

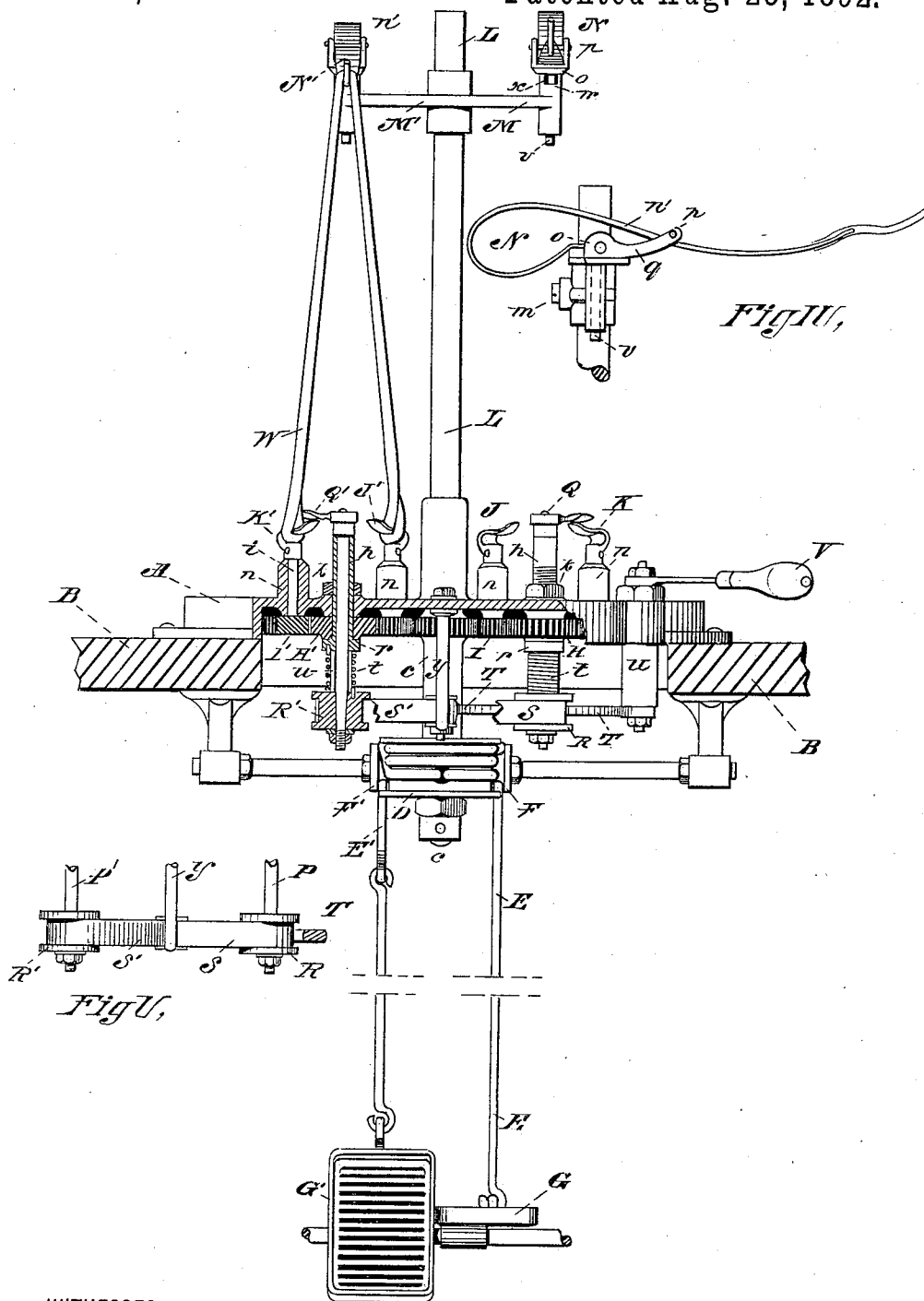
(No Model.)

