

J. L. ACOSTA.
FIBER PREPARING MACHINE.

No. 474,052.

Patented May 3, 1892.

Fig. 1.

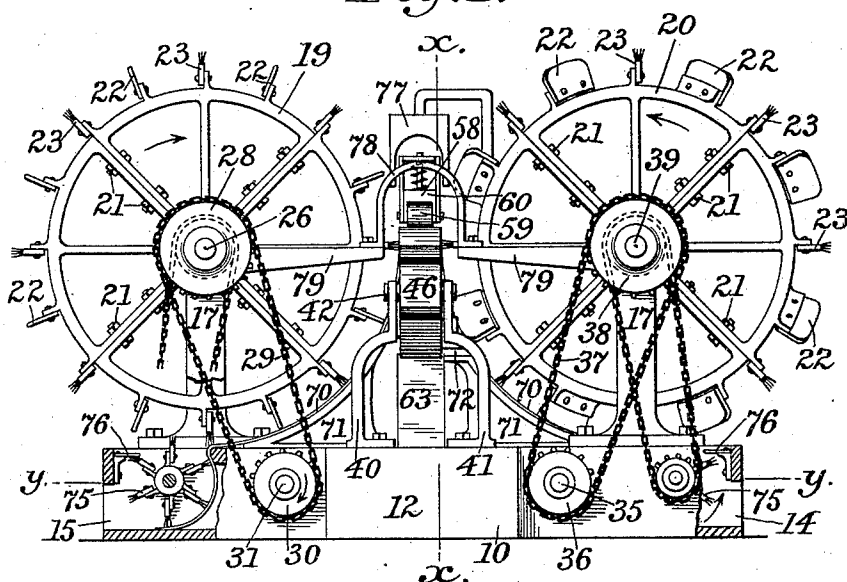
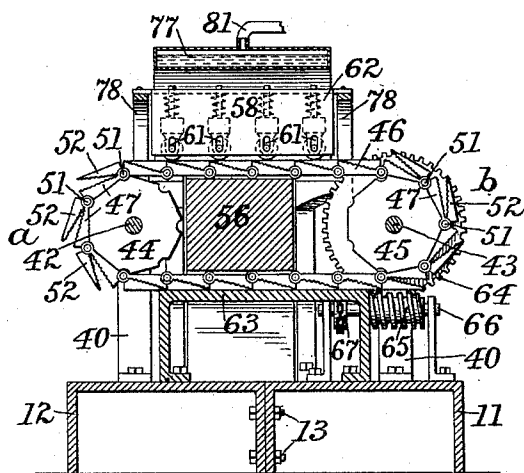


Fig. 2.



Attest:

A. S. Jeschke.
A. H. Hadden.

Inventor:

John Luis Acosta
by William B. Greeley
Atty.

J. L. ACOSTA.
FIBER PREPARING MACHINE.

No. 474,052.

Patented May 3, 1892.

Fig. 3.

