H. SCHWEITER.

COP OR PIRN WINDING MACHINE.

APPLICATION FILED FEB. 16, 1916.

1,198,068.

Patented Sept. 12, 1916.

3 SHEETS—SHEET 1.

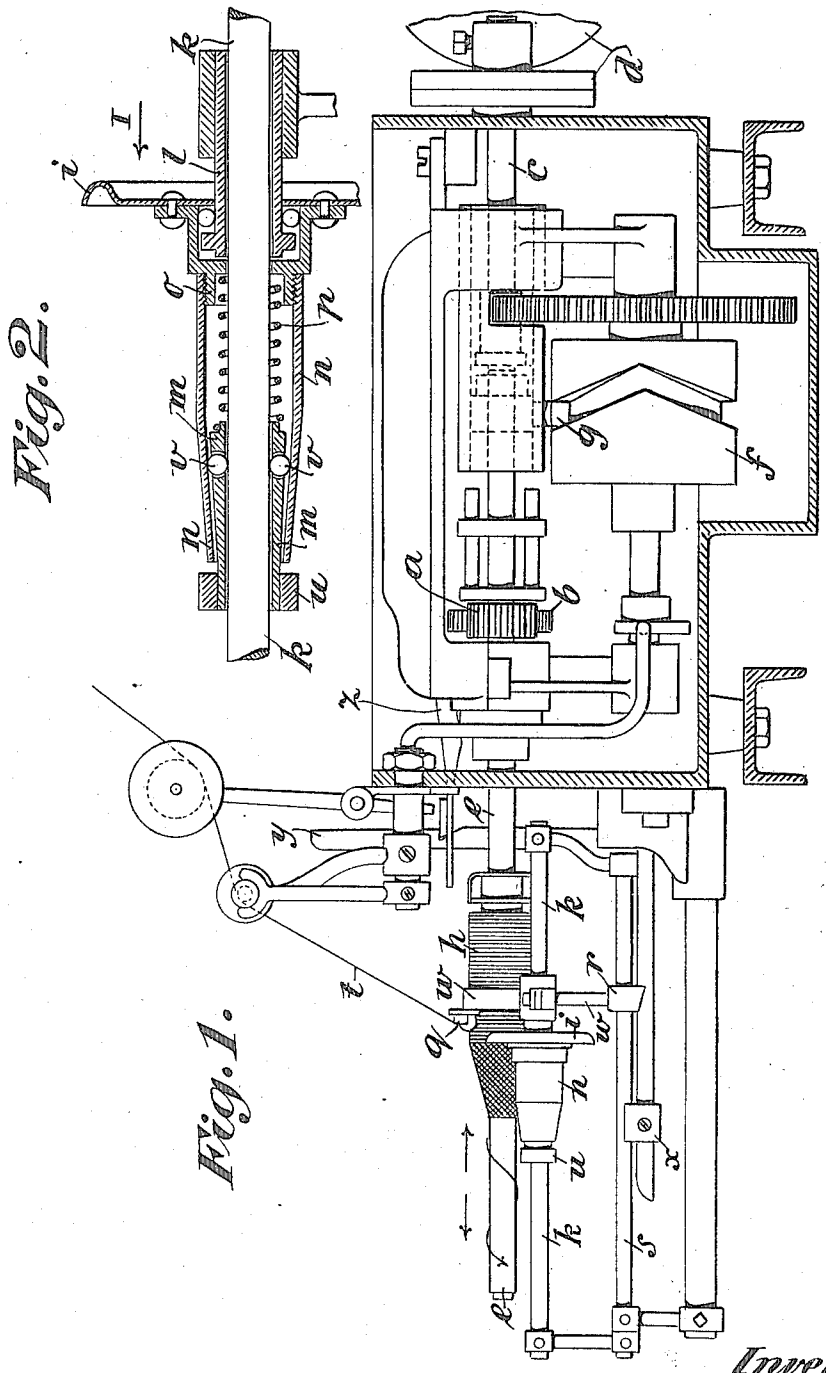


Fig. 2.

Fig. 1.

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Fig. 2.

