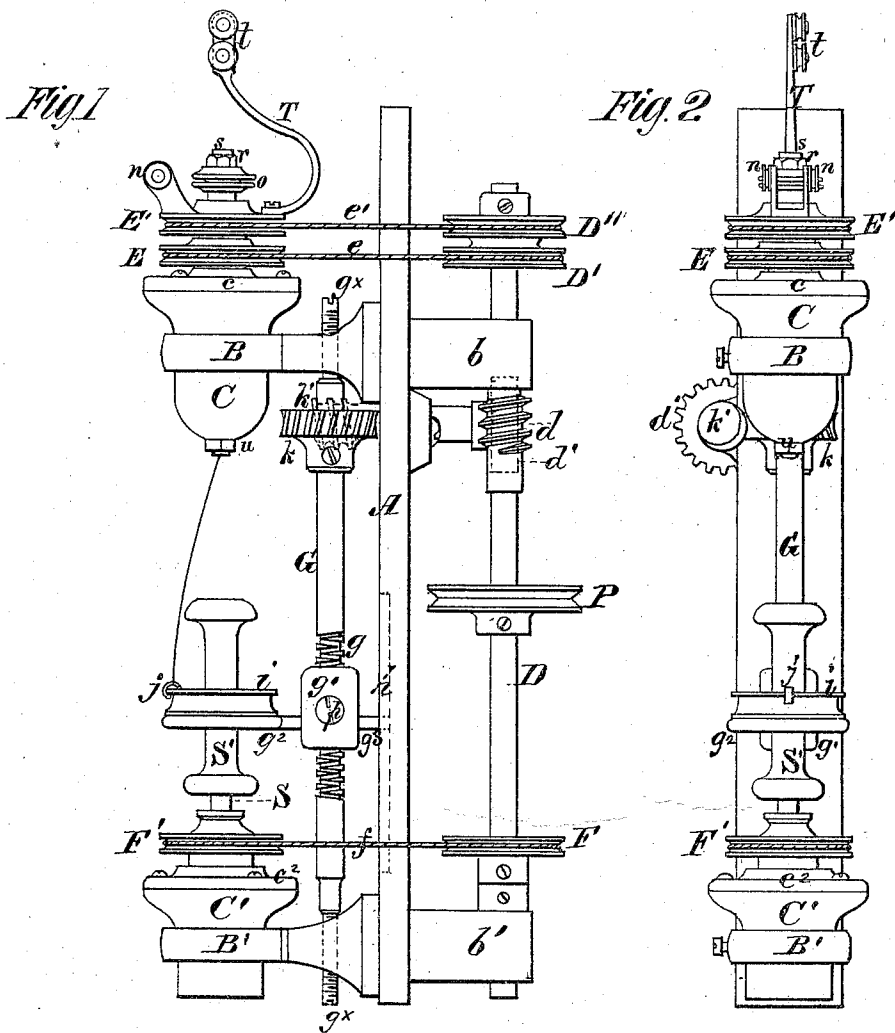


H. A. CHAPIN.

Spinning and Twisting-Machines.

No. 144,191.

Patented Nov. 4, 1873.



