

(No Model.)

W. H. ERSKINE.
STOP MOTION MECHANISM FOR SLUBBING, INTERMEDIATE, AND
ROVING FRAMES.

No. 534,431.

Patented Feb. 19, 1895.

Fig. 1.

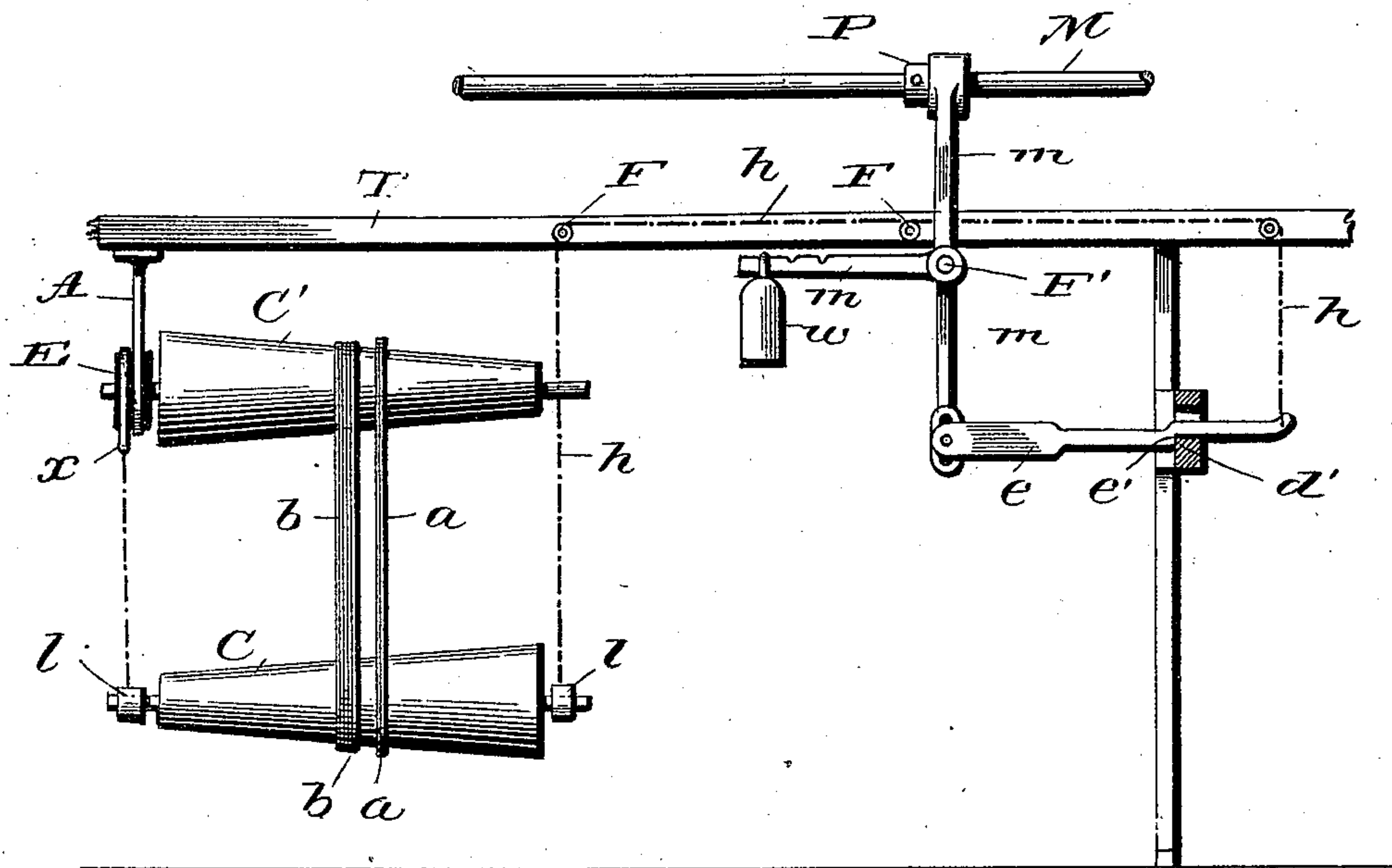


Fig. 2.

