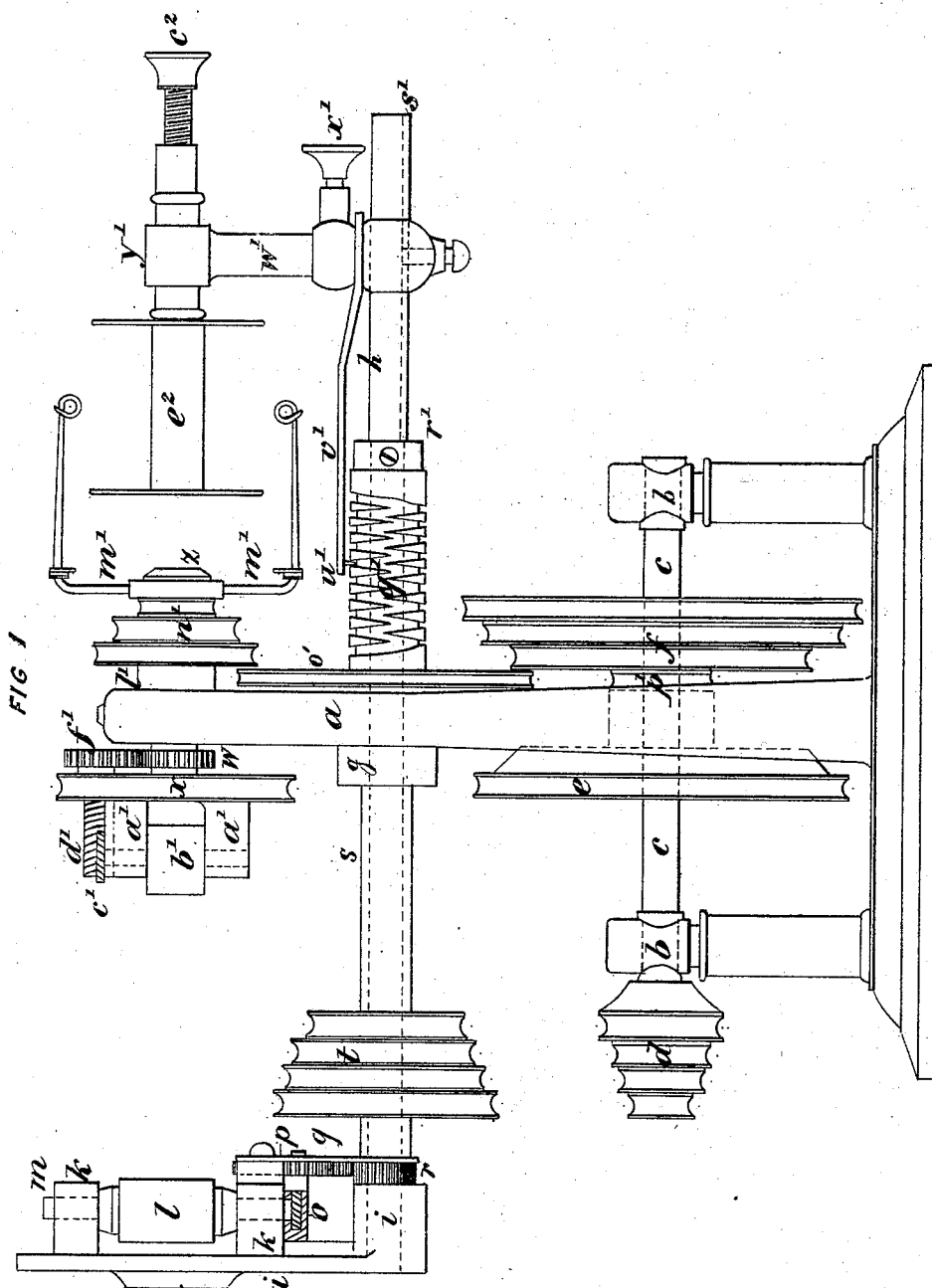


N. MARSHALL.
SPINNING-MACHINE.

No. 171,298.

Patented Dec. 21, 1875.



