No. 638,943. Patented Dec. 12, 1899.

C. E. SMITH.

STOP MOTION FOR CARDING MACHINES.

(Application filed Mar. 16, 1899.)

(No Model.) 3 Sheets—Sheet 1.

Fig. 1.

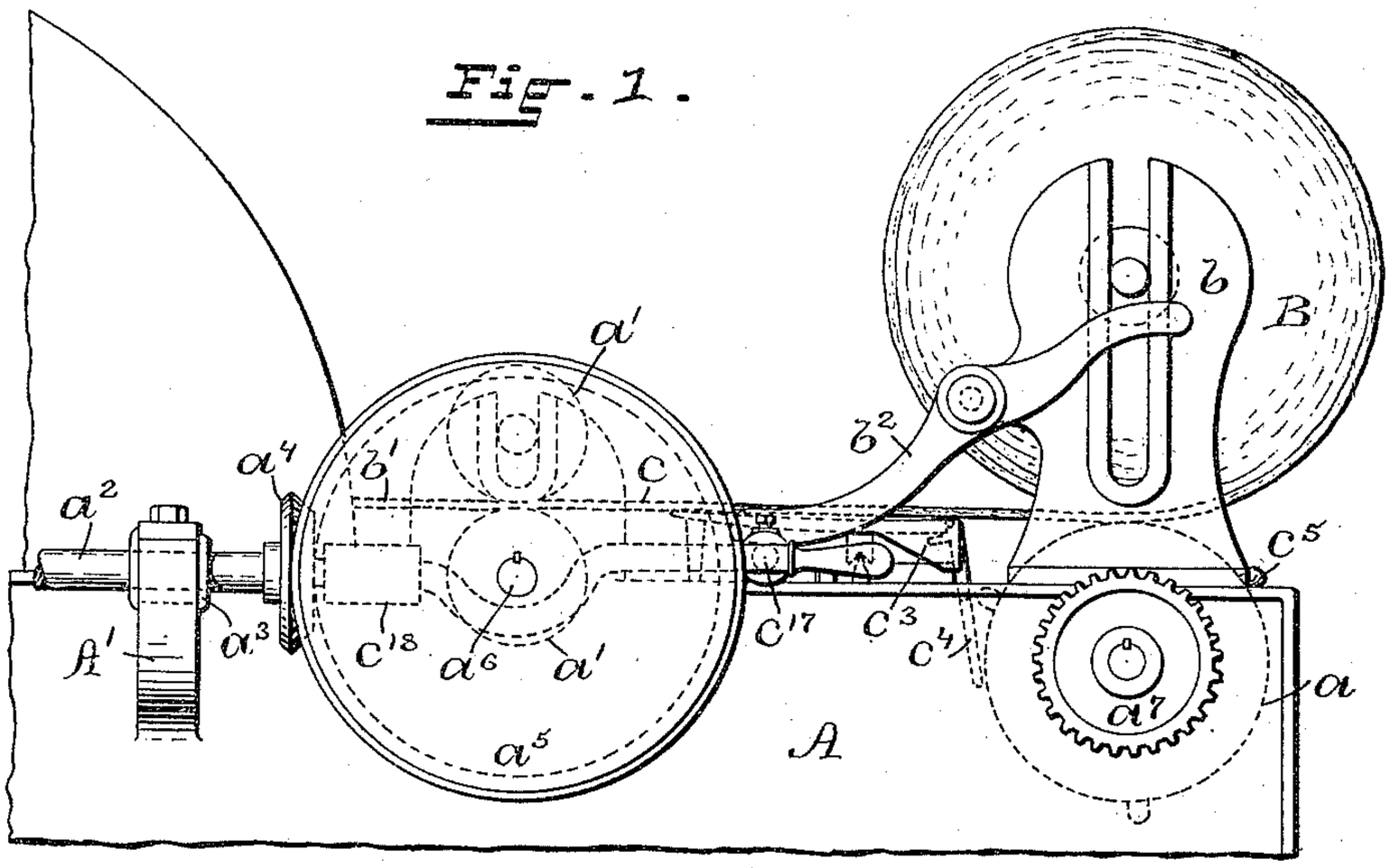

Fig. 2.

