

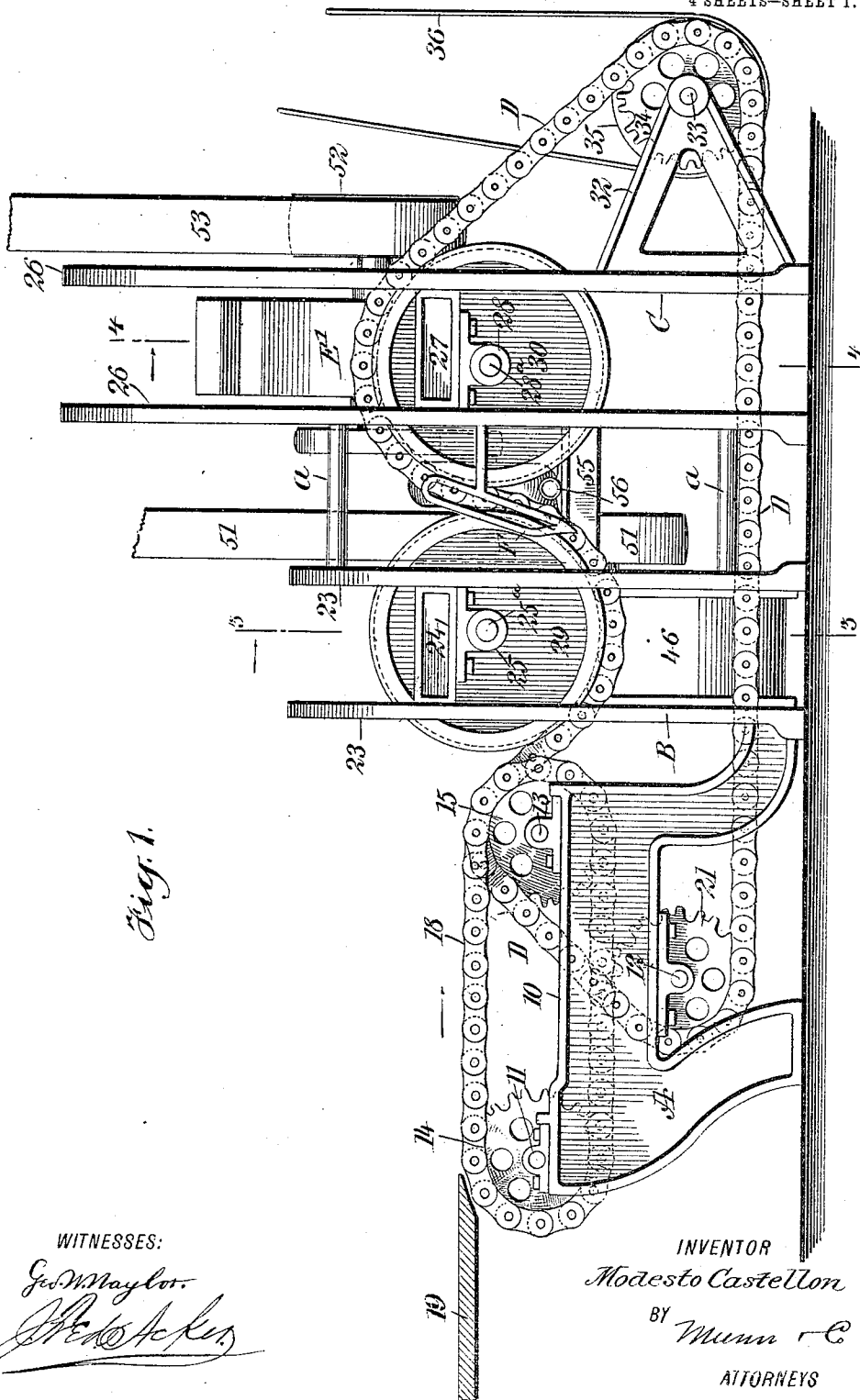
No. 816,296.

PATENTED MAR. 27, 1906.

M. CASTELLON.
DECORTICATING MACHINE.

APPLICATION FILED JAN. 5, 1905..

4 SHEETS—SHEET 1.



WITNESSES:

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J. E. & A. K.

