

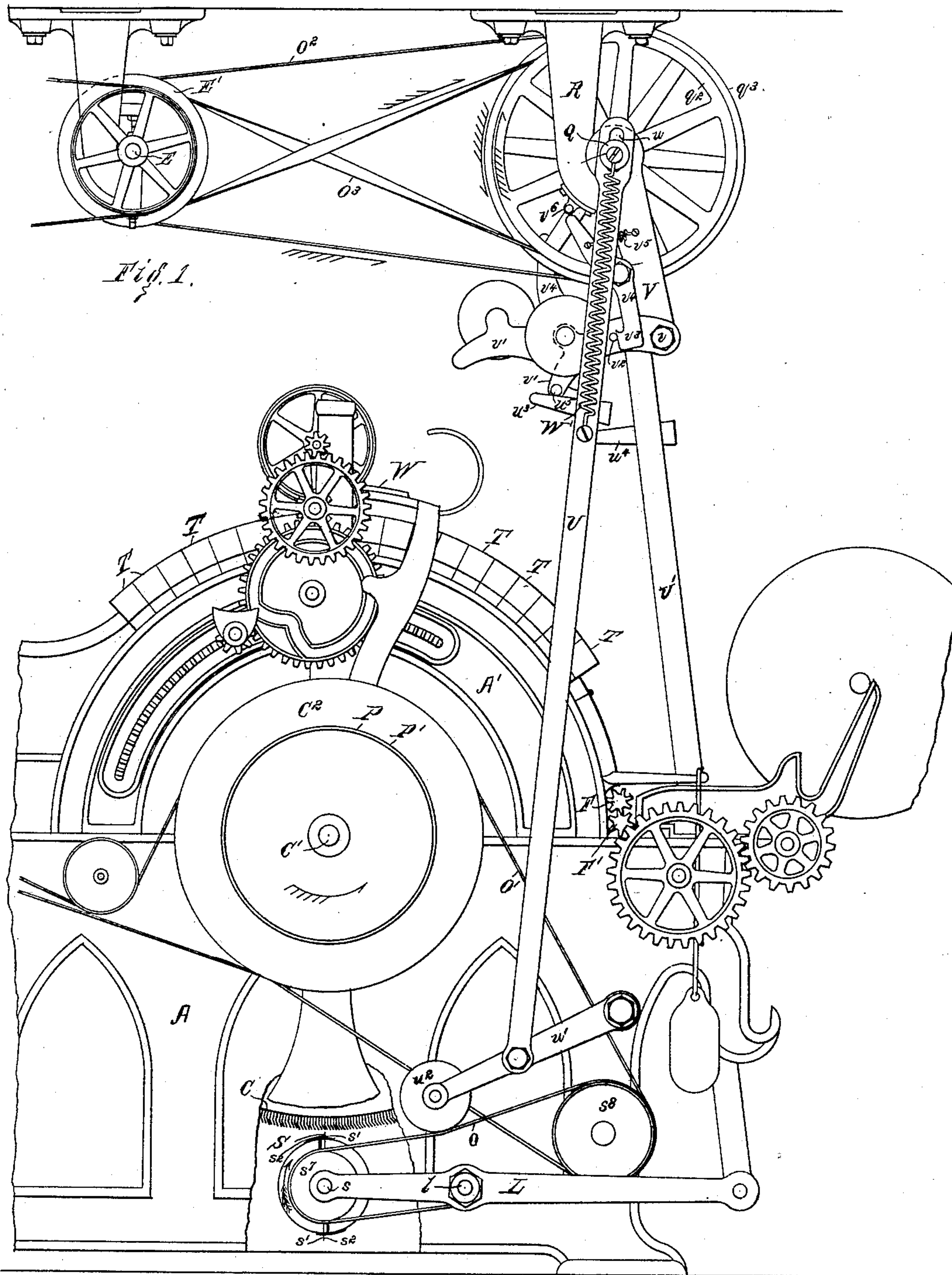
(No Model.)

2 Sheets—Sheet 1.

J. A. BRADSHAW.
CARDING ENGINE.

No. 341,443.

Patented May 11, 1886.



Witnesses—

Hirkley Hyde.
Gertrude M. Day.

Inventor—
John A. Bradshaw,
By Albert M. Moore,
His Attorney.

