

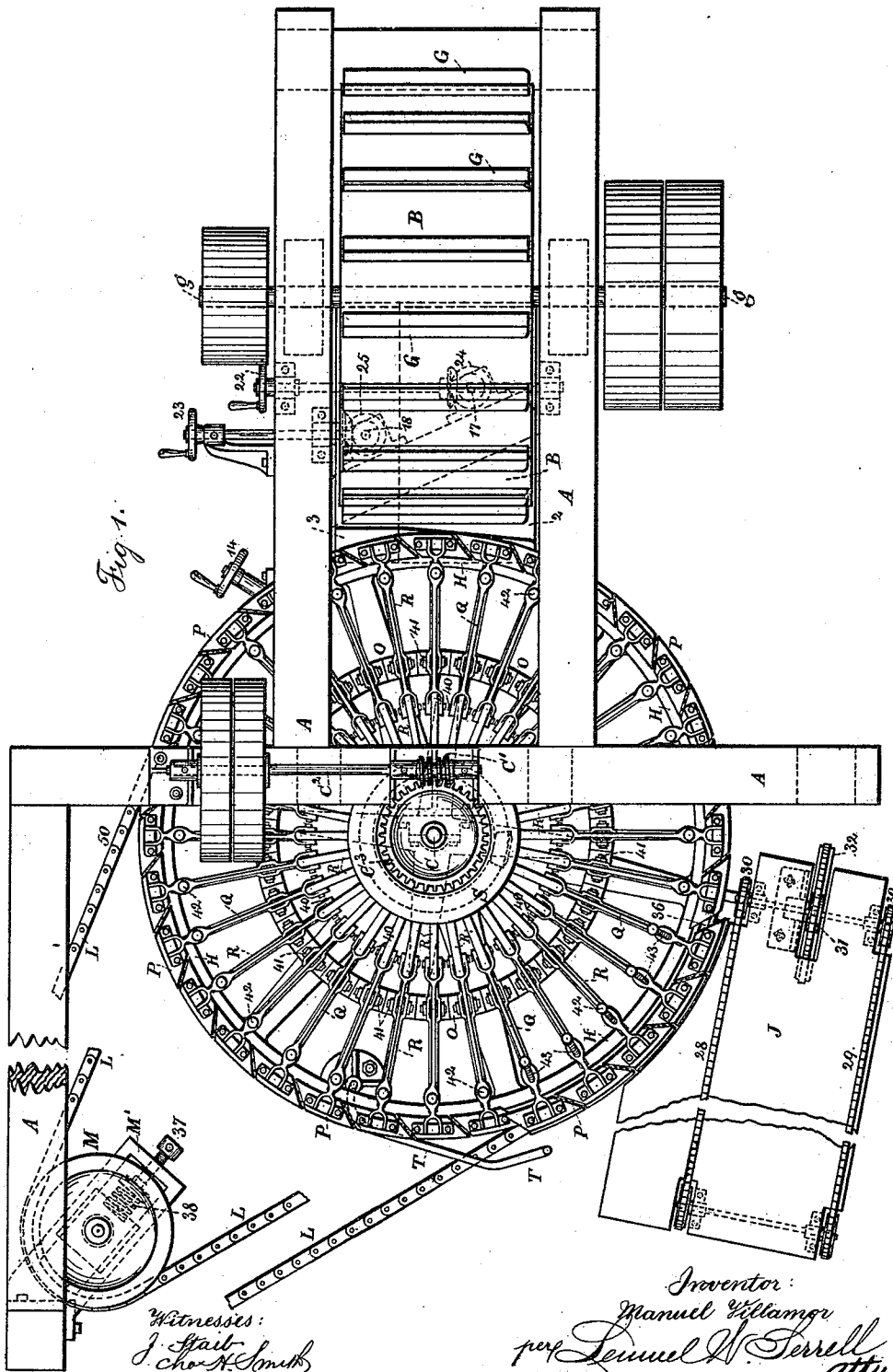
(No Model.)

4 Sheets—Sheet 1.

M. VILLAMOR.
MACHINE FOR CLEANING VEGETABLE FIBER.

No. 464,782.

