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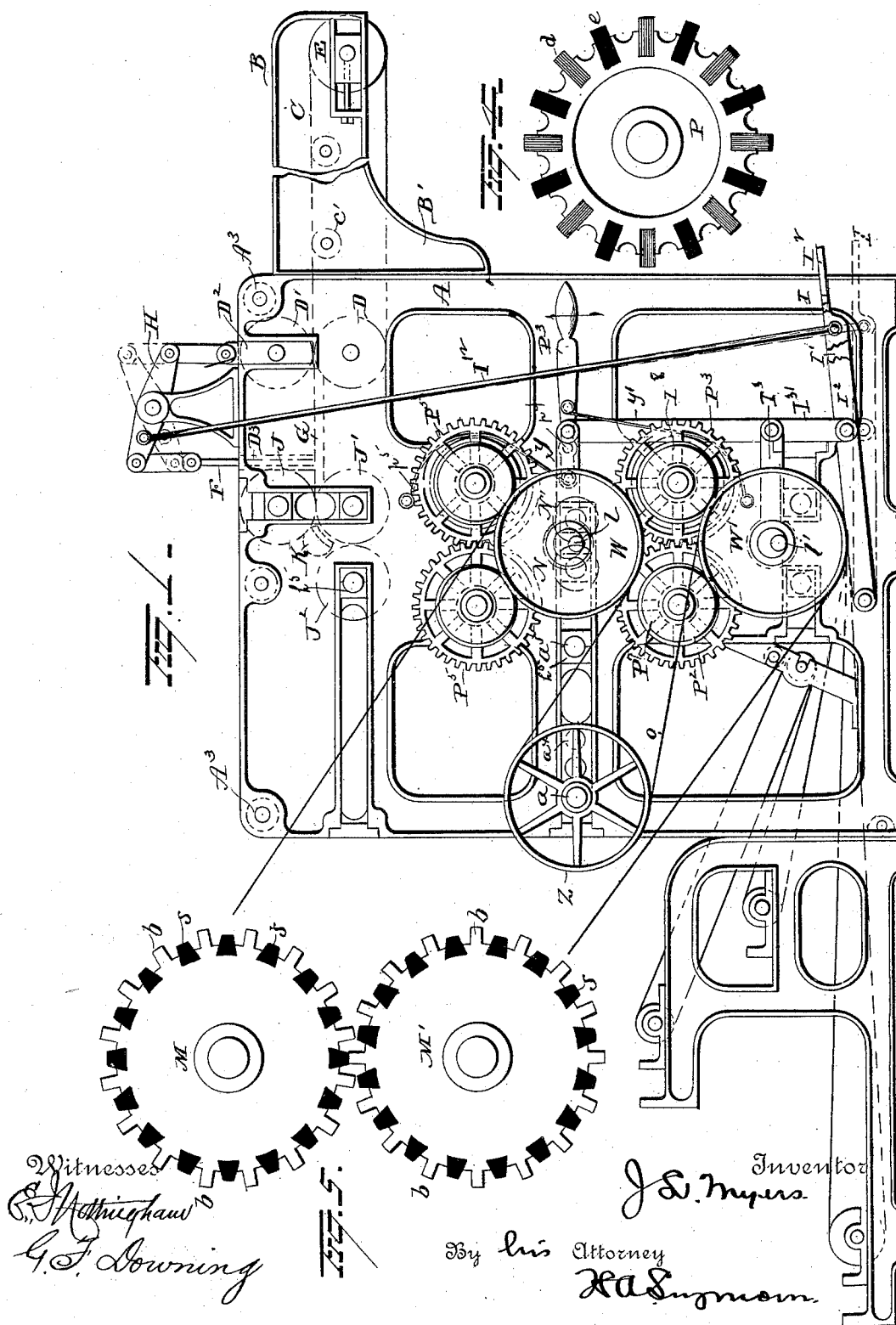
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J. L. MYERS.

MACHINE FOR TREATING FIBROUS PLANTS.

No. 476,161.

Patented May 31, 1892.



