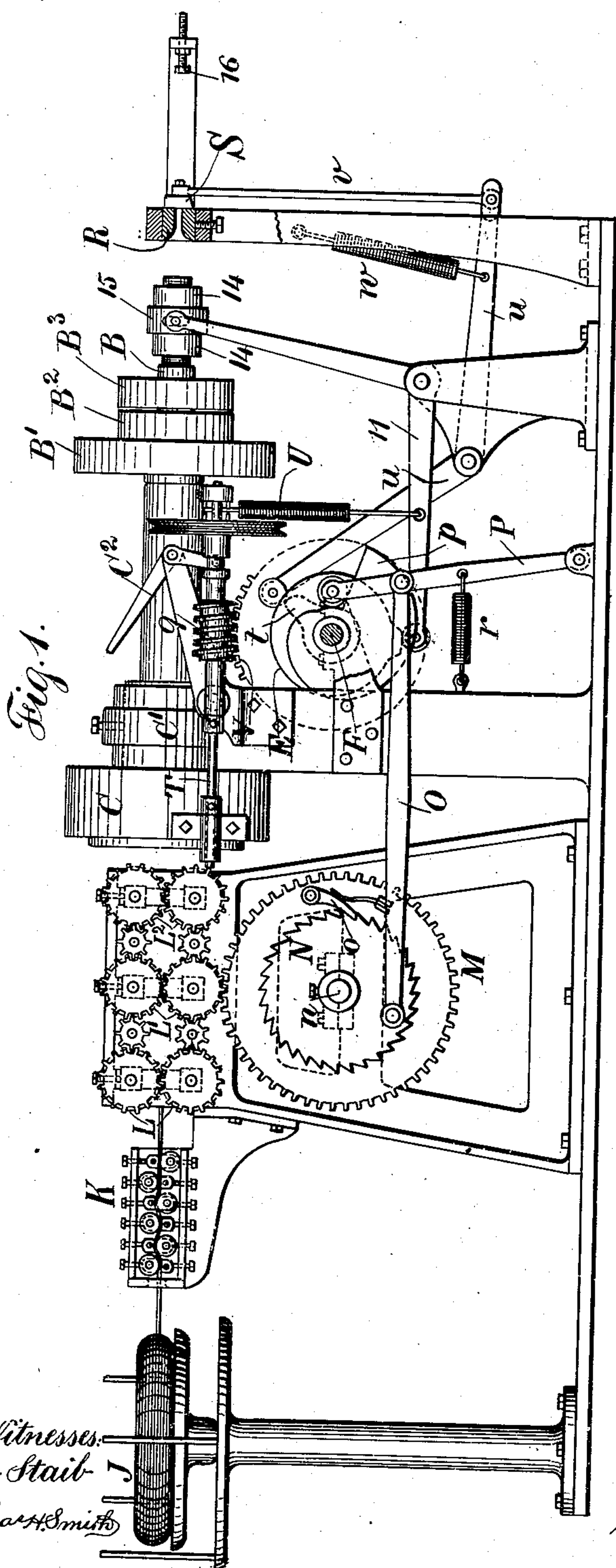


(No Model.)

