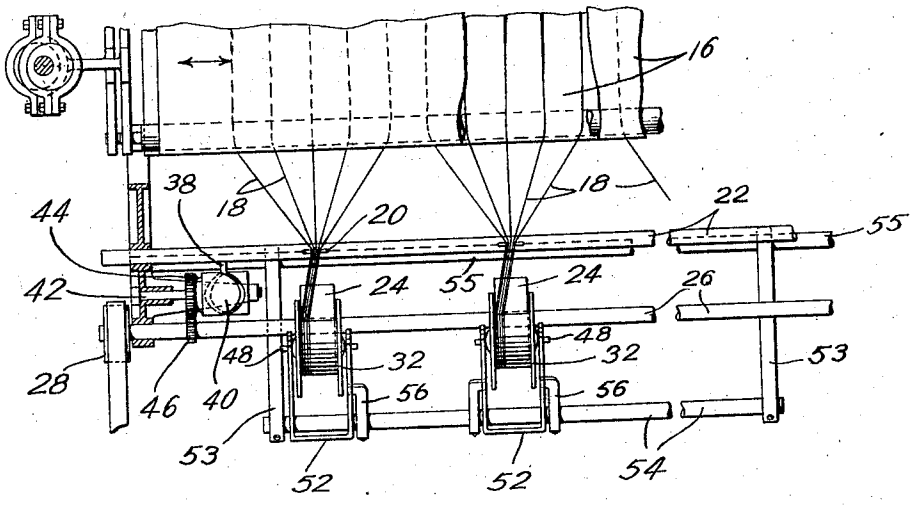
Dec. 30, 1924. 1,520,917

E. E. WAITE

METHOD OF AND MACHINE FOR PRODUCING COPS OF ASBESTOS ROVING

Filed April 6, 1922 2 Sheets-Sheet 1

Fig. 1.



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Fig. 2.

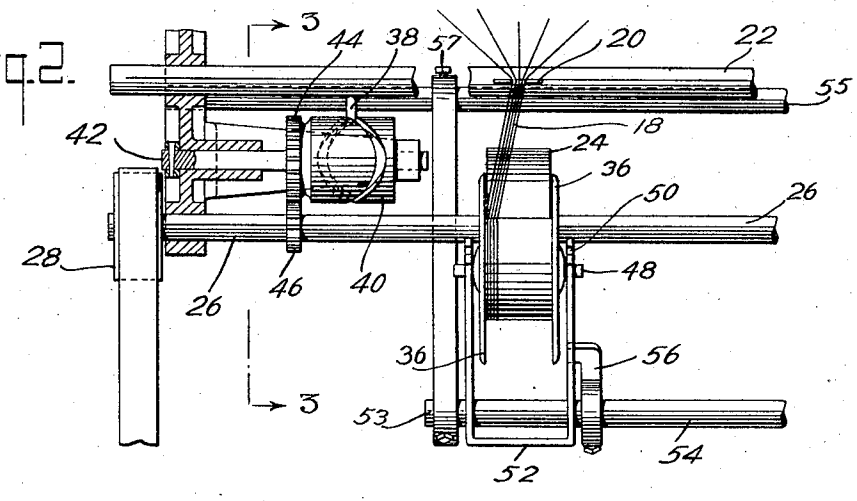


Fig. 3.

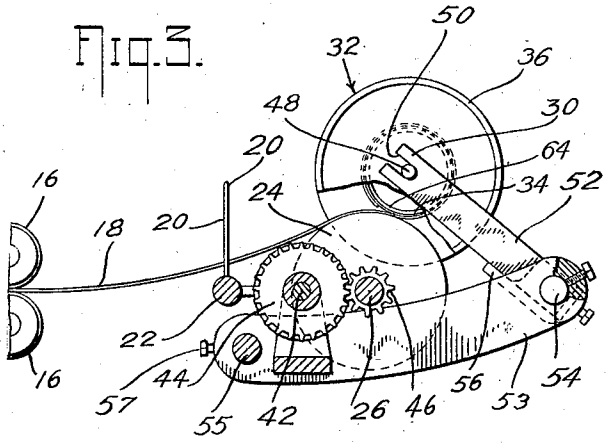


Fig. 4.

