Sept. 1, 1931. W. D. KYLE 1,821,222

INSULATOR

Original Filed Dec. 30, 1929

Fig. 1.

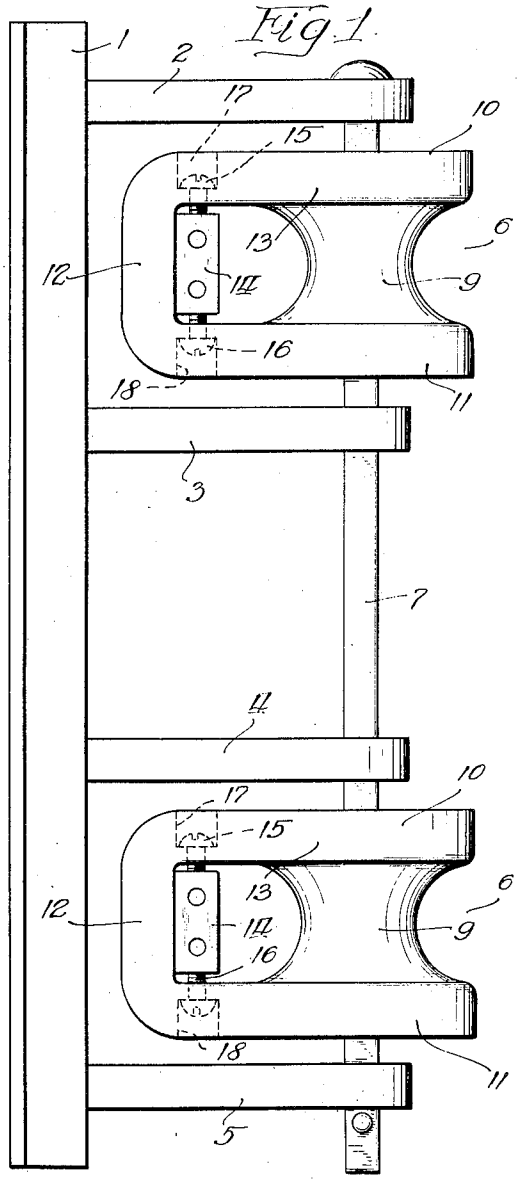


Fig. 2.

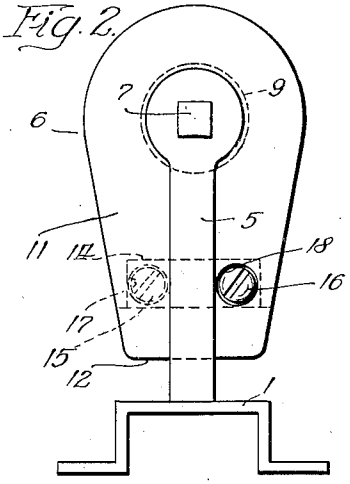


Fig. 3.

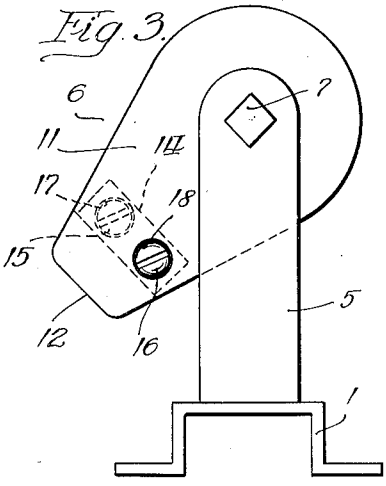


Fig. 5.

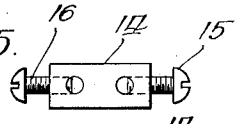


Fig. 6.

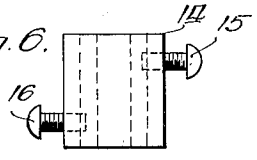


Fig. 4.

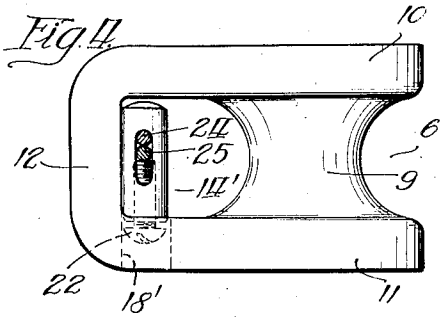
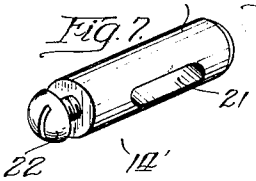


Fig. 7.



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By Brown, Jackson, Boettcher & Dienner.

Attys.

