

W. T. HENSLEY.
 IMPLEMENT FOR WINDING ARMATURES.
 APPLICATION FILED MAY 24, 1912.

1,240,448.

Patented Sept. 18, 1917.
 2 SHEETS—SHEET 1.

Fig. 1.

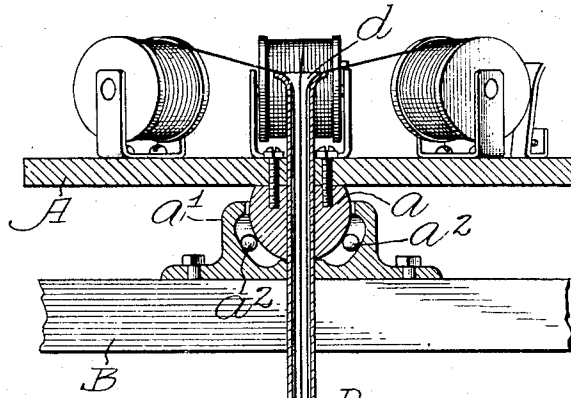


Fig. 2.

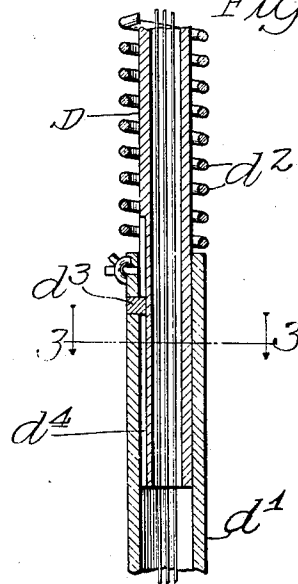
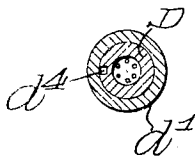
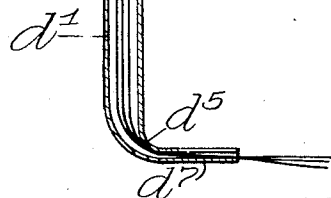
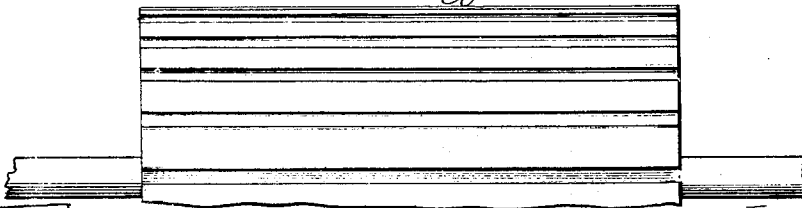


Fig. 3.