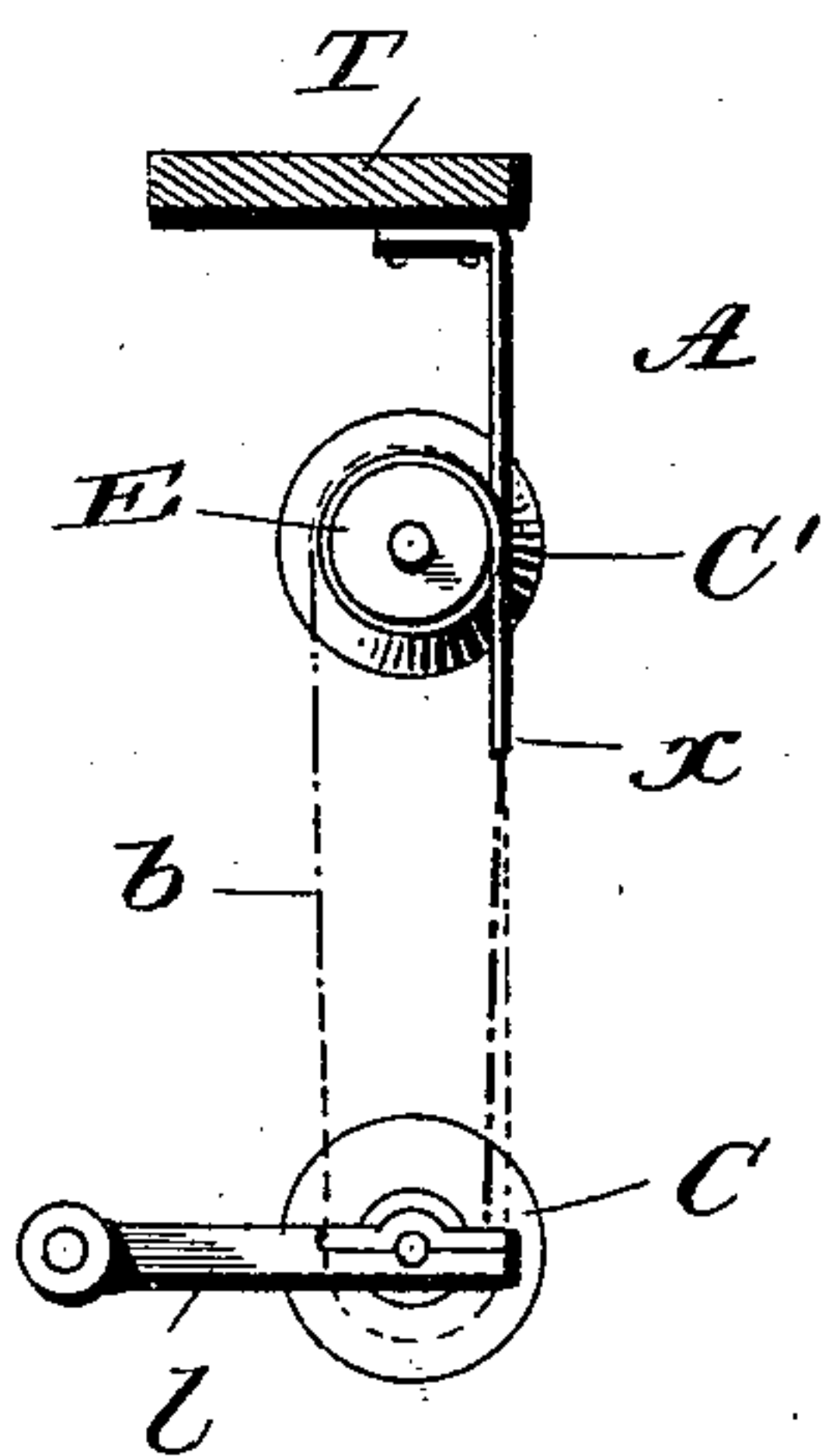
