(No Model.) 2 Sheets—Sheet 1.

M. CHAPON.

SPINDLE FOR SPINNING, WINDING, AND TWISTING MACHINES.

No. 546,915. Patented Sept. 24, 1895.

FIG - 1

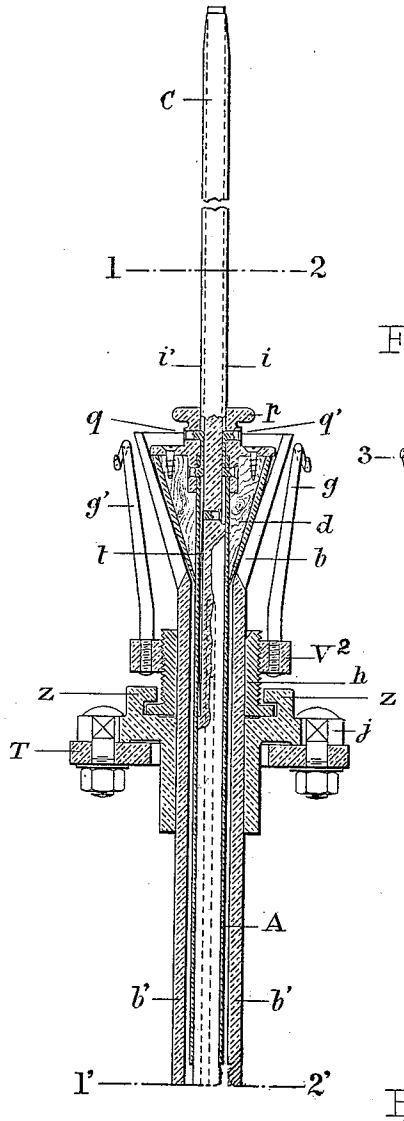


FIG - 3

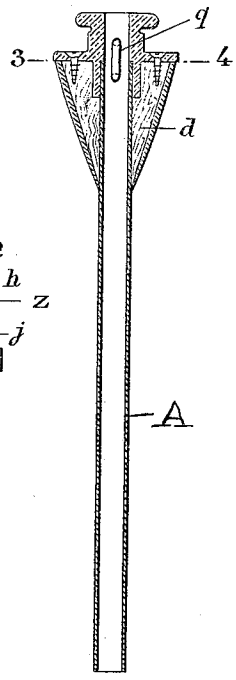
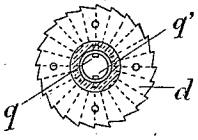


FIG - 4



Witnesses

Marie Jeniot

Jean Germain

Inventor

Maximin Chapon

(No Model.) 2 Sheets—Sheet 2.

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SPINDLE FOR SPINNING, WINDING, AND TWISTING MACHINES.

