

(No Model.)

J. BROWNING.

MACHINE FOR SPINNING METAL INTO IRREGULAR SHAPES.

No. 423,904.

Patented Mar. 25, 1890.

FIG. 1.

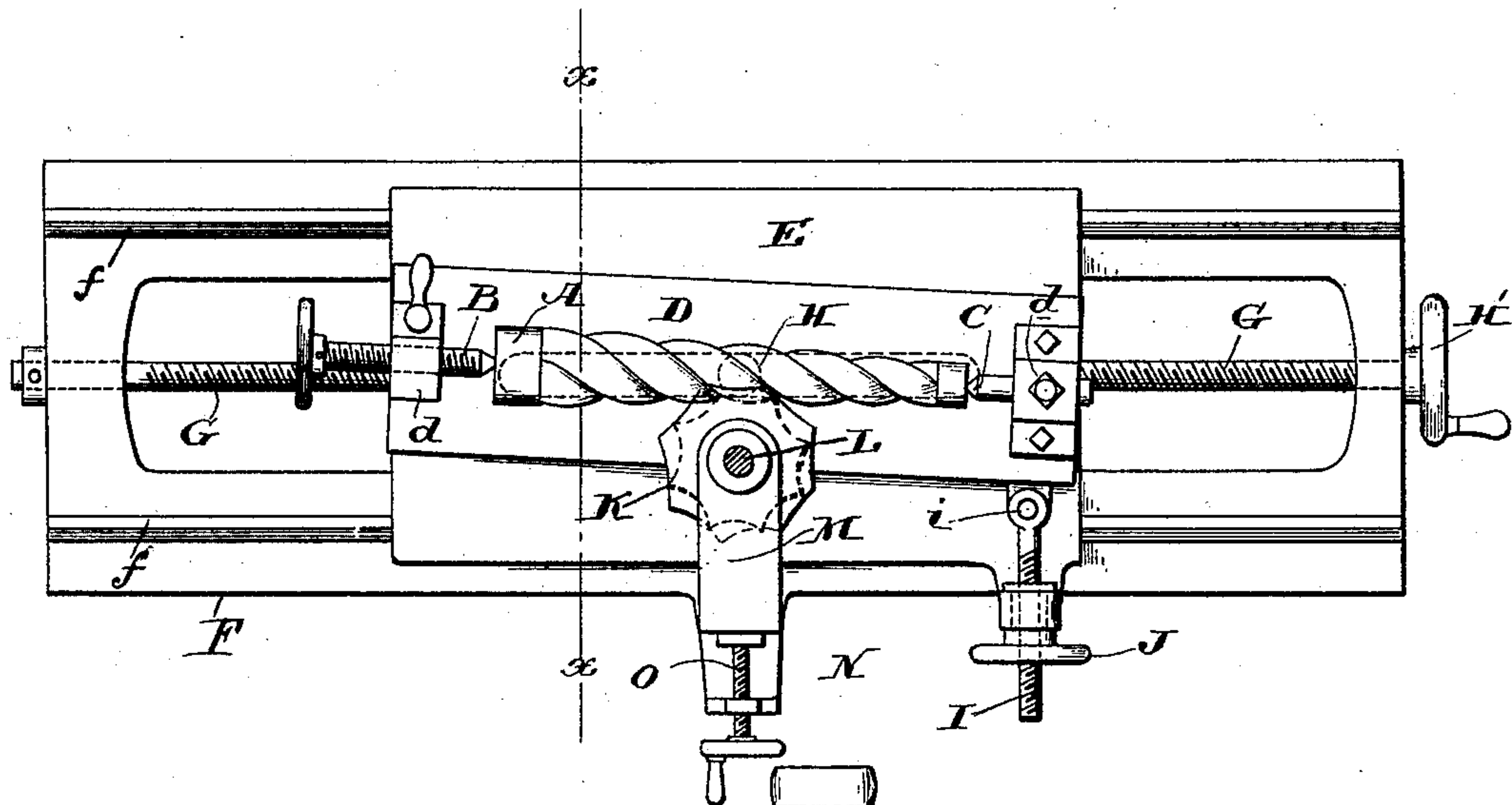


FIG. 4.

