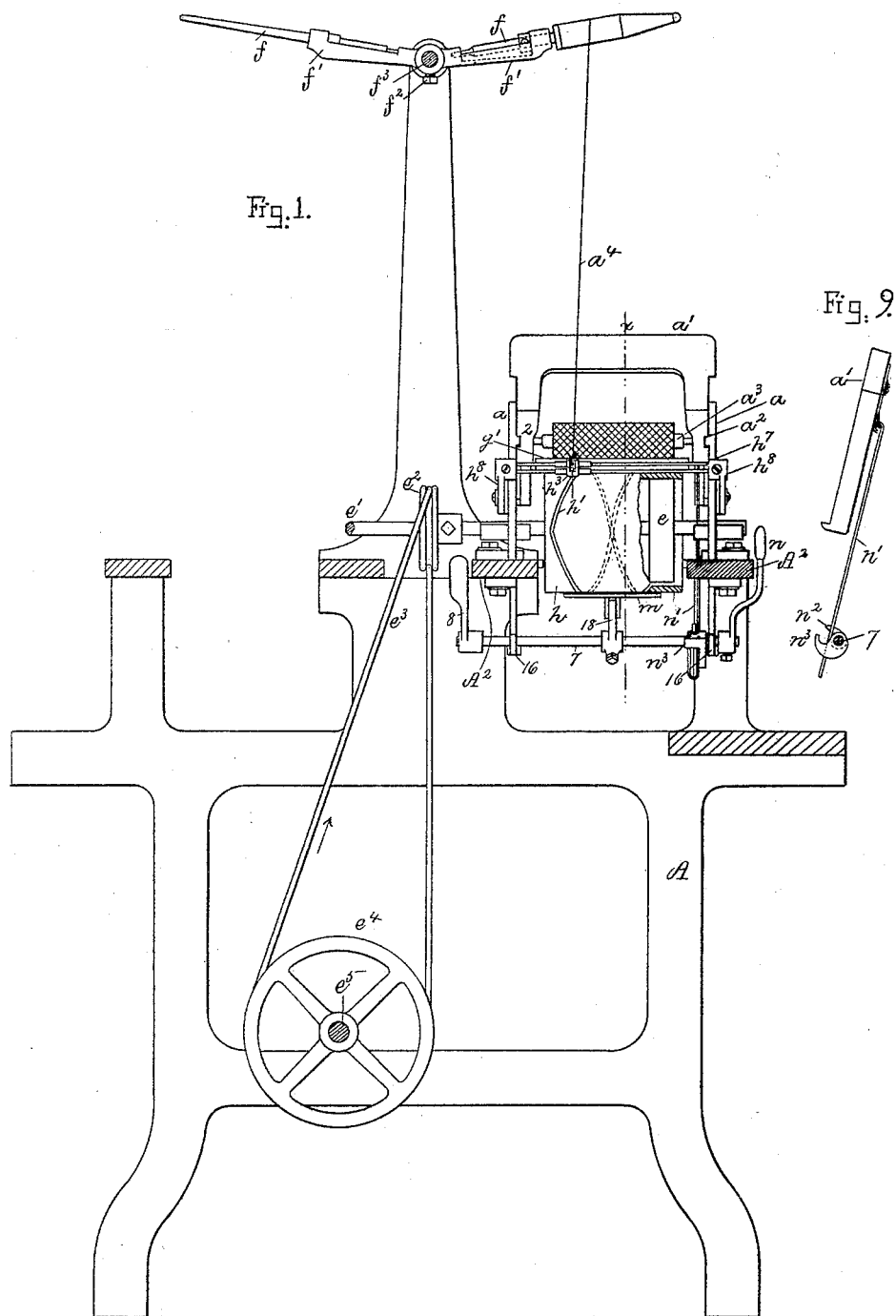


J. W. FOSTER.
YARN OR THREAD WINDING MACHINE.

No. 459,039.

Patented Sept. 8, 1891.



Witnesses.