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FIG-1

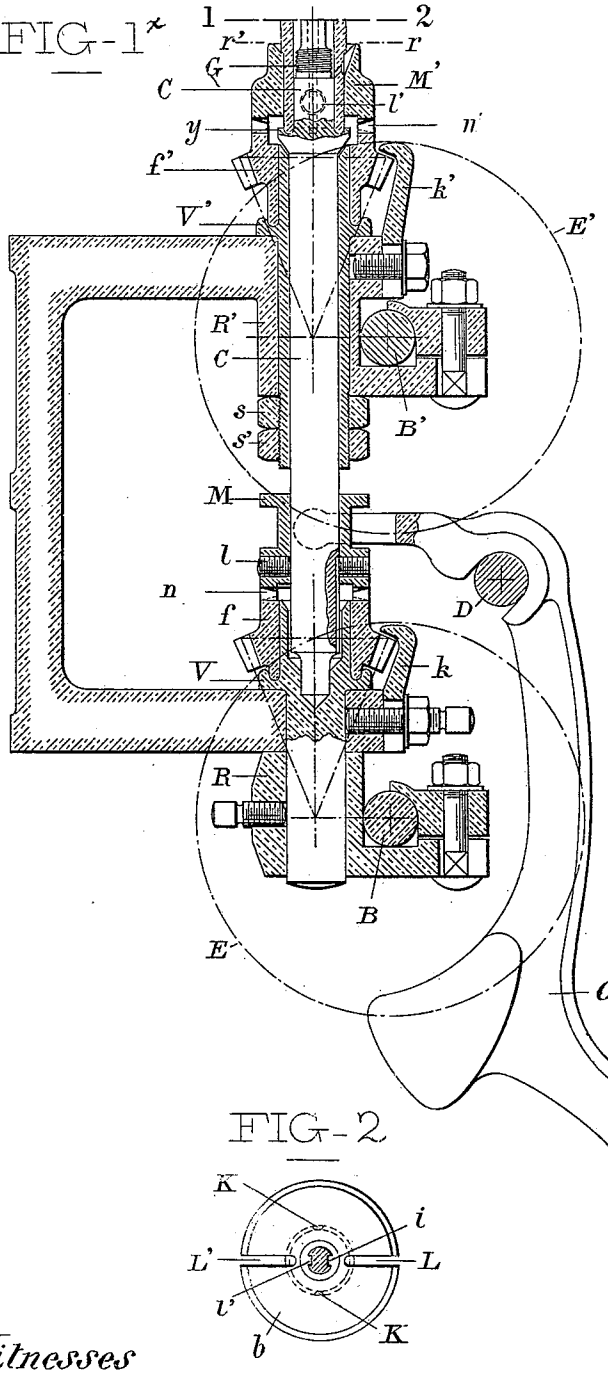

FIG-2

Witnesses

Xavier Jaicot

Jean Germain

Inventor

Maximin Chapon

UNITED STATES PATENT OFFICE.

MAXIMIN CHAPON, OF LYONS, FRANCE.

SPINDLE FOR SPINNING, WINDING, AND TWISTING MACHINES.

SPECIFICATION forming part of Letters Patent No. 546,915, dated September 24, 1895.

Application filed March 4, 1895. Serial No. 540,467. (No model.)

To all whom it may concern:

Be it known that I, MAXIMIN CHAPON, a citizen of the Republic of France, residing at 31 Rue de l'Hôtel de Ville, Lyons, in the Republic of France, have invented certain new and useful Improvements in and Relating to Spindles for Spinning, Winding, and Twisting Machines, of which the following is a specification, reference being had to the accompanying drawings.

My invention relates to spinning, winding, and twisting machines, and comprises improvements or modifications in the arrangement which forms the subject of Patent No. 378,288, issued on February 21, 1888.

In the accompanying drawings, Figure 1 represents a central vertical section of the upper part of the improved spindle down to the line 1′ 2′. Fig. 1ˣ represents a similar section of the lower part of the improved spindle up to a line which coincides with the line 1′ 2′ of Fig. 1. Fig. 2 is a plan of the trumpet showing the spindle in section on the line 1 2. Fig. 3 is a central vertical section of the bobbin-holding tube upon which the thread is wound. Fig. 4 represents a horizontal section on the line 3 4 of the bobbin-holding tube.

This spindle is formed in its entirety of three principal parts: first, the spindle proper, C C C, made of cylindrical form and turning in the collar V′ and upon the bearing V; second, the trumpet *b*, in which the winding of the thread and the formation of the bobbin take place; third, the hollow bobbin-holding spindle A, shown more especially in Fig. 3, upon which the spun material is wound and which turns, together with the spindle C.

The spindle C C C was previously hollow and received a solid spindle A, upon which the spun material was wound.

The bobbin-holding spindle A, on the contrary, is here hollow throughout its length, and is placed upon the upper part of a solid spindle C, care being taken for this purpose to insert it until the conical part *d* of the same bears in the interior of the trumpet *b*.

In order that the bobbin-holding tube A, on which the spun material is wound, may penetrate into the cylindrical socket *b′* of the trumpet *b*, I have made the spindle C of two different diameters. The lower part of this spindle, extending from the bearing V to the dotted line *r r′*, is of larger diameter, and the upper part, extending from this line *r r′* to the extremity of the spindle, is of smaller diameter, as shown.

The trumpet *b* is supported at its base by a small collar *y* of the spindle C, being kept centered at its lower part by the spindle C of larger diameter, and at its upper part by a guide-socket *j* fixed and adjustable upon the carriage T.

I provide the bobbin-holding tube A with two stops *q q′*, which, extending into longitudinal grooves *i i′*, Figs. 1 and 2, formed in the upper part of the spindle C, connect the said bobbin-holding tube with the latter, while enabling it to slide freely upon that part of the spindle C, which is of smaller diameter. A small spring *t* is fixed at one of its extremities in one of the grooves *i i′* of the spindle C, and exerts its tension upon the interior of the bobbin-holder A, thus preventing it from sliding too freely upon the spindle. The arrangement of this spring has been adopted here for the purpose of producing firmer and harder cocoon cops.

The devices for operating the spindle are the same as previously described.