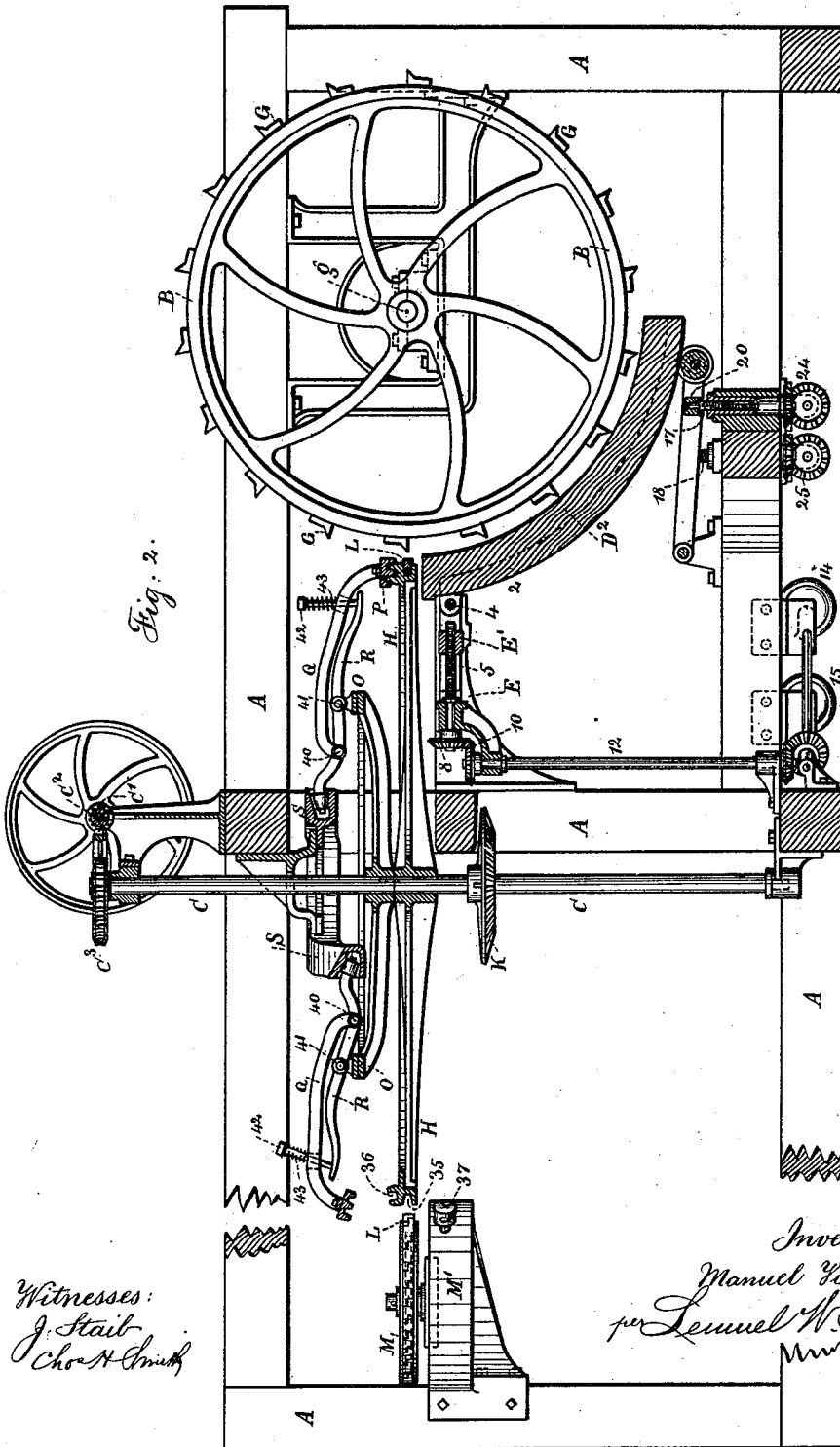
Patented Dec. 8, 1891.



