No. 831,740. PATENTED SEPT. 25, 1906.

P. E. OSWALD.

ARMATURE WINDING MACHINE.

APPLICATION FILED OCT. 23, 1905.

Fig. 1

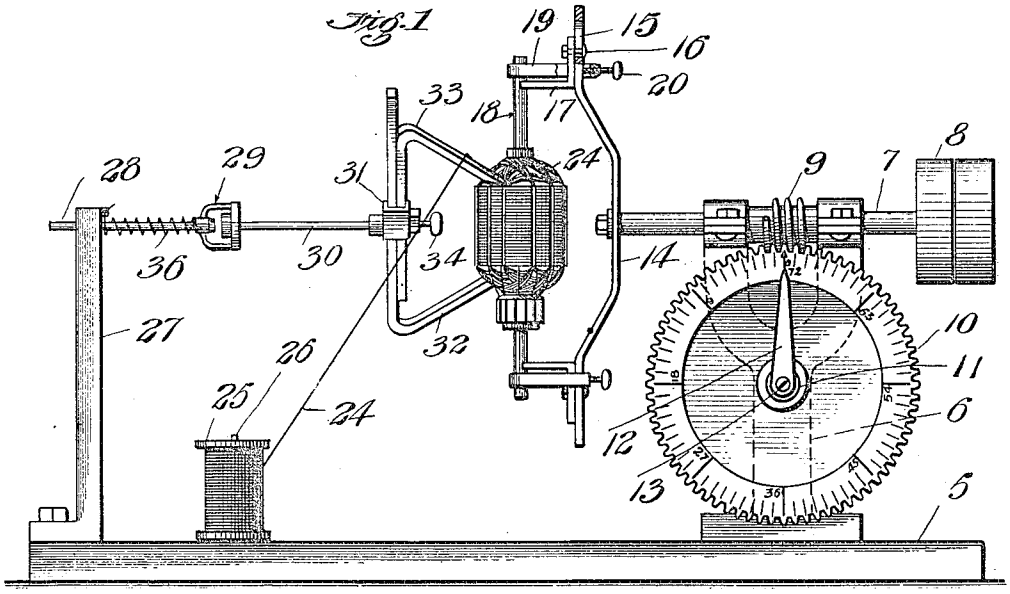


Fig. 2

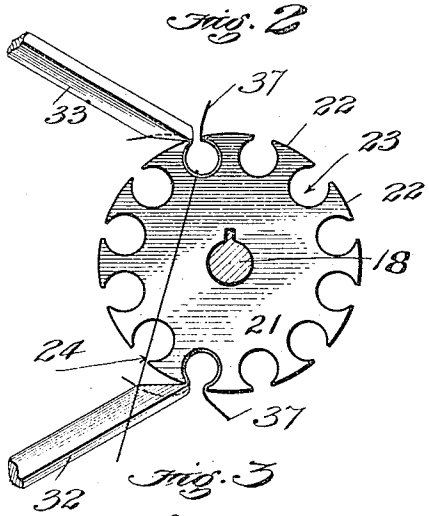
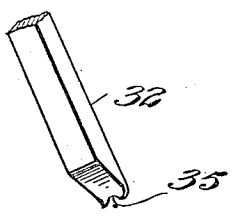


Fig. 3



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UNITED STATES PATENT OFFICE.

PAUL E. OSWALD, OF LOS ANGELES, CALIFORNIA.

ARMATURE-WINDING MACHINE.

No. 831,740. Specification of Letters Patent. Patented Sept. 25, 1906.

Application filed October 23, 1905. Serial No. 284,051.

To all whom it may concern:

Be it known that I, PAUL E. OSWALD, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented new and useful Improvements in Machines for Winding Armatures, of which the following is a specification.

My invention primarily relates to that class of armatures which are known as "tooth-drum" armatures; and the object thereof is to produce a machine in which the coils of the armature may be quickly and easily wound. I accomplish this object by the mechanism described herein and illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation with parts broken away for clearness of illustration. Figs. 2 and 3 are details of certain of the parts shown in Fig. 1.

