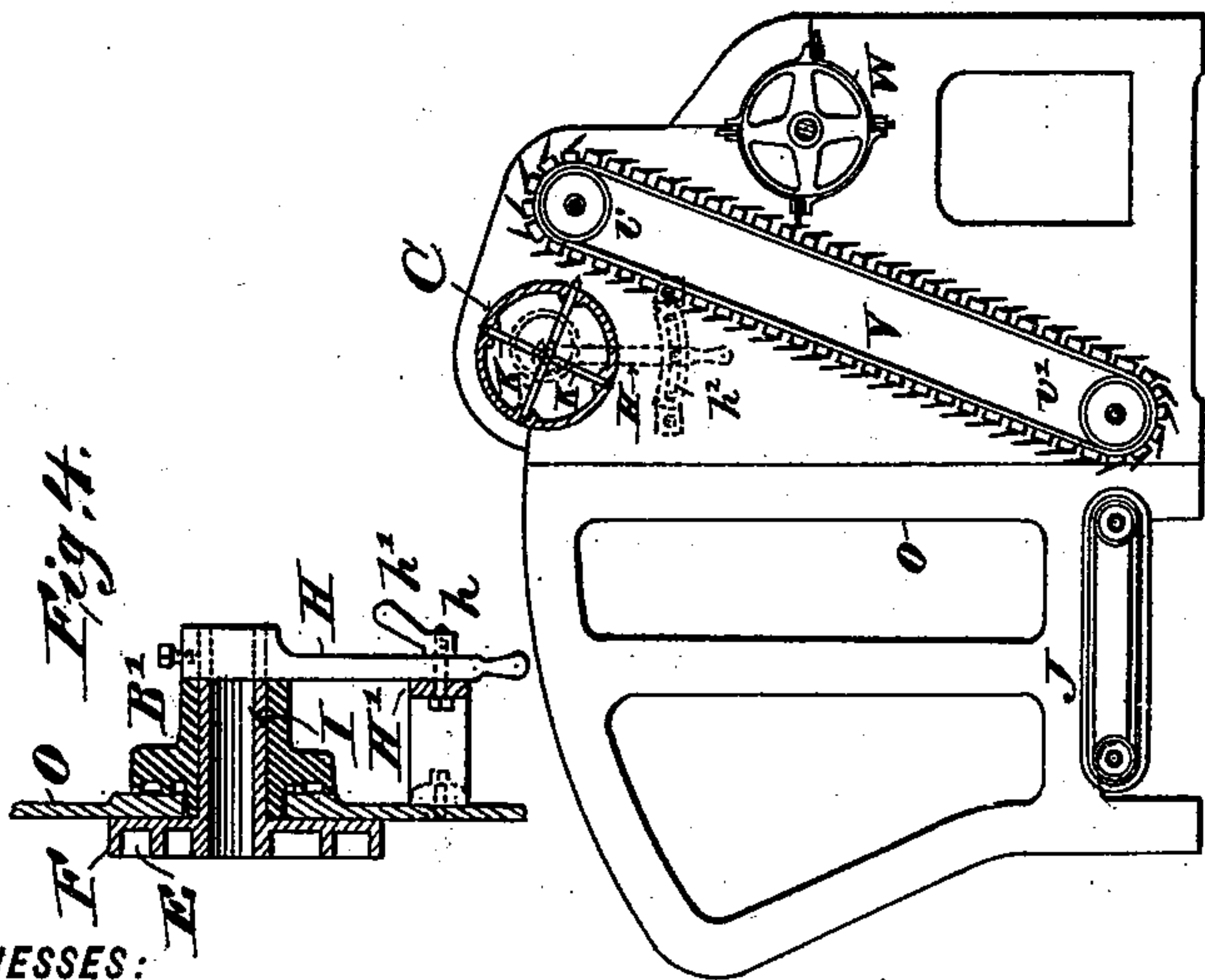
