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Byrd

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[54] **MODULAR JACK PANEL**

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[52] **U.S. Cl.** ..... **339/121,** 339/182 R, 317/101 DH

[51] **Int. Cl.** **H01r 13/60**

[58] **Field of Search** ..... 317/101, 101 DH; 339/17 L, 17 LM, 113, 121, 125, 126, 198, 183, 182; 211/26

[56] **References Cited**

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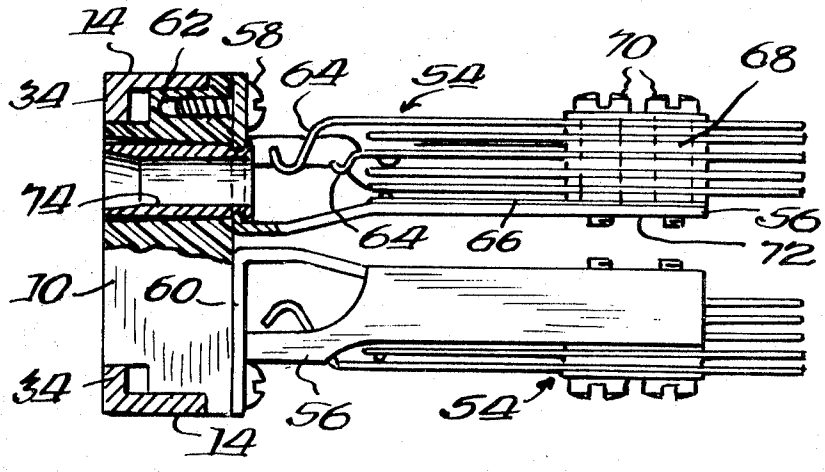
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Primary Examiner—Richard E. Moore
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[57] **ABSTRACT**

Electrical connectors or jacks are fastened to the rear face of synthetic resin modules in alignment with access openings therethrough for jack plugs, the modules being grouped in juxtaposed relation and removably secured within a supporting channel frame for mounting between the uprights of a rack, cabinet or other structure.

