

No. 895,384.

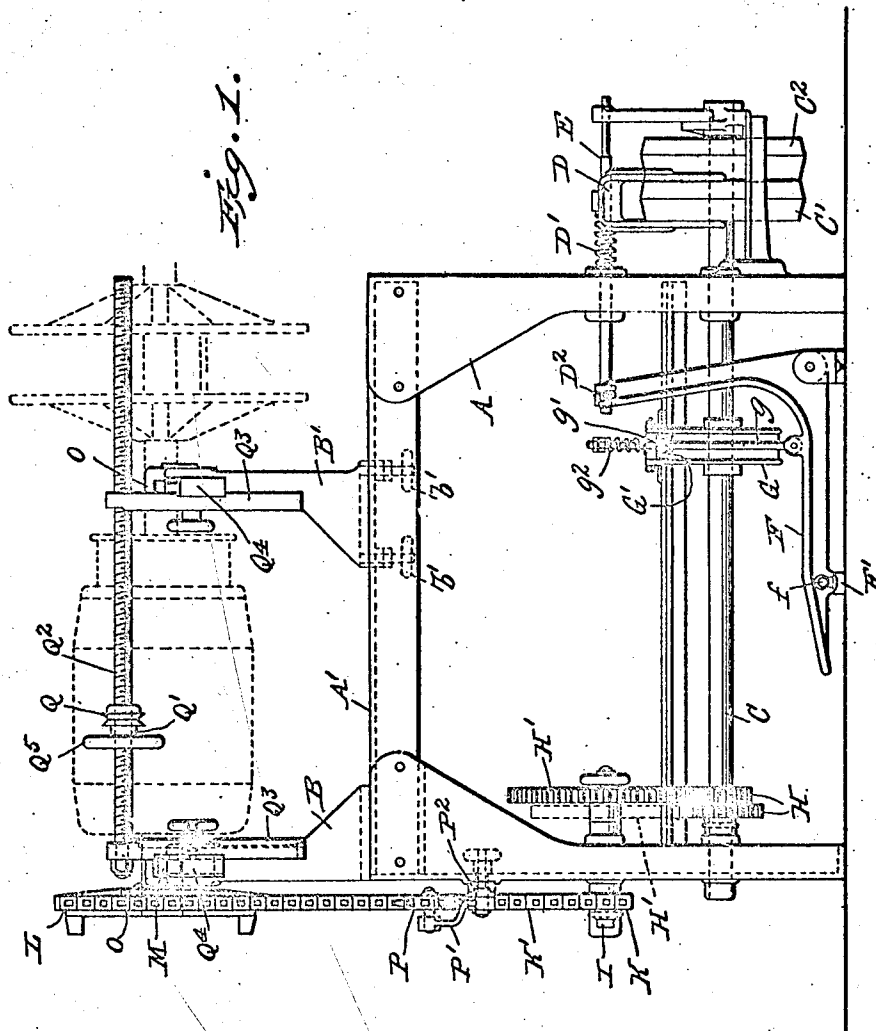
PATENTED AUG. 4, 1908.

R. E. MANLEY.

APPARATUS FOR APPLYING ARMATURE BANDS.

APPLICATION FILED JUNE 27, 1907.