2 Sheets—Sheet 1.

L. DIMOCK.
SKEIN TWISTING MACHINE.

No. 481,227.

Patented Aug. 23, 1892.



WITNESSES:

W. A. Callender
J. K. Krameter

Fig. I,

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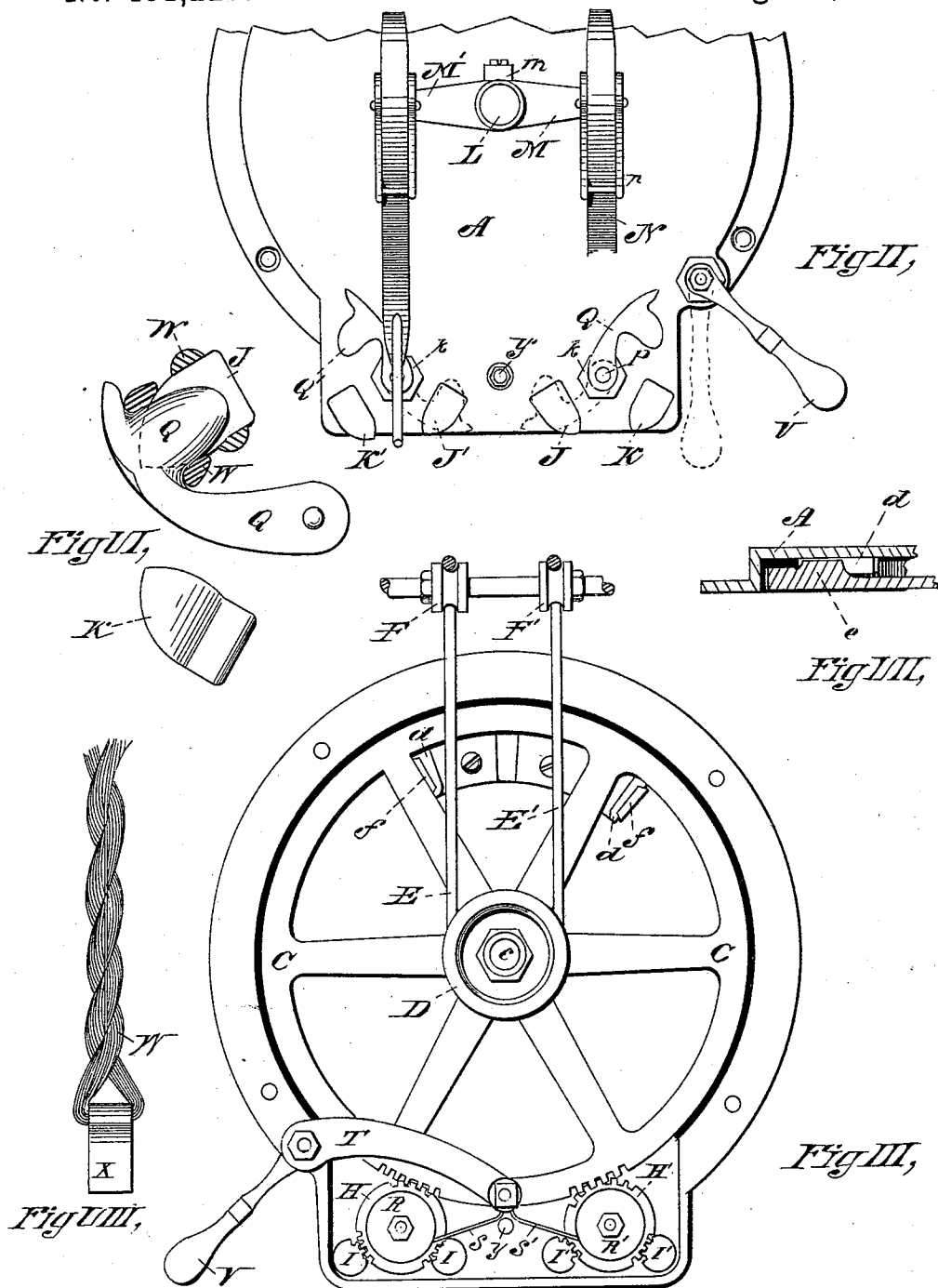
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UNITED STATES PATENT OFFICE.

