

(No Model.)

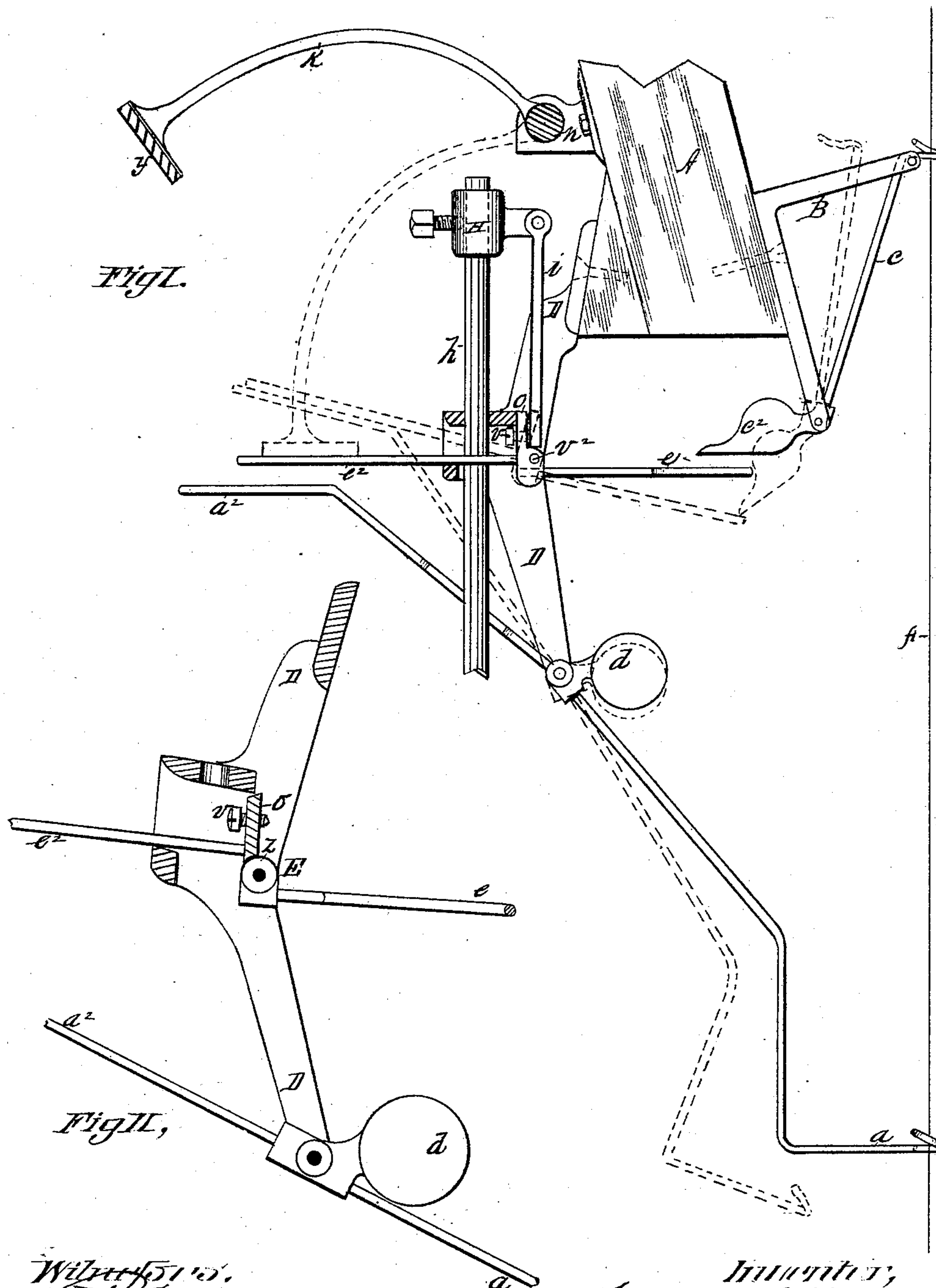
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W. G. HENDÉE.

STOP MOTION FOR SPINNING AND TWISTING MACHINES.

No. 279,870.

Patented June 19, 1883.



