

(No Model.)

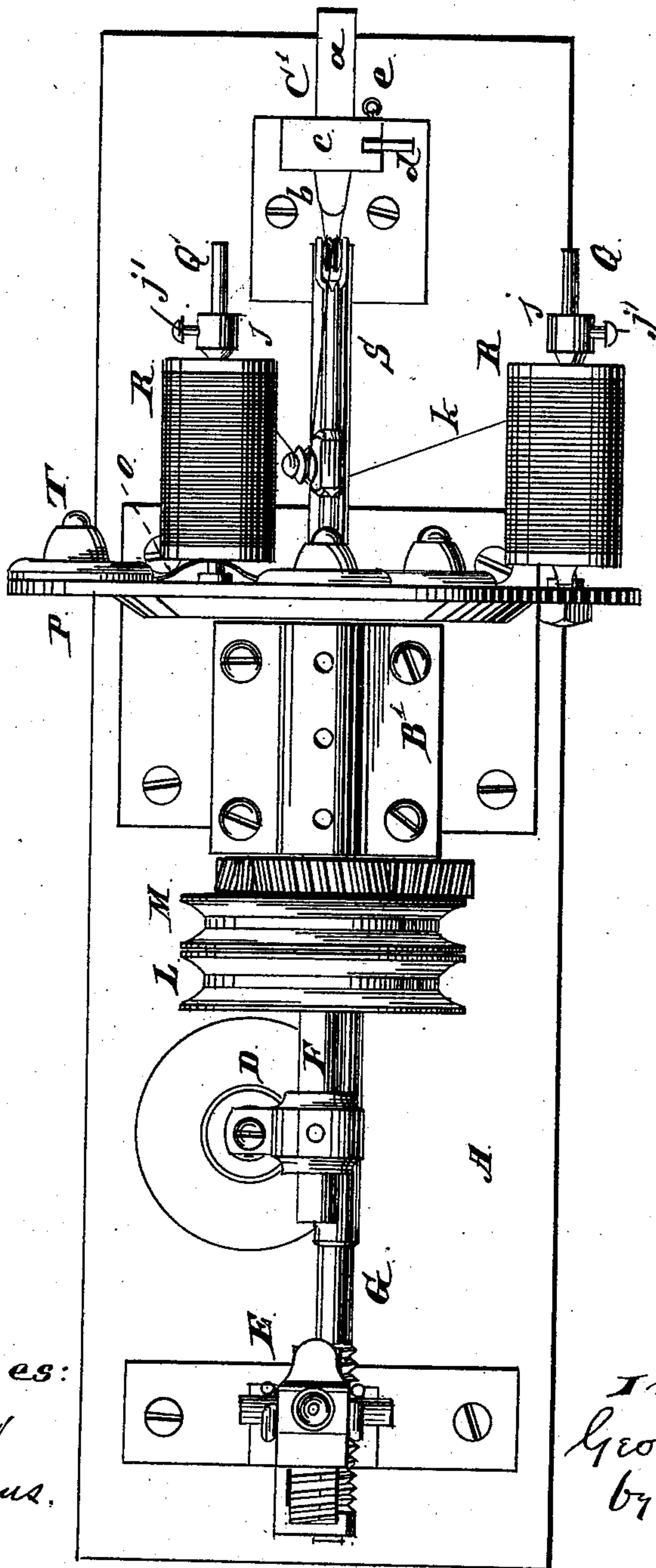
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G. R. HOLDEN.

MACHINE FOR WINDING BLADES OR CORDS.

No. 351,638.

Patented Oct. 26, 1886.



Y. Sciz.

Witnesses:

Harry Jones
Albert H. Adams.

