

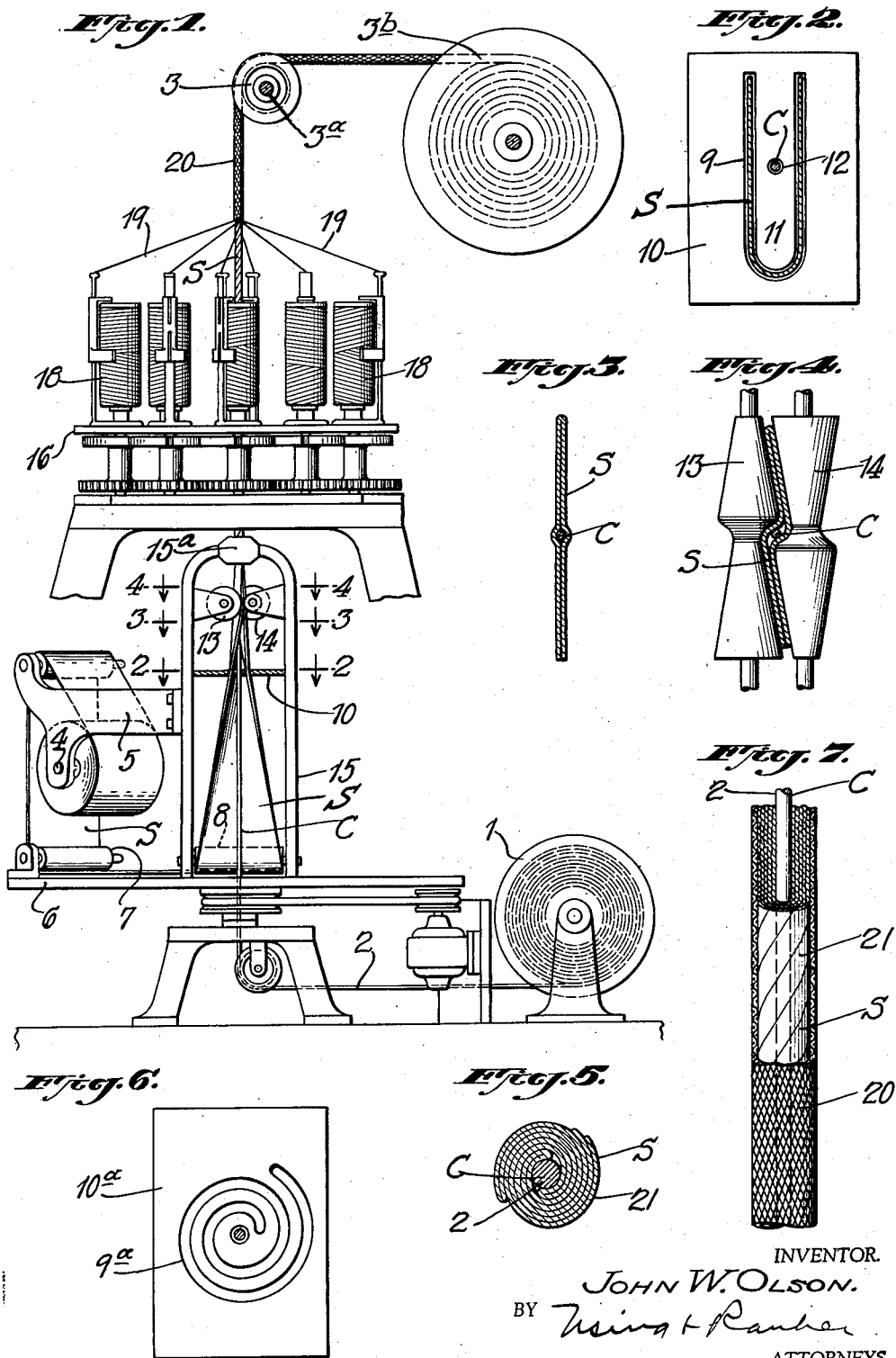
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METHOD OF COVERING WIRE

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METHOD OF COVERING WIRE

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7 Claims. (Cl. 96—26)