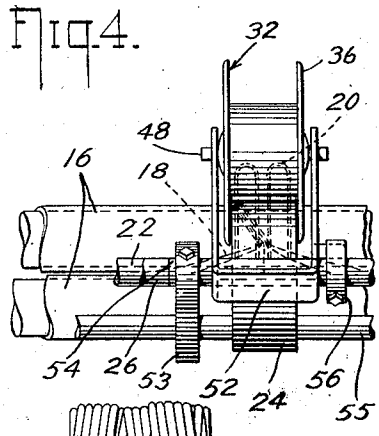


Fig. 6

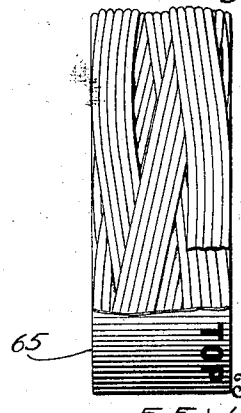
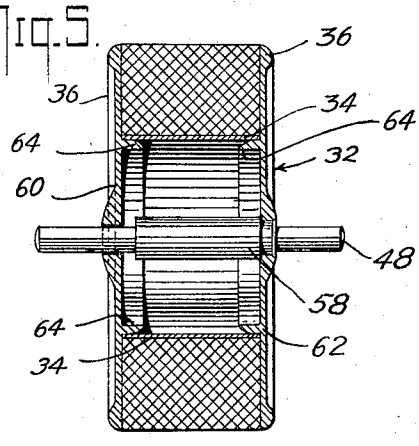


Fig. 5.



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UNITED STATES PATENT OFFICE.

EDWIN E. WAITE, OF FRAMINGHAM, MASSACHUSETTS.

METHOD OF AND MACHINE FOR PRODUCING COPS OF ASBESTOS ROVING.

Application filed April 6, 1922. Serial No. 550,217.

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 Improvement in Methods of and Machines for Producing Cops of Asbestos Roving, of which the following is a full, clear, and exact description.

The present invention relates to a method of and a machine for producing cops of asbestos and other roving, and has for its object to provide a novel and improved method and machine of this character, the same being of particular advantage where short asbestos fibre is used.

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

Fig. 1 is a plan view, partly in section, of a portion of a machine which may be employed in forming my improved cop of asbestos roving in accordance with my improved method;

Fig. 2 is a similar view, on an enlarged scale, of a portion of the machine illustrated in Fig. 1;

Fig. 3 is a sectional view taken on the line 3—3 of Fig. 2;

Fig. 4 is a side elevation of a portion of the machine illustrated in Fig. 3;

Fig. 5 is an axial sectional view, partly in elevation, of the completed cop and the spindle or spool on which it is formed in the machine; and

Fig. 6 is a front view of the cop with a portion of a protective covering therefor broken away.

The machine illustrated in the drawings is provided with a pair of rub belts or aprons 16 to which separate strips of asbestos fibre are delivered by suitable mechanism from a carding engine, the rub aprons being actuated in the usual manner to condense the strips into rovings 18, the carding engine and rub aprons being closely associated as is usual in the making of rovings of wool or asbestos fibre.

In the illustrated machine, as the rovings 18 are delivered from the rub aprons they are brought together in side by side relation in groups of five so that each group forms a flat strand, after which the strands are separately wound into self-sustaining cops. To this end the rovings are threaded in groups of five between vertical guide pins 20 mounted on a guide bar 22 and are then passed over a portion of the peripheral surfaces of rolls 24 which are carried by a shaft 26 driven by a belt and pulley 28 on one end thereof. The rolls 24 deliver the rovings in flat strands to cop spindles or spools 32. Each cop spool 32 is provided with a shank or cop tube 34 of substantially the width of the delivery roll 24 and with annular flanges 36 between which the delivery roll extends. With this construction it will be apparent that as the delivery rolls 24 are rotated the cop spools 32 will be rotated by frictional contact therewith and the flat strands of roving will be wound on the spools. In the construction shown the flat strands are wound on the spools in crossed helices to form self-sustaining cops which when removed from the machine may be easily unwound. To this end means is provided for reciprocating the guide bar 22 in such timed relation to the rotation of the delivery rolls 24 as to cause each pair of guide pins 20 to deflect its strand of roving from one side of the roll to the other during approximately each 180 degrees of rotation of the roll, the guide bar being held at the limit of each throw a sufficient length of time to permit the portion of the strand coinciding with the side of the roll to be delivered to the cop so that the cop will be built up in such a manner as to completely fill the space between the cheeks of the flanges of the cop spool. The flanges 36 are necessary because the asbestos or other rovings are so soft that without the flanges the ends of the cops would slough off during the winding. The means for reciprocating the guide bar 22, as above described, comprises a cam stud or roll 38 secured thereto which engages the cam groove of a cylinder cam 40 which is journaled on a stud shaft 42 secured to the frame, and is driven by a gear 44 formed thereon engaging a pinion 46 carried by the driving shaft 26.

Each cop spool 32 is provided with trunnions 48 which are received in slots 50 in the upper ends of upwardly inclined side arms of a yoke 52. The several yokes 52 are pivotally mounted at their lower ends on a pivot rod 54 which is supported by bracket arms 53, the ends of the rod extending through apertures in the outer ends of the arms. The inner ends of the bracket arms 53 are mounted on a supporting rod 55 having its ends secured in the machine

frame, the arms 53 being held in position on the rod 55 by set screws 57. By loosening the set screws 57 the bracket arms may be swung to adjust the circumferential position of the several cop spools on the rolls 24 and thus the length of the peripheral portions of the rolls over which the rovings pass may be adjusted as best suited for the quality and number of the rovings acted upon. The cop spools 32 are separately held as above described in proper frictional contact with the delivery rolls 24 by gravity and may be easily removed and replaced. The yokes 52 are held from downward movement when the cop spools are removed therefrom by stop arms 56 secured to the pivot rod 54, the ends of which are adapted to be engaged by the side arms of the yokes. The cop spools and the yokes 52 are held in proper axial position during the operation of the machine by the arrangement of the rolls 24 between the flanges of the spools.