LUCIUS DIMOCK, OF LEEDS, MASSACHUSETTS.

SKEIN-TWISTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 481,227, dated August 23, 1892.

Application filed February 13, 1892. Serial No. 421,433. (No model.)

To all whom it may concern:

Be it known that I, LUCIUS DIMOCK, a citizen of the United States, residing at Leeds, in the county of Hampshire and State of Massachusetts, have invented a new and useful Skein-Twisting Machine, of which the following is a specification.

My improvements relate generally, in the first part, to the combination, with a pair of rotating hooks for holding the end of a skein, a finger for holding the skein distended by its center while its ends are being twisted by the hooks, and means for rotating the hooks while the ends of the skein are held by both hooks and for reversing the rotation of the hook holding both ends of the skein, of mechanism for switching one loop end of the skein from one hook to the other; and the second part relates to mechanism for simultaneously operating more than one set of skein-twisting hooks.

The improvements have for their object an increased facility in the twisting of skeins.

My invention consists in the combination and arrangement as hereinafter described, and more particularly pointed out in the claims.

The invention is fully illustrated in the accompanying drawings, in which—

Figure I is a front elevation, in partial section, of my improved machine. Fig. II is a top plan view in partial section. Fig. III is a bottom plan view in reverse of Fig. II. Fig. IV is a side elevation of one finger. Fig. V is a detail view. Fig. VI is a full-size top plan view of a pair of hooks and a switch-carrier. Fig. VII is a detail in partial section, and Fig. VIII is a full-size view of a portion of a skein secured after removal from the machine.

The twisted skein has many advantages as a form for putting up manufactured filaments of various kinds.

My improvements in machinery for twisting skeins are as follows:

A is a bed-plate adapted to be secured above the floor of the room to be in convenient reach of the operative and shown in the drawings, Fig. I, as resting upon and bolted through its flange to a table B, cut out beneath the plate

A to give room to dependent portions thereof.

Beneath the bed-plate A and journaled thereto is a driving-gear C. Beneath the gear C and upon its prolonged arbor *c* is a driving-pulley D, having secured to it cords E E', the opposite ends of which, passing over pulleys F F' to obtain a change of direction, are severally secured to treadles G G', and the pulley, cords, and treadles are so proportioned that one treadle will be up while the other is down and so that the downward movement of each treadle will, through the cords and pulley D, give a rotation to gear C in opposite directions.

Journaled in the bed-plate A and geared to the driving-gear C is a pinion H, and geared to the pinion H are two spur-gears I, having their journals also in plate A. The arbors of spurs I are extended above the bed-plate and are provided with hooks J K, adapted to have the opposite loop ends of a skein caught over them.

From the bed-plate A is a standard L, supporting upon an arm M therefrom a spring-finger N, whose free end is arranged to come vertically over the hooks J K and is adapted to hold the center of the skein W and support it while the ends are looped over the hooks J K. The arm M, bearing the finger N, is adjustable upon the standard to suit different lengths of skein, and the spring-finger N accommodates itself to the shortening of the skein in twisting.

Coincident with the axis of pinion H and in consequence in the center of a circle of which the axes of spurs I I are upon the periphery is a stem P, provided with a horizontal hook Q, adapted to swing upon the rotation of its stem over the tops of the hooks and when they are in a certain position switch the loop of the skein from one hook and carry it to the other. The stem P is prolonged below the bed-plate A and is secured axially to a pulley R, bearing a belt S, fastened at one end to it. The pulley is connected by a coil-spring *t* to a fixed part *r* from the bed-plate, so as to rotate against said spring. The belt S, having one end secured to pulley R, has its

other end attached to the end of an arm T from a rock-shaft U. The rock-shaft U, journaled in the bed-plate A and having arm T below the plate, has a handle V above the plate attached to its upper end, and it will be seen that by swinging the handle V the switch-carrier Q will be operated.