In an application Serial No. 49,689, filed November 14, 1935, now Patent 2,048,886, granted July 28, 1936, I have disclosed a method of covering electric conductors which comprises advancing the conductor in the direction of its longitudinal axis while simultaneously feeding a plurality of strips in the general direction of the advancing conductor while bending each of the strips individually around the conductor and positioning them in overlapping relationship to one another and during such bending of the strips rotating them about the axis of the advancing conductor so as to crumple or twist the overlapped strips around the conductor. The present application is a continuation in part of my former application, the instant application being directed more specifically to a method wherein a single strip is advanced in the direction of the conductor and simultaneously bent around, twisted and crumpled as the conductor advances. The present improvement will be fully apparent from the following detailed disclosure when read in connection with the accompanying drawing, in which—

Fig. 1 is a diagrammatic view partly in elevation and partly in section of the essential features and apparatus for carrying out the improved method; Fig. 2 is a fragmentary horizontal section on line 2—2 of Fig. 1; Fig. 3 is a view showing the strip bent about the conductor prior to being twisted therearound; Fig. 4 is a section on line 4—4 of Fig. 1 showing pressure rolls; Fig. 5 illustrates the final stage of the operation of twisting a doubled strip about the conductor; Fig. 6 shows a modified type of former for coiling a longitudinally extending strip around the conductor prior to twisting it thereon; Fig. 7 is a fragmentary view of the product embodying the invention and resulting from my improved method.

Referring in detail to the drawing, 1 represents a reel carrying a supply of wire 2, which is to be covered. Movement of the reel may be secured by a capstan 3 mounted in overhead position on a suitable axle 3^a. The covered conductor is taken up on a suitable storage reel 3^b. According to the present method, a single strip of paper S is adapted to be first doubled around the conductor C, as shown in Fig. 3. The paper strip material is supplied in the form of a roll carried on a reel 4 mounted in appropriate brackets, one of which is shown at 5, secured to a rotating base 6.

The strip S is fed over suitable guide rollers 7 and 8 and through a U-shaped aperture 9 formed in a guide plate 10. The central portion 11 of

this guide plate is perforated, as shown at 12 for the passage of the conductor C. The strip S is of considerable width, its transverse dimension being many times the circumference of the conductor. As the strip is advanced longitudinally through the aperture 9 in the guide plate 10, it is doubled or in other words bent transversely into the substantially U-shape shown in Fig. 2. From this plate, the strip is converged toward pressure rollers 13 and 14, which are mounted in suitable bearings secured to uprights 15 carried by the rotating base 6. As shown in Figs. 3 and 4, it is apparent that these rollers crease the doubled strip longitudinally.

In some cases, I find it desirable to use paper strip material, which has been presaturated. Various saturants are satisfactory. Among these are bituminous material, such as asphalt, pitch or tar, either used separately or in combination with each other, synthetic resins of phenol-formaldehyde-glycerol-phthalic-anhydride types may also be used. Or, animal or vegetable oils of either a drying or a non-drying type may be compounded with any of the foregoing saturants.

When such saturated paper strips are employed, the pressure of the rollers 13 and 14 causes an initial adherence of the opposed portions thereof. And as such adherent strip is twisted around the conductor by virtue of the rotation of the base 6, while the wire is advancing, thus the twisted and doubled adherent mass is crumpled about the advancing conductor. And as the partially covered conductor advances, the doubled or two-ply strip portion will be twisted therearound in the manner indicated in Fig. 5. As the material continues to advance, it will be passed through a compacting or smoothing die 15^a carried by suitable brackets supported from the rotating base 6. Above the die, there is a braiding deck, indicated generally by numeral 16. This includes thread carrying spools 18 actuated in a known manner. This braiding deck is effective to interbraid the threads 19—19 so as to form an outer braid 20 about the crumpled and twisted single strip, as indicated.

