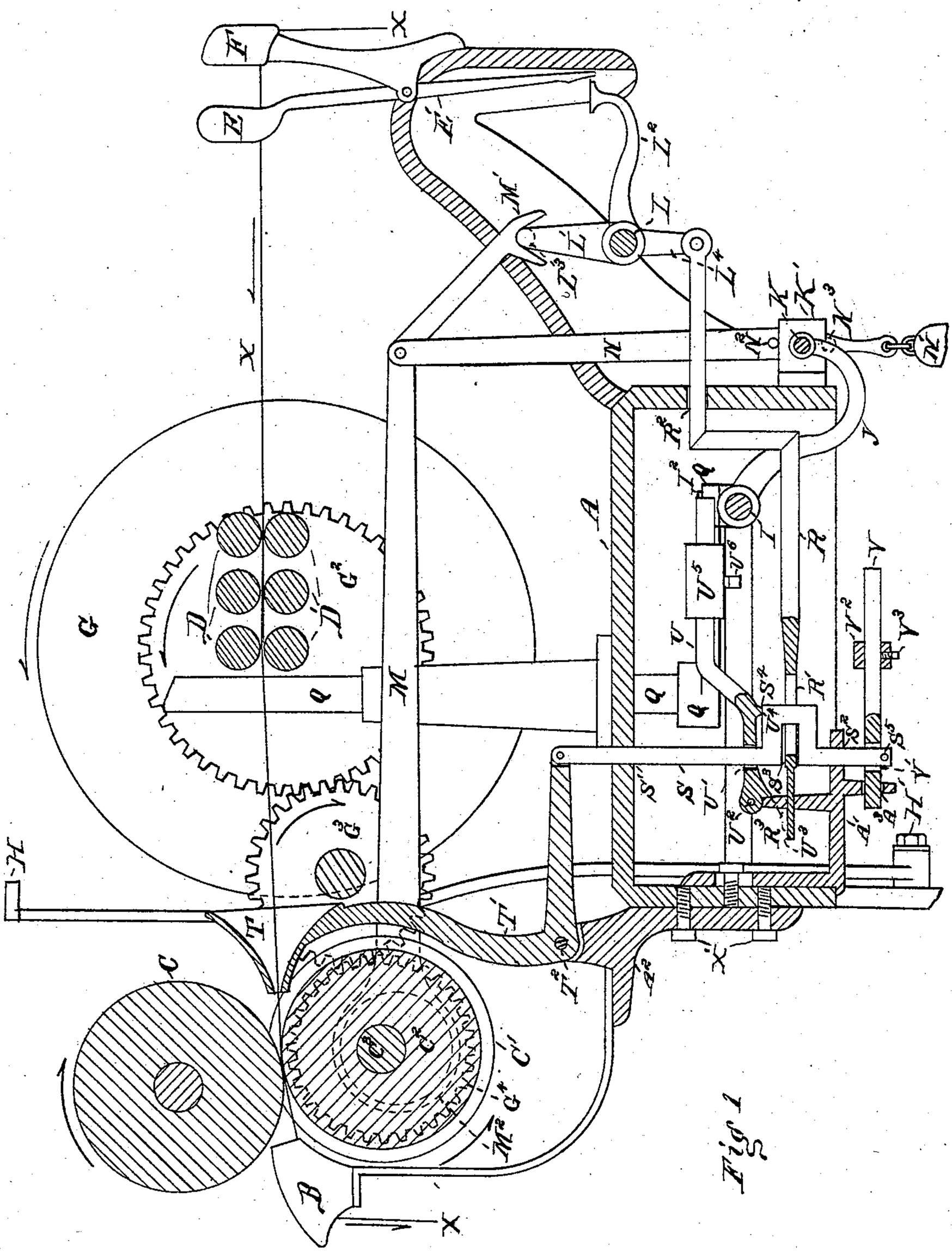
(No Model.) 2 Sheets—Sheet 1.

H. B. ESTES.

STOPPING MECHANISM FOR DRAWING FRAMES.

No. 289,902. Patented Dec. 11, 1883.