Patented Sept. 1, 1931 1,821,222

UNITED STATES PATENT OFFICE

WILLIAM D. KYLE, OF MILWAUKEE, WISCONSIN, ASSIGNOR TO LINE MATERIAL COMPANY, OF MILWAUKEE, WISCONSIN, A CORPORATION OF WISCONSIN

INSULATOR

Original application filed December 30, 1929, Serial No. 417,436. Divided and this application filed May 23, 1930. Serial No. 454,959.

This application is a division of my pending application, Serial No. 417,436, filed December 30, 1929. The present invention relates to electric insulators and constitutes an improvement upon the insulator shown in my pending application, Serial No. 396,248, filed September 30, 1929. While the insulator of the present invention is of general application, it is particularly applicable for dead ending insulated drop wires.

In electric wiring work it is customary for the wiring contractor to furnish the wire connections from the side of the building into the house. The power company extends a connection to the house from the pole carrying the power lines and at the same time it establishes a connection to the conductors located by the contractor on the side of the building and extending into the house. The incoming power wire is extended through an eye or perforation in an insulator or is wound around a groove in the insulator and the span is drawn tight. The end of the wire is then bent back and twisted about the main part of the span wire to hold the same tight against the head of the insulator. A connection is then made between the span conductor and the wire extending along the side of the house. Heretofore, it has been necessary to solder the connection in order to secure a satisfactory joint having a low electrical resistance. It is a particular object of the present invention to provide an insulator adapted for dead ending a line wire, wherein the insulator is provided with a terminal whereby the desired connections may be made without the necessity of soldering the connection. While the insulator of the present invention is particularly useful for dead ending a line wire it is also capable of other uses and I do not wish to be limited to any particular use to which my insulator may be put.

In the embodiments of the invention herein illustrated, I provide an insulator having a body portion of frangible insulation, preferably porcelain, although the invention is not limited to the use of such material. The insulator has an eye formed therein for receiving a line wire and it may, in addition, be provided with a peripheral groove. The insulator is provided with a terminal member, which may be of any approved construction, for establishing a connection between the end of the line wire and the end of the wire extending along the side of the building or the like. The terminal is mounted entirely within the body of the insulator, preferably within the eye of the insulator so that no portion of the terminal is exposed, thereby preventing accidental contact with the terminal. The use of a terminal obviates the necessity for soldering the connection and, since the terminal is secured to the insulator and enclosed thereby so as to leave no exposed portions, it is not necessary to tape the connection in order to guard against the swinging of the connection into contact with the building or with other grounded or live parts.

Another advantage of my invention is that it permits the power company to disconnect the line to the consumer outside of the building in a very efficient and simple manner.

The attainment of the above and further objects of the present invention will be apparent from the following specification taken in conjunction with the accompanying drawings forming a part thereof.

In the drawings:

Figure 1 is a side view of a secondary rack employing insulators constructed in accordance with my invention;

Figure 2 is an end view of the rack shown in Figure 1;

Figure 3 is an end view of a modified form of secondary rack;

Figure 4 is a view of an insulator adapted to be used on a secondary rack and having a somewhat different form of terminal from that shown in connection with the insulators of Figure 1;

Figures 5 and 6 are two views of the terminal used in connection with the insulators of Figures 1, 2 and 3; and

Figure 7 is a perspective view of the terminal used in connection with the insulator of Figure 1.

Reference may now be had more particularly to Figure 1 which shows a secondary

rack construction suitable for dead ending drop wire. A metallic base 1, which may be of any approved construction, is provided with a number of upstanding arms 2, 3, 4, and 5. Insulators 6 are mounted between the upstanding arms by means of a square shaft 7. The insulator 6 has a central square hole formed therein through which the shaft passes. A cotter pin or other suitable means is provided for preventing inadvertent removal of the shaft 7 from the arm. The base 1 may be electrically grounded if desired.

