provision of such frames in which the distribution and support of electrical conductors are made simple, economical and convenient.

Heretofore distributing frames have been made in which various forms of rings, loops, ribs or cross-pins have been attached to frame members for the support of cables and guidance and distribution of jumper wires for connections to terminal blocks and various apparatus employed in telephone systems.

It is a feature of the present invention to provide a specially designed distributing hook that may be attached between members of a distributing frame in various positions to serve as guides for jumper wires between terminal blocks, connecting conductors for telephone apparatus mounted in the frame, or for the guiding of other groups of conductors or cables. This hook may be made from porcelain enameled metal tubing and bent in the shape of a V and secured in the frame between two vertical members by means of a slot running the entire length of one leg and engaging one of said vertical members. At the free end of this leg is provided a lip engaging a slot in the vertical frame member to prevent shifting. The other leg is flattened out at its free end and is secured to the opposite vertical frame member by means of a screw. The jumper wires, cables or groups of conductors may be run either vertically or horizontally along the frame members and the individual wires thereof are bent into the crook of the hook on one side and fanned out to connect to the terminal block or telephone apparatus on the opposite side of the hook. As the slotted leg extends in a vertical direction and the other leg slopes away from this leg, the wires are guided or bunched by this sloping leg toward the slotted leg.

The invention has been illustrated in the accompanying drawing in which:

Fig. 1 is a perspective of a distributing frame showing jumper wires connecting terminal blocks and guided by hooks in accordance with this invention;

Fig. 2 is an enlarged front view of a distributing frame showing one of the hooks in place between two vertical members and indicating how the jumper wires are connected to terminal blocks;

Fig. 3 is a cross-section taken on line 3—3 of Fig. 2;

Fig. 4 is an enlarged cross-section taken on line 4—4 of Fig. 2; and

Fig. 5 is an enlarged section of the free end of the hook showing the construction of the lip entering into the slot on a vertical frame member.

Referring now particularly to Fig. 1, the distributing frame may consist of vertical frame members 1, 2 and 3 of angle iron. The upper and lower ends of these vertical frame members are connected to horizontal angle iron pieces 4 and 5. Another horizontal frame member 6 is located approximately midway between the members 4 and 5 and connected to members 1, 2 and 3 to secure a rigidly constructed frame. Secured to the vertical frame members 1, 2 and 3 are hook-shaped projecting members 7 and members 8 extending at right angles to the frame members 1, 2 and 3. Between the members 7 and the lower members 8 and to the free ends thereof are connected vertically located terminal blocks 10 and between the members 7 and between the upper members 8 are connected horizontally located terminal blocks 11. It should be noted that the terminal blocks 10 may be mounted in vertical rows and the terminal blocks 11 may be mounted in horizontal rows. Groups of jumper wires 12 may be connected between the horizontal and vertical blocks as shown and be engaged by hooks 15 constructed in accordance with this invention.

The manner in which a hook 15 is connected between two vertical frame members is illustrated in detail in succeeding Figs. 2, 3, 4 and 5. As stated, the hook 15 comprises a tubing bent in the shape of a V with the leg 16 having a longitudinal slot 17 engaging the edge 18 of the frame member 2. At the free end of the leg 16 a lip 19 is bent toward the left looking at Fig. 2 or Fig. 5, into the tube or leg 16. This lip enters a slot 20 on the frame member 2 to prevent the hook from shifting in a vertical direction. The right-hand leg 21 of the hook 15 is at its free end flattened out, as shown at 22. This leg may be secured to the frame member 1 by means of a screw 23, entering a hole in the end of portion 22 and a hole in the frame member 1, and secured by a lock-nut 24. The hole in the portion 22 may be larger than the diameter of the screw 23 to permit variations in the spacing of frame members 1, 2 and 3 and in the dimensions of the hook 15. Between the head of this screw 23 and the portion 22 of hook 15 is inserted a lead washer 25. By tightening the screw 23 the lead washer will be partly imbedded into the hole in the portion 22 to securely hold the hook 15 in

place. It should be noted that as the front surfaces of the vertical frame members 1 and 2 are located in the same plane, the portion 22 is therefore slightly bent forward at the point 26 so as to permit the hook 15 to be located in a plane parallel to the front surfaces of the frame members 1 and 2.

