No. 783,500. PATENTED FEB. 28, 1905.

A. F. BATCHELDER.

COIL FORMER.

APPLICATION FILED NOV. 1, 1902.

2 SHEETS—SHEET 1.

Fig. 1.

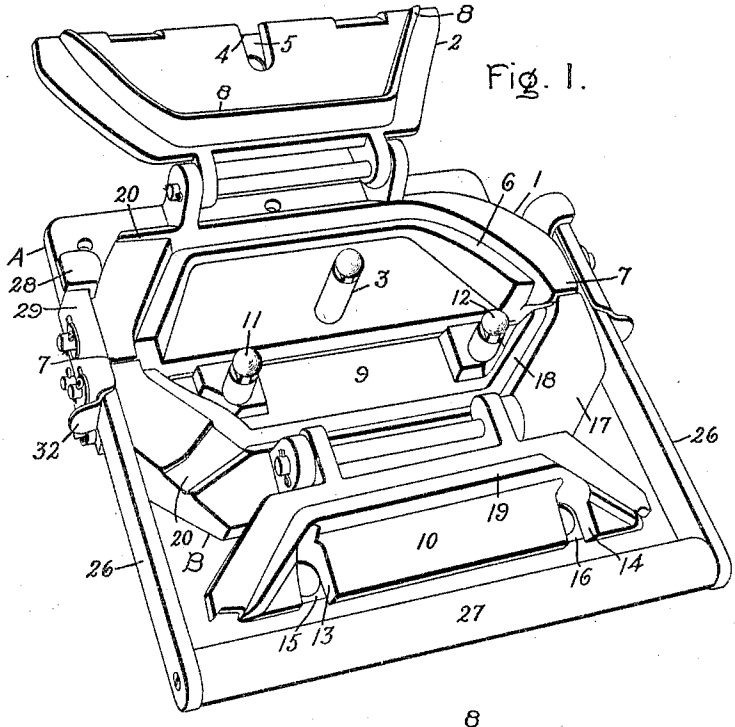
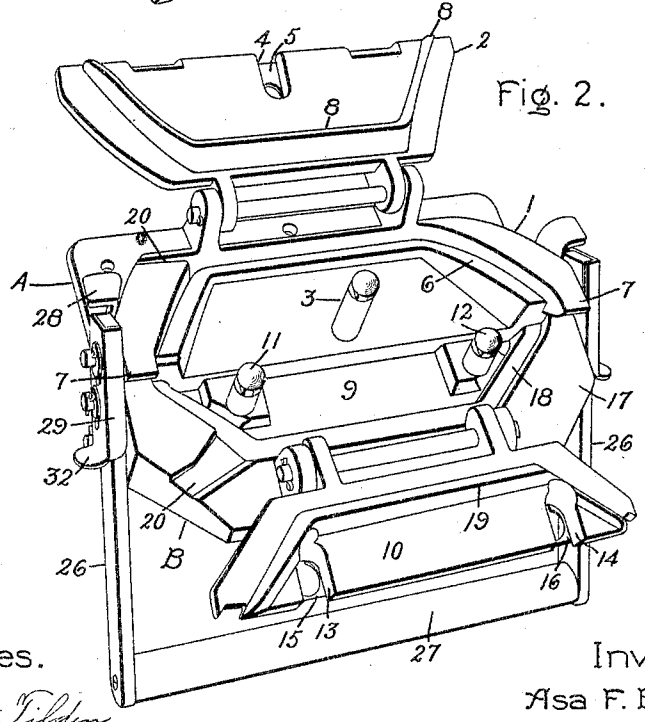


Fig. 2.



Witnesses.

George H. Tilden.

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by Allen & Gardiner

Att'y.

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2 SHEETS—SHEET 2.

Fig. 3.

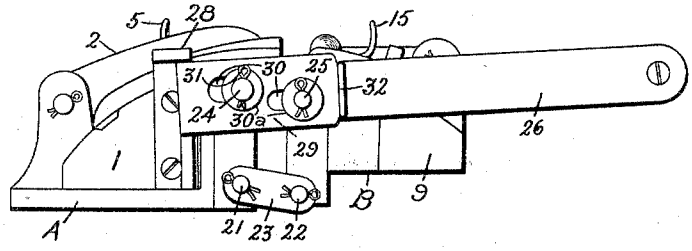


Fig. 4.

