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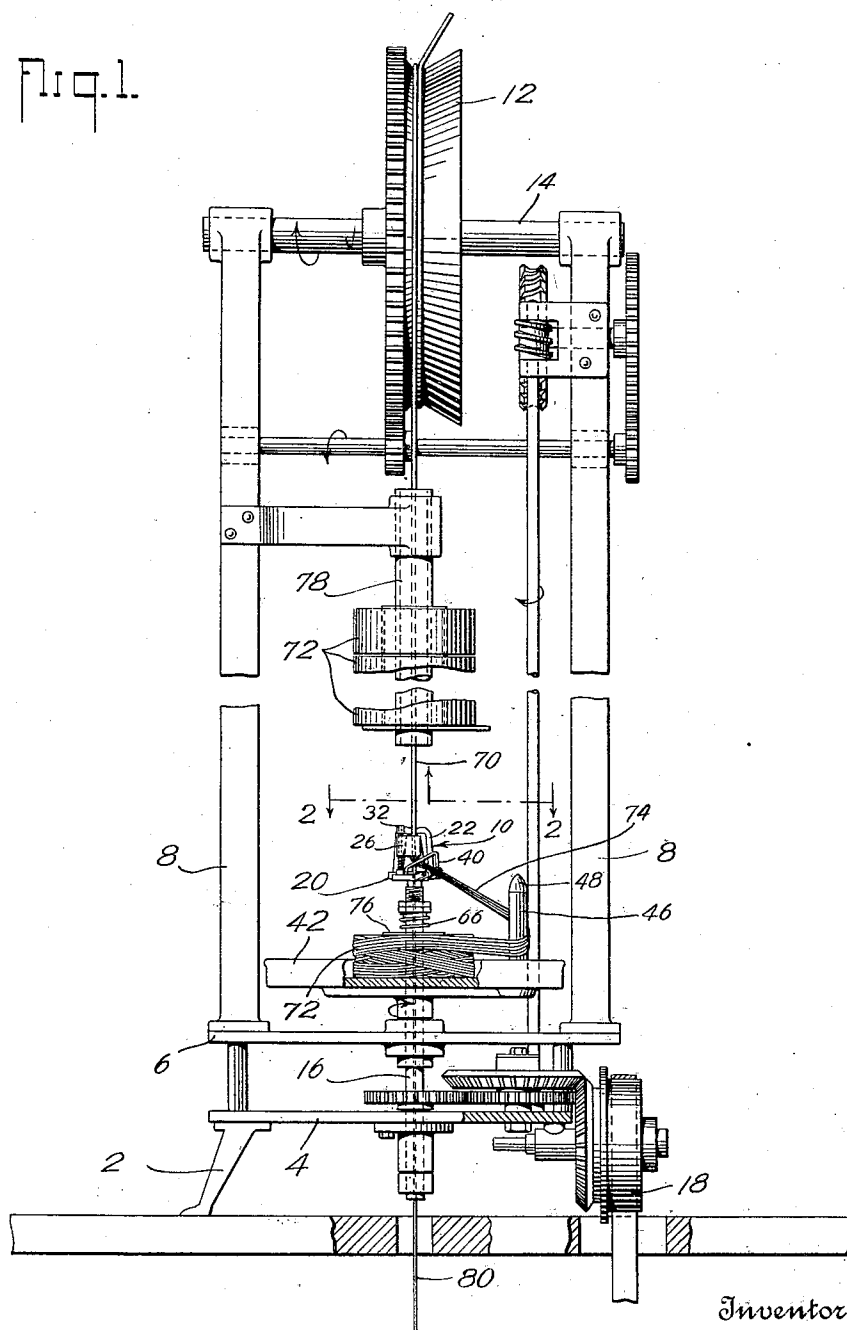
E. E. WAITE

MACHINE FOR COVERING WIRE OR OTHER CORES

Filed April 6, 1922

3 Sheets-Sheet 1

Fig. 1.