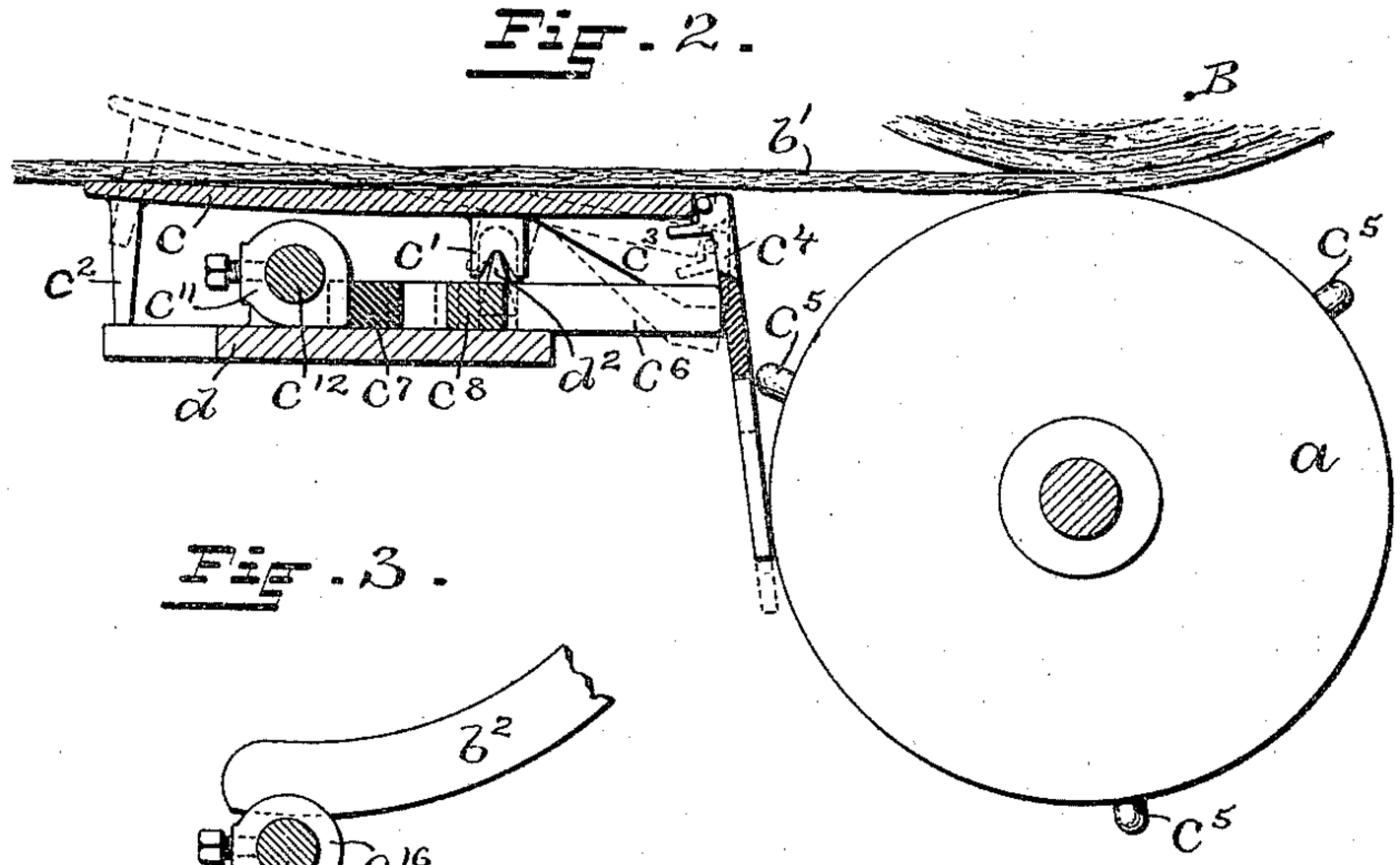

Fig. 3.

