4 Sheets—Sheet 1.

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Stop Motion for Spinning Machines.

No. 232,240. **Patented Sept. 14, 1880.**

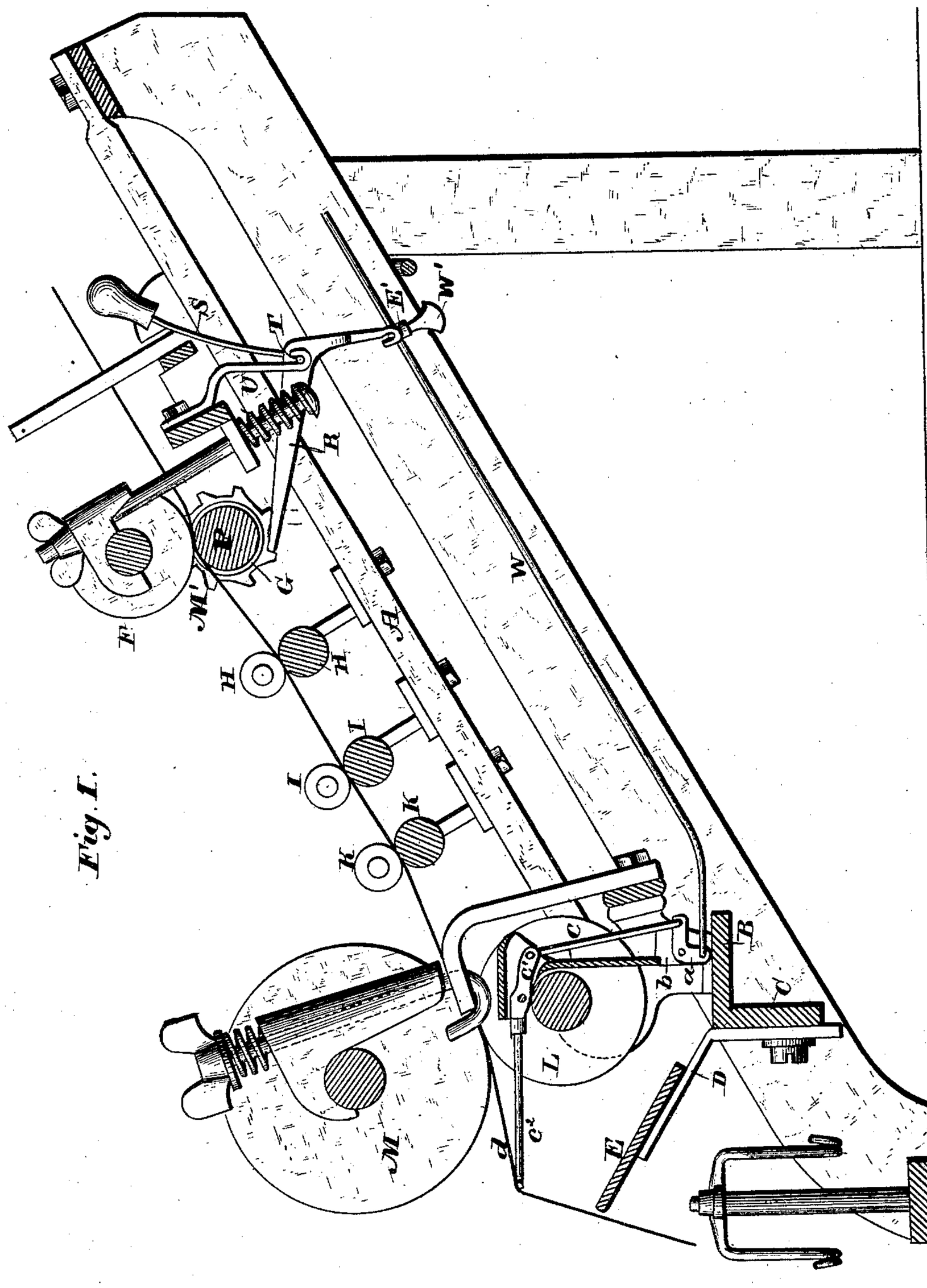

Fig. 1.