Wilbur F. Hyde
R. F. Hyde
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Illustrated by
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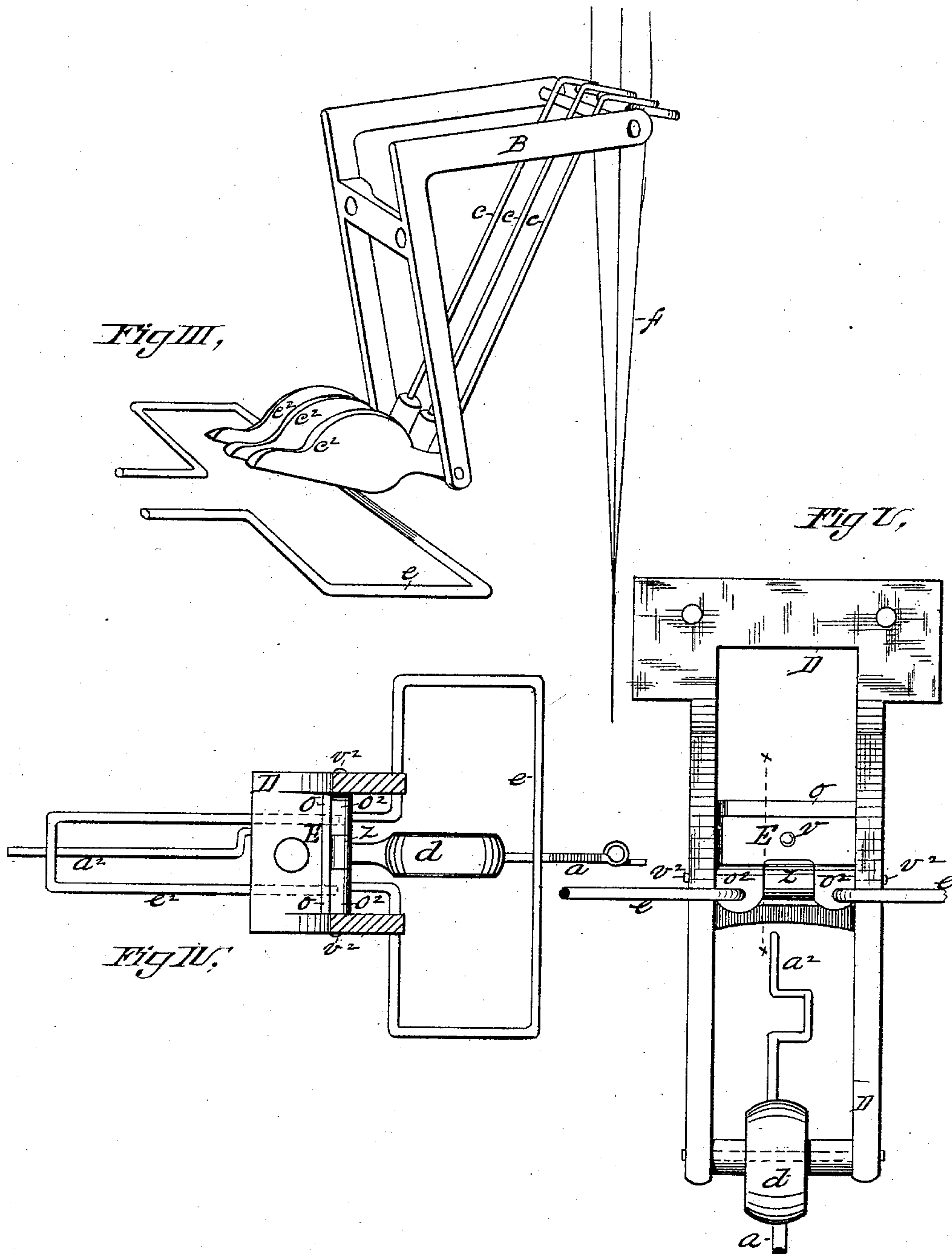
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Witnesses,
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William G. Hendee
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(No Model.)

