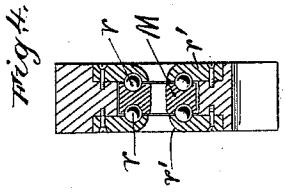
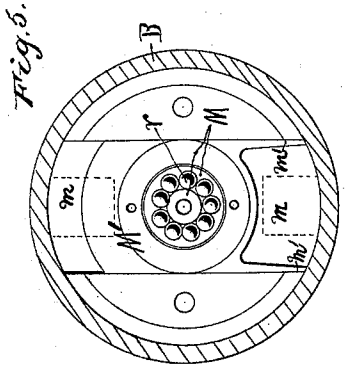
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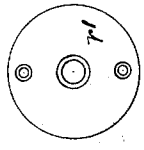
W. G. ALGEO, Jr.

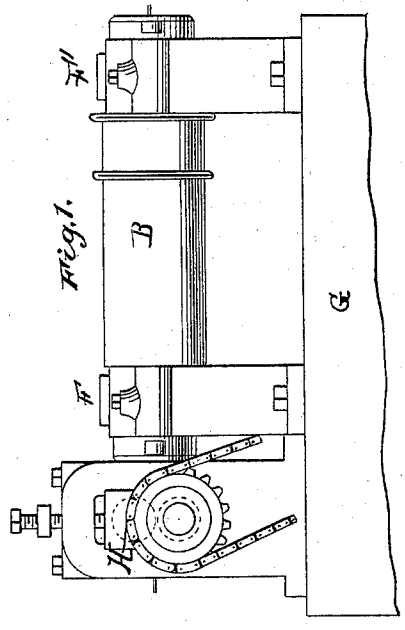
ROTARY STRAIGHTENER AND POLISHER.

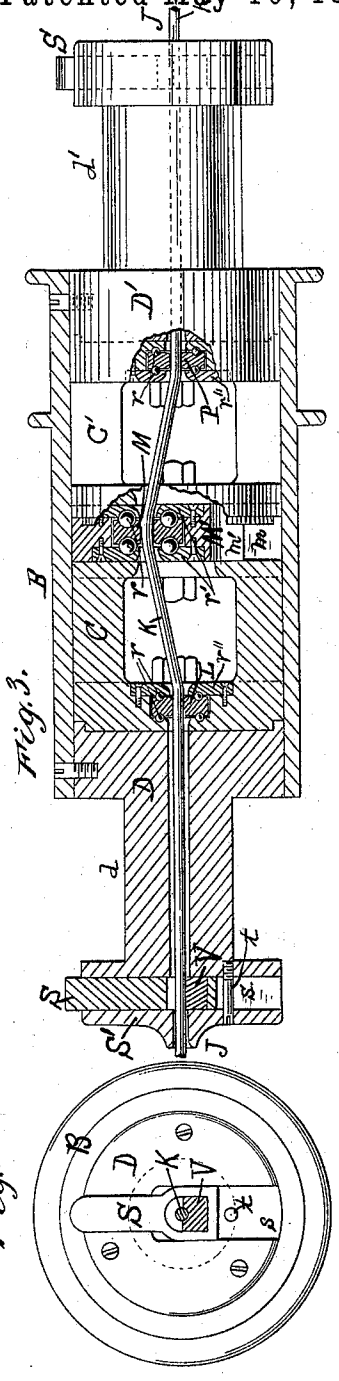
No. 603,836. Patented May 10, 1898.











Witnesses:
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UNITED STATES PATENT OFFICE.

WILLIAM G. ALGEO, JR., OF BEAVER FALLS, PENNSYLVANIA.

ROTARY STRAIGHTENER AND POLISHER.

SPECIFICATION forming part of Letters Patent No. 603,836, dated May 10, 1898.

Application filed May 4, 1897. Serial No. 634,982. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM G. ALGEO, Jr., of Beaver Falls, Pennsylvania, have invented certain new and useful Improvements in Rotary Straighteners and Polishers for Wires and Tubes, of which the following is a description, referring to the accompanying drawings, which form a part of this specification.

The invention relates in part to rotary straighteners in which the wire or tube while passing through the straightener axially is given a bend by means of an eccentrically-mounted die or wire-guide which spins around the wire or tube, bending it successively in all directions around the axis.

The invention relates in part to rotary polishers, centrifugal force being utilized to press the polishing-surface against the wire or tube.

The invention will be clearly understood from the accompanying drawings, which show the complete apparatus in its preferred form as applied to straightening wire.

In the drawings, Figure 1 is a side elevation of the combined straightener and polisher. Fig. 2 is an end view of the rotary flier or mandrel, showing the end cap S′ removed. Fig. 3 is a longitudinal section through the cylindrical casing and through part of the interior mechanism. Fig. 4 is a longitudinal section of the centrifugal slide through its axis in a plane parallel with the radial motion of the slide. Fig. 5 is a detail end view of the adjustable wire guide or die, its carrier, and a portion of the slide which carries it, the surrounding cylinder being shown in cross-section. Fig. 6 is a view of the cap for the ball-bearings of the wire guides or dies.

Throughout the drawings like letters of reference indicate like parts.

Figs. 2 and 3 show the parts as in operation and under the action of centrifugal force, while Fig. 5 shows the parts in the central position when at rest.