Fred. S. Gould of
John F. C. Printz

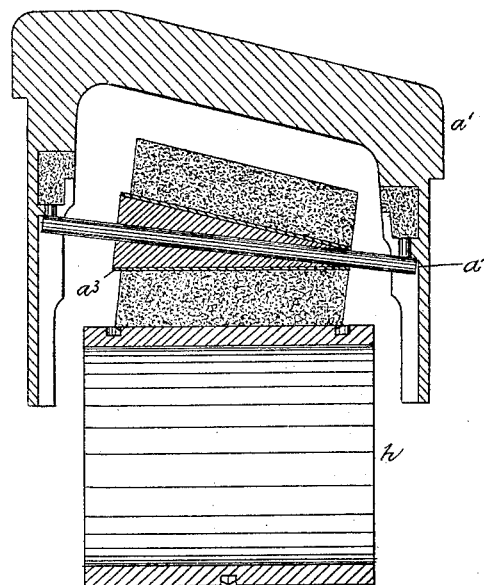
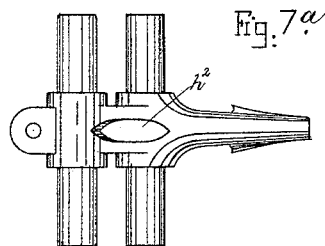
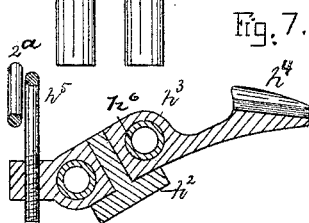
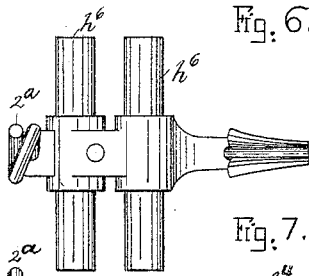
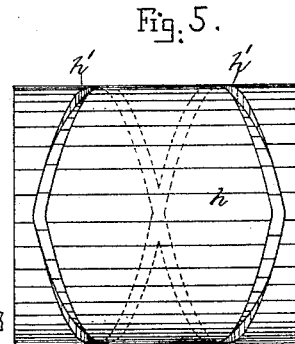
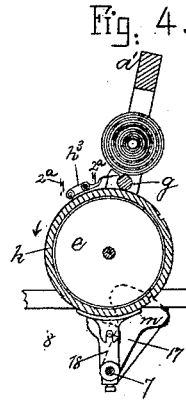
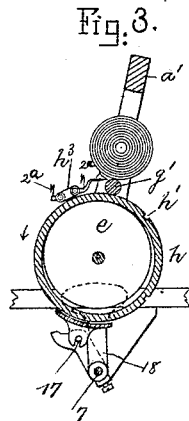
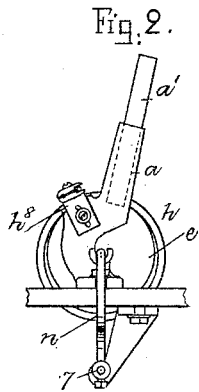
Inventor

John W. Foster:
by Crosby & Gregory attys.

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UNITED STATES PATENT OFFICE.

JOHN W. FOSTER, OF FALL RIVER, MASSACHUSETTS.

YARN OR THREAD WINDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 459,039, dated September 8, 1891.

Application filed July 1, 1890. Serial No. 357,331. (No model.)

To all whom it may concern:

Be it known that I, JOHN W. FOSTER, of Fall River, county of Bristol, State of Massachusetts, have invented an Improvement in Yarn or Thread Winding Machines, of which the following description, in connection with the accompanying drawings, is a specification, like letters and figures on the drawings representing like parts.

This invention has for its object the production of a machine for spooling both yarns and glazed threads, my invention being applicable to both classes of winding.

The machine herein to be described is an improvement upon that represented in my United States Patent No. 436,521, dated September 16, 1890, the said patent containing a shell-roll, the rotation of which is quickly stopped by lifting it from contact with a roll or driving-wheel within it.

In this present invention I have so grooved the said shell-roll as to cause it to actuate the traverse device, there being a traverse device for each spool being wound.

