

(No Model.)

E. DAWES.  
SPINNING OR TWISTING MACHINE.

No. 437,022.

Patented Sept. 23, 1890.

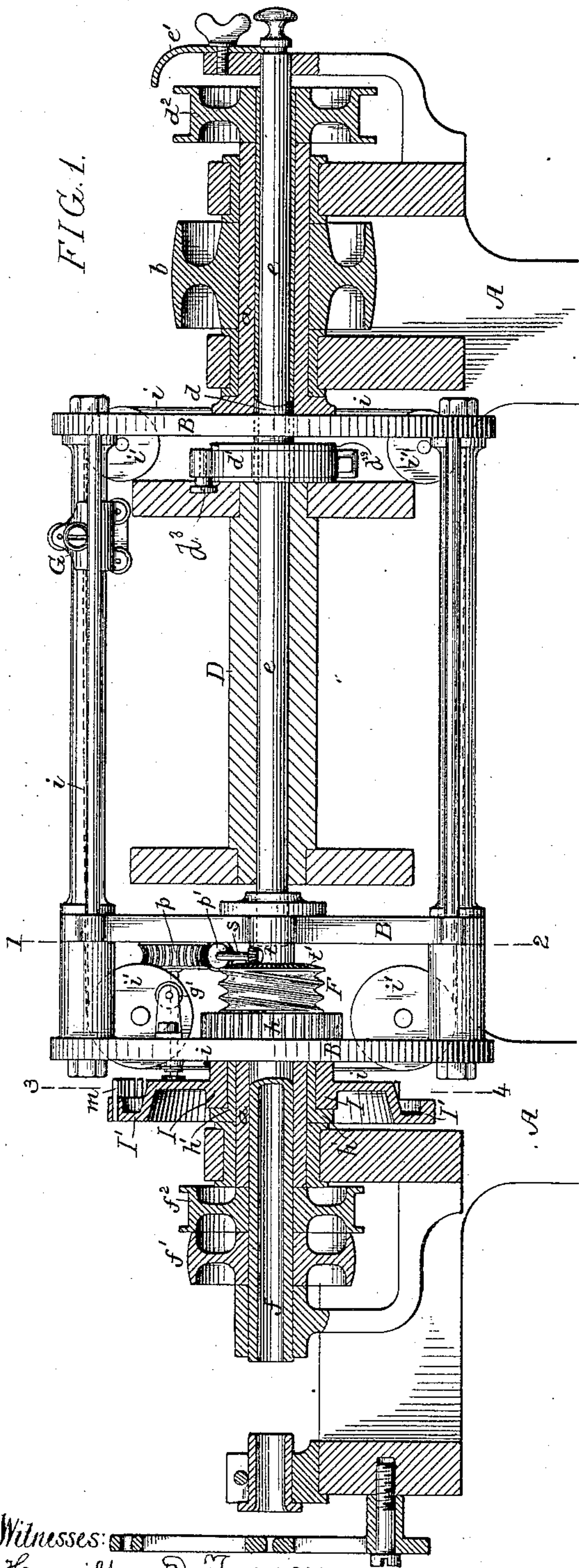


FIG. 1.

