April 13, 1937. J. EAGLESON 2,076,711

METHOD OF CORD CONSTRUCTION

Filed April 20, 1935

Fig. 1.

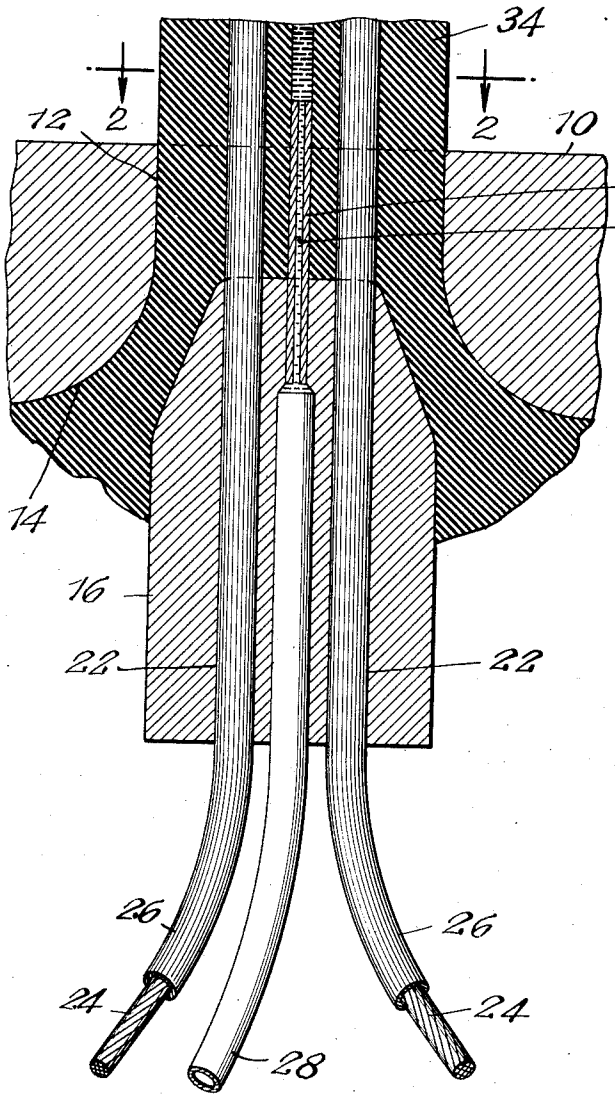


Fig. 3.

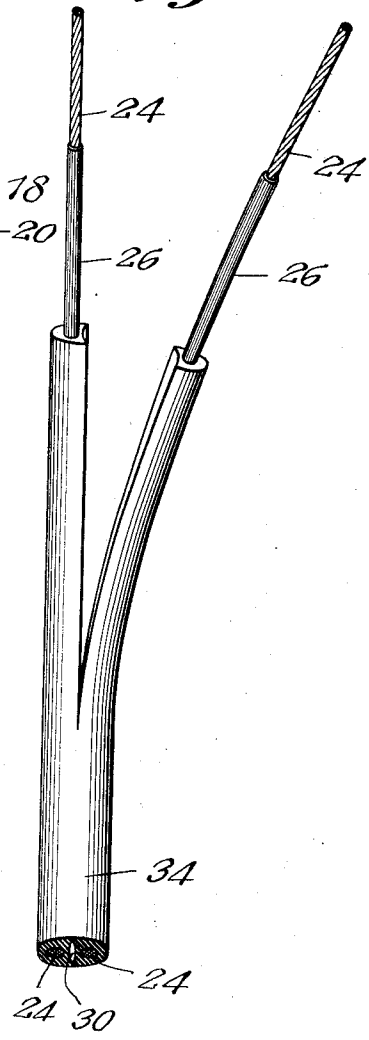


Fig. 2.

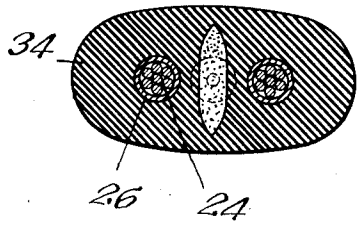
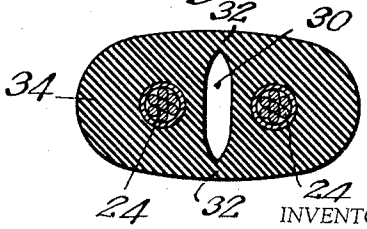


Fig. 4.



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Patented Apr. 13, 1937 2,076,711

UNITED STATES PATENT OFFICE

2,076,711

METHOD OF CORD CONSTRUCTION

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Application April 20, 1935, Serial No. 17,425

6 Claims. (Cl. 18—59)

This invention relates to improvements in the method of producing multiple conductor cords such as used in connection with lighting fixtures and various other electrical appliances. One object of the invention is to provide a method whereby voids can be readily formed between the conductors so as to permit the insulation surrounding the conductors to be easily and quickly split apart. A further object of the invention is to provide a void in the insulating material between a pair of conductors simultaneously with the extrusion of the insulating material around the conductors. A further object is to provide a method in which a void is formed in the mass of insulation surrounding a pair of conductors and to introduce, during the formation of such void, a liquid to prevent the adhesion of the walls thereof during and subsequent to the formation of the void.

The above and other objects will be apparent from the following specification when read in connection with the accompanying drawing.