In this machine the yarn or thread will be wound directly upon a receiver, which may be a paper tube or cone, as desired, or a wooden hub. When the receiver is a paper or other hollow tube, the said receiver will be sustained upon an iron rod, the ends of which are acted upon by a yoke which is adapted to slide vertically, or nearly so, in a suitable guide as the diameter of the yarn or thread upon the said receiver increases, owing to the addition of yarn or thread thereto.

When my machine is to be used for winding glazed threads, it is very essential that the thread-guide of the traverse device be carried close to the point of contact of the thread with the shell or other rotating device which rotates the receiver and the mass of thread thereon. So to provide for this I place between the shell-roll and the receiver upon which the thread is to be wound an intermediate driving-roll, which need not be more than about an inch in diameter; but the said roll is, however, not necessary when winding common yarns, although it can be used, if desired. The driving-roll is especially necessary when winding glazed thread, because, unless the nose of the guide of the traverse device lies

close to the mass of thread on the receiver being wound, the thread, at the change of direction of the traverse device, will slip off the end of the mass of thread, so that the ball will not be properly wound at the ends. The yarn or thread to be wound in spool form is taken from cops of yarn or thread mounted upon spindles or bobbins arranged, preferably, in nearly horizontal position substantially parallel to the axis of rotation of the receiver to receive the yarn or thread, so that the said yarn or thread comes down in a substantially straight line from the cop or bobbin to the traverse device.

One part of my invention consists in an organized spooling-machine containing a shell-like driving-roll having a crossing groove in its periphery, combined with a thread-traversing device actuated by the said crossing groove to lay the yarn or thread from end to end of a ball deriving its rotation from the said shell-roll.

Other features of my invention will be hereinafter described, and pointed out in the claims at the end of this specification.

Figure 1 of the drawings is a sectional detail showing a sufficient portion of a spooling-machine, taken in connection with my application referred to, to enable my present invention to be understood. Fig. 2 is a detail showing the shell-roll, the driver for it, and one of the stands, and the rods on which the traverse device is made to slide. Fig. 3 is a section in the line *x* of Fig. 1, the lifting device for the shell-roll being down in the position it will occupy when the shell-roll is being rotated. Fig. 4 is a like section with the shell-roll elevated and at rest. Fig. 5 is an enlarged detail of the shell-roll, showing its crossing groove. Figs. 6, 7, and 7^a are detail views in different positions of the traverse device enlarged, the latter being an under side view. Fig. 8 is a modification of my invention, wherein the machine is adapted to wind a conical ball instead of a cylindrical ball, as in Figs. 1 to 8. Fig. 9 is a detail showing the vertically-movable yoke and its connection to actuate the rock-shaft to raise the shell-lifting device and shell to stop its rotation.

The frame-work A has suitable sills A²

running lengthwise thereof, on or to which are connected the devices for supporting the chief working parts.

The shaft e^5 , the pulley e^4 thereon, the belt e^3 , extended over the pulley e^2 on the shaft e^1 , provided with the wheels or disks e , the bearings for the said shaft e^1 , the depending bracket 16, the rock-shaft 7 therein provided with a handle n , by which to turn it when desired, the arm 18, connected with said shaft and having a pin 17, which serves to receive and support the lifting device m , shown as a concaved bar adapted to fit the under side of the shell-roll h , are and may be all substantially as in my said patent, it being understood that in practice the said rock-shaft 7 will, as in the said patent, be provided with an arm to be acted upon by a suitable stop-motion device whenever the yarn or thread fails, so as to turn the said rock-shaft automatically in a direction to raise the lifting device m against and so as to lift the shell-roll and stop the rotation of the shell-roll.

The sills A^2 have erected upon them pairs of standards a , there being one such standard at each end of each shell-roll, the said standards being grooved at their inner sides (as best shown by dotted lines, Fig. 2) to receive the lower ends 2 of a yoke a' , having suitable shoulders to bear upon the iron rod a^2 , upon which is placed the receiver a^3 , upon which is to be wound the yarn or thread a^4 to constitute a cylindrical or conical ball, as in Figs. 1 and 8. In Fig. 1 the receiver is intended to be represented as a paper or other tube cylindrical in form, while in the modification, Fig. 8, the tube is conical in form and is sustained upon a conical hub.

