

(No Model.)

W. G. BURNHAM.
WIRE GROOVING MACHINE.

No. 569,087.

Patented Oct. 6, 1896.

Fig. 1.

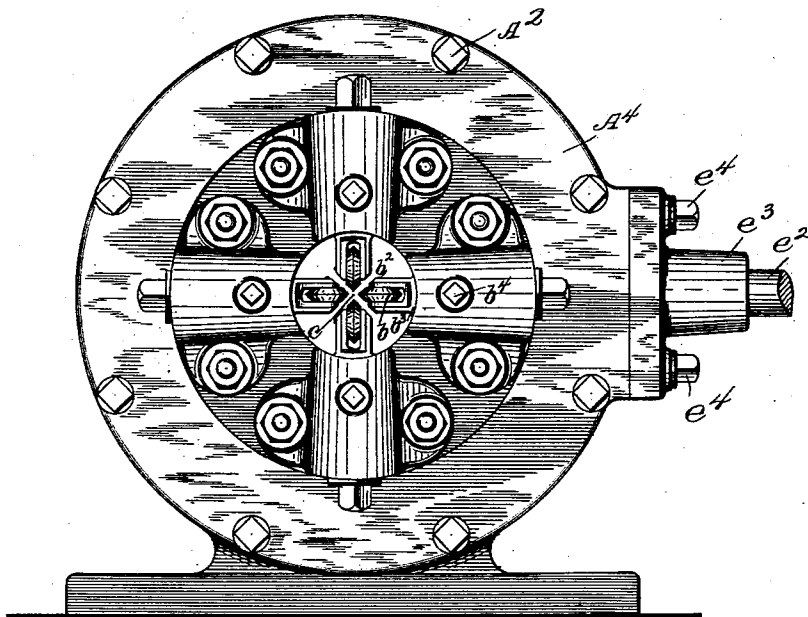
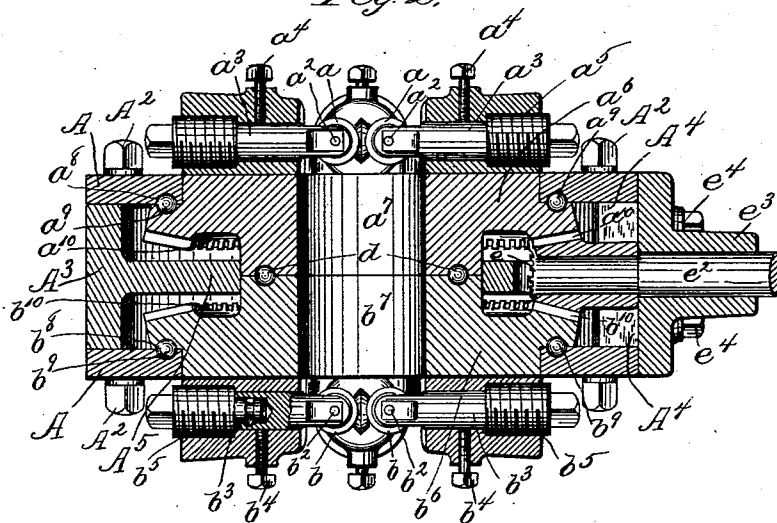


Fig. 2.



Witnesses.

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WIRE-GROOVING MACHINE.

SPECIFICATION forming part of Letters Patent No. 569,087, dated October 6, 1896.

Application filed January 22, 1896. Serial No. 576,415. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM G. BURNHAM, of Boston, county of Suffolk, and State of Massachusetts, have invented an Improvement in Wire-Grooving Machines, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

The present invention relates to a machine for grooving the surface of wire, and is mainly intended for use in producing the anti-inductive conductor for electric currents described in Patent No. 543,960, dated August 6, 1895, to Gorham Gray. Such conductors consist of wires grooved spirally on the surface in opposite directions, so that a series of grooves extending spirally around the wire in one direction are intersected at intervals by a corresponding series of grooves extending around the wire in the opposite direction.