2 SHEETS—SHEET 1.



Witnesses

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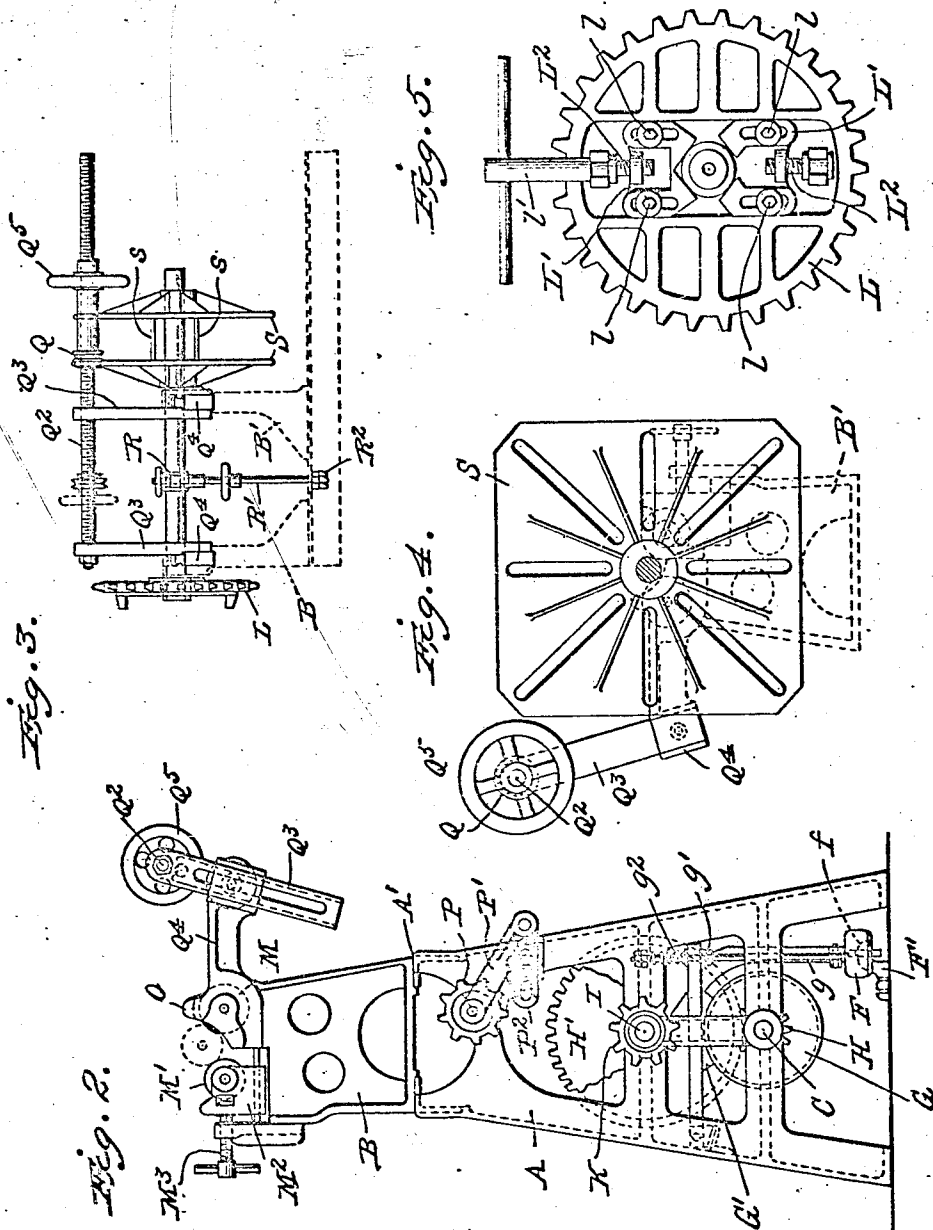
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UNITED STATES PATENT OFFICE.

ROBERT EARLY MANLEY, OF HANOVER, PENNSYLVANIA.

APPARATUS FOR APPLYING ARMATURE-BANDS.

No. 895,384.

Specification of Letters Patent.

Patented Aug. 4, 1908.

Application filed June 27, 1907. Serial No. 381,121.

To all whom it may concern:

Be it known that I, ROBERT E. MANLEY, of Hanover, in the county of York and State of Pennsylvania, have invented a certain
5 new and useful Improvement in Apparatus for Applying Armature-Bands; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings,
10 forming a part of this specification, and to the figures and letters of reference marked thereon.

This invention relates to apparatus for facilitating the application of retaining bands
15 on electric motor and generator armatures and the formation of field coils for such motors and generators, the objects of the invention being to provide a simple mechanism adapted for handling armatures or coils of
20 any size within wide limits and which shall be under absolute control of the workman while leaving his hands free to solder, adjust or bind the strands forming the bands or coils.

Other objects of the invention are to provide an apparatus with which the tension on the strands may be maintained when the rotation of the armature or coil is arrested and in which the slack in the driving connections
30 shall be automatically taken up.

The invention consists in certain novel details of construction and combinations and arrangements of parts all as will be now described and pointed out particularly in the
35 appended claims.