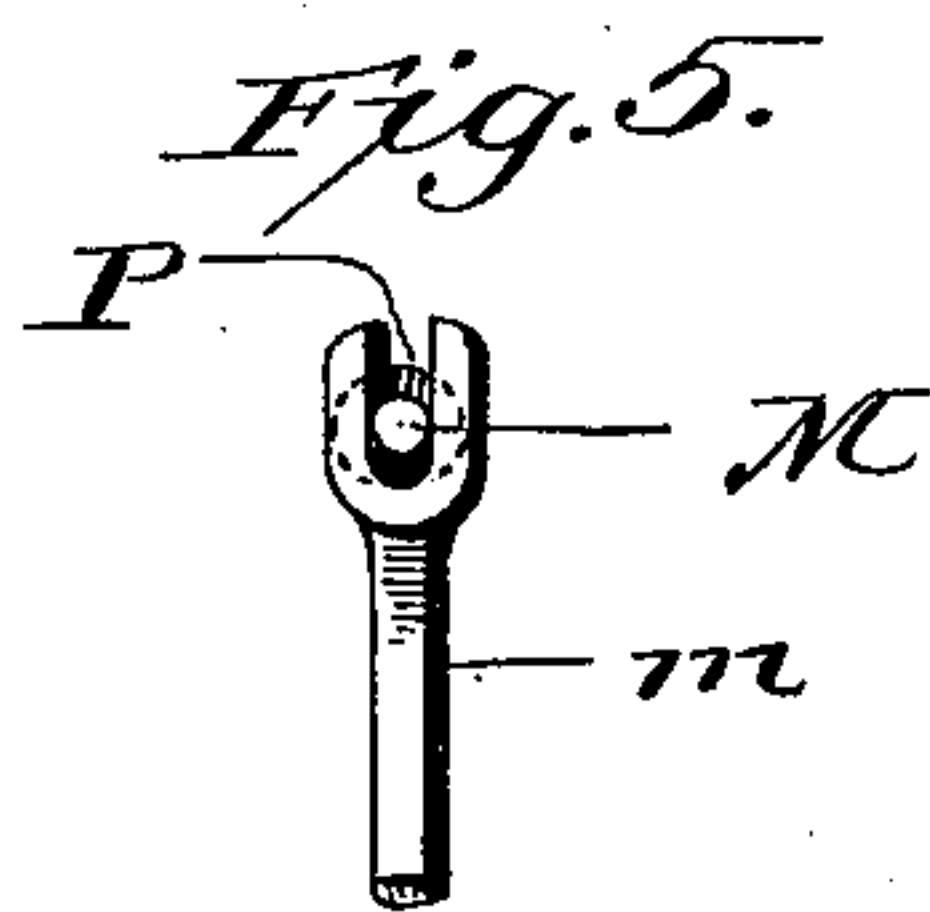
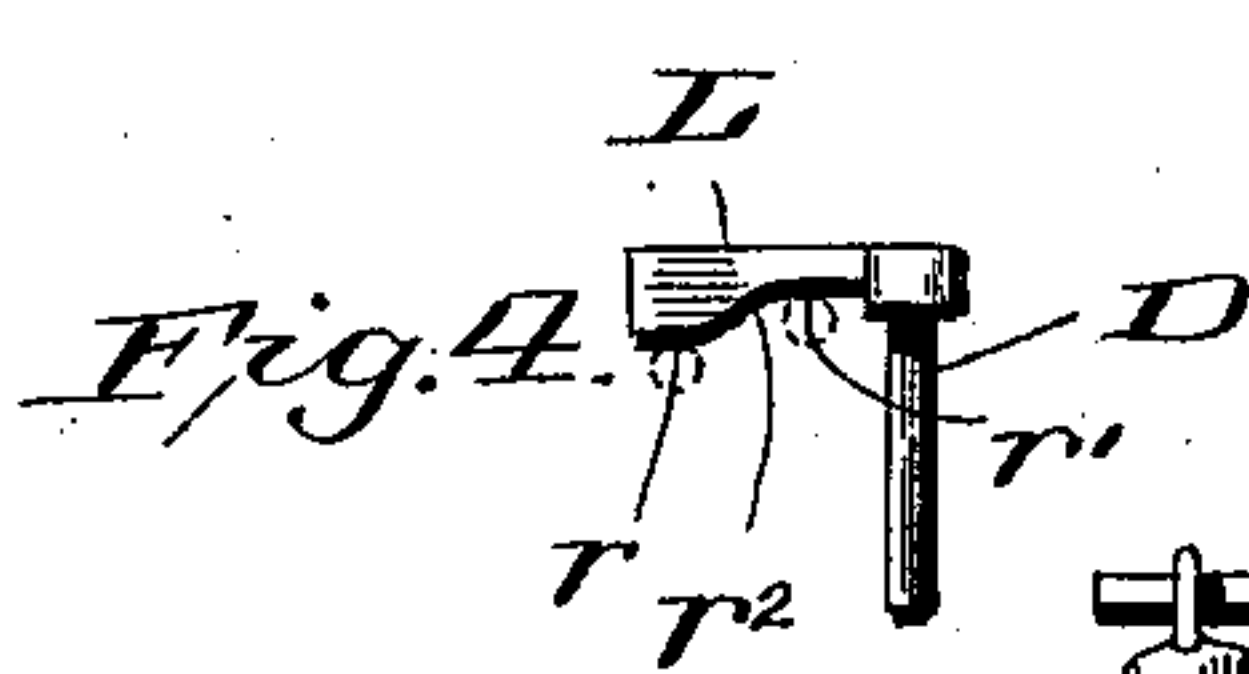
