

C. BERGMANN & H. O. KLÖTZER.
SPINNING SPINDLE.

APPLICATION FILED JULY 17, 1908.

953,813.

Patented Apr. 5, 1910.

2 SHEETS—SHEET 1.

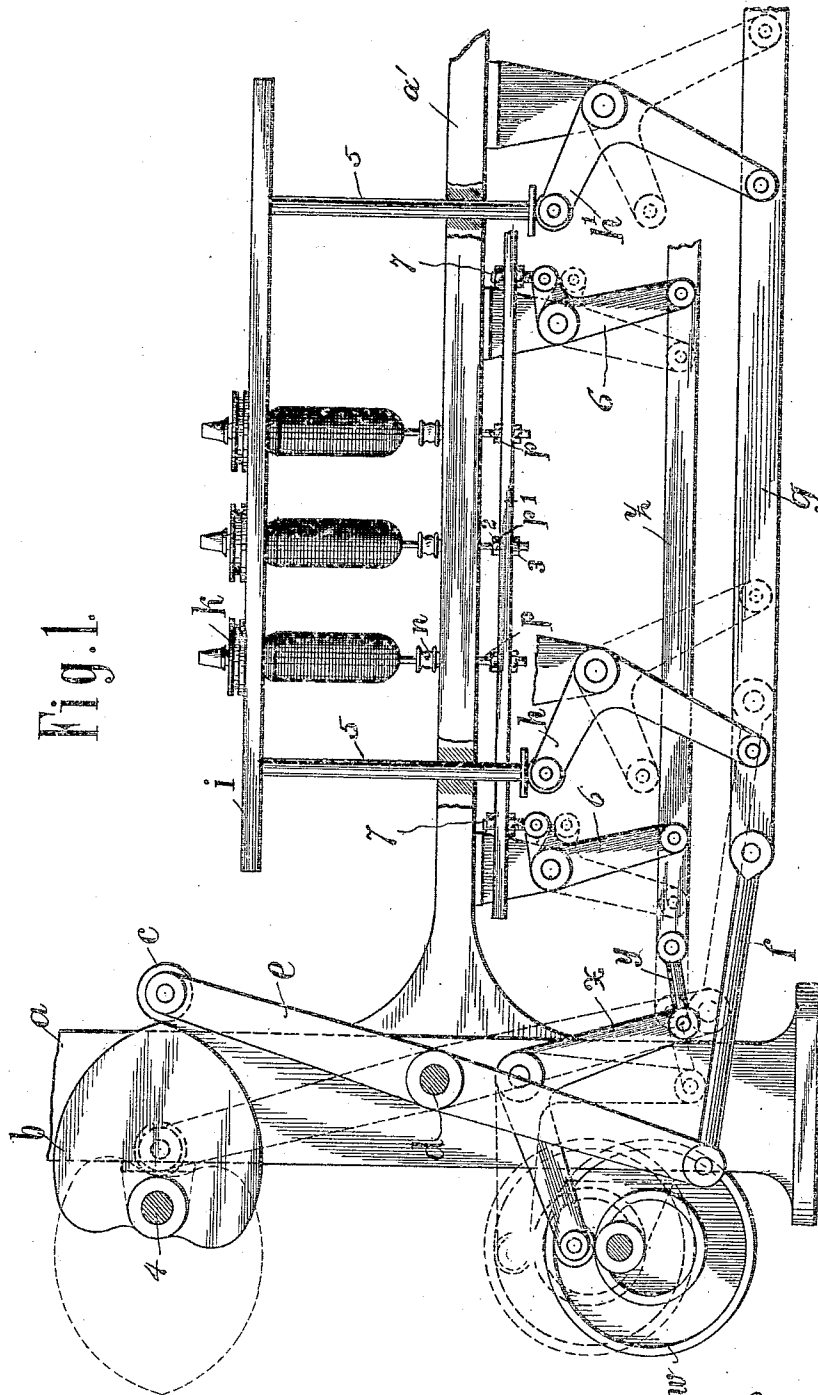


Fig. 1.

Witnesses.