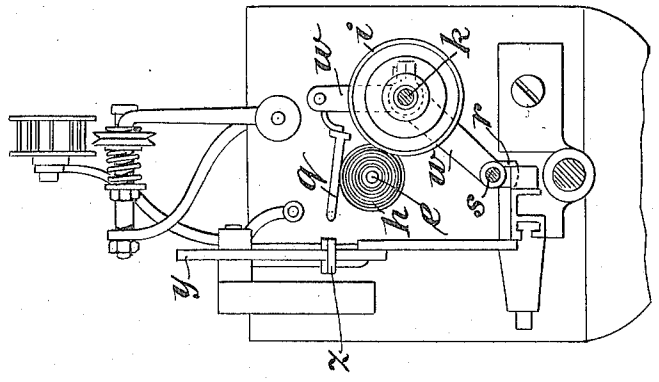


Fig. 4.

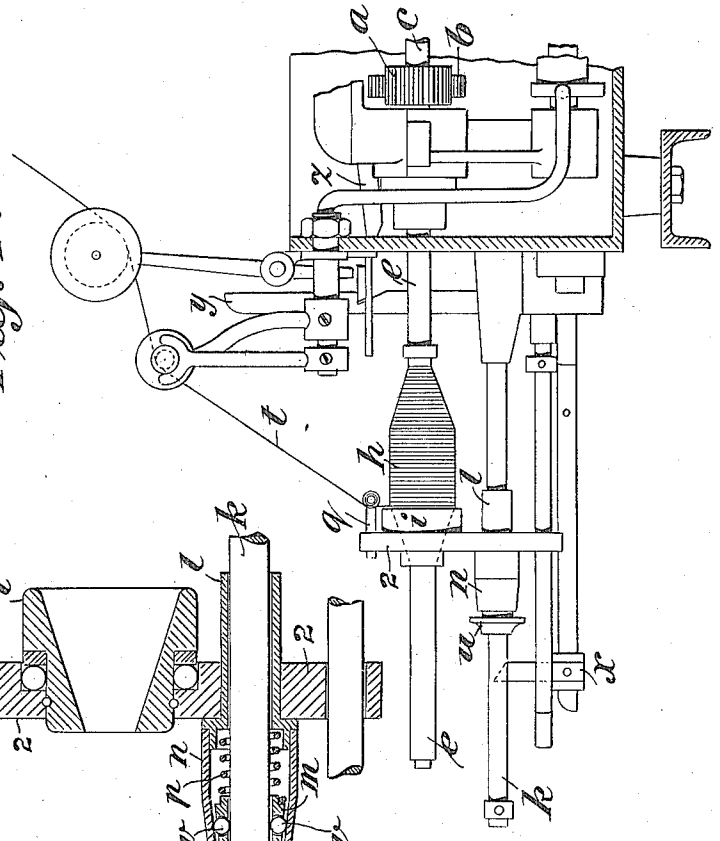


Fig. 5.

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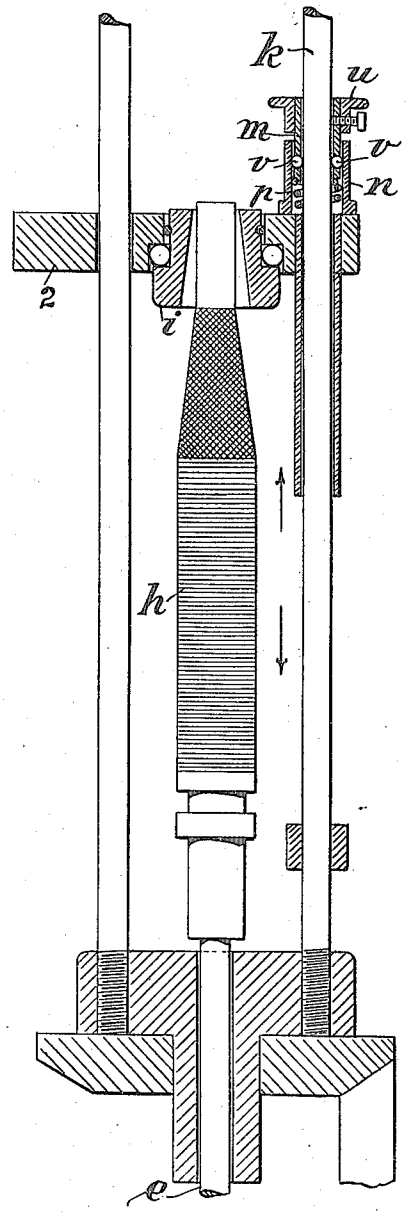
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3 SHEETS—SHEET 3.

