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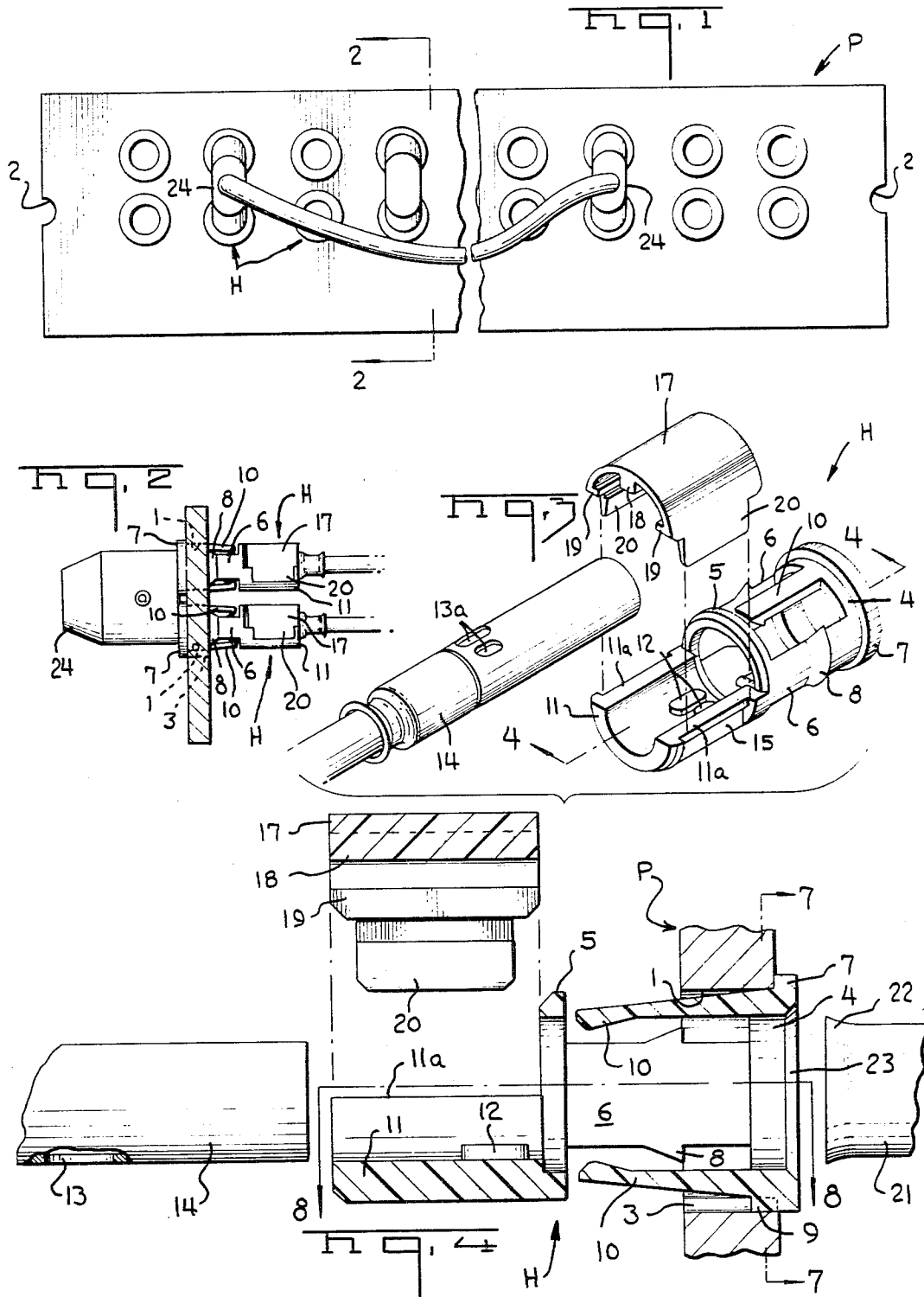
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3,471,825