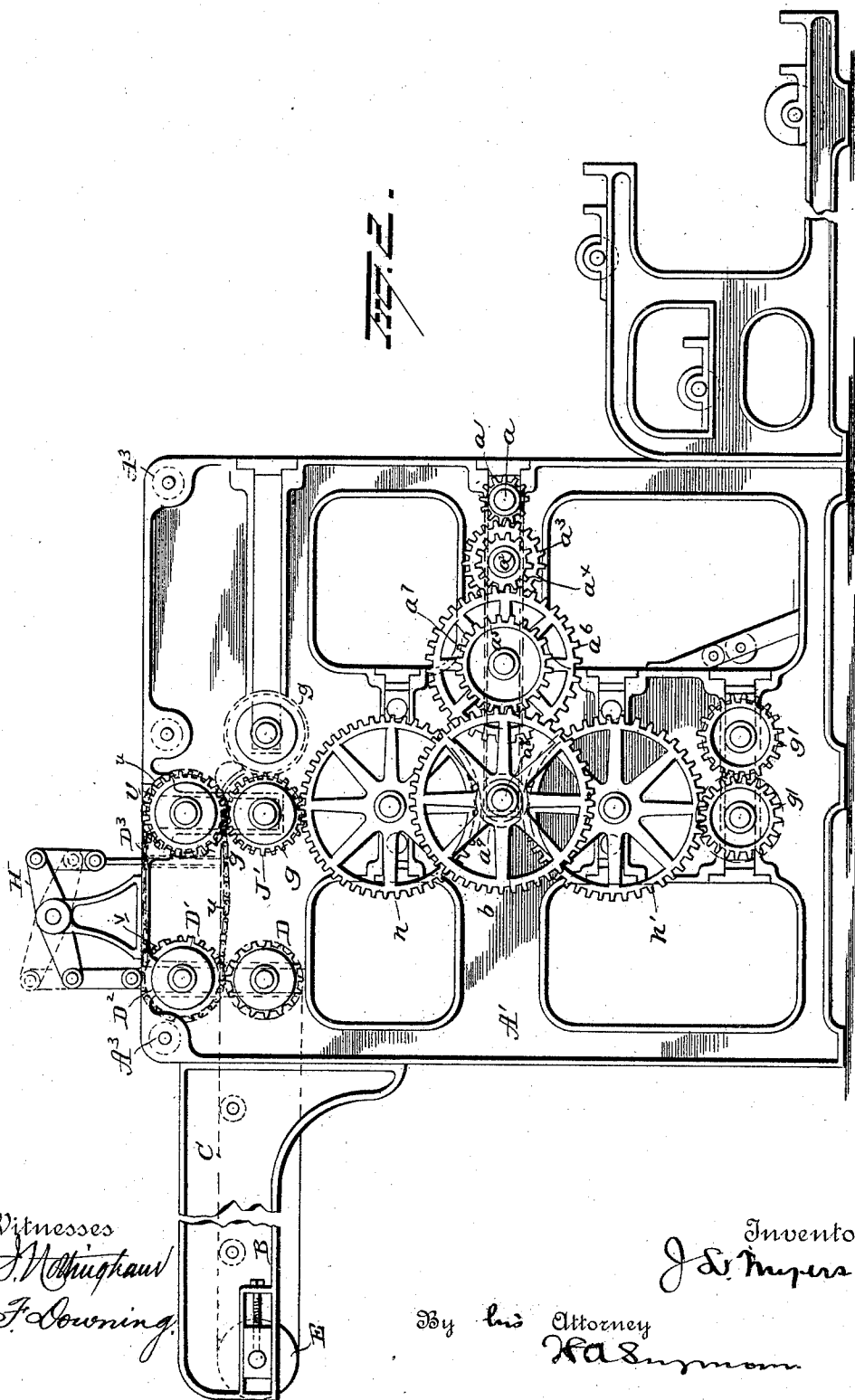
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Witnesses
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Inventor
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By his Attorney
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(No Model.)