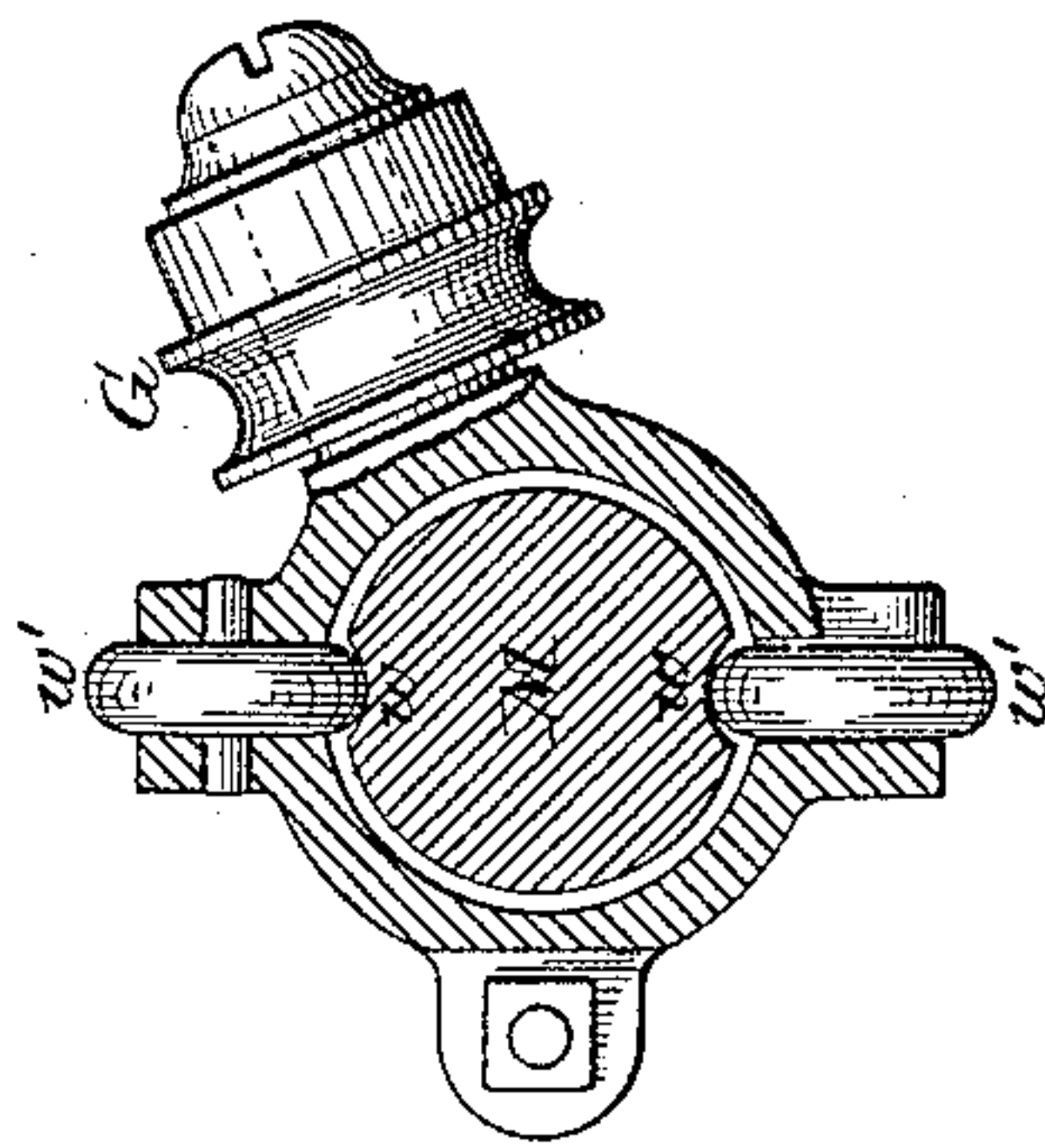


FIG. 4.

