Nov. 6, 1923. 1,473,256

E. F. SHUSTER

WIRE STRAIGHTENING ARBOR

Filed Jan. 25, 1921

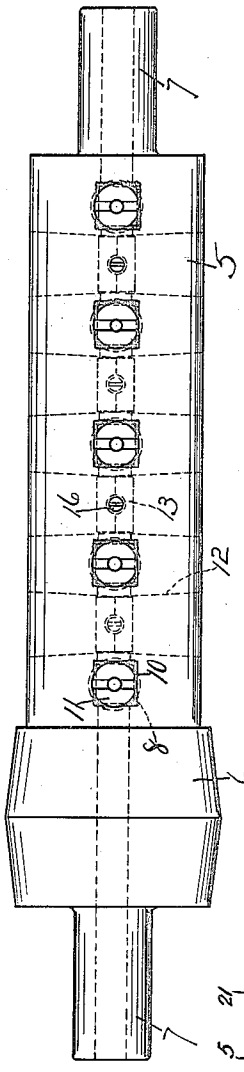


FIG. 1

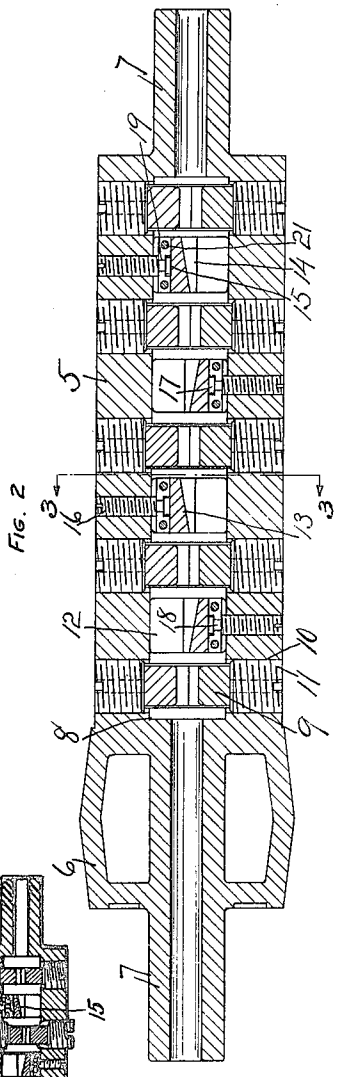


FIG. 2

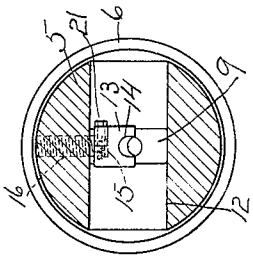


FIG. 3

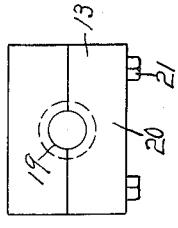


FIG. 4.

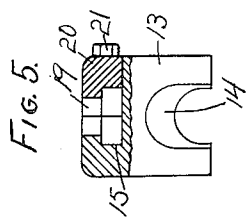


FIG. 5.

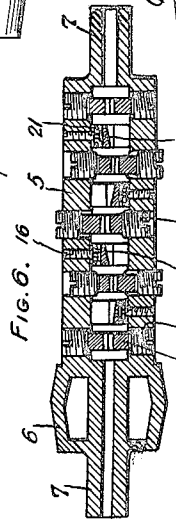


FIG. 6.

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UNITED STATES PATENT OFFICE.

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WIRE-STRAIGHTENING ARBOR.

Application filed January 25, 1921. Serial No. 439,771.

To all whom it may concern:

Be it known that I, ELMORE F. SHUSTER, a citizen of the United States, and a resident of New Haven, in the county of New Haven and State of Connecticut, have invented new and Improved Wire-Straightening Arbors, of which the following is a specification.

My invention relates to the class of devices through which a wire to be strainghtened is extended, the straightening of the wire being effected while the arbor is rotating, and an object of my invention, among others, is to provide an arbor with means whereby the straightening operation may be effected in a particularly efficient manner.