INVENTOR

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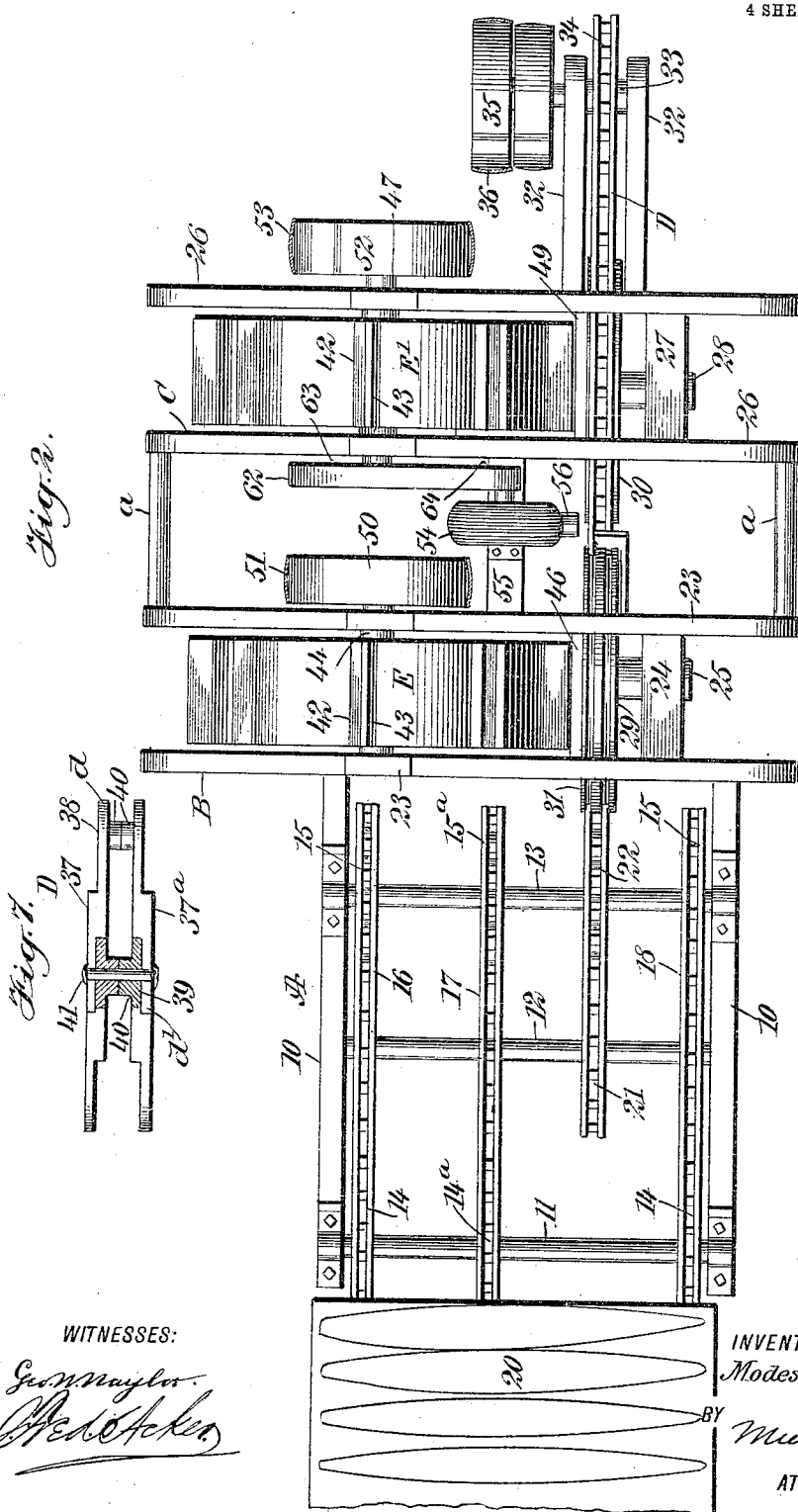
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4 SHEETS—SHEET 2.



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4 SHEETS—SHEET 3.

Fig. 4.

