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H. F. VAUGHN ET AL

ELECTRICAL INSTALLATION ASSEMBLAGE AND CONDUCTOR CLAMP

Filed May 6, 1926

Fig. 1.

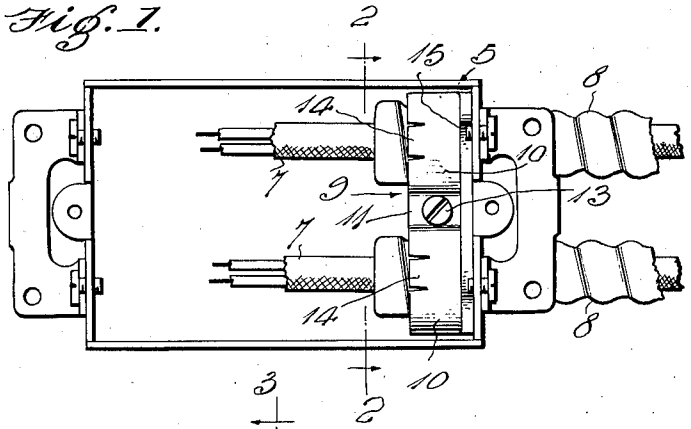


Fig. 2.

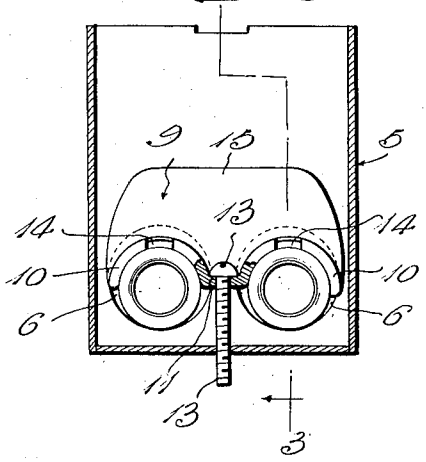


Fig. 3.

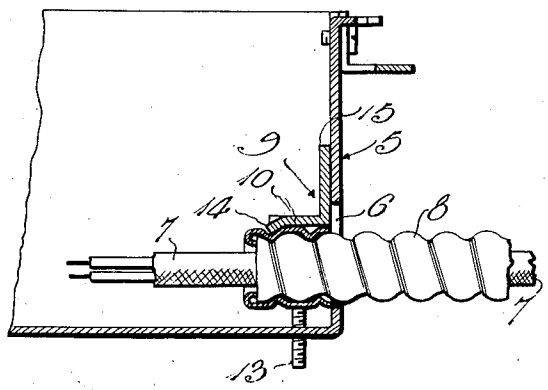
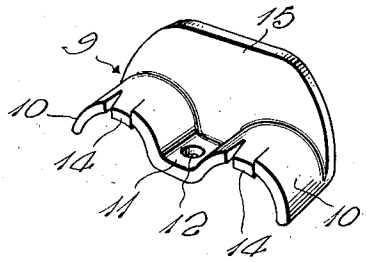


Fig. 4.



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UNITED STATES PATENT OFFICE.

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ELECTRICAL INSTALLATION ASSEMBLAGE AND CONDUCTOR CLAMP.

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In electrical construction work, when clamping conductors to switch boxes, outlet boxes, and other receptacles, it is customary to pass said conductors through relatively large openings in the receptacle and secure them by means of a screw-operated clamp within the receptacle. The form of clamp heretofore employed leaves gaps between the conductors and the edge walls of the openings through which they pass, which gaps are contrary to regulations covering electrical installation, and constitute a dangerous fire hazard. It is the principal object of our invention to provide a new and improved electrical installation assemblage including a clamp which is so constructed as to close the gaps of the openings, heretofore left by the form of clamp previously employed.

Another object of the invention is to provide a clamp which will not only effectively close the portion of the knockout hole not occupied by the conductor armor, but which may be used to effectively grip and hold any of the several sizes of flexible metallic armored cables as well as the non-metallic sheathed cables and the flexible tubings now in use.

Other objects are to provide a combined cable clamp and knockout-hole-closure of almost universal application to the standard switch and outlet boxes, which may be manufactured at small cost, which may be easily and quickly installed, and which will be strong and highly effective in use.

With the foregoing in view, the invention resides in the novel subject matter hereinafter described and claimed, the description being supplemented by the accompanying drawing.

Figure 1 is an elevation of a switch box showing the improved clamp in use for securing two conductors to said box.

Figure 2 is a transverse sectional view on line 2—2 of Fig. 1.

Figure 3 is an enlarged detail section on line 3—3 of Fig. 2.

Figure 4 is a perspective view of the improved clamping member.

In the drawing above briefly described, the numeral 5 designates a receptacle which, for the purposes of this specification, may be considered as any of the well known cabinets, switch boxes, outlet boxes, or other enclosures or receptacles commonly used in electrical installation. The term "receptacle" will hereinafter be used with this understanding in view.

The receptacle 5 is formed with the usual continuous-walled openings or knockout holes 6 through which the conductors 7 and their protecting armors 8 pass and in which they are held by our improved clamping member 9. The latter serves the double function of closing the unoccupied portions of the knockout holes and of holding one or two of the armored cables that enter the receptacle. This improved clamp comprises essentially a closing portion or plate shaped to slide against the inner wall of the receptacle, arched clamping portions rigid with the plate at an angle thereto and braced by it so that they will securely grip and hold either one or two conductors, and suitable means for holding these parts in operative position.