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Witnesses:
J. Stait
Chas. H. Smith

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Manuel Villamor
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att'y

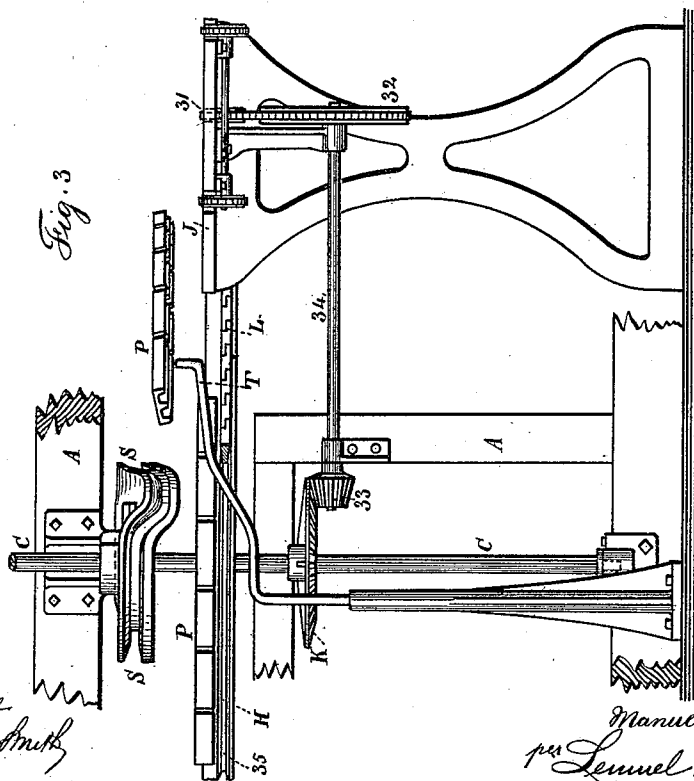
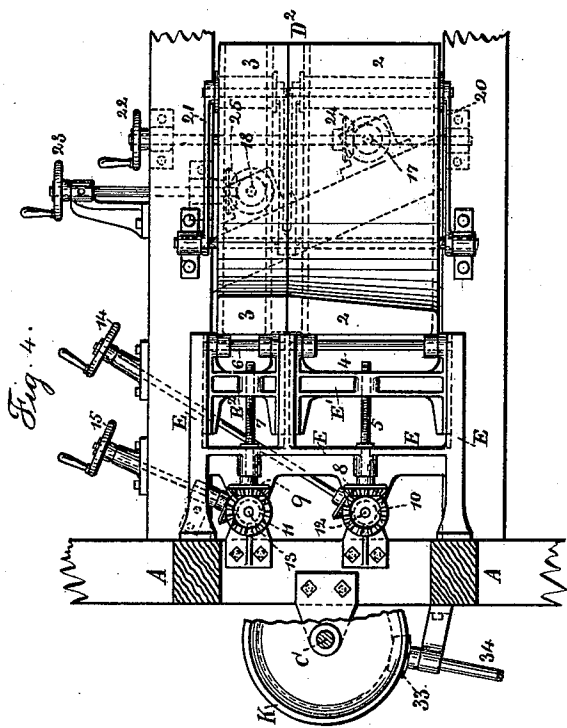
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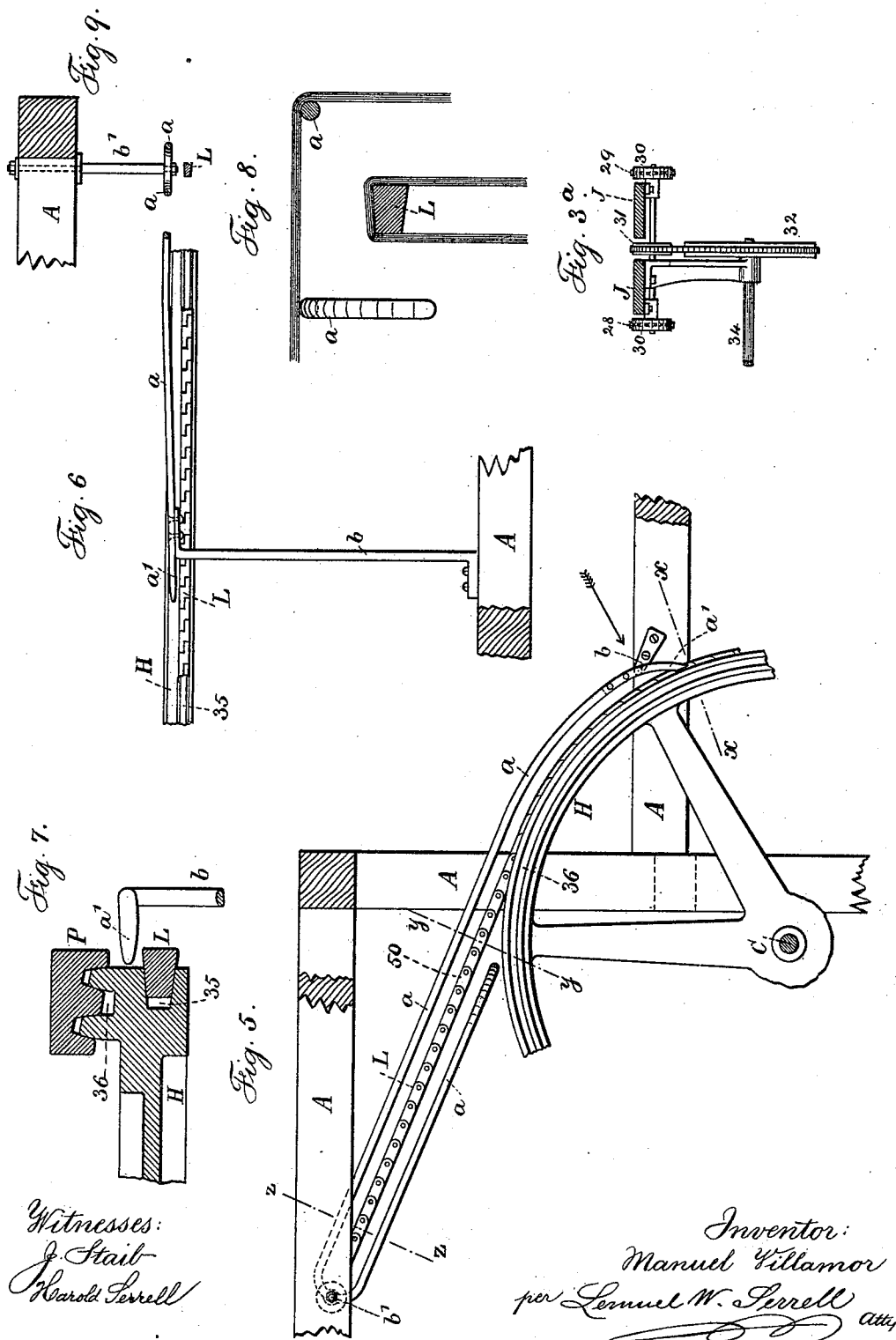
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UNITED STATES PATENT OFFICE.

