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1,989,660

COVERING MACHINE FOR ELECTRICAL CONDUCTORS AND THE LIKE

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Fig. 1.

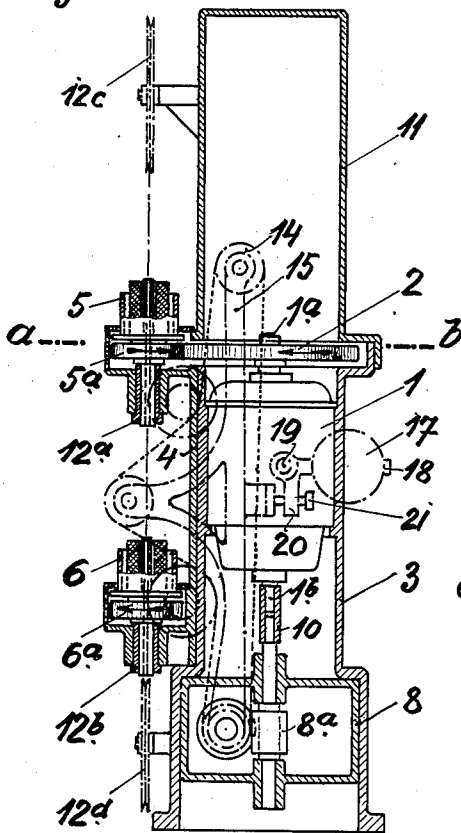


Fig. 2.

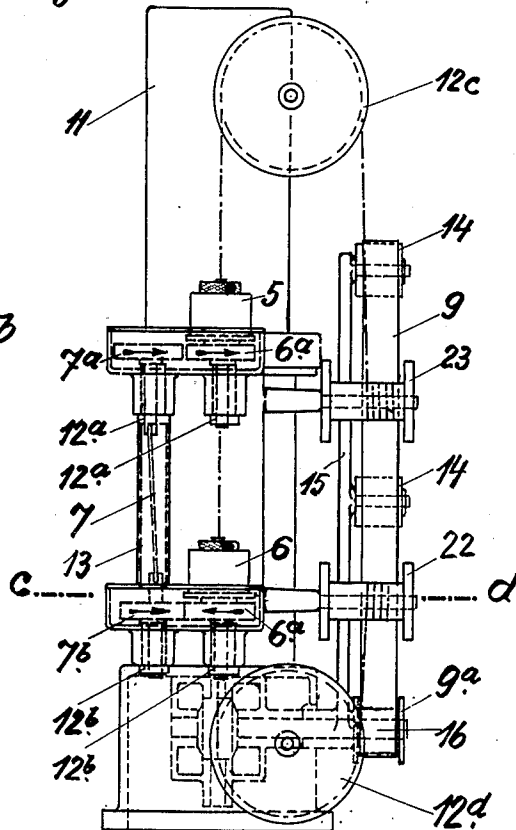


Fig. 3.

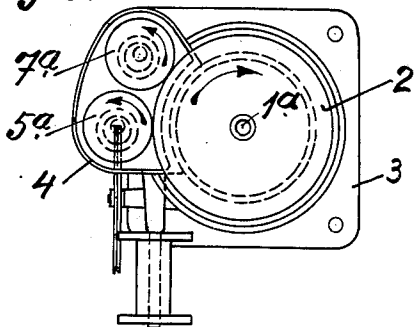
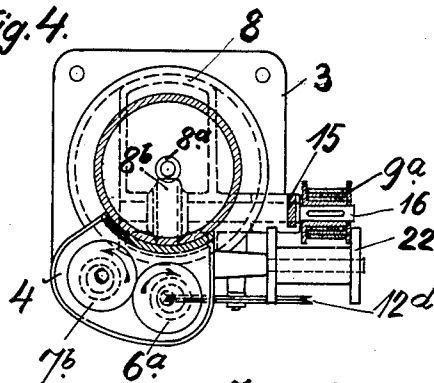


Fig. 4.



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COVERING MACHINE FOR ELECTRICAL
CONDUCTORS AND THE LIKE

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2 Claims. (Cl. 117—34)

The present invention relates to a covering machine adapted to cover electrical conductors or wires and particularly fine wires with silk, cotton or similar insulation. The hitherto known covering machines of this kind are belt-driven machines comprising several sets of covering devices, which are mounted in a frame and are driven from a main driving shaft by means of belts. When machines of this known construction are used, the covering material is inaccurately laid, because the covering sets of which a machine is composed, on account of the slipping of the belts and from other causes, will never run uniformly. A further disadvantage of a belt driving arrangement is that the highest practicable working velocity of the covering heads amounts only to about 3000 revolutions per minute, wherefore the efficiency of the machines is low.

It is also known to drive the covering heads positively by means of toothed wheels operated from the main shaft. However, this arrangement also has serious disadvantages, being very "noisy" in operation, and attended by difficulties in lubricating and packing the elements. Devices of this kind therefore rapidly wear out.

The main object of the present invention is to overcome the above named disadvantages.

According to the present invention, the machine comprises a unitary housing in which is mounted a motor, a plurality of covering heads, a supply reel for delivering uncovered conductor to the heads, a winding reel receiving covered conductor from the heads, and non-slip resilient frictional driving means between the motor and the covering heads and reels. A great number of covering sets can therefore be mounted adjacent each other on a working table, whereby the entire surface of the table is utilized and a compact structure is formed, which may be readily controlled and operated by a single person. In comparison with known covering machines the machines according to the invention have a moderate height and are upon the whole of an exceedingly compact construction, and all parts to be controlled lie within a narrow visual field, so that a single person, without being overworked, is able to control a much greater number of machines than hitherto.