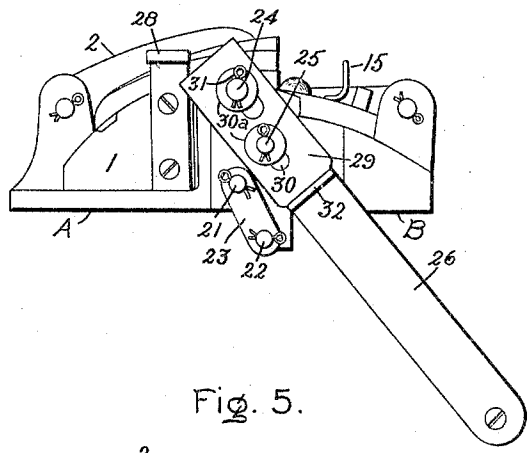
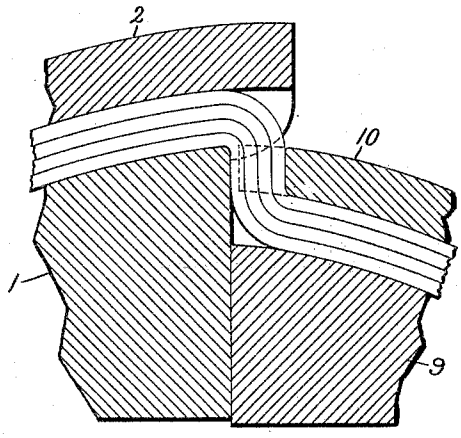


Fig. 5.



Witnesses.

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No. 783,500. Patented February 28, 1905.

UNITED STATES PATENT OFFICE.

ASA F. BATCHELDER, OF SCHENECTADY, NEW YORK, ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

COIL-FORMER.

SPECIFICATION forming part of Letters Patent No. 783,500, dated February 28, 1905.

Application filed November 1, 1902. Serial No. 129,671.

To all whom it may concern:

Be it known that I, ASA F. BATCHELDER, a citizen of the United States, residing at Schenectady, county of Schenectady, State of New York, have invented certain new and useful Improvements in Coil-Formers, of which the following is a specification.

My invention relates to means for shaping form-wound or Eickemeyer coils for use upon dynamo-electric machines. As is well known, these form-wound coils are provided with offset bends to enable them to nest with each other when assembled upon the machine, and in order to produce such coils it has been the practice heretofore to wind the conductor-wire in place upon a former, giving each convolution a number of bends and twists to conform it thereto, so that the manufacture of these coils has been very laborious and correspondingly expensive.

The object of my invention is to provide a device which will receive a previously-wound plain coil, or coil without offsets, and impart to it the desired shape with a minimum expenditure of manual labor.

In forming a coil according to my invention the conductor-wire may be wound into a plain hexagonal coil upon any of the well-known winding-machines and then placed in a former consisting of two clamping members, each of which receives nearly a half of the coil, and then by depressing one clamping member relatively to the other an offset is made in each end of the coil.

The invention will be more readily understood by reference to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a perspective view of a coil-former embodying one form of my invention with the several parts in position to receive a plain coil. Fig. 2 is a similar view of the same, but with the front clamping member in its depressed position. Fig. 3 is an end elevation of the former with the clamping members closed and in alinement. Fig. 4 is a similar view with the front clamping member depressed; and Fig. 5 is an enlarged section of a portion of the clamping members, showing the formation of the offset in the coil.

The coil-shaping machine shown in the drawings comprises the rear clamping member A, adapted to be secured to the front edge of a work-bench, and the front clamping member B, connected by a parallel-motion means to the member A and adapted to be lowered below the top of the work-bench.

The rear member A consists of a base part 1 and a cover 2, pivoted thereto near its rear edge and adapted to be locked thereon in closed position by means of a notched stud 3, fast upon the base part 1 and adapted to extend through a slot 4 in the cover 2, and be engaged by a bolt 5, carried on the outside of the cover. The base part 1 has its upper face made cylindrical and is provided with a channel or recess 6 for the reception of one side of the coil and has guide-lugs 7 projecting from its upper front edge. The cover 2 is made in the shape of a thick cylindrical shell adapted to fit upon the upper face of the base 1 and carries on its under surface a depending web 8, adapted to fit against the inner side of a coil carried in the groove or channel of the base.