The spindle C is actuated by the bevel-wheels *f* E and the trumpet *b* by another pair of bevel-wheels *f′* E′. These two parts, the spindle and trumpet, turn in the same direction and owing to the difference of their respective velocities the winding of the thread takes place. The two small bevel-pinions *f f′* are respectively mounted upon the sockets of the bearing V and collar V′ provided for this purpose. The upper crown of each of these two pinions *f f′* possesses ratchet-teeth *n n′* engaging with teeth of the same form provided on the small sleeves M M′, which are fixed by pressing-screws *l l′* upon the spindle C and upon the trumpet *b*, respectively, thus imparting rotary movement to them. This arrangement has for its object to enable each spindle to be stopped separately, so that the attendant may tie a broken thread while allowing the other spindles of the machine to operate.

In fact Fig. 1ˣ shows that part of the sleeve M is hollowed, so as to allow the passage of the fork of the pedal lever O. The attendant,

pressing with the foot upon the pedal of this lever pivoted at D, raises the spindle C by the intervention of the sleeve M, and consequently the trumpet *b*, which is supported by the collar *y* on the spindle. By this upward movement the ratchet-teeth *n n'* on the sleeves M M' then leave the teeth of similar form of the bevel-pinions *f f'*, which continue to turn loose upon their sockets and which, being no longer in contact with the sleeves M M', then cause the stoppage of the spindle C and trumpet *b*. When the ends of the broken thread are attached again, the attendant leaves with his foot the pedal lever O. The spindle and also the trumpet move down again to their place. The teeth *n n'* of the sleeves M M' engage, therefore, with the corresponding teeth of the bevel-pinions *f f'* and then communicate again to the spindle C and trumpet *b* their rotary movement. I have stated that the spindle C and trumpet *b* turn in the same direction and that the thread is wound up by reason of the difference in their respective number of revolutions. I may add that change-pinions placed at the head of the machine and operating the axes B B', held by the supports R R', and on which are keyed the bevel wheels E E', enable the desirable changes of velocity to be obtained, which in this manner I am enabled to vary according to the degrees of torsion required. Lastly the part G of the spindle C is screw-threaded in the opposite direction to that of the movement, in order to prevent the lubricating-oil from rising to the bobbin-holder A.

For distributing the thread in a uniform manner upon the bobbin-holding tube A, recourse is had, as previously, to a to-and-fro movement imparted to the carriage T, which extends over the whole length of the machine. The thread-guides *g g²* are fixed upon a socket V^2, Fig. 1, which, forming a nut, is screwed upon the screw-threaded collar *h*, actuated by the trumpet *b* in its rotary movement by means of two grooves K K', shown in Fig. 2, in which grooves are located two stops of the screw-threaded collar *h*. This collar *h* receives also the alternating movement of the carriage T, the shoulder provided at its lower part being retained in the guide-socket *j* fixed upon the carriage T by the two stops Z Z' of the same part as the socket *j*. Lastly, the socket V^2, on which the threaded guides *g g'* are fixed, is connected with the collar *h* by a pressing-screw and consequently can, by causing it to turn, effect a small vertical displacement, which thus permits of a very exact adjustment of the height of the thread guides—in other words, of the diameter of the cocoon cop. As will be seen from the foregoing description, the collar *h*, socket V^2, and also the thread-guides *g g'* follow exactly all the movements imparted to the carriage. The thread coming from the feed-roller is passed through one of the thread-guides *g g'*, introduced into the trumpet *b* through one of the openings L or L', indicated in Fig. 2, and fixed upon the grooved cone *d* of the bobbin-holder A, which is raised a little for this purpose and which is then inserted, so that the part *d* will bear upon the trumpet *b*. Then the operation is started and the thread, being wound upon the bobbin-holder A, forms the bobbin, which assumes the form of the trumpet *b*, and which, in proportion as it augments, causes the tube A to rise along the spindle C until it reaches the extremity of the latter. The bobbin, having then the desired length, the attendant removes the tube A, takes off the bobbin, puts the bobbin-holder back in its place and commences a fresh cop.

What I claim is—

In spinning, winding and twisting machines, the combination of the spindle C, the tubular bobbin holding spindle A having the conical part *d* and mounted to turn with and slide longitudinally on the spindle C, the trumpet *b* having an elongated cylindrical socket *b'* in which the spindle A is received, the toothed sleeves M M' fixed to the spindle C and trumpet *b*, respectively, the bevel pinions *f f'* having ratchet teeth engaged with said toothed sleeves, driving gears E E' for engaging said pinions, and a lever L for raising the spindle and trumpet to disengage the toothed sleeves from the pinions, substantially as described.

In testimony whereof I have hereunto set my hand this 14th day of December, 1894.

MAXIMIN CHAPON.

Witnesses:
XAVIER JAINCOT,
JEAN GERMAIN.