Inventor:

George R Holden
by West Bond
attys

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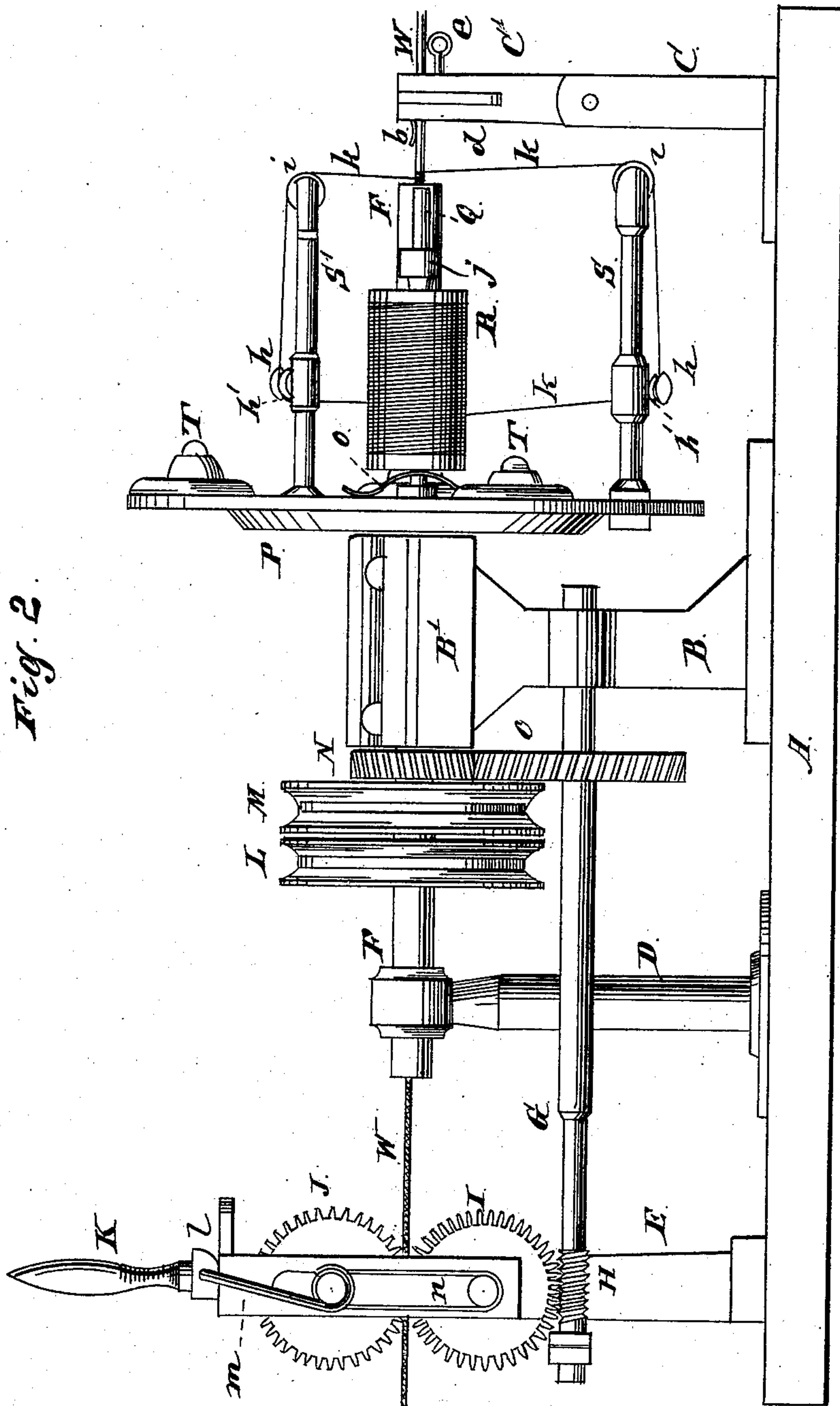


Fig. 2.

