

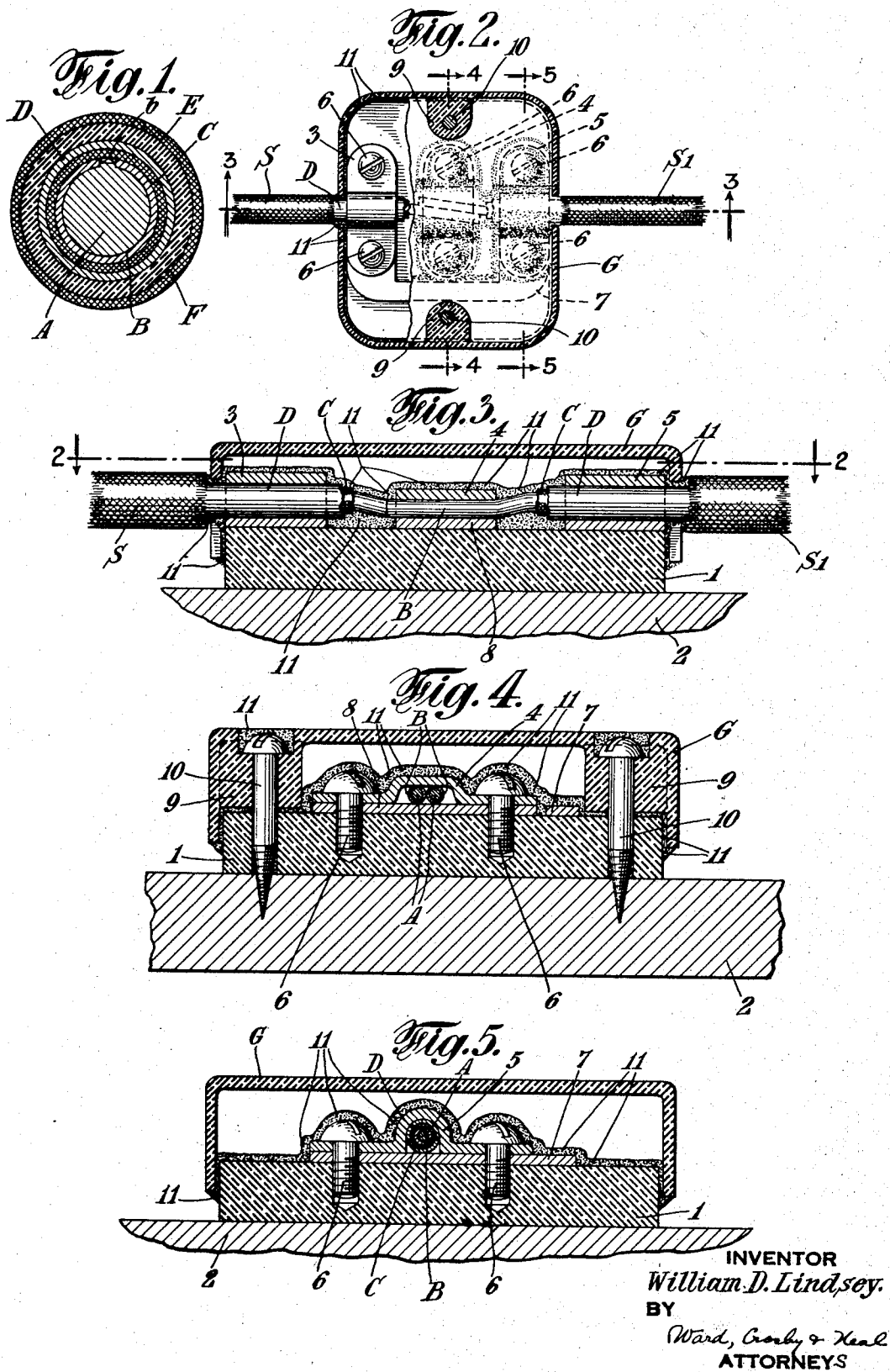
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ELECTRICAL CONNECTION

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ELECTRICAL CONNECTION

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3 Claims. (Cl. 173-268)

My invention relates to an electrical connection or junction.

My invention, in one of its prominent phases, involves the utilization of a medium, initially fluid, but subsequently hardening to positively and securely retain a cover in position about a region wherein electrical conductors are connected together.

Other objects, advantages and attributes of my invention will become apparent from the following description taken in connection with the accompanying drawing showing an example of one form of my invention.

My invention resides in the combination and arrangement of parts of the character herein-after described and claimed.