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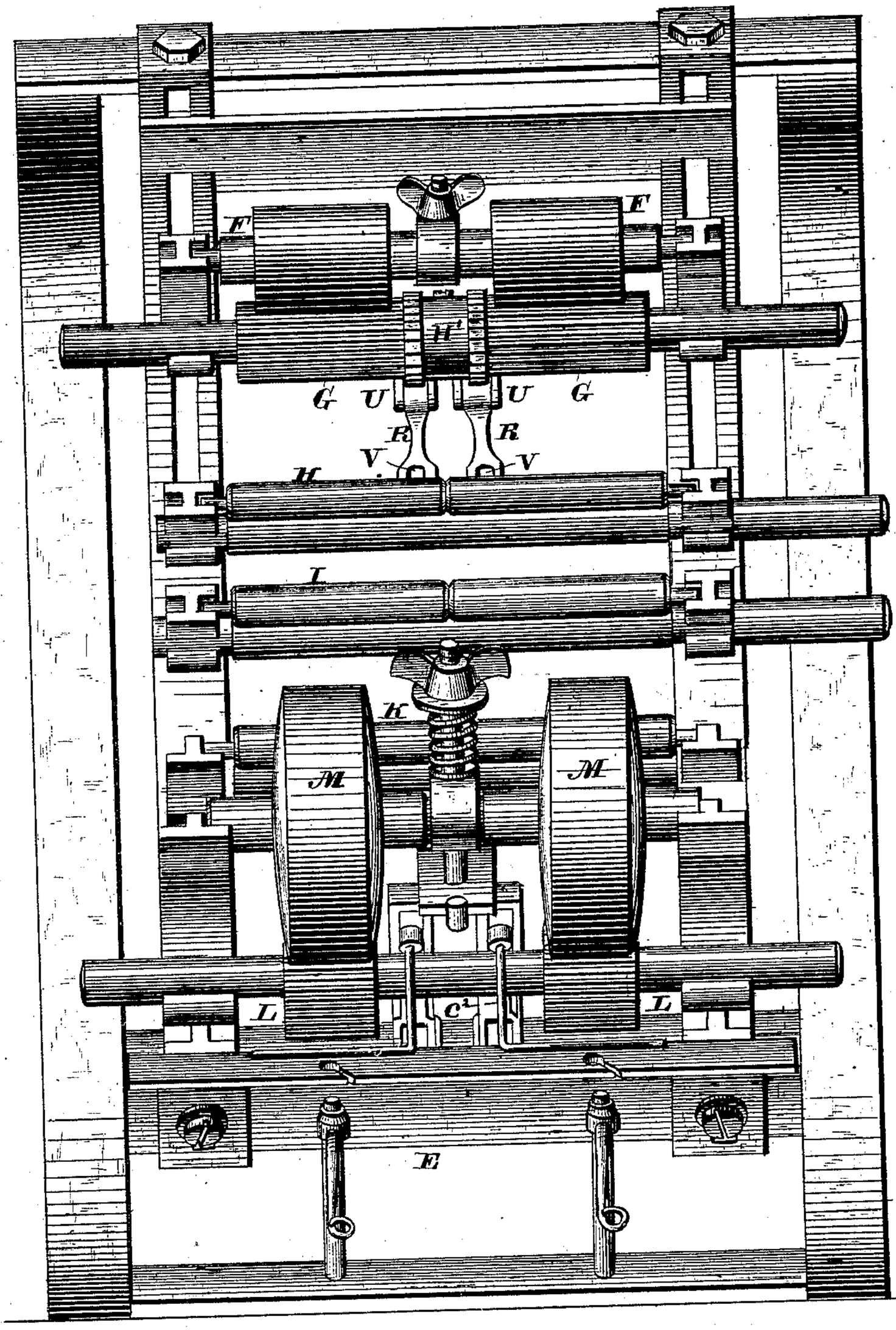
Fig. 2.