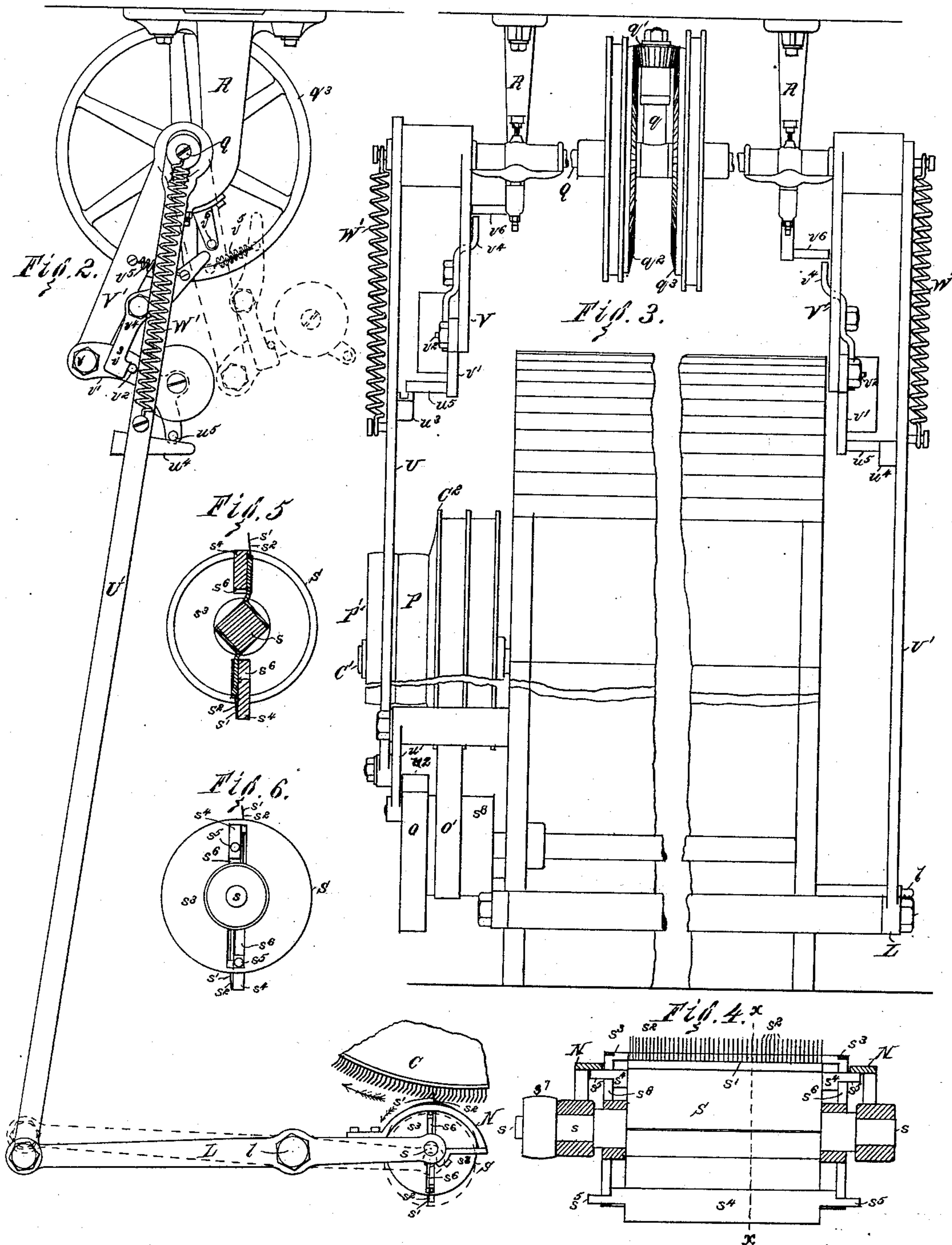
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UNITED STATES PATENT OFFICE.

JOHN A. BRADSHAW, OF LOWELL, MASS., ASSIGNOR OF TWO-THIRDS TO
JOHN J. MEHAN AND CATHARINE O'CONNOR, BOTH OF SAME PLACE.

CARDING-ENGINE.

SPECIFICATION forming part of Letters Patent No. 341,443, dated May 11, 1886.

Application filed April 13, 1885. Serial No. 162,059. (No model.)

To all whom it may concern:

Be it known that I, JOHN A. BRADSHAW, a citizen of the United States, residing at Lowell, in the county of Middlesex and Commonwealth of Massachusetts, have invented certain new and useful Improvements in Carding-Engines, of which the following is a specification.