In the present showing, the member 9 comprises two arched clamping portions 10 to engage the armors 8, said clamping portions being integrally connected by a connecting portion 11 having an opening 12 which receives a clamping screw 13 suitably engaged with an opening in the receptacle, this opening being in a wall of the receptacle at right angles to the wall in which the openings 6 are formed. The member 9 is disposed adjacent the inner side of one wall of the receptacle 5 and its inner edge is preferably provided, in the clamping portions 10, with inwardly stamped lugs 14 to anti-slippingly engage the armors 8, regardless of the nature of the latter, that is, whether said armors be of flexible metal tubing, tubing formed from helically wrapped stripping, or tubing formed from woven or other non-metallic material. The outer edge of the member 9 is provided with an integral plate 15 in a plane at right angles to that of the connecting portion 11, said plate being adapted to slidably engage the inner side of the receptacle wall, as shown. In this

stamped metal construction illustrated in the drawing, it will be seen that the arched clamping portions 10 and the connecting portion 11 form a relatively long and narrow continuous flange along the edge of the plate 15 so that these parts brace or strengthen each other to provide a strong clamp with the use of the minimum amount of metal; and at the same time the clamping portions 10 have sufficient bearing on the cables or conductors to prevent the tilting of the plate 15 away from the wall of the receptacle when the clamping screw is tightened. The shape and size of the clamping portions 10 may of course be varied but they project substantially at right angles from plate 15 and follow the contour of arched edges or seats in said plate 15. Thus, when the clamping member is moved rectilinearly to clamping position by the screw 13, this plate covers the gaps which would otherwise exist between the relatively small conductor armors and the edges of the comparatively large openings 6. By closing these gaps, the assembly is brought well within the realm of standard requirements regarding electrical installation, and the fire hazard is greatly reduced.

In the present showing, both conductors 8 pass through one end of the receptacle 5 and are held by the single clamp 9, but one of these clamps may if desired be provided at each end of the receptacle, in which case, one conductor could be located at one end and the other conductor at the other end of said receptacle, only half of each clamp being then effective. It is, of course, understood that the receptacle is provided with knockouts, any of which may be removed, according to the manner in which the conductors must be arranged.

In the standard switch and outlet boxes the knockouts are of one size which is slightly larger than the diameter of the largest size flexible armored cable; and it will be readily observed that the plate 15 is of such size that when the smallest size cable is used or when the smaller flexible tubing or the non-metallic sheathed cable is used, the portion of the knockout hole not occupied by the conductor or conduit will be effectively closed against the possibility of sparks or flame leaving the box through such hole. The one clamp is therefore usable with all of the sizes of these several kinds of cables or conductors now in general use; and it may be used in the smallest size of the standard switch box where the interior space is limited. In actual use, it has been found in all of these different uses to be very effective in securely holding the cable or conduit without injury or short-circuiting as well as in safely closing the unoccupied portions of the knockout holes.

The device is exceptionally simple and inexpensive, may be easily manufactured, may be applied or released with ease, and is generally advantageous. While it is intended primarily for use in connection with electrical work, it might in some instances be used in other fields.

On account of existing advantages for the details disclosed, they are preferably followed. However, within the scope of the invention as claimed, variations may of course be made.

What is claimed is:

1. An electrical installation assemblage comprising an electrical receptacle having two walls at an angle to each other, one of said walls having two openings to receive conductors while the other of said walls is formed with a screw receiving opening whose axis is between the axes of said conductor-receiving openings, a plate contacting slidably with the inner side of said one wall and having an edge disposed at the edge portions of said conductor-receiving openings remote from said other wall, said plate being provided with a lateral relatively long and narrow flange along said edge projecting into the receptacle in spaced relation with said other wall, said flange being provided with arched ends to engage the conductors and having a screw-receiving opening between said arched ends and near said plate, this opening being alined with the aforesaid screw-receiving opening, and a headed screw passing through said screw-receiving opening and having its head contacting with the flange, said screw being threaded into the screw-receiving opening of said other wall and when tightened serving to draw the aforesaid plate and its flange rectilinearly toward said other wall to clamp the conductors in place, said plate then serving to close portions of the conductor-receiving openings remote from said other wall.

2. Conductor clamping means for a receptacle having in one of its walls two apertures to receive conductors, said clamping means comprising a plate having a lateral relatively long and narrow flange at an edge thereof, said flange being provided with arched ends and having an opening between said arched ends; whereby upon disposal of the clamping means in a receptacle with the aforesaid plate contacting with the apertured receptacle wall, a screw may be passed through said opening to secure the arched ends of the flange against conductors passing through the wall apertures, said plate then serving to close portions of the apertures unoccupied by the conductors.

3. A combined conductor clamp and closure for the unoccupied portions of conductor-receiving apertures in an electrical receptacle, comprising a plate having arched seats, arched clamping portions projecting laterally from said plate at said seats and

following the contour thereof, and a portion having an opening, whereby upon disposal of the article within a receptacle with the plate in slidable contact with the apertured wall thereof, a screw may be passed through said opening to clamp the arched flanges against conductors passing through the wall apertures, said plate then serving to close portions of the apertures unoccupied by the conductors.

In testimony whereof we have hereunto affixed our signatures.

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