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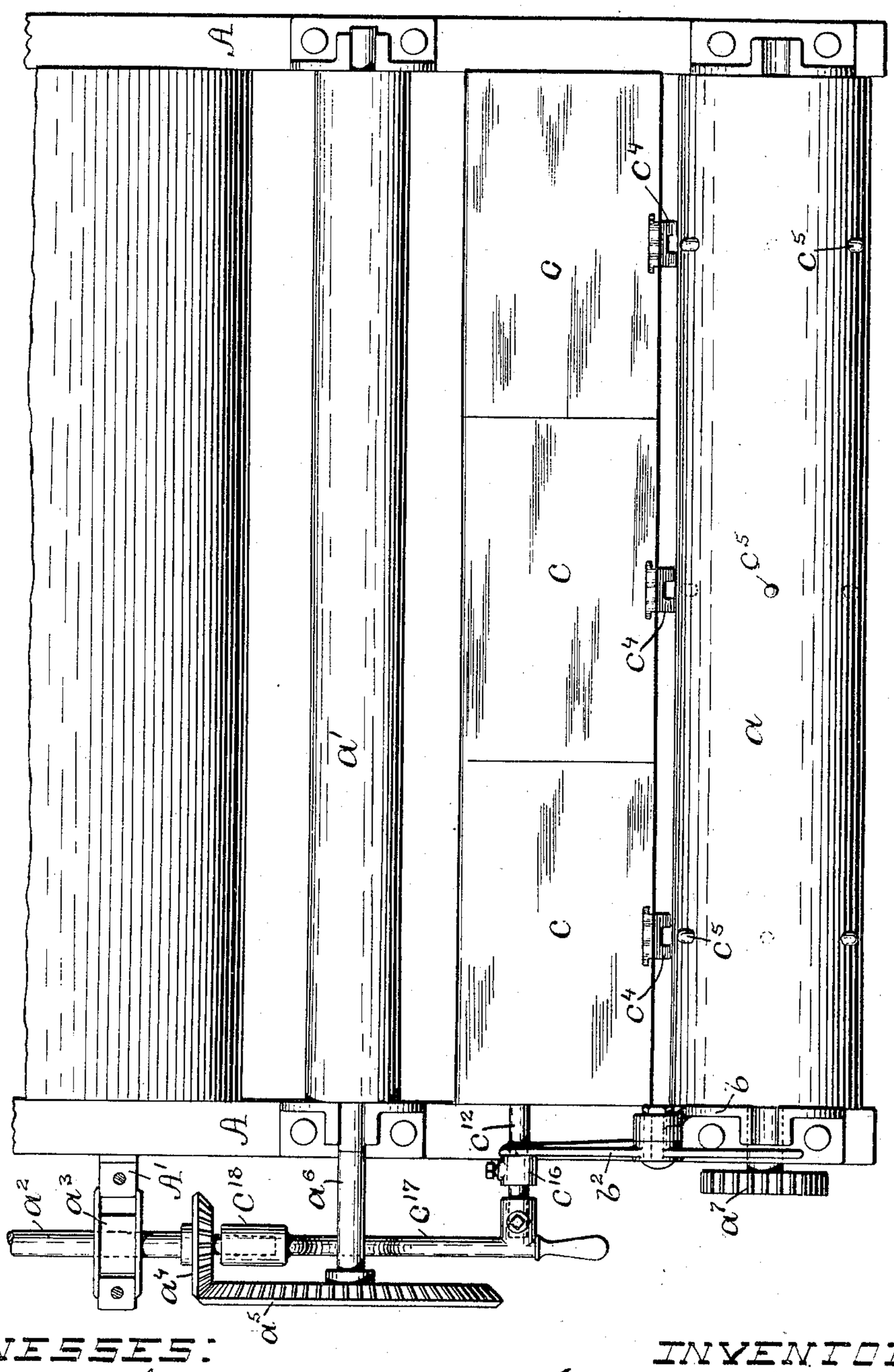
Fig. 4.



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(No Model.) 3 Sheets—Sheet 3.

Fig. 5.