Witnesses—
Kirkley Hyde.
Austin S. Ladd

Inventor—
Henry B. Estes,
By Albert M. Moore,
His Attorney

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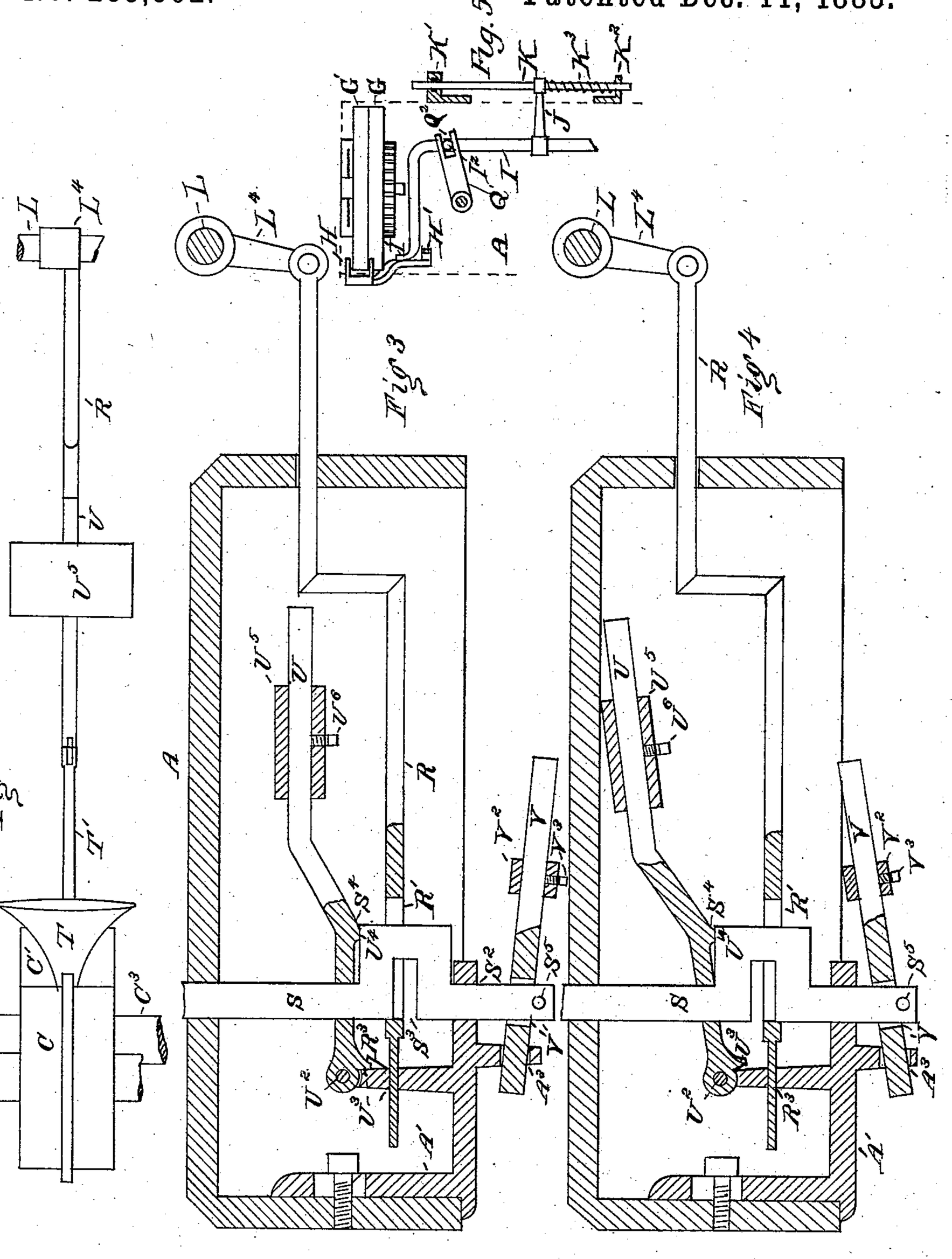

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His Attorney.

UNITED STATES PATENT OFFICE.

HENRY B. ESTES, OF MANCHESTER, NEW HAMPSHIRE.

STOPPING MECHANISM FOR DRAWING-FRAMES.

SPECIFICATION forming part of Letters Patent No. 289,902, dated December 11, 1883.

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

To all whom it may concern:

Be it known that I, HENRY B. ESTES, a citizen of the United States, residing in Manchester, in the county of Hillsborough and State of New Hampshire, have invented certain new and useful Improvements in Stopping Mechanism for Drawing-Frames, of which the following is a specification.