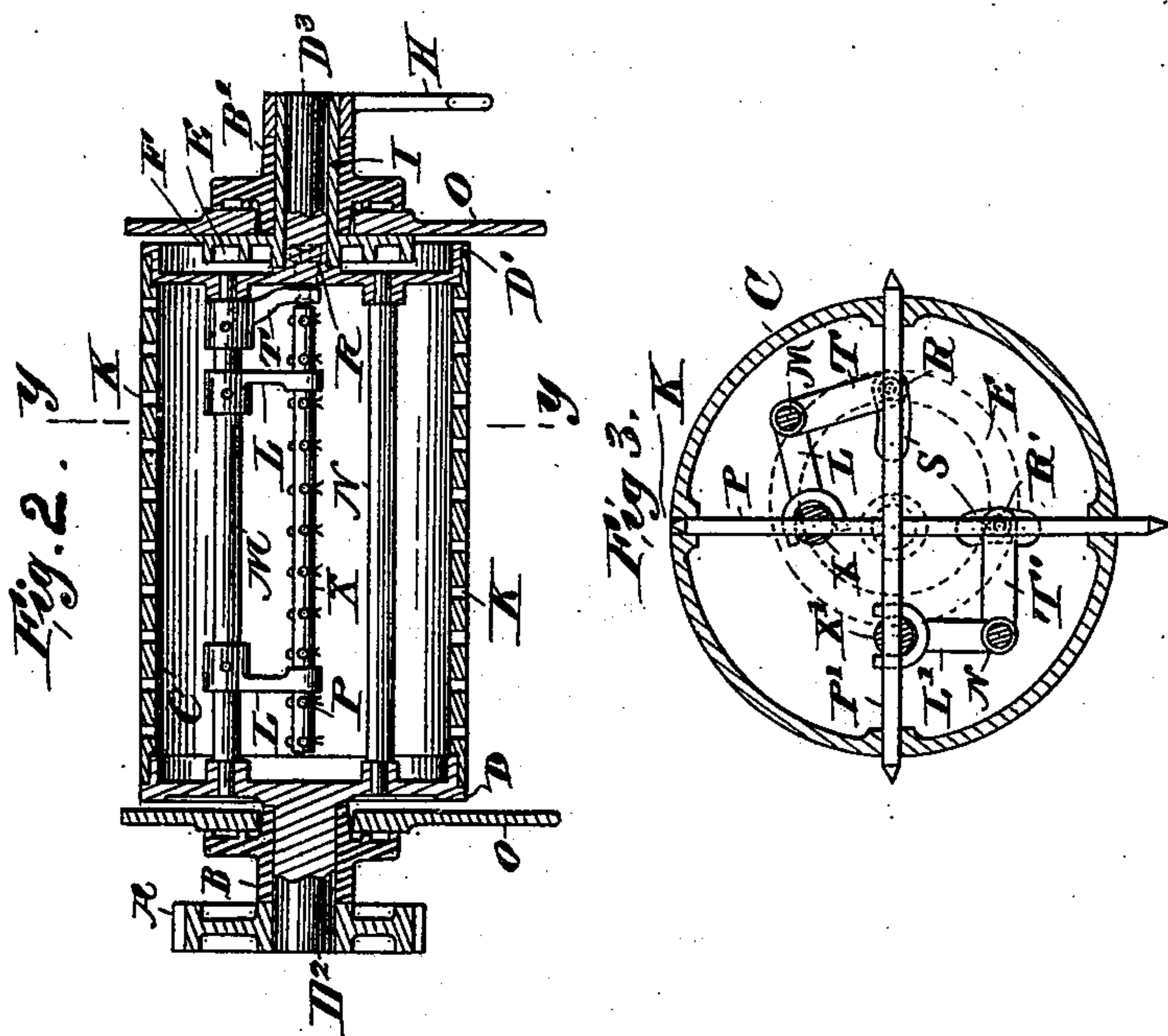