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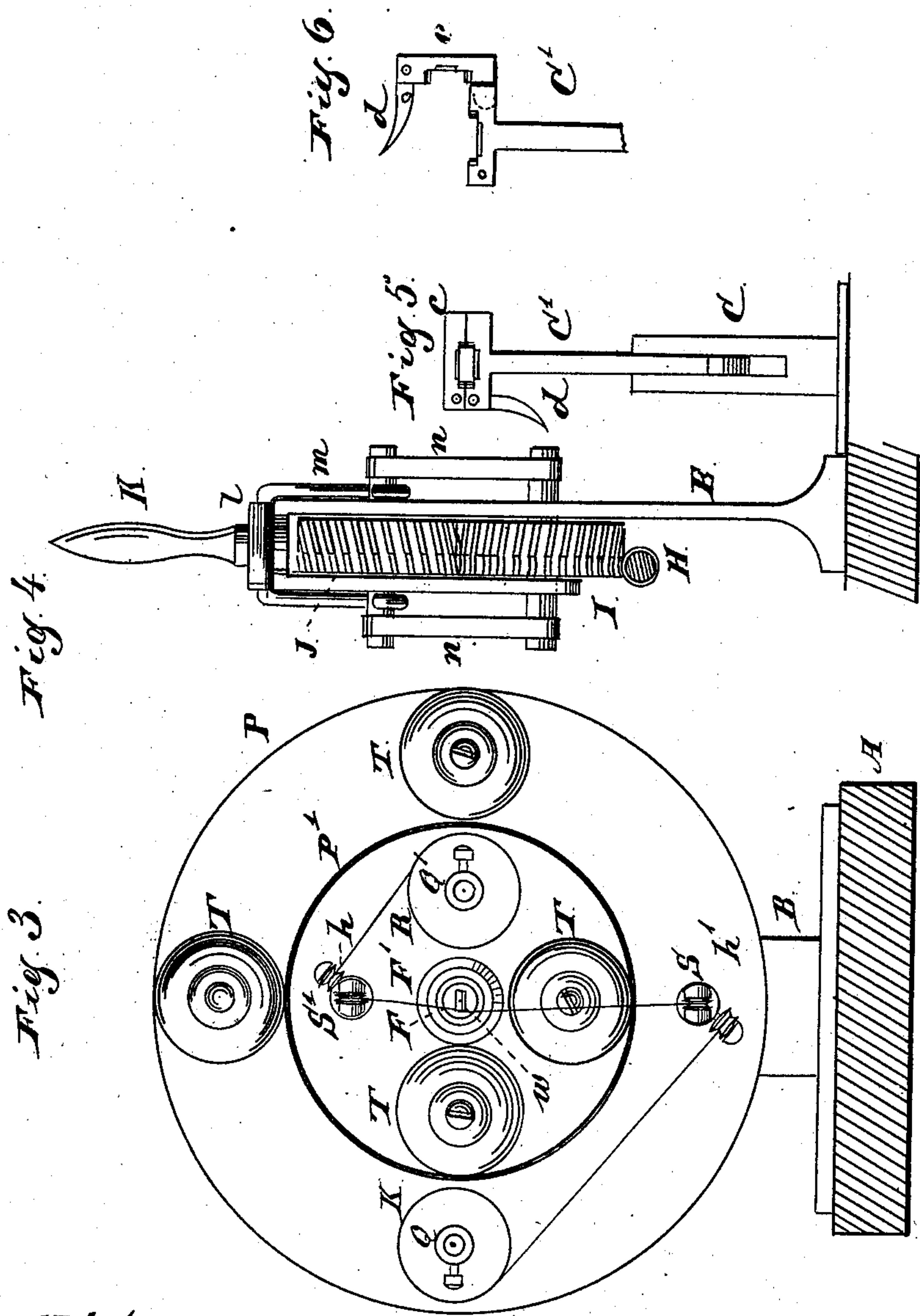
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