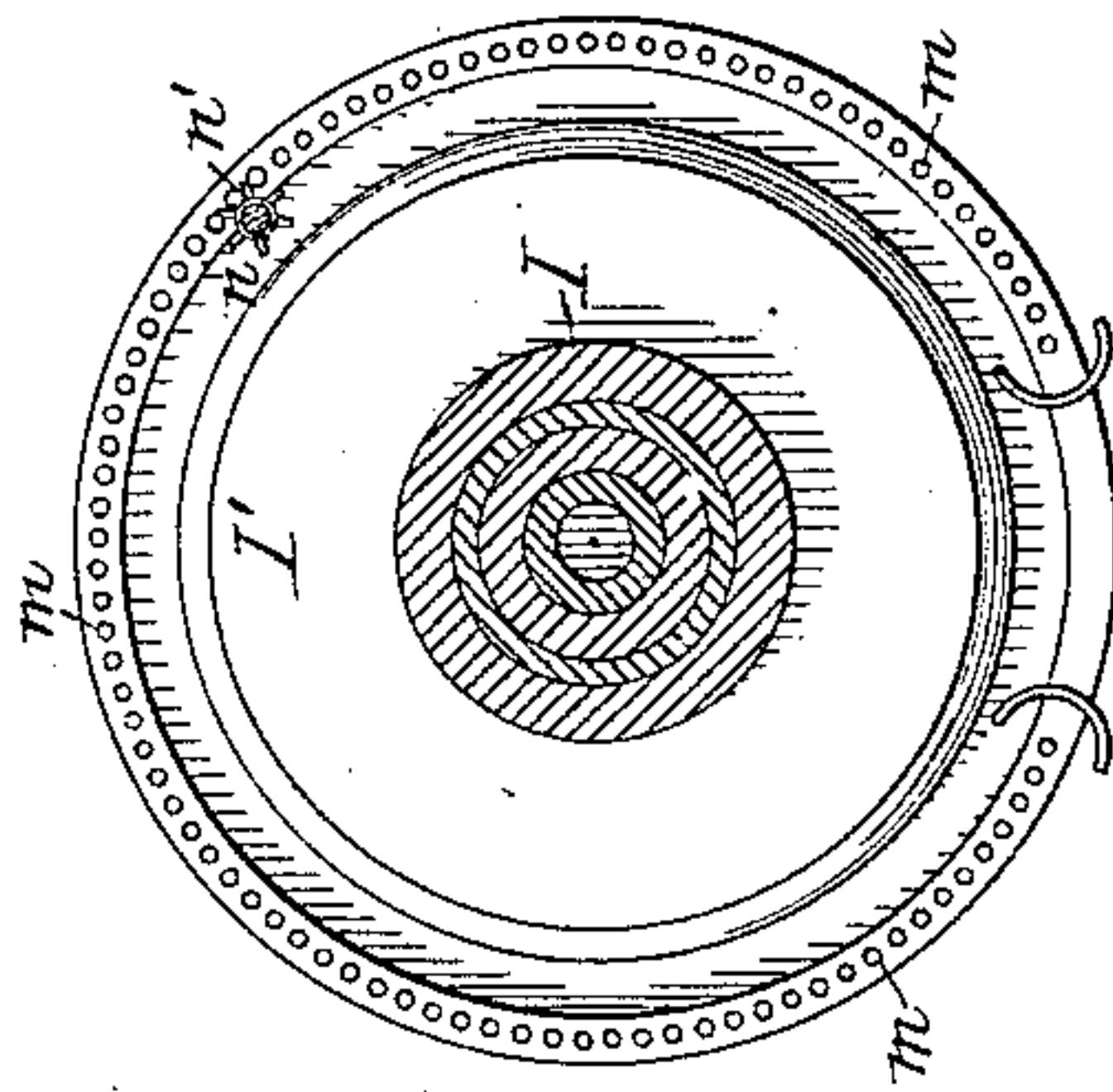


FIG. 3.

