(No Model.)

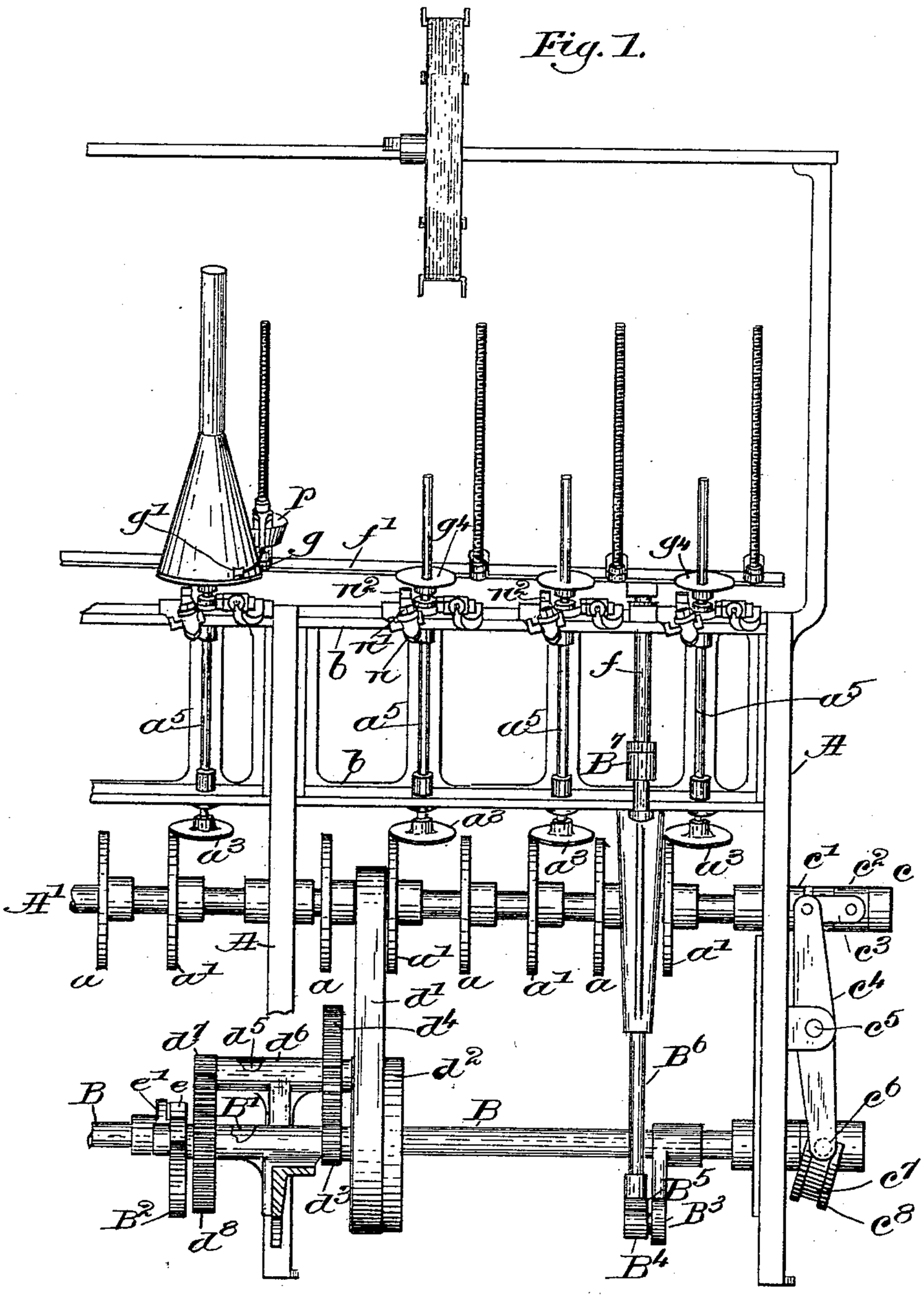
3 Sheets—Sheet 1.

W. D. HUSE.

BOBBIN WINDING MACHINE.

No. 602,583. Patented Apr. 19, 1898.

Fig. 1.



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(No Model.)