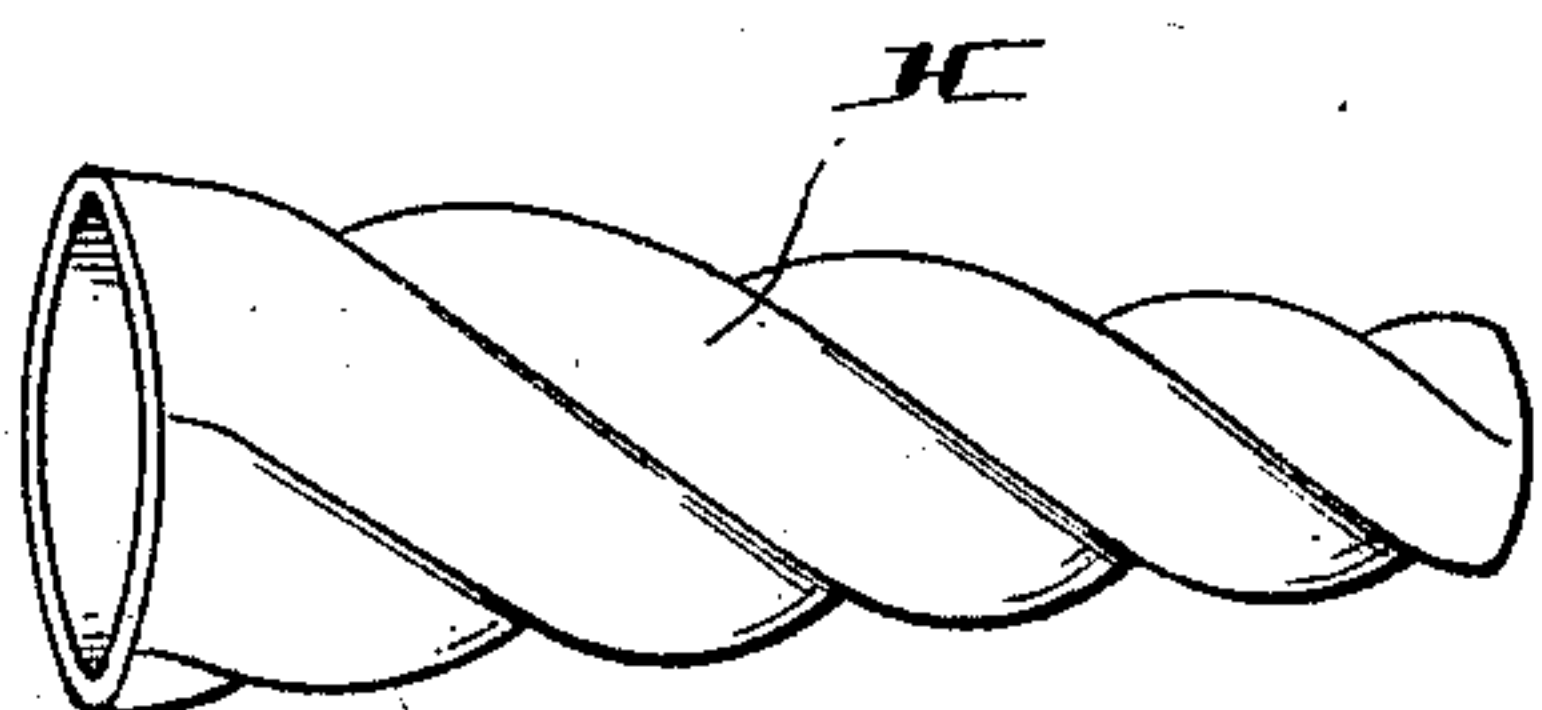