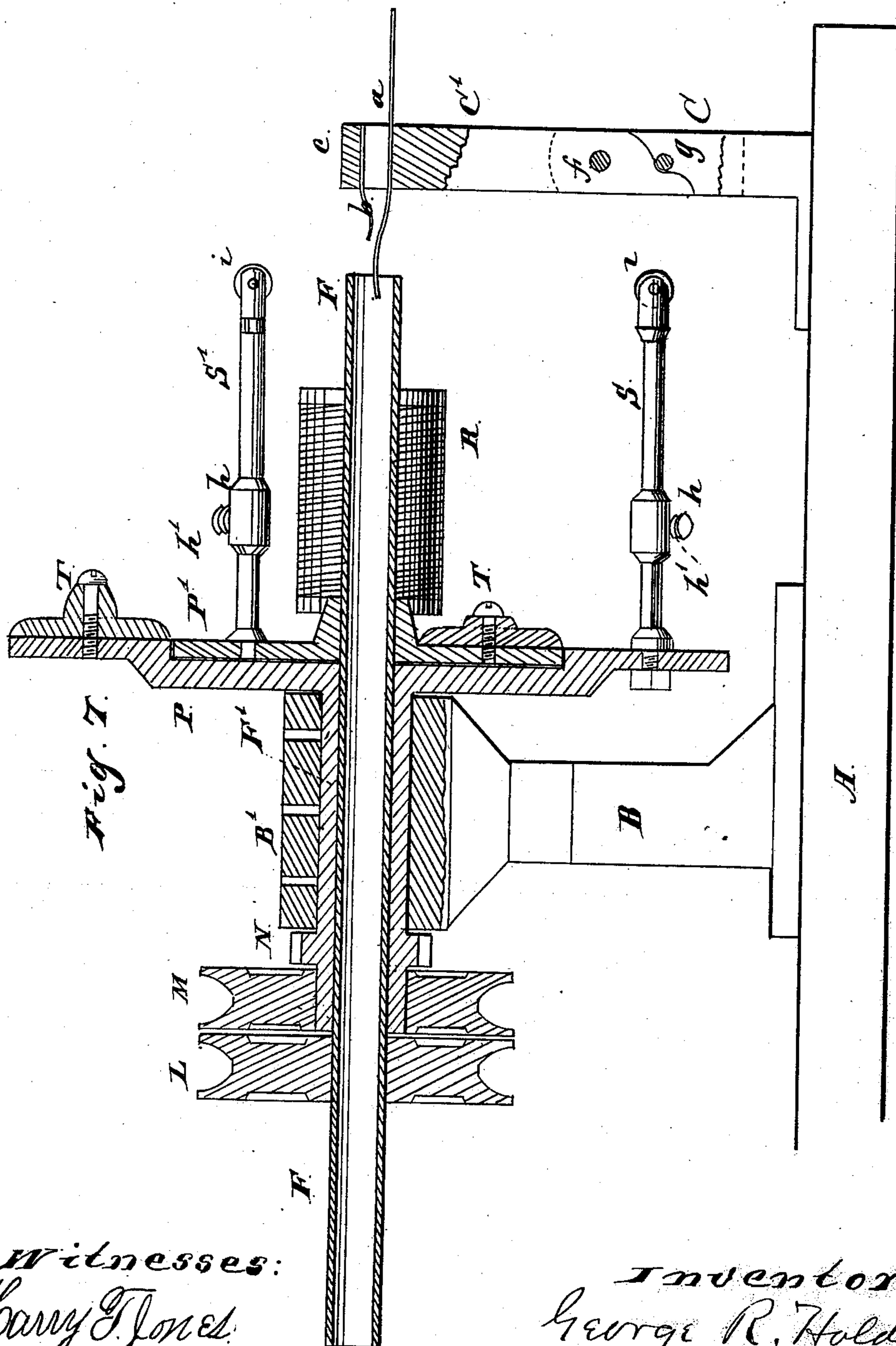
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UNITED STATES PATENT OFFICE.