(No Model.)

J. BARDSLEY.
FEEDING MECHANISM FOR MACHINERY FOR OPENING, CLEANING,
AND PREPARING COTTON.

No. 551,108.

Patented Dec. 10, 1895.



WITNESSES:

C. W. Benjamin
Geo. J. Brennan.

Fig. 1.

INVENTOR
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UNITED STATES PATENT OFFICE.

JOEL BARDSLEY, OF PAWTUCKET, RHODE ISLAND, ASSIGNOR TO THE A. T. ATHERTON MACHINE COMPANY, OF SAME PLACE.

FEEDING MECHANISM FOR MACHINERY FOR OPENING, CLEANING, AND PREPARING COTTON.

SPECIFICATION forming part of Letters Patent No. 551,108, dated December 10, 1895.

Application filed April 17, 1895. Serial No. 546,141. (No model.)

To all whom it may concern:

Be it known that I, JOEL BARDSLEY, a citizen of the United States, and a resident of Pawtucket, county of Providence, and State of Rhode Island, have invented certain new and useful Improvements in Feeding Mechanism for Machinery for Opening, Cleaning, and Preparing Cotton, &c., of which the following is a specification.

My invention has been devised with more particular reference to the needs of machinery for opening and cleaning cotton, and it is in that connection that I shall describe it; but it is also adapted to be used in any connection in which a lifting-apron or spiked apron is employed in connection with mechanism for delivering the material carried by such apron to machinery for opening, cleaning, or otherwise treating the same. Much of the material raised or taken by the spiked apron is in the form of bunches and the like, and the apron is liable to take more stock than it is desirable to deliver to the opener or other machine, and to remedy this trouble it has been essayed to use a comb, sometimes reciprocating and sometimes rotary, to remove surplus stock and to insure as far as practicable that the stock shall be delivered in measurably uniform quantity. The rotary comb, however, soon becomes clogged with the fibers, which catch and gather upon it, so as to be practically incapacitated for work, and in the case of the reciprocating comb trouble is also experienced from this cause, (but not to so great a degree as in the other case,) while its action in traveling to and fro against the cotton tends to pack the cotton and to condense the material to an undue extent. It has been essayed to prevent the clogging of the rotary comb by combining with it a clearing-belt perforated to admit the teeth of the comb. This belt passes around and in contact with the face of the comb-cylinder adjoining the lifting-apron and thence runs off from the cylinder, so as to clear the teeth thereon; but this arrangement in practice is not effective for the purpose. The teeth as they recede from the lifting-apron draw back slantwise through the holes or slots in the clearing-apron, and in so doing they carry with them the cotton fibers which gradually gather on

the comb-cylinder and are packed thereon until in a short time the diameter of the comb-cylinder is increased to such an extent that the comb-teeth are embedded in the cotton and do not project through as they are intended. Moreover, in practice the holes in the clearing-belt through which the comb-teeth pass must be made somewhat larger than the teeth, and of a form approaching that of an elongated slot, and through these openings the cotton fiber will unavoidably pass and catch and gather on the comb-cylinder. Another arrangement for accomplishing this same result has been by mechanism located and operating inside of the comb-cylinder and described in the specification forming part of Letters Patent granted James C. Potter, September 6, 1892, and numbered 482,193; but this last-mentioned arrangement is objectionable in practice because of the great number of parts within the comb-cylinder that require to be lubricated and the difficulty of effecting such lubrication, and also because of the great amount of lubricant required. Another objection to this arrangement is that the oil used in lubricating the parts inside of the cylinder is liable to come in contact with the teeth of the comb and thereby introduced to the outside of the comb-cylinder, whereby it will come in contact with the cotton being operated upon and injure the same.

In the arrangement made use of by me for the purpose a device which I term an "equalizing-doffer," in view of the manner in which it operates and the functions it performs, is employed. This device consists of a rotary cylinder or shell and a series of pins pointed at each of their ends, which, while they rotate with the shell, are so arranged that during such rotation one end of each of the pins protrudes from and withdraws within the shell. They protrude from the shell to the greatest extent when they are opposite the lifting-apron and at the point where they are required to doff the surplus stock therefrom, and after that they gradually withdraw within the shell. Each end of the tooth protrudes from its individual hole or opening in the shell, which hole it exactly fits and fills, so that at no time is there communication

