

(No Model.)

H. E. HEATH.
ARMATURE WINDING MACHINE.

No. 535,104.

Patented Mar. 5, 1895.

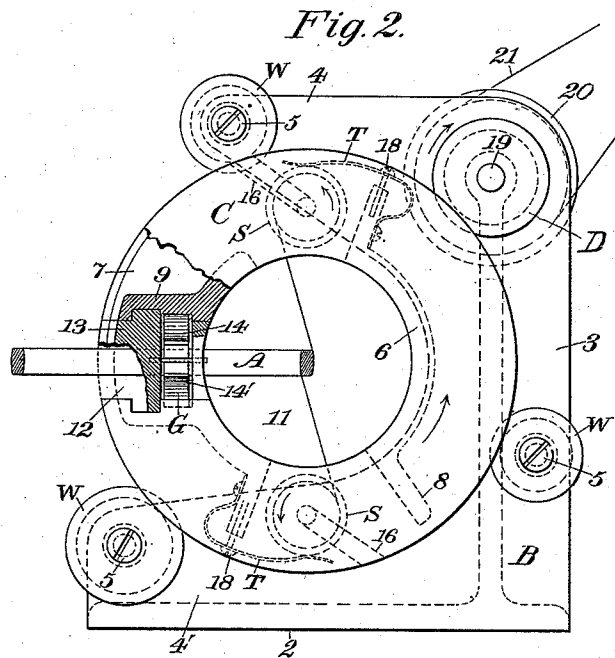
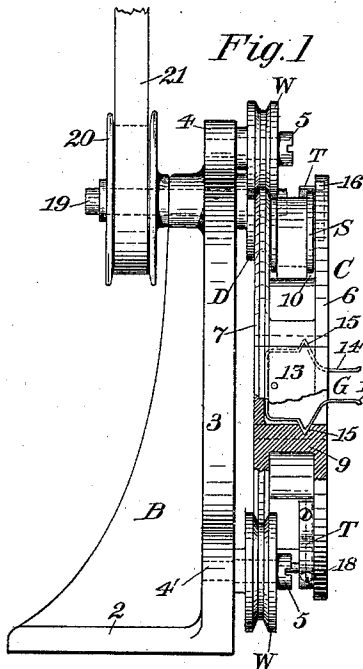


Fig. 4.

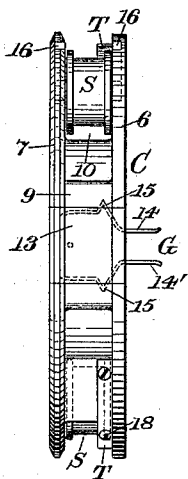
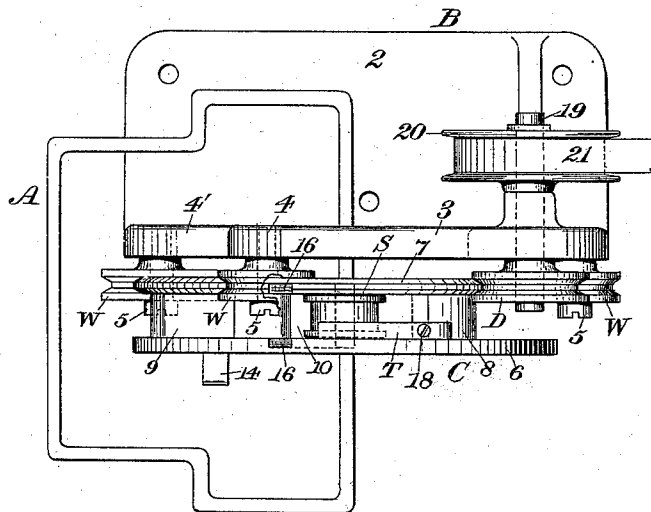


Fig. 3.



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UNITED STATES PATENT OFFICE.

HARRY E. HEATH, OF WINDSOR, CONNECTICUT, ASSIGNOR TO THE EDDY ELECTRIC MANUFACTURING COMPANY, OF SAME PLACE.

ARMATURE-WINDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 535,104, dated March 5, 1895.

Application filed May 15, 1894. Serial No. 511,298. (No model.)

To all whom it may concern:

Be it known that I, HARRY E. HEATH, a citizen of the United States, residing at Windsor, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Winding or Taping Machines, of which the following is a specification.

This invention relates to winding or taping machines, the object of the invention being to furnish a machine especially adapted for winding or covering armature-coils, and to so construct and organize the machine that various forms of armature-coils, or closed rings may be readily wound or taped with rapidity and economy.