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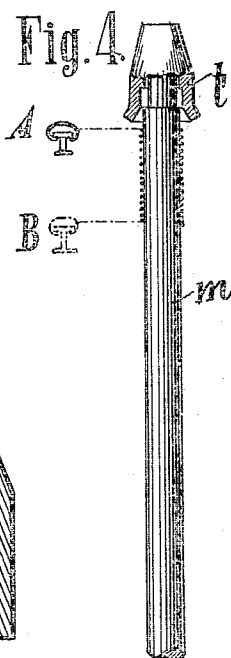
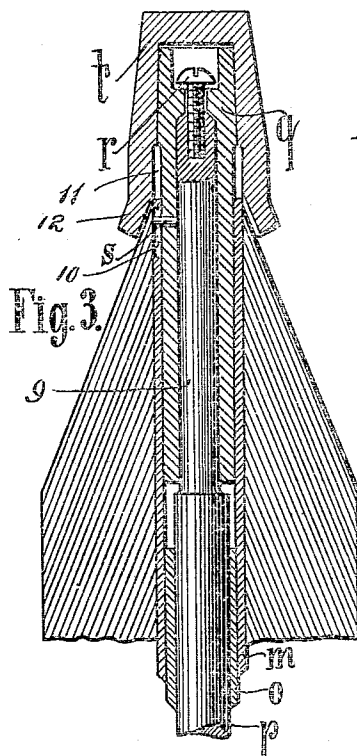
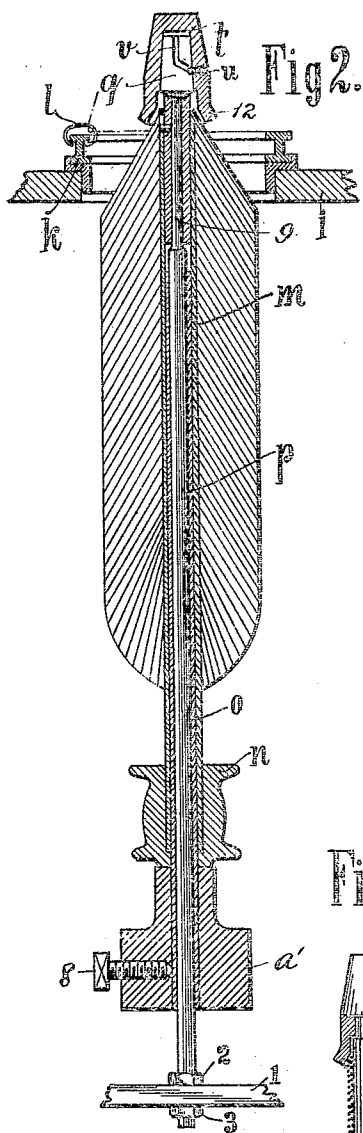
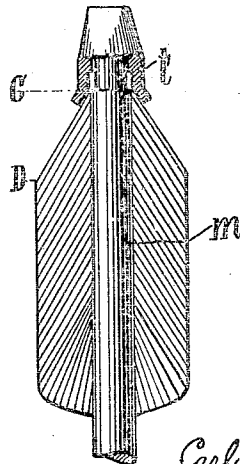
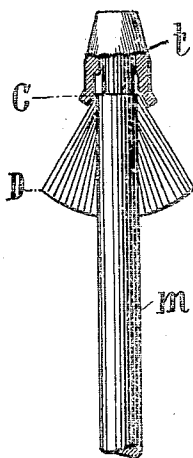
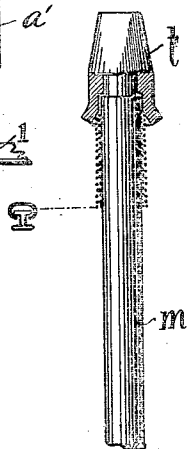


Fig. 5.

Fig. 6.

Fig. 7.



Witnesses.

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UNITED STATES PATENT OFFICE.

CARL BERGMANN AND HANS OTTO KLÖTZER, OF MEISSEN, GERMANY.

SPINNING-SPINDLE.

953,813.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that we, CARL BERGMANN and HANS OTTO KLÖTZER, subjects of the King of Saxony, residing at Meissen, Germany, have invented certain new and useful Improvements in Spinning-Spindles; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

Our invention relates to spinning spindles and has for its object a simple and efficient spindle for use in doubling, twisting and spinning machines.

Referring to the drawings in which like parts are similarly designated, Figure 1 is a side elevation of a portion of a spinning machine employing the spindles forming the subject-matter of the present invention. Fig. 2 is a vertical section of our improved spindle. Fig. 3 is a similar view of the upper part of a cop and cop forming mechanism, on an enlarged scale. Figs. 4, 5, 6 and 7 are diagrammatic views showing various steps in the formation of the cop.

The yarn is supplied from suitable feeding and drawing mechanism of any well known construction to the eye *l* of the ring *k*; said ring being mounted in a ring rail *i*, which rail *i* is raised and lowered by means of a cam *b* mounted on a shaft 4 in the frame *a* of the machine. This cam engages a bowl *c* on one end of a two armed lever *e* pivoted at *d* to the frame *a* and whose opposite end is connected by a link *f* of a rod *g*. To this rod are pivotally connected bell crank levers *h*, *h'* that engage vertical rods 5 connected to the ring rail *i*. The extent of the vertical movement of the ring rail is represented in Fig. 4 which shows the extreme positions A and B of the eye *l*.