13 Claims, 13 Drawing Figures



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SHEET 1 OF 2

Fig. 1

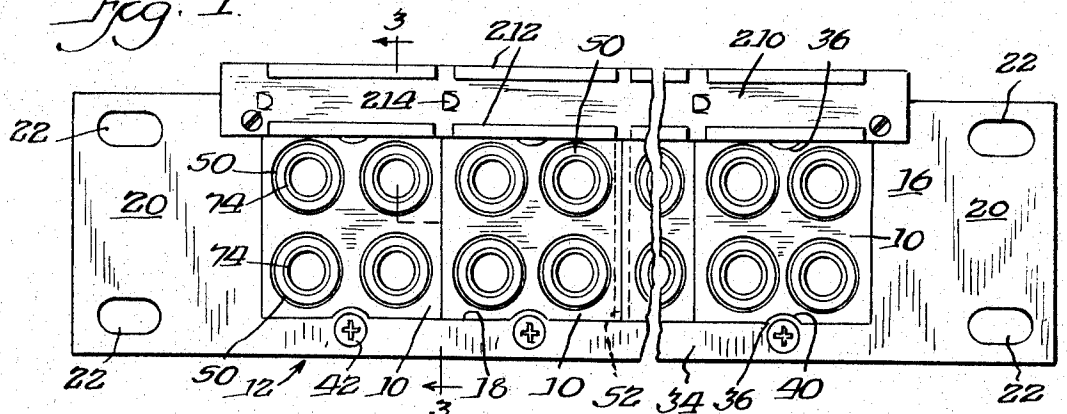


Fig. 2

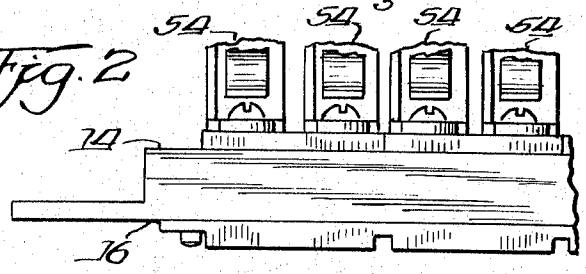


Fig. 4

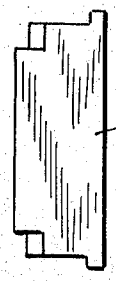


Fig. 3

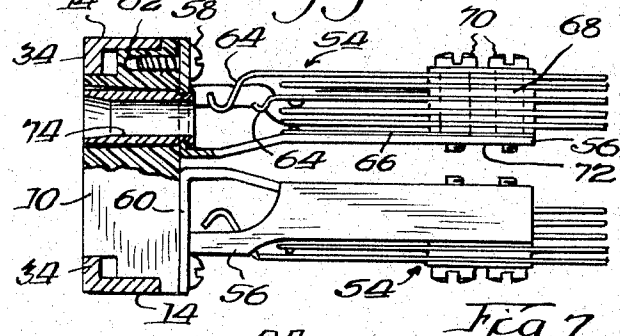


Fig. 5

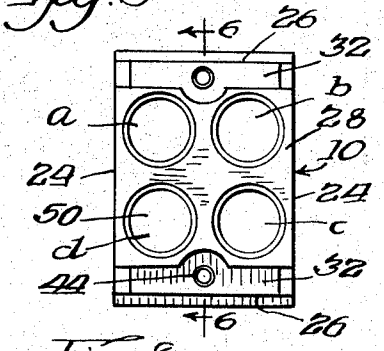


Fig. 6

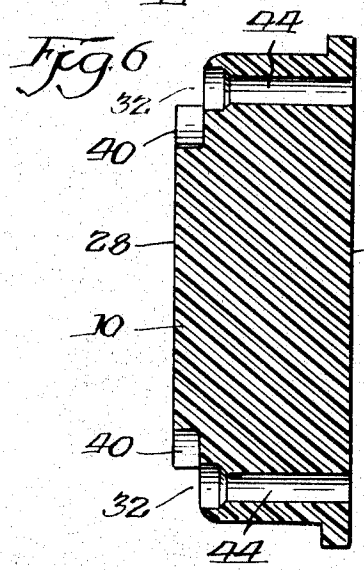


Fig. 7

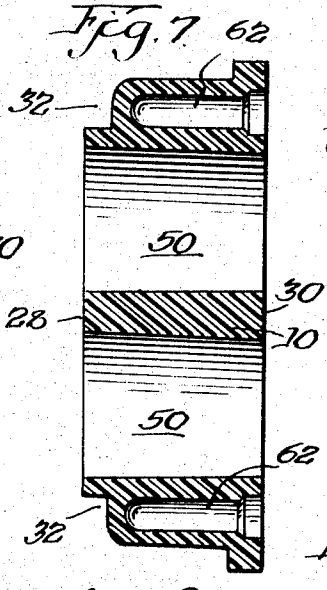
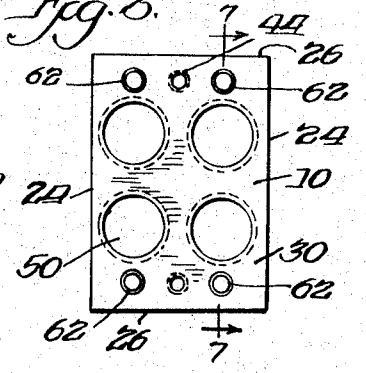


Fig. 8



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Fig. 9.

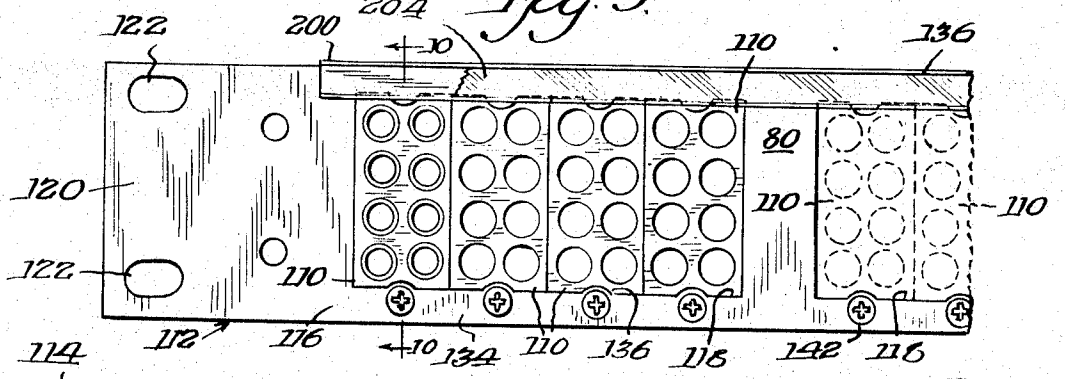


Fig. 10.