Witnesses:
R. J. Campbell
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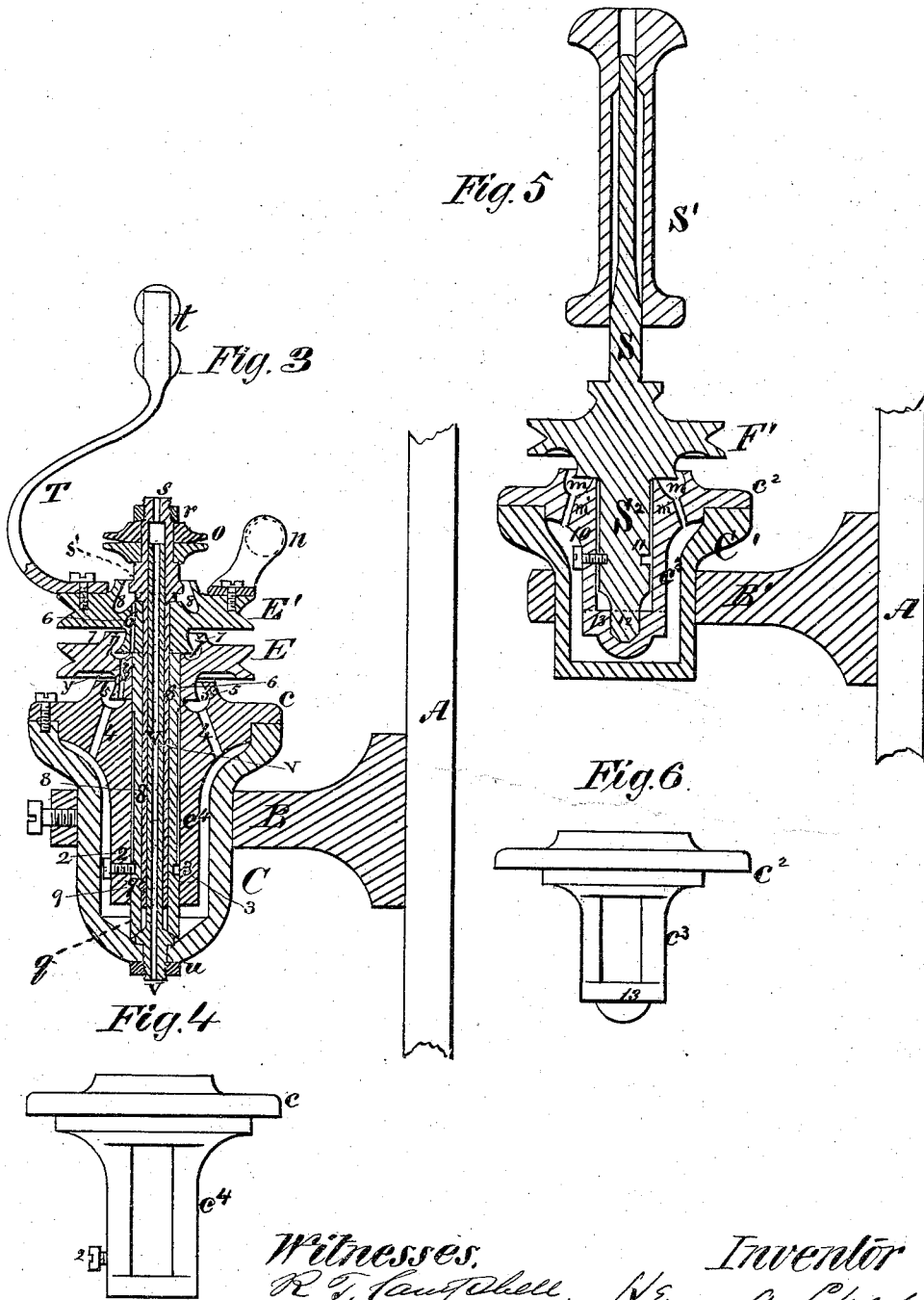
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UNITED STATES PATENT OFFICE.

HENRY A. CHAPIN, OF BRIDGEPORT, CONNECTICUT.

IMPROVEMENT IN SPINNING AND TWISTING MACHINES.

Specification forming part of Letters Patent No. **144,191**, dated November 4, 1873; application filed July 25, 1873.

To all whom it may concern:

Be it known that I, HENRY A. CHAPIN, of Bridgeport, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Spinning and Twisting Machinery; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1, Plate 1, is a side view of my improved devices. Fig. 2, Plate 1, is a front view of the same. Fig. 3, Plate 2, is a vertical sectional view of the drawing and twisting device and lubricating-chambers. Fig. 4, Plate 2, shows the cap and open stem of Fig. 3. Fig. 5, Plate 2, is a vertical section through the spindle, bobbin, and oil-cup. Fig. 6, Plate 2, is a side view of the cap, open stem, and step of Fig. 5.

Similar letters of reference indicate corresponding parts in the several figures.

This invention relates to certain novel improvements in devices for drawing and twisting materials and finishing the same at one operation, wherein the parts are freely lubricated, and the oil effectually prevented from escaping from the oil-chambers in which they are run, and wherein the ring and traveler are not depended on to give any twist or tension to the material, but serve simply as a means by which the material is wound upon the bobbins, as will be hereinafter explained.

The following description of my invention will enable others skilled in the art to understand it.

In the accompanying drawings, A represents part of the frame of the machine for supporting the drawing, spinning, and winding devices. B B' represent ring brackets for supporting two oil-cups, C C', secured fast therein by means of set-screws. D represents a vertical driving-shaft, which is supported back of the frame A by brackets b b'. On this shaft D are keyed four pulleys, D', D'', F, and P, and also a worm-screw, d. The pulley P receives motion from any suitable prime mover, and gives rapid rotary motion to the shaft D. The pulley D' communicates motion to a pulley, E, which is on a hollow stem, g, in oil-cup C, through the medium of a belt, e. The pul-

ley D'', which is somewhat smaller than pulley D', communicates motion to a pulley, E', which is on a hollow stem, s, through the medium of a belt, e', and the pulley F communicates motion to a pulley, F', on the bobbin-spindle S, through the medium of a belt, f. The worm-screw d communicates a slow rotary motion to a vertical shaft, G, through the medium of worm-wheel d', worm-screw k', and worm-wheel k. The shaft G, which is arranged in front of frame A, is sustained between two vertically-adjustable bearings, g^x g^x, and into this shaft right and left intersecting helical grooves are cut, in which is received a pin, p, in a block, g^l. This block moves up and down on shaft G, and carries with it a ring-bracket, g², in which is fixed the neck of a ring, i, around which ring revolves a traveler, j, shown in Figs. 1 and 2. The block g^l is prevented from rotating by means of a guide-stem, g³, which enters a groove, h, made vertically into the face of the frame A. It is by means of the grooves g in the shaft G, and the pin p in block g^l, that the traveler-ring is moved up and down for winding the yarn on the bobbin S' in regular courses.