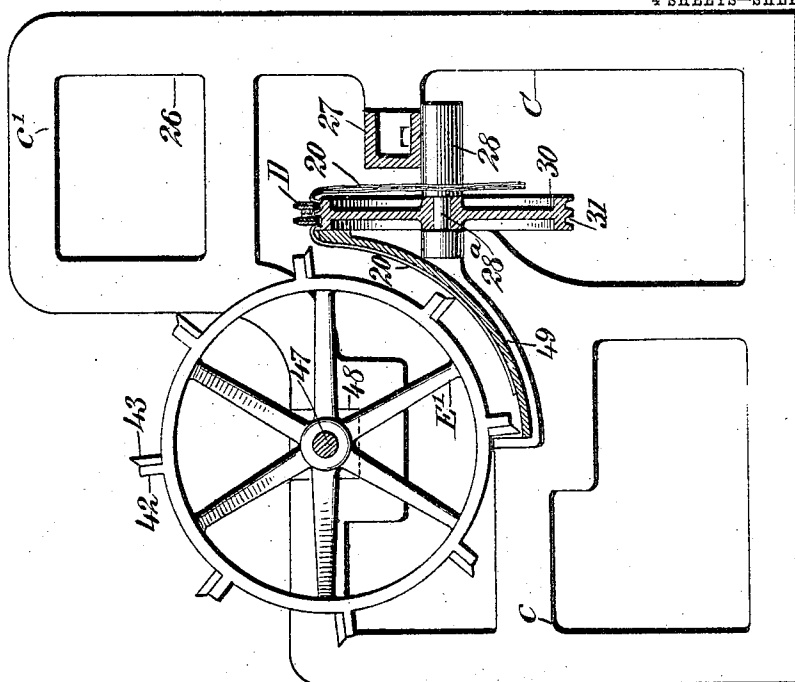
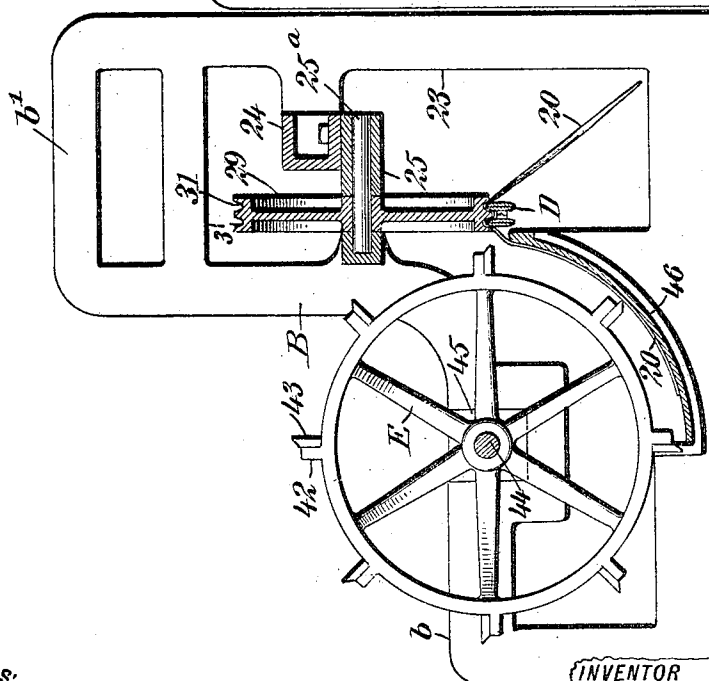


Fig. 3.