through that hole between the outside and inside of the shell. This equalizing-doffer, which is of a length equal to the width of the lifting-apron, is set opposite to that apron at the point where it is required to act upon the stock, and the space between said doffer and the lifting-apron is the throat through which all of the material must pass on its way to the machinery for treating it. By so combining the doffer-pins with adjusting mechanism that the ends of the pins may be caused to project a greater or less distance from the doffer-cylinder at this point—that is to say, into the throat—I can correspondingly vary the delivery of the cotton through the throat, more cotton being delivered when there is less protrusion of the ends of the pins, and vice versa. In this way I am enabled to equalize the delivery of the cotton or other stock and I am also enabled to vary that delivery simply by the adjustment of the doffer-pins alone and without that adjustment of other parts of the machinery which heretofore has been required for the purpose. This adjustment of the doffer-pins for the purpose above intimated can be attained in a variety of ways, which will readily suggest themselves to the skilled mechanic when once the idea of such adjustment is suggested. The preferred means employed by me for the purpose are represented in the accompanying drawings, which I will now proceed to describe, in order that others skilled in the art may fully understand my invention.

Figure 1 is a sectional side elevation of a portion of a cotton opening and cleaning machine, showing the hopper, the horizontal carrying-apron, the spiked lifting-apron, the equalizing-doffer, and the clearer for the lifting-apron; Fig. 2, a longitudinal vertical section of the equalizing-doffer; Fig. 3, a cross-section through line *y y* of Fig. 2, and Fig. 4 a sectional elevation showing the manner of mounting and adjusting the circular plate containing the groove which protrudes and retracts the doffer-pins.

In the several figures of the drawings like letters of reference are employed to designate corresponding parts.

O indicates the hopper for receiving and holding the cotton or other material to be operated upon, and J the horizontally-moving power-driven apron, by means of which the cotton or other material in the hopper is carried forward toward the spiked or lifting apron V, through the instrumentality of which it is raised in the hopper and delivered to the devices made use of for carrying it forward through the machine,

The parts as thus far described, with the beater-clearer W, possess no novelty in themselves, but are or may be the same as the corresponding parts shown and described in the Letters Patent to Potter, above mentioned, and require no further description herein.

C indicates the equalizing-doffer, to which my invention more particularly relates. It

is located at or near the upper end of the lifting or spiked apron V in parallel relation thereto, and at such distance from the same as to leave a delivery-throat between it and the apron of the proper dimensions required. In the particular embodiment of the invention selected for illustration this doffer consists of a cylindrical shell and two heads D D', to which the shell is fixedly secured at its ends. As thus constructed, it is mounted in suitable bearings B B', fixed to the sides of the hopper O, and is rotated through the intervention of the wheel A, secured to the end of its journal D².

P P' indicates the pins with which the doffer is equipped. These pins are preferably constructed in the form of cylindrical rods with their ends pointed, and extending diametrically across the doffer are fitted to slide back and forth in holes K K, formed through the cylindrical shell thereof. There may be as many sets of these pins as desired. In the form of the invention shown in the drawings, however, only two sets P and P' are employed, which are set at an angle of ninety degrees to each other, and these respectively pass through holes formed in the bars X and X', in which they are respectively fastened by pins passing therethrough and through such bars.

For effecting the necessary back-and-forth movements of the pins P P' in the cylindrical shell of the doffer C, I make use of the shafts M and N and of the circular plate F, the former of which are journaled at their ends in the heads D D' at the proper distance apart, and are provided with the arms T L and T' L', respectively, and the latter of which is provided with an eccentric groove E, formed in its side, and with a sleeve or hub I, that surrounds the journal D³ of the doffer-cylinder C, and rests within the bearings B'. The free ends of the arms L and L' are forked and respectively straddle the bars X and X', to which the doffer-pins P and P' are respectively secured, while the free ends of the arms T and T' are respectively provided with rolls R and R', which are free to turn on suitable studs secured thereto and engage with the eccentric groove E in the side of the circular plate F. Under this arrangement, as will be seen, when the equalizing-doffer is rotated and the plate having the eccentric groove in its side held stationary, the doffer-pins, the arms, and the rolls will be carried around with the cylinder, but in so doing the pins, by reason of the movement of the rolls around in the eccentric groove, will have a back-and-forth movement of their own independent of the cylinder, the result being that during the rotation of the doffer the rows of pins will be successively projected to the full extent from the doffer, and will then be gradually withdrawn until entirely within the outer periphery of the same, after which they will be again gradually projected or advanced to the position from which they first started or to that

shown at the bottom of Fig. 3, and so on, the rotation of the doffer successively advancing and retracting these pins as long as such rotation continues.