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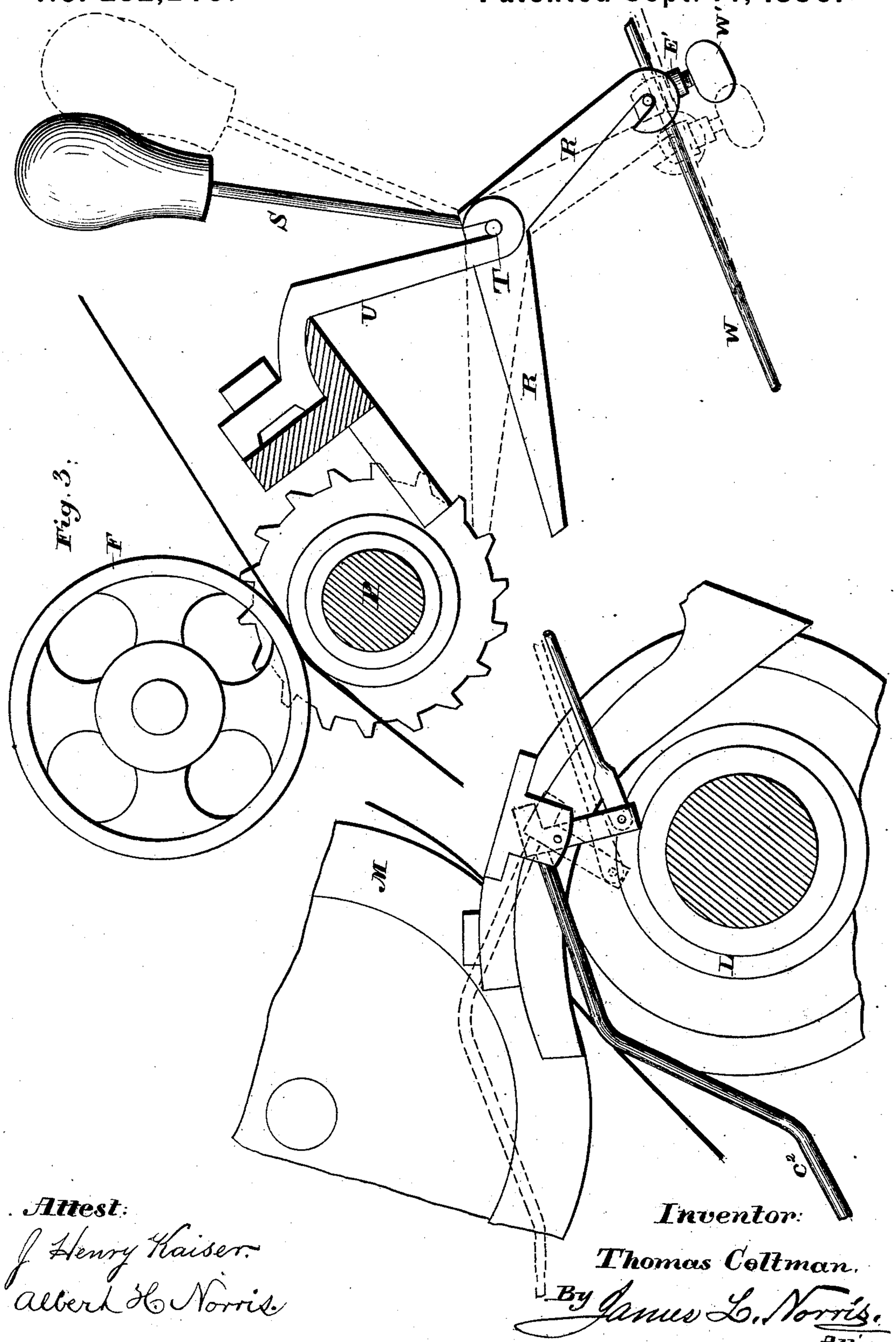

Fig. 3.