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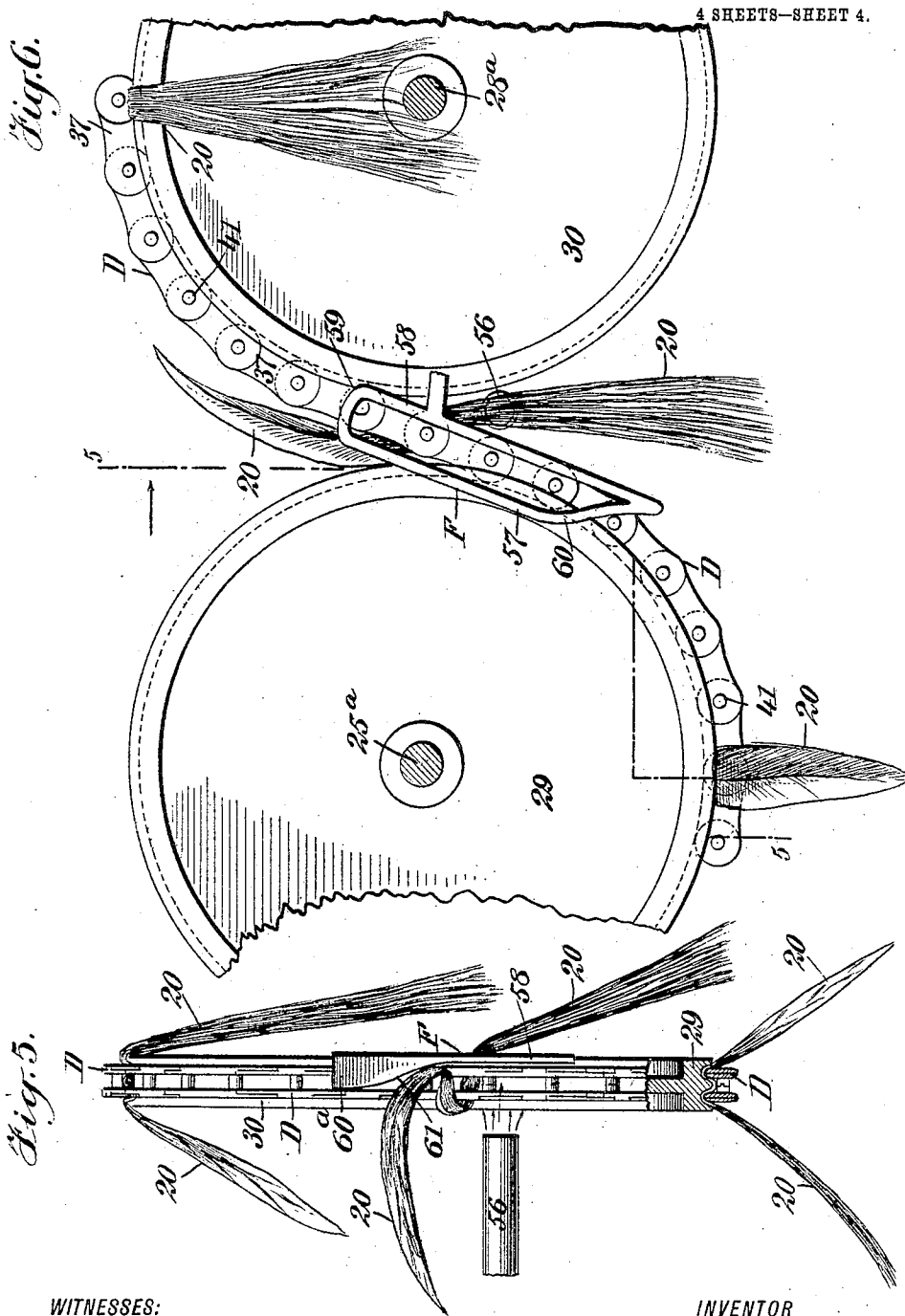
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4 SHEETS—SHEET 4.



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UNITED STATES PATENT OFFICE.

MODESTO CASTELLON, OF MERIDA, MEXICO.

DECORTICATING-MACHINE.

No. 816,296.

Specification of Letters Patent.

Patented March 27, 1906.

Application filed January 5, 1905. Serial No 239,741.

To all whom it may concern:

Be it known that I, MODESTO CASTELLON, a citizen of the Republic of Cuba, and a resident of Merida, Yucatan, Mexico, have invented a new and Improved Decorticating-Machine, of which the following is a full, clear, and exact description.

The purpose of the invention is to construct a machine for decorticating the leaves of plants, especially sisal hemp, and to provide a machine which will expeditiously remove the pulp from the fiber in a thorough and cleanly manner and without detriment to the fiber.

A further purpose of the invention is to provide a machine having two decorticating-wheels so arranged that the first wheel will act to scrape one portion of a leaf and the second wheel the remaining portion of the same leaf, means being provided for automatically presenting the parts of the leaf to be scraped first to one wheel and then to the other.

A further purpose of the invention is to so construct the machine that it will be as light as possible consistent with strength and will be simple, durable, and economic and practically automatic in its action however the material is fed thereto.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

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

Figure 1 is a side elevation of the machine. Fig. 2 is a plan view of the same. Fig. 3 is a vertical section taken practically on the line 3 3 of Fig. 1. Fig. 4 is a vertical section taken substantially on the line 4 4 of Fig. 1. Fig. 5 is a sectional edge view of the first conveyer-wheel, the section being taken practically on the line 5 5 of Fig. 6, the view being drawn on a large scale. Fig. 6 is a detail side elevation of the two conveyer-wheels and the conveyer-chain carried thereby, and Fig. 7 is a detail view of a portion of the conveyer-chain.

The frame of the machine consists of a forward longitudinally-located section A, an intermediate transverse section B, and a parallel rear transverse section C. The intermediate section B of the frame is secured to the forward section A in any suitable or approved manner, and the two parallel trans-

verse sections B and C of the frame are connected by bars *a* (shown in Fig. 1) or by any other suitable means. In the construction of the forward section A of the frame two cheek-pieces 10 are employed, which pieces are parallel and are connected in any suitable or approved manner. Upon the upper face of the cheek-pieces 10 two shafts 11 and 13 are journaled in suitable bearings, and at the lower portion of the said cheek-pieces about intermediate of the shafts 11 and 13 a lower intermediate shaft 12 is journaled, preferably in adjustable bearings.