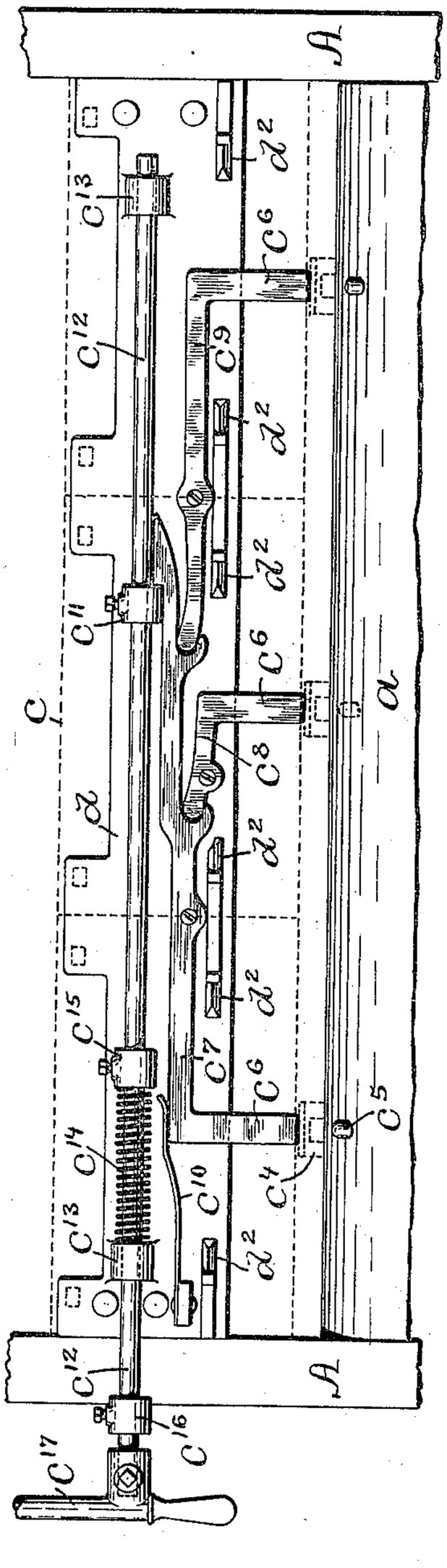
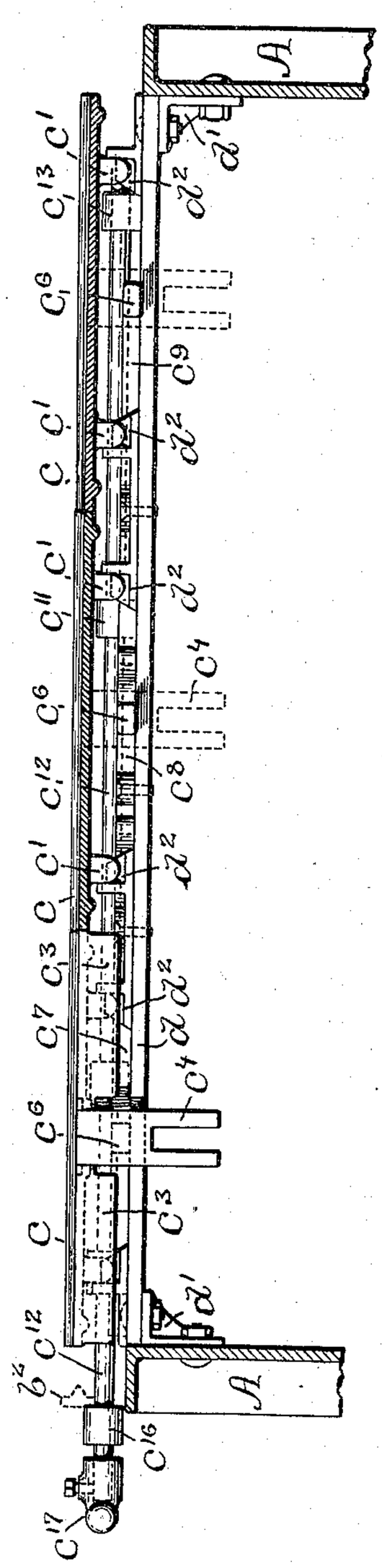


Fig. 6.



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UNITED STATES PATENT OFFICE.

CYRUS E. SMITH, OF FALL RIVER, MASSACHUSETTS, ASSIGNOR TO THE WHITIN MACHINE WORKS, INCORPORATED, OF WHITINSVILLE, MASSACHUSETTS.

STOP-MOTION FOR CARDING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 638,943, dated December 12, 1899.

Application filed March 16, 1899. Serial No. 709,258. (No model.)

To all whom it may concern:

Be it known that I, CYRUS E. SMITH, of Fall River, in the county of Bristol and State of Massachusetts, have invented a new and useful Improvement in Stop-Motions for Carding-Machines; and I hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification.

In a carding-machine the regular feeding of a uniform quantity of lap is essential to the even carding of the fiber. When the lap is torn or the frayed end of the lap is supplied, the carding-cylinders are not evenly supplied with the normal quantity of fiber, and a defective fleece is consequently delivered.

This invention has reference to an improvement in carding-machines by which the delivery of the lap is controlled; and it consists in the peculiar and novel construction whereby the feeding of the lap to the carding-machine is controlled, as will be more fully set forth hereinafter.

Figure 1 is a side view of part of the feeding end of a carding-machine provided with my improvement. Fig. 2 is an enlarged sectional view showing the stop-motion in connection with the lap and the feed-roller. Fig. 3 is an end view of a detail showing the forward end of the stop-arm engaged with a collar on the stop-rod. Fig. 4 is a top view of the feed end of the carding-machine with the lap and lap-roll removed. Fig. 5 is a plan view showing the mechanism of the stop-motion. Fig. 6 is a transverse view, partly in section, of Fig. 5.