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Fig. 4.

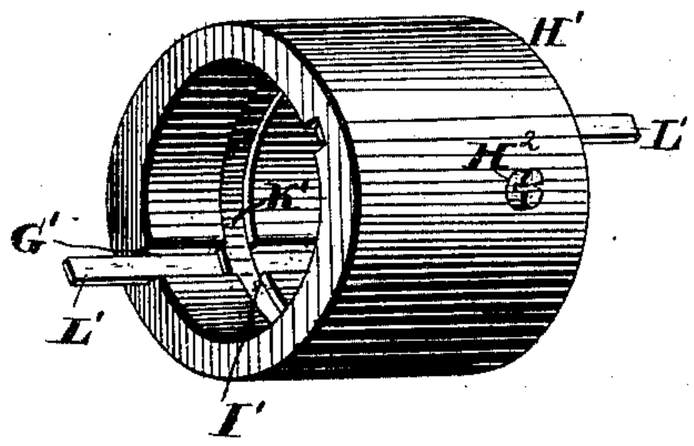


Fig. 5.

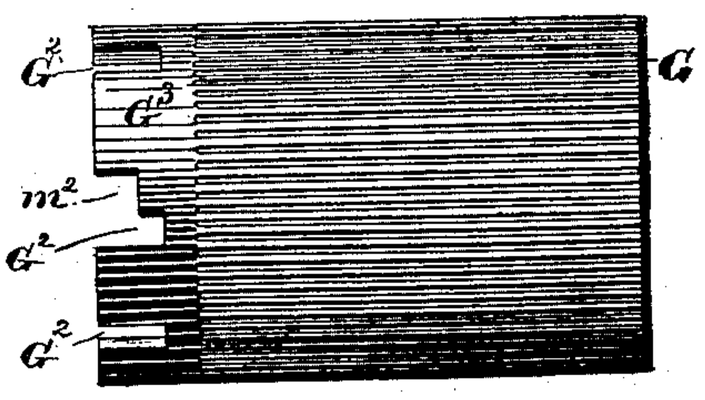


Fig. 6.

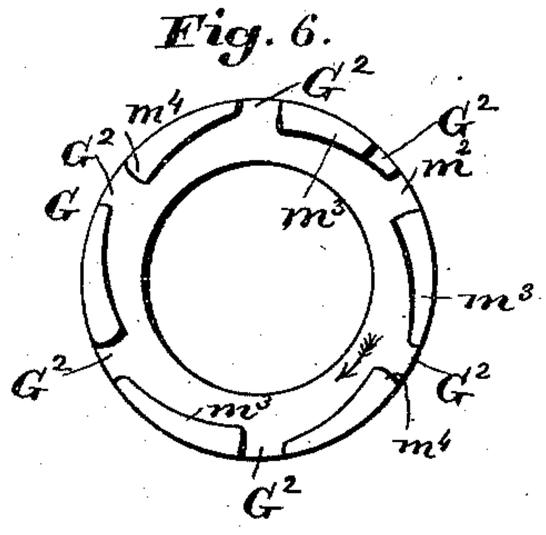


Fig. 7.

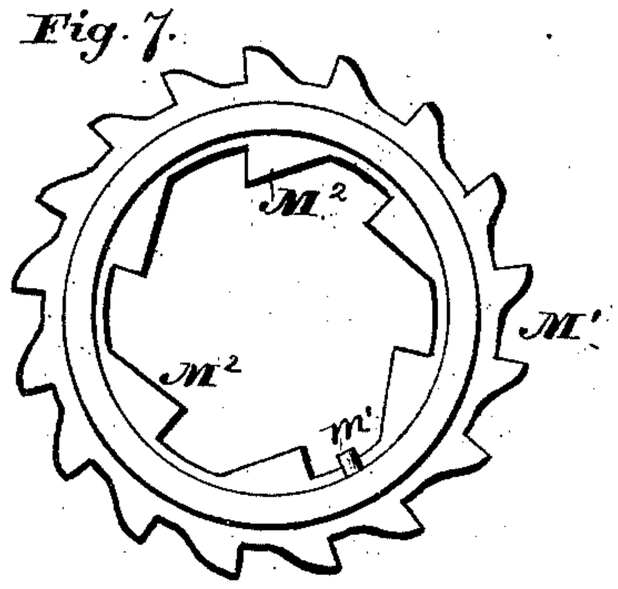


Fig. 8.