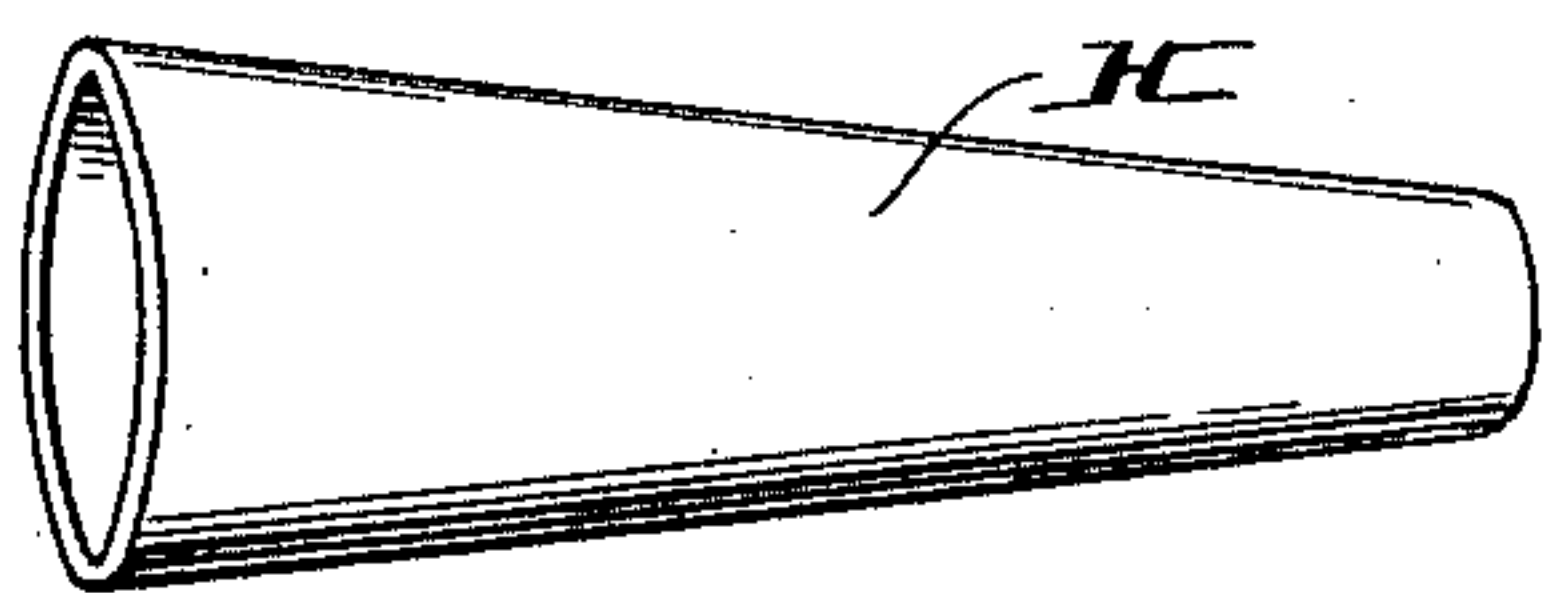