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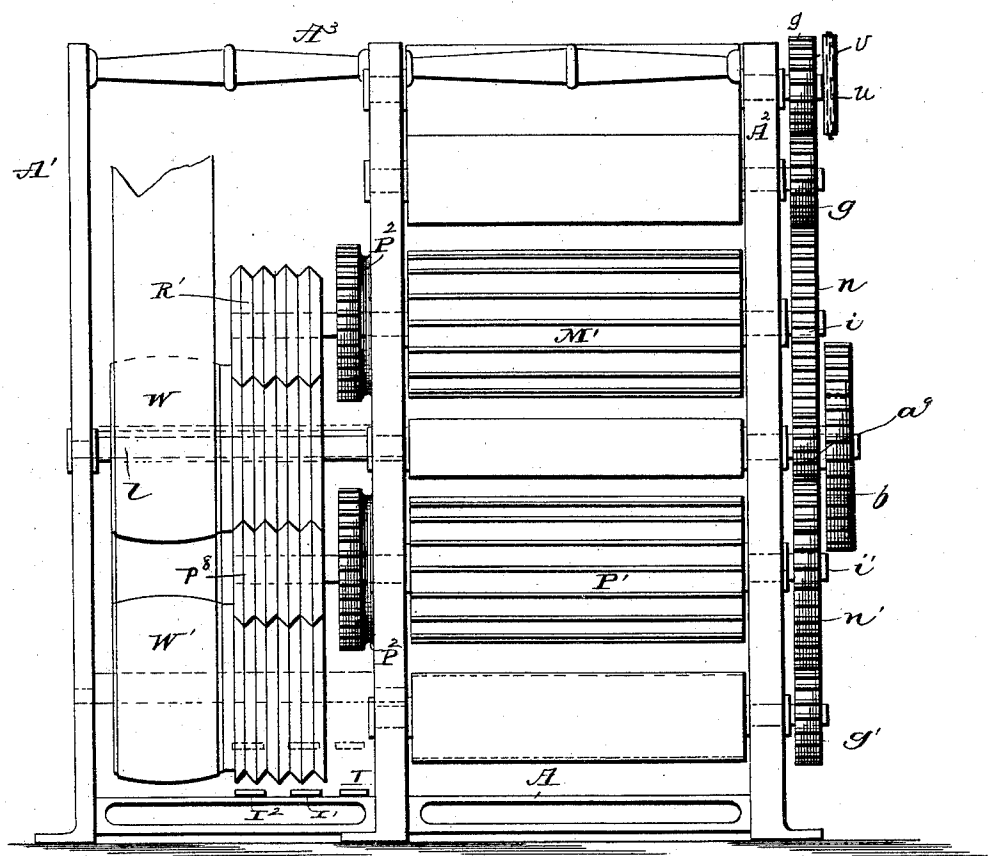
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Fig. 3.



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(No Model.)

