H. K. SANDELL.

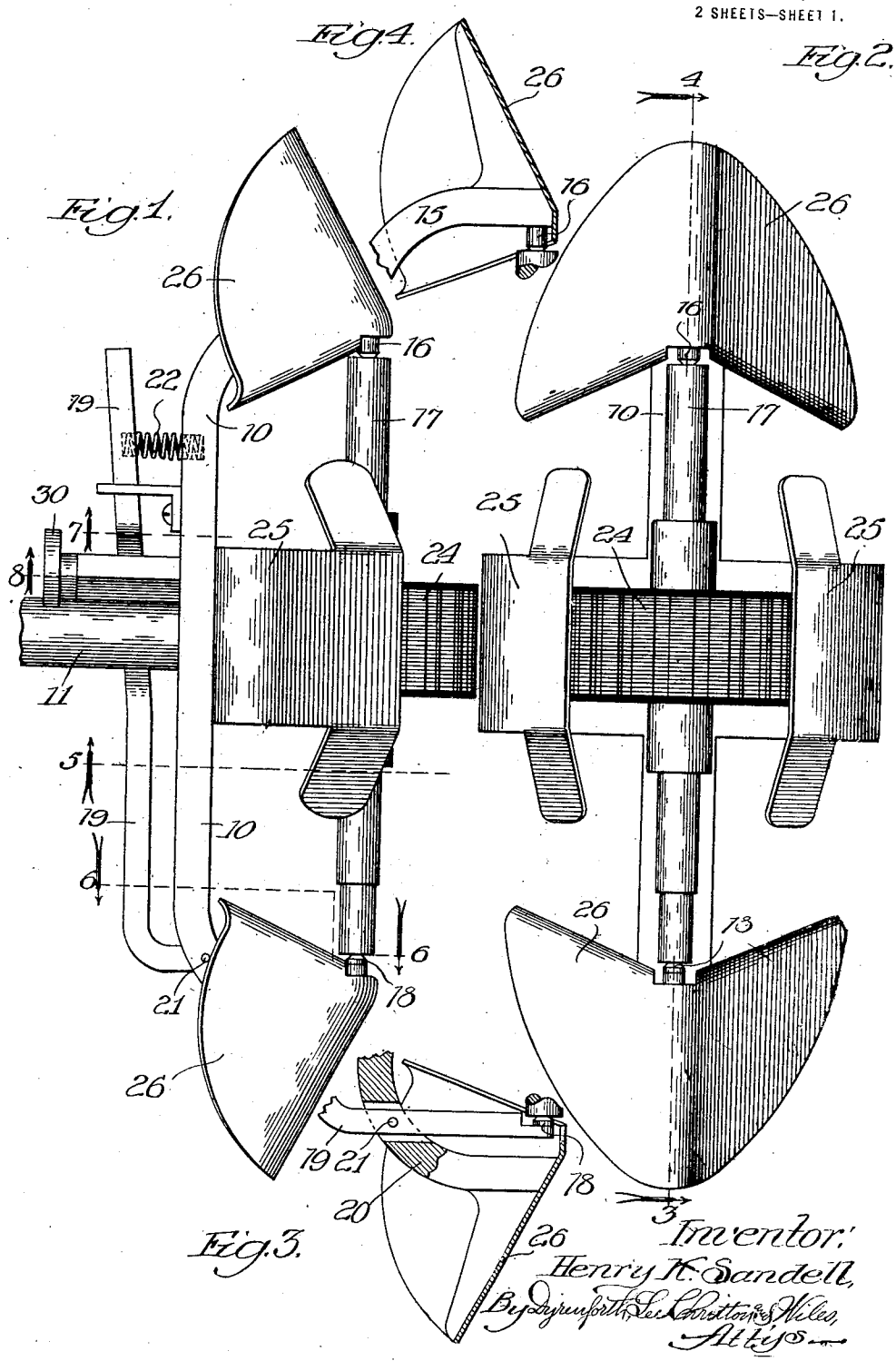
ARMATURE WINDING DEVICE.

APPLICATION FILED MAR. 18, 1920

1,371,647.

Patented Mar. 15, 1921.

2 SHEETS—SHEET 1.



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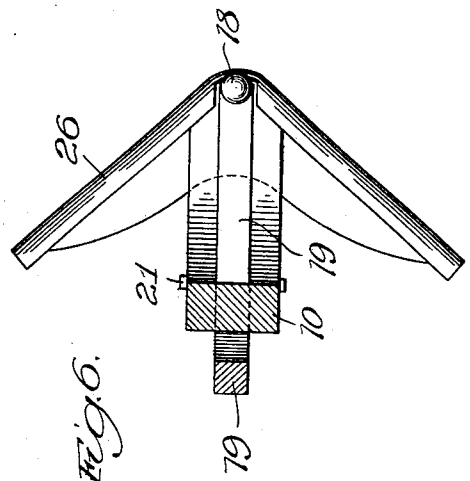


Fig. 6.

