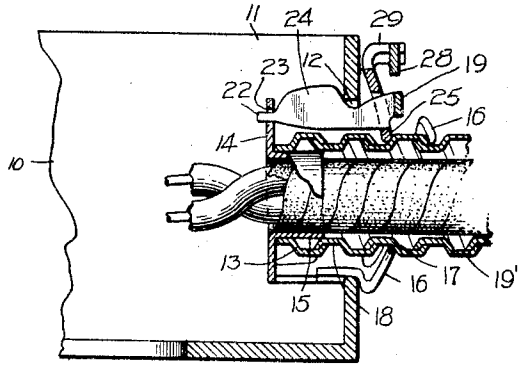
March 17, 1931. S. KANNER 1,796,846

COUPLING MEANS FOR ELECTRIC ARMORED CABLE

Filed June 18, 1929

Fig. 1.



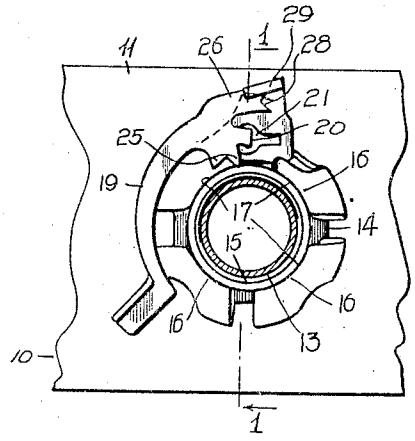


Fig. 2.

Fig. 4.

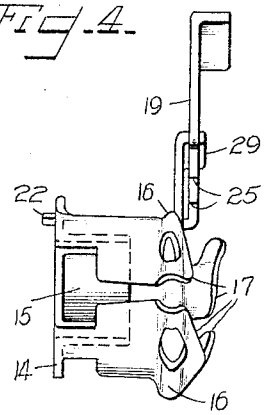
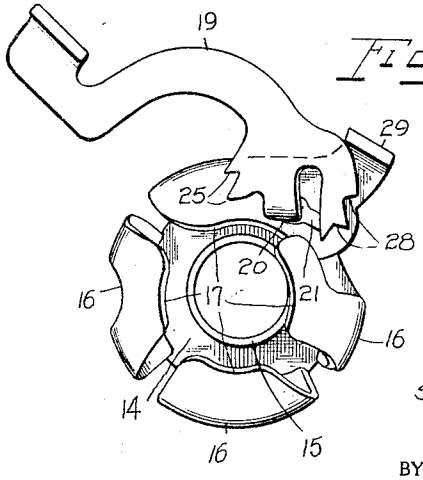


Fig. 3.



Samuel Kanner
INVENTOR
BY Otto Kunert
his ATTORNEY.

Patented Mar. 17, 1931 1,796,846

UNITED STATES PATENT OFFICE

SAMUEL KANNER, OF LONG ISLAND CITY, NEW YORK

COUPLING MEANS FOR ELECTRIC ARMORED CABLE

Application filed June 18, 1929. Serial No. 371,746.

This invention relates to a device for attachably connecting the end of armored electrical cable to the junction or wall box of an electrical installation.

The present invention is a further development of a device forming the subject matter of an application for Letters Patent in the United States Patent Office, filed October 25, 1926, by Abraham Kipnis, under Serial No. 144,027.

Briefly, the invention according to the Kipnis application, comprises a cage adapted to enter an opening in a wall of an outlet box or the like, said cage being provided with a series of flaring yielding arms having jaws arranged for engagement with a groove in the armored electrical cable, and a member pivotally secured to the cage and adapted in one position to hold the latter in the outlet box and in the other position to permit the cage to be removed from the box without requiring the use of a single tool or even the removal of a screw.

Attachable coupling units of the character just described are extremely efficient in so far as they go, but certain limitations in their construction have interfered with their adoption throughout the electrical industry. The main and fatal bar to this type of coupling is found in the failure to provide protection for the conductors between the end of the armored cable covering and the cable opening in the coupling itself. The end of the armored cable is usually very rough because of the manner in which the same must be severed, and if the insulation of the conductors were permitted to rub on the end of the sharp metal covering the metal wire would soon become exposed, resulting in a short circuit and possible fire. Apart from the fire hazard to which the prior art is subject, it has been found that the pivoted clamping member on the cage must lock in its clamped position if the coupling is to be a permanent one.

With the foregoing in mind, it is the principal object of my invention to provide the coupling with an integral bushing which projects into the end of the protective covering of the armored cable between the latter and the conductors when the cable is screwed into the coupling prior to inserting it in the box.

A further object of the invention is to provide the clamping member with a toothed projection to engage a projection on the cage to lock the member in its clamped position.

A still further object of my invention is to afford a coupling of this character which will accommodate different sizes of armored electrical cable and attachably secure the end thereof in the opening of an outlet box.