A sprocket-wheel 14 is secured to each end portion of the upper forward shaft 11 within the frame A, and between the ends of the shaft 11 a third sprocket-wheel 14^a is secured. Sprocket-wheels 15, corresponding to the sprocket-wheels 14, are secured upon the forward upper shaft 13, as is likewise a sprocket-wheel 15^a, secured to the said shaft 13 between its ends.

An endless feed-belt 16 is made to travel over the longitudinally-opposing sprocket-wheels 14 and 15 at what may be termed the "left-hand side" of the machine, and an intermediate feed-belt 17 is made to travel over the intermediate sprocket-wheels 14^a and 15^a, and at the right-hand side of the machine a third feed-belt 18 is made to travel over the sprocket-wheels 14 and 15 on the shafts 11 and 13, located at the right-hand side of the frame, as is particularly shown in Fig. 2, wherein it will be observed that all of the feed-belts 16, 17, and 18 are parallel.

A table 19 is suitably supported at the forward end of the frame A, extending partially over the receiving portions of the feed-belts 16, 17, and 18, as is shown in Figs. 1 and 2, and on this table 19 the leaves 20 to be cleaned are transversely laid, as is indicated in Fig. 2. A sprocket-wheel 21 is secured upon the lower shaft 12 between its center and its right-hand end, and between the center of the upper rear shaft 13 and its right-hand end a corresponding and alining sprocket-wheel 22 is also secured.

With reference to the forward transverse or intermediate frame B it consists of two cheek-pieces 23, (shown in Fig. 1,) which consist of a right-hand high section *b'* and a left-hand low section *b*. In fact, the cheek-pieces 23 of the frame B are more or less L-shaped in general formation and are made skeleton

in construction, so as to be as light as possible. The cheek-pieces 23 of the frame B are connected at about the central portion of their higher sections *b'* by a cross-bar 24, as is shown in Figs. 1 and 3, and this cross-bar 24 serves to support a bearing 25, which extends transversely of the machine, as is shown in Fig. 3, the cross-bar 24 extending longitudinally of the machine. In this bearing 25 a shaft 25^a is mounted to revolve.

The rear section C of the frame of the machine is made higher than the intermediate section B, but is of the same shape, comprising cheek-pieces 26; having a right-hand high portion *c'* and a left-hand lower portion *c*. The cheek-pieces of the said frame, formed as described, are connected by a cross-bar 27, corresponding to the cross-bar 24 heretofore mentioned, and this cross-bar 27 supports a bearing 28, corresponding to the bearing 25 above referred to, and in the bearing 28 a shaft 28^a is mounted to revolve. A conveyer-wheel 29 is made to turn loosely on the shaft 25^a, and a corresponding conveyer-wheel 30 is made to turn loosely on the shaft 28^a. These two conveyer-wheels 29 and 30 are arranged in tandem and are of the same diameter and of the same construction. The said conveyer-wheels 29 and 30 are in longitudinal alinement with the sprocket-wheels 21 and 22 in the front section A of the machine-frame.

Each conveyer-wheel 29 and 30 is provided with two peripheral grooves 31, located at opposite sides of its center, as is best shown in Figs. 3 and 4. Brackets 32 are made to extend rearward from the lower portion of the rear cheek-piece of the rear transverse section C of the frame, and in these brackets 32 the drive-shaft 33 for the machine is mounted to revolve. This drive-shaft is provided with an attached sprocket-wheel 34, which is in longitudinal alinement with the conveyer-wheels 29 and 30, and at one end of the said shaft 33 a driving-pulley 35 is attached, which receives a belt 36, connected with any source of power.