The insulator 6 is made of frangible insulating material such as porcelain or the like and all of the edges of the insulator are preferably well rounded, especially the edges around which a conductor may be extended. The insulator comprises a spool portion 9 which merges into the side portions 10 and 11, said side portions being connected by a portion 12, the entire insulator constituting one integral body. The space 13 between the portion 12 and the spool 9 constitutes an eye wherein the terminal may be located. The terminal 14 is of a construction such as is shown in Figures 5 and 6. The terminal 14 comprises a block of copper or other suitable conducting metal, said block having two holes extending therein lengthwise thereof, the holes being provided each for receiving the end of a conductor. The sides of the terminals are provided with suitable tapped holes into one of which a screw 15 is threaded and into the other of which a screw 16 is threaded. The screws are adapted to be turned into the longitudinally extending openings to firmly clamp the end of a conductor that is extended into those openings. Thus good electrical contact is established between the ends of the conductors. The arms 10 and 11 are provided with openings 17 and 18, said openings being of an enlarged size adjacent the outer ends of the arms 10 and 11 and being of a reduced diameter adjacent the inner side of those arms. To insert the terminal 14 within the eye 13, the screws 15 and 16 are first removed and with the contact terminal block within the eye 13 the screw 15 is inserted through the opening 17 and is threaded into the corresponding tapped opening in the terminal block, and in a like manner the screw 16 is passed through the opening 18 and is threaded into the corresponding tapped opening in the terminal block. The screws 15 and 16 are located on the opposite side of the arm 5 in order to permit the insertion of a screw driver into the slots 17 and 18 of the insulator and at the same time clear the metallic supports 4 or 5.

It is to be noted that the arms 10 and 11 of the insulator 6, together with the base portion 12 thereof constitute a generally U-shape body of insulation, the free ends of the flanges 10 and 11 being joined together by the spool portion 9. It is to be understood that this general shape may be greatly modified without departing from the spirit of the present invention. The end of a line wire that is to be connected to the terminal may be wound around the spool portion 9 and, after being twisted a few times around the line wire, the free end which is bared of insulation is passed into one of the openings in the terminal and is secured therein by the corresponding screw 15 or 16.

Figure 3 shows a modified construction of the secondary rack. This construction differs from that shown in Figures 1 and 2 only in that the insulators 6 are mounted at an angle to the rack so as to clear the supports 2, 3, 4, or 5 as the case may be. Such a construction may be necessary in places where wider supporting arms such as the arms 2 to 5, are necessary. This construction also permits the placing of the openings 17 and 18 in the insulator closer together.

When the insulators 6 are mounted in a position such as shown in Figure 3 then only one opening corresponding to the openings 17 and 18 is necessary. Such an insulator is shown in Figure 4 and the terminal that is used in connection with this insulator is shown in Figure 7. This insulator is in general similar to the insulator 6 of Figure 1 differing therefrom only in that the opening 17 in the arm 10 of Figure 1 is here omitted and the opening 18′ of this insulator is made of an enlarged diameter so as to permit a terminal 14′ to be passed therethrough. The terminal 14′ may comprise a block 20 of copper or other suitable metal having high electrical conductivity, said block being of a generally cylindrical shape and having a slot 21 formed therein. It is, of course, to be understood that if desired the block 20 may be of rectangular shape. A screw 22 is threaded into a tapped hole in the block 20 and extends into the slotted opening 21 for forcing a set of conductors that may be within the slot into firm electrical engagement with one another. This is illustrated in Figure 4. In this figure the ends of the two conductors that are to be electrically connected together are indicated at 24 and 25, and the end of the screw 22 is in engagement with the conductor 25 and forces it into firm engagement with the end of the conductor 24 which bears against the end of the terminal 14′. It is to be noted that the head of the screw 22 does not extend outside of the opening 18′, hence the terminal is completely insulated by the insulator 6. When an insulator such as is shown in Figure 4 is used in connection with a rack, such as is shown in Figure 1, this insulator need not be mounted at such a large angle to the arms of the rack as is the insulator of Figure 3. Also, if desired, such an insulator may be mounted in the manner shown in Figure 2,

in which event the arm 5 would be made much wider and provided with an opening opposite the opening 18′ in the insulator so as to permit the insertion of a screw driver to manipulate the screw 22 of the terminal 14′.

The secondary rack may be used in a manner such as is shown in my pending application Serial No. 396,248, filed September 30, 1929, for dead ending a drop wire. It is, of course, to be understood that the secondary rack herein shown as well as the insulator herein shown is also for general use and it is not intended to limit the use of the same in the manner shown in the above application.

In compliance with the requirements of the patent statutes I have herein shown and described a few preferred embodiments of my invention. It is, however, to be understood that the invention is not limited to any of the specific constructions herein shown, the same being merely illustrative of the invention. What I consider new and desire to secure by Letters Patent is:

1. A secondary rack construction comprising a supporting base, a pair of parallel arms extending therefrom, and a combined insulator and terminal non-rotatably mounted between said arms, said combined insulator and terminal comprising a spool of frangible insulating material having a groove formed therein for the reception of a conductor, and a terminal member carried by the insulator, said insulator having projecting portions substantially surrounding the terminal member and preventing accidental contact therewith.