GEORGE R. HOLDEN, OF MICHIGAN CITY, INDIANA, ASSIGNOR TO THE
WARREN FEATHERBONE COMPANY, OF CHICAGO, ILLINOIS.

MACHINE FOR WINDING BLADES OR CORDS.

SPECIFICATION forming part of Letters Patent No. 351,638, dated October 26, 1886.

Application filed March 7, 1885. Serial No. 158,103. (No model.)

To all whom it may concern:

Be it known that I, GEORGE R. HOLDEN, residing at Michigan City, in the county of La Porte and State of Indiana, and a citizen of the United States, have invented certain new and useful Improvements in Machines for Winding Blades or Cords, of which the following is a full description, reference being had to the accompanying drawings, in which—

10 Figure 1 is a top or plan view of a machine embodying my invention; Fig. 2, a side elevation thereof; Fig. 3, an end elevation omitting the guide and its support and showing the base-plate in section; Fig. 4, a detail side view of the feeding-wheels and their support; Figs. 15 5 and 6, detail end views of the guide; Fig. 7, a longitudinal vertical section with the feeding devices or pulling devices omitted.

The object of this invention is to provide a 20 machine which will wind or cover cords and flat blades composed of a single strand or piece of that form, or composed of two or more cords laid side by side, by winding them with threads moving in opposite directions; 25 and it consists in the several improvements hereinafter described and claimed as new.

In the drawings, A indicates the bed or base plate; B, the support or post upon which the driving devices are mounted; C C', the guide-supporting post; D, supporting-post for the rear end of the hollow shaft; E, supporting-post for the feeding or drawing devices; F F', hollow shafts; G, worm-shaft; H, worm; I J, feed-wheels; K, lever for separating the feed- 35 wheels; L M, driving-pulleys; N O, gear-wheels; P P', revolving disks; Q Q', spool-spindles; R, spools; S S', thread-carriers; T, counterbalance-weights; W, blade or cord upon which the winding takes place; *a b*, feeding-guides; *c*, cap-plate of the feeding devices; 40 *d*, locking-lever; *e*, locking-pin; *f*, pivot-pin for the post C C'; *g*, stop-pin; *h'* and *i'*, thread-guides; *j'*, retaining-collars for spools; *k*, threads; *l*, lifting-cam on lever K; *m*, lifting-yoke; *n*, spring; *o*, tension-springs for the 45 spools.

The base A may be made separate, as shown; or it may constitute a part of the top of a table or bench. On this the supports or posts 50 B, C, D, and E are placed. The post B is provided with a bearing-box, B', which consti-

tutes the entire support for the hollow shaft F' and the support for one end of the hollow shaft F, the other end of this shaft being supported on boxing mounted on the post D. 55

The driving-pulley L is mounted on the shaft F and the driving-pulley M on the shaft F', as shown in Fig. 7. The shaft F' carries the disk P, upon which is mounted the spool-spindle Q and the thread-carrier S, and, if desired, 60 the disk may be counterbalanced by the attached weights T.

The disk P' is attached to and rotated by the hollow shaft F, and is preferably arranged in reference to the disk P as shown in 65 Fig. 7, although it is not essential that it should be set in as there shown. Upon this disk P' are mounted the spool-spindle Q' and the thread-carrier S'. The spool-spindles are provided with removable collars *j*, which are 70 held in place by set-screws *j'*.

The tension-springs *o* are supported by the spool-spindles between the disks and the inner ends of the spools, and the tension of the thread is obtained by pressing up the spools 75 by means of the collars *j*.

The collars *j* may be made conical at their inner ends to center the spool-bores, as shown in Fig. 1.

The thread-carriers S S' are provided with 80 anti-friction wheels *h'*, and at their delivery end provided with anti-friction guide-wheels *i'*; the grooves in the wheels *h'* and *i'* being sufficiently deep to hold the thread in position.

The blades or cords to be wound are fed in 85 between the guide-plates *a b*, and these plates give the blade, if made of cords, the form desired. As shown, these guides are both flat, and give the product a flat form.