FIG. 5.

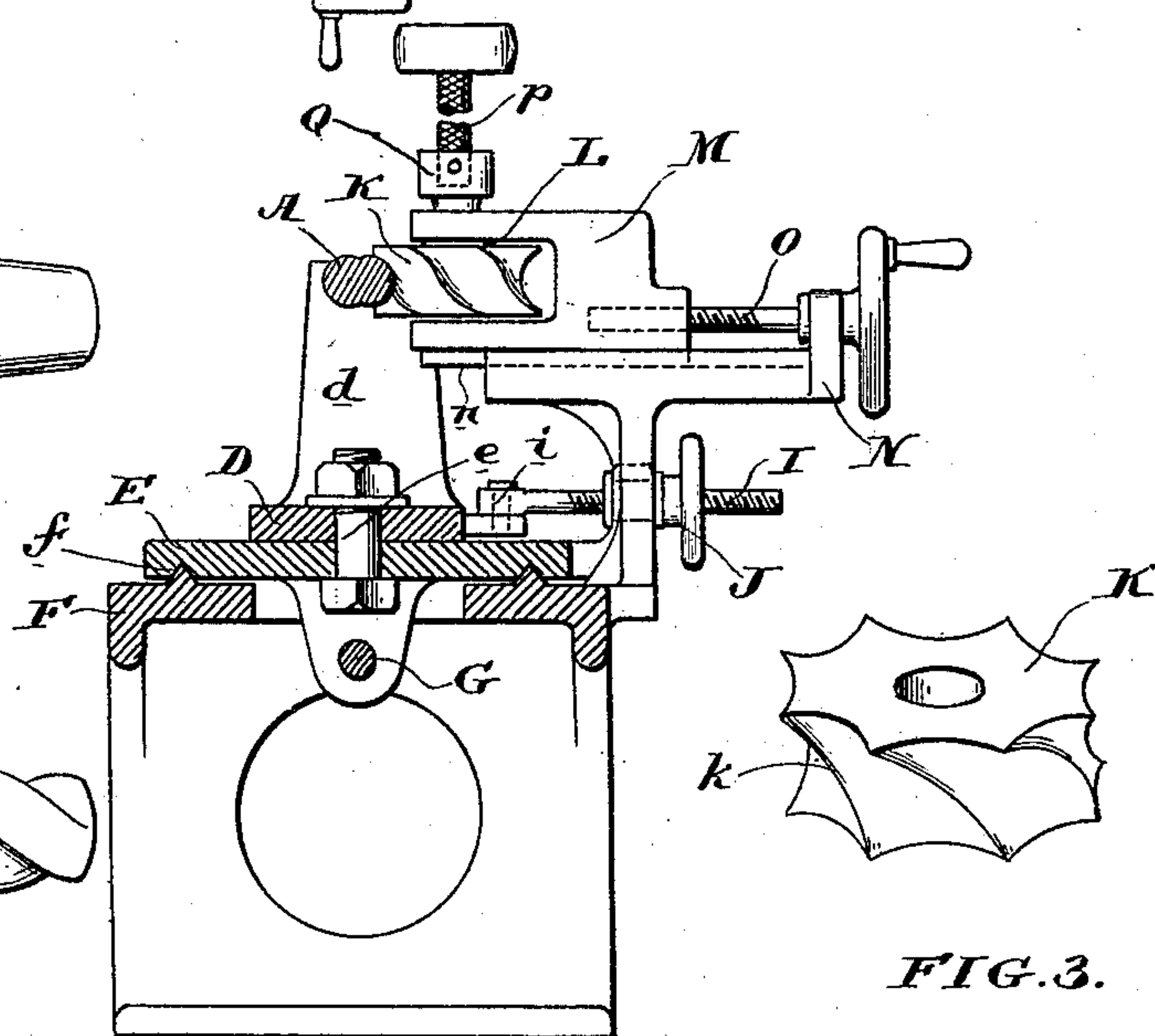


FIG. 3.

FIG. 2.

WITNESSES:

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UNITED STATES PATENT OFFICE.

JOSEPH BROWNING, OF PHILADELPHIA, PENNSYLVANIA.

MACHINE FOR SPINNING METAL INTO IRREGULAR SHAPES.

SPECIFICATION forming part of Letters Patent No. 423,904, dated March 25, 1890.

Application filed December 18, 1889. Serial No. 334,210. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH BROWNING, of the city and county of Philadelphia, and State of Pennsylvania, have invented an Improvement in Machines for Spinning Metal into Irregular Shapes, of which the following is a specification.

My invention relates to machines for spinning metals into irregular shapes; and it consists of certain improvements, which are fully set forth in the following specification and shown in the accompanying drawings, which form a part thereof.