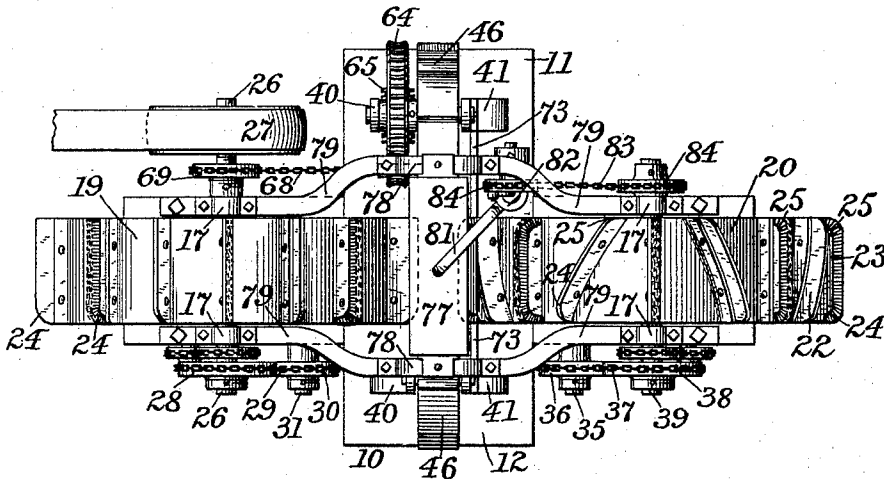
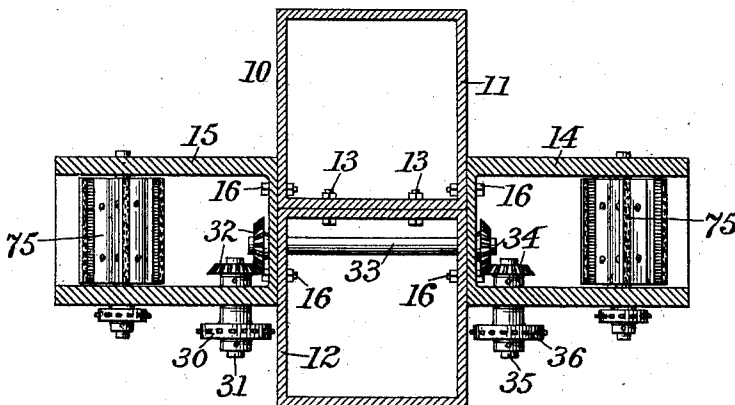


Fig. 4.



Attest:

A. N. Jespersen.
A. Chidder.

Inventor:

John Luis Acosta
by William D. Greeley
Atty.

J. L. ACOSTA.
FIBER PREPARING MACHINE.

No. 474,052.

Patented May 3, 1892.

Fig. 5.

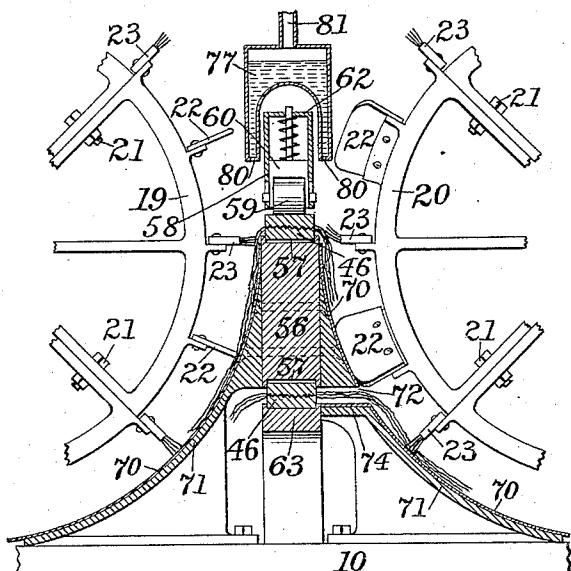


Fig. 6.

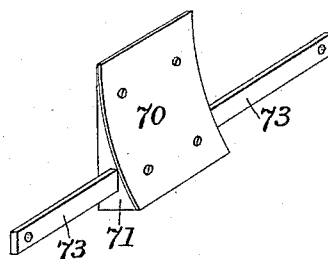


Fig. 7.

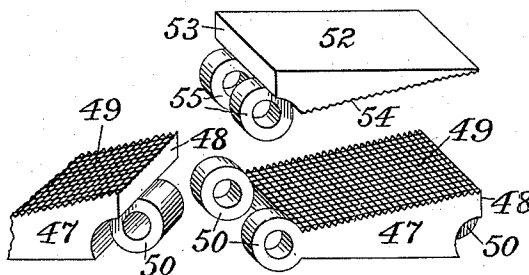
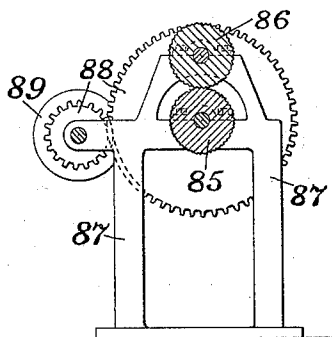


Fig. 8.



Attest:

A. H. Jester.
A. H. Jester.

Inventor:

John Luis Acosta.
by William D. Greeley
Atty.