COAX PATCH PANEL IN INSULATIVE HOUSING MEMBERS THEREFOR

Filed March 20, 1967

2 Sheets-Sheet 1



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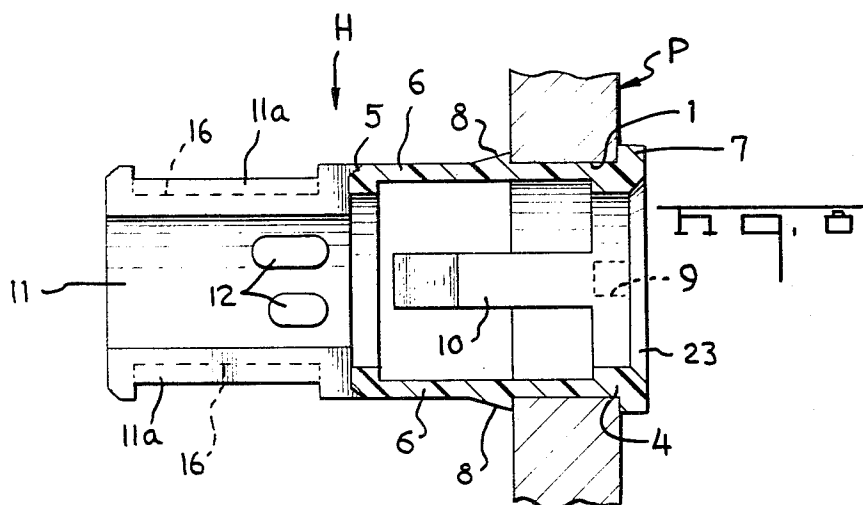
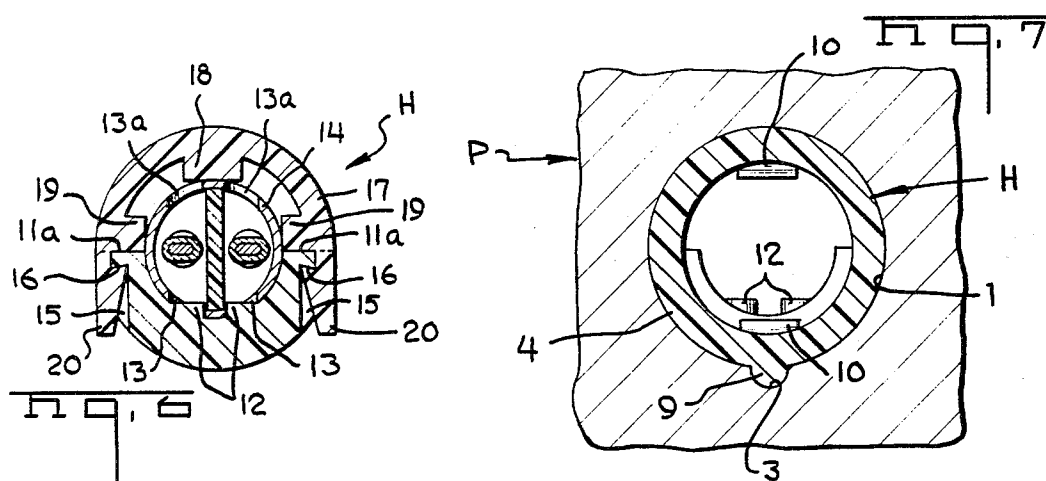
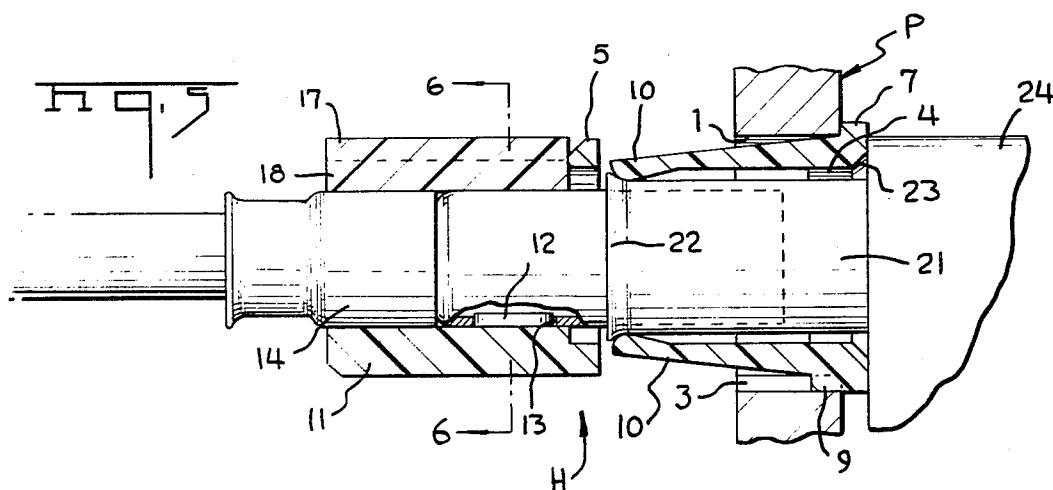
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COAX PATCH PANEL IN INSULATIVE HOUSING MEMBERS THEREFOR