The flier or mandrel is provided with a cylindrical exterior casing B, which also forms a flanged belt-pulley for the driving-belt which rotates the flier. Within this cylinder B are contained the rigid frames C C′ D D′ of the rotating parts. The frames D D′ form heads which close the respective ends of the cylinder B. Journals are indicated at *d d′*. The journal-boxes F F′ are suitably supported on the bed-plate frame or casing G. The wire is fed through the rotary flier from left to right, Figs. 1 and 3. Sprocket-driven feed-rolls H may be employed to feed the wire through the rotary flier. At each end of the flier there is a central wire-guide J. The wire is fed through the guide J in the receiving end of the flier, and thence passes through a centrifugal polisher, a central guide, the centrifugal straightening-die, a second central die or guide, and thence through the second polisher and out. The wire itself, K, does not rotate. The three straightening-dies L M P do not turn upon the wire, but allow the flier to rotate without giving a rotary motion to the dies. This is accomplished by the ball-bearings *r*, upon which each of the guides or dies L M P is mounted. The dies L and P are mounted in fixed central relation to the other parts of the flier, but the die M is carried in the weighted slide M′, which is free to travel diametrically under the action of centrifugal force and of gravity, respectively, in the rectangular way *m* in the frames C C′. The slide M′ is weighted at one end, so that centrifugal force will throw it out when the machine is running, causing the wire-die M to move the desired distance—say one-half or three-quarters of an inch—from the central position, and thereby producing the desired angular bend in the wire as it passes through the flier. The die M is mounted on the balls *r*, which run in the two plates or caps *r′*. In Fig. 5 the plate *r′* is removed to show the balls in position. When the flier or mandrel is stopped with the slide M′ in the position shown in Fig. 5, the weight of the slide causes it to rest on its projections *m′*, which are of such length that the wire-die M will be exactly central. Therefore at this position the wire may be readily threaded through the apparatus preparatory to starting; but as soon as the machine is started and the necessary speed attained the centrifugal force moves the slide M′ to the other limit of its travel and thereby automatically shifts the wire-die M to its eccentric position. The guides or dies L and P are mounted in ball-bearings and provided with caps *r″* in the ends of the

respective frames C C′ at the positions indicated in Fig. 3, being at all times central; but the details are in other respects similar to the mounting described in connection with Figs. 4, 5, and 6.

The weighted slides which operate the polishers are indicated at S, and the slots or ways in which they travel are indicated at *s*. Preferably the slides S are of the stirrup-like shape shown in Fig. 2, the weighted end extending radially outward, as indicated. When brought to rest in the position shown in Fig. 2—that is to say, when the weighted end is uppermost—the slide falls and rests against the stop *t*, thereby removing the polishing-block V from the wire K and leaving the wire perfectly free to be threaded through or withdrawn from the flier; but when the flier is rotating the centrifugal force draws the polishing-block V, which is mounted in the slide S, against the surface of the wire and burnishes or polishes it. The polisher may be a block of brass, leather, or wood, or any burnishing or polishing device—such, for instance, as steel rolls.

In Fig. 3 the polishing-slides S and the straightening-slide M′ are shown drawn outward under the action of centrifugal force; but when the flier is brought to rest with the weighted ends of the slides uppermost, as shown in Fig. 3, then all the slides drop back into their central positions and the wire may be threaded centrally through the flier without obstruction. This is one of the important points of my invention, as it obviates the necessity of bending the wire and threading it through the zigzag course which it must take when the machine is in operation. It also obviates the necessity of adjusting the polishing apparatus to take up wear and of withdrawing it from its operative position by hand when it is desired to thread the end of a length of wire through the apparatus.

Of course the inclosing cylinder B is a mere matter of safety and convenience and not an essential characteristic of my invention, and so also are the forms and details of the several parts shown and described. The essential characteristics have, however, been fully explained in the foregoing description and will be pointed out in the claims.

I will not attempt to enumerate the modifications, both as to general arrangement and to detail, which may be made in the apparatus without departing from the principles of the invention; but

I claim, and desire to secure by Letters Patent, the following:

1. In combination, the rotary flier or mandrel, the centrifugally-controlled movable guide or die mounted therein, the axial or central dies mounted therein, the polishers and centrifugally-controlled movable holders therefor, and means for rotating the said flier or mandrel and for feeding the material to be straightened through it, substantially as set forth.

2. The rotary flier or mandrel, provided with the two centrally-located dies and the intermediate adjustable die which is adjusted transversely to the axial line by the motion of the said flier or mandrel, substantially as set forth.

3. In a rotary straightener, a wire-guide carried by a support which is loosely mounted in the said straightener and free to move therein under an adjusting force, substantially as set forth.

4. The rotary straightener provided with the movable die, free to move from the central position, under the action of centrifugal force a limited distance, and one or more stops for checking its motion in the opposite direction at the central position, substantially as set forth.

5. In the rotary portion of a straightener, the centrifugally-controlled slide M′, movable from the central position, and the die M carried thereby, substantially as set forth.

6. In a rotary straightener, and in combination with the two axial or central wire-guides, the intermediate wire-guide M loosely mounted and free to move under influence of adjusting forces to and from its central or axial position, and stops limiting its motion between the central position in one direction and the maximum eccentricity in the other direction.

7. In a rotary wire-straightener, the perforated wire-guide provided with two ball-races, the supporting-plates suitably mounted in the said straightener and each provided with a coöperating ball-race, and the balls in the said ball-races, substantially as set forth.

8. In combination in a rotary straightener and with guides for giving a lateral bend to the wire or tube therein, the said guides being normally in alinement when the flier or mandrel is at rest, means for automatically displacing one of the guides from the central position when the said mandrel or flier is rotating, substantially as set forth.

9. The rotary centrifugal polisher, consisting of a polishing device V mounted and movable with the rotating centrifugal holder S, substantially as set forth.

10. The rotary centrifugal polisher, consisting of a polishing device V mounted and movable with the rotating centrifugal holder S, and a stop *t* for limiting the movement of the said holder in one direction to the central position of the holder, substantially as set forth.

In witness whereof I have hereunto set my hand.

WILLIAM G. ALGEO, JR.

Witnesses:
E. C. REBESKE,
THOMAS MURRAY.