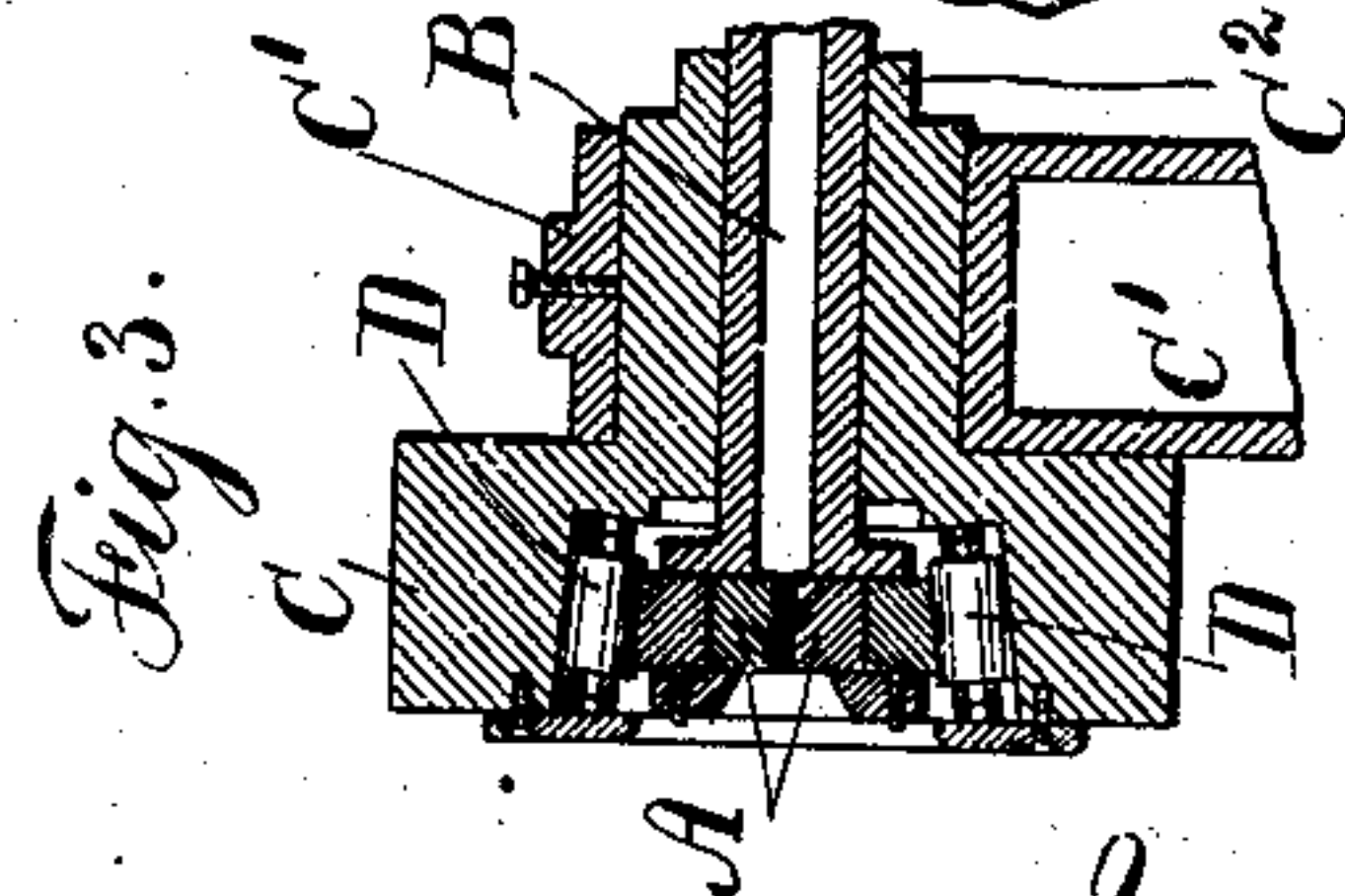
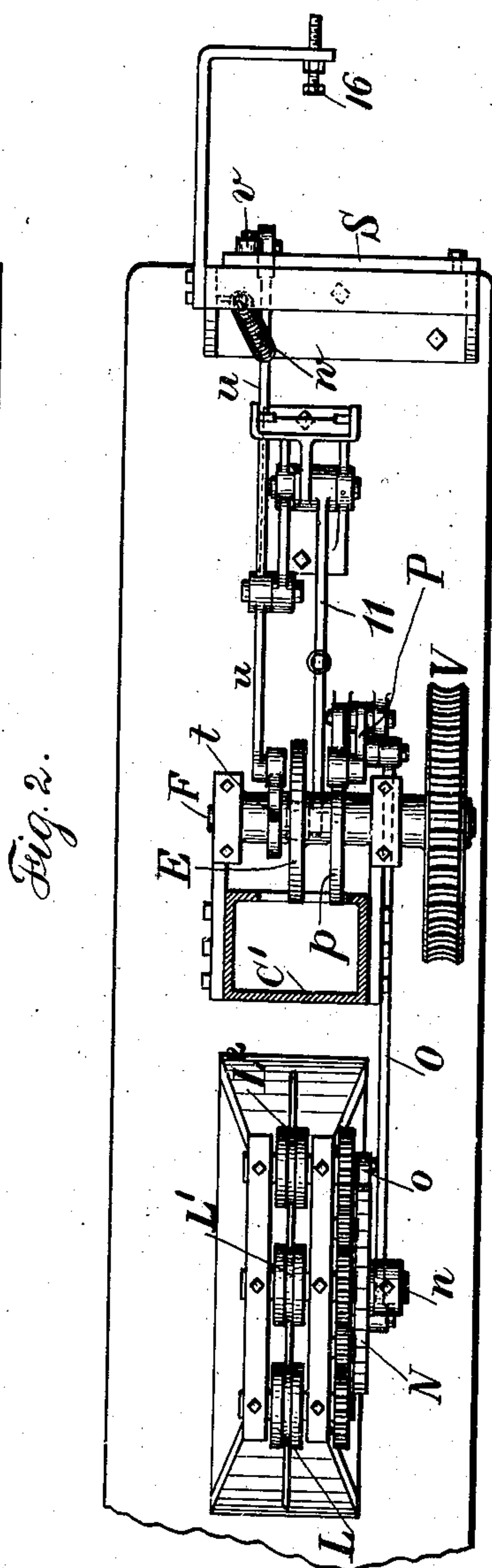
W. H. DAYTON.
MACHINE FOR SWAGING RODS.