In the drawing—

Fig. 1 is a horizontal section through suitable apparatus for carrying out my invention; Fig. 2 is a sectional view taken on line 2—2 of Fig. 1; Fig. 3 is a perspective view of a multiple cord construction embodying the invention; Fig. 4 is an enlarged cross section through a multiple electric cord made according to the invention.

In the drawing, 10 represents a die which has an outlet opening 12 therein, the inner portion of which is flared to form a throat 14 into which projects a guide 16. The die 10 and guide 16 form parts of a standard type of extrusion apparatus which is adapted to receive a mass of plastic substance such as rubber. In this type of apparatus, suitable means are provided for exerting a pressure on the mass of rubber and thus force the mass out through the annular throat 14. In order to adapt the apparatus for the practice of my improved method, I have modified the standard type of machine by providing at the forward end thereof a tongue 18 having a duct 20 formed therein. The outer end of the tongue projects a short distance beyond the outer face of the die 10.

The guide is provided with longitudinally extending passageways 22—22 through which are led the conductors 24—24 which have previously been covered with a light cotton serving 26.

Communicating with the hollow tongue 18, there is a pipe 28 leading to a supply of liquid.

In the practice of my improved method, a pair of covered conductors 24 are fed through the passageways 22 while the mass of rubber or similar insulating material is extruded through the annular throat 14. The width of the tongue 18 is slightly less than the width of the minor axis of the throat 14. Thus as the material is extruded through the die a longitudinally extending void, such as indicated at 30, will be formed in the mass of insulation, this void being closed by the thin portions 32—32 of the body of insulation 34, as indicated in Fig. 4.

An important feature of my improved method resides in the introduction of a liquid into the void simultaneously with the extrusion of the mass of insulating material for the express purpose of preventing the adhesion of the walls of the void during the formation thereof as well as after curing the mass. After the product has been extruded, the same is subjected to the action of a sufficient degree of heat to cure the product and such heating is also effective to free the void of the liquid filling. When the mass is of rubber, the vulcanizing temperature is sufficient to cause absorption of the liquids used by the rubber.

The insulating material used for encasing the conductors is preferably rubber or similar plastic material, which lends itself to extrusion and subsequent curing by vulcanization. Instead of rubber, it is to be understood of course that similar material, such as balata, gutta percha, or other rubber-like compounds may be utilized. The liquid introduced into the void to prevent adhesion is preferably one whose boiling point is lower than the temperature required to vulcanize the product so that the heat of vulcanization will not cause the formation of blisters. I also preferably use a liquid which may be substantially or approximately all absorbed by the plastic mass during the vulcanizing of the product so that, upon completion of the vulcanizing treatment, the void is substantially emptied and the walls thereof are practically dry. Various liquids may be used for this purpose, but in practice I have found that a mixture of triethylene glycol and diethyl phthalate give satisfactory results. After vulcanization of the product, the same can be readily ripped apart for a desired length, so as to cause splaying or separation of the conductors near the ends thereof, as illustrated in Fig. 3 so that the exposed conductors 24 may be readily attached to binding screws or the like at spaced points.

While I have illustrated the method as applied to the production of a two conductor cord, it is clear that the method may be employed to produce a void or voids in a mass of insulation

having various numbers of individual conductors embedded therein.

While I have described quite precisely the steps followed in the practice of my improved method, it is to be understood that the description and drawing are to be interpreted in an illustrative rather than a limiting sense and the appended claims are to be construed as broadly as is consistent with the prior art.

What I claim is:

1. In the manufacture of insulated electric conductors, the method which comprises extruding a plastic mass while feeding a pair of conductors in the direction of the advance of the mass, simultaneously forming a longitudinally extending void in the mass between the conductors and concurrently introducing a liquid into such void to prevent adhesion of the walls thereof.

2. In the manufacture of insulated electric conductors, the method which comprises extruding a plastic mass while feeding a pair of conductors in the direction of the advance of the mass, simultaneously forming a longitudinally extending void in the mass between the conductors and concurrently introducing a liquid into such void to prevent adhesion of the walls thereof and causing said liquid to be absorbed by the mass.

3. In the manufacture of insulated electric conductors, the method which comprises extruding a plastic mass while feeding a pair of conductors in the direction of the advance of the mass simultaneously forming a longitudinally extending void in the mass between the conductors and concurrently introducing a liquid into such void to prevent adhesion of the walls thereof, subjecting the mass to a temperature below the boiling point of said liquid and thus causing the absorption of the liquid by the mass.

4. In the manufacture of insulated electric conductors, the method which comprises extruding a rubber mass around a pair of conductors, while forming a closed longitudinal void between them, introducing a liquid into the void during its formation to prevent adhesion of the walls thereof, and causing the absorption of the liquid by vulcanization of the mass.

5. In the manufacture of insulated electric conductors, the method which comprises extruding a mass of rubber around a plurality of conductors while forming a closed void between them and introducing a liquid into the void during its formation, which liquid is capable of absorption by the rubber mass when subjected to a temperature sufficient to vulcanize the mass, and vulcanizing the thus formed product so as to cause such absorption of the liquid by the mass.

6. In the manufacture of insulated electric conductors, the method which comprises extruding a mass of rubber around a plurality of conductors while forming a closed void between them and introducing a liquid mixture of triethylene glycol and diethyl phthalate into the void during its formation, which liquid is capable of absorption by the rubber mass when subjected to a temperature sufficient to vulcanize the mass, and vulcanizing the thus formed product so as to cause such absorption of the liquid by the mass.

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