My invention relates to stopping mechanism for drawing-frames; and it consists in mechanism adapted to be operated by a breakage of the sliver or by bunches on the sliver, said mechanism being placed between the drawing-rolls and the calender-rolls and used in connection with the ordinary back stop-motion.

In the accompanying drawings, on two sheets, Figure 1 is a transverse section of the upper part of the frame, drawing-rolls, calender-rolls, front trumpet, and rock-shaft, showing my improved front stop-motion and its connection with the ordinary back stop-motion; Fig. 2, a detached plan of the front trumpet, slotted slide, and part of the rock-shaft; Figs. 3 and 4, transverse sections of part of the frame, rock-shaft, slotted slide, vertical rod, and weighted levers, the motion of the slide being shown as arrested in each figure, in Fig. 3 by the falling of the vertical rod due to the breaking of the sliver, and in Fig. 4 by the rising of the vertical rod due to bunches in the sliver; Fig. 5, a plan of the spring-rod, shipping-rod, and their connection, and of the belt-shipper and fast and loose pulleys.

A is the frame; B, the front guide; C C′, the calender-rolls; D D′, upper and lower drawing-rolls; E, the back trumpet, mounted on its lever E′; F, the back guide; G G′, the driving-pulley and loose pulley; G^2 G^3 G^4, the gears which communicate motion from the driving-pulley to the lower calender-rolls, C′; H, the belt-shipping fork, pivoted at its lower end, H′, to the frame A; I, the bent sliding shipping-rod, jointed at its front end, I′, to the fork H; J, a rod rigidly connecting the shipping-rod I and the spring-rod K, the latter sliding in brackets K′ K^2 on the back of the frame A; L, the rock-shaft, provided with arms L′ L^2; M, a connecting-rod having at its rear end a downhanging fork, M′, with downwardly-diverging branches, which engage with a rod, L^3, which connects the arms L′, there being generally two such arms in a drawing-frame, said rod M having at its front end a ring or strap, M^2, surrounding an eccentric, C^2, secured to the shaft C^3 of the lower calender-roll, C′, and said rod M being caused to reciprocate by the revolution of said eccentric; N, a vertical rod pivoted to and hanging from the rod M and running down through the bracket K′, and having a weight, N′, attached to its lower end, and having, also, a pin, N^2, which limits its downward motion by coming in contact with the upper side of said bracket K′, and having, also, a hole, N^3, (shown by dotted lines in Fig. 1,) into which hole the spring-rod K is pushed by the spring K^3 whenever the rod N is slightly raised; Q, the vertical shaft of the shipper, the lower end thereof having an arm, Q′, which is slotted at Q^2 to engage with a pin, I^2, on the top of the rod I, so that partially revolving the shaft Q in one direction will slide the rod I, which, being, as above stated, jointed to the belt-shipping fork H, will cause said fork to swing on its pivot and its forked upper end to ship the belt from the loose to the fast pulley, and of course turning the shaft Q in the other direction will cause the belt to be shipped from the fast to the loose pulley, all of the above-named parts being constructed, supported, and operated in the usual manner, except that I add another arm, L^4, to the rock-shaft L, for purposes hereinafter described.

It is only necessary to add to the foregoing that when the sliver X breaks or becomes too attenuated back of the drawing-rolls the back trumpet, E, tips back, throwing forward the lower end of the lever E′ above the arm L^2, and prevents the rock-shaft L from being oscillated by the forward movement of the rod M, and the rod last named being drawn forward, as above described, the rear branch of its fork M′ will slide up on the rod L^3, lifting the rear end of the rod M, and raising the rod N enough to allow the spring-rod K to enter the hole N^3. When the spring-rod slides, the rod I also slides, and moves the fork H, carrying the belt, from the fast to the loose pulley.

My invention is used in connection with the above-described well-known devices.