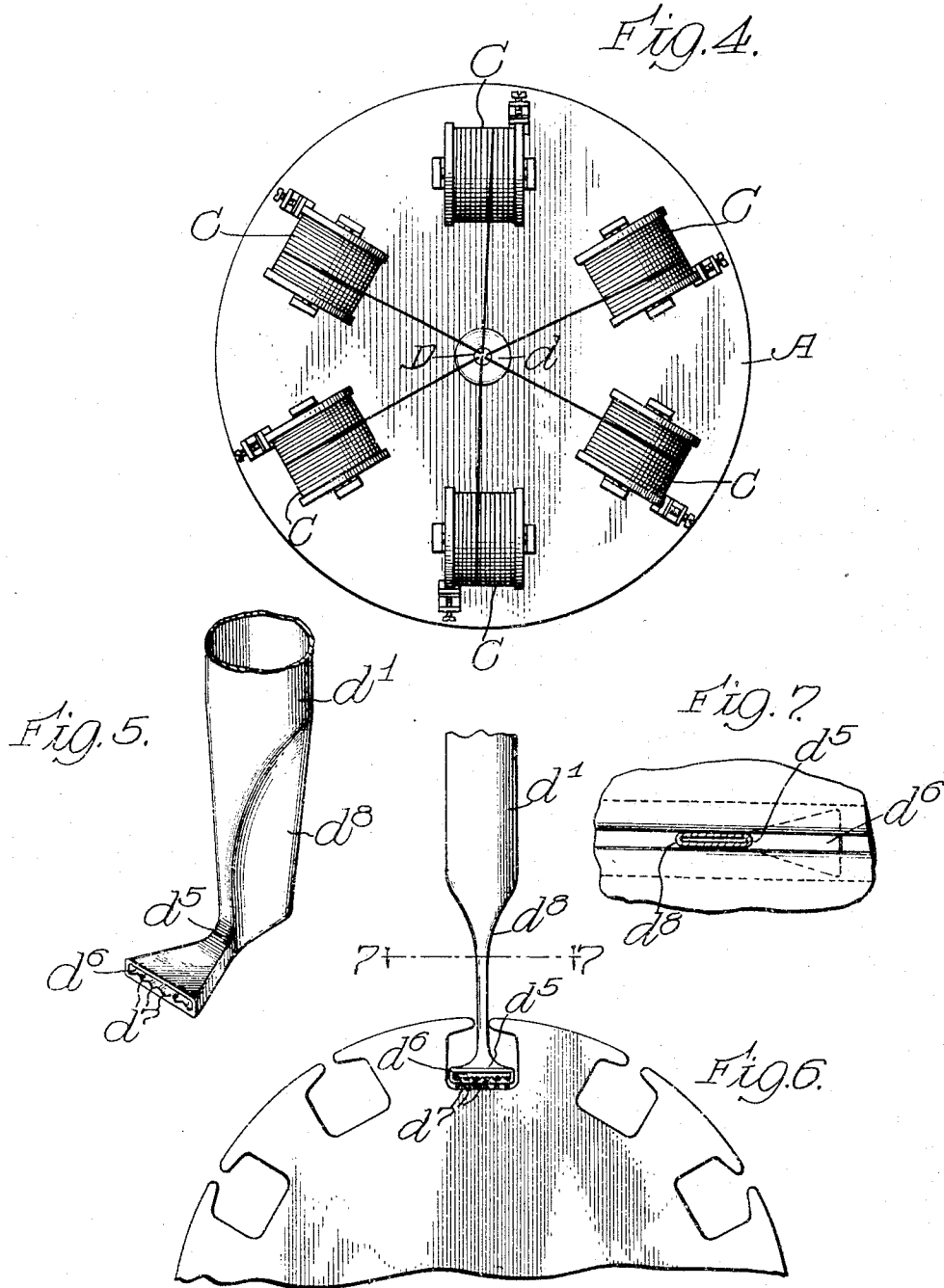
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UNITED STATES PATENT OFFICE.

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IMPLEMENT FOR WINDING ARMATURES.

1,240,448.

Specification of Letters Patent.

Patented Sept. 18, 1917.

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To all whom it may concern:

Be it known that I, WILLIAM T. HENSLEY, a citizen of the United States of America, and resident of Boundbrook, Somerset county, New Jersey, % American Engine & Electric Company, have invented a certain new and useful Improvement in Implements for Winding Armatures, of which the following is a specification.

My invention contemplates a machine for winding the armatures of dynamos or motors. Prior to my invention this was done by hand, and the operation was necessarily slow. With the machine characterized by my invention, however, the winding of the wire upon the armature is greatly facilitated, notwithstanding that the winding motion of the machine is controlled directly by the hand of the operator. The machine characterized by my invention is capable of winding on several wires at a time, and means are provided for feeding the said wires and keeping them from becoming tangled or disarranged. Consequently, as stated, the operation of winding an armature is greatly facilitated, and the cost of manufacture materially reduced. The nature and advantages of my invention will, however, hereinafter more fully appear.

In the accompanying drawings:

Figure 1 is a vertical section of a winding machine embodying the principles of my invention, showing the lower end thereof in position near the armature to be wound.

Fig. 2 is an enlarged detail vertical section of the telescoping connection between the two portions of the tube through which the wires are fed to the armature.

Fig. 3 is a horizontal cross section on line 3—3 Fig. 2.

Fig. 4 is a plan of the machine shown in Fig. 1.

Fig. 5 is an enlarged perspective of the lower end of the tube through which the wires are fed to the armature.

Fig. 6 is a fragmentary view illustrating the manner in which the nozzle or lower end of said tube is adapted to pass through the grooves or recesses of the armature.

Fig. 7 is a detail section on line 7—7 in Fig. 6.