In the accompanying drawings: Figure 1 is a front elevation of an apparatus embodying the present improvements with an armature and field coil form shown in dotted lines.
40 Fig. 2 is an elevation looking at the left hand end of Fig. 1. Fig. 3 is a detail front elevation showing a coil form. Fig. 4 is a view showing a coil form in side elevation. Fig. 5 is a detail elevation of the large shaft clamping
45 sprocket wheel.

Like letters of reference in the several figures indicate the same parts.

The frame A of the apparatus is preferably in the form of a relatively light but strong
50 stand well braced and having a substantially horizontal bed or top A' on which are mounted the standards B, B', for supporting the armature or coil shaft. The standard B may

be mounted in fixed position at one end of the bed, while the standard B' is adjustably
55 mounted on the bed by clamps or hand wheels b', shown in dotted lines, Fig. 1.

A drive shaft C is journaled in the lower portion of the stand and provided with fast and loose belt pulleys C' C² to which power
60 may be applied from a power shaft in any convenient location. A belt shifter D mounted to slide on a square or splined shaft or guide E serves to shift the belt from one pulley to the other, said belt shifter being
65 moved to shift the belt to the fast pulley by a spring D' and connected through a rod or shaft D² with a bell crank foot lever or treadle F, whereby it may be moved against the tension of the spring to shift the belt to
70 the loose pulley.

A catch F' is provided for holding the treadle down, and as a convenient form consists of a finger f' projecting from a base secured to the floor and adapted to engage in
75 an opening in the treadle when the latter is pressed down and laterally beneath the finger and to readily release the treadle when the latter is pressed down and laterally from
80 beneath the finger.

In order to control the drive shaft and the parts driven thereby to be presently described, the shaft is provided with a brake drum G on which a friction brake G' rests, said brake being connected through a rod g
85 with the treadle. A nut or enlargement g' on the rod serves to lift the brake when the treadle rises and a spring g² on the rod above the brake insures the application of the brake before the belt has been completely
90 shifted and at the same time permits the treadle to continue its movement to completely shift the belt and engage the catch. The drive shaft is also provided with pinions or small gear wheels H preferably of different
95 size and one or the other of which is adapted to engage with one or the other of a pair of change gears H' either of which may be placed on a counter shaft I journaled in the stand. On its outer end the counter shaft
100 carries a sprocket wheel K for a drive chain K', said chain also passing around a larger sprocket wheel L preferably mounted directly on the shaft carrying the armature or coil form.

To permit of the sprocket wheel being

readily applied to the shaft and held rigidly in centered position thereon without injury to the shaft, the wheel is provided with radially movable brass centering and clamping jaws

5 L' said jaws being firmly guided in their radial movements by guide bolts L. Adjusting and holding screws L² are provided for the jaws, and for convenience they may have squared heads to which a wrench V' may be applied as will be readily understood.

10 The armature shaft or shaft carrying the coil form is adapted to rest on the top of the standards B, B', each of the latter being provided with brass anti-friction wheels on and between which the shaft rotates.

15 The anti-friction wheels may all be adjustably mounted in the standards to facilitate adjustment and to accommodate shafts of different size, but in practice it is found sufficient to mount the forward wheels M in fixed bearings and the rear wheels M' in movable bearings M² adjustable toward and from the forward wheels by set screws M³.

20 By spacing the rollers properly, it will be seen that not only can shafts of different size be accommodated, but shafts having different diameters at opposite ends may be alined properly, and, further, by dropping the shaft well down between the rollers the necessity of providing top rollers to prevent the shaft riding out of its bearings is avoided.

30 As a precaution against the shaft being drawn off of the top of the standards should sudden strain on the wire occur, the bearings of the front rollers may be extended above the rollers in the form of stops O against which the shaft will strike should an accident such as above contemplated occur. The tension of the sprocket chain is maintained by a gravity or spring pressed idler P, preferably mounted on an arm P' pivoted to a support P², adjustably mounted on the end of the stand, thus the chain will automatically accommodate itself to the sprocket wheels even though the axis of the upper sprocket wheel is high or low within reasonable limits and sufficient slack may be allowed to permit of the removal of the chain when a new shaft or armature is to be put in position.