Witnesses

Dear Mr. Lyman
 A. M. Winona and

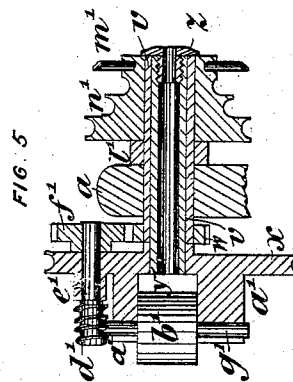
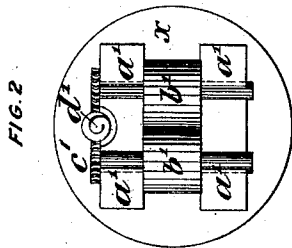
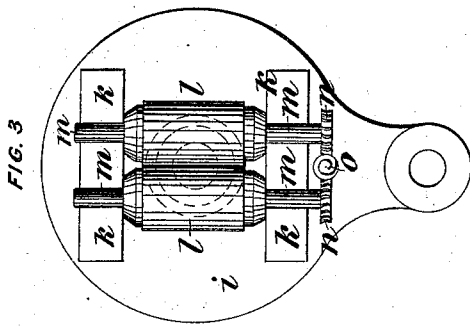
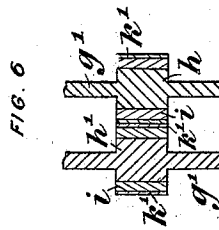
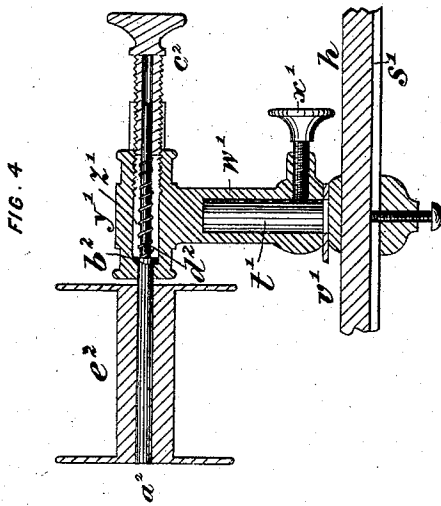
Inventor

N. Marshall
By his attorney
L. G. L. Simpson

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Witnesses

Frank R. Reynolds
Chas. W. H. H. H. H.

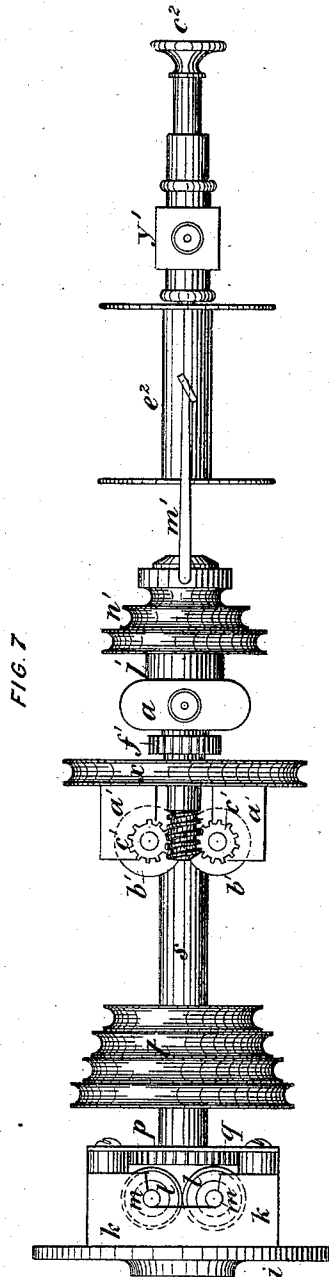
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Witnesses

David W. Reynolds

A. W. Rousseau

Inventor

N. Marshall

By his attorney

L. L. Simpson

UNITED STATES PATENT OFFICE.

NATHANIEL MARSHALL, OF PLATTSBURG, NEW YORK.

IMPROVEMENT IN SPINNING-MACHINES.

Specification forming part of Letters Patent No. **171,298**, dated December 21, 1875; application filed October 25, 1875.

To all whom it may concern:

Be it known that I, NATHANIEL MARSHALL, of the town of Plattsburg, in the county of Clinton and State of New York, have invented certain new and useful Improvements on Machines for Spinning Fibrous Material into Yarn and Thread, &c.; and I do hereby declare that the following is a full, clear, and exact description of the same.

This invention has reference to improvements in self-feeding spinning-machines for the purpose of producing a machine capable of giving a more even and uniform thread than that manufactured by the machines heretofore in use, and to so simplify the machine that it may be adapted for family use as well as for manufacturers, and to render it capable of being operated with little or no skill or care.

In the drawings hereunto annexed, where similar letters of reference indicate like parts, Figure 1 represents a side elevation embodying my invention. Fig. 2 represents a front view of spinner-head. Fig. 3 represents a detail of feed mechanism. Fig. 4 represents a detail of bobbin-bracket. Fig. 5 represents a detail of spinner. Fig. 6 represents a detail of twisting-rollers. Fig. 7 represents a plan of Fig. 1, (upper portion.)

