Jan. 18, 1955 G. B. BENANDER 2,700,142

CORD SPLICER

Filed Dec. 26, 1951

Fig. 1.

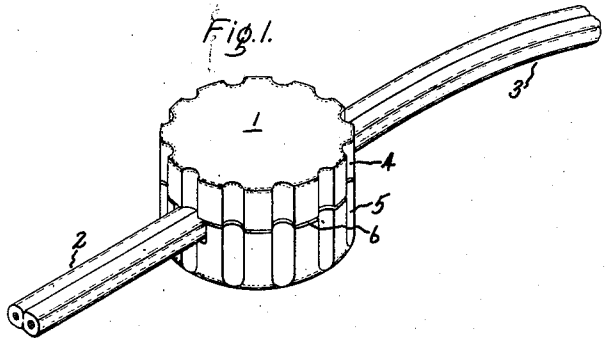


Fig. 2.

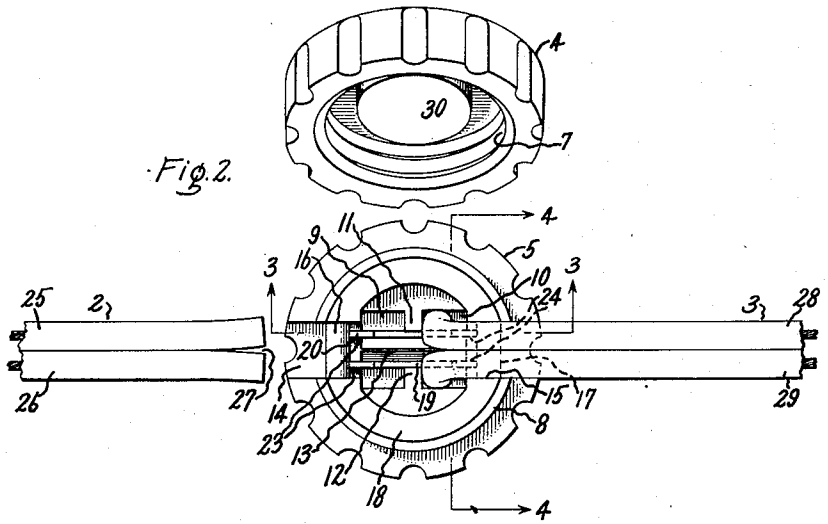


Fig. 3.

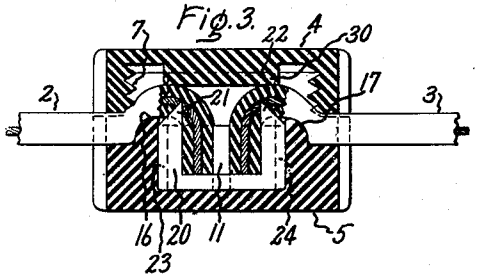
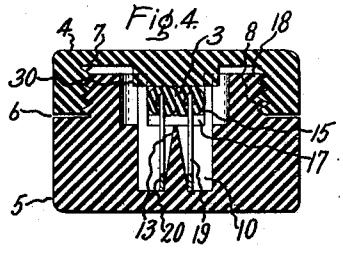


Fig. 4.



Inventor:
George B. Benander,
by Otto R. Barnett
His Attorney.

United States Patent Office 2,700,142
Patented Jan. 18, 1955

2,700,142

CORD SPLICER

George B. Benander, Oaklawn, R. I., assignor to General Electric Company, a corporation of New York

Application December 26, 1951, Serial No. 263,347

4 Claims. (Cl. 339—99)

This invention relates to cord splicers and in particular to a device for electrically and mechanically joining two sections of electric cord, of which one type would be lamp cord.

In a conventional method of splicing electric lamp cord, the adjacent ends of each conductor are stripped of insulation, corresponding conductors are then twisted together and taped thereby electrically and mechanically joining the two pieces of electric cord.

In making such a splice, an unsightly tape bulge is produced, and some minimum electrical skill is required for a proper jointure of the two wires. Accordingly, the average housewife does not attempt to make a splice.

It is an object of this invention, therefore, to provide an improved device whereby two electric cords can be conveniently and effectively joined.

It is a further object of this invention to provide a device so simple in operation that anyone can splice two pieces of electric cord.

It is a still further object of this invention to provide an improved splicing device which is small and compact and which has strain relief properties to assure that the electric cord will not be pulled out of the splicing device.

Further objects and advantages of this invention will become apparent and the invention will be more clearly understood from the following description, referring to the accompanying drawing and the features of novelty which characterize this invention will be pointed out with particularity in the claims annexed to and forming a part of this specification.

In the drawing Fig. 1 is a perspective view of the splicing device; Fig. 2 is an exploded perspective view of the splicing device; Fig. 3 is a sectional elevation through the plane 3—3 of Fig. 2; and Fig. 4 is a sectional view taken through the plane 4—4 of Fig. 2.

