

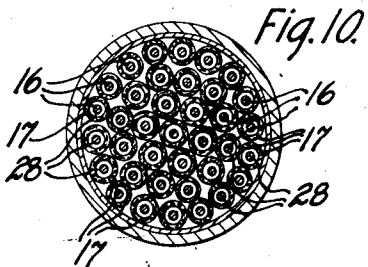
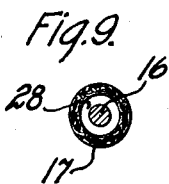
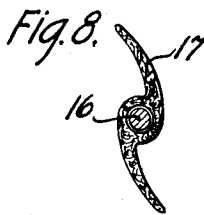
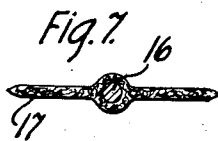
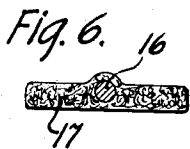
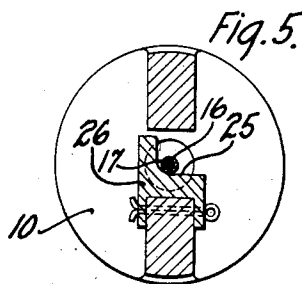
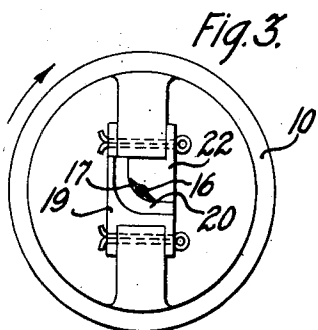
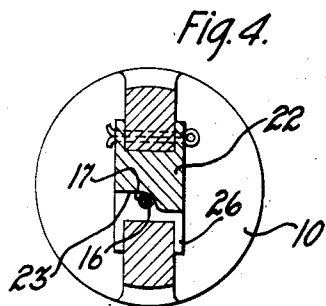
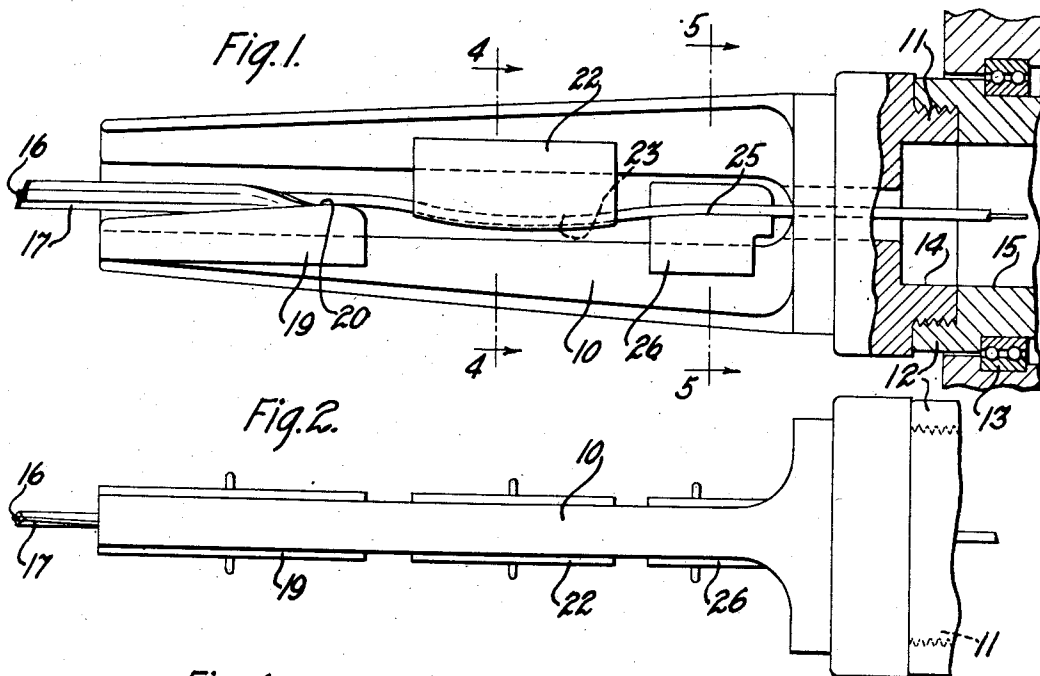
April 14, 1931.

J. N. SELVIG

1,800,411

COATED CORE

Filed March 16, 1927



Inventor  
John N. Selvig  
by *H. J. ...* Att'y.

## UNITED STATES PATENT OFFICE

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## COATED CORE

Application filed March 16, 1927. Serial No. 175,779.

This invention relates to coated cores, and more particularly to insulated electrical conductors for use in telephone cables.

The use of paper insulation has made possible the compact and highly efficient telephone cables of the present day. In this type of cable the paper has been applied in two quite different ways. In the one case the conductors are individually insulated by paper ribbon wrapped spirally around the conductor while in the other case paper pulp is applied directly to the conductors. The continued increasing demand for telephone service, especially in thickly populated areas, has created an ever-increasing necessity for the crowding of more telephone circuits in a single sheath, which may be very expeditiously achieved with conductors insulated by the direct application of paper pulp. However, in each of the aforementioned cases the electrical capacity of the circuits is of paramount importance. Many different means and methods of obtaining low capacity between the circuits have been suggested, of which the use of an air space between the conductors and the inner surface of the insulation is of chief importance.