As thus illustrated, my invention comprises an oscillating platform or turntable A, provided centrally on the under side

thereof with a knob or rounded bearing portion a that sets in the cup a^1 mounted on the stationary support B, anti-friction balls a^2 being interposed between the said cup a^1 and the said bearing portion. With this arrangement the platform or turntable A is adapted to rotate about a vertical axis, and is also adapted to tilt or oscillate freely in any direction. The wire reels C, six in number, are suitably mounted upon the said turntable or platform A and disposed in a circle, in the manner shown in Fig. 4, each reel being of any suitable, known or approved character. A vertically disposed feed tube D extends downward through the table or platform A, and also through the knob or bearing portion a , the upper end of said tube being formed with a flaring mouth d which receives the wires from said reels. The tube D has a telescoping section d^1 , which is mounted to slide up and down, being held on the tube D by a coil spring d^2 , whereby when the section d^1 is pulled downward, it will then return to normal position when released. To prevent the section d^1 from twisting or rotating relative to the main tube D, the section d^1 is provided with an internal projection d^3 , which engages a longitudinal groove d^4 in the tube D, thus permitting a lengthening and shortening of the tube, but preventing relative rotation between the two telescoping sections thereof.

The lower section d^1 is provided at its lower end with a nozzle like portion d^5 , the said portion being arranged to project laterally from the lower end of the tube section d^1 , and being provided with a horizontal slot d^6 having notches d^7 through which the wires travel and by which the latter are held in their proper relative positions. In other words, it will be seen that the lower delivery end of the feed pipe or tube is of such character that the six wires are fed therefrom in a horizontal plane, several wires being held parallel and close together.

The mode of operation of the machine thus constructed is as follows: The nozzle like end portion d^5 , being provided with a flattened portion or neck d^8 , is adapted to pass through the grooves of the armature, as shown in Fig. 6, the said nozzle like end of the feed tube being inserted backward in one end of the armature groove, and then moved along leaving the wires lying flatwise

upon the bottom of the said groove. The telescoping connection, and the manner in which the table or platform A is mounted, enable the operator to grasp the said nozzle
 5 like lower end portion of the feed tube and turn it in any direction and move it back and forth in the manner necessary to thread the wires through the grooves of the armature. If the operator turns the said lower
 10 end of the feed tube in a certain direction, the platform or turntable A will immediately respond and turn in the same direction, the reels, being mounted as described, will be rocked and moved around with the feed-
 15 ing tube and the nozzle so that the relative positions of the different wires are maintained regardless of the manner in which the machine is turned or manipulated during the operation of threading the wires through
 20 the openings or grooves of the armature. As several wires are wound or laid down at the same time, it follows that the operation of winding the armature is facilitated and rendered much more rapid than heretofore.
 25 As shown and described, the back and forth swinging motion of the feed tube D, and the nozzle portion *d'* at the lower end thereof, is accomplished manually, but it is obvious that this may be done in other
 30 ways, and for this reason I do not limit myself to any particular method of operating the machine characterized by my invention.

What I claim as my invention is:

35 1. A winding machine comprising means for supporting a plurality of wires, a device for delivering the wires, a mechanism for permitting free movement of said device to feed the wires therefrom, means for
 40 preventing the wires from twisting, comprising a revolving and oscillating table, and means for properly placing the wires.

2. A winding machine comprising means for supporting the wire, a device for deliver-
 45 ing the wire, and mechanism for permitting free movement of said device and preventing the wire from twisting, said means including a revolving and oscillating table, and a wire reel secured on said table.

50 3. A winding machine comprising means for supporting the wire, a device for delivering the wire, and mechanism for permitting free movement of said device and preventing the wire from twisting, said means includ-
 55 ing a revolving and oscillating table, a plurality of wire reels mounted on said table, and said mechanism including a ball and socket joint for the bottom of said table, said joint having a passage for the wires.

60 4. A winding machine comprising means for supporting the wire, a device for delivering the wire, and mechanism for permitting free movement of said device and preventing the wire from twisting, the said device
 65 comprising a telescoping feed tube depend-

ing from said means, and the lower end of said tube having a nozzle for discharging the wire.

5. A winding machine comprising means for supporting the wire, a device for deliver- 70 ing the wire, and mechanism for permitting free movement of said device and preventing the wire from twisting, said means including a revolving and oscillating table, and a wire reel secured on said table, the
 75 said device comprising a telescoping feed tube depending from said table, and the lower end of said tube having a nozzle for discharging the wire.

