(No Model.)

E. KIMMEL & E. E. CLAUSSEN.

SPINNING, DOUBLING, AND TWISTING MACHINE.

No. 401,282. Patented Apr. 9, 1889.

Fig: 1.

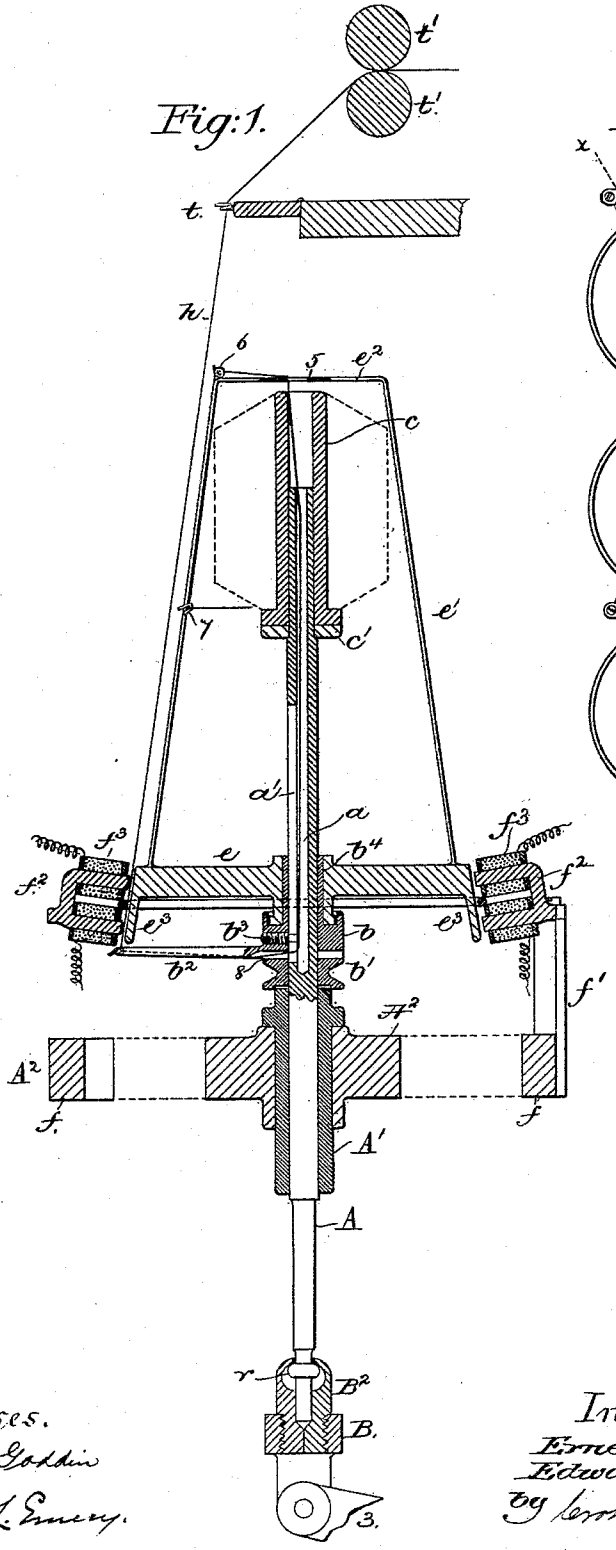


Fig: 2.

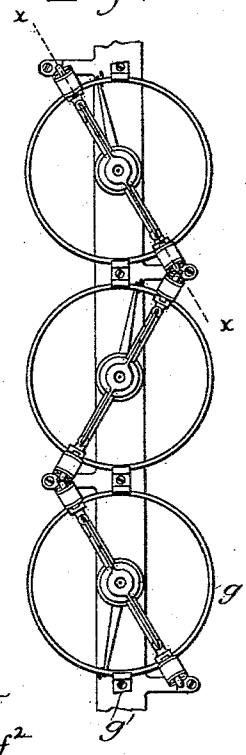
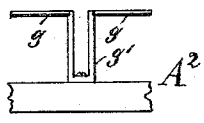


Fig: 3.



Witnesses.
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UNITED STATES PATENT OFFICE.

ERNEST KIMMEL, OF TEMESVAR, AUSTRIA-HUNGARY, AND EDWARD E. CLAUSSEN, OF HARTFORD, CONNECTICUT, ASSIGNORS TO GEORGE DRAPER & SONS, OF HOPEDALE, MASSACHUSETTS.

SPINNING, DOUBLING, AND TWISTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 401,282, dated April 9, 1889.

Application filed January 24, 1889. Serial No. 297,383. (No model.)

To all whom it may concern:

Be it known that we, ERNEST KIMMEL, of Temesvar, Austria-Hungary, and EDWARD E. CLAUSSEN, of Hartford, county of Hartford, State of Connecticut, have invented an Improvement in Spinning, Doubling, and Twisting Machines, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention has for its object the improvement of that class of spinning and also doubling and twisting machines, wherein two turns of twist are to be put into the roving or yarn during each rotation of the spindle.

In this class of machines prior to our invention the device which acted to deliver the yarn directly to the bobbin has been restrained from rotation by or through the gravity of some of its parts. In this our invention the rotation of the delivery yoke or device holding the yarn and presenting it to the spool or bobbin is prevented from rotation with the spindle by or through the action of a magnet.