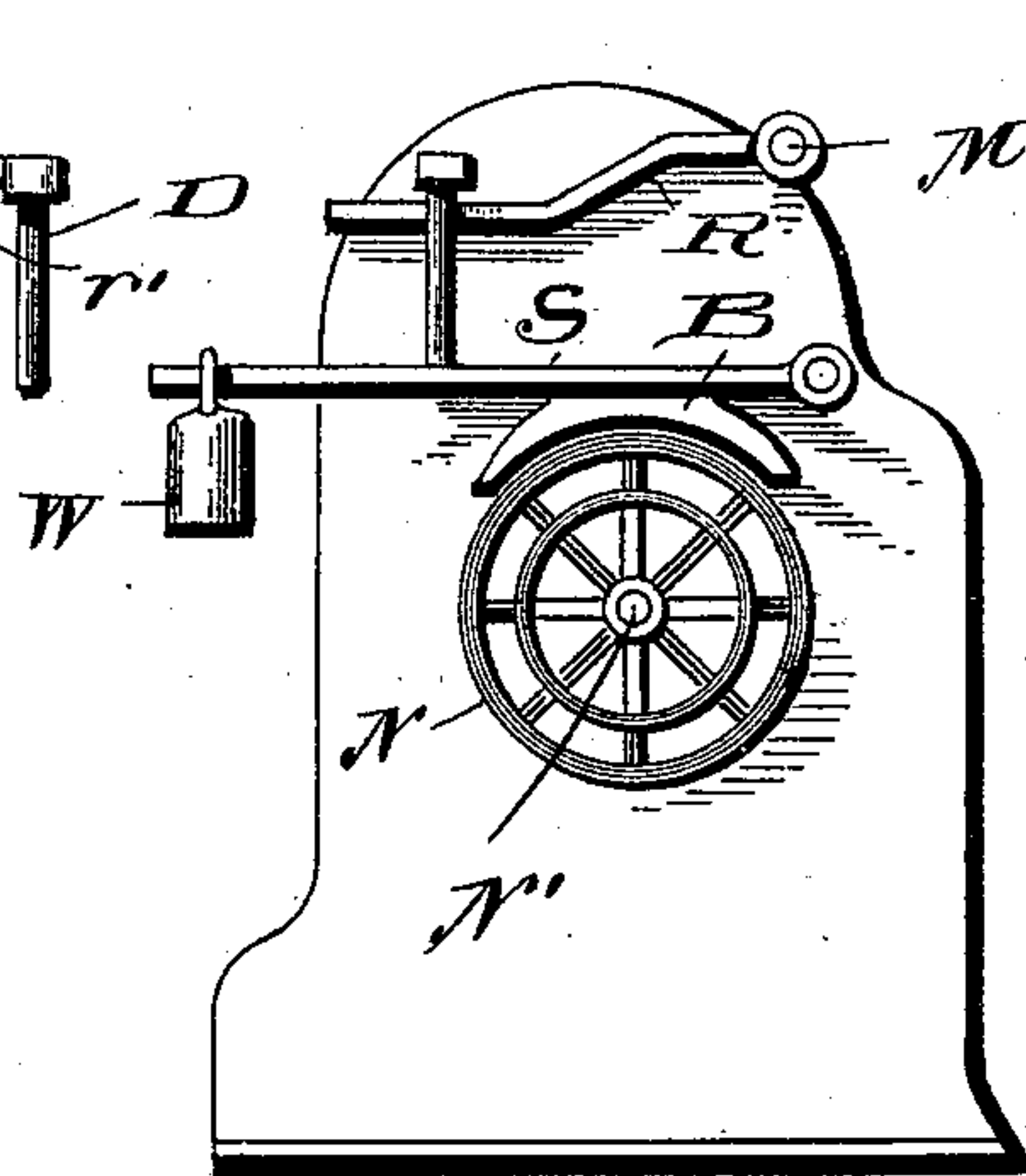