It is the primary object of the present invention to provide a core having a continuous integral coating of felted fibrous material unattached to the core.

Other objects and advantages of the invention will become apparent in the following detailed description and the novel features of the invention will be particularly pointed out in the appended claims.

In the accompanying drawings,

Fig. 1 is a plan view, partly in section, of a forming mechanism for producing a coated core embodying the features of the present invention;

Fig. 2 is a side elevation of the forming mechanism shown in Fig. 1;

Fig. 3 is an end elevation thereof;

Figs. 4 and 5 are vertical sectional views taken on lines 4-4 and 5-5, respectively, of Fig. 1;

Figs. 6 and 7 are enlarged sectional views illustrating the manner in which the pulpous

material is applied to the core before it is delivered to the forming mechanism;

Figs. 8 and 9 are enlarged sectional views illustrating the formation of the pulp coating during and after the forming operation, respectively, and

Fig. 10 is an enlarged sectional view of a cable formed from a plurality of conductors embodying the features of the invention.

The forming mechanism herein shown and described is adapted to be used in conjunction with the apparatus disclosed in the patent to H. G. Walker, No. 1,615,423. In the operation of this apparatus, a core is brought into contact with pulpous material deposited upon a foraminous member and then an additional amount of pulpous material is deposited upon the core and the foraminous member. The pulp so deposited and the core are then brought into contact with a felt covered squeezing roll which cooperates with the foraminous member to squeeze out the "free liquid" from the pulp. The partially dried pulp adheres to the core in the form of a ribbon with the core substantially centrally located therein, as is shown in Fig. 6 of the accompanying drawing. The core with the pulp ribbon attached thereto is then passed through a plurality of squeezing rolls which impart to the pulpous ribbon a contour such as is illustrated in Fig. 7.

The forming mechanism illustrated in Figs. 1 to 5, inclusive, of the drawings is designed to receive a core and its attached pulpous ribbon from the squeezing rolls and wrap the projecting edges of the pulpous ribbon around each other to form a smooth and homogeneous coating for the core which provides a substantial air space between the core and the inner wall of the coating. The appearance of the coating immediately after starting the forming operation is shown in Fig. 8 and its appearance after the forming operation is completed is shown in Fig. 9.

Referring now to the drawing in detail, the numeral 10 indicates, generally, a rotatable head having one of its ends 11 threaded into a sleeve 12 (Fig. 1), which sleeve is rotatably journaled in a plurality of bearings, one of which is indicated at 13. The

sleeve 12 may be rotated by any suitable means and thus constitutes means for rotating the head 10. The head 10 and sleeve 12 are provided with central longitudinal openings 14 and 15, respectively, whereby they are adapted to accommodate a core 16 with its attached pulpous ribbon 17 drawn through them by any suitable means (not shown).

10 A forming member 19 carried at the forward end of the head 10 is provided with a tapered pulp engaging surface 20 which is designed to preliminarily wrap the pulpous ribbon around the core in the same manner as though the core and pulpous ribbon were rolled on a table top with the palm of the hand. The formation of the pulpous ribbon after it is first acted upon by the forward end of the forming member 19, is shown in 20 Fig. 8.

Carried by the head 10 intermediate its ends is a second forming member 22 having a curved pulp engaging surface 23 which is arranged so as to cause the core with its attached coating of pulp to be deflected from its straight line path through the head 10, as clearly shown in Fig. 1. After passing the forming member 22 the pulp coating is engaged by a curved surface 25 of a third forming member 26 carried at the far end of the head 10 and positioned so as to deflect the coated core back to its straight line path through the head 10.

Due to the arrangement of the forming members 19, 22 and 26, as above described, it is obvious that the pulp is compressed between the core and the pulp engaging surfaces of the forming members as the core is drawn under tension through the rotating head 10. This compressing action and the simultaneous rolling engagement of the core and the forming members with the inner and outer walls, respectively, of the pulp produces a smooth and homogeneous pulp coating of substantially larger inside diameter than the diameter of the core, thus providing a substantial air space between the core and the coating as indicated at 28 in Fig. 9.

When assembling a plurality of electrical conductors embodying the features of the present invention into a cable as shown in Fig. 10, a plurality of air spaces are provided between the individual conductors whereby the desired capacitance of the individual circuits is secured.

Although the invention as herein illustrated and described is of particular utility in the construction of electrical cables for transmitting intelligence electrically, it is obvious that the novel features of the invention are capable of various other applications within the scope of the appended claims.

What is claimed is:

65 1. An electrical conductor comprising a

core in strand form, and a continuous integral homogeneous tubular covering of fibrous material matted and felted on the core with a smooth inner and outer surface and having its inner diameter substantially greater than the largest diameter of the core and separated from the core uniformly throughout its length solely by air. 70

2. An electrical conductor comprising a core in strand form and a continuous integral homogeneous tubular covering of fibrous material free of adhesive material felted and matted on the core to equal thickness and density throughout the length of the core with a smooth inner surface and having its inner diameter substantially greater than the largest diameter of the core and separated from the core uniformly throughout its length solely by air and having a smooth outer surface conforming with the shape of the core. 75 80 85

In witness whereof, I hereunto subscribe my name this 5th day of March, A. D. 1927.

JOHN NILSEN SELVIG.