3 Sheets—Sheet 2.

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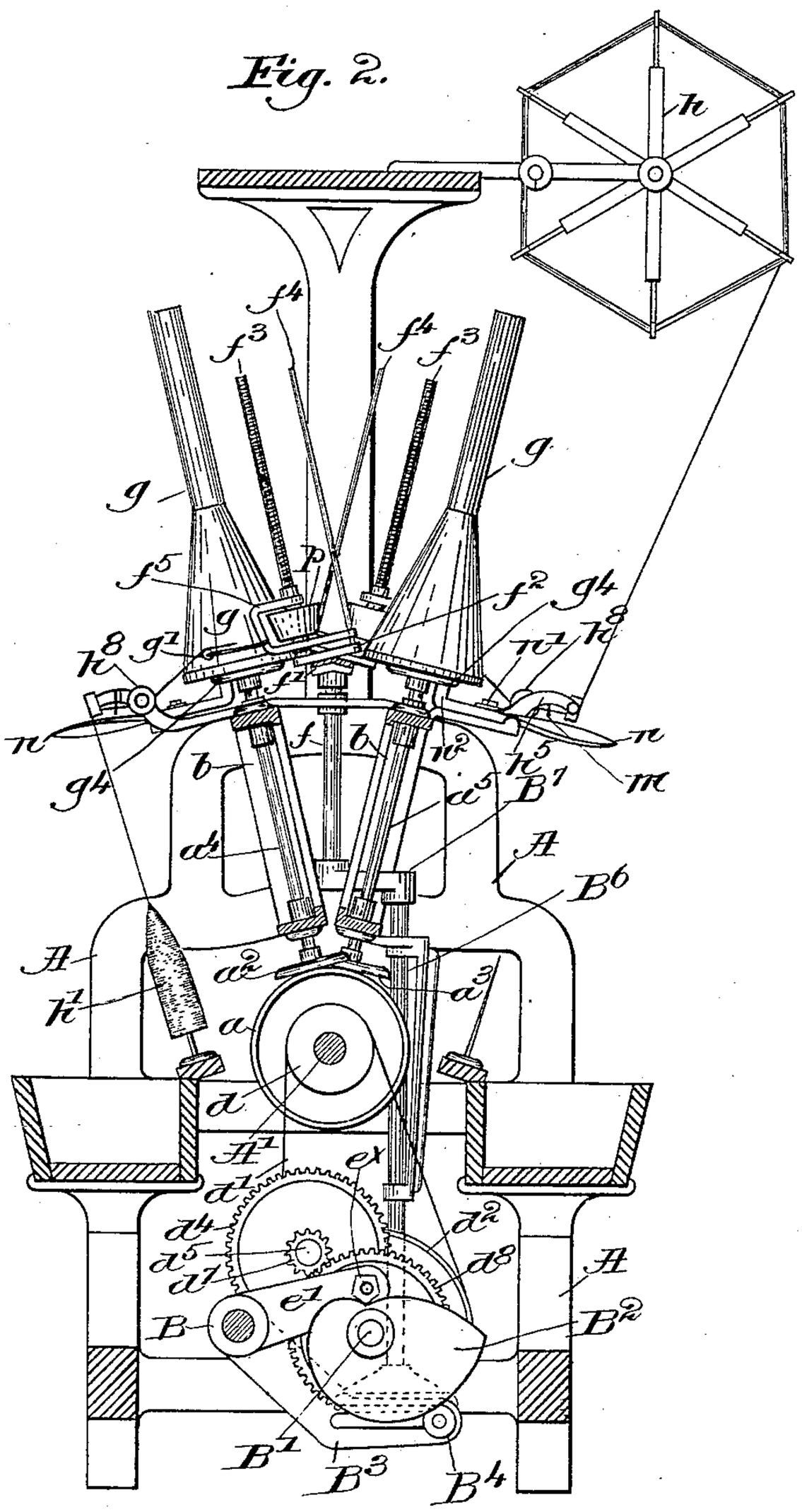
BOBBIN WINDING MACHINE.

No. 602,583. Patented Apr. 19, 1898.

Fig. 2.



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(No Model.)

3 Sheets—Sheet 3.

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BOBBIN WINDING MACHINE.

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Fig. 3.