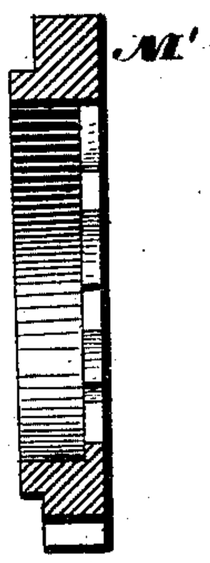
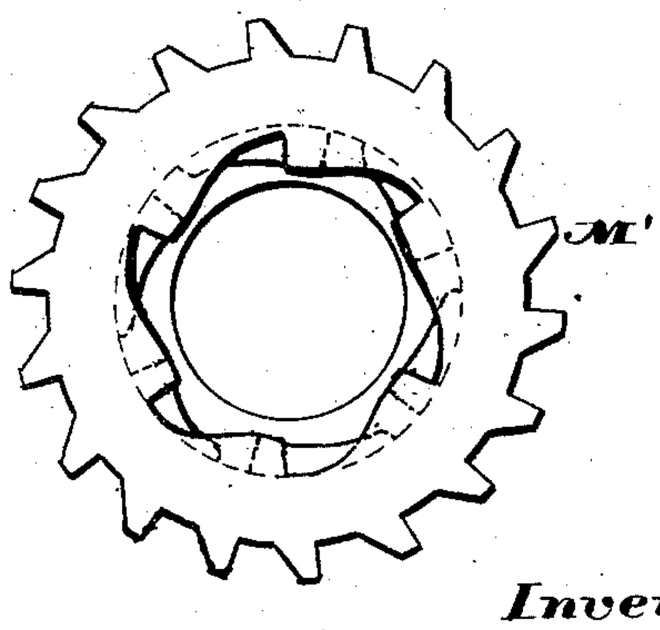


Fig. 9.



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UNITED STATES PATENT OFFICE.

THOMAS COLTMAN, OF LEICESTER, ENGLAND.

STOP-MOTION FOR SPINNING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 232,240, dated September 14, 1880.

Application filed July 3, 1879. Patented in England May 3, 1879.

To all whom it may concern:

Be it known that I, THOMAS COLTMAN, of Leicester, England, have invented new and useful Improvements in Stop-Motions for Spinning-Machines, of which the following is a specification.

The nature of my invention relates to a stop-motion for spinning-machines; and it consists in the features of construction and combination hereinafter described, and particularly pointed out in the claims.

In the drawings, Figure 1 is a transverse section taken on a vertical plane through the upper part of a spinning-machine embodying my improvement. Fig. 2 is a front elevation. Fig. 3 represents in detail the two main parts of the stop-motion disconnected. Fig. 4 is a perspective view of the collar, which is secured to the axle between a pair of tubular fluted sections. Figs. 5 and 6 represent side and end views of one of the fluted tubular sections. Fig. 7 is a side view of one of the ratchet-wheels, and Fig. 8 is a section of said ratchet-wheel. Fig. 9 illustrates the relative position of a ratchet-wheel and tubular fluted section, as explained farther on.

The principal parts of the machine herein shown are the roller-stand A for the angle-irons B and C, the iron lap-board D, the wood lap-board E, the rear top pressing-roller, F, and the rear bottom fluted or delivery roller, G, the rear carrying-rollers, H, the middle carrying-rollers, I, the front carrying-rollers, K, and the front bottom rollers, L, the top front roller, M, being a pressing-roller, and the bottom roller, L, a fluted roller.