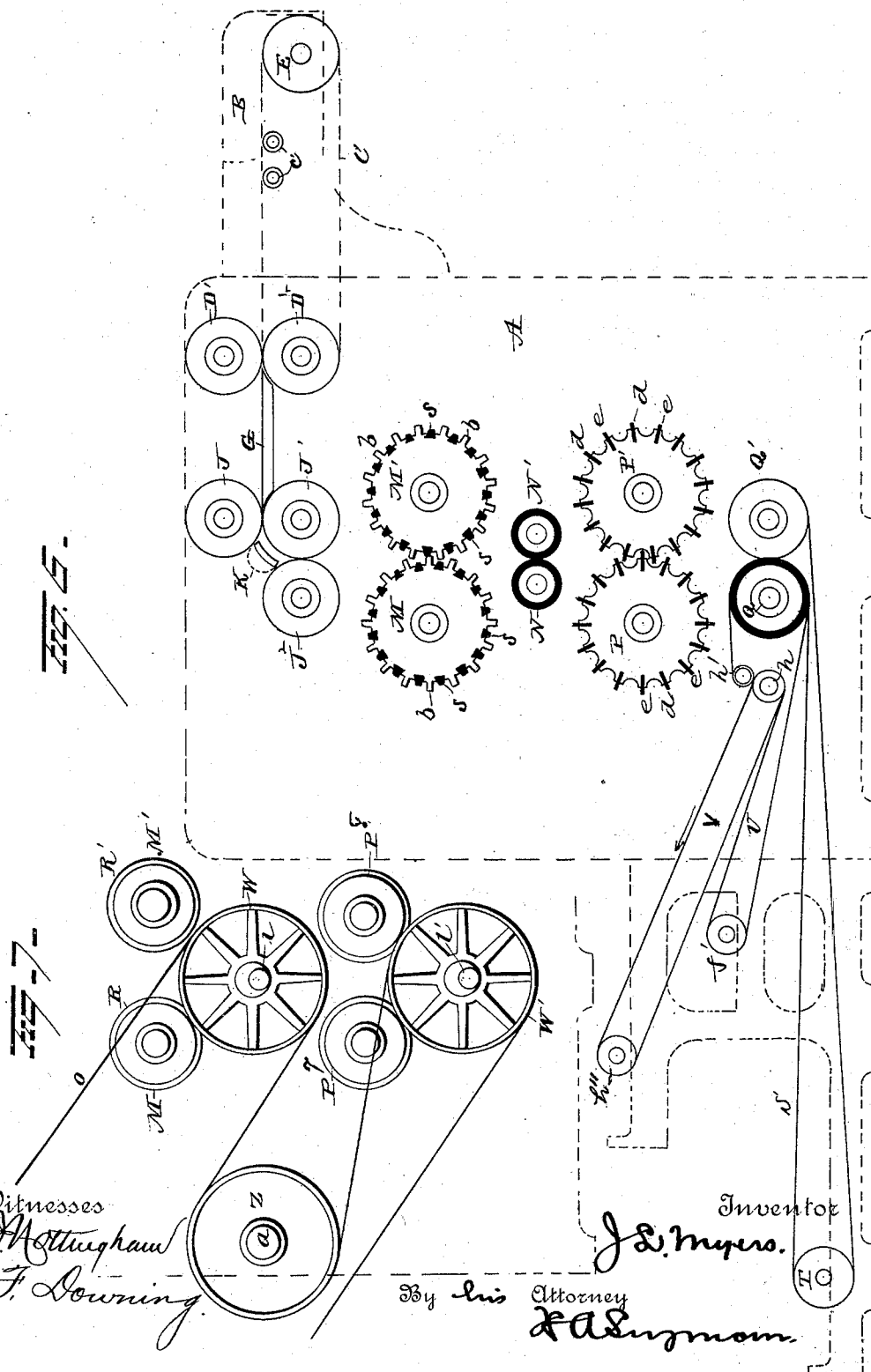
4 Sheets—Sheet 4.

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MACHINE FOR TREATING FIBROUS PLANTS.

No. 476,161.

Patented May 31, 1892.



UNITED STATES PATENT OFFICE.

JAMES L. MYERS, OF NEW ORLEANS, LOUISIANA, ASSIGNOR TO THE TROPICAL FIBRE MACHINE AND PROCESS COMPANY, OF PORTLAND, MAINE.

MACHINE FOR TREATING FIBROUS PLANTS.

SPECIFICATION forming part of Letters Patent No. 476,161, dated May 31, 1892.

Application filed November 10, 1888. Renewed March 26, 1891, Again renewed November 18, 1891. Serial No. 412,299.
(No model.)

To all whom it may concern:

Be it known that I, JAMES L. MYERS, a resident of New Orleans, in the parish of Orleans and State of Louisiana, have invented certain new and useful Improvements in Machines for Treating Fibrous Plants; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in vegetable-fiber cleaning and stripping machines, and is more particularly intended for operating on such plants and the leaves thereof as the abaca, banana, bromelia, henequin, agave, and pita; and it consists in certain constructions and combinations of parts, substantially as hereinafter described, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a side view of my improved machine, showing its driving arrangement, feed and delivery table and frame, as well as stop-board or shutter, and its movement, the side frame A' being omitted. Fig. 2 is another or off-side view of the same machine, showing its feed and carrier gearing, &c. Fig. 3 is an end elevation in part of same. Fig. 4 is a view of one of a pair of revolving brush and wiper drums. Fig. 5 is also a transverse sectional view of certain beating and scraping devices. Fig. 6 is a view of all the rollers and drums and showing their relative position in the apparatus; and Fig. 7 shows the driving-belt with its contacts, with the three principal driving-pulleys and their mode of operation.