Irregular spiral or rope shaped handles for canes, umbrellas, &c., have usually been made either by stamping two halves of sheet metal and then securing the pieces together by solder or by placing a tube of metal upon a properly-shaped mandrel and then pressing in the metal to make it conform to the shape of the mandrel by a hand-tool. These methods are both objectionable—the one because the joints are always perceptible, and the other because it is expensive and slow and requires great skill in the operator, while the finished work is liable to be more or less untrue. To obviate these difficulties I have devised a machine (described in Letters Patent No. 417,226, granted to me on the 17th day of December, 1889) in which the metal article to be spun is supported upon a rotating spirally-grooved mandrel, and is shaped by a spinning or forming wheel having grooves corresponding to those of the mandrel, loosely supported close to the mandrel and acting as a worm-wheel in connection therewith.

My present invention is an improvement upon the apparatus set out in that patent, by which, in the stead of positively rotating the mandrel and having the forming or spinning wheel rotated thereby, the mandrel is loosely supported and the spinning or forming wheel is positively rotated, and this construction is particularly suited to cases in which the pitch of the spiral grooves of the mandrel is very great, in which case the spinning or forming wheel would not be properly driven by the rotating mandrel.

My invention also consists of certain improvements, which are hereinafter more fully described and claimed.

In the drawings, Figure 1 is a plan view of

a machine embodying my invention. Fig. 2 is a cross-sectional view of the same on the line $x x$ of Fig. 1. Fig. 3 is a perspective view of the detached spinning or forming wheel. Fig. 4 is a perspective view of a metal tube before it is spun into shape, and Fig. 5 is a similar view of the same after it has been spun.

A is the mandrel, supported by centers formed of the pivots B and C, upon which it is free to rotate. These pivots are carried by uprights $d d$ of a frame D.

E is a sliding frame, to which the frame D is pivoted, as at e .

F is the base plate or frame, upon which the plate E is free to slide longitudinally upon suitable guides f . The sliding frame E is fed longitudinally by a screw G, which may be operated by a handle g . The pivoted frame D may be adjusted at an angle upon the sliding frame E, so that the surface of the tubular piece of metal to be spun H may be in contact with the spinning-wheel as the metal tube is fed longitudinally. This adjustment may be accomplished by means of a screw I, pivoted to the frame D at i' and operated by a nut J, carried by the frame E.

K is the spinning or forming wheel, and has its periphery formed with grooves or depressions k , the shape of which is immaterial to my invention and may be varied with the design to be imparted to the spun metal. This wheel is carried by a shaft or axis L, journaled in the holder M, which is supported upon a suitable frame N, and sliding thereon on suitable guides n , whereby the wheel K may be adjusted to or from the center line of the frame E to suit different sizes and forms of mandrels A.

O is an adjusting-screw for adjusting the sliding holder M.

P is a flexible power-shaft, which is connected to the shaft L of the forming or spinning wheel by a coupling Q.

It will be seen that by the construction and relative arrangement of the parts herein set out the mandrel A is allowed to rotate freely on the pivots B and C and runs at a speed commensurate with the speed of the spinning or forming wheel K, and that this is wholly independent of the longitudinal feeding motion of the mandrel A.

The operation of the apparatus will now be

readily understood. A tube of metal, such as is shown in Fig. 4, which it is desired to spin into form is placed upon the mandrel A, and one end of the tube is pressed into the grooves
 5 in the mandrel, so that the wheel K may obtain a hold and rotate the mandrel. The oblique grooves of the wheel K, acting against the grooves of the mandrel, impart this motion to it independently of whether it is moved
 10 longitudinally, the pitch of the spiral grooves of the mandrel being high. By this means each portion of the tube H may be operated upon to the extent desired. The longitudinal feeding of the frame E (carrying the frame D
 15 and mandrel A) is accomplished by means of the screw G. The frame D is adjusted, by means of the screw I and nut J, at an angle upon the frame E, so as to bring the side of the tube H adjacent to the wheel K in line, so that
 20 the surface of the tube H may be acted upon by the wheel K equally and uniformly as it is fed along.