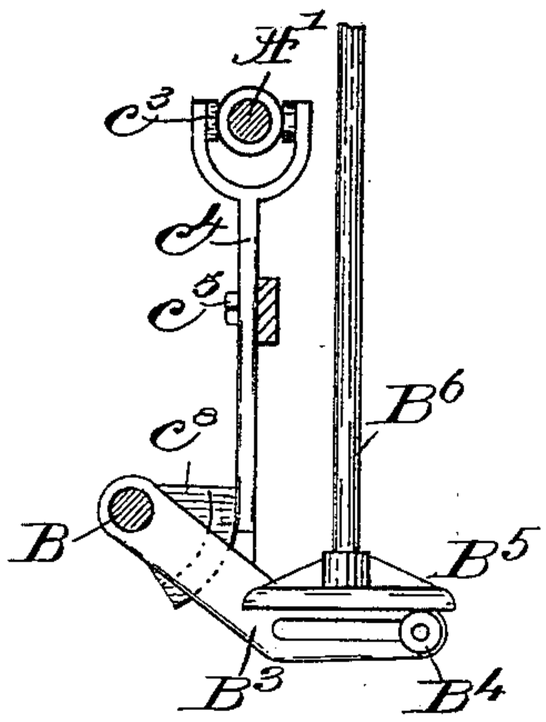


Fig. 4.

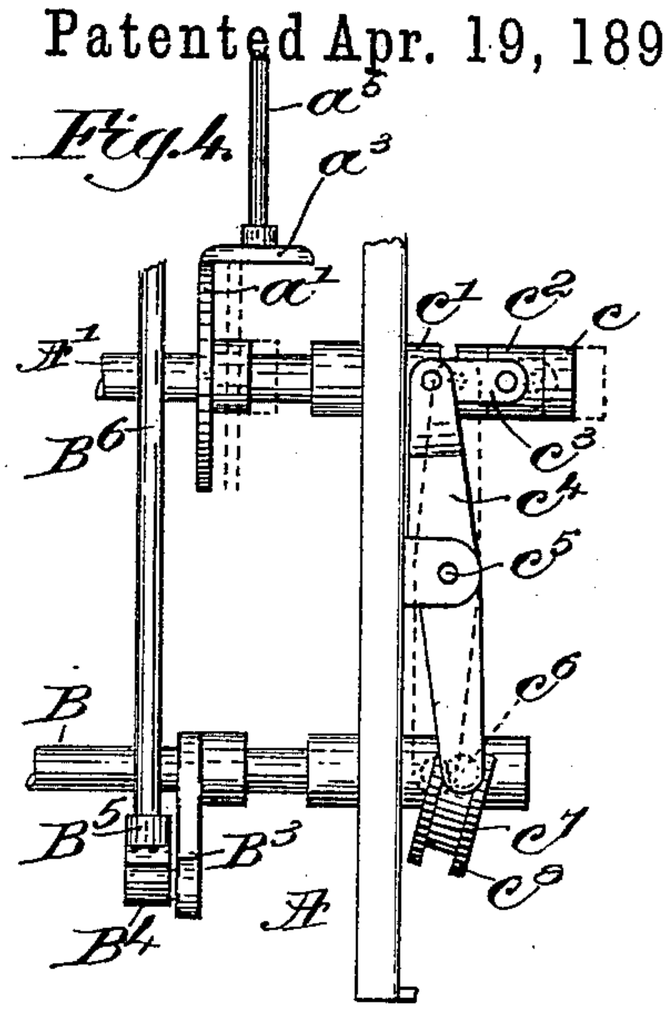


Fig. 5.