Briefly, this invention comprises a hollow body member having an upper and a lower portion made of insulating material, pronged terminals positioned within said body member to engage conductors of two electric cords to be spliced, with the body member further having an integral part thereof for impaling the conductors of the electric cords on the pronged terminals.

In the drawing, the splicing device 1 is shown joining two electric cords 2 and 3 respectively. Splicing device 1 comprises an upper portion 4 and a lower or bottom portion 5 which are joined at a common plane 6. The upper portion 4 has centrally therein a thread 7 formed on its internal periphery to engage a complementary thread 8 formed on a neck 18 integral with the base of the lower portion 5. Neck 18 is of a diameter less than that of the base to provide a shoulder at the base of the neck against which upper portion 4 seats when it is screwed down onto the lower portion.

Lower portion 5 is provided with a pair of cavities 9, 10 for receiving the ends of cords 2, 3 respectively. The cavities are partially separated by protuberances 11, 12 and each cavity is divided further by a wall 13 which provides electrical insulation for the conductor ends.

Bottom portion 5 of splicing device 1 is provided further with a pair of diametrically opposed channels 14, 15, each of which has a depth such that the portion of its bottom which is in line with the lower edge of upper portion 4 lies below the base of neck 18 by an amount equal substantially to the thickness of the electric cord with which the splicer is intended to be used so that the cord will fit down into it, and a width equal substantially to the width of such cord. Cavities 9 and 10 extend

down below the bottoms of channels 14 and 15. Each channel, in turn, has a deflecting projection or bump 16, 17 respectively which is spaced inwardly from the outer edge of the channel by an amount such that it is out of line with the lower edge of upper portion 4 and is of a height such that when upper portion 4 is screwed down onto lower portion 5, there is left a passage between the bottom edge of upper portion 4 and the top of the projection of a width to permit of a cord passing through it with a tight fit. This serves as a mechanical strain relief agent. That is, each conductor is brought into the splicing device through a channel, for example, channel 14 and over the bump 16, whereupon electric cord 2 is so gripped when the upper portion 4 of splicing device 1 is brought down into engagement with the lower portion 5 that a tug on cord 2 does not disturb the electrical or mechanical connection between the cord and the splicing device.

With this structure, the entry of the cords 2 and 3 into the splicing device 1 does not interfere with the interrelationship between the threads 7 and the threads 8, and accordingly, the two portions 4 and 5 can be screwed together without putting any twisting force on the electric cords 2, 3.

To establish electrical connection within the splicing device, a pair of U-shaped electrically conducting terminal prongs 19 and 20 are provided to impale the conductors. Each terminal prong, as shown in Fig. 3, has its base lying at the bottom of cavities 9, 10 and its pointed or pronged legs 21, 22 extending upwardly adjacent and to a position beyond the upper ends of the bumps 16, 17 respectively for engagement with the electric cords 2 and 3.

In order to hold the terminals 19 and 20 within the bottom portion 5 of the splicing device, diametrically opposed notches 23, 24 are provided in each of the cavities 9, 10. These notches having a width compatible with the thickness of terminals 19, 20, are so located within cavities 9, 10 and with respect to protuberances 11, 12, that the outer sides of notches 23, 24 and the ends of protuberances 11 and 12 are not in a straight line. Consequentially, when terminals 19 and 20 are placed in the notches 23, 24, they are deflected slightly to fit around protuberances 11 and 12. The natural resiliency of the terminals 19 and 20, however, is such as to press against the protuberances 11 and 12 to straighten themselves out, and accordingly, a frictional engagement is established for the terminals 19, 20 by their respective interrelation with the notches and protuberances.

This frictional engagement is provided to prevent the terminals 19, 20 from falling out in case the lower splicing portion is turned upside down.

To assemble the conductors within the splicing device, the conductors, for example, 25, 26 of cord 2 are split to provide a V-shaped notch 27. The ends of conductors 25, 26 are then positioned within cavity 9 so that wall 13 fits into notch 27 to electrically insulate the free ends of the conductors from one another after which the cord is bent over into channel 14, extending across the top of bump 16. The conductors 28, 29 of cord 3 are similarly split and inserted on opposite sides of wall 13 in cavity 10. The cavities 9 and 10 are of a size such that the cord ends fit snugly in them. Thus when the cord ends are pushed down into the cavities they are anchored therein and held while the cords are looped over into channels 14 and 15. This serves to make the insertion of the cord ends into bottom portion 5 and the looping of them over into the channels a very simple operation.