In the drawings, 5 is the base-plate of the machine, to which is secured a standard 6, the upper end of which is bifurcated and carries the operating-shaft 7. On the outer end of this shaft is a driving-pulley 8, to which power is applied to rotate the shaft. On the shaft and within the furcations of the standard is a worm 9, which meshes with a gear 10, mounted on a shaft 11, secured to the standard. Gear 10 is revoluble on shaft 11, and at convenient distances has numbers on the side thereof, as shown in Fig. 1, to show how many teeth there are between certain points. A pointer 12 is secured upon the end of shaft 11 by screws 13, upon which screw it may be revolved, so as to indicate how many times the worm rotates, as hereinafter explained. On the inner end of the operating-shaft is the armature-holding frame, which is composed of the base-bar 14, having slots 15 at the ends thereof, through which pass the adjusting-bolts 16, which unite the holding or supporting bar 17 to the base-bar. The outer end of the supporting-bar is concave, and the shaft 18 of the armature is received therein, and a strap 19 passes around the end of the armature-shaft and about the base-bar and is provided with a thumb-screw or set-screw 20, by means of which the armature-shaft may be securely attached to the armature-holding frame. A like strap is provided at the other end and a like supporting-bar. The slots in the ends of the base-bar permit of the adjustment of the holding-bars on the base-bar to provide for armatures having shafts of different lengths. To the armature-shaft are secured the laminated tooth-disks 21, whose teeth 22 are arranged so as to form channels 23 therebetween for the reception and retention of the insulated wire 24, which forms the winding of the armature.

A spool 25, containing the wire 24, is slipped upon a stud 26, secured to the base-plate, and the free end of the wire is secured to the armature-drum in the usual manner. A supporting-standard 27 is secured to the base-plate, and a rod 28 is slidably mounted in the top thereof. The outer end of this rod carries a turnbuckle 29, which is likewise connected to a rod 30, which is provided with a clamp 31, through which pass the arms 32 and 33 of the guide-frame. The bases of these arms are parallel, are adjustable in the clamp, and are held in the clamp in their adjusted position by the set-screw 34. The outer ends of these arms are bent on an angle to the base and project toward each other and are staggered as to each other, one end of one arm being adapted to engage at the edge and at the end of one of the channels at one end of the drum, as shown on the upper side of the drum in Fig. 2 and also in Fig. 1, while the other arm engages in a like position at a similar channel at the other end of the drum as many channels below the upper channel as desired, the number being less than one-half the total number of channels.

I have found in practice that where the drum is provided with twelve channels the lower arm should engage the fifth channel below the channel at which the upper arm engages. In the ends of these arms are notches 35, which form small points on the ends of the arm, which are also tapered, as best shown in Fig. 3. One of these points engages the end of the drum and the other the edge of the channel. A spiral spring 36 is mounted upon rod 28, and one end is secured to the turnbuckle and the other is secured to the standard 27, so as to provide a slight tension upon the guide-frame. When power is applied to drive-pulley 8, the armature is revolved, and as the guide-arms are in engagement with the armature they are revolved with it, thereby causing the guide-frame to revolve. As the wire reels off the spool it is guided by the arms of the guide-frame first into one slot or channel and then into the other channel at which the other arm is set. Before the wire is wound the channels are lined with paper 37. The worm and gear are so arranged that the

worm turns the gear one notch for each revolution of the shaft, so that the operator can readily tell the number of strands of wire that have been wound in the channels. Suppose that he desires to wind twenty-seven strands in each channel for a half-coil. He would start, say, as shown in the drawing in Fig. 1, with the gear-wheel at "0." He would rotate the shaft until "27" came up to the pointer, when he would stop the power, as he knows there are twenty-seven strands of wire in each of the two channels. He would then rotate the index-finger to "0" and then shift his guide-frame to two other channels and then apply power until the number "27" registered with the index-pointer, when he would again stop and shift the guide-frame to new channels and turn the index-pointer again to "0." He would proceed in this manner until all the channels were filled, when the armature would be wound. He would then connect up the different bobbins in the usual manner.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination of an armature-holding frame; means to revolve the same; and a revoluble guide-frame having arms with the points thereof staggered and adapted to engage the armature-drum at its opposite ends and at different channels therein.

2. The combination of an armature-holding frame; means to revolve the same; and a revoluble guide-frame having adjustable arms with the free ends thereof staggered and adapted to engage the armature-drum at its opposite ends and at different channels therein.

3. The combination of an adjustable armature-holding frame; means to revolve the same; and a revoluble guide-frame having adjustable arms, the free ends of which approach each other and are staggered and are adapted to engage the armature-drum at its opposite ends and a different channels therein.

4. The combination of an armature-holding frame; means to revolve the same; a revoluble guide-frame having arms with the points thereof staggered and engaging the armature-drum at its opposite ends and at different channels therein; and means to give a tension to said guide-frame.

5. An armature-winding machine comprising a base-plate; a standard secured thereto; an operating-shaft having a worm secured thereto revolubly mounted in said standard; a gear revolubly mounted on a shaft secured to said standard and having certain of the teeth thereof numbered, said gear meshing with said worm; a pointer revolubly secured to the shaft upon which the gear is mounted; an armature-holding frame secured to said shaft; and a revolubly-mounted guide-frame secured to said base, said guide-frame having arms, the free ends of which are staggered and engage the armature-drum at its opposite ends and at different channels therein.

In witness that I claim the foregoing I have hereunto subscribed my name this 16th day of October, 1905.

PAUL E. OSWALD.

Witnesses:
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