I accomplish these objects and avoid the disadvantages of other constructions of this character by means of the arrangement and combination of parts hereinafter fully described and claimed, and illustratively exemplified in the accompanying drawing, in which: Figure 1 is a substantially longitudinal sectional view of my improved coupling unit in position in an outlet box, the view being taken on lines 1—1 of Figure 2 which is a front elevational view of the coupling and a portion of the outlet box; Figure 3 is a front elevational view of the coupling in open position; and Figure 4 is a side elevational view of the same.

Referring to the drawings, 10 denotes an outlet box having the usual upright wall or rim 11 which is provided with knockouts capable of being removed to afford openings 12 for the reception of the coupling means and end of the armored cable 13.

The body of the coupling means is shaped from a single metal blank and comprises an annular inner end portion 14 provided with a cylindrical shaped bushing 15 projecting from the inner periphery of the annular end 14 towards the front of the coupling. The bushing 15 is integral with the annular end 14 and is formed by drawing the material of the latter into shape by means of a suitably constructed die. The outer periphery of the annular portion 14 is provided with four radially projecting arms 16, which are unequal in length and bent approximately at right angles to positions parallel with the axis of the bushing 15 and then turned inwardly to form flanges 17 which are adapted to engage the convolutions of the armored cable covering 13, as illustrated in Figures 1 and

2. The arms 16 at their ends 17 are of a thickness to pass into the grooves 18 between the convolutions 19' of the cable and because of the unequal length of the arms 16 and also because of the inclination of the ends 17, the broken line formed by the edges thereof describes a screw thread which is exactly adapted to engage with the screw thread formed by the grooves 18 of the cable. The cable end, when attached to the coupling, is inserted between the arms 16 and the coupling and the latter rotated until the flanges 17 have advanced over the grooves 18 and the cable end has moved over the bushing 15 to seat against the annular end 14.

The coupling member is secured in position in the opening 12 of the outlet box 10, by means of a clamping device, comprising a lever arm 19 provided with a shaft portion 20 bent at right angles to the main part of the lever and passed through an elongated slot 21 in one of the flanges 17 and by inserting the stud 22 on the end of the shaft 20 in an opening 23 in the annular part 14. The shaft 20 is provided with a wing portion 24, illustrated particularly in Figure 1, which is inclined on its end towards the arm 19 so that the inclined end will ride against the inner edge of the wall of the opening 12 when the arm is rotated to bring the wing into radial or locking position. A bead formed at the angle of the arms 16 and flanges 17 is drawn against the marginal wall of the opening 12 on the outside of the box so that when the wing 24 engages the box, the coupling member will be drawn into the box until the bead seats against the opposite side.

The lever arm 19 at a point adjacent the shaft 20 is provided on its under side with a pair of teeth 25, adapted to bite into the surface of the armored cable covering when the arm is swung to closed position, as illustrated in Figure 2. In order to lock the arm 19 in its closed position, the latter is provided with a curved projection 26 integral with the arm itself on the side opposite the pair of teeth 25. The curved projection 26 is disposed upwardly and sidewise in the direction opposite that of the main portion of lever arm 19. A pair of teeth 28 is cut in the free end of the projection 26, the uppermost tooth being cut deeper into the projection than the lower one. The purpose of these teeth 28 is to enable one or the other thereof, depending upon the size of cable covering being used to engage under the edge of an overhanging lip 29 which is bent at an angle to the portion of the flange 17 having the slot 21 and is an integral part of the coupling body. The edge of this lip 29 comes right in the path of rotary movement of the teeth 28 so that when the lever arm is closed and the teeth 25 are engaged in the surface of one of the convolutions of the armored casing, one of the teeth 28 will have moved under the lip 29 which springs slightly and seats in the tooth to prevent accidental movement of the arm to free itself from engagement with the cable.

The operation of securing a cable end into a wall box with the use of the improved coupling just described, is as follows: A portion of the conductors is exposed beyond the severed end of the armor and threaded through the space between the flanges 17 of the arms 16 and then through the bushing 15 to project beyond the coupling. The end of the armored casing is then adjacent the flanges 17 and by rotating either the cable or coupling, the latter is screwed over the convolutions of the casing as the flanges 17 follow the grooves 18. The casing being greater in diameter than the bushing 15, the latter enters the end of the armored casing between it and the conductors. Thus a perfect protective wall is established for the conductors, which as a result, are not at any time brought into contact with the rough and sharp end of the severed casing.

The further operation consists in inserting the coupling into the opening 12 and closing down on the lever arm to bring one pair of teeth 25 into engagement with the casing, while one of the other pair of teeth 28 rides under the lip 29 and engages the edge of the latter to prevent slipping of the lever arm to free the grip on the cable casing.