5 With the parts organized as thus far described the equalizing-doffer will remove the same amount of stock from the lifting-apron, no matter what the width of the delivery-throat may be, because the quantity of stock
10 which can pass is determined by the distance between the doffer-pins and the lifting-apron, and hence if it were desired to increase or lessen the amount of delivery of the stock it would be necessary to either move the apron
15 toward or away from the doffer or to move the doffer as a whole toward or away from the apron. I prefer, however, to provide means for accomplishing this result without necessitating such movements, and to this
20 end I make use of an adjusting-lever H, which is fixedly secured to the sleeve or hub I of the circular plate that contains the eccentric groove E, and which while serving to firmly hold such plate in position when adjusted also
25 serves as a means for imparting thereto a partial rotation in one or the other direction whereby to cause the protrusion of the doffer-pins P P' either earlier or later in the rotation of the doffer, and thereby vary the distance
30 between their ends and the lifting-aprons at the operative point. For holding this lever in the various positions to which it may be adjusted various means may be employed. I prefer, however, to make use of the
35 slotted sector H', which is secured to the side of the hopper O, and to clamp the lever thereto by a bolt h and nut h'. By this arrangement not only may the lever be firmly held in any position to which it may be adjusted, but provision
40 is thereby made for its adjustment and the adjustment of the circular plate to which it is secured, as may be desired. I am thus enabled to obtain the most delicate adjustment of the feed and delivery of the material to the
45 opener or other machine, and to vary it instantly without interrupting the operation of the doffer and apron. Further than this the arms, shafts, and bars through which the doffer-pins are protruded and retracted, being
50 wholly within the body of the doffer, are thereby removed from the material being operated upon and cannot come in contact therewith.

The same is likewise true respecting the lubricant that is employed to lubricate the various parts. This is also removed from contact
55 with such material and confined to a few small bearings, all of which, with the exception of the rolls R R' and the groove E' in the circular plates, are within the doffer-cylinder. The
60 several parts thus mentioned being wholly within the doffer, while the circular plate containing the eccentric groove for operating them being on the outside thereof at its end, the rolls R R' on the outer free ends of the
65 arms T T' could not engage with such groove without provisions being made therefor. To permit of this engagement, I form in the head D' of the equalizing-doffer curved slots S S, through which extend and work the studs
70 upon which such rolls R R' rotate.

Although in the foregoing I have described the best means contemplated by me for carrying my invention into practice, I wish it distinctly understood that I do not limit myself
75 strictly thereto, as it is obvious that I may modify the same in various ways without departing from the spirit thereof.

Having now described my invention and specified certain of the ways in which it is or may be carried into effect, I claim— 80

1. The combination, with the doffer-cylinder, the doffer-pins, the bars through which the pins pass and to which they are secured, and the eccentric cam, of the rolls for engaging with such cam, and the devices intermediate
85 such rolls and the pins whereby the pins are protruded and retracted therefrom, substantially as described.

2. The combination, with the doffer-cylinder, the doffer-pins, the bars through which
90 such pins pass and to which they are secured, the eccentric cam, the rolls for engaging with such cams, and the devices intermediate such rolls and the pins, whereby the pins are protruded and retracted by such cam, of a lever
95 secured to the eccentric cam whereby the latter may be adjusted around its axis, substantially as described.

In testimony whereof I have hereunto set my hand this 15th day of April, 1895.

JOEL BARDSLEY.

Witnesses:

CHAS. M. READ,
A. T. ATHERTON.