To the arm L^4, which projects downward from the rock-shaft and moves with it, I pivot the slide R, which is bent, as shown, to bring the front end below the arm L^4, and is provided near its front end with a vertical slot, R′, and slides, as the rock-shaft is oscillated, in bearings R^2 R^3 in the frame A and bracket A′, respectively. The front trumpet, T, is supported upon a bent lever, T′, pivoted at T^2 to the bracket A^2, this bracket, as well as the bracket A′, being secured to the frame A by screws X′, or being a part of said frame. The rear end of the bent lever T′ is pivoted to a rod, S, capable of sliding vertically (in bearings S′ S^2 in the frame A and bracket A′, respectively) through the slot R′ in the slide R when the lever T′ is turned upon its pivot in either direction. The rod S has on its front side a horizontal slot, S^3, of sufficient size vertically to allow the slide R at the front of the slot R′ to enter and leave said slot S^3 freely when the last-named slot is at the proper height; but when the slot S^3 rises above or falls below the slot R′, the front end of said slot R′ will strike the rod S, and the slide R will be prevented from being drawn back, and the rock-shaft L, having its arm L^4 pivoted to said slide, will not be rocked by the forward motion of the rod M, as above explained, the rod N will be raised high enough to allow the spring-rod K to slide into the hole N^3, causing the rod I, rigidly connected to the rod K, as above described, to slide and swing the belt-shipping fork, and the belt will be shipped onto the loose pulley, and the machine will be stopped.

A lever, U, slotted at U′ to allow the rod S to pass down through it, and pivoted at U^2 to the bracket A′, has on its under side a lip or stop, U^3, which limits its downward motion by striking against said bracket A′, and also has a bearing-point, U^4, which presses upon the projection S^4 on the back of the rod S, and tends to hold said rod S low enough to allow the slide R to be drawn back by the rock-shaft, and this pressure of the lever U is approximately adjusted by means of the weight U^5, (sliding on said lever, and held at any desired distance from the fulcrum U^2 by the set-screw U^6, turning in said weight and against said lever,) so as nearly to counteract the normal and constant tendency of the sliver X (by its friction against the inside of the trumpet T) to draw said trumpet T forward.

To secure a more accurate adjustment, and to cause the trumpet T to fall forward when the friction of the sliver in said trumpet T becomes less than normal, (as by the breaking of one of the doublings which form the sliver,) another lever, V, is at one end let into the hole A^3 near the lower end of the bracket A′, and is slotted at V′ to let the rod S pass down through it, and rests upon the pin S^5, projecting horizontally from said rod S. This lever V has a sliding weight, V^2, set by a screw, V^3, turning in said weight and thrusting against said lever. The final adjustment of the pressure of said lever V (the weight U^5 having been previously adjusted, as above set forth) should be such as barely to prevent the rod S from being lifted by the normal friction of the sliver X in the trumpet.

Evidently, when the machine is running properly and the sliver is of the uniform size required, the rod S will not interfere with the operation of the machine; but when the sliver is broken or attenuated the rod S will be drawn down by the lever V; and, on the other hand, when there are bunches or enlargements of the sliver too large to pass readily through the front trumpet, the same will be drawn forward and the rod S will be raised, and in either case the machine will be stopped, as already explained.

I claim as my invention—

1. The combination, with the rock-shaft L, provided with the arm L^4, and the slotted slide R, pivoted to said arm, of the rod S, provided with the slot S^3, the front trumpet, T, its lever T′, and mechanism for stopping said machine upon the stopping of said rock-shaft, as and for the purpose specified.

2. The combination, with the rod M, provided with the fork M′, as described, and means for reciprocating said rod, of the rod N, weighted and provided with the hole N^3, as described, the rods K I, rigidly connected to each other, the spring K^3, the brackets K′ K^2, the belt-shipping fork H, pivoted to the frame A and to said rod I, said frame A, the rock-shaft L, provided with the arms L′ L^4, the slotted slide R, the slotted rod S, the trumpet T, its lever T′, and the lever V, weighted as described, as and for the purpose specified.

3. The combination, with the rod M, provided with the fork M′, as described, and means for reciprocating said rod, of the rod N, weighted and provided with the hole N^3, as described, the rods K I, rigidly connected to each other, the spring K^3, the brackets K′ K^2, the belt-shipping fork H, pivoted to the frame A and to said rod I, said frame A, the rock-shaft L, provided with the arms L′ L^4, the slotted slide R, the slotted rod S, the trumpet T, its lever T′, the lever V, weighted as described, and the lever U, weighted as described, as and for the purpose specified.

HENRY B. ESTES.

Witnesses:
WALTER M. FULTON,
CHARLES F. NUGENT.