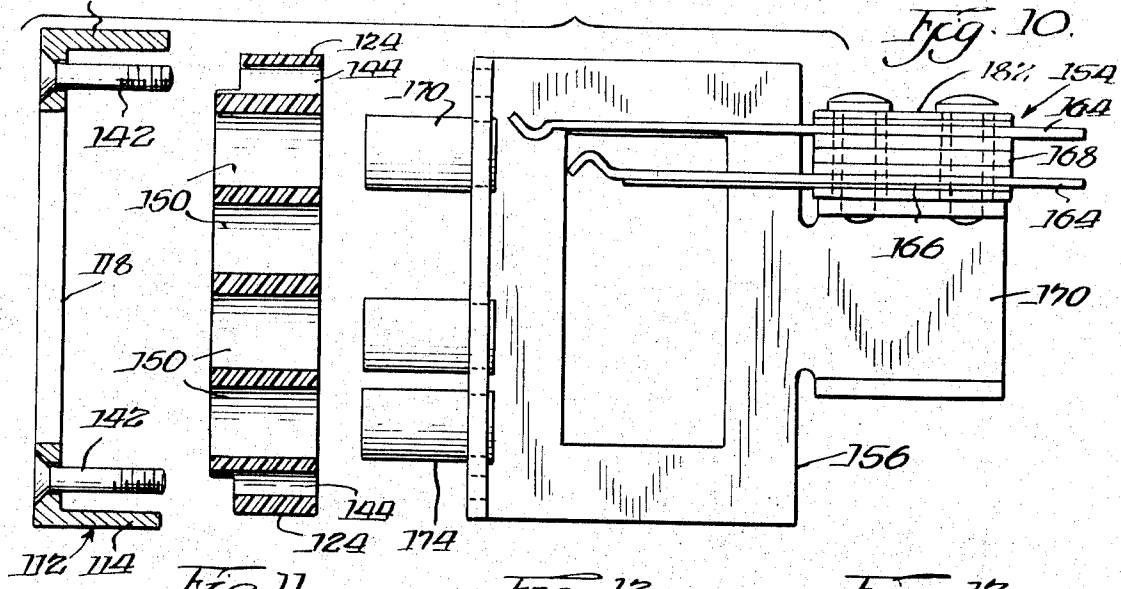


Fig. 11.

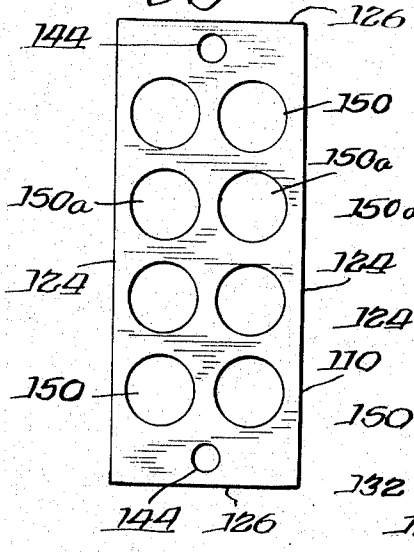


Fig. 12.

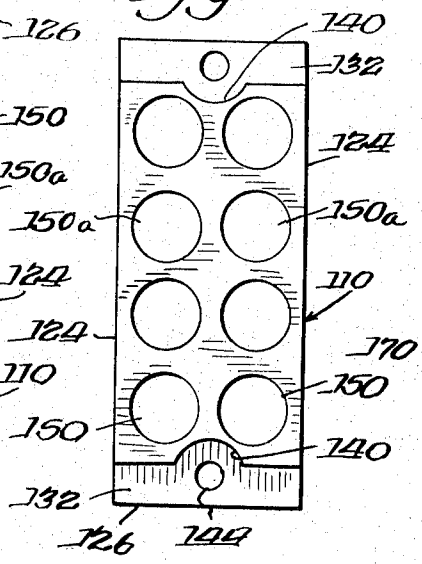
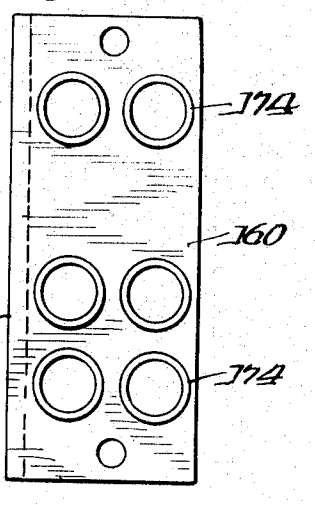


Fig. 13.



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MODULAR JACK PANEL

This invention relates to electrical jacks such as are used in telecommunication systems and particularly to a novel and improved mounting therefor.

A principal object of the invention is to provide a construction of panel to which the conductors and contacts or electrodes comprising the jacks may be mounted in close array, which will be low in cost and will provide a flexibility of design not previously available.

Conventionally, up to the time of the present invention, banks of electrical jacks, as for example those used by the telephone industry, have been assembled on blocks of molded synthetic resins in alignment with one or more rows of access holes therein through which an operator could insert jack plugs to engage said jacks and complete associated circuits. Each said blocks would be sheathed in a metal frame which in turn could be fastened between the spaced uprights of a supporting rack or cabinet. Each block and its associated mounting sheath would constitute a panel having a standardized length dictated by the separation of the uprights of the rack or cabinet to which the panels were to be fastened. 19 inches came to be considered a minimum length for such panels. The width and depth of the panels, however, would vary among manufacturers and/or to satisfy specific needs. In order to obtain a maximum usage of available space, the access holes of these panels would be arranged in parallel rows or lines, usually the individual holes being located on 5/8 inch centers. Thus, a commonly sized panel would be at least 19 inches long by roughly 2 inches wide and ½ inch deep, accommodating two rows of access holes and associated jacks, each row containing up to 26 holes and/or jacks.