One form of device embodying my invention and in the construction and use of which the objects herein set out, as well as others, may be attained, is illustrated in the accompanying drawings, in which—

Figure 1 is a side view of an arbor embodying my invention.

Figure 2 is a view in central longitudinal section through the same showing the straightening dies in axial alinement.

Figure 3 is a view in cross section on plane denoted by the dotted line 3—3 in Figure 2.

Figure 4 is a side view, scale enlarged, of one of the guides.

Figure 5 is an end view, scale enlarged, of one of the guides partially broken away to show construction.

Figure 6 is a detail view, scale reduced, in central longitudinal section through a portion of the arbor, showing the staggered relation of the straightening dies during the straightening operation and the relative positions of the guides for directing the end of a wire into the openings in such dies.

The arbor, as to its general form, is of old and well known construction and consists of a body 5, usually of cylindrical shape, and having a pulley 6 at one end and a journal 7 at each end properly formed for reception within a journal box or other bearing. A hole extends axially through the structure from end to end and is enlarged at intervals throughout its length to provide straightening die chambers 8 for straightening dies 9 arranged in pairs in said chambers and having recessed meeting faces through which the wire being straightened extends in a well known manner. Threaded holes 10 for die backing adjusting screws 11 are cut into the chambers 8, and these holes are partly squared to receive the angularly shaped dies 9, which dies are adjusted as to their position and held in place as by means of the screws 11.

In carrying my invention into effect I provide wire guide holes 12 extending through the body at right angles to and intersecting the axially extending hole, a portion of which hole comprises the chambers 8, the holes 12 opening into the axially extending hole and consequently opening therethrough at their opposite sides into the chambers 8, as shown in Figure 2 of the drawings. These holes 12 are preferably of angular shape and larger in cross sectional area at their outer ends than at their inner ends near the axial center of the arbor as shown in dotted lines in Figure 1 of the drawings. Wire guides 13, of angular shape in cross section, are movably mounted in the holes 12 near the axial center of the arbor, each of said guides having a tapered recess 14 greater in depth at the end at which the wire enters, and of a lesser depth at the opposite end. The holes 12 are of a size to permit the guides 13 to be inserted therein from the outer surface of the body of the arbor. Each guide has a recess 15 to receive the enlarged end or head 17 of a wire guide adjusting screw 16 mounted in a screw threaded opening extending from the outer surface of the body of the arbor into the holes or wire guide chambers 12. A neck 18 extends between the head 17 and the body of each screw. Holes 19 smaller than the recesses 15, and of a size corresponding to the neck 18, extend from the recesses to the outer surface of each guide, the construction, therefore, being such as to secure the adjusting screws 16 to the dies. In order that the heads may be released from the recesses 15 and may be also placed therein, one corner of each guide is so cut away that it may be separated from the main piece and thus provide an adjusting screw releasing piece 20, the cut separating this releasing piece extending into the recess 15 and the releasing piece being secured in place as by means of screws 21, as shown in Figure 4 of the drawings.

The end of a wire to be straightened is more or less bent, owing to the shape given to it in the coil, or otherwise, and for this reason it will not readily pass into the openings formed by the recessed meet-

ing faces of the straightening dies but is liable to strike the sides of said dies and thereby have its progress impeded. It is to obviate this difficulty that I have provided the improved guides forming the subject matter of this application, it being intended that said guides may be adjusted to meet requirements caused by the positions of the straightening dies, which straightening dies, in operation, are located in staggered relation with respect to each other and to a greater or lesser degree depending upon the conditions existing in the wire being straightened. When the guides are properly positioned with respect to the straightening dies the end of a wire will pass directly through the arbor from end to end without having its progress interrupted by contact with shoulders formed by the straightening dies, or otherwise, and the adjusting means for these guides are so arranged that their positions may be readily changed to meet any of the conditions required.

In accordance with the provisions of the patent statutes I have described the principles of operation of my invention together with the device which I now consider to represent the best embodiment thereof, but I desire to have it understood that the device shown is only illustrative and that the invention may be carried out by other means.

I claim:—

1. A wire straightening arbor comprising a body, wire straightening dies spaced apart therein, wire guides located between said dies and means for moving said guides to change their positions with respect to said dies.