For the purpose of conveniently opening the 90 guide the cap-plate *c* is hinged at one end and provided with an arm, *d*, at the other end, and a locking-pin, *e*, by which the cap is held down when the machine is in operation.

As shown, the feed-supporting post is made 95 in two parts, C C', which are hinged together at *f*, and provided with a limit-stop, *g*, as shown in Fig. 7, which gives a convenient form for folding the feeding head or device down out of the way. It may, however, be 100 made of a single piece or rigid its entire length, and be made removable.

Near the driving-wheel M a gear-wheel, N, is attached to or made a part of the hollow shaft F'. This wheel engages with the gear-wheel O, which drives the worm-shaft G and worm H, which worm communicates motion to the feed-wheels I and J, which feed-wheels operate by drawing the finished fabric through the hollow shafts F F', and for this purpose the length of the cogs is reduced on one side, as shown in Fig. 4. The shafts of the wheels I J project through the post or support E sufficiently far to receive the yoke *m* of the lever K upon the upper shaft and the springs *n* on both shafts, which springs are made of rubber bands sufficiently strong to give the required pressure to move the blade or cord W.

The post E is slotted, so as to permit a vertical movement of the feed-wheel J, which movement is effected by means of the cam or projection *l* on the lever K, so that by turning the lever down over this projection the yoke *m* is raised and the wheel J thereby lifted.

In operation the disks P P' are revolved in opposite directions by their respective driving-wheels, so that the thread carried upon each disk is wound in an opposite direction to the thread in close proximity to the front end of the hollow shaft F, as shown in Fig. 2. By the use of two threads the winding is more rapidly accomplished, and the movements of the wheels N O are so timed that the feed-wheels I J will draw the blade or cord W along just fast enough to keep the winding-threads in contact.

It is obvious that two or more wheels and thread-carrying arms may be mounted upon each of the disks P P', and in this event the gear of the shaft G will be so timed as to cause the feed-wheels I J to have a correspondingly faster movement.

Cords or blades of any length may be wound in this machine, either long or short. As the machine is continuous in its operation, blades or cords of great length may also be wound or covered.

As the flat blades are composed of two or more cords, I propose, in addition to this double winding, to run them through a sewing-machine and stitch the winding-threads between each cord of the blade or flat strip to give them an additional security, and for this purpose the guide *a* is made to project into

the hollow shaft F, so as to leave the winding-threads a little slack, when they are drawn off, and by this means the winding-threads can be drawn down in between the cords, when they are sewed lengthwise. If they are not to be sewed, then the guide *a* should be placed farther back, so that the winding-threads will not pass around it.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination of the rotating hollow shaft F, the disk P', secured thereto and provided with the laterally-projecting parallel spindles Q' and S', for respectively carrying the thread-spool and guiding the thread, the rotating hollow shaft F', the disk P, secured thereto and provided with the laterally-projecting parallel spindles Q and S, for respectively carrying the thread-spool and guiding the thread, the guide *a b*, the feeding-wheels I J, and means for rotating said wheels, substantially as described.

2. The disks P P', each having the attached spool-spindle and the thread-carrying arm provided with a wheel, *i*, at its outer end, in combination with the oppositely-rotating hollow shafts F' F, the guide *a b*, the feed-wheels I J, and means for rotating the latter, substantially as described.

3. The disks P P', each having the attached spool-spindle and the thread-carrying arm provided with the wheels *h'* and *i*, in combination with the oppositely-rotating hollow shafts F' F, the guide *a b*, the feed-wheels I J, and means for rotating the latter, substantially as described.

4. The combination, with the rotating hollow shafts F F' and thread-winding devices, of the slotted support E, the feed-wheels I and J, having their shafts journaled in and extending beyond the support, means for rotating the wheels, the springs *n*, connecting the journals of the wheels, the swinging lever K, having a cam, *l*, and the yoke *m*, connecting the lever and the shaft of the upper feed-wheel, substantially as described.

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Witnesses:

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