Letter *a* designates any desired or suitable rigid stand or frame-work for holding the parts hereinafter mentioned in place. *b* are two bearings, carrying the main driving-shaft *c*, on which are secured the pulleys *d*, *e*, *f*, and *p'*, as shown in the drawings. In the frame *a* a hub, *g*, is formed, into which is tightly driven, or secured in any ordinary manner, a shaft, *h*, extending, as shown in the drawings, to a considerable length on each side of it. On one extremity of this shaft is secured the frame *i* of the feed mechanism. This consists of a hub, by which it is attached to the shaft *h*, and a plate made in one with the hub. On this latter are projections *k*, which form the bearing of the feed-rollers *l*, on the lower end of the axles *m* of which are secured the gear-wheels *n*. These are provided with teeth to engage with a screw cut on the shaft *o*, carried by a bearing formed in *i* at one end, and at the other by a bearing formed in the plate *p* attached to the lower projections *k*. *q* is a gear-wheel secured on the shaft *o*, intermeshing

with a gear, *r*, secured on the hollow shaft *s* revolving on the shaft *h*. On the shaft *s* are placed the differential pulleys *t*, arranged to be driven by the pulley *d*. The rollers *l* are provided with an india-rubber outer covering, and are so arranged that while the gear-wheels *n* intermesh with the screw *o* the india-rubber coverings bear sufficiently against one another to gripe the material to be fed. This is done through an opening, *u*, in the plate *i*. In the top of the frame *a* an eye is formed for the reception of a bush, *v*, on which is secured a gear-wheel, *w*. *x* is a disk, the periphery of which is grooved to form a pulley. This is provided with a hollow shaft, *y*, made to fit and pass within the bush *v*, any suitable nut or collar, *z*, being secured at its other end. On the disk *x* projections *a'* are provided, forming bearings to carry the revolving twisting-rollers *b'*. On the ends of the axles of these rollers are provided gear-wheels *c'*, intermeshing with the screw-shaft *d'* carried in a bearing in the disk *x*. The end of the shaft *d'* projects through the other side of *x*, and on it is placed a gear-wheel, *f'*, intermeshing with the gear-wheel *w*. By this arrangement, as the gear-wheel *w* is stationary and that *f'* revolves about it by means of any suitable belt passing from the pulley *e* to the periphery of *x*, the screw *d* is caused to rotate one complete revolution for each revolution of the disk *x*, and this operates the rollers *b'*. These rollers *b'* are constructed as shown more clearly in Fig. 6, where *g'* is the axle; *h'*, the roller; *i'*, an india-rubber covering, and *k'* a metallic shell.

By this construction, while the outer surface of these rollers is hard, an amount of elasticity is provided for, which would otherwise require a complication of springs, &c., to impart.

On the bush *v*, extending through the frame *a*, and immediately next to it, is placed a washer, *l'*, between which and the nut *z* is held the flier *m'*. This flier is of the ordinary construction, and made in one with pulleys *n'*, to be driven by a belt off the pulley *f*. On the shaft *h*, projecting through the frame *a*, is placed the pulley *o'*, which is driven by a belt off the pulley *p'* on the shaft *c*. This pulley *o'* is provided with a long neck, *q'*, bored out to fit on the shaft *h*, and is secured in place.

thereon by a collar, r' . This neck, on its outer surface, is cut with a double-reversed thread, as clearly shown in the drawing. The end of the shaft h extending beyond the collar r' is provided with a longitudinal groove, s' , preferably placed on the under side, for the purpose of holding the standard t' vertical, while it is caused to travel back and forth on the extremity of h by means of a die, w' , attached on an arm, v' , connected to the standard t' , and engaging with the thread on q' . This is so arranged that, when the die is set to travel down one of the double sets of threads, it will continue to do so until it arrives at the end, where the configuration of the thread causes it to be turned about and travel back up the other set of threads. Thus the backward and forward motion of the bobbin-carrier is obtained. On the standard t' is secured a socket, w' , which may be fixed in any desired position by a set-screw, x' . In the head y' of this socket a recess, z' , is formed, in which is placed the spindle a^2 , provided with a collar, b^2 , between which and a screw, c^2 , is placed, on a^2 , a spiral spring, d^2 . This is for the purpose of giving the desired amount of friction to the spindle a^2 as it revolves, thereby creating the required amount of tension to the thread or yarn as it is wound on the bobbin e^2 .

The operation of the machine is as follows:
The roll of fibrous material is presented at the

opening u in the ordinary manner, and is caught by the rollers l , and the machine is operated until a sufficiently long end is produced, to be caught by the rollers b^1 . These give it the required twist. It then passes through the hollow shaft y , and is wound by the flier m' , in the ordinary manner, on the bobbin e^2 . By the differential-pulleys t and d an amount of adjustment with number of twists imparted in a given length of thread is provided for, and by the differential pulleys n' and f the flier may be arranged to impart an amount of twist beyond that given by the rollers b^1 , as well as to wind up the thread or yarn on the bobbin b^2 .

What I claim is as follows:

1. The combination of the bobbin-spindle a^2 , having a collar, b^2 , spiral spring d^2 , and tubular screw c^2 , which serves the twofold purpose of a bearing for one end of the bobbin-spindle and of a means for regulating the tension, substantially as specified.

2. The combined standard and bobbin-bearing $t' w' y'$, in combination with the fixed grooved shaft $h s'$, arm v' , die w' , and revolving neck q' , having a double-reversed thread on its surface, all substantially as and for the purpose specified.

NATHANIEL MARSHALL.

Witnesses:

FRAS. HY. REYNOLDS,
T. H. MACE.