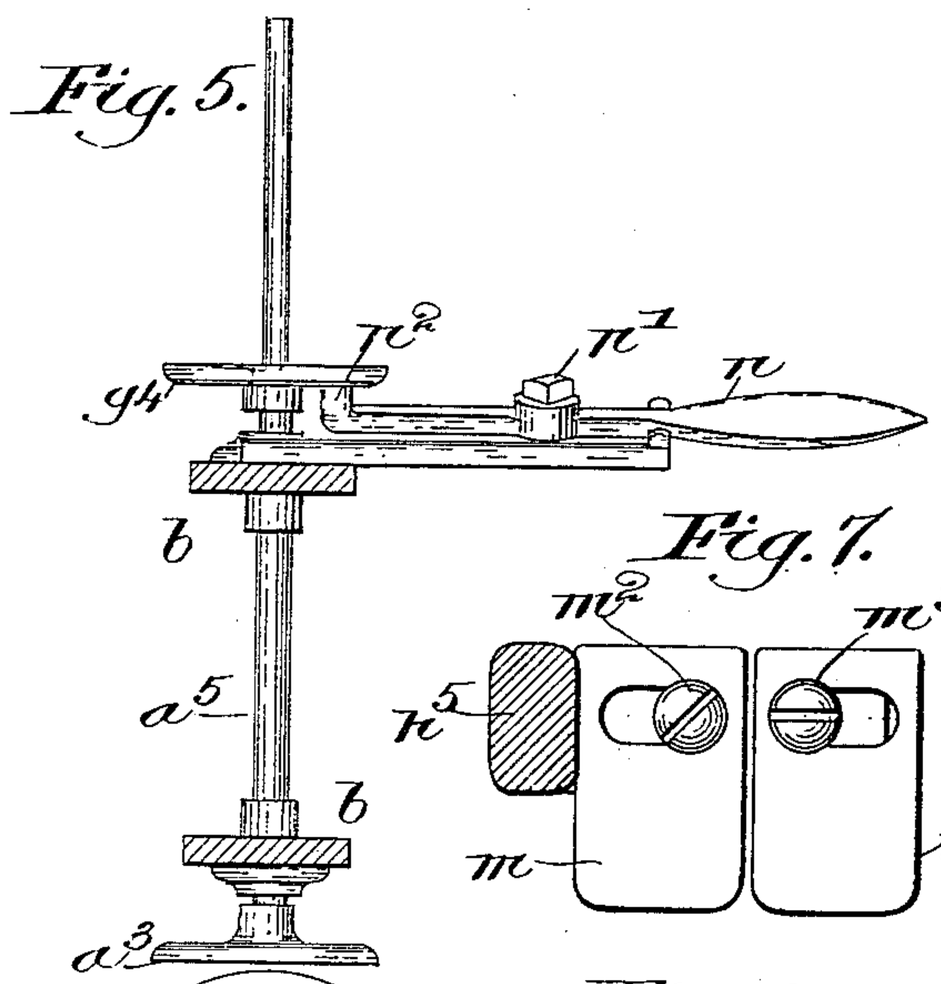


Fig. 6.

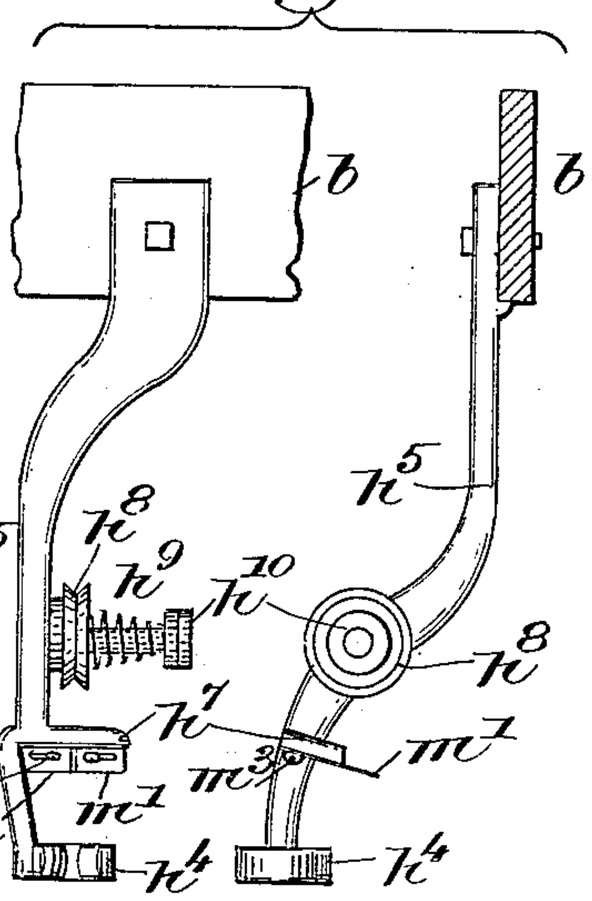


Fig. 7.

Fig. 8.