My invention relates to carding-engines; and it consists in the devices and combinations hereinafter described and claimed, which have for their object the stripping of the cylinder at intervals while the same is in motion.

In the accompanying drawings, on two sheets, Figure 1 is a right-side elevation of a part of a carding engine provided with my improvements, the front end of the machine being broken away, a part of the lap at the rear of the machine being also broken away, and a part of the frame near the middle of the same being broken away to show a part of the cylinder and the stripper; Fig. 2, a left side elevation of the mechanism which throws the stripper into contact with the cylinder, together with said stripper and a part of said cylinder, the weighted levers and stripper-supporting lever being shown in two positions, their positions when the stripper is out of contact with the cylinder being shown by dotted lines; Fig. 3, a rear elevation of a carding-engine provided with my improvements, the machine having portions broken out vertically and horizontally; Fig. 4, a rear elevation of the stripper, its bearings and heads being in vertical section; Fig. 5, a section of the stripper on the line $x x$ in Fig. 4; Fig. 6, an end view of the stripper.

The object of the invention described below is the same as that of the invention described in United States Letters Patent, dated October 27, 1885, No. 329,356; but said object is attained by a different mechanism from the one shown in said previous application.

The frame A, arch A', feed-rolls F F', the fast, P, and loose, P', pulleys on the cylinder-shaft C', the main cylinder C, the top flats, T, and the so-called "Wellman Stripper" W, which strips said top flats, are all of the usual construction and operation. To each side of the frame is pivoted a lever, L, at l , in bearings, in the front ends of which levers turns the cylinder-stripper S, said levers being con-

nected at their rear ends to form, substantially one lever. This stripper S consists of a central shaft, s , provided with two cylindrical heads, s^3 , between which are secured two combs, s^1 , having radial pointed needles or teeth s^2 , the heads s^3 being provided each with two radial slots, s^6 . Two flat metallic bars, s^4 , lying against the combs, are each provided with reduced ends s^5 , which project outward through the slots in said heads. When the cylinder-stripper is revolved in the direction shown by its arrow and in contact with the main cylinder C, the teeth of the comb enter the card-clothing of said main cylinder and pick out the waste in said clothing. The bars s^4 are thrown outward from the shaft s of the cylinder-stripper S by centrifugal force, but are prevented from striking and injuring the clothing of the main cylinder by a curved plate, N, secured to the outer end of the lever L on each side of the machine above said shaft s . The plates N are arc-shaped, and have the same curvature as the circular heads of the cylinder-stripper; but the center of curvature of the plates is below the axis of said stripper-cylinder, so that the bars s^4 can fly out to the end of the needles only when they are lower than the axis of the shaft s , the ends of the bars at other times being held down by the plates N. When the bars are thrown to the ends of the needles they strip the waste off from the needles, the waste falling on the floor beneath the carding-engine. The cylinder-stripper is driven at intervals by a belt, O, which passes over a pulley, s^7 , secured to the shaft of said cylinder-stripper, and over another pulley, s^8 , which turns on a stud projecting horizontally from the frame A, the last-named pulley being driven by a belt, O', which passes over a pulley, C', secured on the main cylinder-shaft C'. The shaft Q turns in hangers R R, secured in the usual manner to the girders of the ceiling of the room, and is provided with a stud, q , rigidly secured thereto at right angles to the same. On the outer end of this stud q turns a beveled pinion, q' , which engages two beveled gears, $q^2 q^3$, which turn loosely on said shaft Q. The rims of the gears $q^2 q^3$ are grooved to receive bands which connect them with the pulley E' on the main shaft E, one of said bands, O², being open and the other, O³, crossed to

cause said gears q^2 q^3 to revolve in opposite directions. The gear q^2 , which carries the crossed belt O^3 , is a little smaller in circumference than the gear q^3 , which carries the open one, O^2 , and will therefore revolve a little faster than the latter, and cause the bevel-pinion q' to travel and the shaft Q to revolve slowly in the same direction with it.

To the shaft Q are rigidly secured two radial arms, V V' , the one, V , at the right of the machine, (shown at the left of Fig. 3,) being a little in advance of the other. These arms are both alike, except that one is right-handed and the other left-handed, and the parts supported upon said arms are alike, with the same exception.