The trunnions 48 of each cop spool 32 are formed on the ends of a supporting pin or spindle 58 on which is mounted two discs 60 and 62, the disc 60 being removable from the spindle and the disc 62 being fixed on the spindle. The discs 60 and 62 are each provided with inwardly projecting annular flanges or ribs 64 on which the ends of the cop core, or tube 34 is mounted, the tube 34 being held on the ribs and the disc 60 being held in position by frictional contact between the tube and the ribs. The portion of the discs 60 and 62 outside of the tube 34 constitutes the flanges 36 of the spool.

When the cop spool has been filled and removed from the machine as above described, the cop with its tube 34 may be easily removed from the spool by removing the disc 60 from the spindle 58. In order to prevent the rovings from unwinding and to hold the leading end of the rovings in position on the tube and to prevent injury thereto after the cop is removed from the spool, a band of paper or other protective material 65 is pasted about the peripheral surface of the cop either before or after the cop is removed from the spool. It is important that the position of the cop shall be determined by the user before the cop is placed in the winding machine, and to this end the word "Top" or other word or mark is placed on the band at a point adjacent the edge which should be uppermost when the cop is placed in the winding machine.

One of the advantages of thus forming the cop is that it can be unwound by pulling simultaneously on a plurality of rovings, so that if the strand from which the cop is formed is made up of five rovings, as above described, the pull can be five times as great as though the cop were made up of but one roving. This is of particular advantage in connection with the use of soft rovings of short asbestos fibre in which the weakness of the individual rovings make manipulation of a single roving unsatisfactory in commercial application such as in covering wire and the like, but by forming a cop in accordance with the present invention short fibre asbestos may be used without backing or supporting thread as heretofore has been found to be necessary.

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. The method of forming a package of rovings of fibre which comprises subjecting a plurality of strips of fibre to the action of rub aprons so as to form separate rovings, arranging the several rovings side by side as they are delivered from the rub aprons so as to form a flat strand, and then winding the strand into a cop while maintaining it substantially flat.

2. The method of forming a package of rovings of fibre which comprises subjecting a plurality of strips of fibre to the action of rub aprons so as to form separate rovings, arranging the several rovings side by side as they are delivered from the rub aprons so as to form a flat strand, and then winding the strand in crossed helices while maintaining it substantially flat so as to form a self-sustaining cop.

3. The method of forming a package of rovings of fibre, which comprises arranging a plurality of rovings in side by side relation to form a flat strand, and then winding the strand in crossed helices into a cop while maintaining the strand substantially flat.

4. A machine for producing a package of rovings of fibre having, in combination, means for forming a plurality of rovings, means for bringing the rovings together in side by side relation to form a flat strand, and means for winding the flat strand into a cop.

5. A machine for producing a package of rovings of fibre having, in combination, means for forming a plurality of rovings, a guide for bringing the rovings together in side by side relation to form a flat strand, a cop spindle arranged in advance of the guide for receiving the strand, and means for reciprocating the guide and rotating the spindle in timed relation to cause the flat strand to be wound in crossed helices on the spindle.

6. A machine for producing a package of rovings of fibre having, in combination, means for forming a plurality of rovings, a guide for bringing the rovings together in side by side relation to form a flat strand, a

roll in advance of the guide over which the flat strand passes, a cop spindle resting on said roll and driven thereby by frictional contact to receive the strand as it passes over the roll, and means for reciprocating the guide and rotating the roll in timed relation to cause the strand to be wound in crossed helices on the spindle.

7. A machine for producing a package of fibre having, in combination, means for forming a flat strand composed of a plurality of rovings of fibre arranged side by side, a guide for the strand, a roll arranged in advance of the guide over which the strand passes, a cop spindle arranged to be driven by said roll by frictional contact for receiving the strand, and means for reciprocating the guide and rotating the roll in timed relation to cause the strand to be wound in crossed helices on the spindle.

8. A machine for producing a package of rovings of asbestos fibre or the like having, in combination, means for forming a plurality of rovings comprising rub aprons from which the rovings are delivered in spaced relation, means for bringing the rovings together in side by side relation so as to form a strand as the rovings are delivered from the rub aprons, and means for cross-winding said strand into a cop.

9. A machine for producing a package of rovings of fibre having, in combination, means for forming a plurality of rovings comprising rub aprons from which the rovings are delivered in spaced relation, means for arranging the rovings in a plurality of groups with the rovings of each group arranged side by side so as to form a strand, and means for separately cross-winding the strands of each group into cops.

EDWIN E. WAITE.

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