An endless conveyer-chain D forms a feature of the invention. This conveyer-chain D is carried from the driving sprocket-wheel 34 over the top portion of the rear conveyer-wheel 30, down between the two wheels 30 and 29 to an engagement with the under face of the forward conveyer-wheel 29. From thence the said conveyer-belt D is carried over the sprocket-wheel 22 on the upper feed-shaft 13 and downward around the sprocket-wheel 21 on the lower shaft 12 in the forward section A of the frame, which sprocket-wheel 21 is utilized as an idler and a tightener, and finally the conveyer-belt D is carried from the sprocket-wheel 21 again to the driving-sprocket 34. In this manner by the movement imparted through the driving-shaft to the conveyer-chain D movement is

imparted through said chain to both of the conveyer-wheels 29 and 30 and to the feed belts or chains 16, 17, and 19 through the medium of the sprocket-wheel 22 on the feed-shaft 13. I arbitrarily denominate that portion of the conveyer-chain which passes over the upper portion of the conveyer-wheel 30 the "upper stretch" of said chain, since it is the working upper portion of the chain, and I denominate that portion of the conveyer-chain which passes around the bottom portion of the conveyer-wheel 29 the "lower stretch" of the chain, since it is the lower working portion of the chain.

The conveyer-chain D is of peculiar construction, as is clearly shown in Fig. 7 of the drawings, wherein it will be observed that a link of the chain consists of two parallel members 37 and 37^a, having longitudinal recesses 38 in the outer face of one end of its members and interior longitudinal recesses 39 in the inner faces of the opposite ends of its members. Thus when the two members 37 and 37^a are assembled to form a link one end *d* of the link is narrower than the opposing end *d'*, the difference being such that the narrower end *d* of one link may be introduced into the recessed portion of the wider end *d'* of the opposing link and at the narrower end *d* of a link interiorly located, and opposing spacing-lugs 40 are formed, which lugs are apertured, as are likewise the members 37 and 37^a of the link, to receive a pivot-pin 41, which when two links are connected in the manner described is passed through the spacing-lugs 40 of the entering link and through corresponding apertures in the members of the link entered. Such a chain affords a wide bearing for the material to be carried and, taken in connection with the particularly -grooved conveyer-wheels 29 and 30, serves to hold the leaf when brought between the conveyer-belt and a conveyer-wheel firmly in fluted form, as is shown in Fig. 3, effectually preventing the leaf from slipping while so held during the decortication operation.

In connection with each of the conveyer-wheels 29 and 30 I employ a decortication or scraping wheel of any suitable or approved construction. The scraping-wheel provided for the forward conveyer-wheel 29 is designated as E and the scraping-wheel for the rear conveyer-wheel 30 is designated as E', the scraping-wheels being clearly shown in Figs. 2, 3, and 4. These scraping or decortication wheels E and E' are located at the same side of the machine—namely, the left-hand side—and are at right angles to the side faces of the conveyer-wheels 29 and 30, as is clearly shown in Fig. 2. Each scraping or decortication wheel is shown as provided with transverse lugs 42 at the exterior of its rim and scraping-blades 43 secured to such lugs. The forward scraping or decortication wheel E, provided for the conveyer-wheel 29, is secured

to a shaft 44, and the said shaft is mounted to turn in suitable bearings 45, located in the upper portion of the lower members *b* of the section B of the frame, and the shaft 44 for the said scraping-wheel E is practically in longitudinal alinement with the lower outer edge of the rim of the said conveyer-wheel 29, as is illustrated in Fig. 3. A curved trough 46 is supported upon the said frame B, and this trough is below the scraping-wheel E, extending from a point below the center of the shaft 44 of the said wheel upward to a point adjacent to the bottom rim portion of the conveyer-wheel 29 at its left-hand side, as is shown in Fig. 3, and this trough is adapted to receive and form a bearing for that portion of the leaf 20 which is to be acted upon by the scraping-wheel E, as is also clearly shown in Fig. 3. The shaft 47, upon which the other scraping or decorticating wheel E' is secured, is mounted to turn in suitable bearings 48 in the lower members *c* of the rear frame-section C, as is shown in Fig. 4, and the bearings 48 for the shaft 47 are at some distance above the bearings 45 for the shaft 44, as will be readily observed by a comparison of Fig. 3 and Fig. 4. The shaft 47, carrying the scraping-wheel E', is practically in horizontal alinement with the upper outer rim portion of the conveyer-wheel 30, as is illustrated in Fig. 4, and a trough 49, corresponding to the trough 46 and utilized for the same purpose, is located below the lower portion of the rear scraping or decorticating wheel E', extending from a point below the center of the shaft 47 upward in a curved line to a point adjacent to the upper outer rim portion of the conveyer-wheel 30, as is also shown in Fig. 4. The shafts 44 and 47 for the two scraping or decorticating wheels E and E' are independently driven, the shaft 44 being provided with an attached pulley 50, driven by a belt 51, while the shaft 47 for the other scraping or decorticating wheel is provided with a pulley 52, driven by a belt 53, the belts 51 and 53 receiving motion from any suitable source of power.