Another advantage of the invention is that the nonslip resilient frictional drive of the covering heads makes it possible to increase the number of revolutions of these heads and consequently the efficiency of the machine, to practically any desired value, without introducing dis-

turbances, the only limiting factor to be taken into consideration being the tensile strength of the covering thread.

Still another feature of the invention consists in this, that the length of wire between the reels and upon which the machine acts, in contrast to the known devices is very short. This is a very important advantage, since a great length of wire permits the covering thread to be easily stretched, so that a thread of non-uniform thickness is applied to the wire and an inaccurately laid covering is obtained.

A further advantage of the invention consists in that the wire, irrespective of the diameter of the supply reels, and the take-up reels always will be drawn off the supply reel and wound upon the take-up reel with constant and uniform velocity. The wire will therefore also travel with constant and uniform velocity through the covering heads. This effect, according to the invention, is caused by keeping the belt operating the reels in engagement with the periphery of both reels. Since the belt and the covering heads are driven by the same motor, the relation between the speeds of the covering heads and the speed of travel of the wire will always be the same.

A constructional form of the invention is shown by way of example in the accompanying drawing.

Fig. 1 is a sectional elevation of a covering machine according to the invention, showing also in broken lines certain details which normally would not appear in the section.

Fig. 2 is a sectional elevation of the same machine taken at right angles to that of Fig. 1.

Fig. 3 is a sectional view taken on line *a—b* in Fig. 1.

Fig. 4 is a sectional view taken on line *c—d* in Fig. 2.

1 denotes the driving motor, shown as an electric motor. To the upper end 1*a* of the motor shaft a disc 2 is fixed, the periphery of which is equipped with a layer 2*a* of rubber or other resilient material. The motor 1 is mounted in a tubular housing 3 into which it is accurately fitted, the housing 3 being formed with an internal flange 3*a* on which the lower edge of the motor casing rests. The motor casing can be locked against rotation within the housing 3 by screws or the like. On one side of the housing 3 a support member 4 for the covering heads 5 and 6 and the driving discs 5*a* and 6*a* of the same is arranged. Within this member the intermediate transmission shaft 7 with the elastic driving discs 7*a* and 7*b* is also

mounted. The covering heads 5 and 6, the driving discs 5a and 6a of the same and the driving discs 7a and 7b are eccentrically mounted in adjustable and lockable sleeves 12a and 12b. The adjusting means of these sleeves are of known kind and are therefore not shown in the drawing. The eccentric mounting makes it possible to engage the individual driving discs with each other and to regulate the contact pressure. The intermediate transmission shaft 7 is flexible and is surrounded by a protective tube 13. In the lower end of the casing 3 a separate chamber 8 for a worm gear 8a, 8b is arranged. The shaft 16 of the worm 8b is connected to the lower end 1b of the motor shaft by means of a coupling 10. The endless belt 9 is driven from the said worm gear. The driving pulley 9a consists of a plurality of concentrically arranged rings, as indicated in Fig. 4. By removing or adding such rings the peripheral velocity of travel of the thread may be regulated at will. The driving belt 9 travels over rollers 14 which are carried by a lever or rod 15. The lever 15 is pivotally arranged on the shaft 16 of the worm 8b and is influenced by a weight 17, which is mounted on a bell crank 18. This bell crank is at 19 pivotally arranged on the casing 3 and the free arm 20 of the same is equipped with an adjusting screw 21 which abuts against a projecting part of the lever 15. The upper end of the machine casing is closed by a cap 11 on the outside of which the upper guide roller 12c for the wire to be covered is arranged. The corresponding lower guide roller is mounted on the casing 3. The support member 4 also serves as support for the reel 22 carrying the wire to be coated and the reel 23 on which the covered wire is wound.

The machine operates in the following manner:

The motor 1 rotates the disc 2 and simultaneously the worm gear 8a, 8b. The disc 2 has a

non-slip resilient frictional contact with the driving discs 5a and 7a, the former of which operates the upper covering head 5, whereas the latter operates the flexible shaft 7 and the disc 7b, which disc 7b, by frictional engagement, is coupled to the disc 6a of the lower covering head 6. The shaft 16 of the worm 8b rotates the belt pulley 9a. The belt 9 travels over the guide rollers 14 and under the influence of the weight 17 (or an equivalent spring) yieldingly engages the periphery of the reels 22 and 23, which thereby are rotated, so that the wire on the same is moved over the guide rollers 12c, 12d and through the spinning heads 5, 6. The wire is continuously covered with insulating matter by means of the known mechanism (not shown) in the spinning heads, adapted to wind the threads or the like in opposite directions.

We claim:—

1. A machine for covering electrical conductors comprising: a housing, a motor supported therein with its shaft vertical, a plurality of covering heads supported in vertical alignment by the housing, resilient surfaced friction disks providing a non-slip drive between the motor shaft and the covering heads, a supply reel for uncovered conductor and a winding reel for covered conductor both supported by the housing, a horizontal shaft gear driven by the motor, a lever pivoted on said shaft, said lever and shaft carrying guiding and tensioning rollers, a belt supported and tensioned by said rollers, and means for biasing said lever into a position forcing said belt into peripheral contact with both reels.

2. A machine according to claim 1, in which means are provided for adjusting the pressure of the belt against the reels.

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