Similar marks of reference indicate corresponding parts in all the figures.

In the drawings, A indicates the side frames of the carding-machine, a the feed-roller on which the lap-roll B is supported, and a' a' the calender-rolls, by which the delivery of the lap to the carding-machine proper is controlled. In carding-machines one of the calender-rolls is usually driven at the required speed by gears or a belt, and this calender-roll, usually the lower roll, is connected by gears with the feed-roller supporting the lap-roll, so that the stopping of the calender-roll arrests the whole of the mechanism controlling the delivery of the lap.

In illustrating the application of my invention to a carding-machine I have shown the lower of the calender-rolls driven by bevel-gears from a shaft usually connected with the doffer and have omitted the gears connecting the lower of the calender-rolls with the gear on the feed-roller supporting the lap-roll, so as to show more clearly my lap stop-motion.

The shaft a^2 is journaled in the bearing a^3, which is constructed to slide in the supporting-bracket A'. The bevel-gear a^4, secured to the shaft a^2, engages with the bevel-gear a^5, secured on the shaft a^6 of the lower calender-roll a', and from the shaft a^6 power is transmitted to the gear a^7 on the shaft of the feed-roller a in the usual manner. The lap-roll B is held vertically over the feed-roller a by the fiddlestick or slotted bracket b. The lap b' is drawn usually by giving to the calender-rolls a greater surface speed than to the feed-roller a in a stretched condition toward the calender-rolls. Under the lap b', and preferably in contact with its under surface, I place a lap-table formed of two or more plates c c—three being shown in the drawings. The plates c c are provided on their under side with the posts c' c', near one end with the feet c^2 c^2, and at the other end with the weights c^3 c^3, extending nearly the whole of the width of the plates. The plates c c are supported on the plate d, secured to the two side frames A A, by the brackets d' d', as is shown in Fig. 6, the posts c' resting on the rocking supports d^2 d^2, on which the plates rock and assume the tilted position (shown in broken lines in Fig. 2) when the lap is broken or is too weak to hold all the plates in the horizontal position, with the feet c^2 in contact with the plate d. To the edges of each one of the plates c c nearest the feed-roller a are pivotally secured the plates c^4 c^4, the lower ends of which are slotted, and to the feed-roller a are secured the pins c^5, so as to register with and in the normal position occupied by the plates c^4 to pass through the slots in the lower ends. c^6 c^6 are arms projecting from the levers c^7, c^8, and c^9. The ends of the levers c^8 and c^9 engage with hooks formed on the lever c^7. The spring c^{10} bears on one end of the lever c^7 and holds the shoulder formed on the other end of the lever c^7 against the adjustable collar c^{11} on the stop-rod c^{12}, which when released slides in the

bearings c^{13} c^{13}, moved by the coiled spring c^{14} bearing against one of the bearings c^{13} and against the collar c^{15}, secured to the stop-rod c^{12}. A collar c^{16} is secured to the stop-rod c^{12} near its outer end, and the end of the stop-rod is pivotally secured to the hand-lever c^{17}. The socket c^{18} on the other end of the hand-lever extends over the end of the shaft a^2, projecting beyond the bevel-gear a^4.

When the lap is being supplied by the calender-rolls, the plates c c are maintained in their normal position by the strained laps. The stop-rod c^{12} and the hand-lever c^{17} remain in the positions shown in Figs. 4 and 5, with the bevel-gear a^4 in engagement with the bevel-gear a^5, the feed-roller a and the calender-rolls a' a' being driven to supply the lap. When now a torn portion of the lap passes over any one of the plates c c or the end of the lap passes over these plates, the plate over which the torn portion of the lap passes or the plates over which the end of the lap passes are tilted by the counterweight c^3 into the position shown in broken lines in Fig. 2. The plate or plates c^4, pivotally secured to the plates c c, descend, and the first of the pins c^5 on the feed-roller in turning encounters the solid portion of the plate c^4 and swings the same against the arm c^6 corresponding with the plate c^4 so moved, thereby operating the lever c^7 direct through the lever c^8 or through the lever c^9 to disengage the end of the lever from the collar c^{11} and releasing the stop-rod c^{12}, which, sliding inward by the force exerted by the coiled spring c^{14}, draws the hand-lever c^{17} toward the side frame and with it the shaft a^2, causing the journal-bearing a^3 to slide inward and moving the bevel-gear out of engagement with the bevel-gear a^5, thereby disconnecting the driving mechanism operating the feed-roller and the calender-rolls and stopping the delivery of the lap. When the delivery of the lap is stopped, the attendant pieces up the lap and drawing the hand-lever c^{17} outward to engage the bevel-gear a^4 with the bevel-gear a^5 places the end of the lever b^2, pivotally secured to the fiddlestick b, on the side of the collar c^{16} to lock the stop-motion and by hand assists the delivery of the lap until the solid lap under tension acts to hold the plates c in the horizontal position, when the lever b^2 is again raised and the stop-motion is again in the position to control the delivery of the lap.