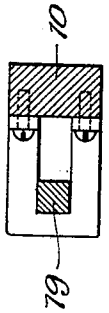


Fig. 7.

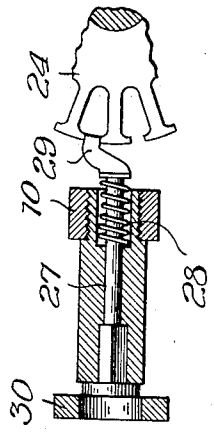


Fig. 8.

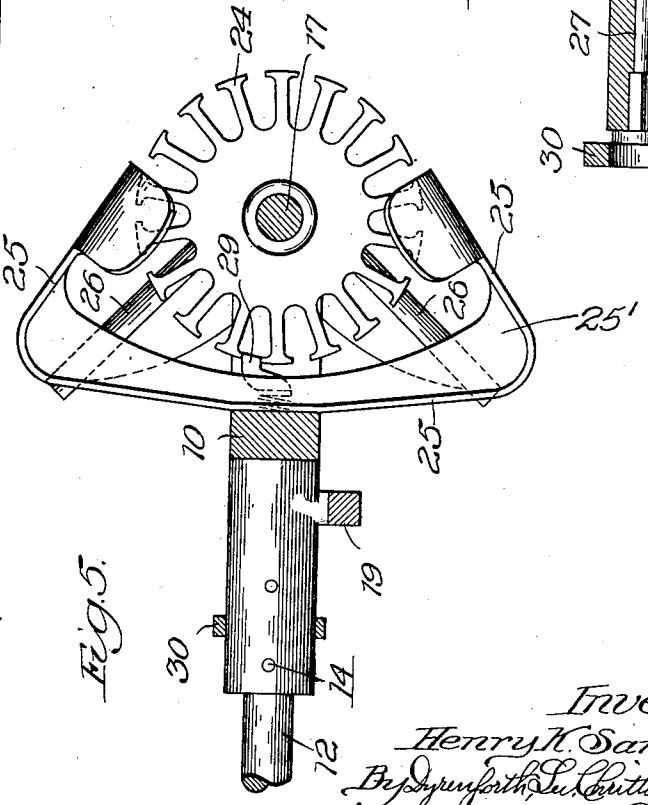


Fig. 5.

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UNITED STATES PATENT OFFICE.

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ARMATURE-WINDING DEVICE.

1,371,647. Specification of Letters Patent. Patented Mar. 15, 1921.

Application filed March 18, 1920. Serial No. 366,369.

To all whom it may concern:

Be it known that I, HENRY K. SANDELL, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Armature-Winding Devices, of which the following is a specification.

The present invention relates to devices for winding armatures, and will be clearly understood from the following specification, illustrated by the accompanying drawings, in which—

Figure 1 is a side elevation of the device, when so positioned that the armature shaft is held vertically;

Fig. 2 is an end elevation of the device in the same position;

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

Fig. 4 is a sectional view of a portion of the device on the line 4 of Fig. 2;

Fig. 5 is a sectional view on the line 5 of Fig. 1;

Fig. 6 is a sectional view on the broken line 6—6 of Fig. 1, viewed in the direction of the arrow;

Fig. 7 is a partial sectional view on the line 7 of Fig. 1; and

Fig. 8 is a sectional view on the line 8 of Fig. 1 through a portion of the device.

Referring more particularly to the drawings, the numeral 10 indicates a bowed member, provided centrally with an outwardly projecting boss 11 adapted to be secured to a rotatable shaft 12 by means of the lugs 13 on the latter and the pin 14. On rotation of the shaft 12 the bowed member is rotated about an axis passing transversely through it.