3 Sheets—Sheet 3.

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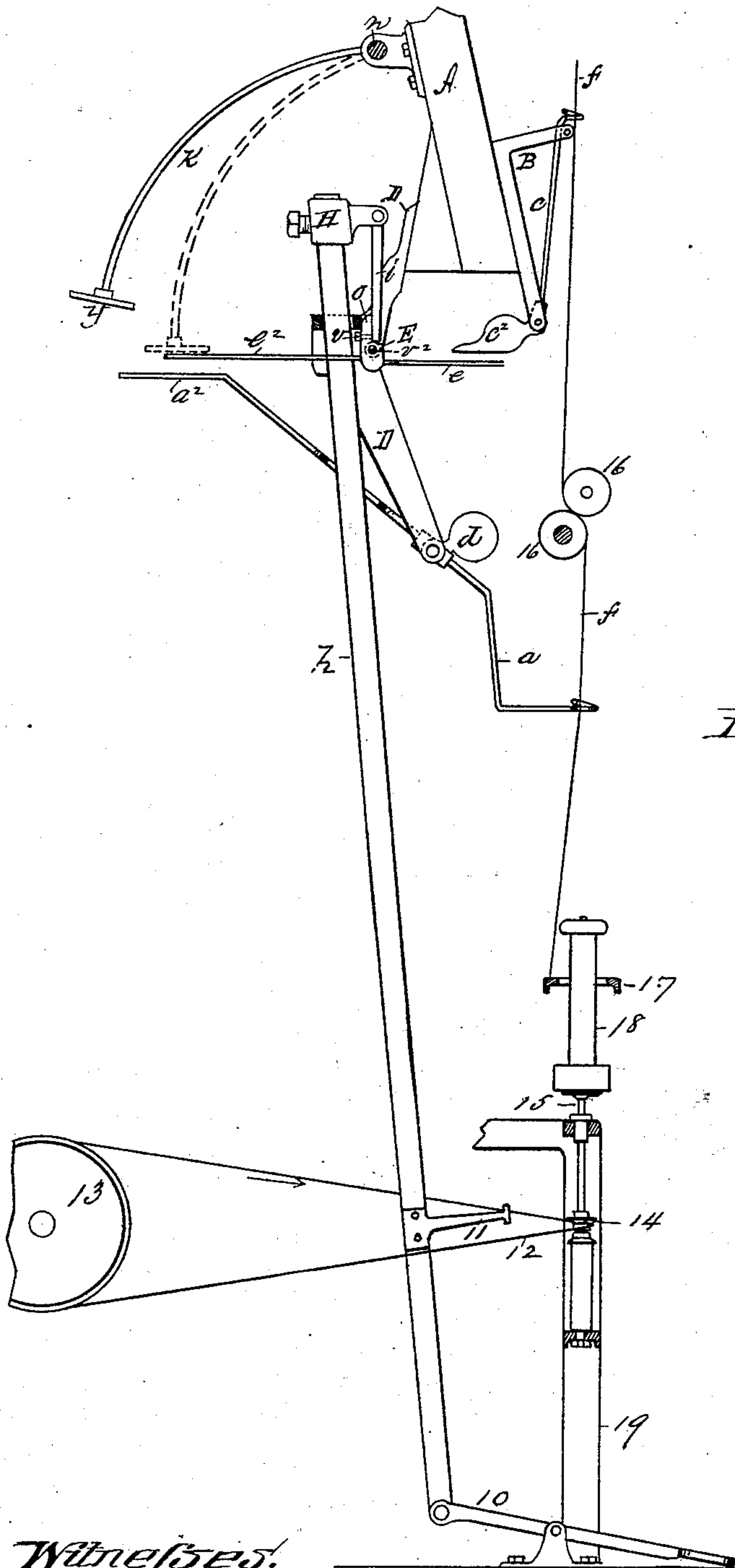


Fig. II.

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UNITED STATES PATENT OFFICE.

WILLIAM G. HENDEE, OF SPRINGFIELD, MASSACHUSETTS.

STOP-MOTION FOR SPINNING AND TWISTING MACHINES.

SPECIFICATION forming part of Letters Patent No. 279,870, dated June 19, 1883.

Application filed September 26, 1882. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM G. HENDEE, a citizen of the United States, residing at Springfield, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Stop-Motions for Spinning and Twisting Machines, of which the following is a specification.

This invention relates to stop-motion devices for spinning and twisting machines, and has reference to machines of that class in which each spindle may be stopped and started independently of the others, the object being to insure the stoppage of a spindle if the material which is being twisted thereon breaks either above or below the feed-rolls of the machine.

In the drawings forming part of this specification, Figure I is a side elevation of stop-motion devices, partly in section, embodying my improvements. Figs. II to V, inclusive, are detail views of the same. Fig. VI is a side elevation, partly in section, showing the operative parts of the twisting mechanism of a spinning-machine having my improvements applied thereto.

In the drawings, A is the end of the front board of the twisting-frame.

B is the drop-wire frame, secured in an inclined position upon the front side of said board.

c indicates drop-wires adapted to have strands of yarn or other fibrous material pass through proper eyes formed on their ends, and pivoted at the lower end of frame B, and provided with enlarged lower ends, c^2 , standing nearly in a horizontal position when yarns are passing through said eyes. Said parts c^2 are adapted to overbalance the weight of the upwardly-projecting parts c of the drop-wires.