In this our invention we are enabled to employ a vertical spindle and the delivery-yoke is also arranged in vertical position.

Figure 1 in vertical section represents a portion of a spinning-machine embodying our invention, a part of the spindle and part of the delivery-yoke employed being in elevation, the line of section being represented by the line x, Fig. 2, the lever for reciprocating the spindle and its actuating mechanism being omitted. Fig. 2 is a top or plan view, on a smaller scale, of a series of spindles and flyers and magnets embodying our invention; and Fig. 3, also on a smaller scale, shows a partial side elevation of the rail with one of the supports for the guards g.

Referring to the drawings, A is a spindle; A′, the bolster-bearing; A^2, the rail in which the bearing is held, and B is a step-rail, it supporting the step B^2, in which rotates the foot of the spindle. The spindle A, from the top of the spindle to a point just above the top of the bolster-bearing, is bored centrally to form a passage, a, for the yarn on its way to the bobbin. The spindle for a part of its length is provided with a slot, as a', which intersects the central passage, a.

The spindle above the bolster-bearing is surrounded loosely by a collar, as b, having an attached whirl, as b', the said collar having secured to and projecting from it a twisting device, (shown as the arm b^2,) the said twisting device having at its outer end a suitable eye, through which is extended the roving to be twisted. The hub b has a screw or stud, b^3, the point of which enters the slot a', so that the said hub, as it is rotated by any usual band (not shown) upon the whirl b', acts through the screw b^3 to rotate the spindle, the twisting device b^2 being also rotated in unison with the spindle. The slot and screw b^3 enable the spindle to be reciprocated vertically, to thereby reciprocate in usual manner the bobbin or spool c, it resting upon a flange, c', secured to the spindle, to thereby enable the yarn to be wound upon the spool or bobbin surrounded by the delivery-yoke.

The yarn is shown by dotted lines as wound on the bobbin after the manner of the warp-wind. The spindle (see Fig. 1) has a collar or projection, r, which is embraced by the step, made, as shown, in two pieces divided vertically and screwed into the step-rail.

The step-rail in practice will have jointed to it or will rest on a lever, 3, (partially shown in Fig. 1,) this lever in practice being moved by any usual copping mechanism which will reciprocate the step-rail, and with it the spindle more or less, according to the shape to be given to the mass of yarn wound upon the bobbin. As herein shown, the hub b has a sleeve-like extension, b^4, upon which is mounted loosely the neck e of the delivery-yoke e', it resembling a flier. The yoke e' surrounds the spindle and bobbin or spool, the legs of the yoke being joined together above the bobbin or spool by a cross-bar, e^2, having an eye, 5, said yoke having, as herein represented, two curls or eyes, 6 7.

The ends of the neck of the yoke e are provided, as shown, with arms e^3 e^3, which, as

represented, are downturned and made to present smooth or flat surfaces.

The rail A^2 has extended from it at suitable intervals stands or brackets f, to which are attached suitable uprights, f', to which are attached holders or supports f^2 for the magnets f^3, of any usual or desired construction. The magnets herein shown are represented as electro-magnets, and consequently their poles are supposed to be connected in circuit by suitable wires, one with the other, and to a battery, the said magnets located opposite the arms e^3 at the opposite ends of the neck serving to restrain the neck from rotation with the spindle.

Surrounding but not touching the neck is a ring-guard, g, it being interposed, as best shown in Fig. 1, between the arms e^3 and the electro-magnets, there being sufficient space between the guard and the arms e^3 to permit the yarn to pass freely between the arms e^3 and the electro-magnets, the guard preventing the bowing out of the yarn, so as to strike the magnets. These guards g are and may be supported by suitable stands, as g', erected upon the bolster-rail A^2. The yoke (herein described and denominated the "delivery-yoke") acts chiefly to present the yarn to the rotating spool or bobbin.

In operation it will be supposed that the roving or sliver h is coming from a guide-eye, t, and set of delivery-rolls t', common to ordinary spinning or doubling machines, the said roving or sliver being led between the ends of the yoke and the guard g, and thence through an eye in the outer end of the twisting device b^2, thence through the passage 8 at the inner end of the said twisting device into the longitudinal passage a of the spindle, the yarn being led along said passage out at the top of the spindle through the eyes 5, 6, and 7 of the delivery-yoke, and thence to the bobbin.

The roving in its passage, as described, has one twist put into it between the usual guide-eye, t, of the spinning-frame and the eye of the twisting device b^2 at each rotation of the said spindle and twisting device, a second turn or twist being put into the roving between the said twisting device and the eye 5 of the delivery-yoke.

We do not desire to limit our invention to the exact form of magnet shown, nor to the exact form of the delivery-yoke, as the same may have one leg instead of two; but two are preferable, as thereby the machine is better balanced.

It is obvious that should the reciprocating motion of the spindle be arrested and the bobbin filled with yarn the apparatus herein described might be employed to put two twists into the yarn at each rotation of the spindle as the yarn is drawn from the bobbin in the direction reverse of that herein described.

Such a machine would be valuable for doubling and twisting.

The lever 3 may in practice be actuated by the cam of any usual builder motion.

We claim—

The rotating spindle having a central passage, a, the twisting device rotating in unison with the spindle, and the spool or bobbin, combined with the delivery-yoke and with a magnet to check the rotation of the said delivery-yoke with the spindle, substantially as described.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

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