No. 492,574.

Patented Feb. 28, 1893.



Witnesses:
J. Staib
Chas. H. Smith



Inventor:
Wm. H. Dayton
per Lemuel W. Perrell
Att'y.

UNITED STATES PATENT OFFICE.

WILLIAM H. DAYTON, OF TORRINGTON, CONNECTICUT, ASSIGNOR TO THE
EXCELSIOR NEEDLE COMPANY, OF SAME PLACE.

MACHINE FOR SWAGING RODS.

SPECIFICATION forming part of Letters Patent No. 492,574, dated February 28, 1893.

Application filed July 18, 1892. Serial No. 440,303. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. DAYTON, a citizen of the United States, residing at Torrington, in the county of Litchfield and State of Connecticut, have invented an Improvement in Machinery for Swaging Rods and other Round Articles, of which the following is a specification.

In an application of like date herewith, I have represented a swaging machine in which separate wires or blanks are fed into swaging dies, and these dies are brought nearer together or farther apart in the swaging operation in order to swage spokes for bicycle and other wheels, or other articles that are round and of larger diameter at one place than at another.

In the present invention I feed the wire into the swaging machine progressively from a reel, and the wire as it passes into the machine is straightened and it is fed by rollers moved progressively and automatically, and the swaging dies are revolved continuously by a hollow shaft carrying such dies, and these dies are controlled automatically so as to act closer together at one part than at another, and thereby vary the size of the round article that is being swaged, and the swaged wire or rod passes on through the hollow revolving shaft carrying the swaging dies, to a gage and cutting apparatus, whereby the spokes and other similar articles are cut off in regular lengths, the operations being automatic and the parts are so adjusted that any slight inequality in the size of the wire or any wear in the parts can be compensated so that the finished or swaged wire is cut off at the proper places to correspond with the reduced or enlarged portions of the wire as it is swaged.

In the drawings Figure 1 is a side elevation of the machine with one of the gears partially removed to show the cams, the cutting die being in section. Fig. 2 is a plan view showing the feeding rolls and the actuating mechanism, the swaging dies and the revolving shaft being removed for greater clearness, and Fig. 3 is a detached section of the swaging dies.

The swaging dies A are in a cross slot in the revolving shaft B, and around such dies

there are a circular range of rollers D within the stationary shell C that is supported by the standard or frame C', and the tubular bearing C² carries the revolving shaft B, and there are upon the shaft B a fly wheel B' and driving pulley B² and loose pulley B³ by which the shaft B is revolved with regularity, and an end movement is provided by which the action of the swaging dies is regulated, so that they are brought nearer together or farther apart, according to the size of the article or the particular part thereof that is being swaged, in my patent granted May 10, 1892, wedges are shown for effecting this object and the end movement may act upon such wedges, or when the motion is given directly to the shaft, the rollers D may be inclined more or less, so that the dies are closed nearer together or farther apart according to the relative position of the dies to the inclined surfaces of the rolls, and with the object in view of giving the end motion, I provide a cam E upon the cross-shaft F acting upon a lever 11, and a collar 15 which is between the nuts 14 upon the revolving shaft B, as in my aforesaid application. The worm pinion 9 acts upon the wheel V upon the cross shaft F, so that the same is rotated at the desired speed, there being a driving pulley U upon the counter-shaft T, and upon this shaft F there are the cams for giving the movements hereinafter described.