MANUEL VILLAMOR, OF MERIDA, MEXICO.

MACHINE FOR CLEANING VEGETABLE FIBER.

SPECIFICATION forming part of Letters Patent No. 464,782, dated December 8, 1891.

Application filed November 14, 1890. Serial No. 371,405. (No model.)

To all whom it may concern:

Be it known that I, MANUEL VILLAMOR, of Merida, Yucatan, Mexico, have invented an Improvement in Machines for Cleaning Vegetable Fiber, of which the following is a specification.

A reference is hereby made to Letters Patent No. 362,683, granted May 10, 1887, and No. 399,802, granted March 19, 1889, to Timoteo Villamor, for machines for cleaning vegetable fiber. In the present improvements some of the devices made use of are represented in the aforesaid patents; and my invention consists in the combinations of devices hereinafter set forth. In these former patents the fiber is held while being acted upon by revolving scrapers within a stationary incline or segment, and the present invention relates especially to the means for reversing the hank of fiber automatically in order that the scraping operation may be performed with facility for the removal of the soft and pulpy substances from the leaves in cleaning the fiber.

In the drawings, Figure 1 is a general plan view with the reversing-belt and feeding-table shortened up. Fig. 2 is a section representing the scraping device and two of the clamping-levers. Fig. 3 is a partial elevation end-wise of the feed-table. Fig. 3^a is a cross-section of the feed-table at the pinion-shaft. Fig. 4 represents the adjusting devices for the concave. Fig. 5 is a plan view illustrating the curved bar or bridle; and Fig. 6 is a partial elevation of the same in the direction of the arrow, Fig. 5. Fig. 7 is a cross-section in large size of the parts at the line *xx* of Fig. 5. Fig. 8 is a cross-section in larger size of the parts at the line *yy* of Fig. 5, showing the disposition of the fiber; and Fig. 9 is a cross-section of the parts at the line *zz* of Fig. 5.

The frame A is of suitable size and character and usually of wood, and by it are supported the boxes for the cross-shaft *g*, carrying the scraping-cylinder B, upon which are scrapers G, similar to those in aforesaid patents, and there is a concave rest D², preferably of wood, upon which the leaves or stalks as they are scraped, and such leaves or stalks are moved across the concave during the scraping operation. This concave rest D² is made in two parts 2 and 3, and the part 2 is

beveled off toward the entrance side, (see Fig. 4,) so as to freely admit the leaves or stalks and gradually bring them nearer the scraping-blades, so that the scrapers act with increasing force. The surface of the concave part 3 is parallel with the edge of the scraping-blades, and here the work of scraping is finished. Both parts 2 and 3 can be separately adjusted or replaced when worn out, and there is a cross-shaft 4 in the bearing E', which shaft forms a hinge upon which the part 2 of the concave rest can be swung as it is adjusted. The bearing E' is supported in a stationary metal frame E, and it can be adjusted toward or from the scraping-cylinder B by means of the screw 5, and there is a shaft 6, forming a hinge for the portion 3 of the concave rest, and this shaft 6 is supported in a bearing E² and it can be adjusted toward or from the scraping-cylinder B by the screw 7, and the frame E is made double for receiving the two parts E' and E², and the screws 5 and 7 pass through hubs in the frame E and are provided with bevel-gears 8 and 9, acted upon by similar gears 10 and 11 upon the vertical shafts 12 and 13, and to provide for freely turning these shafts 12 and 13 in adjusting the parts I make use of hand-wheels 14 and 15 upon diagonal shafts extending to bevel-gears upon the lower ends of the respective shafts 12 and 13. The lower ends of the parts 2 and 3 of the concave rest D² can be raised or lowered to regulate the proximity of the concave surface to the scrapers G, and for this purpose I make use of screws 17 18, that act upon the lever-supports 20 21 beneath the lower ends of the concave rest, and these screws 17 and 18 may be revolved in any suitable manner. I have represented hand-wheels 22 23 upon shafts provided with bevel pinions 24 25 to connect the hand-wheels to the screws for rotating them in either one direction or the other. The section 3 of the concave rest is worn out the most rapidly. Hence it is advantageous to provide separate adjustments for the same, as before described.

There is a vertical shaft C supported in the frame-work of the machine and rotated by suitable means. I have represented a worm C' upon a driving-shaft C² and acting upon a worm-wheel C³ at the upper end of the shaft C as a means for rotating this shaft and the

clamp-wheel H, that is supported by said shaft. There is a feed-table J, the surface of which is at the level, or nearly so, of the clamp-wheel H, and upon this table are feed-chains 28 29, preferably with projecting spikes or pins for carrying along the leaves, stalks, or other vegetable substances acted upon, and these chains are moved at the proper speed by any suitable means. I have represented the pulleys 30 as driven by a pinion 31 and a wheel 32 and gear-teeth or a chain, and this wheel 32 is represented as receiving motion from the pinion 33 and shaft 34, the pinion gearing with the bevel-wheel K upon the vertical shaft C below the clamp-wheel H. The clamp-wheel H is made with a grooved edge. The groove 35 around the periphery receives a chain or belt L, and the groove 36 in the upper face of the rim is used in connection with the clamping devices. The belt or chain L is of any suitable character and may be composed of links, as shown. It passes to a distant pulley M, which is upon an axis or shaft set in yielding bearings in a frame M', and there is an adjusting-screw 37 and spring 38 to regulate the tension applied to the chain or belt, and above the clamping-wheel H is a pivot-wheel O, attached to the shaft C and carrying the pivots of the levers that operate the clamps. There may be any desired number of these clamps and their levers. I have shown thirty-two of them and will describe one of them.