In the drawings accompanying and forming a part of this specification, Figure 1 is a front view, partially in section, of a winding or taping machine embodying my invention. Fig. 2 is a side elevation of the same, partially in section, showing an armature-coil in the position it occupies while being wound or covered. Fig. 3 is a plan view of the machine, and Fig. 4 is a front or edge view of the winding-wheel or spool-carrier, removed from the machine.

Similar characters designate like parts in all of the figures.

In the form thereof herein shown, the winding or taping machine comprises a frame, B, which may be of any suitable construction for carrying the several operative details; a revoluble carrier, C; a series of peripherally-disposed carrier-supporting wheels, W; a revoluble driver, D, in position and adapted for rotating the carrier; a series of circumferentially-disposed tape or strand-carrying spools, S, revolubly-carried by the carrier C, and spool-retaining tension-devices, T, in connection with said spools, all of which will be hereinafter more fully described.

The framework B of the machine is shown consisting of the base 2, and upright or side-plate, 3, which side-plate is recessed at its forward edge to form the forwardly-projecting arms, 4 and 4', as most clearly shown in Fig. 2. Revolubly-supported upon studs, 5, secured in the framework of the machine and equi-distantly disposed with relation to a common center, and preferably equi-distantly

disposed with relation to each other, is a series of carrier-supporting wheels, W, they being herein shown as three in number and as peripherally-grooved. Two of these wheels are carried at the extreme forward ends of the arms 4 and 4' of the framework, while the remaining one is carried upon the side-plate 3 near the rear edge thereof, as clearly illustrated in Fig. 2. The number and position of these wheels, which constitute the supporting-wheels for the winding-ring or carrier, may be varied as circumstances may require.

The winding-wheel, or spool-carrier C, in the form thereof herein shown, is of a composite nature, it consisting of two non-contiguous concentric rings, 6 and 7, set side by side, and joined together by transverse webs or flanges, 8 and 9, so as to leave a spool-receiving space, 10, between them, one of said rings preferably having a V-shaped periphery and being revolubly-supported in the peripheral grooves of, and between the wheels W, as shown in Figs. 1, 2 and 3 of the drawings. These carrier-rings 6 and 7 have relatively large transverse coinciding recesses, 11, formed centrally therethrough, and are cut away at one side thereof, as shown at 12, to form an opening through which the armature-coil, designated by A, may be extended to bring successive portions thereof into position for wrapping, as will be understood by reference to Figs. 2 and 3 of the drawings.

In practice, the opening 12 formed through the carrier C, and through which the armature-coil or ring to be wrapped or covered is introduced, will be provided with a removable section, 13, whose periphery coincides with, and will, when the section is in place, complete the continuity of the periphery of the carrier. This removable section 13 will preferably be provided with a detent-catch, designated in a general way by G, which is herein shown as comprising two oppositely-disposed spring-arms 14 and 14', having offsets or projections, 15, adapted for engaging in notches formed in the adjacent walls of the opening 12, as will be understood by reference to Figs. 1, 2 and 4 of the drawings. This detent-catch, or locking-device G, will preferably be permanently secured to the remov-

able section 13, and the forward ends of the resilient arms 14 and 14' will project beyond the side-face of the carrier, as shown in Figs. 1, 3 and 4, to form a convenient means for releasing the catch and withdrawing the section 13, as is necessary when it is desired to insert or remove an armature-coil.

In the drawings, I have shown the carrier C provided with two tape, or strand-carrying spools, S, which are supported between the rings 6 and 7 at opposite sides of, and in alignment with the axis of the carrier. As a means for removably-securing said spools in place between the two rings of the carrier, the adjacent faces of said rings are mortised, as shown at 16, which mortises extend from the peripheries of the rings inward at an inclination to a line radiating from the axis of the carrier, the inner ends of said mortises forming bearings for the axles or trunnions of the strand-carrying spools S.

As a means for holding the spools against displacement when in position in the carrier, I have provided spool-retaining tension-devices, which are herein shown as curved springs, T, each of which springs is secured at one end to a convenient portion of the carrier, and bears at its free end against the periphery of the spool, said spring not only preventing lateral displacement of the spool, but also holding the spool under tension and preventing a too-free rotation thereof during winding. An adjusting-screw, 18, is provided in connection with said spring for increasing or decreasing the tension thereof, as will be readily understood by reference to Fig. 2 of the drawings. By this construction, it will be seen, that the spools may be readily applied to the carrier in proper working position, or be removed therefrom by simply lifting the spring T adjacent to the spool being inserted or removed, sufficiently to allow the periphery of said spool to freely pass said spring.