The reel of wire is represented at J upon a suitable support, and such wire is drawn over and between the straighteners K, which straighteners may be of any suitable character; I have represented them as small rolls, and the feed rolls are represented in pairs. I prefer to use three pairs of feed rolls L L' L², and these are all geared together, so as to move in the proper direction and with uniformity of speed, and one of the rollers receives motion from a gear wheel M upon a shaft n, and this movement is progressive, there being a ratchet wheel N loose upon the shaft n and a pawl o upon the gear wheel M and to the ratchet wheel N a reciprocating partial rotary movement is given by the connecting rod O to a lever P that is acted upon in one direction by a cam p, and the spring r acts in the other direction, the shape of the

cam *p* is such that motion is communicated through the ratchet wheel *N*, gear wheel *M* and pawl *o* at the proper time and with the proper speed, so that the feed takes place as the dies are brought nearer together by the end movement before described, so that the wire is fed at the proper speed during the reduction thereof by the swaging dies, and when the proper end movement has been given and the article produced is to be cut off, the feed is momentarily stopped, and this is effected in this instance by the shape of the cam *p* which allows the ratchet wheel *N* to be rotated in such a direction that the pawl *o* runs over the teeth thereof and catches at the proper place for giving a further progressive movement in feeding in the blank.

It will be understood that the wire as it is reduced by the swaging operation at the proper places passes along through the hollow revolving shaft *B*, and at the rear end thereof a cutting apparatus of any suitable character is provided; I have shown this cutting apparatus as consisting of a stationary block *R*, and a shear *S* acting therewith, and this usually is lifted so that the wire or swaged article passes along through the block *R* until it reaches the screw stop 16 which arrests the movement of the wire while the shear *S* is brought down to cut off the wire. This shear *S* is actuated at the proper time by the cam *t*, lever *u* and connecting rod *v*, and the parts are returned to their normal position by the spring *w*; and it is to be understood that the parts are so timed that in swaging an article such as a spoke for a wheel, the dies are open after the swaged portion has been completed, and the spoke that is to be cut off reaches the screw stop 16; and then the cutting is effected while the feeding device is upon the return stroke and the rollers remain quiescent, and then the dies are closed to reduce the wire to the proper extent and the feed comes into action to carry the wire along while the body of the spoke is being reduced to the proper size; the swaging dies are then allowed to open sufficiently for the wire to be fed along, and either not reduced or only partially reduced, and the end of the wire coming against the stop 16, the movement of the wire is arrested and the end spoke is cut off as before described and the operations are repeated.

In cases where the feed rolls are moved with regularity so that the feed is continuous, the opening and closing of the dies and the cutting devices are so timed as to act properly upon the wire, and the cut can be suffi-

ciently rapid not to cause the wire to bend by the momentary cutting operation.

I claim as my invention—

1. The combination with the swaging dies and the mechanism for revolving and acting upon the same, of a wire straightening device, feed rollers for supplying the wire to the swaging dies, and automatic intermittent mechanism for acting upon the feed, and a cutting mechanism brought into action while the feed is out of action, substantially as set forth.

2. The combination in a swaging machine, of swaging dies, a revolving shaft carrying the same, rollers for acting upon the swaging dies, adjusting mechanism acting endwise of the revolving shaft for varying the opening and closing of the swaging dies, a straightening mechanism for acting upon the wire as it passes from a reel, feeding rolls in pairs geared together, between which the straightened wire passes, automatic mechanism for moving the feeding rolls, the same acting intermittently, and a cutter, a stop for the end of the wire and mechanism for acting upon the cutter to sever the finished article during the time that the feed movement is arrested, substantially as set forth.

3. The combination with the swaging dies and the mechanism for revolving and acting upon the same, of a wire straightening device, feed rollers for supplying the wire to the swaging dies, and automatic mechanism for acting upon the feed and a cutting mechanism brought into action while the feed is out of action, substantially as set forth.

4. The combination in a swaging machine, of swaging dies, a revolving shaft carrying the same, rollers for acting upon the swaging dies, adjusting mechanism acting endwise of the revolving shaft for varying the opening and closing of the swaging dies, a straightening mechanism for acting upon the wire as it passes from a reel, feeding rolls in pairs geared together, between which the straightened wire passes, automatic mechanism for moving the feeding rolls, and a cutter, a stop for the end of the wire and mechanism for acting upon the cutter to sever the finished article during the time that the feed movement is arrested, substantially as set forth.

Signed by me this 13th day of July, 1892.

WILLIAM H. DAYTON.

Witnesses:

GEO. T. PINCKNEY,
WILLIAM G. MOTT.