(No Model.)

L. B. JONES.

MACHINE FOR WINDING ARMATURES.

No. 350,828. Patented Oct. 12, 1886.

Fig. 1

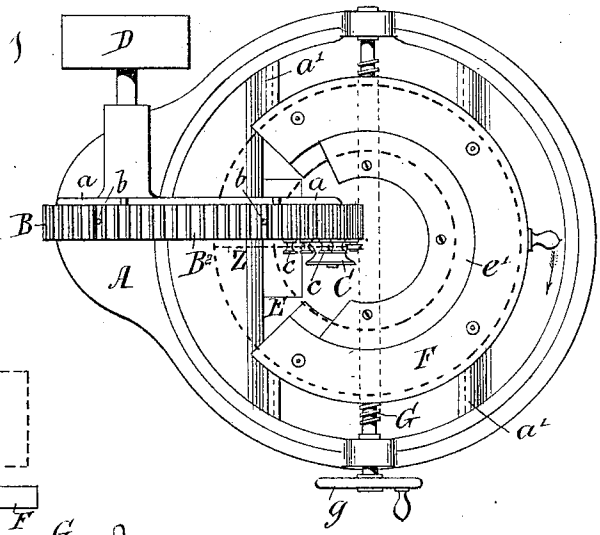


Fig. 3

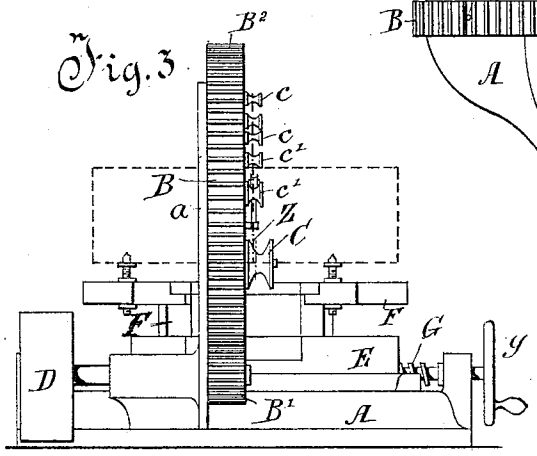
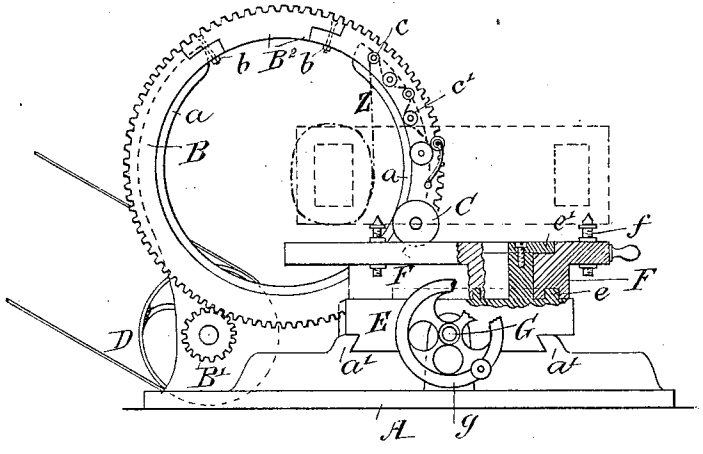


Fig. 2



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UNITED STATES PATENT OFFICE.

LUCIAN BIGELOW JONES, OF BEDFORD, ASSIGNOR TO THE FORSAITH ELECTRICAL MACHINE COMPANY, OF MANCHESTER, NEW HAMPSHIRE.

MACHINE FOR WINDING ARMATURES.

SPECIFICATION forming part of Letters Patent No. 350,828, dated October 12, 1886.

Application filed February 9, 1886. Serial No. 191,364. (No model.)

To all whom it may concern:

Be it known that I, LUCIAN BIGELOW JONES, of Bedford, in the county of Hillsborough and State of New Hampshire, have invented a certain new and useful Improved Machine for Winding Armatures; and I do hereby declare that the following is a full, clear, and exact description of the same.

This invention has reference to improvements in winding-machines, and is specially designed for winding the wire upon armatures for dynamo and magneto-electric machines, electromotors, and the like, its object being to do this work more efficiently and expeditiously than can be accomplished by hand.

The main points of my winding-machine are: an annular gear carrying the spool and necessary tension devices revolving upon an annular extension of the bed plate or frame, and having a removable section to admit part of the armature-rim to the interior of the annular gear; a circular platform or ring upon which the armature rests while being wound, capable of being rotated as the winding of the different bobbins proceeds, and means for moving said platform or ring, and the armature carried thereby, laterally, to insure the proper coiling or laying of the wire.

For full comprehension, however, of my invention, reference must be had to the annexed drawings, in which letters of reference similar to those used in the following detailed description indicate like parts.

In said drawings, Figure 1 represents a plan view of my winding-machine; Fig. 2, a side view partly broken away, and Fig. 3 an end view of same.