To each arm V V' is pivoted at v a weighted lever, v' , each of which levers v' is provided with a horizontal outwardly-projecting pin v^2 , adapted to be engaged by the hooks or catches v^3 of catch-levers v^4 , also pivoted on said arms V V' . Each hook v^3 is held in engagement with its pin v^2 by a spiral spring, v^5 , which connects the arm (V or V') and its catch-lever v^4 , as shown, until such time as, by the revolution of the shaft Q , the end of said catch-lever between its pivot and the shaft Q is brought in contact with a projection, v^6 , (extending outwardly horizontally from the lower end of the bracket R ,) which releases the catch and allows the weight on said weighted lever to fall.

On each side of the machine is a connecting-rod, U U' , slotted at its upper end at u to receive and slide freely on the shaft Q , at right angles to the same. One of these rods U is attached at its lower end to a lever, w' , pivoted to the side of the frame A at one end, and provided at its other end with an idle-pulley, w^2 , arranged above the belt O . The connecting-rod U' , at the other side of the machine, is pivoted to the rear end of the lever L . The rods U U' are normally held up by spiral springs W W , so that the idle-pulley w^2 is not in contact with the belt O , and the cylinder-stripper is not in contact with the cylinder. The belt O is not tight enough to drive the cylinder-stripper, except when said idle-pulley is resting upon the top of said belt. The connecting-rods U U' are each provided with forwardly-projecting arms w^3 w^4 , against which horizontal pins w^5 , projecting from the weighted levers, strike and rest when the catch-levers release said weighted levers. It will be seen that the weighted lever at the right of the machine first falls and pushes down the connecting-rod U , pressing the idle-pulley down upon the belt O , and tightening said belt and setting the cylinder-stripper in motion. When the cylinder-stripper has immediately thereafter attained its full speed, the weighted lever at the left of the machine falls and pushes down the other connecting-rod, U' , depressing the rear end of the lever L and raising the cylinder-stripper into contact with the main cylinder, thereby stripping the same. The

further revolution of the shaft Q carries the weighted levers past the arms w^3 , whereupon the springs W W draw up the rods U U' , and bring the cylinder-stripper out of contact with the main cylinder and lift the idle-pulley off from the belt O .

In order that the cylinder-stripper may not cease to revolve until it moves out of contact with the main cylinder, the arm w^3 of the rod U is made sufficiently longer than the arm w^4 of the rod U' to keep the idle-pulley in contact with the belt O as long as the rear end of the lever L is depressed. The catches v^3 of the catch-levers v^4 are beveled on their outer ends, as shown, so that when the radial arms V V' are sufficiently revolved, after the stripping of the cylinder is completed, the weighted levers will swing toward the shaft Q , and the pins v^2 will strike against the beveled outer ends of the catch-levers and be forced nearer to said shaft Q , then the catches v^3 , which catches will then spring in and engage said pins v^2 , and remain in engagement with said pins until the inner end of the catch-lever v^4 is again brought in contact with the projection v^6 , as above described.

I claim as my invention—

1. The stripper consisting of a central shaft and heads secured to said shaft at right angles thereto and concentrically therewith, and provided with radial slots, combs secured to said shaft between said heads and having teeth which project radially beyond said heads, clearing-bars reaching from one to the other of said heads in contact with said teeth and having reduced ends, which project through the slots in said heads, said bars being adapted to be moved outward by centrifugal force when said stripper is revolved to the ends of said teeth, and arc-shaped plates having the same curvature as said heads, but having their center of curvature on the opposite side of said shaft from said plates, as and for the purpose specified.

2. The combination of the main cylinder, the stripper consisting of a central shaft, heads secured to said shaft at right angles thereto and concentrically therewith, and provided with radial slots, combs secured to said shaft between said heads and having teeth which project radially beyond said heads, clearing-bars reaching from one to the other of said heads in contact with said teeth and having reduced ends, which project through the slots in said heads, said bars being adapted to be moved outward by centrifugal force when said stripper is revolved to the ends of said teeth, the levers in which said stripper is journaled, and arc-shaped plates adapted to be struck by the reduced ends of said bars and to prevent said bars from coming in contact with the clothing of said main cylinder, as and for the purpose specified.