A represents the main frame, of any suitable construction, preferably designed as in the drawings, consisting of upright supports A² and the outside cheek A' of the main frame, this part A' being so arranged relative to the main frame that tie-rods A³ may extend through both and hold them together.

B is a feed-carrier frame secured to the main frame and provided with an endless traveling

apron or belt C, arranged to pass at its inner end around a roller D and at its outer end around a tension-roller E, said belt or apron being supported between said rollers by idlers or smaller rollers c', and the feed-apron working between cheek or side pieces B', constituting the sides of carrier-frame B, takes up the portions of the plants or leaves being treated. The roller D works in connection with a second or upper feed-roller D', rotary motion being given to these feed-rollers through sprocket-wheels v and chain u, or by carrier-gear (not shown) from the crushing-roller J, as hereinafter described.

As the fibrous plants or portions of them are being carried forward by the traveling apron C the upper feed-roller D' is raised and disengaged from the lower roller D, causing the roller D and the apron to cease movement at intervals, and a stop board or shutter F is provided to be brought down upon a plate G, which latter constitutes a fixed portion of the feeding device in line with the carrying surface of the apron C. This may be done by fitting the bearings of the top roller D' and the stop-board F to work at their ends in guides or grooves D² D³, respectively, and connecting them by a rocking beam or lever H, to which motion is given by a foot lever or treadle I, through a rod I², to raise the roller D' and lower the stop-board F simultaneously, as required. The bearing of roller D' is connected by a link with lever H, and the sprocket-chain u, connecting pulley v on roller D' with pulley v on roller J, is sufficiently slack to permit the roller D' to rise the short distance required in a vertical plane. The object of thus raising the roller D' and lowering the stop-board or shutter F is to close down in front of the foremost leaves or portions of the plants for the purpose of arresting them in their feed until their ends are all even or in line. This operation of evening the ends of the plants can be conveniently performed by hand. Upon removing foot-pressure from the treadle I the roller D' drops into its normal position again, imparting motion to the lower roller D and the apron C, the stop-board F

rising at the same time to its normal position, as shown by full lines in Figs. 1 and 2, when the feed-passage will be opened and the leaves will be delivered over the feed plate or table

5 G to and between a pair of crushing-rollers J and J'. As the forward ends of the leaves or portions of the plants under treatment pass from between these crushing-rollers J and J' they come in contact with a concave

10 deflector or deflecting-plate K, which directs the leaves in a downward course between the crushing-roller J' and another crushing and gripping roller J² in the same horizontal plane. One object of this arrangement is to

15 give the leaves a vertical direction, so that they will be assisted in their downward course by gravity. The material to be stripped then passes down between the two rotary beater or scraper drums M and M', which

20 may be variously constructed and of any suitable material, but are here shown (see Fig. 5) as composed of a body having integral paddle or breaking blades *b*, with rubber bearing-strips *s* dovetailed in the de-

25 pressed surfaces between these breaking-blades and acting as yielding cushions, whereby the outer ends of the rigid paddles or blades *b* are made to beat and scrape the fiber as it passes between the beaters or scrapers *b*

30 and the yielding cushions *s* of the drums M and M'. These rotary beater or scraper drums M and M' may be suitably driven first in one direction and then in the other, and are geared to rotate simultaneously and uniformly through

35 the gear-wheels P⁵. In this connection it is well to explain that it is important in reversing the drums that no time should be lost by a gradual stopping of the same, but, on the contrary, that the stopping before reversing

40 should be as nearly instantaneous as possible. To this end an enlarged hub or drum P², having, preferably, a grooved periphery, is made to project from one or more of the gear-wheels in position to be operated upon by a brake-

45 lever P³ in proximity thereto. This lever P³ is pivoted at P⁴ and is connected at points on opposite ends of its pivotal point with flexible brake-straps, which latter are secured at their outer ends and rest within the grooves in the

50 peripheries of the drums P². By applying this with a slight effort the drums are stopped at once. The mechanism by which the reverse motion is given will be hereinafter described.

