Dec. 15, 1925. 1,565,862

H. R. MASSINGHAM

STRAND TWISTING MECHANISM

Filed Feb. 16. 1924

Fig. 1.

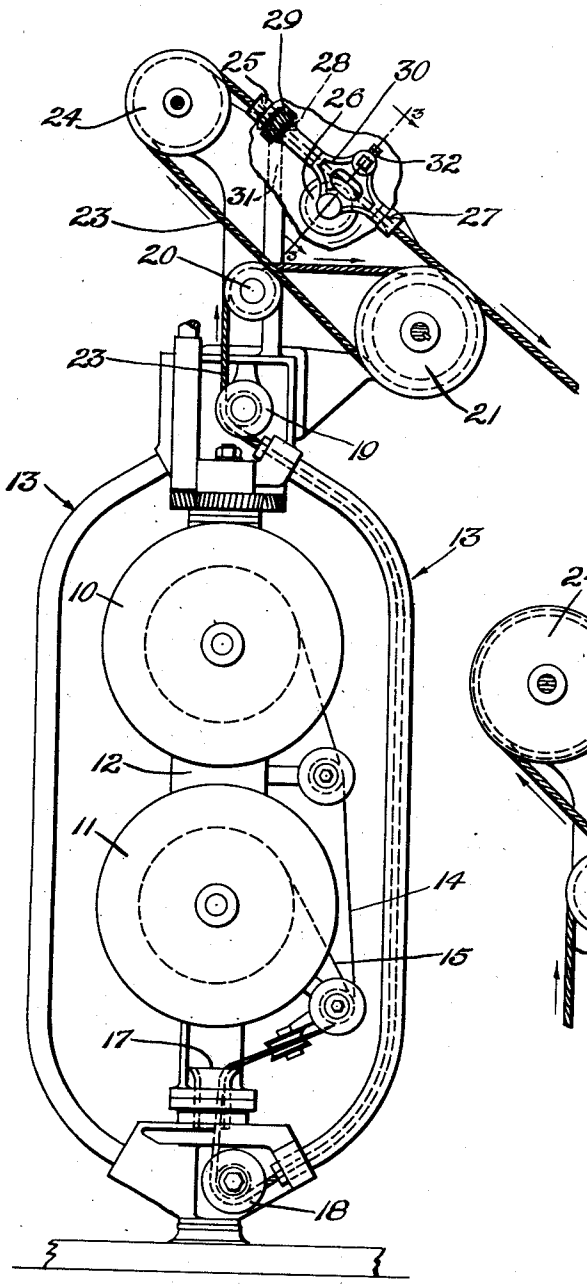


Fig. 3.

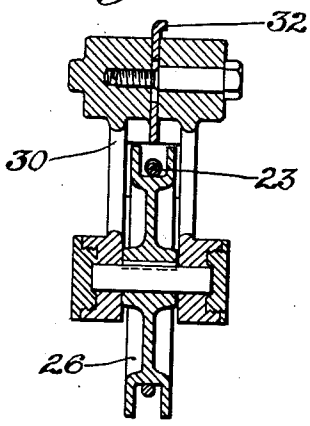
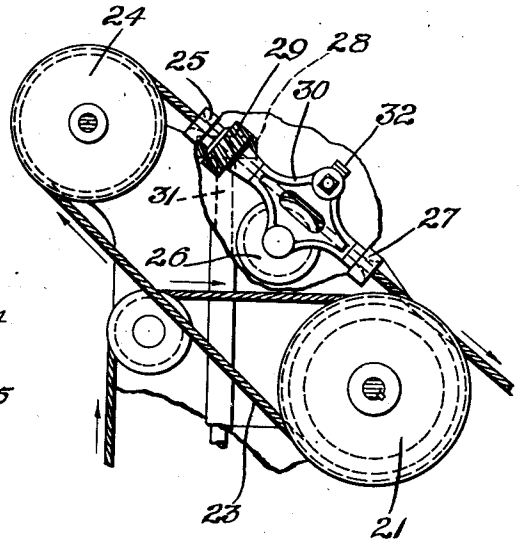


Fig. 2.



Inventor
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by H. A. Gattiker Atty.

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UNITED STATES PATENT OFFICE.

HENRY ROGERS MASSINGHAM, OF LA GRANGE, ILLINOIS, ASSIGNOR TO WESTERN ELECTRIC COMPANY, INCORPORATED, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

STRAND-TWISTING MECHANISM.

Application filed February 16, 1924. Serial No. 693,211.

To all whom it may concern:

Be it known that I, HENRY ROGERS MASSINGHAM, a citizen of the United States, residing at La Grange, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Strand-Twisting Mechanism, of which the following is a full, clear, concise, and exact description.

This invention relates to strand twisting mechanism, and more particularly to strand twisting machines of the type shown in H. H. C. Grondahl Patent No. 1,436,312 of November 21, 1922, in which a flier and a strand supply reel support are rotatable relative to each other to put two twists into strands for each revolution of the movable part.

In certain forms of insulated conductors in which the wires are insulated with compounds and fibrous materials, the compound forms a binder between the wire and braid, which gives the conductor a certain stiffness, causing a complete twist given to it to spring back a certain amount when the conductor is left free.