2. A wire straightening arbor comprising a body, wire straightening dies spaced apart therein, means for moving said dies to change their positions in the direction of the diameter of the arbor, wire guides located between said dies, and means for moving said guides to change their positions in the same direction as that of said dies.

3. A wire straightening arbor comprising a body, having straightening die chambers and a hole extending into said arbor from one side and opening into said chambers, straightening dies located in the straightening die chambers, a wire guide located in said hole between the straightening dies, and means for changing the position of said guide with respect to said straightening dies.

4. A wire straightening arbor comprising a body, wire straightening dies spaced apart in said body, a wire guide located between said straightening dies, and an adjusting screw secured to said guide to move it in opposite directions and extending through the body to the outer surface thereof.

5. A wire guide having a recess therein to receive the head of an adjusting screw and a small hole opening from said recess to receive the smaller neck of said screw, a releasing piece shaped to uncover said recess to permit entrance of said head, and means for securing said releasing piece in place.

6. A wire straightening machine comprising a rotating body having an axial wire passage, spaced apart transverse passages, and chambers intersecting the wire passage between the transverse passages, pairs of dies arranged in the transverse passages and having wire holes arranged staggered relatively to the axis of the wire passage of the body, and a guide block arranged in each chamber and having an inclined face formed with a groove arranged in a plane radial with the axis of the wire passage of the body and presented toward the wire hole of the pair of dies at one side of the chamber and inclining toward the wire hole of the pair of dies at the opposite side of the chamber, substantially as and for the purpose described.

7. A wire straightening machine comprising a rotating body having an axial wire passage, spaced apart transverse passages, and chambers intersecting the wire passage between the transverse passages, pairs of dies arranged in the transverse passages and having wire holes arranged staggered relatively to the axis of the wire passage of the body, and a guide block arranged in each chamber and having an inclined face formed with a groove arranged in a plane radial with the axis of the wire passage of the body and presented toward the wire hole of the pair of dies at one side of the chamber and inclining toward the wire hole of the pair of dies at the opposite side of the chamber, said block extending from near the wire hole of one pair of dies and terminating near the wire hole of the next pair of dies, the blocks located in adjacent chambers being arranged on opposite sides of the axis of the wire passage of the body, substantially as and for the purpose specified.

8. A wire straightening machine comprising a rotating body having an axial wire passage, spaced apart transverse passages intersecting the wire passage, and chambers between the transverse passages, pairs of dies arranged in the transverse passages and having wire holes arranged staggered relatively to the axis of the wire passage of the body, and guide blocks arranged in the chambers and extending the full width thereof, each block having an inclined face formed with a groove arranged in a plane radial with the axis of the wire passage of the body and presented toward the wire

hole of the pair of dies at one side of the chamber and inclining toward the wire hole of the pair of dies at the opposite side of the chamber, substantially as and for the purpose set forth.

9. A wire straightening machine comprising a rotataing body having an axial wire passage, spaced apart transverse passages intersecting the wire passage, and chambers between the transverse passages, pairs of dies arranged in the transverse passages and having wire holes arranged staggered relatively to the axis of the wire passage of the body, and guide blocks arranged in the chambers and extending the full width thereof, and each having an inclined face formed with a groove arranged in a plane radial with the axis of the wire passage of the body and presented toward the wire hole of the pair of dies at one side of the chamber and inclining toward the wire hole of the pair of dies at the opposite side of the chamber, said block extending from near the wire hole of one pair of dies and terminating near the wire hole of the next pair of dies, the blocks located in adjacent chambers being arranged on opposite sides of the axis of the wire passage of the body, and means for forcing the wire through the body and the dies and past the guide blocks, substantially as and for the purpose described.

10. A wire straightening arbor comprising a body, wire straightening dies spaced apart therein, a wire guide located between said dies, and an adjusting screw loosely connected with said guide to change its position with respect to said die.

11. A wire straightening arbor comprising a body, wire straightening dies spaced apart therein, a wire guide located between said dies, said guide having a socket partially formed by a piece removably secured to the guide, and an adjusting screw having an enlarged end to be loosely engaged within said socket to change the position of the guide with respect to the die.

ELMORE F. SHUSTER.