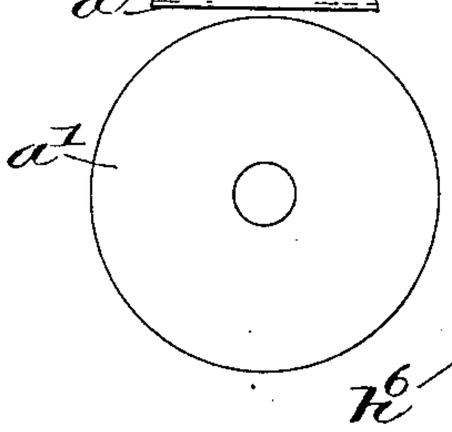
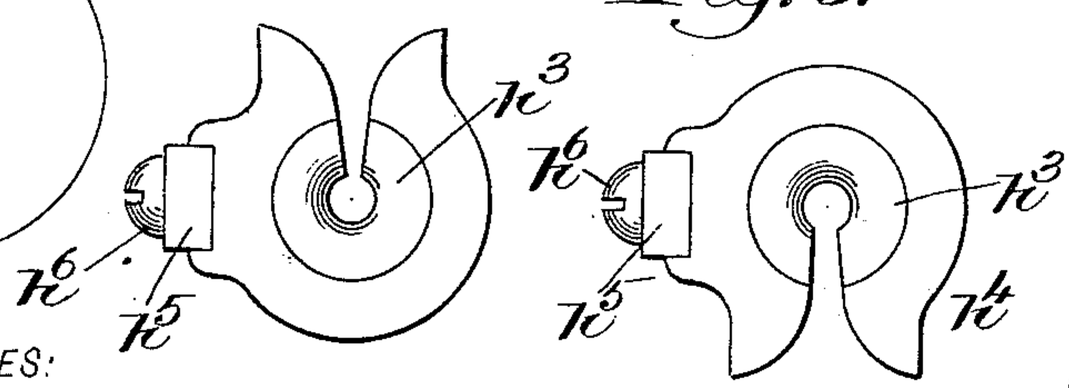


Fig. 9.



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UNITED STATES PATENT OFFICE.

WARREN D. HUSE, OF LACONIA, NEW HAMPSHIRE.

BOBBIN-WINDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 602,583, dated April 19, 1898.

Application filed February 23, 1897. Serial No. 624,570. (No model.)

To all whom it may concern:

Be it known that I, WARREN D. HUSE, of Laconia, county of Belknap, State of New Hampshire, have invented an Improvement in Bobbin-Winding Machines, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention has for its object the production of an improved bobbin-winding machine, one more especially adapted to wind bobbins having a tapering base and taking the yarn from a skein or other usual yarn-holder, as a spindle.

The particular features in which my invention consists will be hereinafter more particularly described and pointed out in the specification and set forth in the claims thereof.

Figure 1, in front elevation, represents a sufficient part of one side of a bobbin-winding machine to enable my invention to be understood. Fig. 2 is a left-hand end elevation thereof. Fig. 3 is a detail of the lifting-rod and some of its actuating parts. Fig. 4 is a detail showing the means employed to gradually vary the speed of the bobbins. Fig. 5 shows a spindle in elevation, its driving-disk, and brake device. Fig. 6, in two views, shows the guide and clearer; Fig. 7, a sectional detail showing the clearer in two sections. Figs. 8 and 9 show the guide in its two positions.

The framework A has suitable bearings for the main shaft A′, it in practice having on one end of it a suitable driving-pulley. (Not shown.) This shaft is provided with a series of friction devices $a\,a'$, arranged side by side, those a' engaging friction-disks a^3 at the lower ends of spindles a^5, while those marked a engage friction-disks a^2 at the lower ends of spindles a^4. These spindles have their bearings in like yokes b, secured in the framework, the said spindles occupying reversely-inclined positions and lying side by side, as shown in Fig. 2, so as to be rotated by the series of drivers $a\,a'$ on one and the same shaft.

The shaft A′ has mounted loosely upon it, between collars $c\,c'$, a collar c^2, having attached to it a link c^3, connected with a lever c^4, pivoted at c^5 and having at its lower end a stud (shown by dotted lines at c^6) which enters a diagonal or inclined groove c^7 in one end of an arm c^8, fixed to a rock-shaft B, the motion of said shaft turning the lever c^4 and sliding the drivers under the disks to rotate them at a slower or faster speed—the nearer the drivers to the center of the disk the faster the speed, and vice versa. The main shaft has a belt-pulley d, provided with a belt d', which is extended over a pulley d^2, loose on a short shaft B′ and having at its hub a pinion d^3, which engages a toothed gear d^4, fast on a short shaft d^5 in a stand d^6, said shaft having at its opposite end a suitable pinion d^7, which in turn engages a toothed gear d^8, fast on the shaft B′, thus rotating said shaft and its attached gein-cam B^2 at a slow speed, causing it to act on a roller or other stud e on a stud $e^\times$ of a lever e', fast on the rock-shaft B, causing the said rock-shaft in its movement to also operate the arm B^3, having adjustably attached to it a roller or other stud B^4, which acts on and rolls over the shoe B^5, attached to suitable lifting-rods B^6, having at their upper ends an arm B^7, which carries an upright rod f, two or more such rods carrying at their upper ends a bar f', which latter carries the blocks f^2, on which are erected a screw f^3 and a guide f^4. The screws are surrounded by a yoke f^5, and one end of the yoke is extended to embrace the guide f^4 loosely, and between the arms of the said yoke the said screw is surrounded by a tapering pressure-roller p, having its hub adapted to engage the threads of the screw to gradually raise it on the screw as the bobbin is being filled. The yoke also supports an arm g, having a yarn-supporting roll g'. The surface of the pressure-roller is tapered to correspond with the tapering surface of the base of the bobbin and the yarn to be wound thereon. This yoke, pressure-roller, screw, and guide are and may be all substantially as fully described in United States Patent No. 463,423, dated November 17, 1891.