55 The object of the forward and reverse motion is to beat and scrape off the covering from both sides of the plant or leaves in one passage through the machine, the beaters or scrapers *b* repeatedly striking the leaves or material treated at short distances apart trans-

60 versely to their downward travel, while the flexible cushions *s* hold up the leaves or material to the beaters or scrapers *b* and are designed to prevent the fiber from being cut or

65 injured, as it would be if the beaters forced it against a rigid surface. The leaves then pass between a pair of gripping-rollers N and N',

preferably rubber-faced, which serve to hold the fiber and carry it downward, while the beater or scraper drums M and M' are oper- 70 ated in a reverse direction for the purpose of scraping the end of the leaf which has not yet passed between the drums and been scraped before the motion of the latter is reversed. From the grip-rollers N and N' the fibrous 75 material is delivered between a pair of drums P and P', (see Fig. 6,) each of which is constructed similar to the beater and scraper drums M and M', except that on their periph- 80 eries brushes *d* alternate with the wipers *e*, and there is preferably a corrugated or concave surface between each brush and wiper. The brushes *d* may be made of any suitable material, and the wipers *e* be composed of flat 85 strips of leather, rubber, or other flexible material set edgewise on or along the drums P and P'.

The brushing and wiping drums P and P' are made to revolve rapidly, and serve to brush and wipe from the fiber any adhering 90 pulp or substance. Said drums P and P' are coupled to rotate in concert in the same manner as the drums M and M'—as, for instance, by gearing P² and P³—and made to revolve and reverse alternately, as hereinafter de- 95 scribed, the wipers and brushes of one drum registering with the spaces between the wipers and brushes of the other drum. After the fiber has passed down from and between the drums P and P' a sufficient distance it is 100 gripped by the lower rollers Q and Q', both or either of which are driven by suitable gearing. The rollers Q Q' having taken hold of the fiber or material, and just before the fiber is released from the grip-rollers N and 105 N', the brush and wiper drums P and P' are reversed, which keeps the fiber straightened or held perpendicularly while being brushed or wiped and allows it to be carried through the grip-rollers Q and Q' in an untangled 110 mass, conveying it to the delivery-apron S. The lower grip-rollers Q and Q' can be made of any suitable material, and one or both, but preferably one at least, is made yielding by facing it with rubber, and one or both of the 115 rollers may be driven through the engagement of carrier-wheel *n'* with one of the gear-wheels *g'* on the shafts of the rollers Q Q'.

5 S is an endless apron passed around the roller Q', whereby it is driven, and the outer tension- 120 roller T, and serves to deliver the fiber from the machine. U is another endless belt, arranged to pass around the roller Q, small pulleys *h'* and *h*, and outer tension-pulley *f'*, and serves to prevent the fiber from wrapping around the 125 roller Q and at the same time to drive the shive-apron V. The apron V is mounted on rollers *h* and *h''* and is driven in the direction of the arrow by the contact therewith of apron U, which, before passing around roller Q, passes 130 down under roller *h* and then over roller *h''*. The object of the apron V is to carry away the greater part of the shive. Some little will pass downwardly onto apron S; but by locat-

ing the rollers h h' near roller Q the apron V is brought down under the wiper-drum, so that the greater portion of shive which is beaten, brushed, or scraped off while the fiber is held between rollers Q Q' falls onto apron V and is carried away.