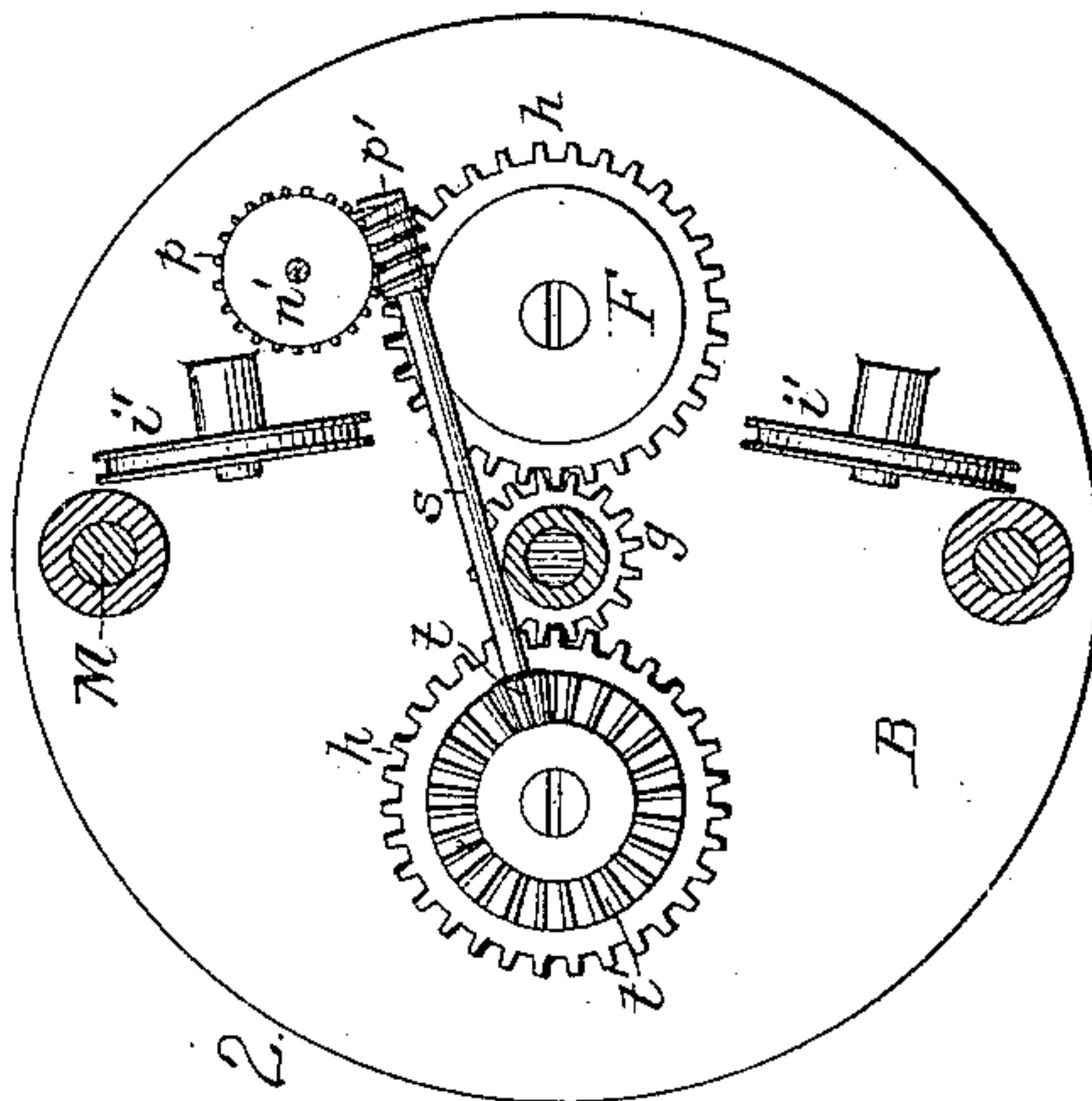


FIG. 2.

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# UNITED STATES PATENT OFFICE.

EDMUND DAWES, OF PHILADELPHIA, PENNSYLVANIA.

## SPINNING OR TWISTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 437,022, dated September 23, 1890.

Application filed August 2, 1889. Serial No. 319,535. (No model.)

*To all whom it may concern:*

Be it known that I, EDMUND DAWES, a subject of the Queen of Great Britain and Ireland, residing in Philadelphia, Pennsylvania, have invented certain Improvements in Spinning or Twisting Machines, of which the following is a specification.

My invention consists of certain improvements in that class of machines which are employed for making rope, twine, cord, or yarn by twisting a number of strands together, my invention relating especially to the means for traversing the guide for laying the rope, twine, cord, or yarn upon the spool or bobbin on which it is to be wound.

In the accompanying drawings, Figure 1 is a longitudinal section of a single spindle and flier of a spinning-machine constructed in accordance with my invention. Fig. 2 is a transverse section of the same on the line 1 2, Fig. 1. Fig. 3 is a transverse section on the line 3 4, Fig. 1; and Fig. 4 is a transverse section, on an enlarged scale, of the traversing guide of the machine.

To opposite bearings in the fixed frame of the machine are adapted hollow journals *a*, carried by the flier B of the machine, the flier being rotated by means of a pulley *b* on the rear, one of said journals receiving a belt from a pulley on any available counter-shaft, so as to impart rotating motion to the flier-frame for the purpose of properly laying or twisting the strands of which the rope, twine, cord, or yarn is to be composed.

The spool D is rotated so as to wind up the rope, twine, cord, or yarn thereon by means of a tubular shaft or spindle *d*, passing through the rear journal *a*, and having at its inner end a friction driving device for the spool, consisting of a sleeve *d'*, adapted to a drum or collar *d<sup>29</sup>* on the shaft *d*, and having a pin *d<sup>3</sup>* for engaging with a recess in the head of the spool, the other end of the shaft having a pulley *d<sup>2</sup>* for receiving a belt, whereby the spool is driven at the proper rate of speed to wind up the rope, cord, or yarn as it is formed.