Fig. 3.



Witnesses
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UNITED STATES PATENT OFFICE.

WILLIAM H. ERSKINE, OF PAWTUCKET, RHODE ISLAND.

STOP-MOTION MECHANISM FOR SLUBBING, INTERMEDIATE, AND ROVING FRAMES.

SPECIFICATION forming part of Letters Patent No. 534,431, dated February 19, 1895.

Application filed August 2, 1894. Serial No. 519,309. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. ERSKINE, of Pawtucket, in the State of Rhode Island, have invented a new and useful Stop-Motion Mechanism for Slubbing, Intermediate, and Roving Frames, of which the following is a specification.

The stop motion to which my invention is directed is intended to operate only when the cone belt of the differential mechanism breaks—as it is liable to do and in fact not infrequently does. When the cone belt breaks in a roving frame the bobbin stops, but the fliers continue to run. This causes the ends of the yarn to break, and the yarn to tangle around the fliers, causing damage, delay and general disorder.

Under my invention the breaking of the cone belt causes, through the action of suitable intermediaries, the shipper to shift the driving belt from the fast to the loose pulley of the machine; and with these devices I further combine a friction mechanism which is called into action by the stop motion mechanism, and operates to overcome the momentum of the moving parts and to bring all parts speedily to a standstill.

The nature of my invention and the manner in which the same is or may be carried into effect will be readily understood by reference to the accompanying drawings, in which—

Figure 1 is a rear elevation of so much of a speeder or roving frame as needed to illustrate my invention. Fig. 2 is a cross section of the same, with the cone drums in end elevation. Fig. 3 is an elevation of that end of the frame where the balance wheel of the main shaft is located, showing a form of friction mechanism different from that shown in Fig. 1. Fig. 4 is a detail of the friction mechanism in Fig. 3. Fig. 5 is a cross section of the shipper shaft showing the manner in which it is engaged by the shipper lever.