When different size armored casings are used, the same coupling will accommodate itself to any of them within certain limits, because the free ends of the arms 16 are unattached and are free to yield and spread, while the elongated slot 21 permits certain play in the shaft portion 20 which enables the arm lever to swing about a slightly higher center to bring the teeth 25 against the casing and the shorter one of the teeth 28 into locked position against the lip 29.

The advantages of my invention will be obvious from the foregoing when it is considered that a cable connection may be effected in any outlet box without the use of any tools and with the assurance that a perfectly flash-proof joint exists between the end of the armored cable and the interior of the wall box.

Having now described my invention what I claim and desire to secure by Letters Patent, is:

1. A coupling device adapted to anchor grooved armored cable in an outlet box opening, comprising a member adapted to enter the opening in the outlet box, and provided with arms having jaws to engage the groove of the armored cable, said member having an integral bushing to project into the end of the casing between the latter and the cable, and rotary means arranged in the member for locking the latter in the wall box.

2. A coupling device adapted to anchor grooved armored cable in an outlet box open-

ing, comprising a member adapted to enter the opening in the outlet box and provided with radial arms having jaws to engage the groove of the casing of an electrical cable, said member having an annular inner end provided with an integral axially projecting bushing to be inserted into the cable casing between the latter and the cable, and a rotary locking member arranged in the coupling member to lock the latter in the outlet box and the cable casing in the member.

3. A coupling device adapted to anchor grooved armored cable in an outlet box opening, comprising a member to be inserted in the opening of the outlet box and having an annular portion provided with an integral bushing projecting co-axially thereof, a series of arms having jaws to engage the groove of the electrical cable armor beyond the bushing, and rotary means for clamping the member to said outlet box.

4. A device adapted to anchor grooved armored cable in an outlet box opening, comprising in combination, a member adapted to enter the opening in a wall of the outlet box or the like, said member having an annular portion provided with an axially projecting integral bushing and being provided with a series of arms, having jaws adapted for engagement with a groove in the armor of the electrical cable, and a locking member comprising a shaft portion pivotally connected to said first-named member and adapted to pass with said first-named member into an outlet box, and provided with a flange adapted to engage with the wall of the outlet box when the shaft is in one position and to clear said wall when the shaft is in another position, and a swinging arm adapted to operate said shaft and to rotate same into position for engaging with the wall of an outlet box.

5. A device adapted to anchor grooved armored cable in an outlet box opening, comprising in combination, a member adapted to enter the opening in a wall of the outlet box or the like, said member being provided with a series of arms, having jaws adapted for engagement with a groove in the armor of the electrical cable, and a locking member comprising a shaft portion pivotally connected to said first-named member and adapted to pass with said first-named member into the outlet box, and provided with a flange adapted to engage with the wall of the outlet box when the shaft is in one position and to clear said wall when the shaft is in another position, and a swinging arm adapted to operate said shaft and to rotate same into position for engaging with the wall of the outlet box, said arm being provided with means adapted to engage with said cable when in one position and lock the same against rotation and when in another position to permit said cable to rotate, and further means to cooperate with a portion of one of the arms to prevent movement of the swinging arm to release the cable.

6. A device adapted to anchor grooved armored cable in an outlet box opening, comprising in combination, a member adapted to enter the opening in a wall of the outlet box or the like, said member being provided with a series of arms, having jaws adapted for engagement with a groove in the armor of the electrical cable, and a locking member comprising a shaft pivotally connected to said first-named member and adapted to pass with said first-named member into the outlet box, and provided with a flange adapted to engage with the wall of the outlet box when the shaft is in one position, and to clear said wall when the shaft is in another position, and a swinging arm adapted to operate said shaft and to rotate same into position for engaging with the wall of the outlet box, said arm being provided with a toothed portion adapted to engage with said cable when in one position and lock the same against rotation, and when in another position to permit said cable to rotate, and further provided with a second toothed portion opposite the first toothed portion and adapted to engage a portion of one of the arms to prevent freeing the arm.

7. A device adapted to anchor grooved armored cable in an outlet box opening, comprising in combination, a member adapted to enter the opening in a wall of the outlet box, said member being provided with a series of arms, having jaws adapted for engagement with a groove in the armor of the electrical cable or the like, one of said arms having a lip portion spaced from the jaws, and a locking member comprising a shaft portion pivotally connected to said first-named member and adapted to pass with said first-named member into the outlet box, and provided with a flange adapted to engage with the wall of the outlet box when the shaft is in one position and to clear said wall when the shaft is in another position, and a lever arm adapted to operate said shaft and to rotate same into position for engaging with the wall of the outlet box, said arm being provided with a toothed edge adapted to engage with said cable when in one position and lock the same against rotation and when in another position to permit said cable to rotate, said swinging arm being provided with teeth on its side opposite the first toothed edge to engage the said lip, the arm having an inturned flange at its free end adapted to engage with other parts of the device and thereby secure said swinging arm and said rotatable shaft in their locked position.

In testimony whereof I affix my signature.

SAMUEL KANNER.