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6 Claims

ABSTRACT OF THE DISCLOSURE

An insulative housing member removably mountable in an opening of a mounting panel in a polarized position with polarizing means on electrical connector means and in the housing member to polarize the position of the electrical connector in the housing member.

This invention relates to a coax patch panel and an insulative housing member and more particularly to an insulative housing member mountable within the panel and for receiving an electrical connector therein.

In the field of coax patch panels, the coax jack connectors of the patch panels are threadably secured in openings therein. The inner or rear ends of the jack connectors generally have an intermediate connector to connect coaxial leads to the jack connectors and to allow the leads to be moved at random to different jack connectors as desired. The coax jack connectors of the existing coax patch panels are costly and the cost is increased with regard to the provision of the intermediate connector at the inner ends of the jack connectors.

An object of the present invention is the provision of coax patch panels that are simple in construction and economical.

Another object of the invention is to provide coax patch panels having insertable insulative housing members to removably carry coax jack connectors of the like.

A further object of the invention is the provision of an insulative housing member to carry connector members and to be removably insertable within a panel.

An additional object of the invention is to provide an insulative housing member to removably carry one element of a connector and to latch another element of the connector within the housing member.

Still another object of the invention is the provision of an insulative housing member and a mounting member having polarizing means to polarize the insulative housing member in the mounting member.

Still a further object of the invention is to provide an insulative housing member having means communicating with means on electrical connector means to polarize the electrical connector means in the housing member.

A still further object of the invention is the provision of an insulative housing member having detachable section means to secure a connector element in polarized position therein and latching means on the housing member to latch a mateable connector element in engagement with the connector element secured in the housing member.

Other objects and attainments of the present invention will become apparent to those skilled in the art upon a reading of the following detailed description when taken in conjunction with the drawings in which there is shown and described an illustrative embodiment of the invention; it is to be understood, however, that this embodiment is not intended to be exhaustive nor limiting of the invention but is given for purposes of illustration in order that others skilled in the art may fully understand the invention and the principles thereof and the manner of applying it in practical use so that they may modify it in var-

ious forms, each as may be best suited to the conditions of a particular use.

The foregoing objects are achieved by means of a panel member having openings therein, insulative housing members insertable in the openings, each housing member including a flange and projections to secure the housing member in its opening, a section of the housing member clampable thereon to secure a connector element within the housing member, stiffly-flexible latching arms on the housing member for latching engaging another connector element mateable with the above-mentioned connector element, guide means to guide the other connector element into mating engagement with the connector element secured within the housing member, and polarizing means to polarize the connector element secured in the housing member.

In the drawings:

FIGURE 1 is a broken front elevational view of a panel member for use as a coax patch panel;

FIGURE 2 is a view taken along lines 2-2 of FIGURE 1;

FIGURE 3 is a perspective exploded view of the insulating housing member and a connector element exploded therefrom;

FIGURE 4 is a cross-sectional view similar to FIGURE 3 but with the insulative housing member in place in the panel member;

FIGURE 5 is a view similar to FIGURE 4 but with the connector elements in place within the insulative housing member;

FIGURE 6 is a view taken along lines 6-6 of FIGURE 4;

FIGURE 7 is a view taken along lines 7-7 of FIGURE 4; and

FIGURE 8 is a view taken along lines 8-8 of FIGURE 4.