The general operation of the machine is as follows: The skein thrown over the finger has its ends brought over the hooks. One treadle is operated to give a rotation to gear C, which in said rotation multiplies the rotation of hooks J K in unison to impart the required twist in one direction to the skein W. The switch-carrier Q is reciprocated to leave both ends of the skein upon hook J, at which time the other treadle is depressed to reverse the rotation of gear C, and with it the rotation of hook J, to thereby complete the twisting of a skein, which is then removed from the finger N and hook J, being from the configuration of the hook adapted to receive through its loop end a tag X for securing it. Such being the general operation of the machine, the details of construction of the parts to insure its perfect operation and accurate working are as follows: To cause the rotation of gear C to cease at a point which will bring the hooks J K in the most favorable position for having the loop ends of the skein caught over them and in the proper position for having the loop end of one switched to the other, I arrange upon the inner face of the bed-plate A a downward-projecting stop *d*, adapted to intercept one spoke of gear C, having a lug *e* raised from it. This stop (in effect two stops) for receiving the opposite sides of the spoke-bearing lug *e* is made distensible, so that the number of twists given the skein may be varied by limiting the rotation of gear C, care being taken in setting the stop to arrange it to bring the hooks with their mouths in the proper position. The stop ends are in the form of abutments having cushions *f* of rubber or other suitable material to soften the shock of the blows from the lug *e*, as seen in Fig. III. The arbors of spurs I are stems *i*, which, as shown in Fig. I, pass up through uprights *n*, integral with the bed-plate A, to be secured to the hooks J K, whose shoulders rest upon said uprights. The pinion II is journaled upon a sleeve *h* and rests upon a collar *r* upon said sleeve. The sleeve *h* above the bed-plate is outwardly threaded, and a nut *k*, screwed against the bed-plate, holds said sleeve *h* in place and the pinion journaled thereupon. The stem P passes through sleeve *h* to have the pulley R fixed to its lower end, and intermediate to pulley R and having its ends secured, respectively, to pulley R and collar *r* is the coil-spring *t*, surrounding stem P, but in immediate contact with a blank sleeve *u* for preserving its proper form. The pulley R is shown attached to stem P by corresponding cone surfaces drawn together by a nut upon the threaded end of

the stem P, by means of which connection the pulley may be set to tighten the spring and take up slack in belt S. The belt S, having one end secured to the pulley after passing over it, has the other end made fast to the arm T.

When the switch-carrier Q and handle V are in their normal position, as shown in Figs. I, II, and III, such position is determined by a stop Y, consisting of a rod pendent from the bed-plate and secured thereto and against which the spring *t* bears the end of arm T, so that upon operating the switch-carrier the handle V is simply released to permit the spring to complete the reciprocation of the switch-carrier and leave it and the handle in their normal position.

The efficiency of the hooks J K, both independently and in conjunction with the switch-carrier Q, depends in a large measure upon their peculiar configuration. To cause them to better hold the loop ends of the skein, they are swelled, as shown in side profile view in Fig. I, to prevent the loop resting against their closed ends from escaping horizontally without overcoming an opposing surface, and in top plan view one side is shown swelled from the seat of the loop to oppose resistance to an escape in a vertical plane. They are also made wide as a former to the loop to leave it distended to receive the securing-tag X, as shown in Fig. VIII, which finishes the skein for packing and is in practice a distinguishing trade-mark or label. To co-operate more perfectly with the switch-carrier Q, they are pointed, as shown in top plan view, with curved edges to permit the loop to both leave the hook and be received on it in an easy manner, and the points lie in a line coincident to the direction of movement of the switch-carrier. The switch-carrier has one part wedge-shaped in both horizontal and vertical cross-section, as seen in Fig. VI, for entering the loops upon the hooks and shoulders at the horizontal base of this wedge to take a loop with it in its forward movement. The lower surface of the carrier is almost in contact with the pointed ends of the hooks when above them, and the wedge-shaped part of the carrier being of equal width at its base with the hooks, the loop is taken from one hook and easily carried past the horizontal and vertical swell of the other hook to be securely seated therein.