Instead of forming a delivery-roller in one piece, as is usually the case, and fluting sectional lengths of the same, I provide tubular fluted rollers or sections G to each spindle in the machine and arrange these fluted rollers in pairs. These fluted sections or rollers revolve with the shaft P when at work, but can be stopped independently while the shaft is running. This stoppage occurs when the ratchets M′ are arrested in their rotation by a clawker, which will be described before entering into a detail description of the connection between the ratchets and the tubular fluted rollers.

R designates an angular bar, which I denominate a "clawker." The clawker is balanced by a weighted rod, S, and is provided with journal-pins T, which rock in the slotted ends of a forked bracket, U, secured to a cross-bar or other suitable part of the spinning-machine. The clawker is also forked at its lower end, and slotted, as at V, to form bearings for the journals of a device, E′, called a "center," which consists of a block having a mortise formed entirely through it to receive the rod W, which is held in connection with the said block or center by a set-screw, W′. By means of the set-screw the block or center can be adjusted upon the rod W, the forward end of which rod is hinged to the forked lower end of the rocking lever *a*, which is fulcrumed in the forks of a bearing-bracket, *b*. This bracket is secured to an arm projecting from the angle-iron B of the spinning-machine. A rod, *c*, connects the lever *a* with a like rocking lever, *c′*, and from this rocking lever a rod, c^2, extends forward, the front end of said rod c^2 being turned at a right angle to its length and arranged to lie under the thread, *d*, which is being spun. While the thread bears upon the said rod and holds it in the position shown in full lines in Fig. 3 the clawker is held quite clear of the ratchet-wheel M′, and hence the tubular fluted sections G revolve with the shaft P, thus continuing to draw the worsted from the roving-spool and deliver it to the back carrying-rollers, H; but immediately the portion of thread which is running between the wood lap-board E and the front bottom roller, L, breaks, the weighted rod *s* overbalances the clawker R and the rods which connect it with the rod c^2, and lifts the upper end of the clawker into the teeth of the ratchet-wheel, which is thus prevented from revolving, and this, in turn, holds the fluted section stationary through the medium of the devices presently described. While the fluted section is stationary the clawker, weighted rod, center or block E′, and lever *a* occupy the respective positions shown by dotted lines in Fig. 3.

Instead of employing a weight capable of adjustment upon a screw-threaded rod I permanently secure the weight to the upper end of the rod and bend the rod toward the front

or back of the spinning-machine until the weight requisite to effectively lift the clawker into the teeth of the ratchet-wheel when the thread breaks is attained, the weight balancing the levers and wires, so that the running thread holds the clawker down with but little strain upon the thread. The shaft P is provided with a pair of the tubular fluted roller-sections, G, which are arranged loosely upon the shaft.

H′ designates a collar separating a pair of said sections, said collar being secured upon the shaft P by a set-screw, H^2. This collar has an internal circular groove, I′, at the center of its length, which receives a ring-spring, K′. This spring presses upon two pins or bars, L′, which lie in grooves G′, cut in the direction of the length of the collar. The ends of these pins project beyond the collar and take into recesses G^2 at one end of the fluted tubular sections or rollers, the inner face of each section between the recesses being provided with inclines m^3, as shown in the end view of one of the tubular fluted sections. Upon that end of each fluted section which is adjacent to the fixed collar H′ is fitted a ratchet-wheel, M′, having a line of internal ratchet-teeth, M^2, as clearly illustrated in the detail view, Fig. 7, of said wheel. The ratchet-wheels are also provided with studs m', which extend into recesses m^2 of the tubular fluted sections, thus coupling the ratchet-wheel and tubular sections together.

By referring to Fig. 5 it will be seen that one of the recesses G^2 of the tubular fluted section is widened for a portion of its length, so as to form the above-mentioned recess m^2. The ratchet-wheels are loosely fitted upon the ends of these tubular sections, so that the ratchet will be allowed a limited rotary movement upon the tubular fluted section on which it is arranged, the extent of said movement being limited by the recess m^2, in which the stud m' works.