For an illustration of one of the forms my apparatus or electrical connection may take, reference is to be had to the accompanying drawing in which:

Figure 1 is a vertical sectional view of a cable structure;

Fig. 2 is a horizontal sectional view, partly in elevation, of a junction box and is taken on the line 2-2 of Fig. 3 looking in the direction of the arrows;

Fig. 3 is a vertical sectional view, partly in elevation, and is taken on the line 3-3 of Fig. 2; and

Figs. 4 and 5 are transverse vertical sectional views, taken, respectively, on the lines 4-4 and 5-5 of Fig. 2.

Referring to Fig. 1, there is illustrated cable structure of the general character disclosed in my pending application Serial No. 352,624, filed April 5, 1929 and, therefore, comprising a core A of suitable electricity-conducting material adapted to become molten when the temperature thereof is brought approximately to some predetermined magnitude. The core A is disposed within a tube B of electricity-conducting metallic material and having a longitudinal slot b. Disposed around the tube B is a layer of insulating material C impregnated, if desired, with some substance adapted to become liquid at a temperature lower than the temperature at which the core A becomes molten. A sleeve or sheath D surrounds the insulating layer C and is formed, preferably, by spirally winding a metallic tape on said insulating layer C. Encircling the sleeve D is a section E of suitable waterproofing material, as rubber, having on its outer surface, if desired, a protective fabric layer F impregnated, if desired, with suitable material rendering the same acid or fume-proof.

As more particularly described in the aforesaid pending application, cable structure of the character described above is laid or disposed in a region where fire protection is desired, as the rooms of a building, for example. Then, upon occurrence of fire or abnormally high temperature conditions, the core A becomes molten and a portion thereof passes through the insulating layer C and contacts with the sleeve D to thereby complete or alter the characteristics of an electrical circuit of which the core A and tube B forms one side and of which the sleeve D forms another side. Change in character of the aforesaid electrical circuit may effect any desired control, operate a signal, or function otherwise as may be desirable.

Referring to Figs. 2, 3, 4 and 5 there is illustrated a device for splicing or connecting ends of cable structures S and S1 which may be and, in the example illustrated, are of the character described above in connection with Fig. 1. As shown, said device comprises a base 1 carried by a supporting surface 2 and formed from suitable insulating material, as hard rubber, a phenol condensation product, or the like. Base 1 has a plane upper surface, Figs. 3, 4 and 5, upon which clamps 3, 4 and 5 are disposed in spaced, side-by-side relation. These clamps are secured to the base 1 in any suitable manner and, in the example shown, there is thus utilized a plurality of screws 6 for each clamp.

The clamps 3 and 5 are suitably connected together in electricity-conducting relation and, for this purpose, there may be utilized a member 7 of substantially U-shaped configuration and suitably secured at its opposite ends in contacting relation to the respective clamps 3 and 5, as by the same screws 6 that hold said clamps to the base 1. The clamps 3 and 5 are formed or provided with openings of substantially the same cross-sectional configuration for the reception of and for direct engagement with the terminals of the sleeves D of the respective cable structures S and S1 after said sleeves D have been exposed by removal of the outer sections E and F. As illustrated particularly in Fig. 5, the aforesaid sleeves D are received between one of the clamps and the adjacent leg of the connecting member 7. Accordingly, with the screw 6 fully threaded to the base member 1, the respective sleeves D are securely clamped in the position shown and they are electrically connected one to the other through clamp 5, member 7 and the clamp 3.

Between the clamps 3 and 5 and in suitable spaced relation with respect thereto, the clamp 4 is suitably secured to the base member 1, as by

screws 6, or otherwise as may be desirable. As illustrated particularly in Figs. 3 and 4, said clamp 4 is not secured directly to said base member 1 but indirectly through an intervening member or plate 8 of suitable metallic material. The exposed ends of the cores A and their respective encircling tubes B extend between the clamp 4 and plate 8; in this position, they are firmly and securely held when the screws 6 for said clamp 4 are fully threaded into the base member 1.

In the manner described above, there is provided a junction between ends of the cable structures S and S1, the respective sleeves D being connected together electrically and independently of the connection for the cores A and their respective tubes B. It is often necessary to thus utilize splicing arrangements for connecting ends of adjacent cable structures together and it may, and often does happen, that the splice occurs on the ceiling or wall of a room, the good appearance of which should be preserved.

As hereinbefore stated, the sleeves D form one side of an electrical circuit and the cores A, together with their respective encircling tubes B, form the other side of said electrical circuit. To the end that a fire detecting system utilizing cable structure of the character herein described may remain satisfactorily operative over long periods of time, it is necessary to prevent the entrance of moisture or corrosive agents interiorly of the cable, and particularly in the region where adjacent cable ends are connected together as described above.