In the before mentioned patent a strand twisting machine is disclosed which will eliminate this back twist from twisted conductors of this class, thereby preventing the tendency to untwist which causes a collapse of the conductors in the coil in which they are formed after leaving the twisting machine.

An object of this invention is to provide a twisting mechanism of the before mentioned type wherein damage to the insulation upon the conductors during the removing of the back twist therefrom is reduced to a minimum.

Another object of the invention is to provide a mechanism of the before mentioned type in which the twisted conductors leave the back twist mechanism with a more uniform twist.

A further object of the invention is to provide a back twist removing mechanism of the before mentioned type, in which the wear thereon due to the friction of the twisted conductors passing therethrough is reduced to a minimum.

In accordance with the general features of this invention, a mechanism is provided wherein the twist setting mechanism and associated parts are arranged in such a manner that the back twist pulley is mounted with its periphery in line with the peripheries of the idler pulley and capstan, thereby maintaining the twisted conductors in a straight line during their passage through the guides on their way to and from the back twist pulley. Consequently damage to the insulation upon the strand and substantially all wear upon the guides is eliminated.

In the drawings illustrating this invention,

Fig. 1 is a fragmentary side view of a twisting machine embodying the features of the invention;

Fig. 2 is an enlarged fragmentary side view of the back twist removing mechanism, and

Fig. 3 is an enlarged sectional view taken upon line 3—3 of Fig. 1 looking in the direction indicated by the arrows.

As shown in the drawings, strand supply reels 10 and 11 are mounted on a stationary pedestal or support 12 around which revolves a tubular yoke 13. Strands 14 and 15, drawn from the supply reels 10 and 11, are led downwardly through a guide opening 17 in the support 12, over a pulley 18, through one side of the tubular yoke 13, over pulleys 19 and 20, and over a capstan 21. A double twist is given to the strands 10 and 11, one as they leave the guide 17 and pass over the pulley 18; a second as they leave the pulley 19 and pass over the pulley 20.

A strand 23 thus twisted, is passed a number of turns over the capstan 21, over an idler pulley 24, through a guide 25, one turn over a back twist pulley 26, through a second guide 27, back over the capstan 21 a number of turns, and to a suitable take-up reel, which is not shown. The back twist pulley 26 in addition to being rotated around its normal axis of rotation is also bodily rotated at right angles to this axis of rotation. This latter rotation is preferably accomplished through the agency of a spiral gear 28 meshing with a spiral gear 29 secured to a yoke or frame 30, in which the back twist pulley 26 is rotatably mounted with its periphery in line with the peripheries of the idler pulley 24 and capstan 21. The spiral gear 28 is secured to a shaft 31 suitably driven from the main drive of the machine. The back twist pulley 26 is so geared to the capstan 21 that it makes one complete revolution for each length of twist

passing over it. That is, assuming that the capstan 21 is two feet in circumference and the length of the twist is two inches, the back twist pulley 26 would make twelve revolutions for each revolution of the capstan 21. Due to the mounting of back twist pulley 26 with its axis offset with respect to the axis at right angles thereto and about which it revolves, it is necessary to provide balancing means to prevent vibration. Suitable weights indicated at 32 are therefore provided which are suitably mounted upon the rotatable frame 30 directly opposite the back-twist pulley 26.

The operation of the back twist mechanism is as follows: The twisted strand 23 passing from the capstan 21 is given an additional twist in the same direction as the twist given to it by the yoke 13. This last twist takes place between the idler pulley 24 and back twist pulley 26. As it leaves the back twist pulley 26, however, another twist is put into it between this back twist pulley 26 and the capstan 21, but in the opposite direction to the twist put into it between the idler pulley 24 and back twist pulley 26. The effect of this last twist is to counteract the effects of the twist put into the strands between the idler pulley 24 and back twist pulley 26 and the resultant effect that there will be a certain spring in the conductor which tends to tighten the twist which will counteract the spring in the conductor from the twist in the machine, tending to loosen it, and in this manner it will leave the conductors free from any back twist or spring when taken up onto the coiling reels.

During the removal of the back twist from the twisted conductors, the conductors pass in a straight line from the idler pulley 24 through the guide 25 and frame 30 to the periphery of the back twist pulley 26 and then in a straight line through the other side of the frame 30 and through the guide 27 to the capstan 21 without frictionally engaging the guides 25 and 27 or the frame 30. Therefore, damage to the insulation upon the strands and substantially all wear upon the guides is eliminated due to the arrangement of the back twist pulley 26 wherein its periphery is in line with the peripheries of the idler pulley 24 and capstan 21.

What is claimed is:

In a twisting machine, means for twisting strands together, a device for drawing twisted strands from the twisting means, means for guiding the twisted strands back to the drawing device, and means interposed between said guiding means and said drawing means for giving the strands two twists in opposite directions as they pass from said guiding means to said drawing means, said means comprising a single pulley having its periphery in line with the normal path of the strands between the drawing means and guiding means and adapted to receive one complete turn of the strand thereabout, said pulley rotatable about its axis in the direction of movement of the twisted strands and rotatable bodily at right angles to its direction of rotation around its axis.

In witness whereof, I have hereunto subscribed my name this 9th day of February, A. D. 1924.

HENRY R. MASSINGHAM.