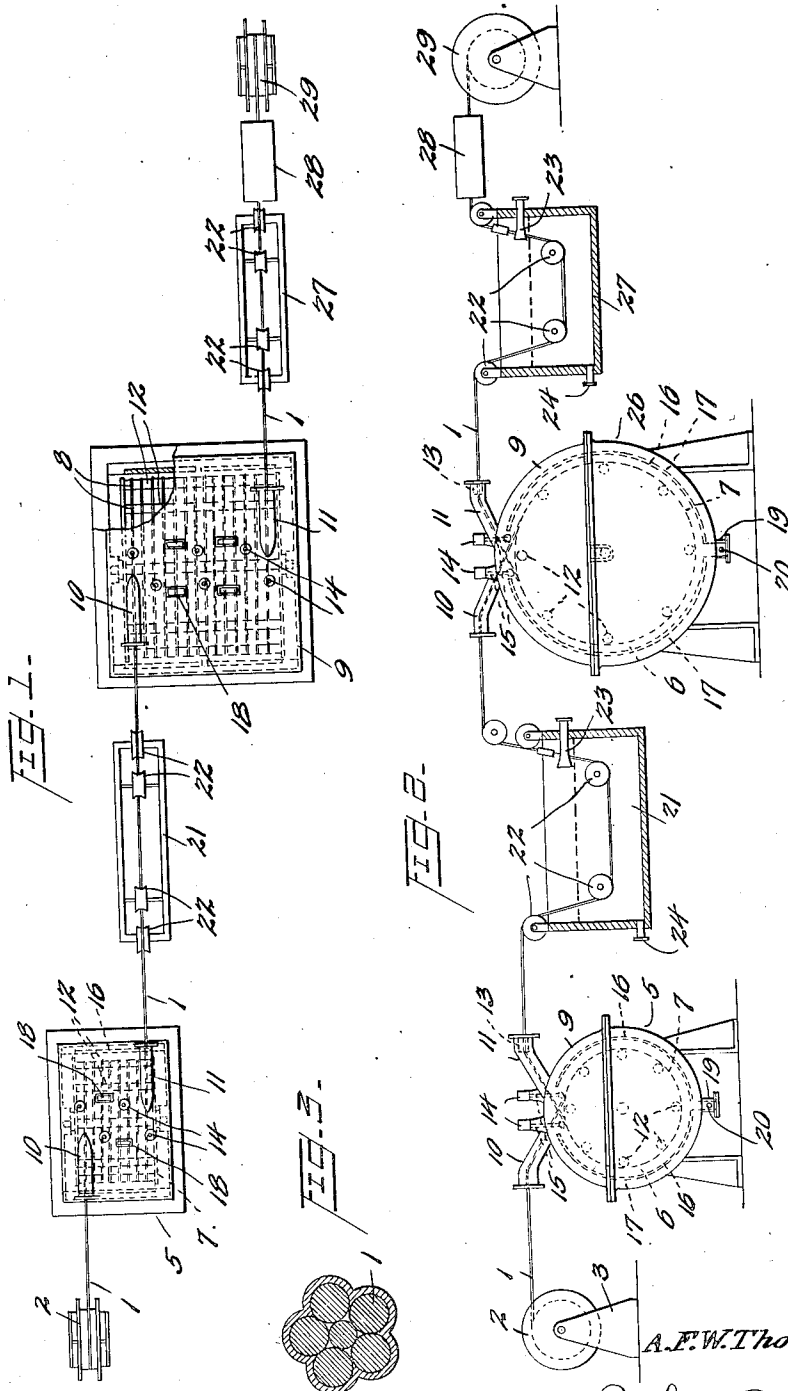


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COPPER COATED WIRE ROPE

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COPPER-COATED WIRE ROPE

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My invention relates to the manufacture of reinforced high tension copper wire. The reinforcing consists of a steel wire rope of the required number of plies, depending on the required thickness for the wire, which in turn depends on the distance between supports and the power to be transmitted. The copper coating is applied to the wire by electrodeposition.