50 The wire is preferably led in over guide rollers Q journaled on a sleeve Q' threaded on a shaft Q² mounted in adjustable supports Q³ carried by forwardly extending arms Q⁴ on the standards B B'. Separate guide rollers may be employed for the band and field coil wires but each is controlled in its position longitudinally of the shaft by a hand wheel Q⁵, as it is preferred that the feed of the wire axially of the shaft should be under the direct and precise control of the workman.

60 When field coils are to be wound, it is preferred that the form should be mounted on the free end of the shaft outside of the adjustable standard, as shown in dotted lines

in Fig. 1 and in Figs. 3 and 4. The shaft in this instance may be held down intermediate the standards by a removable bearing R adjustably connected by a rod R' with an anchor R² under the bed of the machine.

70 The field coil form preferably embodies two oppositely arranged face plates S each slotted radially for the passage of binding tapes. The face plates are adapted to clamp between them a core of any proper configuration corresponding to the core of the field coil and are held together by clamping bolts s so as to be readily separated for the removal of the formed coil or for the removal or insertion of a new core.

80 In making use of the apparatus the workman has complete control through the treadle, thus he can start and rotate the shaft a fraction of a revolution if he so desires and instantly stop and hold the shaft in its new position by the brake, even though the tension on the wire be very great. Both hands are free to solder or manipulate the wire as it is applied and the screw shaft Q² affords a convenient rest, the height of which may be adjusted, for the workman to rest his arms on in the more particular and careful steps of the operation.

90 In winding field coils the binding tapes are first passed through the slots in the face plates, then the wire is wound on, then the tapes are passed through the slots over the outside of the coil and made fast to preserve the shape of the coil when removed from the form.

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

1. An apparatus for use in applying bands to armatures embodying a frame, standards on said frame having bearings adapted to receive the armature shaft, a drive shaft, a brake, fast and loose drive connections for said drive-shaft, a treadle controlling the brake and fast and loose drive connections, and gearing for transmitting motion from the drive-shaft to the armature, embodying a sprocket chain and sprocket wheel having gripping jaws thereon for engaging the armature shaft.

115 2. An apparatus for use in applying bands to armatures embodying a frame, standards on said frame adjustable toward and from each other and having bearings adapted to receive the armature shaft, a drive shaft and gearing operated by the said drive shaft and embodying a member adapted to be removably mounted on the armature shaft.

120 3. An apparatus for use in applying bands to armatures embodying a frame, vertically arranged standards thereon adjustable toward and from each other and having bearings adapted to receive the armature shaft, a drive gearing embodying fast and loose connections, a brake and a foot treadle movable

in one direction to apply the brake and release the power and in the opposite direction to release the brake and apply the power and also embodying a member having clamping jaws for engaging the armature shaft.

4. An apparatus for use in applying bands to armatures embodying a frame, standards having bearings adapted to receive the armature shaft, and treadle controlled drive gearing and brake therefor, a sprocket wheel having centering and clamping jaws thereon, for engaging the armature shaft, and a sprocket chain connecting said wheel with the treadle controlled drive gearing.

5. An apparatus for applying bands to armatures, embodying a frame, standards thereon adjustable with relation to each other on the frame, treadle controlled drive gearing, and bearings in the standards adapted to receive the armature shaft formed by anti-friction rollers adjustable with relation to each other.

6. An apparatus for applying bands to armatures, embodying a frame, standards thereon adjustable with relation to each other on the frame, treadle controlled drive gearing, bearings in the standards adapted to receive the armature formed by fixed and adjustable antifriction rollers, and a drive

wheel having attaching means for removably attaching the same to the armature shaft.

7. An apparatus for use in applying armature bands, embodying means for removably supporting the armature shaft in position to rotate, drive gearing for rotating the shaft embodying a chain and sprocket wheel, the latter having radially movable centering and clamping jaws of relatively soft metal whereby the sprocket wheel may be clamped to the armature shaft without injury to the latter.

8. An apparatus for use in applying bands to armatures, embodying a frame, adjustable bearings therein adapted to receive the armature shaft, a sprocket wheel adapted to be mounted on the shaft carried in said bearings, a drive shaft, a sprocket chain intermediate the sprocket wheel and drive shaft, and means for tightening the sprocket chain embodying a movable idler cooperating with the chain, whereby the tension of the chain may be maintained with shafts of different size and sufficient slack provided to permit of the removal of the chain.

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Witnesses:

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