Mounted on the frame *a* of the machine is a cam *w* operating a bell crank lever *x* connected by a link *y* to a rod *z* and to this rod are pivotally connected the bell crank levers 6 operating to raise and lower a rail 1, said rail being adjustable with respect to said levers by means of the stud 7 or in any well known manner. Secured to the rail 1 by means of lock nuts 2 and 3 are rods *p*, Figs. 1 and 2 capable of being reciprocated in vertical tubular spindles *o* held stationary in the

portion *a'* of the frame by means of screws 8, Fig. 2, or any other device capable of effecting the purpose. Mounted rotatably on the stationary tubular spindle *o* is a cop sleeve or tube *m* with its whirl *n*. The rod *p* is provided at its upper end with a reduced portion 9 and on this reduced portion is mounted a head *q* rotatably connected thereto by means of a screw *r* or otherwise, in order that this head may be free to rotate with respect to the rod *p*, but at the same time be compelled to partake of its reciprocating movement. The head *q* is provided with a pin *s* that takes into a slot 10 in the rotatable cop tube *m* whereby said head is compelled to rotate in unison with said cop tube *m*. On the head *q*, is mounted a cap *t* removably connected thereto, preferably but not necessarily, by means of a bayonet joint comprising a substantially right angle groove *v* in the head *q* and a screw or pin *u* capable of taking into the same and secured in the cap *t* as shown in Fig. 2. The lower portion of the cap *t* is distanced from the head *q* at 11 sufficiently to permit the cop tube *m* to pass between it and the head during the reciprocation and the extreme lower portion of the cap is conical or flared as shown at 12. The stationary tubular spindle *o* ends at or just below the reduced portion 9.

The machine for employing the spindles is illustrated in Fig. 1, by a conventional drawing showing the manner of using the spindle, and we make no claim to the structure of this machine.

The operation is as follows: The cop is started at the top of the cop tube *m* as indicated in Fig. 4 and the thread is wound on the tube by rotation imparted thereto by the whirl *n*, the head *q* and the cap *t* moving in unison therewith. The ring rail is moved vertically to the extent A B, Fig. 4, thereby forming a cone indicated at C D, Figs. 6 and 7. The first layers of yarn on the cop tube are cylindrical as indicated in Figs. 4 and 5, but as each layer of yarn on the cop tube is moved downward along the same by reason of the cap *t* coming in contact with the upper turn about the tube the layers gradually assume a conical form as shown in Fig. 6 and thus form the foundation cone. As soon as the foundation cone has been completed the layers of yarn thereafter are maintained of the same conicity and the body of the cop assumes cylindrical form.

By adjusting the nuts 2, 3 in the rail 1

the rod p may be slightly raised or lowered to increase or diminish the extent of movement of the cap with respect to the tube m as the cop is being formed. The distance to

5 the conical or flared lower portion 12 of the cap t is therefore increased or diminished from the upper turn of yarn about the cop tube so that the cap will engage the yarn on the cop tube either sooner or later and thereby
10 determine the diameter of the cop.

By this simple mechanism we entirely dispense with special mechanism for producing the foundation cone, prior to forming the entire cop.

15 We claim:

1. The combination with a stationary tubular spindle of a cop tube revoluble thereon, a rod passing through both, means to reciprocate the rod and means on the upper
20 end of the rod to engage the thread on the tube and move the cop downward along its tube by the reciprocation of said rod.

2. The combination with a stationary tubular spindle, of a cop tube revoluble thereon, a rod passing through the tube and spindle, means to reciprocate the rod, means
25 on the upper end of the rod to engage the thread on the tube, means to slidably connect the cop tube and said means whereby
30 said tube and means will rotate as a unit.

3. The combination with a tubular spindle, of a cop tube and its whirl revoluble thereon, a rod passing through the sleeve having a reduced upper end, means to recip-
35 rocate the rod, a head secured to said reduced

end and slidably connected to the cop tube, and a cap removably secured to the head and capable of engaging the thread on the tube.

4. The combination with a stationary tubular spindle, of a cop tube and its whirl revoluble thereon, a rod passing through the sleeve, means to reciprocate the rod, means
40 on the rod to engage the cop and move it along its tube as it is formed and means to
45 adjust the amplitude of movement of the rod in the sleeve.

5. The combination with a stationary spindle and a cop tube and its whirl thereon; of means to engage the upper thread layers
50 on the tube and connected to the latter to rotate in unison therewith, and means to reciprocate the thread engaging means.

6. The combination with a stationary spindle and a cop tube and its whirl revoluble thereon; of means slidably connected to
55 the tube to engage the upper portions of the thread layers, means to reciprocate the thread engaging means and means to adjust the amplitude of reciprocation and thereby
60 determine the diameter of the cop.

In testimony that we claim the foregoing as our invention, we have signed our names in presence of two subscribing witnesses.

CARL BERGMANN.

HANS OTTO KLÖTZER.

Witnesses:

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CLÉRE SIMON.