March 24, 1964 P. O. RAYGOR ETAL 3,126,244

ELECTRICAL CONNECTOR

Filed Nov. 6, 1962

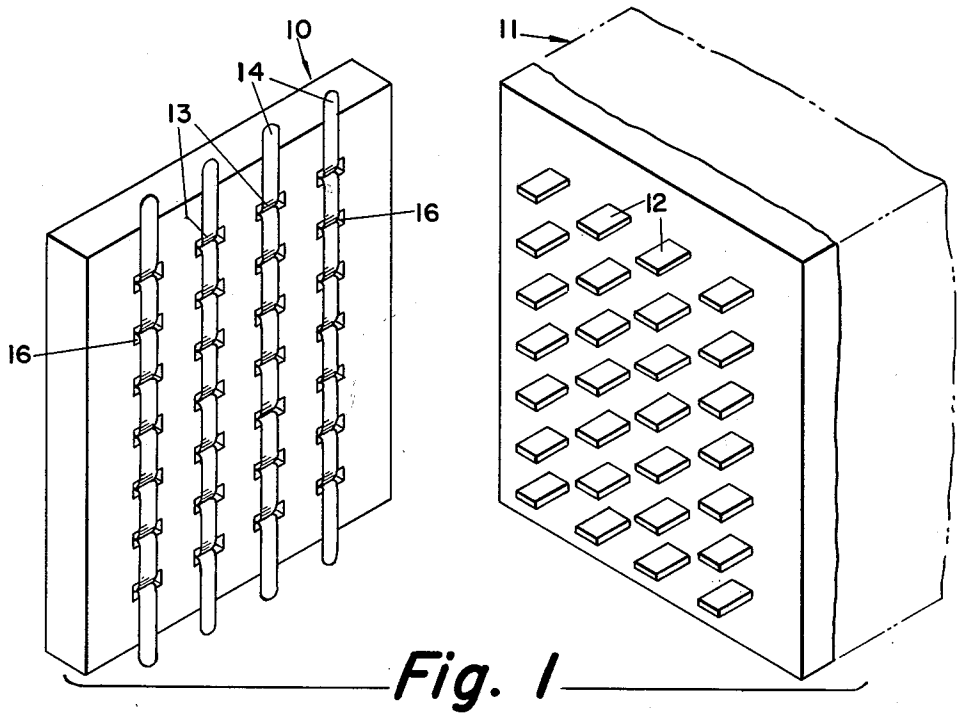


Fig. 1

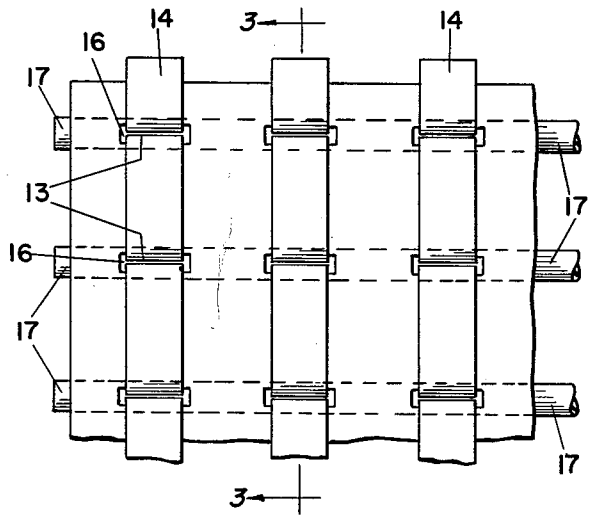
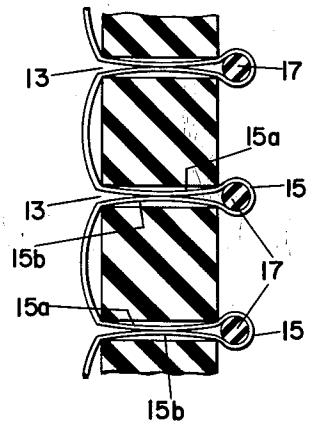