Accordingly, and in accordance with my invention, the aforesaid junction or connection is covered by a member G, preferably, receptacle-like in configuration and formed of suitable insulating material, as hard rubber, a phenol condensation product, or the like. As illustrated particularly in Figs. 2 and 3, opposite side walls of the member G are provided with perforations or opening through which the cable structures S and S1 respectively extend. Moreover, said member G, preferably comprises or has inwardly extending lugs or abutments 9, 9 through which, and the base member 1, extend screws 10, the latter, preferably, being threaded into the supporting surface 2, Fig. 4.

A cover member G, such as described above, improves the appearance and efficiency of the installation but, ordinarily, is insufficient to prevent access of moisture or other undesirable agents to the exposed connections interiorly of said cover G and to exposed parts of the cable ends. Accordingly, before assembly of the cover member G, it is desirable that an insulating or sealing medium 11 be freely applied to and around the base member 1, to the clamps 3, 4 and 5, the member 7 connecting the clamps 3 and 5, and to the ends or terminals of the cable structures S and S1. Preferably, the aforesaid medium 11 is of fluid or fluid like consistency, when applied, but which shortly thereafter assumes a solid state without substantial change of temperature; accordingly, there is no tendency for the core A to become molten such as would be the case were hot insulating material utilized. A heavy acetone base lacquer has been found suitable for this purpose but, obviously, many other substances are satisfactory.

Where the medium 11 is one which quickly solidifies, as stated above, the cover member G should quickly be placed in position after application, as aforesaid, of said medium 11. Accordingly, said medium 11, when it hardens, serves to

retain the cover member G in its intended position as shown, for example, as in Fig. 4 wherein the bottom sections of its vertical walls have been passed downwardly around the base member 1. The space between surfaces of said base member 1 and the adjacent wall sections is filled with the aforesaid medium 11 to thereby effectually prevent the entrance of moisture or other agents interiorly of said cover member G along such a path. Moreover, particularly as illustrated in Fig. 3, said medium 11 fills the space around the cable structures S and S1 where the latter pass through the perforated walls of said cover member G.

Thus, in accordance with my invention, there is provided a construction or an arrangement wherein the members forming or completing the sides of the electrical circuit, together with adjacent ends of the cable structures, are hermetically sealed and, therefore, shielded or protected from moisture, gas fumes, or other corrosive agents, the presence of which interiorly of the cover member G might cause corrosion of sufficient extent to form a short circuit and thereby falsely indicate the presence of fire.

Moreover, with an arrangement of the character described above, the cover member G is secured in its intended position on the base member 1 in such manner that, ordinarily, it must be fractured or broken to remove the same even though the screws 10 have been detached previously. Accordingly, any tampering with malicious intent is indicated, inevitably, by the presence of a fractured cover member G.

While the invention has been described with respect to a certain particular preferred example which gives satisfactory results, it will be understood by those skilled in the art after understanding the invention, that various changes and modifications may be made without departing from the spirit and scope of the invention and it is intended therefore in the appended claims to cover all such changes and modifications.

What is claimed as new and desired to be secured by Letters Patent is:

1. In a junction box, the combination with a supporting member, electrical conductors terminating at one side of said member, and means for connecting said conductors together, of a receptacle-like cover receiving said member and having openings through which said conductors extend, and a medium covering exposed surfaces of said first-named member, the terminals of said conductors and said conductor connecting means, said medium initially having a fluid-like consistency and thereafter hardening to permanently fasten the respective parts of the structure together in their respective positions to exclude moisture and to make breakage of the structure necessary to open the box.

2. In a junction box, the combination with a member of insulating material, electrical conductors terminating at one side of said member, and means carried by said member for connecting said conductors together, of a cover for said member, means for securing said cover and member together, and a medium covering exposed surfaces of said member, the terminals of said conductors and said conductor connecting means, said medium, initially, having fluid-like consistency and thereafter hardening to supplement the action of said second named means for permanently retaining said cover and other elements of the structure in their intended position whereby to prevent the entrance of moisture and

make it necessary to break the box to open it, said cover being secured to said member by said second named means after application of said medium.

- 5 3. In a junction box of the character described, an insulator base, conductor clamps mounted on the base, a plurality of insulated conductors secured to the base by the clamps, said conductors having bared ends thereof overlapping and clamped together, a cover for said base, clamps
- and electrical conductors, and an insulating medium having initially fluid-like consistency but capable of hardening to permanently fasten said cover in its intended position and to surround and additionally secure the electrical connections within the cover, whereby a fixed moistureproof junction box assembly is provided which must be broken to be opened.
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20	95
25	100
30	105
35	110
40	115
45	120
50	125
55	130
60	135
65	140
70	145
75	150