In accordance with this invention, it is proposed to assemble the jacks on much smaller sized but rectangularly shaped blocks or modules, which, by reason of the design, are less expensive to manufacture and more versatile in their use. Thus, it is a feature of the invention that two or more pairs of jacks are affixed on modules which are removably mounted in juxtaposed or side by side relation in a supporting frame so as to define rows corresponding in numbers to the parallel pairs of jacks on each module. The supporting frame for such a line of modules is channel shaped and the spacing of its depending side walls correspond to the longer dimension of the modules, wherefore the modules snugly fit therebetween within the frame. The base wall or forward side of the channel frame contains a rectangular shaped opening or openings through which the outer face of the modules protrude, the modules being recessed along their more widely spaced sides so that their outer faces are thus accessible and essentially flush with the surrounding outer surface of the base wall of the channel frame; and the two ends of the frame are adapted to be secured to provided portions of the supporting structure or cabinet. Importantly, the access holes of each module to which a jack is aligned bear a specific relationship to every other access hole of said module as well as to the four rectangular-related side walls of the modules. Thus, in a module comprising four holes or two pairs of two holes each, every hole is paired with two adjoining holes and the center of each hole of the modules is spaced from the center of the other two holes with which it is paired by a constant dimension which is also twice the spacing of the center of said hole from the nearest edge or side wall of the module.

Thus, in one form of the invention a jack panel comprises a frame, roughly 19 inches long by 1¾ inches wide and ½ inch deep. Such a panel may be provided with a rectangular shaped opening in its space wall which can receive up to 13 modules, each roughly 1¾ inches high by 1¼ inches wide, containing two pairs of ½ inch diametered access holes on ⅝ inch centers. When assembled in juxtaposed relation a full complement of modules will provide the panel with two rows of equally spaced access holes separated by ⅝ inch center to center spacings.

A feature of the invention is that the modules are not only readily removable and/or replaceable within the supporting panel frame, but are also interchangeable at different locations along the length of the panel, and any number of modules less than a full complement may be assembled with a supporting frame to provide a predictable pattern of access holes and associated jacks.

These and other details of structure as hereinafter more particularized provide a modularized jack panel in accordance with the invention having important advantages and/or features over earlier known forms of jack panels.

The modules and supporting frames are not only less expensive to make because of their simplicity of design and the smaller size of the modules, but also permit utilizing less costly equipment. There is also a considerable saving in scrap material. One of the problems when manufacturing jack panels in the past has been the problem of warpage which is inherent to the process of molding phenolic resins to the previously required large sizes. When working in the smaller sizes one does not have this problem and the scrap problem can be reduced from near 20 percent or zero or close thereto.

Also, at the end user's level if an access hole is damaged the module can be simply discarded and maintenance and/or repair costs are considerably less than where a whole panel has to be discarded because of one damaged access hole.

An important advantage or feature of the invention is the opportunity for flexibility and/or design which the invention introduces. In the same size panel, it is still possible to assemble the same number of jacks as in the past. However, now only the number of modules required for a particular purpose need be mounted and the remaining space of a panel becomes available for other purposes, as for example to mount meters and the like, The individual modules can be molded from a variety of differently colored resins. It is therefore possible to construct a coded panel wherein different colors define different circuits and modules representing a particular circuit may be arranged over the total area of the mounting panels wherever required and/or can be assembled and reassembled in any pattern. Moreover, it is now necessary to assemble only those modules and the number thereof required at a particular time. Also, although a standard module may contain, for example, two pairs of access holes on ⅝ inch center-to-center spacings, it now becomes a simple matter to provide and to mount modules in such a panel having other number or different centerings of holes within

the area of a module or modules to satisfy particular circuit design requirements.

Many other objects, advantages and features of the invention will become evident from the description of a preferred form of the invention which now will be described in connection with the accompanying drawings.

Referring to said drawings,

FIG. 1 illustrates, in side elevation, a modular jack panel in accordance with the present invention wherein each module is adapted to support from one to four jacks in aligned pairs;

FIG. 2 is a fragmented top plan view of one end of the jack panel shown in FIG. 1;

FIG. 3 is a sectional view taken through the panel of FIG. 1 along lines 3—3 looking in the direction indicated by the arrows;

FIGS. 4–8 illustrate the modules separate from the supporting frame, FIG. 4 illustrating the module in side elevation;

FIG. 5 illustrates the module in front plan view;

FIG. 6 is a sectional view of the module illustrated by FIG. 5 taken along lines 6—6 thereof;

FIG. 7 is a sectional view taken through the module of FIG. 5 along lines 7—7 thereof;

FIG. 8 is a rear plan view of the module;

FIGS. 9 through 13 illustrate a second embodiment of the invention wherein FIG. 9 is a fragmentized side elevational view of one end portion of the jack panel supporting modules in groups of four, each module containing four equi-spaced pairs of access holes;

FIG. 10 is an exploded view of the jack panel illustrated in FIG. 9, the view being taken along lines 10—10 thereof;

FIG. 11 is a front side view of the module;

FIG. 12 is a rear side view thereof; and

FIG. 13 is a plan view of the jack supporting mount as viewed from lines 13—13 of FIG. 10 looking in the direction indicated by the arrows.