Between the two frames B and C at the right-hand side of the machine a cross-bar 55 is secured, and on this cross-bar a blower 54 is attached, the nozzle end 56 whereof is directed toward the right-hand side of the machine and is located adjacent to the space between the lower portions of the conveyer-wheels 29 and 30 and practically in alinement with the lower edge of a switch F, located at the lower portions of the two wheels 29 and 30, diagonally crossing the space between the two wheels, and such switch is given an inclination from its bottom end upward and rearward. The switch is attached to the frame 26, as is indicated in Fig. 1, and is independent of both of the conveyer-wheels 29 and 30. As is illustrated in Fig. 6, this

switch preferably consists of parallel side members 57 and 58 and end members 59 and 60. The forward portion of the switch F at the top and at the bottom is beyond the right-hand face of the conveyer-wheel 29 and the conveyer-chain D; but at the upper portion of the lower side member 58 of said switch the said side member is transversely enlarged, as is shown at 60^a, the enlargement being in direction of the left-hand side of the machine and being at the left-hand side of the rear portion of the conveyer-belt D, where it leaves the wheel 29 to meet the wheel 30, as is shown in Fig. 5, and such enlargement 60 at its left-hand side is provided with a cam-surface 61, which is adapted to assist in turning a leaf end for end as the leaf is being passed from one conveyer-wheel to the other, since when one portion of the leaf is being cleaned in the trough 46 by the first scraping-wheel E the leaf is held between the upper face of the conveyer-chain and the lower surface of the conveyer-wheel 29; but as the other end of the leaf is to be cleaned on the same side of the machine by the rear scraping-wheel E' it is necessary that the leaf be practically turned end for end before it passes to the rear conveyer-wheel 30, thus bringing the uncleaned portion of the leaf, which was at the right-hand side of the machine, to the left-hand side and the cleaned portion of the leaf to the right-hand side of the machine, and in thus turning the leaf end for end, which is accomplished by its engagement with the cam-surface 61, as is shown in Fig. 5, the leaf is passed between the rear face of the chain D and the opposing rim-face of the rear conveyer-wheel 30, permitting the uncleaned portion of the leaf to hang down at the left-hand side of the wheel 30 and the cleaned portion of the leaf at the right-hand side of the same wheel, as is shown in Fig. 6. Under these conditions the portion of the leaf which was not cleaned at the initial scraping operation is brought into the trough 49 and is cleaned by the second scraping-wheel E'. The cleaned leaf is then conducted by any suitable mechanism to any desired place. The cam-surface 61 of the switch F would not of itself be sufficient to effectually obtain a reversal of the leaf. Therefore the blower 54 is employed, as the said blower will direct its blast of air to the cleaned portion of the leaf, as is shown in Fig. 5, and force that portion to the right, thus assisting the cam portion of the switch to throw the uncleaned and heavier end of the leaf from the right to the left. Such operation is clearly indicated in Figs. 5 and 6 of the drawings. The blower is shown driven by means of a belt 62, passed over a pulley 63 on the shaft 47 of the rear scraper E', which belt 62 is likewise passed over a suitable pulley 64 on the blower-shaft.

Having thus described my invention, I



claim as new and desire to secure by Letters Patent—

1. In a decorticating-machine, conveyer devices arranged tandem, an endless conveyer-chain in engagement with the lower portion of one device and the upper portion of the other device, and scraping devices mounted to operate adjacent and at right angles to the side faces of the conveyer devices.

2. In a decorticating-machine, conveyer-wheels having peripheral grooves, the said conveyer-wheels being arranged tandem, an endless conveyer-chain in engagement with the grooved portions of the wheels, the said chain passing in engagement with the bottom of one wheel and the top of the other, said chain being constructed of series of pivotally-connected and interlocking links, and scraping-wheels mounted to revolve opposite the side faces of the conveyer-wheels and at right angles thereto, troughs leading from the chain-engaged portions of the said conveyer-wheels to the lower portions of the respective scraping-wheels, a switch located between the two conveyer-wheels opposite the lower portion of the wheel in engagement with the lower stretch of the chain and means to cooperate with the switch to change the leaf end for end.