As a convenient means for rotating the carrier C, I have herein shown a driver, D, whose periphery is grooved to correspond with and which engages the track or periphery of the carrier, said driver being carried upon the end of a shaft, 19, journaled in the upright 3, the shaft being provided at its outer end with a driving pulley, 20, which may be driven from any suitable source of power by a belt, 21. It is desired to state, in this connection, that the carrier might be in the nature of a cog-wheel and be driven by means of a pinion secured to the shaft 19 which is simply a matter of preference, and is mere mechanical substitution of one well-known form of driving means for another. It is also desired to state, that the carrier might be constructed in a single piece, and that the removable sections might be dispensed with, in which case it would be necessary to have a series of drivers located at different points in the circumference of said carrier.

The framework of the machine will be provided, in practice, with suitable means (not

shown) for supporting the armature-coil during the operation of covering the same.

Having thus described my invention, I claim—

1. In a winding or taping machine of the class specified, in combination, a revolubly-supported annular spool-carrier consisting of two non-contiguous but connected concentric rings, one or more circumferentially-disposed spools carried by said carrier and revolubly-supported between said rings, and means for rotating the carrier, substantially as described and for the purpose set forth.

2. The herein-described winding or taping machine, it consisting of a revolubly-supported annular spool-carrier comprising two non-contiguous but connected concentric rings, peripherally-disposed supporting wheels for said carrier, one or more circumferentially-disposed tape or strand-carrying spools revolubly supported between the two rings comprising the spool-carrier, tension-devices in connection with said spools, and means in connection with one of the peripherally-disposed wheels for rotating said carrier, substantially as described and for the purpose set forth.

3. The herein-described winding or taping-machine, it consisting of a revolubly-supported annular spool-carrier having a closable opening at one side thereof and consisting of two non-contiguous but connected concentric rings, each of which has a closable opening at one side thereof, one or more tape or strand-carrying spools circumferentially-disposed with relation to said carrier and revolubly-supported between the adjacent faces of the carrier rings, tension-devices in connection with said spools, and friction-wheels for rotating the carrier, substantially as described and for the purpose set forth.

4. The herein-described winding or taping-machine, it comprising a revolubly-supported annular spool-carrier consisting of two annular carrier-rings secured together side by side, and having a closable transverse opening at one side thereof, a track-section removably-secured in said closable opening with its periphery coinciding with the peripheries of the annular rings, one or more circumferentially-disposed tape-carrying spools revolubly-carried by and between the two annular carrier-rings, tension-devices in connection with said spools, peripherally-disposed wheels in position and adapted for supporting the carrier, and means for rotating said carrier through the medium of one of said wheels, substantially as described and for the purpose set forth.

5. In a winding or taping machine of the class specified, an annular spool-carrier supported for rotation between peripherally-disposed wheels or rollers and consisting of two rings having their inner faces mortised substantially as described, to form an elongated bearing for the axles of the tape-carrying spools, in combination with tape-carrying spools revolubly and removably supported in

said bearings, spool-retaining tension-devices in connection with and adapted for preventing displacement of said spools and for regulating the tension of the tape as it is unwound
5 from said spools, and means for rotating the carrier, substantially as described and for the purpose set forth.

6. In a winding or taping machine of the class specified, in combination, a revoluble
10 spool-carrier peripherally-supported between carrier-wheels and comprising two concentric rings cut away at one side thereof to form a coil-entering opening and having a track-section removably-secured in said opening
15 to complete the continuity of the periphery of the carrier-rings, tape-carrying spools removably-supported between said rings, springs secured to said rings and bearing at their free-ends against said spools to prevent
20 displacement and regulate the unwinding tension of said spools, and means for driving said carrier, substantially as described and for the purpose set forth.

7. In a winding or taping-machine of the

class specified, an annular spool-carrier revolubly-supported peripherally and consisting
25 of two non-contiguous but connected concentric rings and having at one side thereof a removable section whose periphery coincides with the periphery of one of said rings, a
30 dent-catch substantially as described for locking the removable section in the spool-carrier, one or more circumferentially-disposed tape-carrying spools revolubly and removably-carried between the adjacent faces of the
35 carrier-rings, springs secured at one end to the annular spool-carrier and bearing at their opposite ends against said spools to prevent displacement and regulate the unwinding tension thereof, and a frictional driving-device
40 in operative connection with said carrier, substantially as described and for the purpose set forth.

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