Fig. 6.



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UNITED STATES PATENT OFFICE.

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COP OR PIRN WINDING MACHINE.

1,198,068. Specification of Letters Patent. Patented Sept. 12, 1916.

Application filed February 16, 1916. Serial No. 78,745.

To all whom it may concern:

Be it known that I, HANS SCHWEITER, a citizen of Switzerland, residing at Horgen, Switzerland, have invented certain new and useful Improvements in Cop or Pirn Winding Machines; and I 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.

This invention relates to improvements in cop or pirn winding machines.

Cop or pirn winding machines are generally provided with a device whereby the cop or pirn spindle is either moved to and fro and simultaneously rotated, or moved to and fro only. To build the cop or pirn, a so-called feeler is employed which by the said spindle is slid forward a predetermined distance. This feeler which generally carries also the thread guide, is rendered movable on a rod or rail arranged parallel with the said spindle. In order to prevent the said feeler from being fed prematurely and also to obviate other irregularities in the movement thereof, the said feeler is provided with a device which will always arrest it in the required position, while the cop or pirn will release the said device again. Hitherto the devices known for the said purposes consisted of a rack and a pawl carried by the feeler adapted to engage in the said rack and thereby prevent the feeler from moving backward. If however the cop or pirn moves toward the feeler, the latter can be readily engaged thereby. This device however does not insure an accurate winding of the cop or pirn, because the feed of the feeler cannot be reduced to less than the distance of a tooth of the said rack, while on the other hand the top layers of thread are too frequently displaced. This is particularly detrimental in fine threads, for instance in silk, as the coarse advances of the feeler will easily damage the cop or pirn.

The object of this invention is the provision of means whereby the said defects are overcome. The said means consist of a feeding device which differs from similar devices by so arranging the said feeler in connection with a ball clamp device, that when the feeler is moved forward, it is fed the required distance, that is to say, the balls of the said clamp will release and when the said forward movement ceases, will clamp the guide around which they are located and thereby arrest the feeler.

The accompanying three sheets of drawings illustrate three different embodiments of this invention.

Figures 1–3 show the feeding device applied to a winding machine with a cop or pirn spindle moving to and fro and simultaneously rotating arranged in connection with the disk-like feeler. Fig. 1 is a longitudinal section of the machine. Fig. 2 is a longitudinal section of the feeding device in connection with the feeler shown on an enlarged scale, and Fig. 3 a front view of the winding machine.

In the embodiment shown in Figs. 4 and 5, the feeding device is combined with a feeler which has a rotatable cone. In the embodiment shown in Fig. 6, the feeding device rotates with the feeler, while the cop or pirn spindle does not rotate, but simply moves up and down.

Similar letters refer to similar parts throughout the several views.

Referring to Fig. 1 of the drawings, e is the said spindle and h the cop or pirn thereon. As hitherto, the spindle e is rotated by means of the spur wheels a and b, shaft c and wheels d. The spindle e is also moved to and fro in the usual manner, by means of the members f and g. In close proximity to the cop or pirn h is arranged the disk-like feeler i, operating in connection therewith and guided on the rod k (Figs. 1 and 2). By means of a ball bearing and a guide sleeve l, the feeler i is rendered readily slidable and rotatable on its guide rod k. On the guide rod k is also employed a slidable cone m, which carries a row of easily rotatable, radially located balls. Around the said cone is mounted a second cone n, which at o is suitably connected with the feeler i. In the position of rest, the two cones are forced toward each other by means of a spring p inserted between them. On the sleeve l is also mounted the thread guide q, which by means of a projection r thereon is also guided on the rod s.