In some cases, instead of doubling the strip by the use of a U-shaped aperture in the plate, as shown in Fig. 2, I may provide a guide plate 10^a having a spiral shaped slot 9^a therein, as illustrated in the modification of Fig. 6. When this type of guide plate is used, it will be apparent that as the strip advances longitudinally the plate will be effective to coil the same spiral fashion with the convolutions of the spiral extending generally in the longitudinal direction of the ad-

vancing wire. Thus, as the spiralled strip reaches the pressure rolls, the opposite portions thereof will be pressed together and due to the rotation of the base 6 a long lay twist will be formed in the strip as the assemblage advances.

From the foregoing, it is apparent that, as the conductor is advanced longitudinally, the single strip of fibrous material, such as paper or the like, is fed in a generally longitudinal direction and that opposite portions of this single strip are bent, twisted or crumpled around one another, thus compacting the portions thereof about the conductor.

The single strip referred to may be either plain paper or a presaturated paper impregnated with materials hereinabove referred to. The use of such presaturated paper has the advantage that a shorter time is required for saturation of the finished conductor when the same is passed through the saturating tank.

The product resulting from my invention comprises an improved article of manufacture consisting of the central conductor 2 enclosed in a layer of insulation comprising the compacted or twisted fibrous mass 21 enclosed in the outer braided jacket 22, the latter being formed from the interconnected textile elements or strands 19. The final product may or may not be further saturated as in cases, where the presaturated strip is used the characteristics of the covering are sufficient for many purposes. However, the product may be further saturated, in which case the fact that the fibrous mass has been presaturated will make it possible to carry on further saturation with an increased speed, with resulting economies in manufacture.

While I have described quite precisely the specific method and product resulting from the method, it is to be understood that the drawings and description are to be interpreted in an illustrative rather than a limiting sense since various modifications may be made within the spirit and scope of the invention as defined in the appended claims.

What I claim is:

1. In the manufacture of electric conductors the method which comprises advancing a conductor in the direction of its longitudinal axis, simultaneously feeding a single strip in the direction of the advancing conductor while doubling such strip longitudinally around the conductor thus positioning longitudinally extending plies thereof in opposed relationship to one another and after such doubling of the single strip about the axis of the advancing conductor imparting a twist thereto.

2. In the manufacture of electric conductors the method which comprises advancing a conduc-

tor in the direction of its longitudinal axis, simultaneously feeding a single strip in the direction of the advancing conductor while bending such strip transversely substantially along the median portion thereof thus positioning portions thereof in opposed relationship to one another and on opposite sides of the conductor and after such transverse bending flexing the resulting doubled strip about the axis of the advancing conductor so as to twist it therearound and forming an outer covering of interconnected thread-like strands about said twisted strip.

3. In the manufacture of electric conductors, the method which comprises advancing the conductor in the direction of its longitudinal axis, simultaneously feeding a presaturated fibrous strip in the general direction of the advancing conductor while doubling portions of the strip around the conductor and positioning them in opposed relationship to one another, exerting pressure on the opposed portions of the doubled strip so as to cause adhesion and twisting the doubled strip about the axis of the conductor so as to compact it thereabout.

4. In the manufacture of electric conductors, the method which comprises advancing the conductor in the direction of its longitudinal axis, simultaneously feeding a fibrous strip in the general direction of the advancing conductor while creasing it substantially along its median line thus positioning longitudinally disposed portions of the strip on opposite sides of the conductor in opposed relationship to one another, exerting pressure on the opposed portions of the thus formed two-ply strip so as to cause adhesion then flexing the said two-ply strip about the axis of the conductor so as to compact it thereabout and forming an outer covering of interconnected thread-like strands about the adherent compacted portions of said strip.

5. An article of manufacture substantially as described comprising a conducting wire enclosed in a single strip doubled longitudinally thereabout and twisted with a long helical lay therearound.

6. An article of manufacture comprising a conducting wire enclosed in a layer of insulation comprising a single presaturated strip doubled thereabout and having adherent opposed portions helically twisted therearound.

7. An article of manufacture comprising a conducting wire enclosed in a layer of insulation comprising a single presaturated strip doubled thereabout and having adherent opposed portions helically twisted therearound and a jacket of interconnected textile strands embracing the assemblage.

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