Referring now more specifically to the several views constituting the drawings wherein like parts are indentified by like reference numerals, FIGS. 1 through 8 illustrate a first embodiment of the invention wherein jacks are mounted to a series of modules supported within a frame 12 in juxtaposed side-by-side relation. Frame 12 as illustrated by FIGS. 1–3 may be stamped from lightweight metal such as aluminum into the illustrated generally channel shape which includes a pair of spaced depending parallel side walls 14, an intermediate connecting base wall 16 therebetween having a rectangular shaped opening 18 with which the outer faces of the modules 10 are aligned and end portions 20 on either side of the rectangular opening 18 and which project beyond the depending side walls 14. Said projecting end portions 20 of the frame 12 are illustrated in FIG. 1 as provided with spaced elongated openings 22 through which screws or other locking means may be extended for securing the jack panels to the uprights of a rack, cabinet or other supporting structure (not shown).

Modules 10 are molded of phenolic or other suitable insulating synthetic resins to the illustrated generally rectangular shape and have opposed longer sides 24 which extend in a direction laterally across rectangular opening 18 at right angles to their parallel shorter side walls 26 which extend longitudinally of and abut the inner surfaces of side walls 14 of the frame 12 when properly assembled with the supporting frame 12 of the jack panel. Said modules 10 further have front faces and rear faces 28 and 30 respectively which are generally flat, parallel and at right angles to said side walls 24 and 26. At their upper and lower peripheral edges, said front face 28 of the modules are recessed, as indicated at 32 in FIG. 5, to provide clearance for the overhang portions 34 of the base wall 16 of the channel member which are arranged on either side of its rectangular opening 18. Preferably said recesses 32 of the modules have a width corresponding to the width of said overhang portions 34, these being equal in dimension, and preferably have a depth corresponding to the thickness of the wall portion 16 of the frame. Thus the outer face 28 of the modules protrudes through the rectangular opening to essentially flush with the outer surface of the frame base wall 16, filling the area of said rectangular opening across the width thereof. At spaced intervals along the two opposed longitudinal edges of the rectangular opening 18 are semi-circular lugs as indicated at 36 which lie in the plane of said wall 16 and mate with similar semi-circular shaped recesses 40 provided in the outer face 28 of said modules 10. These serve to locate the modules within the supporting frame and to resist torsion as, for example, in the insertion and removal of the jack plugs. Means such as screws 42 extend through provided openings in said lug portions 36 of the frame and threadedly connect into internally threaded openings 44 in the modules removably securing the modules to the frame.

As illustrated by FIGS. 1 and 3, the dimensions of the longer side walls 24 of the modules correspond to the inner spacing of the depending side walls 14 of the frame. The dimensions of the shorter sides 26 of the modules on the other hand bear a relation to the length of the receptacle opening 18 of said panel frame 12 such that a full complement of modules assembled with the frame will completely fill said receptacle opening across the length as well as width thereof. In the embodiment illustrated by FIGS. 1–8 each module 10 contains four designate access holes 50 and these are arranged in two parallel pairs. As illustrated, the designate access holes 50 are each equidistantly spaced from each of the two nearest designate holes 50 with which it is paired so that the center-to-center spacing of the holes is a constant and the spacing of the center of each hole from the nearest longer side wall 24 is equal to one-half said constant. Thus, considering the centers of the four designate openings 50 to be identified by points *a*, *b*, *c* and *d* in FIG. 5, the diameter of the openings are considered to be ½ inch and the spacings *ab*, *bc*, *cd* and *da* to be ⅝ of an inch. The distance of points *a* and *d* from side wall 24 on the left hand side of the figure and points *b* and *c* from the right hand side wall 24 is one-half of said ⅝ inches or 5/16 of an inch. Thus the dimension of the narrower side wall 26 of the module 10 would be twice ⅝ inches or 1¼ inches. Therefore, when assembled in juxtaposed relation as illustrated by FIG. 1, the access holes 50 in the upper row have a center-to-center spacing of ⅝ inches across full length of the receptacle opening 18 as do the openings in the second or lower row. Furthermore, the two rows of access holes also have a center-to-center separation of said ⅝ inches. Under some circumstances it may be desirable to provide a bridging web, as illustrated by dotted lines at 52 in FIG. 1, across receptacle opening 18 bordering the junction of each pair of modules 10.