The device described operates as follows: The thread t being constantly wound on, the cop or pirn h will finally attain such a diameter that it will come into contact with the disk-like feeler i, Fig. 3. When this takes place, the cop or pirn in moving forward in

the direction of the arrow I, shown in Fig. 2, will abut against the feeler *i*, which causes the spring *p* to be compressed and the clamping action of the balls on the surfaces of the cone and rod *k* to cease, so that the feeler can move freely forward. During this movement the nut *u* serves as abutment. As soon as the forward movement of the cop or pirn has ceased the spring *p* will expand again and drive the two cones *m* and *n* toward each other, which causes the balls *v* to grip the rod *k* and thereby the entire feeler to be arrested without preventing the further rotation of the feeler. It will thus be readily seen that the feeding device described after overcoming the pressure of the spring, can readily move forward and will clamp itself and thereby prevent the feeler from moving backward, so that even during the greatest tension of the thread, it is impossible for the feeler to be drawn back. Owing to the easy movement of the feeding device, the same will also move the feeler in winding the finest of threads. The sleeve *l*, which as already stated, carries the thread guide *q*, carries also the angular lever *w*. This causes the thread guide to be also taken with it during the forward movement of the feeler. When the projection *r* coupled with the thread guide, contacts with the abutment *x*, the winding machine is stopped in the usual manner by means of the levers *y* and *z*, as soon as the cop or pirn has attained the required size.

In the embodiment shown in Figs. 4 and 5, the feeler *i* consists of a rotatable cone, which can readily rotate in the feeler body 2. As shown in Fig. 5, this body is connected with the cone *n*, while the cone *m* possesses the same arrangement as the one shown in Fig. 2. In this case the cop or pirn spindle moves also to and fro and simultaneously rotates. When the cop or pirn moves forward, it enters the cone *i*, rotates same and in the meantime displaces the feeler body 2, whereby the described feed also takes place.

In the embodiment shown in Fig. 6, the feeding device is located on the rotatable feeler body 2 and released in the described manner by the up and down movement of the cop or pirn, which also in this case permits the feeding of the entire feeler.

I claim:

1. In a feeler and thread guide-feeding device for cop winding machines, the combination with a feeler movable to and fro along an axis, of a ball-clamp, which when the feeler moves forward, is fed the required distance and the balls of which, when the said forward movement ceases, will grip the said axis and thereby arrest the feeler, for the purpose specified.

2. In a feeler and thread guide-feeding device for cop winding machines, the combination with a feeler movable to and fro along an axis, of a ball-clamp, which when the feeler moves forward, is fed the required distance and the balls of which, when the said forward movement ceases, will grip the said axis and thereby arrest the feeler, the said ball-clamp comprising two cones to and fro movable in each other and a row of balls arranged radially between the cones, which as the cones move to and fro release the said feeler from its axis or clamp the same thereto respectively, for the purpose specified.

3. In a feeler and thread guide-feeding device for cop winding machines, the combination with a feeler movable to and fro along an axis, of a ball-clamp, which when the feeler moves forward, is fed the required distance and the balls of which, when the said forward movement ceases, will clamp the said axis and thereby arrest the feeler, the said ball-clamp comprising two cones to and fro movable in each other, a row of balls employed radially between the said cones, which as the cones move to and fro, release the said feeler from or clamp the same to the axis thereof and a spring arranged in connection with the said cones which, after the feeler has ceased to move, will arrest the feed every time in its clamping position, for the purpose specified.

4. In a feeler and thread guide-feeding device for cop winding machines, the combination with a feeler movable to and fro along an axis, of a ball-clamp, which when the feeler moves forward, is fed the required distance and the balls of which, when the said forward movement ceases, will clamp the said axis and thereby arrest the feeler, the said ball-clamp comprising two cones to and fro movable in each other, a row of balls employed radially between and mounted in one of the said cones, which as the cones move to and fro release the said feeler from or clamp the same to the axis thereof and a spring arranged in connection with the said cones which, after the feeler has ceased to move, will arrest the feed every time in its clamping position, for the purpose specified.

Signed at Zurich, Switzerland this 24th day of January, 1916.

HANS SCHWEITER.

Witnesses:
WILH. ERNST,
HUGO SCHELBLIN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."