In Fig. VI the carrier is shown in the act of switching one loop and before it has completed the operation.

The finger N consists of a spring-band *n'*, secured at one end to a socket-piece *o*, bent upon itself to pass under a bar *p* upon an arm *q* from the socket-piece, and prolonged to terminate in the finger proper, adapted to hold the skein thrown over it and arranged to come vertically over the hooks J K and half-way between them, and it will be seen that the finger, while exerting a tension to

hold the skein in the hooks, will give to compensate for the shortening of the skein in twisting. As the vertical strain of the skein upon the finger changes after both loops are upon one hook, I adapt the finger to turn to a true vertical position above hook J by providing it with a stem *v*, arranged in a socket. A shoulder of the stem rests above the socket, and a pin *w*, pendent from this shoulder, plays in a slot *x* in the top of the socket, as seen in Fig. I, by means of which the rotation of the finger is limited to a movement from its first position to one over the hook holding both loop ends of the skein.

I combine two sets of twisting-hooks with the driving mechanism and switch-carrying mechanism, by means of which the capacity of a machine is nearly doubled with one operative, which is due principally to the simultaneous switching of the loop ends from two hooks and as follows: The duplicate pinions H H' are arranged upon the periphery of gear C to bring the centers of the duplicate spurs in a straight line, and with them the hooks J K J' K', as more particularly shown in Fig. II, and upon the standard L, arranged upon the bed-plate at an equal distance from the two sets of hooks, is a cross-head having the arms M M' for bearing duplicate spring-fingers N N', the cross-head, as seen in Fig. II, having a set-screw *m* through its sleeve to clamp the standard at the point at which the cross-head is adjusted.

The pulley R' and belt S' are identical with pulley R and belt S and are arranged as reverse counterparts to have the ends of the bolts joined to the end of lever-arm T, which makes a convenient way of coupling an additional switch-carrier with the operating mechanism of the first, as it will be seen that the swinging of the lever-handle V will simultaneously advance both carriers and that upon the release of the handle one or both springs complete the reciprocation of the carriers in restoring them to their first position.

The pulleys R R' and belts S S' shown in partial section in Fig. I are shown complete in the same position in Fig. V.

Now, having described my invention, what I claim is—

1. The combination, with a pair of rotating skein-twisting hooks and with mechanism for rotating and stopping them in a determined position, of a switch-carrier adapted to enter the loop of a skein upon one hook from the rear of said hook when the two hooks are at rest with their mouths opposite and transfer said loop to the other hook and means, substantially as shown and described, for reciprocating the switch-carrier.

2. The combination, with a pair of rotating skein-twisting hooks and with mechanism for rotating and stopping them in a determined position, of a switch-carrier device consisting of a rotating carrier pivoted, as shown and described, to rotate over the hooks and transfer the loop of the skein from one hook to the other, and a rock-shaft journaled in its frame and provided with a handle and lever-arm, and belt and pulley connecting the arm with the spindle of the switch-carrier, whereby the reciprocation of the carrier is effected upon the rotation of the handle.

3. The combination of a pair of skein-twisting hooks adapted to distend the loop end of a skein, leaving them for the purpose described, means for rotating and stopping them in the required position, and a reciprocating switch-carrier for transferring a loop end of the skein from one hook to the other.

4. The combination, with skein-twisting hooks of the character described, of a switch-carrier having its end in the form, as shown and described, of a wedge or cone provided with shoulders at its base and adapted thereby to enter a loop upon a hook and take said loop therefrom.

LUCIUS DIMOCK.

Witnesses:

R. F. HYDE,
JASON PERKINS.