Such a web **52** will provide added strength to the panel. In this event, however, the periphery of the outer face **28** of the modules should be suitably recessed along their longer sides to accommodate said web **52**; or alternatively, the width of the modules may be decreased by the width of said web **52** in order to preserve the constant center-to-center spacing of the access holes in each row.

Access holes **50** provide entry for jack plugs (not shown) which are inserted therethrough to establish contact with jacks **54** mounted to the rearsurface of the modules and in alignment with said access holes **50.** The operation of said jacks and plugs is well understood and conventional as are also the construction of the jacks. However, for purposes of an understanding of the invention, a simple form of jack **54** is illustrated in FIG. **3** and is shown mounted on an L-shaped supporting frame or mount **56** which is secured to the rear face **30** of the module by means of screws **58** which pass through provided openings in the base wall **60** of the jack mounts **56** and threadedly connect into internally threaded openings **62** of the modules. As illustrated in FIG. **8,** one such threaded opening **62** is arranged with each of the access holes **50.** Although said jacks may be complex or simple, the one illustrated in FIG. **3** as attached to module **10** by its frame **56** comprises an assembly of tip springs **64** which are positioned in alignment with a respective access hole **50** to be engaged by a jack plug inserted thereto. The opposite ends of said springs **64** extend beyond the assembly and constitute terminals to which the leads of a circuit may be soldered or otherwise electrically connected. Said tip springs **64** may be backed by lifter springs **66** and are insulated from each other by insulating pieces **68,** the whole assemblage being secured to the angle portion **70** of the mount by screws **72.** At **74** is a bushing projecting from base **60** of the jack mount and serves to line the access hole **50** into which it projects.

In FIGS. **4–8,** modules **10** are illustrated as comprising four access holes **50,** each having a jack assembly **54** aligned therewith. It, however, is also possible that one or more modules may have one, two, three, four or even no jack assemblies mounted thereto. Where a module is required to support less than a full number of designate access holes, those unneeded may be left blank. The term "designate access hole" is therefore intended to mean the location for an access hole whether it is actually "in esse" or left "blank." It will also be understood that a full complement of modules **10** in receptacle opening **18** of frame **12** might comprise 10, 12, 13 or some other number of modules, each module containing four "designate access holes" **50** of which one or more may be blank, it is also possible that circuit requirements will be satisfied with less than a full complement of modules. In this event, only the required number of modules will be mounted within the frame and at the required locations along the length of the receptacle opening **18.** The open spaces in the receptacle opening **18** which remain may be left unfilled until needed. Also, as explained above, the modules may be all of the same color or selected ones may be of a different color or colors to designate particular circuits. It is also possible to assemble one or more modules which may be of the same standard dimensions but provided with a different number or arrangement or size of access holes to satisfy a particular circuit design. These special modules may be molded in the molds for the standard modules but omitting the access holes. These special modules will then be completed for example by boring the special number, size and location of access holes as required therefor. The unused spaces in the jack panels also provide locations for mounting meters and the like.

Referring now to FIGS. **9** through **13,** a second embodiment of the invention is illustrated which is particularly adapted for so-called mini-jacks. In this second embodiment the designate access holes **150** of the modules **110** are ¼ inch in diameter and are separated on 5/16 inch center-to-center spacings. Also, as illustrated in said FIGS. **9** through **13** the number of pairs of designate access holes **150** has been increased from two to four pairs. The dimension of the longer sides **124** of the modules **110,** however, remains the same, in our example 1¾ inches. However, the dimension of the shorter walls **126** has been decreased to ⅝ of an inch because of the shorter constant representing the center-to-center spacing of the designate access holes **150.**

Referring now to FIG. **9,** an alternate arrangement for grouping the modules in their supporting frame is illustrated. Thus in FIG. **9** modules **110** are illustrated as comprising groups of four and instead of having one long receptacle opening **18** as in the first embodiment, wall **116** of the supporting channel frame member **112** of the second embodiment has a series of rectangular shaped receptacle openings **118** separated by integral webs **80.** Any number of modules per group, as well as number of groups, within the physical dimensions of the frame **112** may be utilized to satisfy particular design requirements. As illustrated, frame **112** of the second embodiment is otherwise essentially the same construction as frame **12** illustrated in the embodiment according to FIGS. **1-8,** it having side walls **114,** a base wall **116** containing the mentioned receptacle openings **118** and end portions **120** provided with elongated access openings **122** by which the assembled jack panel may be secured to the uprights of a supporting rack or cabinet. The spacing between the side walls **114** of the frame and the dimension of the longer side walls **124** of the modules **110** are such that the modules snugly fit therebetween and the upper and lower peripheral portions of the outer face **128** of the module **110** are similarly recessed as at **132** and have locating semi-circular cutouts **140** which receive the projecting lugs **136** of the overhang portions **134** to either side of the receptacle openings **118.** The lugs **136** are perforated as are lugs **36** of the first described embodiment to receive screws **142** to extend therethrough into internally threaded openings **144** of the modules **110.** However, as distinguished from the embodiment of FIGS. **1–8,** in this second embodiment now being described screws **142** also serve to secure the base **160** of the jack mount illustrated generally at **154** in FIG. **10.** As there illustrated, a single mount **156** is relied upon to support all eight or any lesser number of jacks to be assembled with each module **110.** Similarly, as in the first embodiment, base **160** of the jack mount **156** has through bushings **174** which extend through the aligned access holes **150.** In this connection it will be noted that as illustrated by FIG. **13,** one pair of bushings **174** and associated jacks have been omitted wherefore only three pairs of designate holes **150** need be "in esse" and one pair of designate access holes **150***a* may be left blank. For convenience of illustration all but one jack have been omitted from the showing of FIG. **10.** The upright