3. The combination of the main cylinder, the stripper consisting of a central shaft, and heads secured to said shaft, provided with radial slots, combs secured to said shaft between

said heads and having teeth which project radially beyond said heads, clearing-bars reaching from one to the other of said heads in contact with said teeth, and having reduced ends which project through the slots in said heads, said bars being adapted to be moved outward by centrifugal force to the ends of said teeth when said stripper is revolved, the levers in which said stripper is journaled, and the arc-shaped plates secured to said levers and adapted to be struck by the reduced ends of said bars and to prevent said bars from coming into contact with the clothing of said main cylinder, and means, substantially as described, of rotating said main cylinder and stripper, as and for the purpose specified.

4. The combination of the frame, the main cylinder, stripper-levers pivoted at the sides of said frame and rigidly connected to each other at their outer ends, a cylinder-stripper journaled in the inner ends of said levers, a connecting-rod pivoted to the outer end of one of said levers and provided with an arm, a shaft provided with a radial arm, a weighted lever pivoted to said radial arm, a catch-lever, also pivoted on said radial arm and adapted to engage with said weighted lever and to hold the same out of contact with the arm of said connecting-rod, a pin adapted to be struck by said catch-lever and to disengage the same from said weighted lever once in every revolution of said shaft, to allow said weighted lever to strike the arm of said connecting-rod, and thereby to raise said cylinder-stripper into contact with said main cylinder, and a spring attached to said connecting-rod and adapted to hold said stripper-cylinder normally out of contact with said main cylinder, as and for the purpose specified.

5. The combination of the frame, the main cylinder, stripper-levers pivoted at the sides of said frame and rigidly connected at their outer ends, a cylinder-stripper journaled in the inner ends of said levers, a connecting-rod pivoted to the outer end of one of said levers and provided with an arm, a shaft provided with a radial arm, a weighted lever pivoted to said radial arm, a catch-lever, also pivoted on said radial arm and adapted to engage with said weighted lever and to hold the same out of contact with the arm of said connecting-rod, a pin projecting from said frame and adapted to be struck by said catch-lever and to disengage the same from said weighted lever once in every revolution of said shaft, to allow said weighted lever to strike the arm of said connecting-rod and thereby to raise said cylinder-stripper into contact with said main cylinder, another lever pivoted at the side of said frame and having an idle-pulley journaled thereon, the shaft of said cylinder-stripper being provided with a fast-pulley

and driven by a belt which is loose on said pulley, except when tightened by the pressure of said idle-pulley upon said belt, another connecting-rod provided with an arm, another radial arm attached to said shaft first named a little in advance of said first-named radial arm, a weighted lever pivoted to said last-named radial arm, a catch-lever pivoted on said last-named radial arm and adapted to engage with said last-named weighted lever and to hold the same out of contact with the arm of said last-named connecting-rod, and another pin projecting from said frame and adapted to be struck to disengage said last-named catch-lever and weighted lever, and to allow said last-named weighted lever to strike the arm on said last-named connecting-rod and to press said idle-pulley upon said belt, to tighten said belt and to set said cylinder-stripper in motion before the same is brought in contact with the clothing of said main cylinder, springs attached to said connecting-rods and adapted to raise the same, and means, substantially as described, of rotating said main cylinder, stripper, and shaft, as and for the purpose specified.

6. The combination of the frame, the main cylinder, stripper-levers pivoted at the sides of said frames and rigidly connected to each other at their outer ends, a cylinder-stripper journaled in the inner ends of said levers, a connecting-rod pivoted to the outer end of one of said levers and provided with an arm, a shaft provided with a stud, a beveled gear journaled upon the outer end of said stud, two beveled gears adapted to turn loosely upon said shaft and engaging with said first-named beveled gear, and adapted to revolve in opposite directions to each other at slightly different rates of speed, said shaft being also provided with a radial arm, a weighted lever pivoted to said weighted arm, a catch-lever, also pivoted on said radial arm and adapted to engage with said weighted lever and to hold the same out of contact with the arm of said connecting-rod, a pin projecting from said frame and adapted to be struck by said catch-lever and to disengage the same from said weighted lever once in every revolution of said shaft, to allow said weighted lever to strike the arm of said connecting-rod, and thereby to raise said cylinder-stripper into contact with said main cylinder at intervals, springs attached to said connecting-rod and adapted to raise the same, and means, substantially as described, of rotating said main cylinder, stripper, and shaft, as and for the purpose specified.

JOHN A. BRADSHAW.

Witnesses:

ALBERT M. MOORE,
GERTRUDE M. DAY.