Turning now to the drawings, a panel member P which is made of a suitable material such as, for example, aluminum or dielectric material, has aligned openings 1 therein. Insulative housing members H are removably mounted within openings 1. Recesses 2 are located in panel member P in order to mount the panel member to a cabinet or suitable mounting means via screw means or the like. Openings 1 are provided with depressions 3.

Insulative housing member H is preferably molded in accordance with conventional molding techniques from a suitable stiffly-flexible dielectric material such as for example, nylon, polypropylene, etc.

Insulative housing member H comprises spaced annular sections 4 and 5 which are interconnected by stiffly-flexible members 6 having an exterior surface of arcuate configuration. A flange 7 extends outwardly from annular section 4 for engagement with one side of panel member P and projections 8 extend outwardly from members 6 for engagement with the other side of panel member P, flange 7 and projections 8 constituting holding means to hold housing member H in position in an opening 1 in panel member P. As can be discerned, the leading edge of projections 8 are parallel with respect to flange 7 for engagement with the panel member and the trailing edges of projections 8 are tapered to facilitate the insertion of the housing member into the opening of the panel member. The stiffly-flexible characteristic of members 6 permits the housing members to be readily insertable within the openings of the panel member as well as being removed therefrom.

Annular section 4 includes a polarizing projection 9 mateable with depressions 3 to polarize the position of the housing member within the opening. Stiffly-flexible cantilever latching arms 10 extend outwardly from annular section 4 between members 6 toward annular section 5. Arcuate channel 11 extends outwardly from an-

nular section 5 and includes polarizing projections 12 on the inside surface thereof. Polarizing projections 12 have different sizes to cooperate with similarly shaped openings 13 in electrical connector member 14. Openings 13 are in alignment with corresponding openings 13a so that only openings 13 cooperate with polarizing projections 12 to properly position electrical connector member 14 in position within housing member H.

Recesses 15 are formed in the exterior surface of channel 11 and these recesses delimit tapered latching surfaces 16. Cap 17 has an arcuate configuration and is provided with engaging projections 18 and 19 with engaging projection 18 engaging connector member 14 to force the connector member against the inside surface of channel 11 and polarizing openings 13 into polarizing projections 12 while engaging projections 19 engage connector member 14 at opposite positions to equalize pressure thereon. Latching members 20 are disposable in recesses 15 and are latchably engageable with latching surfaces 16 to maintain cap 17 in position to secure connector member 14 in position within housing member H. Cap 17 is of such a configuration that it can be latched in position in one or the other direction without resorting to a single position. Engaging projections 19 engage surfaces 11a of arcuate channel 11 when the cap 17 is latched in position on channel 11.

In assembly, the housing members H are inserted into respective openings 1 in panel member P with flanges 7 engaging one surface of the panel member while projections 8 engage the other side of the panel member in order to secure the housing members therewithin. Polarizing projections 9 mate with depressions 3 to polarize the housing members within the openings. Connector members 14 are inserted within the housing members with polarizing projections engaging openings 13 and caps 17 are latched onto channels 11 to secure the connector members in a polarized position within the housing members. The stiffly-flexible characteristic of the material of caps 17 is such to maintain the cap members in position on the channels and to therefor positively secure the connector members in position within the housing members with a minimum of effort.

Caps 17 can be readily removed from channels 11 so that connector members 14 can be readily removed from the housing and replaced, if necessary.

Electrical connector members 21 are electrically mateable with connector members 14 and these connector members include bell mouths 22 to facilitate engagement with connector members 14. Connector members 14 and 21 are of the type completely disclosed in U.S. Patent No. 3,144,292. Bell mouths 22 are engaged by latching arms 10 when connector members 21 mate with connector members 14 to maintain the connector members in a mated condition as illustrated in FIGURE 5. The entrance to the housing member has a tapered surface 23 to facilitate insertion of connector members 21 within the housing member. The connector members are held in position within housing members H by the frictional engagement between the connector members in addition to stiffly-flexible latching arms 10 to maintain them in position within the housing members. In view of the fact that connector members 14 and 21 are polarized, the polarization of the housing members relative to openings 1 and the polarization of connector members 14 within the housing members is essential to assure the proper connection with patch plugs 24.