The clamp P has a corrugated face adapted to clamp the vegetable fiber against the upper surfaces of the grooved rim, and this clamp P is at the end of a lever Q, pivoted at 40 upon the secondary lever R, that is pivoted at 41 upon the pivot-wheel O, and this lever R extends in both directions from the pivot, and at the inner end is provided with a roller traveling in the stationary grooved cam S, which surrounds the shaft C, but is fastened to the frame A, and the shape of the groove in this cam is such that at the proper time the clamps are raised to liberate the fiber or pressed down and held for clamping the fiber to the clamping-wheel. At the outer end of the secondary lever R is a pressure-pin 42, passing through a hole in the lever Q and having a spring 43 between the head of the pressure-pin and the lever Q, so that a limited amount of yielding movement is allowed to the clamp in grasping the stalks or leaves.

It is now to be understood that as the leaves or stalks are conveyed along upon the feed-table J by the chains or belts 28 29 their projecting ends pass above the clamp-wheel and beneath the clamps P, which are elevated, and as the shaft C and clamp-wheel H revolve the clamps are brought down upon the leaves or stalks by the action of the stationary grooved cam S and grip said leaves or stalks, and the clamps and wheel move on together, carrying the leaves or stalks beyond the end of the table J, and as they hang down they are drawn freely in between the concave rest

D² and scraping-wheel B, and the soft and pulpy portions of the said leaves or stalks are scraped from the fiber by the scrapers G, and the clamps retain their hold upon the leaves or stalks during the scraping operation and thereafter until released, as hereinafter described. A stationary curved bar or bridle *a* occupies a place at each side of and above the chain L at the delivery side of the machine. One end of this bridle *a* is carried by a rod *b*, secured to a lower portion of the frame A, (see Figs. 5 and 6,) and the other end of the bridle *a* is supported by a rod *b'*, connected to an upper portion of the frame A. (See Figs. 5 and 9.) The end of the bridle adjacent to the wheel H is curved in at *a'* to almost touch the wheel H and to come between the chain L and clamps P. (See Figs. 5 and 7.) After the scraping action above referred to, the hank of fiber leaves the portion 3 of the concave rest or scraping-board and with the rotation of the wheel H passes over the main arm of the bridle *a* and gradually draws over both arms of the bridle without touching the chain L, (see Fig. 8,) and then falls down again and hangs from the clamps between the two portions of the chain or belt, and in this manner the hank of fiber is kept from becoming entangled with the chain L. As the fiber approaches the other part of the belt the clamps still retain their hold upon the unscraped portion of the stalks or leaves and carry the hank of fiber along outside and over the lifter-bar T, which is stationary, and this lifter-bar raises the fiber into a loop as the rotation of the wheel H proceeds, and the lower part of the loop or hank of fiber draws in between the chain or belt L and the edge of the clamp-wheel H, and such hank of fiber is caught and held by and between the chain and wheel. At this time and with the further and continuous movement of the wheel H the stationary cam S lifts each of the clamps in succession and liberates the unscraped portions of each leaf or stalk, and the said parts of the leaf or stalk which had been between the clamp and the surface of the clamp-wheel are raised, drawn outwardly and over the bar T, and fall down below the wheel H, and are now supported solely by the chain L and wheel H, and said hank of fiber is carried a second time by the chain and wheel alone through the machine and over the surface of the concave rest, and in so doing the previously-unscraped ends of the stalks or leaves are relieved of pulp and reduced to fiber by the final scraping operation. The fiber is now thoroughly cleansed from end to end, and the hanks of fiber are carried away upon the chain or belt L along past the part marked 50, and the same are removed therefrom preferably by hand previous to reaching the pulley M. Fresh leaves or stalks are fed to the clamp-wheel and beneath the clamps P while the turned-over hanks of fiber and their unscraped ends that are hang-