2. An insulator comprising a spool of insulating material, said spool having a central longitudinal opening for mounting the insulator and having a peripheral groove for holding a wire on the insulator when the same is looped around the groove, said insulator having a portion formed integrally therewith and defining an eye portion, and a terminal member mounted in the eye portion and extending within the same, the terminal being entirely within the body of the insulator to prevent accidental contact therewith.

3. A secondary rack having a pair of upstanding arms, an insulator mounted between said arms and comprising a unitary piece of insulation, said insulator having a terminal therein entirely within the body of insulation to prevent accidental contact therewith.

4. A secondary rack having a pair of upstanding arms, an insulator mounted between said arms, said insulator having a terminal therein entirely within the body of insulation to prevent accidental contact therewith, said insulator having a tool receiving opening therein for receiving a tool for manipulating the terminal.

5. A secondary rack having a pair of upstanding arms, an insulator mounted between said arms, said insulator having a terminal therein entirely within the body of insulation to prevent accidental contact therewith, said insulator having an opening therein adjacent to one of said arms, but spaced therefrom, for receiving a tool for manipulating the terminal.

6. A secondary rack having a pair of upstanding arms, an insulator mounted between said arms, said insulator having a terminal therein entirely within the body of insulation to prevent accidental contact therewith, said insulator having an opening therein for receiving a tool for manipulating the terminal, the insulator being relatively long and narrow and being mounted with its elongated axis at an angle to the supporting arms.

7. A secondary rack having a pair of upstanding arms, an insulator mounted between said arms, said insulator having a terminal therein entirely within the body of insulation to prevent accidental contact therewith, said insulator having an opening therein adjacent to one of said arms but spaced therefrom for receiving a tool for manipulating the terminal, the insulator being relatively long and narrow and being mounted with its elongated axis at an angle to the supporting arms.

8. An insulator and terminal comprising a unitary body of insulation, means extending from the opposite ends of the insulator for mounting the insulator in place, and a terminal member mounted on the insulator and adapted to receive the end of a conductor for establishing a connection thereto, said terminal being entirely within the body of the insulator to prevent accidental contact therewith.

9. An insulator comprising a spool shaped portion the ends of which are extended beyond the body of the spool portion and are joined together in spaced relationship to define an eye portion with the periphery of the spool portion, said insulator being made of a single piece of frangible insulation and having mounting means for the insulator extending from the outer sides of the opposite ends of the insulator.

10. An insulator comprising a U-shaped body portion and a spool shaped body of insulation between the ends of the flanges of the body portion, said spool member being spaced from the base of the U to form an eye in the insulator, said U-shaped member and said spool portion constituting an integral body of insulation.

11. An insulator comprising a U-shaped body portion of insulation and a spool shaped body of insulation between the ends of the flanges of the body portion, said spool member being spaced from the base of the U to form an eye in the insulator, said insulator having an opening formed through the arms of the U shaped portion and the spool portion

for mounting the insulator and having an additional opening through at least one arm of the U-shaped body portion and leading into the eye portion of the insulator.

12. An insulator comprising a U-shaped body portion and a spool shaped body of insulation between the ends of the flanges of the body portion, said spool member being spaced from the base of the U to form an eye in the insulator, and a terminal substantially entirely within the eye in the insulator.

13. An insulator comprising a U-shaped body portion and a spool shaped body of insulation between the ends of the flanges of the body portion, said spool member being spaced from the base of the U to form an eye in the insulator, and a terminal substantially entirely within the eye in the insulator, the U shaped member having an opening therein for permitting access to the terminal.

14. An insulator comprising a U-shaped body portion and a spool shaped body of insulation between the ends of the flanges of the body portion, said spool member being spaced from the base of the U to form an eye in the insulator, said insulator having an opening formed through the arms of the U shaped portion and the spool portion for mounting the insulator, and a terminal substantially entirely within the eye in the insulator, the U shaped member having an additional opening therein for permitting access to the terminal.

15. A secondary rack having a pair of upstanding arms, an insulator mounted between said arms, said insulator having a terminal therein entirely within the body of insulation to prevent accidental contact therewith, said insulator having an opening therein for receiving a tool for manipulating the terminal, the insulator being relatively long and narrow and being mounted with its elongated axis parallel to the supporting arms.

16. A secondary rack having a pair of upstanding arms, an insulator mounted between said arms, said insulator having a terminal therein entirely within the body of insulation to prevent accidental contact therewith, said insulator having an opening therein adjacent to one of said arms but spaced therefrom for receiving a tool for manipulating the terminal, the insulator being relatively long and narrow and being mounted with its elongated axis parallel to the supporting arms.

In witness whereof, I hereunto subscribe my name this 17 day of May, 1930.

WILLIAM D. KYLE.