D is a yoke-frame secured to the rear side of board A, the form of which is shown in Figs. I, II, IV, V, and VI. E is a latch-rest hung on a shaft, v^2 , between the sides of frame D, and consists of the vertical leaf o, provided with two bosses, $o^2 o^2$, on its lower edge, through which said shaft v^2 passes, and a roller, z, hung on said shaft between said bosses, and adapted to rotate thereon. A drop-wire yoke, e, of rectangular form, is secured to the bosses o^2 on said latch-rest, and reaches forward under the ends c^2 of the drop-wire c. A frame, e^2 , is likewise secured to said bosses and projects

rearwardly therefrom. An adjusting-screw, v, is placed in the leaf o of the latch-rest, for the purpose of adjusting the degree of the engagement of the latch with said rest, as hereinafter fully set forth. A vibratory eye-wire, a, is pivoted to the lower end of the frame D, and connected therewith, near the latter, is a weight, d. Said eye-wire is adapted to reach down just above the end of the spindle of the machine, and have the yarn f pass through its eye, holding its lower end forward, as shown in Fig. I. A rearwardly-projecting arm, a^2 , is secured to the same axis with the wire a and extends under said frame e^2 , which is secured to the latch-rest E.

16 16 are the drawing-rolls, 17 is a section of the ring-rail, 18 is the bobbin, and 19 is a section of the frame of the machine.

The kind of spinning-frame herein illustrated and to which my improvements are applicable is that wherein each spindle is arranged to be started and stopped independently of the others, and therefore a shipper-rod, h, is located behind each spindle, whose lower end is connected with a foot-treadle, 10, and on which is secured a band-guide, 11.

Fig. VI illustrates the co-operative parts of such a frame as is above described, together with the stop-motion devices herein described, showing the spinning and stop-motion devices in their operative relations. Each spindle and its stop-motion mechanism is but a duplicate of the others on the frame, and therefore one spindle and its accompanying parts clearly show the construction thereof. The usual driving-band, 12, passes around the drum 13, through said guide, and around the spindle-whirl 14 of the spindle 15. Said spindle is provided with a tight and loose whirl of any well-known construction, to provide for shipping said band thereon to stop and start the spindle, as aforesaid.

A down-hanging latch, i, is hung on a latch-holder, H, which is secured to the rod h, and when the latter is lifted to start the spindle the lower end of latch i swings back and rests upon the roller z on the latch-rest E, and against the side of the leaf o thereon, thereby holding rod h in an upward position. The weight of the rear arm, e^2 , overbalances that of the yoke e, and therefore, when nothing obstructs the free oscillatory movement of the

rest E, and said arm or frame e^2 and yoke e , the said parts will swing to the position shown in full lines, Fig. I, which brings the latch-rest E to a proper position to receive thereon the lower end of latch i , whereby rod h is held up.

The aforesaid latch-rest E is shown in front elevation in Fig. V in the yoke-frame D, hung in the latter by the shaft v^2 , and centrally in said latch-rest is located the roller z , on which the end of latch i rests when the shipper-rod h is lifted up to start the spindle and hold the band onto the spindle-whirl. The lower end of latch i may be allowed to take a position on said roller directly over the shaft v^2 , on which said roller is hung, or a little to one side of said shaft, by adjusting the screw v through the leaf o , so that when said latch swings over said roller it will hit the end of said screw, and as the latter stands in a line across shaft v^2 and roller z , the position of the end of the latch on the latter will be governed by the projection more or less of the end of said screw over said roller. The oscillation of the latch-rest E to drop the shipper-rod h and stop the spindle carries leaf o and screw v against the back side of latch i , forcing its end off from roller z , and the end of said latch is more easily pushed forward and off from said roller if it does not stand too directly over said shaft v^2 . This provides for operating yoke e and said latch-rest by very lightly weighted ends c^2 of the drop-wires c . The oscillating latch-rest E may be made without the roller z , which constitutes a rolling bearing for the end of latch i , by making that part thereof in which said roller is hung solid; but the resistance of said latch against displacement from such a rest would necessitate very heavy parts c^2 on the drop-wires, and consequently cause such a back draw on the yarn f as would render it difficult to sustain said wires in a forward position, when running very fine silk or other material, without running the risk of often breaking the strand. The location of said adjusting-screw v in the leaf o contemplates the swinging of the rest E to the position shown in Fig. I, when it is to receive the end of latch i ; but said screw may be put through a part of frame D and made to operate against the rear side of leaf o , swinging its upper edge toward latch i , and the result relative to the bearing of the end of the latter over the axis of roller z would be the same as is effected by said screw when operating through said leaf. The leaf o , standing up behind latch i , serves, when yoke e is forced down, to push the end of latch i off from roller z , letting rod h drop down, with the result above stated. When the yarn f is passing regularly down to the spindle unbroken and under proper tension, the wire a and arm a^2 are retained in the positions shown in full lines in Fig. I; but if said yarn breaks or slacks up, said parts swing to the positions shown in dotted lines in said figure.

