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W. S. SMITH ET AL

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MANUFACTURE OF TELEGRAPH AND TELEPHONE CABLES

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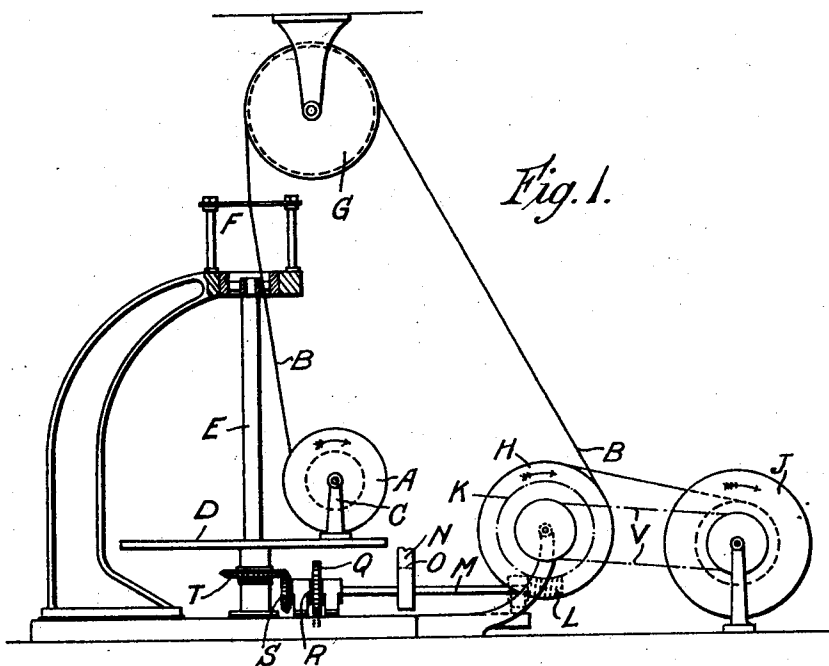


Fig. 1.

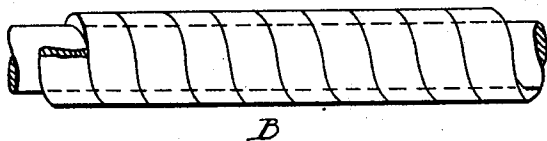


Fig. 3

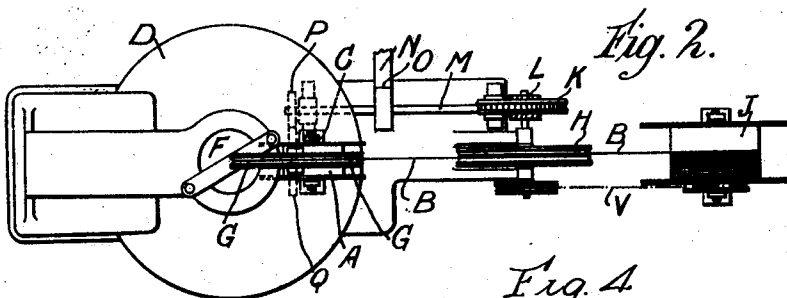


Fig. 2.

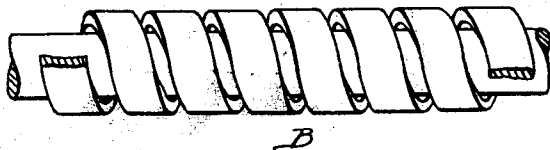


Fig. 4

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MANUFACTURE OF TELEGRAPH AND TELEPHONE CABLES

Application filed January 2, 1925, Serial No. 294, and in Great Britain May 6, 1924.

This invention relates to the manufacture of telegraph and telephone cables of the type in which a conductor is surrounded by a spiral of wire or strip of magnetic material.

In order to obtain the highest possible permeability in the magnetic material it has been found advantageous to anneal it after it has been wound on the conductor.

In order that this annealing may be fully effective, it is necessary that the winding be very loose, as otherwise the shrinkage of the material due to annealing sets up strains which are detrimental to its permeability.

According to this invention we subject the conductor and the loading material, which has been laid around it in the usual way, that is, with a reasonable tension, to a special treatment by which the loading wire or strip is loosened before the annealing process, so that the shrinkage of the wire or strip due to annealing may not induce in it harmful strains.

We loosen the wire or strip by partially unwinding it. This may be done by passing the loaded conductor from one reel to another, one of the reels being caused to rotate about an axis normal to the axis of its spindle, the direction of this rotation being such that the wire or strip is unwound by the desired number of turns in a given length.

Preferably this may be effected by mounting the reel of one conductor in a cradle rigidly attached to the rotating part of an ordinary stranding machine and leading the loaded conductor through a lay plate of the machine and around the draw off wheel to a take up reel frictionally driven in the well known way.

The accompanying drawing illustrates apparatus suitable for use in carrying out the invention. Figure 1 is an elevation and Figure 2 a plan of an apparatus in which the loading wire or strip is partially unwound and loosened.

Figure 3 is a side elevation of a portion of a loaded cable after loading and before the loading strip has been unwound.

Figure 4 is a similar view showing a section of the cable after the loading strip has been unwound.

The reel A on which the loaded conductor B has been wound is mounted in a cradle C fixed to a table D, the axis of whose spindle E is normal to the axis of the reel A and the direction of rotation of the table D is such that the loading wire or strip is unwound by a desired number of turns in a given length. The loaded conductor B passes from the reel A through a lay plate F round a pulley G and round a draw off wheel H to a take up reel J. The draw off wheel H is driven by a worm wheel K meshing with a worm L on a shaft M driven by a belt N which passes round a pulley O on the shaft. Also on the shaft M is a pinion P meshing with another pinion Q on a counter shaft R and on the counter shaft R is a bevel pinion S meshing with another bevel pinion T on the spindle E. The reel J is driven by a belt V from the axis of the wheel H. When the shaft M is driven the spindle E is turned and the table D carrying the reel A is rotated round the spindle E while at the same time the draw off wheel H is turned by means of the worm wheel K and worm L.

Figures 3 and 4 show the loaded cable before the loading strip has been untwisted and after it has been passed through the machine for the purpose of unwinding the loading strip. The showing in Figure 4 is, of course, exaggerated as it is not the practice to unwind to such an extent.

The term "strip" as used generically in the accompanying claims. It particularly includes wire as hereinbefore referred to and avoids the use of an alternative expression in the claims.

What we claim is:—

1. A process for the manufacture of telegraph and telephone conductors which comprises first laying the loading material in strip form around the conductor then partially unwinding said loading material and finally annealing the loaded conductor.

2. A process for the manufacture of telegraph and telephone conductors which comprises first laying the loading material in strip form around the conductor, then partially unwinding the loading material by

twisting the conductor and finally annealing the loaded conductor.

3. The method of rendering strain sensitive loading material sufficiently loose after it has been applied helically to a conductor, so that it may be heat treated without straining it to an undesirable extent, which comprises twisting the loaded conductor in such a direction as to effect the desired loosening.

4. The manufacture of telegraph and telephone conductors comprising first laying the loading material around the conductor, then partially unwinding the loading material, and subsequently heat treating the loaded conductor.

5. The method of applying strain sensitive loading material, of the type requiring heat treatment after application to the conductor, to a conductor with a desired and uniform looseness which comprises winding a strip of the material about the conductor and then loosening the material by twisting the loaded conductor.

In testimony that we claim the foregoing as our invention we have signed our names this 11th day of December, 1924.

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