ing from the chain L are passing by the feed-table, and these unscraped ends and fresh leaves or stalks pass together into the machine, the final scraping operation being performed on the former and the first scraping operation being performed on the latter. As the fiber leaves the scraping-board the finished hank passes away on the chain L, and the portion held by the clamps P is simultaneously drawn over the bridle *a*, (see Fig. 8,) as heretofore described, and turned over to be finished and finally scraped. In this manner the scraping and cleaning operations are continuous and progressive, and but little hand-work is required, except in supplying the machine and in removing the hanks of fiber from the belt after the scraping operation has been performed.

I claim as my invention—

1. The combination, with a scraping-cylinder and concave rest, of a horizontal clamp-wheel, a chain or belt passing around its grooved periphery and clamps acting upon its grooved upper surface, and a stationary cam and levers for acting upon such clamps, substantially as set forth.

2. The combination, with the shaft C and clamp-wheel H, of the clamps P, the clamp-levers and secondary levers to which the clamp-levers are pivoted, the springs for applying pressure to the clamps, and a stationary grooved cam acting upon the secondary levers for moving the clamps, substantially as set forth.

3. The combination, with the scraping-cylinder and concave rest, of a clamp-wheel, clamps acting upon the upper surface of the wheel for grasping the stalks or leaves, a chain or belt at the edge of the wheel for holding the hank of fiber when passing the second time through the machine, and a lifter for raising the hank of fiber previous to being grasped the second time by the chain or belt and for simultaneously drawing the unscraped portion out from between the clamps, substantially as set forth.

4. The combination, with a scraping-cylinder, of a concave rest made in two separate parts, the one part having an inclined surface at the entrance side providing for the free admission of the stalks or leaves, and means for adjusting such parts independently of each other, substantially as set forth.

5. The combination, with a scraping-cylinder and concave rest, of a horizontal wheel having ribs on its upper surface, clamping-blocks grooved on their under surface to correspond with the wheel and levers for supporting the clamps, and a cam for moving the levers and actuating the clamps, substantially as set forth.

6. The combination, with the clamp-wheel and its shaft, of clamps acting against the wheel for holding the stalks or leaves while being carried through the machine the first time, and a chain or belt at the edge of the wheel for carrying the fibrous materials through the machine the second time, substantially as set forth.

7. The combination, in a machine for scraping fibers, of a scraping-cylinder, a concave incline against which the material is scraped, revolving clamps for receiving and carrying the fibrous materials through the machine, and a chain or belt for clamping the scraped portion of the fibrous material and carrying the same through the machine a second time, substantially as set forth.

8. The combination, with a scraping-cylinder and concave rest, of a revolving wheel and clamps, a feed-table for supplying the material operated upon to the clamps, an automatic device for reversing the hank of fiber, and a chain or holding device for grasping the scraped portion of the fiber and holding the same while the unscraped portion is acted upon, substantially as set forth.

9. The combination, in a machine for scraping fibers, with the scraping-cylinder and concave rest, of a horizontal wheel, clamping-blocks and mechanism for operating the same to convey the leaves or stalks through the machine the first time, a chain or belt at the edge of the wheel for carrying the fibrous material through the machine the second time, a bridle over which the fiber is drawn above the chain after the first scraping operation, and a reversing device or bar T for turning over the hank of fiber and withdrawing the ends from the clamping-blocks previous to the final scraping, substantially as set forth.

10. The combination, in a machine for scraping fibers, with the scraping-cylinder and concave scraping-board, of a horizontal wheel H, clamping-blocks and mechanism for operating the same, a chain or belt L at the edge of the wheel, and a two-part stationary bridle or bar *a* at each side of and above said chain or belt L and having a curved end at *a'* contiguous to the wheel H, whereby the fibers of the leaves or stalks after their first scraping are drawn over the bridle and the other and finished hanks of fiber are delivered independently on the belt or chain L, substantially as set forth.

Signed by me this 29th day of October, 1890.

MANUEL VILLAMOR.

Witnesses:

TIMOTEO VILLAMOR,
GEO. T. PINCKNEY.