Inventor

E. E. WAITE.

By his Attorneys

Barth & Brumby

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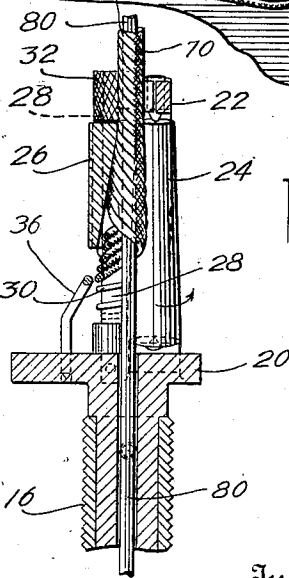
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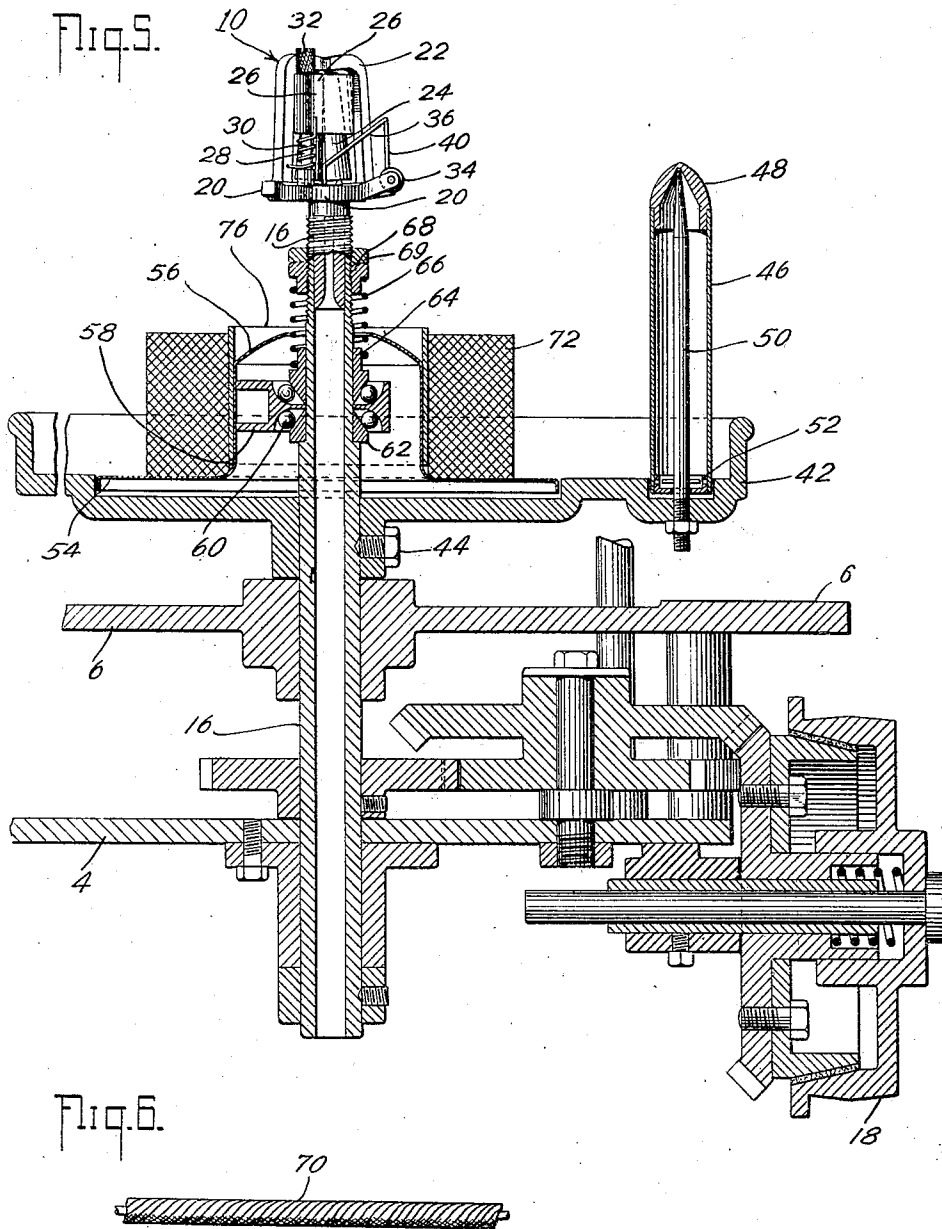
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3 Sheets-Sheet 3



Inventor
E. E. WAITE.
By his Attorneys
Barth & Brown

UNITED STATES PATENT OFFICE.

EDWIN E. WAITE, OF FRAMINGHAM, MASSACHUSETTS.

MACHINE FOR COVERING WIRE OR OTHER CORES.

Application filed April 6, 1922. Serial No. 550,216.

To all whom it may concern:

Be it known that I, EDWIN E. WAITE, a citizen of the United States, residing at Framingham, county of Middlesex, State of Massachusetts, have invented a certain new and useful Improvements in Machines for Covering Wire or Other Cores, of which the following is a full, clear, and exact description.

The present invention relates to a machine for covering wire or other core with roving particularly of asbestos fibre, and has for its object to provide a novel and improved machine of this character.

The several features of the invention will be clearly understood from the following description and accompanying drawings, in which—

Fig. 1 is a front view, partly broken away and partly in section, of a machine that may be employed in producing my improved insulated conductor in accordance with my improved method;

Fig. 2 is a sectional plan view on an enlarged scale taken on the line 2—2 of Fig. 1 showing particularly a portion of the winding mechanism of the machine;

Fig. 3 is a detail front elevation, partly in section, of a portion of the machine, showing particularly a part of the winding head;

Fig. 4 is a sectional view, partly in elevation, taken on the line 4—4 of Fig. 3;

Fig. 5 is a vertical sectional view, partly in elevation, of a portion of the machine showing particularly the winding mechanism and its driving mechanism; and

Fig. 6 is an elevation of the insulated or covered conductor or wire in its preferred form.