UNITED STATES PATENT OFFICE.

JOHN LUIS ACOSTA, OF VERA CRUZ, MEXICO.

FIBER-PREPARING MACHINE.

SPECIFICATION forming part of Letters Patent No. 474,052, dated May 3, 1892.

Application filed September 9, 1891. Serial No. 405,155. (No model.) Patented in Mexico March 20, 1890.

To all whom it may concern:

Be it known that I, JOHN LUIS ACOSTA, a citizen of the United States of Colombia, residing in Vera Cruz, Mexico, have invented certain new and useful Improvements in Fiber-Preparing Machines, (described in part in Letters Patent of Mexico granted to me March 20, 1890;) and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, making a part of this specification.

The object of my invention is to provide an improved machine for treating fibrous plants of various kinds for the purpose of separating the cellular tissue and other matter from the fibers and leaving the latter in a well-cleaned condition.

I have designed my machine particularly for the treatment of pita fiber, and inasmuch as the pita plant grows in places inaccessible by the ordinary modes of travel and as the fiber can be treated most advantageously where it is cut I have constructed my machine with especial reference to its transportation on the backs of mules from the coast regions to the place of use.

In the drawings, Figure 1 is a front elevation of my improved machine with part of the base broken away. Fig. 2 is a section on the line $x x$ of Fig. 1. Fig. 3 is a top plan view of the machine. Fig. 4 is a horizontal section on the line $y y$ of Fig. 1. Fig. 5 is a detailed sectional view on a larger scale than the preceding figures. Figs. 6 and 7 are details to be referred to, and Fig. 8 is a sectional view of the machine used for the preliminary crushing of the fibrous material.

The working parts of the machine are supported upon a base 10, which is made in sections to be readily taken apart and transported. Two rectangular sections 11 12 are adapted to be secured together end to end by bolts 13, and to the sides thereof are secured the two rectangular sections 14 15 by bolts 16, the bolts which secure each section 14 to the compound section passing into and engaging both of the sections 11 12, thereby forming a base of great strength and rigidity.

Upon the sections 14 15 are removably secured the brackets 17, which are formed with

bearings for the wheels 19 20. Each wheel is made up of quadrantal segments, as shown, secured together by bolts 21 and mounted 55 upon a shaft. Each wheel is armed on its periphery with a series of blades 22 and brushes 33 in alternation. The blades are round-edged, and for a reason which will hereinafter appear the blades and brushes of the wheel 19 have one end rounded, as at 24, while the blades and brushes of the wheel 20 have both ends rounded, as at 24 25, as shown in Fig. 3.

On the wheel 19 the blades and brushes are 65 parallel with the axis and with each other; but on the wheel 20, which acts twice upon the fiber, the alternate blades are set obliquely in opposite directions, while the brushes are parallel with the axis. I find that this arrangement is necessary to secure the best action upon the fiber. The wheel 19 bears upon its shaft 26, a driving-pulley 27, and a chain-wheel 28. From the latter motion is transmitted by a chain 29 to a chain-wheel 30 on 75 a short shaft 31, which communicates motion through bevel-gears 32 to a cross-shaft 33. From this shaft motion is transmitted by bevel-gears 34, short shaft 35, chain-wheels 36 38, and chain 37 to the shaft 39 of the 80 wheel 20.

Brackets 40 41, bolted to the sections 11 12, provide bearings for the shafts 42 43 of drums or wheels 44 45, which support and move a fiber-carrying chain 46. This chain is composed of links and jaws, which are adapted to grasp and hold the fiber during the action thereon of the wheels 19 20. The links 47 are made substantially triangular in longitudinal section, (see Fig. 7,) with a substantially vertical end 48 and a toothed inclined surface 49, and at their ends are provided with perforated ears 50 for the reception of a pivot-pin 51, by which they are connected. (See Fig. 2.) Jaws 52, also substantially triangular in longitudinal section and having a substantially vertical end 53 and inclined surface 54, toothed to correspond to and cooperate with the surface 49 of the links, are pivotally attached to the links, preferably by perforated ears 55, which receive the pin 51. As the links pass about the drums or wheels 44 45 the jaws open automatically, as at the points a and b ; but when the links lie in the