The machine embodying the present invention consists mainly of a series of grooving devices adapted to surround the wire to be operated upon, which preferably consist of rotating dies mounted on axes transverse to the axis of the wire, so that their peripheries extend toward the wire and surround the same, the spaces between the peripheries of the dies on opposite sides of the wire being less than the diameter of the wire itself, so that as the said wire is forced through the space the surface thereof will be compressed by the peripheries of the dies to produce the grooves. In order that the grooves may extend spirally around the wire the said dies are mounted in a rotating carrier, adapted to rotate on an axis parallel to the wire as the wire is forced through the opening between the peripheries of the dies, so that during the forward movement of the wire as it is drawn through the continually-changing position of the dies with relation to the wire will produce grooves extending spirally around the latter, as is desired. In order that the two sets of grooves intersecting each other may be produced, a similar carrier, provided with similar dies, is arranged to operate upon the wire after it has passed by the first set of dies, and the said second set is mounted on a carrier adapted to rotate in the opposite direction to that which carries the first set, so that when the wire has

passed once through the machine it will be completely grooved, as is desired.

Figure 1 is an elevation of a machine embodying the present invention, and Fig. 2 a horizontal section of the same.

The dies or compressors *a* at one end of the machine are mounted to rotate on pinions *a*² at the ends of longitudinally-adjustable arms *a*³, secured by a set-screw *a*⁴ in a socket *a*⁵ upon a rotating carrier *a*⁶. There may be any number of the said dies, arranged, as shown, so that their peripheries converge toward the same point, the adjustment being so made that the space between the peripheries of the dies on opposite sides of the carrier is somewhat less than the diameter of the wire to be operated upon, so that when the said wire is thrust endwise into the space *c* between the peripheries of said dies its surface will be acted upon and compressed thereby. A similar set of dies *b* is correspondingly arranged on the opposite side of the machine and carried by the carrier *b*⁶, the corresponding parts being indicated by the letter *b* with indices corresponding to those of the letter *a*, which refer to the parts described above.

Thus when the wire is passed into the space *c* and drawn through said space and the corresponding space between the dies *b* it will be acted upon by both sets of dies; and in order to produce the desired spiral configuration of the grooves in opposite directions the two carriers *a*⁶ and *b*⁶ are mounted to rotate in opposite directions as the wire is drawn through. As herein shown, the said carriers are provided with central annular openings *a*⁷ *b*⁷, through which the wire extends from one set of compressing-dies to the other, and are mounted to rotate in suitable bearings, herein shown as ball-races *a*⁸ *b*⁸, provided with balls *a*⁹ *b*⁹, having a bearing in suitable ball-races in the frame or casing of the machine. Between the two carriers a series of balls *d* is preferably interposed to provide antifriction-contact between the two during their rotation, each carrier thus requiring but one set of bearings in the frame. The said carriers are provided with bevel-gears *a*¹⁰ *b*¹⁰, respectively, meshing with a pinion *e* at the end of the shaft *e*², having a bearing *e*³, secured to the frame by means of bolts or cap-screws *e*⁴. Thus a rotation of the shaft

e^2 causes a corresponding rotation of the carriers a^6 and b^6 in opposite directions, so that when the machine is set in motion and the wire drawn through it will produce two series of spiral grooves extending around the wire and intersecting each other. The wire may be drawn through in any suitable way, as by means of a windlass.

The frame of the machine may be of any suitable construction, but as herein shown consists of two annular plates A, secured by cap-screws A^2 to a cylindrical shell A^3 , the said plates A containing the ball-races for the carrier-bearings, and the said shell being provided with an opening in one side for the shaft e^2 , the bearing e^3 for which is secured to flanges A^4 . As shown herein, the cylindrical shell A^3 is strengthened by an inwardly-extending rib A^5 .

I claim—

1. A machine for producing spirally-grooved wire consisting of a set of grooving devices mounted on a rotating carrier; a similar set of grooving devices adapted to operate upon

the wire after it has passed by the first set, said second set being also mounted on a rotating carrier, and means for rotating said carriers in opposite directions, substantially as described.

2. The combination with the converging grooving devices, a ; of a rotating carrier for said devices; the grooving devices b ; a carrier for said devices; a frame or casing for said carriers; a series of balls interposed between said frame and each of the said carriers; and another series of balls interposed between the said carriers themselves, a bevel-gear on each carrier, and a shaft and pinion coöperating with said gears, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM G. BURNHAM.

Witnesses:

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