The frame of the machine illustrated in the drawings is provided with legs 2, horizontal supporting plates 4 and 6, and a pair of vertical side standards 8 mounted on the plate 6. The operating mechanism of the machine comprises a wiping head 10 and a wire take-up or delivery mechanism comprising a delivery drum 12 which is carried by a shaft 14 having its ends journaled in suitable bearings in the upper ends of the standards 8, the wire passing one or more times around the delivery drum after leaving the wiping head. The wiping head is carried on the upper end of a vertical hollow shaft or spindle 16, the lower portion of which extends through and is journaled in

suitable bearings in the horizontal plates 4 and 6 of the frame, the wire to be covered passing through the hollow spindle 16 and the wiping head. The spindle 16 and the delivery drum 12 are driven in proper timed relation through suitable connections with a driving pulley 18 on the base of the machine.

The wiping head is provided with a base 20 having an inverted U-shaped frame 22 projecting upwardly therefrom. The wiping head is further provided with a pair of upwardly and inwardly inclined and upwardly tapered rolls 24, the ends of which are mounted on conical bearings in the base of the wiping head and in the top part of the frame 22 so as to be freely rotatable.

The wiping head is also provided with a presser plate 26 having its inner surface inclined downwardly and outwardly, the presser plate and rolls 24 being relatively arranged so as to contact at substantially equally spaced points with the wire. The plate 26 is loosely mounted on a pin 28 having its lower end secured in the base 20 of the wiping head. The plate 26 is pressed upon the wrapped wire by means of a spring 30 coiled about the pin 28 and having one end engaging the plate and its other end secured to the pin. The plate 26 is movably mounted on the pin 28, being interposed between the spring 30 and a nut 32 secured to the upper end of the pin, the pressure of the plate being capable of adjustment by the rotation of the nut 32 and pin 28, which are held in adjusted position by a set screw 33. The wiping head is also provided with a horizontal guide roll 34 having its ends mounted on conical bearings on the base of the head. A ribbon deflecting member is arranged between the guide roll 34 and the conical rolls 24, which comprises a wire having a portion 36 inclined to the horizontal and downwardly extending vertical end portions 40 secured in the base. The wire is adjustably secured by set screws 37.

A table 42 is mounted on the vertical spindle 16 below the wiping head and is secured to the spindle by means of a set screw 44. The table 42 carries a vertical guide roll 46 near its periphery which comprises a sleeve having a hollow head 48 closing its upper end having its interior surface in the form of a conical bearing which rests on the upper end of a supporting pin 50 extending

through the sleeve and having its lower end secured to the table 42, the guide roll being held from lateral swinging movement on the supporting pin 50 by means of a bearing collar 52 secured in the lower end of the sleeve and surrounding the supporting pin, which construction enables the guide roll to be of light weight and to turn freely on its supporting pin.

A cop support 54 is mounted on the spindle 16 adjacent the top of the table 42. The cop support is made of light sheet metal such as aluminum so as to have a little inertia and is provided with an upwardly projecting thimble or shank 56 which is secured to a carrier 58 mounted on a ball bearing 60 on the spindle 16. The ball bearing 60 comprises a fixed ball retaining cone 62, and a retaining cone 64 mounted to slide on the spindle 16. The retaining cone 64 is pressed toward the retaining cone 62 by a spring 66 coiled about the spindle 16 and interposed between the cone and a nut 68 screw-threaded on the spindle. The spring 66 is for the purpose of placing a slight drag on the cop support and its carrier, the tension of which may be adjusted by adjusting the nut 68, a lock nut 69 being provided for the nut 68.

The machine is particularly adapted for producing the insulated or covered conductor or wire illustrated in Fig. 6 of the drawings, in which the covering consists of a plurality of rovings 70 of asbestos fibre arranged side by side and wound in closed coils or helices with the rovings matted together to form a substantially uniform cohering mass. The rovings are supplied to the machine in a cop 72 which is made up of a flat ribbon 74 of rovings, which in the present instance consists of five, arranged side by side, the ribbon being wound in crossed helices on a paper tube or core 76. In setting the machine for operation a plurality of cops are supplied to the machine before the wire is threaded through the wiping head, and the cop first to be used is applied to the cop support 54 by slipping the cop tube or core over the shank 56 of the support, the extra or reserve cops being supported on a cop supporting tube 78 through which the wire passes when the machine is in operation as in ordinary winding machines. After a cop is placed on the cop support 54, the wire is threaded through the wiping head, and cop supporting tube 78, and wound one or more times about the delivery drum 12. The end of the flat ribbon 74 of roving is then passed around the vertical guide roll 46, then over the horizontal guide roll 34, then beneath the deflecting member 36, and then to the wire where it is coiled one or more times about the wire at a point adjacent to the tapering rolls 24, the presser plate 26 being

swung back from the wire to enable the operator to easily apply the ribbon to the wire. The ribbon is thus applied to the wire in a substantially flat condition, the deflecting member 36 determining the angle at which the ribbon is finally presented to the wire.