The mere insertion of conductors 25, 26 and 28, 29 into cavities 9, 10 as above described, however, does not electrically interconnect the respective conductors of the cords. This electrical connection is brought about by impaling the conductors on the prongs 21, 22 of terminals 19, 20 when the upper portion 4 of splicing device 1 is screwed down into engagement with the lower portion 5. In doing this, a stud 30 centrally located in upper portion 4 presses against the cords 2 and 3 as the threads 7, 8 are tightened, thereby causing the prongs to pierce the cord insulation and establish electrical contact. The upper ends of the prongs are directly adjacent

and project above the bumps, and the cavities in which the cord ends are placed extend below the upper ends of the bumps and the bottoms of the channels. With this arrangement when the cord ends are inserted into the cavities and the cords then bent down over the prong ends and the bumps, loops are formed in the cord ends. The edge of the stud engages the tops of the loops. The cord ends are thus gripped by upper portion 4 at spaced points, i. e., between the edge of stud 30 and the inner edges of the bumps and between the bottom of the channels through which the cord passes and the bottom edge of upper portion 4. Thus beyond the connections of the prongs with the cords, the cords have a reverse bend and are firmly gripped and anchored between the upper and lower portions 4 and 5. This forms an effective strain relief for the cord.

In the end sectional view shown in Fig. 4, the stud 30 is shown after it has driven the conductors 28, 29 into engagement with the prongs 22 of terminals 19, 20 respectively.

By the arrangement of the cavities 9 and 10 so that they extend below the bottoms of channels 14 and 15, the cord ends projecting down into them, loops for the strain relief for the cord ends are obtained while at the same time, the size of splicer is kept small. Also this arrangement has the advantage that the connection of the prong ends to the cord is made at a distance from the cord end (a desirable feature) while still keeping the size of the splicer to a minimum.

Modifications of this invention will occur to those skilled in the art and it is desired to be understood, therefore, that this invention is not intended to be limited to the particular embodiment disclosed but rather it is intended to cover all modifications which are within the true spirit and scope of this invention.

What I claim as new and desire to secure by Letters Patent of the United States is:

1. In a cord splicer, a bottom portion comprising a base having walls which define upwardly facing cavities of a size to receive vertically the ends of electric cords, and a threaded neck formed integral with and of less diameter than the base to provide a shoulder at the base of the neck, opposed upwardly facing channels in the neck and base which connect at their inner ends with the upper ends of said cavities, terminal prongs in said cavities having legs which extend up along the outer sides of said cavities to positions above the bottoms of said channels, and an upper portion threaded to screw down onto said neck and provided with a central stud for engaging the loops of cord ends positioned down into said cavities and bent out through said channels for impaling the loops on said terminal prong legs.

2. A cord splicer as defined by claim 1 wherein said channels at their inner portions are provided with upwardly extending projections over which the cord ends are bent so that the cord ends are clamped between the said stud and the projections to provide strain relief means for anchoring cord ends between the lower and upper portions of the cord splicer.

3. In a cord connector, an open ended bottom portion having an outer surrounding wall and interior walls which define an upwardly facing cavity of a size such that a cord end may be inserted vertically down into it, said outer surrounding wall having a channel which at its inner end communicates with the said cavity at a point spaced from the bottom of the cavity, the upper rim of the outer wall of the bottom portion being generally cylindrical in shape and provided with external screw threads, a contact member in the bottom portion having an upper end for piercing the insulation of an electric cord which end is located at the side of said cavity adjacent and extending above the bottom wall of said channel whereby a cord end may be inserted down into said cavity and then bent over across said contact member end into the channel, and a threaded cover fastened over the open end of said bottom portion, said cover having an inner cord-engaging stud, so that the said cover when positioned on the bottom portion forces the cord end down onto said contact member end to impale the cord end thereon.

4. In a cylindrically shaped electric cord splicer, a bottom portion comprising a base having a pair of cavities which are separated by a vertically extending partition, each cavity being subdivided centrally thereof by a projecting wall portion arranged perpendicularly through the said partition, upwardly extending U-shaped terminal members seated in said cavities, said terminal members having pointed ends which extend upwardly into the said channel, an externally threaded neck formed on the upper portion of the base, and a diagonal channel formed through said neck portion, and recesses formed in the outer walls of the base in communication with the ends of the said channel, the top portion of the cord splicer comprising a threaded cover which is fastened to the neck of the base, the inner portion of the cover being provided with a cord-engaging stud, whereby a cord end may be seated within the said pair of cavities with the conductors separated by the said partition, and the cord-engaging stud holding the cord impaled over the ends of the terminal members while the cord extends outwardly from the said splicer through the nearest one of the recesses in the base portion.

References Cited in the file of this patent

UNITED STATES PATENTS

1,315,317	Letiecq	Sept. 9, 1919
2,031,453	Benander	Feb. 18, 1936
2,419,652	McLarn	Apr. 29, 1947
2,491,463	Brooks	Dec. 13, 1949
2,525,449	Coutant	Oct. 10, 1950
2,567,783	Richardson	Sept. 11, 1951
2,602,831	Levitt	July 8, 1952