The front clamping member B has a base part 9, similar to the base 1 of the rear clamping member A, to which a cover 10 is hinged at its front edge and adapted to be locked in closed position by means of two notched studs 11 and 12, fixed upon the base part 9 and entering recesses 13 and 14 in the cover, over which slide the bolts 15 and 16. The base part 9 is also provided with a cylindrical upper surface 17 and a groove or recess 18 for the reception of a portion of the coil to be formed, and the cover 10 is provided with a corresponding web 19 to engage the inner side of the coil when the front cover 10 is closed. Both base parts 1 and 9 are provided with channels 20 for the passage of the lead ends of the coils.

The front clamping member B is secured to the rear clamping member A by means of a parallel-motion connection in duplicate at each end consisting of stub-shafts 21 and 22, fixed in the ends of the base parts 1 and 9, upon

which a link 23 is pivoted, and another pair of stub-shafts 24 and 25, upon which the lever 26 is pivoted. The levers 26 at opposite ends of the former are connected to operate in unison by a handle-bar 27. The means for locking the front clamping member B in elevated position, as shown in Fig. 3, consist of angular offsets 28 from each end of the base part 1 and latches 29, which partially surround the pivoted ends of levers 26 and which are provided with elongated holes 30 for the free passage of the stub-shafts 24 and 25 therethrough. Washers 30ª and split pins 31 at the ends of the stub-shafts serve to hold the levers 26 and latches 29 in place. The front ends of the latches are turned up to form thumb-pieces 32 and are adapted to engage at their opposite ends with the offsets 28 when pressed rearwardly, as shown in Fig. 3.

When a plain hexagonal coil is to be placed on the former, the operating-levers 26 are raised and locked in horizontal position by the latches 29, as shown in Fig. 3. The coil being placed in position in groove 18 of the front base 9, the cover 10 is then closed and locked by sliding the bolts 15 and 16 into engagement with the studs 11 and 12. The rear cover 2 is then closed and locked by bolt 5. The act of closing and locking the covers gives the front and rear halves of the coil a circular shape in end projection. By releasing the latches 29 and depressing the levers 26 the front clamping member is carried down to a lower horizontal plane, as shown in Figs. 4 and 5, imparting a double curve or offset to both ends of the coil, and this operation is performed without disturbance of the relative positions of the individual convolutions of the conductor-wire in the coil, for, as is apparent from Fig. 5, the bent portions of the several convolutions have equal lengths, and as a consequence there is no tendency to displace the relative positions of the conductor-wires held between the clamping parts 1 and 2 or 9 and 10. The covers 2 and 10 are unlocked and thrown back, as shown in Fig. 2, and the formed coil removed from the device.

It is apparent that the invention herein illustrated and described admits of many changes and modifications, and I accordingly do not restrict myself to the particular modification shown in the drawings.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. The combination of relatively movable clamping members each adapted to receive a portion of a coil, and means for moving one of said members into a position substantially parallel to its first position.

2. The combination of clamping members each adapted to receive a portion of a coil, and a parallel-motion means connecting said members together and for moving one member relatively to the other.

3. The combination of two clamping members adapted to be locked in engagement with portions of a coil, and means for moving one of said members into a different parallel plane.

4. The combination of two clamping members each comprising a base and a cover adapted to receive between them a portion of a coil, means for locking said covers to said bases, and means for moving one of said members into a different parallel plane.

5. The combination of two clamping members adapted to receive portions of a coil and impart thereto a circular contour in end projection, and means to move one of said members relatively to the other whereby offsets are formed in the ends of the coil.

6. The combination of two clamping members, a lever pivoted to both members and adapted to move one relatively to the other, and means for locking said lever against movement in one direction.

7. The combination of two clamping members each comprising a base, a cover hinged thereto, means for locking said base and cover together, pairs of stub-shafts carried at the ends of each member, links connecting the lower shafts and levers connecting the upper shafts, and means carried by said levers for locking the levers and one of the clamping members in elevated position.

In witness whereof I have hereunto set my hand this 31st day of October, 1902.

ASA F. BATCHELDER.

Witnesses:

BENJAMIN B. HULL,

HELEN ORFORD.