At one end, 15, of the bowed member 10 an inwardly projecting pin 16 is formed, which is adapted to engage the end of an armature shaft 17. The armature shaft is retained in position in the bowed member by means of the engaging pin 16 at one end, and a similar pin 18 at its other end, the pin 18 being mounted upon the end of a bent lever 19, which passes through an opening in the bolt member 10, this opening being provided near the end 20 of said bowed member opposite the shaft engaging pin 16. This lever is pivoted in such manner as to permit movement of the pin 18 toward and from the pin 16, preferably on pins 21 passing through the openings in the bowed member 10, above mentioned. The lever is bent to lie in approximate parallelism with the back of the bowed member 10 and means, such as the spring 22 are provided for normally forcing the pin 18 in a direction of the pin 16. By pressing down the lever 19 against the force of the spring 22, the shaft engaging pin 18 may be moved away from the opposite shaft engaging pin 16, thereby permitting the placing of an armature shaft in position in the bowed member or its release therefrom. On release of the handle of the lever 19, the spring 22 forces the handle of the lever 19 away from the back of the bolt member 10, thereby causing the pin 18 to approach the opposite pin 16, and engage the end of an armature shaft which may be placed between, as indicated in Figs. 1 and 2 of the drawings. This armature shaft has secured to it in the usual manner the slotted armature core 24 illustrated as made up of a plurality of laminations. Guiding or deflecting members 25, 25 are mounted upon the bolt member so as to partially embrace the core of the armature on the shaft. A reinforcing web 25′ may be provided within the guides or deflectors to aid in maintaining their rigidity and their proper position. The ends of the deflectors or guides 25 are brought inwardly toward the armature core between them, and terminates adjacent the spaced slots of the core into which a single winding is intended to fall.

Upon each end, 15 and 20 of the bowed member 10, a deflector 26 is mounted, each deflector being illustrated as somewhat fan shaped, and bent downwardly upon its central axis. As a result of this form of construction, the end deflectors 26, 26, cover and protect the ends of the armature shaft.

In order to retain the armature shaft rigidly in position with the proper slots of the core in proximity to the edges of the deflecting guides 25, 25, a small spring-pressed plunger 27 is provided which passes through a boss 28 screwed into the back of the bolt member 10 and preferably lying in proximity to the boss 11. The spring 28 tends to force the engaging end 29 of this plunger

toward the armature core, this engaging end 29 entering a slot in the core, as illustrated in Figs. 7 and 8. A head 30 is provided for convenience in disengaging the end of the plunger from the armature slot.

In operation, the device being mounted upon a rotatable shaft, an armature core mounted upon a shaft is inserted between the pins 16 and 18, being held in position by the action of the spring pressed lever 19. The spring-pressed plunger 27 is forced in the direction of the core by the spring 28, its end 29 engaging a slot in the armature and thereby positioning the core so that the two slots of the armature into which a single loop is intended to fall are in juxtaposition to the opposite ends of the guides 25, 25, as illustrated in Fig. 7. The wire for the winding is fed in the usual manner from a spool (not shown) and is held by hand, for example, in such position as to engage the guides 25, by which it is deflected into the proper slots of the core on rotation of the device when the shaft 12 is rotated. The deflectors 26, 26, at the ends of the device prevent the wire from falling on the wrong side of the core, guiding it over to the proper side of the armature shaft. The rotation of the device is continued until the proper number of loops have been formed in the slots. Rotation is then stopped, the spring-pressed plunger 28 pulled out of engagement with the armature, which is rotated until the next pair of slots in the core are in position for winding, at which position the end 29 of the plunger 27 engages the core slot adjacent that which it previously engaged. The winding operation is then repeated, the windings falling into the new pair of slots. The series of operations is continued until the entire armature is properly wound.

Although the present invention has been described in connection with the details of a specific embodiment thereof, it is not intended that these details shall be regarded as limitations upon the invention, except in so far as contained in the following claims.

What I claim as new and desire to secure by Letters Patent is:

1. In armature winding devices, in combination, rotatable supporting means engaging the armature shaft at its ends, means for engaging a slot of the armature to hold it stationary upon the support, lateral guides terminating opposite the proper slots of the armature for receiving a winding to guide a wire thereinto and end deflectors to protect the ends of the armature shaft.

2. In armature winding devices, in combination, rotatable supporting means engaging the armature shaft at its ends, a spring-pressed plunger mounted thereupon and adapted to engage the armature by entering a slot thereof to hold it stationary, lateral deflecting guides terminating opposite the proper slots of the armature for receiving a winding to guide a wire thereinto and deflectors to protect the ends of the armature shaft.

3. In armature winding devices, a rotatable armature shaft support, said support comprising a bowed member, shaft engaging means attached to one end thereof, a lever within the bow of the bowed member and near one end thereof, said lever being pivoted to the bowed member, shaft engaging means upon said lever alined with the first mentioned shaft engaging means, means for forcing said lever toward the opposite end of the bowed member, lateral deflecting guides attached to said bowed member and partially embracing the armature core, said guides terminating opposite the proper slots in the armature core for receiving a winding guide a wire thereinto on rotation of the device, and end deflectors to protect the ends of the armature shaft, said deflectors being attached to the ends of the bowed members.

HENRY K. SANDELL.