It is desirable, in machines of the class to which the above-described devices are applied,

that the shipper-levers h should not drop down and unship the bands when the yarn slacks up because of the stopping of the whole spinning-frame, as would be the case were no provision made, independent of the stop-motion proper, for preventing the latch-rest E from being operated by the slacking of the yarns under such circumstances.

For the purpose of preventing the shipper-lever h from dropping when the machine is stopped, as just described, a latch-rest holder, y , is provided, which is secured to an arm, k , and the latter is secured to a shaft, n , which is supported on the rear side of the board A. When the operator is about to stop the machine, shaft n is turned to bring the holder y down onto frame e^2 , as shown in dotted lines in Fig. I, whereby the latch-rest E is held stationary, and the ends c^2 of the drop-wires c may rest on yoke e when the yarns slack up without causing the rod h to drop down. Holder y operates in like manner to prevent said latch-rest from being operated by the movement of arm a^2 up against frame e^2 from the same cause as above stated.

The holder y may consist of a single piece secured to an arm, k , for each spindle; or it may be a suitable strip or rod running in the rear of board A, from end to end of the machine, which can be swung onto and off from all of the frames e^2 simultaneously.

The operation of the combined parts of the shipper-rod and latch and the drop-wires, latch-rest, and eye-wire a is as follows: The yarn f , having been passed through the drop-wire c , and thence around the usual feed-rolls, and then through the eye-wire a , is attached to the spindle-bobbin in the usual manner. Rod h is then lifted up to start the spindle, the tension on the yarn draws the wires c and a to the positions seen in full lines in Fig. I, and the latch-rest E, yoke e , and frame e^2 all assume the positions there shown; and upon raising rod h the lower end of latch i is brought to rest upon the roller z thereon, whereby rod h is held in the upward position there shown.

The frame B is adapted to support a series of wires, c , to provide for governing and supporting several threads which are to be twisted together below. When any one of the said threads breaks, or from any cause becomes so slacked that it does not retain the wire c in the position shown in full lines in Fig. I, against the counterbalance action of the lower end, c^2 , of said wire, the latter swings back and its said end falls on the yoke e , bearing it down, as shown in dotted lines, and turning the latch-rest E on its shaft v^2 , causing the leaf o to strike the back side of latch i , whereby the lower end of the latter is pushed forward, and the roll z rotates, carrying said end entirely off from said rest, and rod h drops, and the band is thereby shipped and the spindle is stopped. When said rod drops, the lower end of latch i hangs down in front of rest E, slightly out of a perpendicular line, so that when said rod is again lifted up the lower end of the latch will

swing back again onto the rest E, as before. The slacking up or breaking of the yarn at or near its engagement with the lower end of wire *a* allows the latter to swing to the position indicated in dotted lines in Fig. I, thereby producing the same effect upon the rest E, by driving frame *e*² upward, as was produced by the back fall of wire *c*, as above described, the two positions of which are shown in full and in dotted lines in Fig. I.

The construction of the latch-rest E with the leaf *o* and roller *z* thereon, the latter operating on a small shaft, makes a device for this purpose which, while ample for the support of the weight of the shipper-rod, can be operated to drop the latter by a very slight weight on the yoke *e*. Therefore by making the wires *c* with short unweighted ends in place of those lettered *c*², and hanging them in frame B, so that they would of themselves swing backward when permitted to do so, the weight thereof would be sufficient to tip yoke *e* and disengage the latch from the rest E.

What I claim as my invention is—

25 1. In combination, the shipper-rod *h*, the latch *i*, one or more drop-wires, *c*, the pivoted latch-rest E, provided with the yoke *e*, and with the leaf *o* and the roll *z*, substantially as set forth.

2. In combination, the rod *h* and the latch *i*, the eye-wire *a* and the arm *a*², having a common pivot, the latch-rest E, provided with the frame *e*², and with the leaf *o* and the roll *z*, substantially as set forth.

3. In combination, the shipper-rod *h*, the latch *i*, hung on said rod, the oscillating latch-rest E, having the leaf *o* thereon, and the screw *v*, passing through said leaf, substantially as set forth.

4. The combination, with the latch-rest E, provided with the frame *e*², of the latch-rest holder *y*, pivoted over said frame, substantially as set forth.

5. In combination, the shipper-rod *h*, the latch *i*, hung on said rod, the oscillating latch-rest E, having therein a rolling bearing for the end of said latch, substantially as described, and provided with the upwardly-projecting leaf *o*, having therethrough the screw *v*, whose point extends over said rolling bearing, substantially as set forth.

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Witnesses:

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