same plane, as in the upper and lower members of the chain, the vertical ends 48 of the links abut against the vertical ends 53 of the oppositely-set jaws and compel them to close, while at the same time the sheet of fibers held by each pair of jaws lies in a nearly horizontal plane, in which relative position they can be operated upon by the wheels to the best advantage. Furthermore, the chain thus constructed, while grasping the fibers very firmly and being itself very strong and durable, occupies a minimum of space either in operation or when packed for transportation.

I have found it desirable to provide means for holding the jaws tightly closed, and to that end I provide for the upper member of the chain a rest or support 56, preferably grooved to receive the chain, as shown at 57 in Fig. 5, and above the chain I provide a pressure device 58. As shown, this device may consist of one or more rollers 59, carried by a spring-pressed block 60. The shafts of the rollers project through slots 61 in the sides of the supporting-case 62 and the stem of the block through a hole in the top of the case, whereby the movements of the rollers are guided and limited. The lower surface of the block 56 is also grooved to receive the lower member of the chain, and beneath the chain is a fixed plate or block 63, by which means the jaws of the lower member of the chain are also pressed firmly against the links. As will hereinafter appear, there is less inequality in the material held by the lower member of the chain, and consequently less necessity of a yielding pressure device, than in the case of the upper member. The chain is driven by a worm-wheel 64 on the shaft of one of the wheels, said worm-wheel being engaged by a worm 65 on a shaft 66. The latter carries a chain-wheel 67 and is driven by a chain 68 from a chain-wheel 69 on the shaft 26. The wheels 19 20 are preferably so disposed with reference to the chain 46 as that the axes of said wheels are about on a line with the upper member of the chain and as that the outer edges of the blades and brushes thereon shall move in a path adjacent to the sides of said chain. The projecting ends of the fiber are supported to receive the action of said blades and brushes by concave plates 70, preferably of brass and held in position by suitable backing 71. The fibrous material held by the upper member of the chain is grasped in the middle, and both projecting ends are cleaned at once. When it has been brought by the chain to the point *b*, (see Fig. 2,) it is shifted laterally in the jaws and is carried back in the lower member of the chain in order that the portion previously grasped may be cleaned also. I therefore make one of the concave plates 70 in two portions and separate the two by a narrow slit 72, through which the fiber may project into the path of the blades and brushes on the wheel 20.

In order that the path of the fiber may be unobstructed, the upper portion of the plate

70 and its backing 71 are supported by arms 73, bolted to the brackets 41. A shelf 74 supports the fibers between the chain and the point of action of the cleaning device.

The wheels 19 and 20 are cleaned by rotary brush-wheels 75, and the brushes of these wheels are cleaned by fixed combs 76.

An inverted-U-shaped water-tank 77 straddles the pressure device 58 and is supported, together with said pressure device, by an arch 78, carried by arms 79, extended from the brackets 17. The legs of the tank are perforated, as at 80, to allow water to fall upon the fiber and assist in the operation of cleaning. The tank is fed through a pipe 81 by a pump 82, driven from the shaft of wheel 20 by a chain 83 and chain-wheels 84.

The machine shown in Fig. 8 consists, essentially, of a pair of finely-corrugated rolls 85 86, supported in a suitable frame-work 87 and actuated through gearing 88 by a drive-wheel 89.

In the treatment of fiber with my machine the fibrous material is first crushed by the rolls 85 86 and is then subjected to a chemical treatment to further facilitate the separation of the fiber from the other material. After this the fibrous material is placed beneath the jaws of the chain 46 as they open at the point *a* and is carried by it between the wheels 19 and 20, by which the projecting ends are thoroughly cleaned. By rounding the ends of the blades and brushes which meet the advancing material and by providing the blades with blunt edges in place of the sharp edges usually employed I avoid injury to the fiber itself. As the jaws of the chain open at the point *b*, the material is moved laterally to bring the portion previously grasped by the jaws into the path of the blades and brushes on the wheel 20 at the line 72. As the jaws again open at the point *a*, the fibers are removed and will be found to be thoroughly cleaned and straightened and ready for the preliminary steps of spinning.