Under my invention the lower cone drum is upheld by the cone belt, and unless so upheld will by gravity drop a certain distance. It is this drop of the lower cone drum which I avail of to arrest the movement of the machine.

T is the roller beam of the frame.

C and C' are the two cone drums forming

part of the usual mechanism for automatically varying the speed of the bobbins (assuming of course that the frame has a bobbin lead); and *b* is the cone belt. The lower cone drum C is capable of up and down motion and is upheld by the belt *b*. In the absence of this belt it would drop. This movement of the lower cone drum can be provided for in a variety of ways which will suggest themselves to the skilled mechanic. In the present instance it for this purpose has its bearings in the outer ends of levers *l* pivoted at H to the main frame.

To the end of one of the levers *l* is attached a chain *h* which runs over idler pulleys F to a catch lever *e* to the free end of which it is attached. This catch lever at its other end is jointed by a pin and slot connection to one arm of the three armed shipper lever *m* having its fulcrum at F', its upper arm being jawed at its end to straddle the longitudinally movable shipper shaft M, and its horizontal or intermediate arm carrying the weight *w* by which the shipper lever, when released, is caused to throw the shipper shaft in a direction to shift the driving belt from the fast to the loose pulley of the main shaft of the machine. For this purpose the jawed end of the shipping lever abuts against a shoulder P on the shipper shaft.

The catch lever *e* at a point between its two ends passes through a catch bracket *d* which has a shoulder *d'* to engage a like shoulder *e'* on the catch lever. When the two are thus engaged the parts are in normal position and the lower cone drum C is upheld by the belt *b*. Should however the belt break then the lower cone drum will at once drop. The effect of this movement of the drum will be to pull on the chain *h*, which in turn pulls up the catch lever *e* out of engagement with the catch bracket. This releases the shipper lever *m*; and the latter at once is caused by its weight *w* to throw the shipper shaft in a direction to throw the driving belt from the fast to the loose pulley of the driving shaft of the machine.

The main shaft is indicated at N' Fig. 3.

N is the balance wheel, and the fast and loose pulleys are usually on the main shaft just outside of the balance wheel. I have however omitted the pulleys as well as the

shipper fork carried by the shipper shaft M and the driving belt controlled by said fork—these instrumentalities being old and well known and differing in no wise from those found in ordinary roving frames or speeders.

I have shown at *a* a belt on the cone drums alongside of the main cone belt *b*. This second belt is not indispensable, but its use is attended with advantages which make its presence desirable. This belt *a* so long as the belt *b* is intact is an idle belt without function. It is slightly longer than belt *b*—enough longer in fact to permit the lower cone drum to drop far enough to unlatch the catch lever *e* before it brings up against the belt *a*. Under these conditions and after the lower cone drum has in dropping been caught by the belt *a*, the latter will do the work of the belt *b* until the machine stops; and owing to momentum the machine is apt to run a few revolutions even after the shipper has acted.

It is very desirable to overcome the momentum of the machine so as to bring it to a standstill as nearly as possible at once after the driving belt has by the shipper shaft been thrown from the fast to the loose pulley. To this end I provide a brake mechanism which also is called into action by the dropping or downward movement of the lower cone drum, and which when thus brought into action serves as a drag to stop further movement of the parts due to momentum. Various forms of such brake mechanism can be used for the purpose. One form is shown in Figs. 1 and 2. Upon the axle of the upper cone drum *C'* is a pulley *E*.

To the roller beam *T* is attached one end of the elastic band or strap *A*, which takes a turn around the pulley *E* and has its free end connected to one of the pivoted lever arms *l* by a chain *x*. When the lower cone drum with its levers *l* drops the strap *A* by the chain *x* will be pulled tight around the pulley *E*, thus forming a band brake for overcoming the momentum of the machine.