In describing the operation of checking the rotation of these tubular fluted roller-sections, it will be understood that the devices for connecting or disconnecting the collar H and one of said tubular fluted sections are identical with the means employed for connecting said collar and the remaining tubular fluted section, and hence I will refer to the collar and one of said tubular fluted sections only.

The arm c^2 being depressed by the thread d, and the clawker being consequently freed from the ratchet-wheel, an arm, L′, of the collar H will enter one of the recesses G^2 of the tubular fluted section upon which the ratchet-wheel is arranged, as above described. The collar, being secured to the shaft, rotates with it, and hence, as the said collar rotates, the projecting arm or driving-pin L′ thereof acts against one of the shoulders m^4, formed by the inclines m^3, so as to cause the rotation of the tubular fluted section. The ratchet-wheel, being loosely arranged upon such tubular section, will not, of course, interfere with the driving-pin L′ during this movement of parts. If now, however, the thread breaks, the bent rod c^2 and the clawker will rise by reason of the weighted arm S, and hence the clawker will engage with the outer teeth of the ratchet-wheel, as shown in dotted lines, Fig. 3, and hold the ratchet-wheel stationary. A continuance in the rotation of the shaft and its collar H′ will cause a further rotation of the tubular fluted section until the driving-pin L′ strikes against the inclined edge of one of the inner ratchet-teeth, M^2, of the wheel, which is now stationary, whereby, as the shaft, collar, and driving-pin continue to rotate, the pin will be forced by the said inner ratchet-tooth out of the recess G^2 and toward the shaft. The driving-pin, after passing by this tooth, drops upon that face of the next incline m^3 which is opposite the shaft, and passes along the said face in the direction of the arrow, Fig. 6, until it strikes the next ratchet-tooth, over which it rides as before, and so on, thus having no opportunity to enter any one of the recesses G^2 until the clawker is freed from the ratchet. The width of the recess m^2 is just sufficient to admit of the pin m', during such operation, striking against one of the walls of said recess and checking the movement of the tubular fluted section so soon as the inner ratchet-teeth are in front of the recesses G^2, and in position to prevent the driving-pin entering said recesses while the ratchet-wheel is held stationary by the clawker. As soon as the clawker is released the spring K′, which acts upon the driving-pin, forces it away from the shaft and into one of the recesses G^2, the inner ratchet-teeth being now easily forced away from the front of the said reeesses by reason of the driving pin or arm acting against one of the said teeth.

In Fig. 9 the ratchet-wheel is shown with its inner teeth in front of the recesses of the tubular fluted section, in which position the driving-pin will ride over the inclines m^3, and also over the inner ratchet-teeth, so long as the ratchet-wheel is held stationary by a clawker.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a stop-motion for spinning-machines, the tubular fluted section G, provided with inclines m^3 and a recess, m^2, in combination with the shaft P, the collar H′, secured upon the shaft by a set-screw, a ring-spring, K′, within the collar, a pin, L′, held in the collar by said spring, and the ratchet-wheel M′, provided with stud m' and internal inclines or teeth M^2, all organized for operation substantially as specified.

2. In a stop-motion for spinning-machines, the combination of the vibratory clawker R and weighted rod S with the swiveled center block, E′, and its set-screw, the rocking lever a, and the rod W, connecting the rocking le-

ver with the block E′, the bent rod c^2, and connections between said rod and the said rocking lever, substantially as and for the purpose set forth.

3. In a stop-motion for spinning-machines, the combination of the vibratory clawker R, carrying a weighted rod, with the ratchet M′, tubular fluted roller G, rod W, the rocking lever *a*, rod *c*, connected with rod W by said rocking lever, and the bent rod c^2, arranged to be depressed by the thread which is being drawn forward, substantially as set forth.

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