The oil-cup C has a cap, c, secured upon it, on the bottom side of which is formed an open elongated bearing, c^t, for the hollow stem g, and, centrally, into the upper side of which cap is formed a circular cup, 5, which communicates with the interior of the oil-cup C by means of passages 4. Surrounding the stem g, inside of the cup 5, is an elevated bearing for the hub of pulley E, which hub runs in the cup 5, as shown in Fig. 3. The stem g, on which pulley E is keyed, extends through cap c and its open extension c^t, and has its bearing at the bottom of the cup; consequently, when this stem is rapidly rotated it carries oil up between itself and the two bars of the extension c^t, and into the cup 5 on the cap c, from which latter the oil returns into the cup C again through the passages 4 4. The stem g is prevented from rising from its seat by means of a screw, 2, which is tapped through one of the bars of the open extension c^t, and which enters an annular groove, 3, made into said stem g. The pulley E has a cup, 7, formed into its upper side, which communicates with the cup 5 through passages Y;

and surrounding the opening, leading into the stem g , is a raised bearing, on which is supported the hub of pulley E' . The pulley E' rotates around a hollow stem, s , which extends down nearly to the lower end of the stem g , and which is secured to this stem g by means of a key, 9, shown in Fig. 3. Into the upper side of pulley E' a cup, 8, is formed, which communicates with the cup 7 in pulley E by means of passages 6. In this cup 8 and surrounding the opening leading into the stem s is a raised bearing for a shoulder, s' , which is formed on the stem s near its upper end. This stem s receives on it tension-plates o and a set-nut, r , as shown in Fig. 3. The stem s with its stem g revolves around a fixed hollow stem, v , which is secured to the bottom of the cup C by means of a nut, u , and which rises vertically nearly to the upper open end of the stem s , and receives through it the yarn on its way to the bobbin-winding device, hereinafter explained. On top of the pulley E' and firmly secured thereto is a short standard, supporting two yarn-carrying pulleys $n n$ and opposite the standard is a curved standard, T , having pivoted to it two yarn-carrying pulleys, t , which are arranged directly over the stems through which the yarn is carried.

It will be seen that oil will be carried up into cup 5 for lubricating the stem g outside, and also the bearing at the lower end of the hub of pulley E , which oil will be returned back into the cup C through the openings 4. The rotation of the stems $g s$ carries up oil around the fixed stem v into the cup 8 in pulley E' , from which the oil descends into the cup 7 in pulley E , thence into cup 5, from which it flows back into the cup C .

It will thus be seen that I supply oil freely to the running parts from the cup C without liability of the oil overflowing or soiling the yarn as it passes through the hollow stems.

Below the oil-cup C and coincident therewith is the winding device above described, and the oil-cup C' , which is designed for holding the oil that lubricates the stem S^2 of the bobbin-spindle S . The oil-cup C' has a cap, c^2 , secured on it, on the bottom of which cap is an open extension, c^3 , which terminates at its lower end in a step, 13. This cap is also constructed with a circular cup, m , in its upper side, which receives the oil carried up to lubricate the stem S^2 of the spindle S , and returns this oil back into the cup C' through passages m' . The

lower reduced end 12 of the stem S^2 turns in the step 13. The part S^2 is straight or cylindrical, and this part, by reason of the rapid revolution of the spindle S , carries the oil with such force against the edges of the openings in the extension c^3 that it is made to rise and lubricate the bolster. The hub of the pulley E' is received into the cup m , and has a bearing upon a raised annular portion of cap c^2 , which surrounds the hole through this cap.

It will thus be seen that the stem S^2 of the spindle S is inclosed in the cup C' , and that the oil which rises and lubricates this stem is received into the cup m and returned back into the cup; also, that the oil cannot escape or be thrown from the parts being lubricated however rapidly the spindle be rotated.

It will be observed that the ring and traveler are of the well-known kind; but in my machine this ring and traveler are not employed, nor depended upon for tension or required twist, as these are produced by the drawing and twisting device above it, and by which the yarn is delivered to the traveler ready to be wound upon the bobbin; consequently the ring and traveler are employed solely as a winding device.

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

1. A drawing and twisting device combined with an oil-reservoir, and having oil-receptacles and discharge-passages in and through revolving pulleys $E' E$, and in which the long hollow hubs of said pulleys are arranged relatively to each other and to the upright hollow shaft, which carries on its upper end the drawing pulley o , as described.
2. The combination of the specified drawing and twisting device with an oil-reservoir having attached to it the stationary tube v , which passes up through the moving parts and protects the yarn from being soiled by the oil as it passes through on its way to the ring and traveler, substantially as described.
3. The combination of the drawing and twisting device, ring and traveler, building device, and spindle, substantially as described, and for the purpose set forth.

HENRY A. CHAPIN.

Witnesses:

L. M. SEGEE,
R. F. SHELDON.