No. 794,866. PATENTED JULY 18, 1905.

A. KLEIN.

TWISTING AND SPINNING MACHINE.

APPLICATION FILED JUNE 22, 1903.

2 SHEETS—SHEET 1.

Fig. 1.

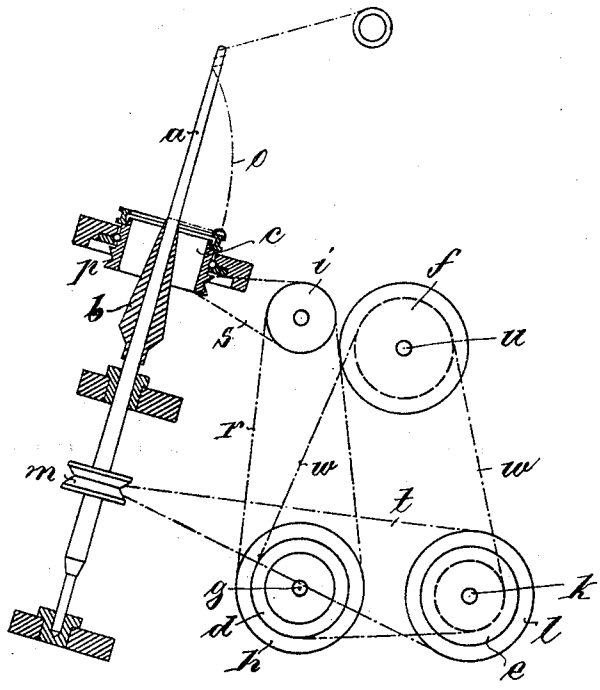
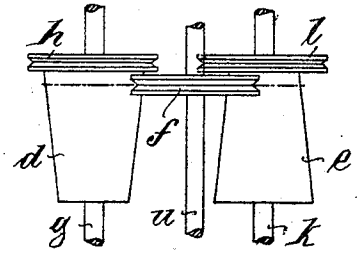


Fig. 2.



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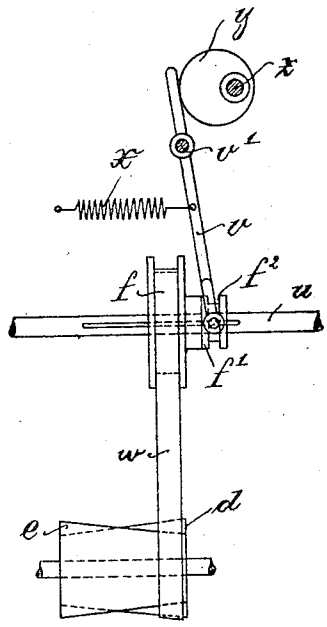
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2 SHEETS—SHEET 2.

Fig. 3.



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No. 794,866. Patented July 18, 1905.

UNITED STATES PATENT OFFICE.

ACHILLE KLEIN, OF ROUBAIX, FRANCE.

TWISTING AND SPINNING MACHINE.

SPECIFICATION forming part of Letters Patent No. 794,866, dated July 18, 1905.

Application filed June 22, 1903. Serial No. 162,606.

To all whom it may concern:

Be it known that I, ACHILLE KLEIN, a citizen of the Republic of France, and a resident of 27 Rue Perrot, Roubaix, in the Republic of France, have invented certain new and useful Improvements in Twisting and Spinning Machines, of which the following is an exact specification.

My invention relates to improvements in twisting and spinning machines provided with a rotating ring for twisting the threads and with a rotating cone-shaped cop. In such spinning-machines the rotating ring which guides the thread must constantly move upward and downward, and the thread follows this upward-and-downward movement. In consequence of the different diameter of the upper and lower part of the bobbin the tension of the thread is altered. It will be clear that if the thread is wound around the lower part of the bobbin—that is to say, the part with the greater diameter—the thread is drawn forward with greater velocity than if it is wound upon the upper part with smaller diameter. This difference in tension is owing naturally to the difference in the velocity with which the thread moves forward. In order to avoid this disadvantage and to avoid the irregularities in the tension of the thread, spinning-machines have been constructed in which the rotating movement of the guide-ring for the thread is retarded when the ring is situated at that part of the cop which has the greater diameter. These constructions have, however, the disadvantage that in consequence of the *vis viva* of the guide-ring and of relatively quick changes in the movement of the same irregularities in the tension of the thread occur. This disadvantage is done away with according to the present invention by changing not only the movement of the rotating guide-ring, but changing simultaneously the movement of the spindle itself, so that the changement in the movement of the guide-ring is only half as great as in the machines in which no changement of the movement of the spindle takes place.

In order to make my invention more clear, I refer to the accompanying drawings, in which—

Figure 1 is partly a section and partly a diagrammatic view of the mechanism constituting the present invention. Fig. 2 is a plan of the conical rollers forming the main part of the invention and of the means for shifting the belt across the same. Fig. 3 is a detail view.

In the drawings, *a* is a spindle. *b* is a conical cop situated upon the same.

m is a pulley situated upon the spindle *a*, and *c* is a rotating ring provided with means for guiding the thread *o*. To this ring *c* a pulley *p* for rotating the same is fixed.

d and *e* are oppositely-coned rollers around which a belt *w* passes. This belt *w* passes, furthermore, around a disk *f*, Fig. 2, which is movable parallel to the axis of the conical rollers *d* and *e*. The disk *f* is situated upon a shaft *u* and is rotated by means of this shaft with uniform velocity. If the disk is moved in horizontal direction, the velocity of both conical rollers *d* and *e* is changed simultaneously—that is to say, the number of rotations of one of the rollers is increased, while the number of rotations of the other one is diminished.

To the shaft *g* of the conical roller *d* a pulley *h* is fixed, around which passes a belt *r*, which serves for rotating a disk *i*, the rotation of which disk is transferred by means of the belt *s* to the pulley *p*. To the shaft *k* of the conical roller *e* a pulley *l* is fixed, around which passes a belt *t*, which is situated around the pulley *m*. It is hereby attained that the spindle *a* is driven from the conical roller *e*, whereas the ring *c* is driven from the conical roller *d*. By changing the number of rotations of both conical rollers in the manner above described the rotations of the spindle *a* and the ring *c* are simultaneously changed,

the rotation of one of these members being always increased, whereas the rotation of the other one being simultaneously diminished.

The movement of the disk f in the direction parallel to the axis of the conical rollers d and e may be effected by any convenient suitable means. In Fig. 3 the disk f is so mounted upon the axle u as to allow the disk to be displaced longitudinally thereto. The disk f is provided with a sleeve f', into the groove f^2 of which enters the fork-like end of a double lever v, pivotally mounted at v'. A spring x permanently tends to axially move the disk f in one direction upon axle u, whereas an eccentric or curved disk y, fixed to the axle z, is rotated at constant speed and acts upon the second end of the lever v, thereby displacing the disk f in a direction opposite to that produced by the spring x. In this manner the belt w is shifted upon the two conical rollers e and d, so that the alterations in the speed for producing the cop above described are produced.

Having thus fully described the nature of my invention, what I desire to secure by Letters Patent of the United States is—

In a twisting and spinning machine, the combination of a spindle upon which the cop is wound and a rotating guide-ring for the thread, with two oppositely-coned rollers, a disk movable in the direction parallel to the axis of the conical rollers, a belt situated around this disk and both conical rollers, means for transferring the rotation of the shaft of one of these rollers to the rotating ring and means for transferring the rotation of the shaft of the other roller to the spindle, substantially as described and for the purpose set forth.

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

ACHILLE KLEIN.

Witnesses:
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