The first step is to thoroughly clean the wire rope. This may be done by a boiling bath of caustic potash solution and pickling with acid. The most convenient way however is by means of the electrolytic copper cyanide process in which the steel wire rope gets a flashing of copper. After a thorough rinsing the wire rope passes through an acid copper sulphate bath. In this bath, the wire rope is revolved and very slowly moved forward by means of rolls while at the same time it makes connection with the cathode terminals. As anodes, copper plates are used. The wire rope remains in the copper sulphate bath until the required thickness of copper is deposited. The plating solution may be heated to get a fast and proper process. To get a good circulation in the bath and to take the dirt off, a pump may be provided, which takes the solution from the surface, passes it through a filter and pumps it in at the bottom. By the above process electrolytic copper coated wire can be obtained.

Referring to the drawing for a more complete disclosure of the invention—

Fig. 1 is a plan view of and

Fig. 2 is an elevation of the coating apparatus,

Fig. 3 is an enlarged transverse section of a copper coated wire.

The wire rope 1 is uncoiled from a drum 2, rotatably mounted on support 3. It is then fed into a copper cyanide bath 5 to clean it and impart a flashing of copper thereto. The copper flashing indicates whether the wire rope is perfectly clean; for where there is any impurity on the wire there will be no copper flashing.

Within the tank 6 is revolvably mounted a drum 7 around which the wire is reeled in a

spiral. The drum itself is isolated by means of insulating tubes 12 made of glass, porcelain, or similar insulating material put over iron rods and on these tubes, grooves 8 are provided to form the spiral groove around the drum and in which the wire rope lays.

The tank 6 is provided with a cover 9 and inlet and outlet tubes 10 and 11 respectively are provided through which the wire enters and leaves the tank. In the tube 11 a wiper 13 is provided. For making the necessary electrical connections, cathode terminals 14 are pressed against the wire by springs 15. The copper anodes 16 are supported on insulating plates 17 similar in shape to the tank. The anode terminals are indicated at 18. A pit 19 collects any sediment and through it, the bath can be drained or air injected as required. A heating pipe 20 may also be provided to give the bath the proper temperature.

After leaving the cyanide bath the wire passes into a rinsing vat 21, guided by rollers 22, a sprayer 23 being provided for a second rinsing and also providing a water feed to the bath. A water outlet is provided at 24, the water feed and outlet being regulated to provide a constant stream through the vat.

From vat 21 the cleaned wire is fed into the copper sulphate bath 26. This vat is in all respects similar in construction to the cyanide bath, similar reference numerals indicating similar parts. Inasmuch as it takes a longer time to deposit the copper on the wire rope than it does to clean the wire, more spirals of larger diameter are provided and the other parts are correspondingly enlarged.

After leaving the copper sulphate bath the wire rope passes into a second rinsing vat 27 similar in construction to the vat 21 similar reference numerals indicating similar parts.

For drying the coated wire a heating drum 28 is provided from which the coated wire is delivered onto a driven coiling drum with variable speed 29, by means of which the rope is pulled through the various parts of the apparatus.

The wire rope disclosed in Fig. 3 is of the conventional type, in which the central strand *a* is made of hemp and the outside strands *b* are composed of a plurality of plies or fine steel wires twisted together. It will be noted that the copper shell *c* is on the entire outer surface of the rope and the outer surface of the copper shell has substantially the same contour as that of the rope.

I claim:

1. A steel wire rope composed of a plurality of strands and having a continuous electrodeposited copper coating.
2. A reinforced high tension conductor comprising a core of steel wire rope having a plurality of strands and an electrodeposited continuous coating of copper thereon of substantial thickness.
3. A steel wire rope composed of a plurality of strands and having a continuous electrodeposited copper shell on the entire outer surface of the rope.
4. A steel wire rope composed of a plurality of strands and having an electrodeposited copper shell on the entire outer surface of the rope and having substantially the same outer contour as the surface of the rope.

Signed at Pittsburgh, Pa., this 18th day of July, 1927.

ALBERT F. W. THORMANN.

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