6. A winding machine comprising means 80 for supporting the wire, a device for delivering the wire, and mechanism for permitting free movement of said device and preventing the wire from twisting, said means including a revolving and oscillating table, 85
 a plurality of wire reels mounted on said table, and said mechanism including a ball and socket joint for the bottom of said table, said joint having a passage for the wires, the said device comprising a telescoping 90
 feed tube depending from said table, and the lower end of said tube having a nozzle for discharging the wire.

7. A winding machine comprising means for supporting the wire, a device for deliver- 95 ing the wire, and mechanism for permitting free movement of said device and preventing the wire from twisting, the said device comprising a telescoping feed tube, depending from said means, and the lower end of said
 100 tube having a nozzle for discharging the wire, the said nozzle being formed with a feed opening for the wire, and having a reduced portion or neck immediately above the lower end thereof. 105

8. A winding machine comprising means for supporting the wire, a device for deliver- ing the wire, and mechanism for permitting free movement of said device and preventing the wire from twisting, said means includ- 110
 ing a revolving and oscillating table, and a wire reel secured on said table, the said device comprising a telescoping feed tube depending from said table, and the lower end of said tube having a nozzle for dis- 115
 charging the wire, the said nozzle being formed with a feed opening for the wire, and having a reduced portion or neck immediately above the lower end thereof.

9. A winding machine comprising means 120 for supporting the wire, a device for delivering the wire, and mechanism for permitting free movement of said device and preventing the wire from twisting, said means including a revolving and oscillating table, 125
 a plurality of wire reels mounted on said table, and said mechanism including a ball and socket joint for the bottom of said table, said joint having a passage for the wires, the said device comprising a telescoping feed 130

5 tube depending from said table, and the lower end of said tube having a nozzle for discharging the wire, the said nozzle being formed with a feed opening for the wire, and having a reduced portion or neck immediately above the lower end thereof.

10 10. A winding machine comprising means for supporting the wire, a device for delivering the wire, and mechanism for permitting free movement of said device and preventing the wires from twisting, the said device including a nozzle provided with a slot for discharging a plurality of wires side by side in the same plane.

15 11. A winding machine comprising means for supporting the wire, a device for delivering the wire, and mechanism for permitting free movement of said device and preventing the wire from twisting, said means including a revolving and oscillating table, and a wire reel secured on said table, the said device including a nozzle provided with a slot for discharging a plurality of wires side by side in the same plane.

20 12. A winding machine comprising means for supporting the wire, a device for delivering the wire, and mechanism for permitting free movement of said device and preventing the wire from twisting said means including a revolving and oscillating table, a plurality of wire reels mounted on said table, and said mechanism including a ball and socket joint for the bottom of said table, said joint having a passage for the wires, the said device including a nozzle provided with a slot for discharging a plurality of wires side by side in the same plane.

25 13. An armature winding machine comprising an element movable longitudinally in the slots of the armature and provided with means to properly place the conductors therein.

30 14. An armature winding machine comprising an element movable longitudinally in the slots of the armature and provided with means to properly place the conductors therein, said element being reversible to move alternately in opposite directions in successive slots.

35 15. An armature winding machine comprising an element movable longitudinally in the slots of the armature and provided with means to properly place the conductors therein, said element being mounted for free manipulation to manually control the winding operation.

40 16. An armature winding machine comprising an element movable longitudinally in the slots of the armature to place the conductors therein, said element being provided with a ball and socket support to permit swinging and rotary motion thereof.

45 17. An armature winding machine comprising an element movable longitudinally in the slots of the armature to place the conductors therein, said element comprising a feed nozzle provided with means for delivering a plurality of conductors in proper relation to each other.

50 18. An armature winding machine comprising an element movable longitudinally in the slots of the armature and provided with means to properly place the conductors therein, and a set of reels for supplying the conductors to said element, supported to revolve about a common axis, said element being rotatable with said reels about said axis to move in opposite directions in said slots.

55 19. An armature winding machine comprising an element movable longitudinally in the slots of the armature and provided with means to properly place the conductors therein, and a set of reels for supplying the conductors to said element, supported to shift with the back and forth movement thereof.

60 20. An armature winder comprising means movable back and forth in the slots of the armature and provide with means to properly place the conductors side by side therein.

Signed by me at Connorsville, Ind., this 11th day of May, 1912.

WILLIAM T. HENSLEY.

Witnesses:

WILLIAM E. OCHILTREE,
CALVIN OCHILTREE.