By making the machine as described, with its base, large wheels, and all other large parts in sections I am enabled to reduce the weight of any one piece to less than two hundred and fifty pounds, and thereby to make it possible to transport the machine on the backs of mules or by carriers to any place where it may be desired to set it up.

I have herein described a particular embodiment of my improvements; but the details of construction may be varied without departing from the spirit of my invention.

I claim as my invention—

1. A fiber-carrying chain composed of links substantially triangular in longitudinal section, with one end substantially vertical, and jaws also substantially triangular and oppositely set with respect to said links and pivotally secured thereto near the apices of said links, substantially as shown and described.
2. The combination of a series of links pivoted end to end substantially triangular in

longitudinal section, having each a substantially vertical end and an inclined upper surface provided with teeth, and a series of jaws pivotally secured to said links and set reversely with respect thereto and having each a substantially vertical end and an inclined lower surface provided with teeth, substantially as shown and described.

3. The combination, with an endless fiber-carrying chain composed of links and jaws adapted to co-operate to grasp the fiber, wheels carrying said chain, and wheels armed with devices for cleaning the fiber, of a fixed block below the lower member of the chain to support the same, a block supported between the upper and lower members of said chain and grooved on its upper and lower sides to receive the chain, and a pressure device to press upon the upper member of said chain, substantially as shown and described.

4. The combination, with a fiber-carrying chain and horizontally-disposed wheels to support and move said chain, of wheels armed with devices for cleaning the fiber and set adjacent to the line of travel of said chain, and plates set with their upper edges about on a line with the line of travel of the upper member of said chain and adapted to support the fiber under the action of the cleaning devices, one of said plates having a slit about on a line with the line of travel of the lower member of said chain, substantially as shown and described.

5. The combination, with a fiber-carrying chain and horizontally-placed wheels to support and move said chain, of two wheels placed on opposite sides of said chain and adjacent to the line of travel thereof, fiber-cleaning blades and brushes upon the periphery of said wheels, the blades and brushes upon one wheel having one end rounded to meet the fibers carried by the one member of said chain and the blades and brushes upon the other wheel having both ends rounded to meet the fibers carried in each direction by the upper and lower members, respectively, of said chain, plates to support the fibers under the action of both wheels and having their upper edges adjacent to the upper member of said chain, and a third plate having its upper edge adjacent to the lower member of said chain and

adapted to support the fibers carried by said member under the action of said second wheel, substantially as shown and described.

6. The combination, with a fiber-carrying chain and horizontally-placed wheels to support and move said chain, of two wheels placed on opposite sides of said chain and adjacent to the line of travel thereof, fiber-cleaning blades and brushes upon the periphery of said wheels, the blades and brushes upon one wheel being parallel with the axis and with each other and the brushes upon the second wheel being also parallel with the axis and with each other, while the blades upon said wheel are obliquely inclined with respect to the axis alternately in opposite directions, plates to support the fibers under the action of both wheels and having their upper edges adjacent to the upper member of said chain, and a third plate having its upper edge adjacent to the lower member of said chain and adapted to support the fibers carried by said member under the action of said second wheel, substantially as shown and described.

7. The combination, with a fiber-carrying chain, supports therefor, and a pressure device to press upon said chain, of a water-tank straddling said pressure device and provided with perforations in the extremities of its legs to permit water to escape upon the fibers projecting from said chain, substantially as shown and described.

8. The combination, in a fiber-preparing machine, of a base composed of rectangular sections 11 and 12, bolts to unite them end to end, rectangular sections 14 and 15, and bolts to secure them to opposite sides of the first-named sections, said last-named bolts passing into and engaging the sides of both of said sections 11 12, and brackets removably secured to said sections and adapted to support the operative parts of the mechanism, substantially as shown and described.

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

JOHN LUIS ACOSTA.

Witnesses:

W. B. GREELEY,
A. N. JESBERA.