I do not wish to confine myself to the exact construction herein shown and described, as changes in construction and modifications may be made without materially affecting the operation of my invention.

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

1. In a carding-machine, the combination with the feed-roller supporting the lap-roll, and the calender-rolls, of a plate, or table, pivotally supported and bearing against the lap in its passage to the calender-rolls, a counterweight on the plate, or table, a hand-lever connected with the driving mechanism, and mechanism, whereby the tilting of the plate or table operates a member to engage with the feed-roller to disconnect the driving mechanism from the lap-feeding mechanism, as described.

2. In a carding-machine, the combination with the mechanism for driving the calender-rolls and the feed-roller supporting the lap-roll, of a stop-motion comprising a tilting plate or table held in the normal position by the passage of the lap over its upper surface, a detachable member in the calender-roll-driving mechanism, a hand-lever connected with the detachable member, locking means to hold the hand-lever in the operative position, and mechanism intermediate the tilting plate or table, the feed-roller and the locking device, whereby the tilting of the plate or table causes the release of the locking device and the stopping of the calender-rolls to arrest the delivery of the lap, as described.

3. In a stop-motion controlling the delivery of the lap to the cards, the combination of the following instrumentalities: a carding-cylinder, a feed-roll arranged to support the lap-roll, a pair of calender-rolls, a plate or table extending under the path of the lap, a pivotal support for the plate or table, a member pivotally connected with the tilting plate, driving mechanism for the calender-roll including a detachable member and stop-rod for holding the detachable member normally in engagement, and a locking-lever therefor, whereby, on the breaking of the lap, the tilting of the table moves the member pivotally connected with the tilting table and causes the feed-roll to operate the locking-lever to release the stop-rod and disconnect the driving mechanism, as described.

4. In a carding-machine, the combination with the roller arranged to support the lap-roll, the calender-rolls, and the mechanism for operating the calender-rolls, of two or more plates, or tables, pivotal supports for the tables, plates pivotally connected with each table, a spring-pressed stop-rod, a stop-lever, lever-arms extending from the stop-lever to the plates pivotally connected with the tables, a hand-lever connected with the stop-rod and with a detachable member of the feed-roll-driving mechanism, and projections on the feed-rolls, whereby, when the lap is broken, the table over which the broken part passes is tilted and the delivery of the lap is arrested, as described.

5. In a stop-motion for carding-machines, the combination with the feed-roller a provided with the projecting pins c^5, of the plates c c, the rocking supports d^2 d^2 for the plates c c, the plate d, the feet c^2, the plates c^4 pivotally connected with the plates c c and having their lower ends slotted, the stop-rod c^{12}, the collars c^{11}, c^{15} and c^{16} on the stop-rod, the coiled spring c^{14}, the stop-lever c^7, the levers c^8

and c^9, and the arms c^6 connected with the stop-lever c^7 and coöperating with the plates c^4, the hand-lever c^{17} connected with the stop-rod c^{12} and with a part of the driving mechanism; whereby, when the lap breaks, the driving mechanism is disconnected to stop the delivery of the lap, as described.

6. In a stop-motion for carding-machines, the combination with a tilting plate or table supported in the horizontal position by the passage of the lap, a pair of calender-rolls, mechanism for driving the calender-rolls, a detachable member in the driving mechanism, and a hand-lever connected with the detachable member, of a stop-rod c^{12} for normally holding the detachable member in engagement, means adapted to be actuated by the tilting of the plate to move the stop-rod to detach the detachable member of the driving mechanism, the collar c^{16}, and the hand-lever b^2, whereby the stop-motion may be locked during the feeding of a broken or new lap, as described.

In witness whereof I have hereunto set my hand.

CYRUS E. SMITH.

Witnesses:
J. A. MILLER, Jr.,
B. M. SIMMS.