The yarn to be wound may be taken from a reel h or from a cop h'. The yarn when taken from the reel passes through a slotted guide-eye h^3, preferably of porcelain, held in a fork h^4, attached to an arm h^5 by a screw h^6, the slot of the guide being directed downwardly, as in Fig. 9, and thence the yarn is led between the clearer-plates $m\,m'$, composed,

preferably, of metal and confined adjustably by set-screws m^2 m^3, entering a projection h^7 from the arm h^5, and thence the yarn goes to and about a tension device or wheel h^8 of usual construction regulated by a suitable spring h^9 and nut h^{10}, said arm being suitably attached to the yoke b. From the tension device the yarn goes over the roller g', connected with the yoke f^5, and is connected with the bobbin g, the latter resting on the friction-plate g^4, each spindle having a like plate.

When the yarn is to be taken from a cop h', the screw h^6 will be withdrawn, and the block h^4, with its guide-eye, will be reversed to occupy the position Fig. 8.

To stop the rotation of the spindles when desired, I have provided a series of brake-levers n, mounted on a stud-screw n', tipped a little from true vertical position, so that the upturned end n^2 of said lever may in its movement by hand in one direction be made to act as a brake on the disk g^4, carried by the spindle, its movement in the opposite direction being made to release the disk and leave the spindle free to be rotated.

The pressure-roller p in operation rises and falls, and at the same time by contact with the yarn being wound it is gradually fed upward on the screw as required to properly shape the base of the wound mass of yarn.

In this my invention I have, I believe, for the first time placed clearers, as m m', between the guide, as h^3, and a tension device for the yarn, and by so doing I am enabled to keep more uniform the tension on the yarn being wound onto the bobbin, for I clear from the yarn all bunches before the yarn arrives at the tension devices

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a bobbin-winding machine, a main shaft provided with a series of friction-drivers, a set of spindles having at their lower ends friction-disks adapted to be rotated by said drivers, a driven pulley on said shaft, a second shaft parallel therewith and having loosely mounted on it a pulley provided with a pinion, a belt connecting said two pulleys, a third shaft also parallel to said shaft and provided with a gear and a pinion and operated from the pinion on said pulley, a gear and a cam fast on said second shaft and actuated from the pinion on said third shaft, and a rock-shaft having an arm actuated by said cam, and a second arm having a diagonal or inclined groove, a lever actuated by said groove and loosely connected with said main shaft, the rocking of the said rock-shaft effecting through said lever the sliding of the said main shaft, to vary the speed of rotation of the spindles, substantially as described.

2. In a bobbin-winding machine, a main shaft having two series of friction-drivers, two sets of diagonally-placed spindles having friction-disks coöperating with alternate drivers on the said shaft, a rock-shaft parallel with said shaft and having an arm provided with a diagonal groove c^7, means to rock said shaft, a lever c^4 operated by said groove c^7 and loosely connected at its upper end with said main shaft, to automatically reciprocate said main shaft longitudinally to vary the speed of rotation of said spindle, substantially as described.

3. In a bobbin-winding machine, an arm h^5, and the open-centered guide-block h^4 notched to engage said arm, and slotted at one edge into said open center, combined with a slotted thread-guide h^3, and means to connect the said block to said arm either side up, whereby the open slot of the thread-guide may be presented either side up, substantially as described.

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

WARREN D. HUSE.

Witnesses:
GEO. W. GREGORY,
MARGARET A. DUNN.