

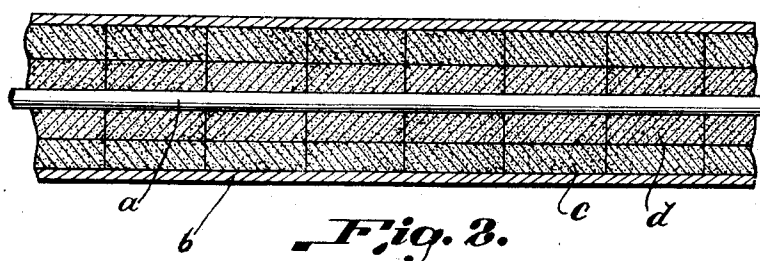
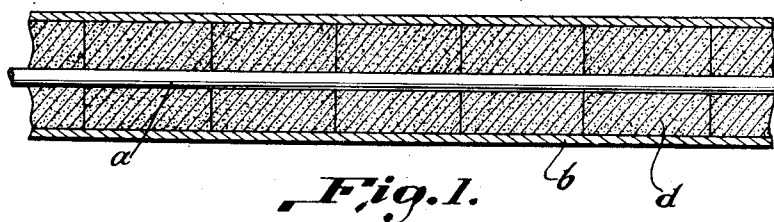
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MANUFACTURE OF TELEPHONE CABLES

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MANUFACTURE OF TELEPHONE CABLES

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6 Claims. (Cl. 178—45)

The object of the present invention is a process for manufacturing conductors which are intended for underground, submarine and aerial telephone cables having a high inductive filling, which comprise a core, a sheath and an intermediate layer of ferro-magnetic powder. According to a known process for manufacturing such conductors, the powdered magnetic material fills the entire space between the core and the sheath, the tube thus prepared is closed at both ends and the whole arrangement is reduced by mechanical working to the smallest desired cross-section.

The process according to the invention simplifies the manufacture by enabling the operation to be effected in another manner. According to the invention, the particles of ferro-magnetic powder are not, as previously, brought into the shape of a powdered mass of high compactness by the mechanical working of the whole cable, but the shape of compressed blocks is, on the contrary, given them before they are introduced into the sheath and they are then arranged one after the other on the core of the cable, inside the sheath. During the drawing of the arrangement formed by the core, the intermediate layer and the sheath, the pressure exerted on the sheath during the drawing operation, for the purpose of reducing the cross-section, is immediately transmitted from the sheath to said block by the intermediate layer. The use of the compressed blocks according to the invention furthermore has the advantage that the core which is guided by the compressed blocks can be accurately centered in the sheath, which it is hardly possible to do with a filling of uncompressed magnetic material. The flexibility of the cables manufactured by the process according to the invention is in no way limited owing to the use of the compressed blocks made of ferro-magnetic powder, since the blocks remain sufficiently flexible without losing any of their compactness during the mechanical working. As in the known process in which the powder is only compressed by the drawing, the losses due to eddy currents in the intermediate layer formed by previously compressed blocks, are extremely low owing to the bad contact between the particles of powder which are insulated from each other according to the art of making massic cores for Pupin coils.

For the manufacture of conductors having a continuous inductive filling, it is known to form the filling layer by a magnetic material in the shape of rings or of cylinders which are previously compressed and arranged one behind the other on the conductor. Said conductors are not subsequently subjected to a drawing operation, so that

the massic rings or cylinders do not undergo a change of shape. It ensues that gaps remain between the elementary rings of cylinders, where as in the process according to the invention the compressed blocks are welded to each other without gaps by the drawing operation.

The powder used by the process according to the invention may comprise iron or an iron-nickel alloy, the elementary particles, as already stated, being insulated from each other according to a well known process.

The invention is illustrated in the drawing which shows exemplary embodiments and in which:

Figure 1 is a longitudinal sectional view of one form of the invention; and

Figure 2 is a similar view of a modified form of the invention.

In the drawing *a* indicates the core while the sheath is shown at *b*. The intermediate layer of ferro-magnetic powder is shown at *d*. Such powder being in the shape of compressed blocks.

In Figure 2 a modification is shown in which the layer of ferro-magnetic particles is surrounded by a layer *c* of insulating material.

In order to decrease the capacity of such a conductor, according to the invention an additional insulating layer *c*, made for example of magnesia, is introduced between the sheath and the ferro-magnetic blocks, and said layer may if necessary have the shape of rings of compressed powder which are subjected with all of the conductors to the drawing operation which is intended to decrease the cross-section. It is of advantage to bring the blocks of ferro-magnetic powder and the rings of insulating powder into the form of high compactness and of dehydration before introducing into the sheath.

A modified form of construction is shown in applicant's co-pending case Serial No. 209,305 filed May 21, 1938.

Having now particularly described and ascertained the nature of my invention and in what manner the same is to be performed, I declare that what I claim is:

1. A process of manufacturing a conductor for telephone cables in which there is a conducting core, a metallic sheath and between said core and sheath an intermediate mass comprising ferro-magnetic particles insulated from one another by an insulating material which comprises compressing said mass containing said ferro-magnetic particles into blocks, then assembling said blocks, core and sheath to form a work-piece and then

subjecting said work-piece to a metallurgical drawing treatment.

2. A process of manufacturing a conductor for telephone cables in which there is a conducting core, a metallic sheath and between said core and sheath an intermediate mass comprising ferro-magnetic particles insulated from one another by an insulating material which comprises compressing said mass containing said ferro-magnetic particles into blocks to its limit compactness, then assembling said blocks, core and sheath to form a work-piece and then subjecting said work-piece to a metallurgical drawing treatment.

3. A telephone cable comprising a conducting core, a metallic sheath and between said core and sheath an intermediate mass comprising ferro-magnetic particles insulated from one another by an insulating material in the form of compressed blocks.

4. A telephone cable comprising a conducting core, a metallic sheath, an annular layer of ferro-magnetic particles insulated from one another surrounding said core and an annular layer of

powdered insulating material interposed between said sheath and layer of ferro-magnetic particles.

5. A telephone cable comprising a conducting core, a metallic sheath, an annular layer of ferro-magnetic particles insulated from one another surrounding said core and an annular layer of powdered insulating material interposed between said sheath and layer of ferro-magnetic particles, said layers having a high compactness.

6. A process of manufacturing a conductor for telephone cables in which there is a conducting core and a metallic sheath surrounding said core comprising placing an annular layer of compressed blocks of ferro-magnetic particles insulated from one another about said core interposing an annular layer of compressed powdered insulating material between said first mentioned layer and said sheath to form a work-piece and then subjecting said work-piece to a metallurgical drawing treatment until the desired elongation and diameter are obtained.

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