A is the bed-plate, cast to somewhat the shape shown, *a a* being curved arms or extensions projecting vertically from the bed to afford an annular journal or ways for an annular gear or spur wheel, B, to revolve upon, the teeth of this gear being on the outer periphery and in mesh with a pinion, B′, the shaft of which is journaled in the bed-plate and carries on its opposite end the driving-pulley D. This annular gear or spur wheel has a removable section, B^2, which is held in place while the machine is working by countersunk studs *b b*, a side plate, or other suitable means, and the entire wheel is held in place on the journal-arms *a a* by means of a tongue-and-groove connection or other approved arrangement which will leave it free to revolve.

C is a spool, the spindle of which passes into the side or flat portion of the spur-wheel B, upon this spool being wound sufficient wire to complete one bobbin of the armature, and *c c′* are tension-rollers, also journaled to the wheel B′, over and between which the wire Z passes from the spool to the armature, as seen by the dotted line in Fig. 2.

Upon the bed-plate A are formed horizontal ways *a′ a′*, in which slides a table or frame, E, of suitable construction to carry on its top a semi-ring-shaped platform, F, of somewhat larger circumference, suitable curved or circular ways, *e e′*, being provided to steady same, while permitting it to be also turned on its circular ways when required, as will be hereinafter explained. Passing through this ring or platform F, or screwed therein, are two or more upwardly-projecting pins, *f f*, upon which the armature (shown by dotted lines) will rest, suitable holes being made in same to receive said pins, thus providing means for holding the armature firmly in position while the bobbins are being wound. (This arrangement of pins and holes may be only adapted to a special style of armature-core—such as one made up of a number of flat plates or rings bolted together—the pins being arranged to match and fit into the bolt-holes; but I intend to use different holding devices to suit the various styles of armatures adapted to be wound on my machine.)

The platform F is not a complete ring, a segment of the circle being open to permit the spur-wheel B to enter in such manner that the ring-armature carried by the platform may pass and be revolved within the annular wheel after the fashion of one chain-link within another, the wheel B revolving in a vertical plane, and the platform and armature being rotated in a horizontal plane.

A horizontal screwed shaft, G, suitably journaled in the bed-plate A, is connected to the table or frame E, and by the rotation of this shaft said table or frame is caused to slide in the ways *a′ a′*. I have shown a wheel, *g*, by which this screwed shaft may be worked by hand; but I intend in some cases to connect

same by proper gearing or other mechanical devices with the driving-shaft, so that the back-and-forth motion may be given to the frame and platform automatically.

The operation of my invention is as follows: The section B^2 of the annular gear B having been removed, the annular core of the armature to be wound is placed upon the semi-ring-shaped platform F, with one part of its circumference within the annulus of the gear, the open part of the platform leaving part of the armature-core free, so that a number of bobbins may be wound consecutively without changing the position of the core with relation to the platform. The removable section B^2 is then replaced and the core properly fastened on the platform. The spool C, filled with the wire, being in place, and the free end having been passed through the tension devices, is taken down to the armature, as indicated in Fig. 2, and properly fastened in one of the bobbin-spaces, which will be arranged in the proper line by shifting the platform F. Power is then applied to the driving-pulley, and the pinion B′ causes the annular spur-wheel B to revolve. This motion draws upon the wire and winds it tightly upon the core, the spool C meanwhile unwinding, each complete revolution of the wheel B passing the wire once around the core. The attendant, when the hand-wheel *g* is used, or the proper mechanism when the work is done automatically, will move the platform slowly in a lateral direction (by bringing the screwed shaft G into operation against the table or frame and causing it to slide in the ways *a′ a′*) as the winding proceeds, and thus lay the wire in even coils side by side. When one bobbin is finished, a fresh spool is put in place, and the core is adjusted to bring another bobbin-space in line by turning the platform on its circular ways *e e′*, and the operation is repeated. After all the bobbins which cover the open space in the ring-platform have been wound, another section of the armature-core is brought into position by lifting the same off the pins *f* (or removing the equivalent holding devices when pins are not used) and readjusting the core on the platform. The operation then proceeds as before.

It will be apparent to those skilled in the building of electrical machines that my invention in its essential features may be applied with equal facility to the winding of field-magnets for dynamo-electric machines and other like purposes.

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

1. A machine for winding wire upon armature-cores, consisting of an annular spur-wheel carrying a spool and having part of its periphery removable, and a platform capable of being rotated in a plane at right angles to the plane of revolution of said spur-wheel, and means for revolving said spur-wheel and moving said platform laterally, substantially as and for the purpose set forth.

2. In a machine for winding wire upon armature-cores, the combination, with the bed-plate A, having a driving-shaft journaled therein, curved arms or extensions *a a*, and ways *a′ a′*, of annular gear B, having removable section B^2, and carrying a spool and tension devices, table or frame E and platform F, movably attached thereto, and screwed shaft G, all substantially as and for the purpose specified.

3. In a machine for winding armatures, the combination, with the movable ring or platform F, of pins *f*, for holding the armature-core thereon, substantially as described.

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