The spool is supported in the flier by means of a central spindle *e*, which at one end has a bearing in the inner end of the hollow shaft, *f* referred to hereinafter, and which passes through the hollow shaft *d*, this spindle being suitably held by a clip *e'* at its outer end, but

being free to be withdrawn when the retaining-clip is removed, so as to permit the removal of the filled spool and the insertion of an empty one.

In the opposite bearing of the frame is a hollow shaft *f*, driven by a belt adapted to a pulley *f'*, this shaft having a pulley *f<sup>2</sup>* for driving a like shaft *f* of an adjacent flier when two spindles and fliers are mounted in the same frame. The shaft *f* also has at its inner end a pinion *g*, which drives two spur-wheels *h h* on the shafts of a pair of grooved drawing-drums F. The strands pass through the hollow shaft *f* and are twisted together by reason of the rotation of the flier, the twisted strands passing around the pair of drawing-drums F and being delivered by the same over a suitable guide-roller *g'* to the traversing guide or carriage G, whereby the twisted strands are properly laid upon the spool, this traversing carriage being reciprocated so as to lay the rope or yarn from one end of the spool to the other, and the mechanism for reciprocating the carriage constituting the main feature of my invention.

The carriage is connected to a belt or band *i*, which passes around suitable guide-pulleys *i'* on the frame of the machine, the ends of this belt or band being wound in opposite directions upon a drum I, which can turn freely on a sleeve *h'*, surrounding the journal *a* at one end of the machine. This drum has a projecting disk I', with a series of pins or teeth forming a segmental rack *m*, with which engages a pinion *n* at one end of a shaft *n'*, the opposite end of which is adapted to a bearing in the frame of the flier B, and is provided with a worm-wheel *p*, with which meshes a worm *p'* on a shaft *s*, likewise adapted to bearings on the frame of the flier and having a bevel-pinion *t*, engaging with a bevel-wheel *t'* on one of the drawing-drums F. As the shaft *n'* is rotated, therefore, the pinion *n* engages with the segmental rack *m*, first on the outside of the same and then on the inside, the pinion passing around one end of the rack from the inside to the outside and around the other end of the rack from the outside to the inside, so that a back-and-forth vibrating movement will be imparted to the rack and to the disk and drum connected therewith, the ends of the band or belt *i* controlling the



traversing guide being thus alternately wound and unwound from the drum, and the guide being compelled to reciprocate on its bearings from one end of the spool to the other.

5 In order that the guide may be firmly supported upon its bearings and prevented from being twisted out of place thereon, the rod M, upon which the guide is mounted, has opposite grooves W, as shown in Fig. 4, and the  
10 guide has anti-friction rollers W' running in these grooves, so as to prevent twisting of the guide on the rod and insure the proper steadiness of movement without causing excessive friction.

15 I am aware that guide-operating mechanism consisting of a band, a drum, a segmental rack, and a pinion for operating the latter have been heretofore employed in spinning or twisting machines, the mechanism being  
20 mounted upon one of the side bars of the flier-frame, so as to be carried round with the same. In my machine, however, the segmental rack and its drum are mounted so as to be concentric with the axis of rotation of the flier, so  
25 that they have no tendency to disturb the equilibrium of the latter, whatever the rate of speed at which it is driven.

Having thus described my invention, I claim and desire to secure by Letters Patent—

30 1. The combination of the spool-carrier, the flier - frame, and the traversing guide with

mechanism for effecting the reciprocation of said guide, said mechanism comprising a band connected to the guide, a drum connected to  
35 said band and having a segmental rack, a pinion adapted to said rack, a shaft carrying said pinion, and means for rotating said shaft, said drum and segmental rack being mounted concentric with the axis of rotation of the  
40 flier, substantially as specified.

2. The combination of the spool-carrier, the draft-drums, the flier-frame, and the guide mounted on the latter with means for reciprocating said guide, consisting of a band connected to the guide, a drum connected to said  
45 band and having a segmental rack, a pinion adapted to said rack, a shaft carrying said pinion, a worm-wheel on said shaft, a bevel-wheel on one of the draft-drums, and a secondary shaft having a worm engaging with  
50 said worm-wheel and a bevel-pinion engaging with the bevel-wheel on the draft-drum, the segmental rack and its drum being mounted concentric with the axis of rotation of the  
55 flier, substantially as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EDMUND DAWES.

Witnesses:

WILLIAM D. CONNER,  
HARRY SMITH.