The shell-roll h is like the shell-roll described in the said patent, with the exception that herein it is provided with a crossing groove h' , in which enters a traveler h^2 , pointed at both ends and mounted loosely upon the body h^3 of the traverse device, it having a delivery-nose h^4 suitably grooved for the passage of the yarn or thread, the yarn coming through the said nose from suitable thread-guides 2^a . The traverse device is shown as having two sleeves h^6 , which are adapted to slide upon parallel rods h^7 , the ends of which are suitably held in stands h^8 , secured in a suitable manner to the stand a .

The weight 8, fast to the rock-shaft 7, is so placed as to aid in turning the said shaft to actuate the lifting device m as soon as the shaft 7 is turned by a depending loop or link n' , attached to the yoke a' and extended through between arms n^2 and n^3 of a collar attached to the rock-shaft 7, the said link meeting the arm n^2 as soon as the ball is of the desired diameter to thus start the rock-shaft 7, the weight 8 completing its movement to elevate the lifter and lift the shell-roll from the driving-wheels e , the arm n^3 preventing the escape of the link from the said collar.

The yarn to be spooled is taken from a suitable cop or bobbin on a spindle f , arranged

in nearly horizontal position in a bolster f' , having suitable bearings for the central part of the spindle and for the step, the said bolster 70 being attached at its lower end by a suitable set-screw f^2 to a rod f^3 , so that the yarn or thread a^4 can pass vertically to the guide-eye 2^a of the traverse device.

I do not desire to limit this invention to the exact form of the spindle, as the gist of this part of my invention lies in placing the spindle in a nearly horizontal position, so that the thread may pass directly to the thread-guide of the traverse device without passing through other guides, thus saving strain and friction upon the threads.

For winding glazed thread the yoke receives within it the journals of a small auxiliary driving-roll g' , which rests directly upon the surface of the shell-roll, so that the said roll is rotated by frictional contact with the shell-roll whenever the shell-roll is rotated. The receiver upon which the yarn is to be wound and the ball made by the yarn upon the receiver rest directly upon the periphery of the intermediate driving-roll and are rotated by frictional contact with it. By employing this small intermediate driving-roll it is possible (see Fig. 3) to place the delivery-nose of the traverse device substantially at the bight or point of contact of the receiver or yarn thereon with the intermediate driving-roll, so that the thread is held close up to the point at which it is wound in the mass, and thereby the thread is prevented from slipping off the end of the ball, which would produce imperfect winding. When the receiver or ball rests directly upon the shell-roll, the nose of the traverse device cannot hold the yarn as closely to the ball as when the small intermediate roll is employed; but for coarser yarns this intermediate roll may be omitted.

It will be understood that the yoke a' rises as the mass of yarn or thread on the receiver increases in diameter.

The intermediate roll g' may be covered or be a plain uncovered roll, as desired, and the covering may be of any usual character.

I claim—

1. The driving wheels or disks, the shell-roll grooved at its periphery, and a traverse-guide actuated thereby to traverse the material to be wound from one to the other end of the ball, substantially as described.

2. A rotating roll provided with a crossing groove and a traverse-guide actuated thereby, combined with a shaft for a hub or shell on which the material is to be wound in a ball and a yoke which is elevated by the said shaft as the ball increases in diameter, substantially as described.

3. The rotating roll h , provided externally with a crossing groove, a traverse-guide actuated thereby, a shaft to support the hub or shell on which the material is to be wound, and a yoke to bear on the said shaft, combined with an intermediate roll g' , to operate substantially as described.

4. The rotating shell-roll having a crossing groove, a driving-roll therein, a lifting device to lift the shell-roll, a rock-shaft by which the lifting device is actuated, a yoke, a traverse-guide, a weight, and means between the said yoke and shaft to rotate the latter, substantially as described.
5. The driving wheels or disks, the shell-roll grooved at its periphery, and a traverse-guide actuated thereby to traverse the material to be wound from one to the other end of the ball, combined with a delivery-spindle, arranged substantially as described to enable the thread to be laid directly from the spindle to the guide-eye of the traverse-guide, as set forth.
- 10 In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN W. FOSTER.

Witnesses:

GEO. W. GREGORY,
EMMA J. BENNETT.