Z is the driving-pulley for the feeding, crushing, and delivering mechanism, and is fast upon a shaft a , which extends from the right to the left side of the main frame A. Upon its left-hand end and outside of the main frame is fixed a pinion a' , which is made to engage or mesh with a gear-wheel a^3 , fixed upon a counter-shaft a^2 , and upon which is fixed a smaller pinion a^4 , which engages or meshes with another larger gear-wheel a^6 , fixed upon another counter-shaft a^5 , and which also has another pinion a' smaller than itself which meshes with and drives a still larger gear-wheel b' on the front intermediate grip-roller shaft a^8 . Upon this same grip-roller shaft a^8 is a small pinion a^9 , which is also fixed thereto and engages with both the upper carrier gear-wheel n and lower carrier gear-wheel n' . These carrier gear-wheels n and n' are hung upon independent studs i and i' , and the upper carrier gear-wheel n carries the motion given it by the pinion a^8 to the gears g on the rollers J, J', and J² to the sprocket-wheel v on roller J, and to wheel v on roller D' through the sprocket-chain u , thus driving the feed-roller D'. The lower carrier gear-wheel n' receives its motion from the same pinion a^8 and imparts it to the gear-wheel g' on the grip-roller Q', which, through the other gear-wheel g' , drives the roller Q and apron-belts S, V, and U. The top pulley W is provided with two faces—one to receive the driving-belt o and the other having V-grooves to give it an extended frictional surface. This pulley W revolves upon an eccentric-shaft l , which is made to oscillate by means of the lever y , secured thereto and vibrated through rod y' and pedal I', whereby said pulley W is thrown from contact with the pulley R, where the tension of the driving-belt o normally keeps it, into contact with the pulley R', which causes a reverse motion to be given to drums M M', by pressing the foot down upon the pedal I'. The moment the foot is raised the tension of the driving-belt o brings the friction-pulley W to its former position and keeps it there until required for reversing the drums M and M' again. The pulleys R and R' are provided with V-grooves to suit the pulley W, their position being upon the outside ends of the two drum-shafts M and M', and for the purpose already described. The lower pulley W' is arranged upon the eccentric-shaft l' in the same manner as pulley W upon the shaft l , and gives motion to the brush and wiper drums P P', through the spur-gearing P² and P³ and friction-pulleys P⁷ and P⁸. The lower shaft l' of pulley W' is oscillated by the pedal I², lever

I³, and link I³¹. Instead, however, of grooving the faces of the pulleys as described, they may be plain.

In putting the machine together the shafts are journaled in sectional boxes h^5 , and these boxes are always placed so that in taking the machine apart they may be readily removed and interchanged, they all being of a uniform size and blocked up in a similar manner.

It is evident that slight changes might be resorted to in the form and arrangement of the several parts described without departing from the spirit and scope of my invention. Hence I do not wish to limit myself to the precise construction herein set forth; but,

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

1. In a fiber stripping and cleaning machine, the combination, with beater or scraper drums geared together and gripping-rollers located at one side of said drums, of a shiftable actuating device adapted to be thrown into engagement with either of said drums, whereby the direction of rotation thereof can be reversed, as described.

2. In a fiber stripping and cleaning machine, the combination, with beater or scraper drums geared together, a pulley connected to each drum, and gripping-rollers located at one side of said drums, of a shaft carrying a power-transmitting pulley and means for placing said pulley in engagement with the pulley on either of said drums, substantially as set forth.

3. In a fiber stripping and cleaning machine, the combination, with gripping-rollers and beater or scraper drums geared together and each provided with a friction-pulley, of an eccentric-shaft having a friction-pulley thereon arranged to engage the pulley of either drum and a lever and treadle for shifting the shaft.

4. In a fiber stripping and cleaning machine, the combination, with beater or scraper drums geared together, a pulley connected to each drum, an eccentric-shaft carrying a power-transmitting pulley, and devices for moving the shaft, whereby the power-transmitting pulley thereon can be moved to engage the pulley on either drum, of yielding gripping-rollers located at one side of said drums.

5. In a fiber stripping and cleaning machine, the combination, with beater or scraper drums geared together, brushing and wiping drums also geared together, and gripping-rollers located between the beater or scraper drums and brushing or wiper drums, of a shiftable actuating device adapted to be thrown into engagement with either drum of each set, whereby the direction of rotation thereof can be reversed, as described.