3. In a decorticating-machine, conveyer-wheels arranged tandem, an endless conveyer-chain in engagement with the lower portion of one wheel and the upper portion of the other wheel, a switch and means to cooperate with the switch to change the leaf end for end located between the conveyer-wheels adjacent to the lower stretch of chain, and scraping devices mounted to operate at right angles to the side faces of the conveyer-wheels, the axes of the said scraping devices being one higher than the other, so that the upper portion of the initial scraping device is slightly below the axis of the adjacent scraping device, and the axis of the initial scraping device is practically in horizontal alinement with the lower edge of the first conveyer-wheel, and the axis of the second scraping device is in horizontal alinement with the upper edge of the second conveyer-wheel.

4. In a decorticating-machine, conveyer-wheels arranged tandem, an endless conveyer-chain in engagement with the lower portion of one wheel and the upper portion of the other wheel, a switch located between the conveyer-wheels adjacent to the lower stretch of chain, and scraping-wheels mounted to revolve at right angles to the side faces of the conveyer-wheels, the axes of the said scraping-wheels being one higher than the other, so that the upper portion of the initial scraping-wheel is slightly below the axis of the adjacent scraping-wheel, and the axis of the initial scraping-wheel is practically in horizontal alinement with the lower edge of the first conveyer-wheel, and the axis of the second

scraping-wheel is in alinement with the upper end of the second conveyer-wheel, and segmental troughs located below the under edges of the scraping-wheels, the said troughs extending up one to the upper edge of one conveyer-wheel and the other to the lower edge of the other conveyer-wheel.

5. In a decorticating-machine, conveyer-wheels arranged tandem, an endless conveyer-chain in engagement with the lower portion of one wheel and the upper portion of the other wheel, a switch between the conveyer-wheels adjacent to the chains means to cooperate with the switch to change the leaf end for end, scraping-wheels mounted to revolve at right angles to the side faces of the conveyer-wheels, both of the scraping-wheels being on the same side of the machine and the switch being located at the opposite side of the machine and troughs for the scraping-wheels.

6. In a decorticating-machine, conveyer-wheels arranged tandem, an endless conveyer-chain in engagement with the lower portion of one wheel and the upper portion of the other wheel, a switch between the conveyer-wheels adjacent to the chains, scraping-wheels mounted to revolve at right angles to the side faces of the conveyer-wheels, both of the scraping-wheels being on the same side of the machine and the switch being located at the opposite side of the machine, a blower located on the side of the machine on which the scraping-wheels are located, said blower being located between the scraping-wheels and the nozzle of the blower extending in the direction of the switch below the under edge thereof and troughs for the scraping-wheels.

7. In decorticating-machines, conveyer-wheels, an endless conveyer-chain passed over the top of one wheel and in engagement with the bottom of the other wheel, scraping devices located at angles to the side faces of the conveyer-wheels, and devices for reversing the leaves carried by the conveyer-chain at a point between the two conveyer-wheels.

8. In decorticating-machines, the conveyer-wheels arranged in tandem, an endless conveyer-belt passed in engagement with the top of one wheel and with the bottom of the other, scraping-wheels mounted at right angles to the conveyer-wheels and located at the same side of the machine, the axis of the initial scraping-wheel being in horizontal alinement with the under edge of the adjacent conveyer-wheel and the axis of the second scraping-wheel being in horizontal alinement with the upper edge of the second conveyer-wheel, troughs for the scraping-wheels and a reversing mechanism located at a point between the two conveyer-wheels, comprising a blower located at one side of the machine and a switch located at the opposite side of the machine, the switch being adjacent to the lower portion of the conveyer-wheel with

which the lower stretch of the conveyer-belt engages, and the outlet for the blower being adjacent to the under side of the said switch.

9. In decorticating-machines, the conveyer-wheels arranged in tandem, an endless conveyer-belt passed in engagement with the top of one wheel and with the bottom of the other, scraping-wheels mounted at right angles to the conveyer-wheels and located at the same side of the machine, the axis of the initial scraping-wheel being in horizontal alinement with the under edge of the adjacent conveyer-wheel and the axis of the second scraping-wheel being in horizontal alinement with the upper edge of the second conveyer-wheel, and a reversing mechanism located at a point between the two conveyer-wheels, comprising a blower located at one side of the machine and a switch located at

the other side of the machine, the switch being adjacent to the lower portion of the conveyer-wheel with which the lower stretch of the conveyer-belt engages and the outlet for the blower being adjacent to the under side of the said switch, and troughs located adjacent to the bottom portions of said scraper-wheels, one trough leading to the upper edge of one conveyer-wheel and the other trough leading to the lower edge of the other conveyer-wheel.

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

MODESTO CASTELLON.

Witnesses:

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W. TOWE.