In connecting the jumper wires between the terminal blocks 11 and 10 the wires may be strung one at a time by connecting them to terminals such as 29 on the blocks, either from a block 11 or from a block 10 and then extended through holes in the blocks downward if connected to terminals on blocks 11, over an upper hook 15 through the crook thereof, then behind the horizontal frame member 6, and over the crook of a lower hook 15, as shown in Fig. 1, through holes in a terminal block 10 to terminals 29. As the left-hand leg 16 of the hook 15 extends in a vertical direction and the right-hand leg 21 slants away from leg 16, the jumper wires will be guided by leg 21 towards leg 16 and bunched in close relation to each other in the crook of the hook. In the case of the jumper wires bunched in the crook of the lower hook 15 of Fig. 1, it will be noted that they are fanned out in slightly upward and downward directions as they emerge from the crook to connect to the various terminals of blocks 10. In the case of the jumper wires bunched in the crook of the upper hook 15, it should be noted that they are fanned out toward the left and toward the right as they emerge from the crook to connect with the terminals of blocks 11.

With this type of hook it is readily seen that additions to or changes in existing wiring may conveniently be made and at the same time maintain a neat and orderly arrangement of connections.

What is claimed is:

1. A distributing frame having vertical supporting members, horizontal connecting members for said vertical members, and terminal blocks secured to said vertical members, hollow guide hooks having an upright leg and a sloping leg, the upright leg being slotted longitudinally and fitted to one vertical member with a part of this upright entering said slot, and the end of the sloping leg secured to another vertical member, groups of jumper wires running among the frame members and guided between the two legs of the hooks and then fanned out and connected with individual terminals on said blocks, said guide hooks being so located and shaped that the sloping leg throws or guides the jumper wires in the crook of said hook toward the upright leg.

2. A distributing frame having vertical upright members and horizontal members secured to said vertical members, terminal blocks secured to said vertical members, tubular jumper wire guide hooks each having two legs, one leg extending in a vertical direction, and provided with a longitudinal slot in which part of one vertical member is

fitted, and a lip at the free end of said leg fitted into a slot in said vertical member and the other leg extending from the crook of said hook in a sloping direction away from the first leg and secured to another vertical member, groups of jumper wires guided into the crook of said hooks, and fanned out on the opposite side of said hooks and connected individually to said terminal blocks, the arrangement being such that the sloping legs guide the jumper wires entering the crook of the hooks toward the vertical legs.

3. A jumper wire guide hook for distributing frames having two legs, one of said legs extending vertically and having on its outer side a longitudinal slot cut therein and at its free end a lip bent outwardly into said slot, and the other leg sloping away from the crook of said hook.

4. A tubular guide hook for distributing frames having two legs, one extending upwardly from the crook of said hook and slotted longitudinally on its outer side and provided with a lip at its free end extending outwardly through said slot, while the other leg extends from the crook of said hook in an upwardly slanting direction away from said first leg, the free end of said second leg being flattened out in the plane of the legs and provided with a hole at right angles to the plane of said legs through said flattened portion.

5. A porcelain enamelled metal jumper wire guide hook for distributing frames comprising two straight hollow legs, one having a longitudinally cut slot on the outside thereof and a lip at the free end extending outwardly into said slot and the other leg extending from the crook of said hook outwardly away from said first leg and having a flattened portion with a hole therein at the free end of said leg.

6. A V-shaped jumper wire guide hook of circular cross-section having a slot cut on the outside of one leg running the entire length thereof, and a lip extending at the free end of said leg into said slot and having a flattened end portion at the free end of the other leg provided with an aperture therethrough.

7. The combination of a distributing frame having two parallel frame members, a screw, a nut, and a V-shaped jumper wire guide hook, said guide hook having a slot cut on the outside of one leg and a lip extending at the free end of said leg and having a flattened end portion at the free end of the other leg provided with apertures therethrough, said hook being secured between said frame members by having one frame member fitted in the slot in the hook and having the lip on the hook fitted into a slot in this frame member and by having the flattened end portion of the other leg secured to the other frame member by means of said screw and nut, said screw passing through the aperture of said flattened end portion and through a hole in said other frame member.

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