6. In a fiber stripping and cleaning machine, the combination, with reversible beater or scraper drums and wiper-drum, brakes for stopping said drums, and mechanism for re-

versing them, of gripping-rollers located between the beater or scraper and wiper drums, substantially as set forth.

7. In a fiber stripping and cleaning machine, the combination, with crushing-rolls, of beater mechanism, gripping-rollers, and wiper drums, the passage between said parts being in the same vertical plane, substantially as set forth.
8. In a fiber stripping and cleaning machine, the combination, with a pair of beater or scraper drums geared together, a pair of wiper drums geared together, gripping-rollers located between the beater or scraper drums and the wiper drums, and gripping-rollers located below the wiper-drum, of shiftable actuating devices adapted to be thrown into engagement with either drum of the two pairs, whereby the direction of rotation thereof can be reversed, as described.
9. In a fiber stripping and cleaning machine, the combination, with feeding mechanism, a pair of beater or scraper drums, a pair of wiper drums, pulleys, means for placing one of said pulleys in engagement with either of the beater or scraper drums, and means for placing the other pulley in engagement with either of the wiper drums, of gripping-rollers located between the beater or scraper and wiper drums and gripping-rollers located below the wiper-drums, substantially as set forth.
10. In a fiber stripping and cleaning machine, the combination, with feeding mechanism, beater or scraper drums geared together, wiper drums geared together, shiftable power-transmitting devices, and means for placing said power-transmitting devices in engagement with either of the beater or scraper drums and either of the wiper drums, of gripping-rollers located between the beater or scraper and wiper drums and gripping-rollers located below the wiper-drums, substantially as set forth.
11. In a fiber stripping and cleaning machine, the combination, with a frame and shafts journaled therein and carrying beater or scraper drums, wiper drums, and friction-pulleys, of gripping-rollers located between the beater or scraper drums and the wiper drums, eccentric-shafts, pulleys thereon having friction-surfaces, and levers for rocking the eccentric-shafts to change the contact of the friction-surface, substantially as set forth.
12. In a fiber stripping and cleaning machine, the combination, with a frame and shafts journaled therein, said shafts carrying beater or scraper drums, wiper drums, and friction-

pulleys, of gripping-rollers located between the beater or scraper drums and the wiper drums, eccentric shafts, pulleys mounted thereon, said pulleys having frictional surfaces, levers connected with said eccentric shafts, and foot-treadles pivotally connected with the levers, substantially as set forth.

13. In a fiber stripping and cleaning machine, the combination, with a frame and shafts journaled therein, said shafts carrying beater or scraper drums, wiper drums, gear-wheels, and V-shaped grooved frictional surfaces, of eccentric shafts having friction-pulleys thereon, levers connected with said shafts, foot-treadles for operating said levers, a pulley Z, a drive-belt passing around said pulley Z and around pulleys on the eccentric shafts, gripping-rollers located between the beater or scraper drums and wiper drums, and gripping-rollers located below the wiper-drums.

14. In a fiber stripping and cleaning machine, beater or scraper drums having blades on their surfaces and rubber cushions dovetailed in the surface of the drum between the blades, substantially as set forth.

15. In a fiber stripping and cleaning machine, a pair of wiper drums having corrugated surfaces and alternating wipers and brushes secured in the projecting ribs between the corrugations, the wipers and brushes of one drum registering with the spaces between the wipers and brushes of the other drum, substantially as set forth.

16. The combination, with the main frame and an outside cheek held thereto by bolts passing through the two, said cheek being adapted to receive the ends of the shafts, of feeding mechanism, crushing-rolls, a deflecting-plate for changing the course of the material being fed, beater or scraper drums, wiper drums, gripping-rollers located between the beater or scraper drums and wiper drums, eccentric shafts, levers for throwing the latter, and gearing for transferring motion from one part of the machine to the other, substantially as set forth.

17. In a fiber stripping and cleaning machine, the combination, with drums and gripping-rollers, of aprons between which the fiber passes and an apron located in a plane below the drums for carrying off the shive.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

JAMES L. MYERS.

Witnesses:

S. G. NOTTINGHAM,
V. E. HODGES.