In view of the fact that connector members 14 are held in a secured position within housing members H by means of cap 17 and polarizing projections in a cooperation with openings 13, it is possible to exchange the positions of connector members 21 from housing member to housing member as desired to obtain a patch panel arrangement in accordance with selected circuit connections without the use of coaxial jack members having intermediate connectors to accomplish the same result.

The present invention has been described in relation to coaxial connector members, other types of electrical connectors can, of course, be utilized to accomplish the intended purpose.

To remove a connector member 14 from its housing member, cap 17 is unlatched from channel 11 whereupon the connector member can be readily removed from the housing member and another similar connector member can be readily placed within the housing member by placing the connector member within the housing member with opening 13 mating with polarizing projections 12 and cap 17 relatched into position on channel 11.

In view of the foregoing, there has been disclosed a unique patch panel having insulative housing members removably disposed in openings therein a polarized manner, connector members removably secured within the housing members in a polarized manner, and latching arms are provided on the housing members in order to maintain other connector members in mated connection with the connector members secured in the housing members.

It will, therefore, be appreciated that the aforementioned and other desirable objects have been achieved; however, it should be emphasized that the particular embodiment of the invention, which is shown and described herein, is intended as merely illustrative and not as restrictive of the invention.

The invention is claimed in accordance with the following:

1. A housing member insertable within an opening of a panel member and for carrying an electrical connector member mateable with another connector member, said housing member being made of stiffly-flexible dielectric material and comprising spaced annular sections connected by elongated members, a flange member on one of said annular sections and projection means on said elongated members and spaced from said flange member to engage respective sides of said panel member to secure said housing member in said opening, channel means extending outwardly from another of said annular sections to provide a surface onto which the electrical connector rests, means on said surface and the electrical connector to position the connector within the housing member, cap means latchably engageable with said channel means and engageable with a housed electrical connector thereby maintaining the housed electrical connector therein, and stiffly-flexible arm members extending outwardly from one of said annular sections for latching engagement with a section of the mateable electrical connector when the same is mated with the housed electrical connector.

2. A housing member according to claim 1 wherein said positioning means define polarizing means to polarize the housed electrical connector in said housing member.

3. A housing member according to claim 1 wherein said elongated members define stiffly-flexible members which are depressible to permit said projection means to clear said opening so that said housing member can be removed therefrom.

4. A housing member according to claim 1 wherein means is provided on said flanged annular section for polarizing engagement with a polarizing section of said opening in said panel member.

5. For use in an opening in a panel member to secure one connector member for mateable engagement with another connector member, an insulative housing member comprising annular sections with one thereof having a flange thereon, stiffly-flexible members connecting said annular sections and having projections extending outwardly therefrom, said flange and said projections engaging respective sides of said panel member when said housing member is inserted into said opening to secure said housing member therewithin, channel means on one of said annular sections and having an inner surface provided with projection means engageable with openings in the one connector member to polarize the connector mem-

ber within the tubular member, cap means latchably engageable with said channel means and engageable with the polarized connector member to secure this connector member in said housing member, stiffly-flexible arm means on one of said annular sections and extending toward the other of said annular sections for latching engagement with the other connector member when the same is mated with the one connector member, and polarizing means on one of said annular sections polarizingly mateable with a polarizing section in said opening of said panel member.

6. A housing member for insertion in an opening of a panel member and for carrying an electrical connector member electrically connectable with a complementary electrical connector member, said housing member being made of stiffly-flexible dielectric material and comprising a first section and a second section, said first section having securing means thereon for engaging opposite sides of the opening when said housing member is inserted therein to secure said housing member in position on the panel member, said second section including a channel-shaped member extending outwardly therefrom for receiving a first portion of the electrical connector member with a second portion of the electrical connector member being disposed within said first housing member section, cap means latchably securable onto said channel-shaped member and for engagement with the first portion of the elec-

trical connector member to secure the electrical connector member within said housing member, and stiffly-flexible latching means provided by one of said first and second housing member sections for engagement with the complementary electrical connector member to maintain the connector members mated together within said housing member.

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U.S. Cl. X.R.

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