portion 170 of the jack mount 156 is, however, seen to comprise three spaced ears designated at 176 to which the jack assemblies are fastened as by mounting screws 170. The one jack illustrated in FIG. 10 comprises a pair of tip springs 164, the lower one in the figure being tensioned by a back up spring 166 and both tip springs are insulated from each other and from the supporting mount by insulating pieces 168. At 182 is a ground plate.

As in the first described embodiment, any number of modules up to a full complement of the receptacle opening 118 may be provided in order to satisfy circuit design requirements. Any lesser number of modules may be located in the illustrated four positions of each receptacle opening. The individual modules may contain any number of access holes from zero to eight and the modules may be differently colored in accordance with a predetermined code. Also, under special circumstances, one or more of the modules of a group may be provided with access holes in a completely different arrangement as well as size, if that is deemed necessary. In addition, in both embodiments, blank spaces in the receptacle openings not occupied by modules may serve as locations for meters and other equipment.

Each panel also may be provided with identification strips as indicated at 200 in FIG. 9 and 210 in FIG. 1, these strips being threadedly secured to the channel member 12 or 112 as illustrated. In FIG. 1 such comprises a narrow metal strip which extends along one side of the receptacle openings substantially the full length thereof and has opposed longitudinal tabs 212 and tabs 214 which are located to retain slips of cardboard or lightweight paper inserted therebeneath and to locate said cardboard pieces in alignment with respective modules. In an alternate form, as illustrated by FIG. 9, the identifying strip 200 may comprise a channel member in which is secured a transparent plastic cover 204 beneath which is inserted the cardboard piece bearing printed identifying legends.

Many other modifications and/or variations as well as arrangements of the structure and elements above described in connection with the two embodiments will be at once apparent or will become so and therefore are intended to be included within the scope of the appended claims insofar as permitted by the prior art.

From the aforesaid description, it will be apparent that all of the recited objects, advantages and features of the invention have been demonstrated as obtainable in a highly satisfactory and practical manner.

Thus having described my invention, I claim:

1. A modular jack panel comprising a group of uniformly-sized rectangular-shaped modules of molded resin and a supporting channel frame therefor, each said modules having front and rear faces and two pairs of opposed side faces, one pair of side faces being longer than and disposed at generally right angles to the other pair and to said front and rear surfaces, each said modules further having designate openings to receive the bushing of an electrical jack supporting mount when secured to the rear face of said module and provide access for insertion and removal of a jack plug with respect to a jack centered by said mount with the opening, at least one electrical jack supporting mount secured to the rear face of each of said modules and having a bushing disposed in one of said openings, an electrical jack secured to each of said mounts and centered thereby with the adjacent opening, the supporting frame having opposed generally parallel side walls and an intermediate connecting wall with end portions adapted for mounting to a supporting structure, said connecting wall further having a rectangular shaped opening of a length to receive said group of modules when arranged lengthwise of said rectangular opening with their longer sides in juxtaposed relation, the spacing of said sidewalls of the frame being at least as great as the length of said longer sides of the modules and the width of said rectangular opening being less than the said longer sides of the modules, a portion of the intermediate connecting wall of the supporting frame on each side of the rectangular opening therein overhanging a peripheral portion of the modules, each said modules having a peripheral recess along their front face to receive said overhanging portion, said overhanging portions and recessed front faces of the modules having aligned openings through which threaded connector means extend for securing the modules in an aligned side-by-side relation.

2. A modular jack panel as claimed in claim 1 wherein the designate openings of said modules are rectangularly related pairs, the center-to-center spacing of each said pairs of openings being a constant.

3. A modular jack panel as claimed in claim 2 wherein the spacing of the center of each opening from the nearest side edge of the front face of the modules is equal to one-half the center-to-center spacing of said paired openings.