Fig. 2

Fig. 3



INVENTORS
PAUL O. RAYGOR
JURIS A. ASARS

BY

ATTORNEY

United States Patent Office 3,126,244 Patented Mar. 24, 1964

3,126,244

ELECTRICAL CONNECTOR

Paul O. Raygor, Irwin, and Juris A. Asars, Monroeville, Pa., assignors, by mesne assignments, to the United States of America as represented by the Secretary of the Navy

Filed Nov. 6, 1962, Ser. No. 235,899
6 Claims. (Cl. 339—192)

The present invention relates to electrical connectors and in particular is directed to an improved receptacle or socket arrangement for receiving and interconnecting a group of prongs or pins projecting from an electrical device.

The broad object of the invention is to provide an insulated panel structure having a set or group of receptacles or sockets formed therein of resilient strips of conducting material.

Another object is to provide such a panel structure with a set or group of receptacles formed of resilient conductor strips arranged in a predetermined pattern.

Another object of the invention is to provide such an improved panel structure having a group of apertures arranged in a pattern and having loops formed of resilient conductor strips disposed within the apertures to provide receptacles or sockets for connecting elements.

Another object is to provide such an improved panel structure having rows of receptacles or sockets formed of removably secured resilient conductor strips.

The above objects and other features of the invention which are believed to be new are set forth with particularity in the appended claims. The invention itself, however, may best be understood by reference to the following description when taken in conjunction with the accompanying drawings, in which:

FIG. 1 is an enlarged exploded view showing, in perspective, elements which are representative of components of an electrical system with the invention applied to one of the elements;

FIG. 2 is an enlarged plan view of a fragment of the element of FIG. 1 which has the invention applied;

FIG. 3 is a view taken along the line 3—3 of FIG. 2.

Referring to FIG. 1, the numeral 10 may be considered as the vertical matrix component of an electroluminescent display system and the numeral 11 considered as an adjacent structural component of the system which is to be interconnected with component 10 in order that the interconnected components 10 and 11 may function in the operation of the luminescent screen (not shown) of the display system. The components 10 and 11 are in the form of plates and constructed of suitable insulating material such as ceramic or glass and, as shown, are preferably in rectangular shape for the purpose of providing substantial surface areas permitting a large number of interconnections to be made between the components and in desired pattern or configuration. The component 10 has the receptacles or sockets of the present invention applied thereto while the component 11 is provided with a group of spaced prongs or pins 12 which are arranged in a regular pattern which for the purpose of explanation are made up of four vertical rows. The receptacles or sockets of the invention are indicated at 13 in the component 10 and also formed in a regular pattern suitable for reception of the prongs or pins 12.

The receptacles or sockets 13 are constructed of resilient conductor ribbons or strips 14 and as shown in FIG. 1, one strip is provided for each vertical row of prongs or pins 12. The ribbons or strips 14 are folded lengthwise at spaced intervals to provide a series of loops 15 and are removably mounted on or supported by the component 10 in a manner to receive and hold the prongs

or pins 12. In order to mount the ribbons or strips 14, the component 10 is provided with sets of vertically aligned apertures 16, as shown in FIGS. 1 and 2, which, in effect, provide a lattice work through which the ribbons or strips 14 may be looped or woven in the manner shown in FIG. 3.

Each aperture 16 may be rectangular as shown and will have a width sufficient to readily accommodate the width of the conductor strip or ribbon material while the height of each aperture is sufficient to readily accommodate the fold of the ribbon or strip in a manner to form the receptacles 13 into confined spaces between the strands or layers 15*a* and 15*b* of each fold as indicated in FIG. 3. The strip or ribbon 14 is secured to the component 10 by means of rods 17 which extend through the loops 15 and are formed of insulating ceramic or glass having a diameter which is somewhat larger than the height of the apertures 16 permitting the resilient ribbons to be threaded or woven about the rods and maintained within the receptacles.