It will be apparent when the machine is thrown into operation that the ribbon will be freely delivered to the wire and wound helically thereon in closed coils, the spindle 16 and parts carried thereby constituting a winding head; that the tapering rolls 24 will operate to apply a gradually and progressively increasing pressure to the forming end portion of the covering to uniformly mat it about the wire; and that the presser plate 26 will act to burnish and smooth the covering uniformly and to cooperate with the rolls 24 to form the covering into a uniformly cohering mass of uniform character and texture throughout. It has been found that asbestos rovings of long or short fibre may be used in the machine illustrated in the drawings without difficulty since the strain of unwinding the cop during the operation of the machine is borne by a plurality of rovings, the ribbon in the present instance consisting of five rovings, so that a strain can be placed on this composite ribbon several times greater than can be placed on a ribbon consisting of but a single roving. The cop should be so placed in the machine that its unwinding movement is in the same direction as the rotation of the rotating table 42.

In the drawings the wire on which the asbestos rovings are to be wound is shown as provided with a coating or covering of rubber, but it will be apparent that the machine may also be used for covering bare wire or other material with asbestos or other roving.

As will be evident to those skilled in the art my invention permits of various modifications without departing from the spirit thereof or the scope of the appended claims.

What I claim is:

1. A machine for covering a core with roving having, in combination, a rotating winding head, means for feeding the core axially through the head, means mounted on the head for feeding a plurality of parallel rovings to the core whereby they are wound on the core, and a pair of freely rotatable tapering rolls carried by the head and arranged at opposite sides of the core for applying a gradually increasing pressure to the rovings as they are being applied to the core.

2. A machine for covering a core with roving having, in combination, a rotating winding head, means for feeding the core axially through the head, means mounted on the head for feeding a plurality of parallel rovings to the core whereby they are wound

on the core, and a pair of freely rotatable tapering rolls and a spring pressed plate acting on the rovings as they are applied to the core to apply a gradually increasing pressure to the roving to mat the rovings into a substantially uniform cohering mass.

3. A machine for covering a core with roving having, in combination, a rotating winding head, means for feeding the core axially through the head, means mounted on the head for feeding a plurality of parallel rovings to the core whereby they are wound on the core, and pressure applying devices carried by the head and contacting with the rovings after they are wound on the core at three points equally spaced about the periphery of the core for applying a gradually increasing pressure to the roving.

4. A machine for covering a core with a flat ribbon composed of a plurality of rovings of asbestos fibre or the like arranged side by side having, in combination, a hollow shaft vertically arranged through which the core is fed, devices arranged at the upper end of the shaft for applying and matting the roving about the core as the core emerges from the upper end of the shaft, a support for a cop of said ribbon of roving mounted on ball-bearings below said devices so as to be freely rotatable with relation to said shaft, and having its axis of rotation in alinement with said shaft, and a guide roll carried by said shaft and rotatable relatively thereto, said roll having its axis parallel to and spaced away from the axis of said shaft, and acting to guide the ribbon of the roving from said cop to said devices.

5. A machine for covering a core with a flat ribbon composed of a plurality of rovings of asbestos fibre or the like arranged side by side having, in combination, a hollow shaft vertically arranged through which the core is fed, devices arranged at the upper end of the shaft for applying and matting the roving about the core as the core emerges from the upper end of the shaft, a support for a cop of said ribbon of roving mounted to turn freely about said shaft, and means for guiding the ribbon from said cop, said devices comprising a roll in the form of a sleeve, and a vertical bearing pin spaced from and carried by said shaft, the upper ends of said pin and sleeve having a needle point bearing between them whereby said sleeve is hung on the upper end of the pin and is freely rotatable.

6. A machine for covering a core with a flat ribbon composed of a plurality of rovings of asbestos fibre or the like arranged side by side having, in combination, a hollow shaft vertically arranged through which the core is fed, devices arranged at the upper end of the shaft for applying and matting the roving about the core as the core emerges from the upper end of the shaft, comprising freely rotatable rolls adapted to contact directly with the ribbon upon said core, a support of little weight and low specific gravity mounted on said hollow shaft and freely rotatable with relation to said shaft, and a freely rotatable roll carried by, spaced from and having its axis parallel with said shaft for guiding the ribbon of roving from said cop to said devices.

EDWIN E. WAITE.