Another form is illustrated in Figs. 3 and 4. In this arrangement there is placed over or upon the balance wheel *N* of the main shaft *N'* a brake shoe *B* adapted to fit and bear against the periphery of the wheel, but normally held away therefrom. To this end it is attached to and carried by the lever *S* pivoted to the frame of the machine, and weighted at *W*, so that when free its brake shoe *B* may be pressed forcibly down upon the balance wheel *N*. The brake lever *S* is held up by a rod *D* attached to it and carrying at its top a horizontal piece *L* which extends cross-wise of an arm *R* attached to and projecting from the longitudinally movable shipper shaft *M* and extending underneath the piece *L*. The under side of this piece is provided with a swell *r* and a recess *r'* connected by an incline *r²*. When the arm *R* is under the swell *r* the brake lever will thereby be lifted so as to raise the brake shoe out of contact with the balance wheel, and this is the normal con-

dition of things so long as the machine is running; but the moment the shipper shaft moves in a direction to throw the driving belt from the fast to the loose pulley, the arm *R* will pass from the swell *r* into the recess *r'* thus allowing the brake lever and shoe to drop and act to check the continued movement of the balance wheel.

I here remark that in lieu of having the lower cone drum movable the upper cone drum may be thus arranged instead; in which event the levers *l* supporting said drum would be combined with springs which would pull them upward whenever released from the restraining influence of the belt *b*; and in this event the motion transmitting mechanism between the levers *l* and the shipper would be modified so as to respond to an upward instead of a downward movement of the levers *l*. This however would be a mere reversal of parts, the equivalent of what I have herein illustrated, and which I desire to be understood as including in my claim.

Having described my improvements and the best way now known to me of carrying the same into effect I state in conclusion that I do not restrict myself to the mechanical details hereinbefore set forth in illustration of my invention for manifestly the same can be widely varied without departure therefrom, but

What I believe to be new, and desire to secure by Letters Patent, is—

1. The combination with the upper cone drum and cone drum belt, of the lower cone drum capable of up and down movement and free to drop when not upheld by the cone drum belt, the shipper shaft and intermediate mechanism whereby this downward movement of the lower cone drum is caused to throw the shipper shaft in a direction to stop the machine, substantially as and for the purposes hereinbefore set forth.

2. The combination with the upper cone drum and cone drum belt of the lower cone drum, capable of up and down movement and free to drop when not upheld by the cone drum belt, the shipper shaft and intermediate motion transmitting mechanism between said shaft and the lower cone drum, and an ancillary belt *a* for limiting the extent of drop of the cone drum, substantially as and for the purposes hereinbefore set forth.

3. The combination of the two cone drums and the cone drum belt, the pivoted levers *l* on which the lower cone drum is mounted, the shipper shaft, the weighted automatically acting shipper lever, the catch or latch for holding said lever against the stress of its weight, and the chain connected on the one hand to one of the levers *l* and on the other hand to the latch—the combination being and acting substantially as set forth.

4. The combination of the upper and lower cone drums, the latter movable up and down; the cone drum belt upholding the lower cone drum; the shipper shaft; intermediate motion

transmitting mechanism whereby the drop of the lower cone drum is caused to throw the shipper shaft in a direction to stop the machine; and an automatic brake mechanism 5 also called into action by the drop of the lower cone drum and operating to check the after movement of the machine, substantially as and for the purposes hereinbefore set forth.

5. The combination with cone belt and the 10 cone drums arranged and adapted to move the one away from the other when freed from the restraining influence of the belt which holds

them together, of the shipper shaft and intermediate mechanism whereby this movement of the one cone drum from the other is trans- 15 mitted to and caused to move the shipper shaft in a direction to stop the machine, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM H. ERSKINE.

Witnesses:

CHARLES M. READ,
R. B. HORTON.