As shown in FIGS. 2 and 3, a group of rods 17 are provided which extend horizontally across the rear face of the component 10 and each is received by a set of horizontally aligned loops which permit each rod to lock all the strips along a horizontal line. The diameter of the locking rods relative to the height of the apertures 16 positions the strands 15*a* and 15*b* of each fold of the resilient ribbon or strip in substantial contact as shown in FIG. 3 and thus insures contact with the prongs or pins 12 when the components 10 and 11 are interconnected.

The manner above described of affixing the ribbons or strips 14 of the component or support 10 provides receptacles or sockets generally of the configuration as shown in FIG. 3. That is, the receptacles or sockets 13 are formed of looped strands 15*a* and 15*b* which are open at their front ends to admit the prongs or pins 12 and are in substantial contact with each other or spaced about 1/16" inwardly thereof in the area located within the apertures 16 while the loop portion 15 or closed ends are wedged against the rear face of component 10 by the rods 17. Although the ribbons or strips 14 are shown disposed vertically in the drawings, they may, of course, depending on the pattern of the prongs or pins 12, extend horizontally and be held in place by locking rods which extend vertically through aligned loops of the ribbons or strips.

Ribbons or strips 14 have been constructed of beryllium copper composition while the locking rods 17 have been constructed of nylon to provide receptacles or sockets which have been used effectively with different shaped prongs or pins since the close spacing of the strands 15*a* and 15*b* provide receptacles which are readily adapted for receiving variously shaped prong or pin elements.

Obviously many modifications and variations of the present invention are possible in the light of the above teachings. It is therefore to be understood that within the scope of the appended claims the invention may be practiced otherwise than as specifically described.

We claim:

1. An electrical connector for receiving an electrical component having spaced prong connections projecting therefrom, said connector comprising a plate of insulating material having apertures therein forming a pattern, a strip of conducting material having folds which form a pattern corresponding to the pattern of the apertures and extend into corresponding apertures from one face of the plate, each fold having its strands closely spaced for receiving a prong connection in contacting relation therewith and terminating in a loop which is disposed adjacent the other face of the plate and means extending

through the loops to maintain the folds within the apertures.

2. An electrical connector for receiving an electrical component having spaced prong connections projecting in a pattern therefrom, said connector comprising a plate of insulating material having apertures therein forming a pattern corresponding with the spacing of the prong connections, a strip of conducting material having folds which form a pattern corresponding to the pattern of the apertures and extend into corresponding apertures from one face of the plate, each fold having its strands closely spaced for receiving a prong connection in contacting relation therewith and terminating in a loop which is disposed exteriorly of and adjacent the other face of the plate and rod means extending through the loops to maintain the folds within the apertures.

3. An electrical connector for receiving an electrical component having spaced prong connections projecting therefrom, said connector comprising a plate of insulating material having a pattern formed of parallel rows of apertures, a strip of conducting material for each row of apertures, each strip having folds formed therefrom which correspond to the spacing of the apertures in a row and extend into the apertures from one face of the plate, each fold of each strip having its strands closely spaced for receiving a prong connection in contacting relation therewith and terminating in a loop which is disposed exteriorly of and adjacent the other face of the plate and rod means extending through the loops to maintain folds within the apertures.

4. An electrical connector as in claim 2, further characterized by the apertures having a length greater than the width of the strip of conducting material and a width sufficiently larger than the folds to maintain the strands in substantial contact within an aperture.

5. An electrical connector as in claim 2, further characterized by said rod means being sufficiently large to prevent its passage into an aperture and maintain the loop adjacent the other face of the plate.

6. An electrical connector as in claim 3, further characterized by the rows of apertures being vertically and horizontally aligned and the rod means extending through aligned loops and across the other face of the plate.

References Cited in the file of this patent

UNITED STATES PATENTS

2,313,960	O'Brien	Mar. 16, 1943
2,782,389	Sunko et al.	Feb. 19, 1957
2,904,768	Rasmussen	Sept. 15, 1959

FOREIGN PATENTS

908,670	Great Britain	Oct. 24, 1962