4. A modular jack panel comprising a group of uniformly-sized, rectangular-shaped modules of molded resin and a channel-shaped supporting frame therefor, each said modules having generally parallel flat front and rear faces and two pairs of opposed generally parallel side faces disposed at right angles to each other and to said front and rear surfaces, each said modules further having at least one pair of designate openings therethrough which open through said front and rear faces of the modules to receive a bushing of an electrical connector supporting mount secured to the rear face of said modules and provide access for insertion and removal of a jack plug with respect to an electrical connector centered by said mount with the opening, at least one electrical connector supporting mount secured to the rear face of each of said modules and having a bushing disposed in one of said openings, an electrical connector secured to each of said mounts and centered thereby with the adjacent opening, each said pairs of designate openings having a center-to-center spacing corresponding to the center-to-center spacing of every other pair of designate openings of said group of modules, each said designate openings being spaced at a constant distance from the nearest one of the paired side faces of its module, the supporting frame having a pair of opposed parallel side walls and an intermediate connecting wall with end portions adapted for mounting to a supporting structure, said connecting wall having a rectangular shaped opening between said end portions of a length to receive said group of modules when arranged lengthwise of said rectangular opening in juxtaposed relation, the width of said rectangular opening being less than the length of the side faces of the modules which extend transversely thereof and centered between the sidewalls of the frame such that a longitudinal portion of the frame connecting wall overlies opposite edge portions of the front face of the modules, said overlying portions of the frame and por-

tions of the front face of the modules having aligned openings through which threaded connector means extend for securing the modules to said frame in an aligned side-by-side relation.

5. A modular jack panel as claimed in claim **4** wherein the constant distance at which each said designate opening is spaced from the nearest side wall of its module is equal to one-half the center-to-center spacing of the paired openings.

6. A modular jack panel as claimed in claim **4** wherein the portions of the modules underlying said overlying portions of the frame connecting wall are recessed to receive said portions of the frame, the front face of the modules being approximately flush with the outer surfaces of the frame connecting wall.

7. A modular jack panel as claimed in claim **4** wherein said frame has a narrow connecting web between each module of the group.

8. A modular jack panel as claimed in claim **4** having more than one group of modules and the frame has a number of rectangular openings in its connecting wall equal to at least the number of groups of modules.

9. A modular jack panel as claimed in claim **4** wherein selected ones of said modules have a different number of openings than other modules.

10. A modular jack panel as claimed in claim **4** wherein selected ones of said modules are differently colored than other modules.

11. A modular jack panel as claimed in claim **4** wherein the openings in the modules are rectangularly paired.

12. A modular jack panel comprising a plurality of uniformly-sized rectangular-shaped modules of molded resin and a supporting U-channel frame therefor, each said modules having front and rear faces and rectangularly related side walls, each said modules further having designate openings with which electrical jacks are aligned by their supporting mount when secured to the rear face of said modules and provide access for insertion and removal of a jack plug to contact said jacks, at least one electrical connector supporting mount secured to the rear face of each of said modules, an electrical jack secured to each of said mounts and aligned thereby with the adjacent opening, the supporting frame having spaced depending side walls and an intermediate connecting wall with end portions adapted for mounting to a supporting structure, said connecting wall further having a rectangular shaped opening between its end portions with which the front faces of the modules are aligned when arranged in side-by-side relation within said channel frame between the depending side walls thereof, a portion of the intermediate connecting wall of the supporting frame on each side of said rectangular opening overlying a peripheral portion of the modules, and said overhanging portions and modules having aligned openings into which threaded connector means extend for securing the modules within said channel frames.

13. For assembling jacks to the supporting U-channel frame of a jack panel having a rectangular shaped opening in the connecting wall thereof, a series of uniformly sized, rectangular shaped modules each having generally parallel flat front and rear faces and two pairs of generally parallel side faces disposed at right angles to each other and to said front and rear faces, one of said pairs of side walls being longer than the other pair, each said modules having at least one pair of designate openings which open through said front and rear faces of the modules to receive a bushing of an electrical jack supporting mount secured to the rear face of said modules and provide access for insertion and removal of a jack plug with respect to an electrical jack centered by said mount with the opening, at least one electrical jack supporting mount secured to the rear face of each of said modules and having a bushing disposed in one of said openings, an electrical jack secured to each of said mounts and centered thereby with the adjacent opening, said pair of designate openings having a center-to-center spacing corresponding to the center-to-center spacing of every other pair of designate openings of said modules, each said designate openings being spaced at a constant distance from the nearest one of the paired shorter side walls of said modules, said modules being adapted for arrangement in side-by-side relation within said frame so as to align said designate openings in a row, the length of said longer sides of the modules approximating the spacing of the side walls of the frame and the length of their shorter sides being equal to twice the center-to-center spacing of the designate openings, each said modules further having a peripheral recess along each of their two shorter sides such that their front face may extend into said rectangular opening of the channel frame when assembled therewith, and said modules further having aligned openings into which threaded connector means extend for securing the modules to said frame.

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