While I prefer the details of construction which are here shown as being best suited to the carrying out of my invention, I do not
 25 limit my invention to them, as it is apparent that they may be varied in many ways without departing from the principles of it.

Having now described my invention, what I
 30 claim as new, and desire to secure by Letters Patent, is—

1. The combination of a pivoted mandrel, having its surface formed with one or more spiral grooves, with a rotating forming or spinning wheel having corresponding grooves and
 35 mounted close to and in a plane substantially parallel to the axis of said mandrel, whereby it acts as a worm-wheel with said mandrel and rotates it.

40 2. The combination of a pivoted mandrel, having its surface formed with one or more spiral grooves, with a rotating forming or spinning wheel having corresponding grooves and mounted close to and in a plane substantially
 45 parallel to the axis of said mandrel, whereby it acts as a worm-wheel with said mandrel and rotates it, and devices to feed said mandrel longitudinally.

3. The combination of a pivoted mandrel, having its surface formed with one or more spiral grooves, with a rotating forming or spinning wheel having corresponding grooves and mounted close to and in a plane substantially
 50 parallel to the axis of said mandrel, whereby it acts as a worm-wheel with said mandrel and rotates it, and an adjustable support for said mandrel, whereby the direction of the axis of said mandrel may be varied.

4. The combination of a pivoted mandrel, having its surface formed with one or more spiral grooves, with a rotating forming or spinning wheel having corresponding grooves and mounted close to and in a plane substantially
 60 parallel to the axis of said mandrel,

whereby it acts as a worm-wheel with said
 65 mandrel and rotates it, an adjustable support for said mandrel, whereby the direction of the axis of said mandrel may be varied, a longitudinally-movable frame carrying said adjustable support, and feeding devices to feed said
 70 longitudinally-movable frame.

5. The combination of a loosely-pivoted mandrel, having its surface formed with spiral grooves, with a rotating forming or spinning wheel having grooves corresponding to the
 75 grooves of said mandrel, mounted in a plane parallel to the axis of said mandrel, acting as a worm-wheel with said mandrel and driving it, and an adjustable support for said spinning or forming wheel, whereby it may be ad-
 80 justed to or from the axis of said mandrel.

6. The combination of a spirally-grooved loosely-pivoted mandrel and a rotating forming or spinning wheel having grooves corresponding with the grooves of said mandrel,
 85 and acting as a worm-wheel therewith and rotating said mandrel.

7. The combination of a spirally-grooved loosely-pivoted mandrel and a rotating forming or spinning wheel having grooves corresponding with the grooves of said mandrel,
 90 and acting as a worm-wheel therewith and rotating said mandrel, a support for said mandrel, a frame to which said support is pivotally secured, means to adjust said support
 95 relatively to the longitudinal axis of said frame, and devices to feed said frame longitudinally.

8. The combination of a spirally-grooved loosely-pivoted mandrel and a rotating forming or spinning wheel having grooves corresponding with the grooves of said mandrel,
 100 and acting as a worm-wheel therewith and rotating said mandrel, a support for said mandrel, a frame to which said support is pivotally secured, means to adjust said support
 105 relatively to the longitudinal axis of said frame, and devices to feed said frame longitudinally, and a guide for said frame.

9. The combination of a loosely-pivoted
 110 mandrel, having its surface formed with spiral grooves, with a rotating forming or spinning wheel having grooves corresponding to the grooves of said mandrel, mounted in a plane parallel to the axis of said mandrel, acting
 115 as a worm-wheel with said mandrel and driving it, and a sliding support for said spinning or forming wheel, a guide for said sliding support, and devices to adjust said support upon the guide, whereby it may be adjusted
 120 to or from the axis of said mandrel.

In testimony of which invention I have hereunto set my hand.

JOSEPH BROWNING.

Witnesses:

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ERNEST HOWARD HUNTER.