

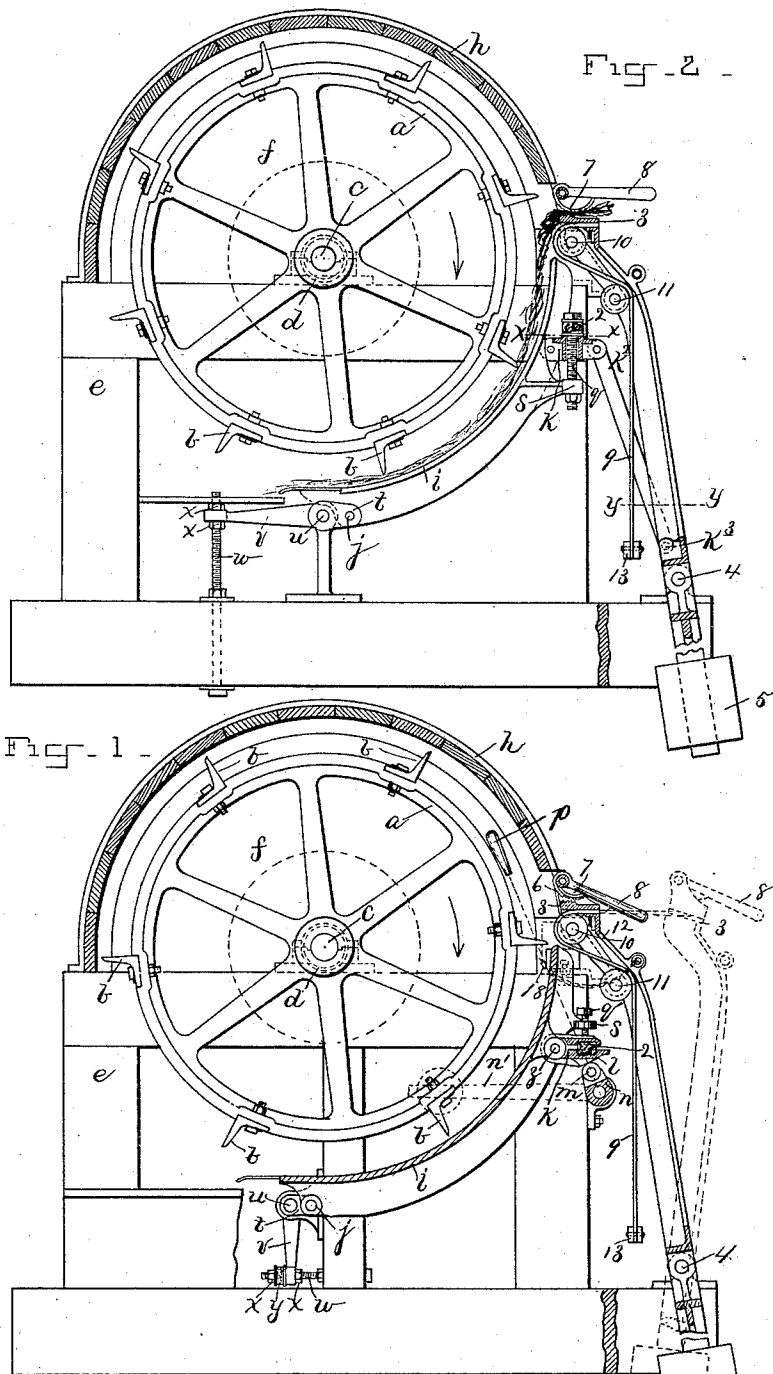
(No Model.)

3 Sheets—Sheet 1.

F. DARKIN.
MACHINE FOR EXTRACTING FIBER.

No. 473,826.

Patented Apr. 26, 1892.



WITNESSES—

W. A. Ewell
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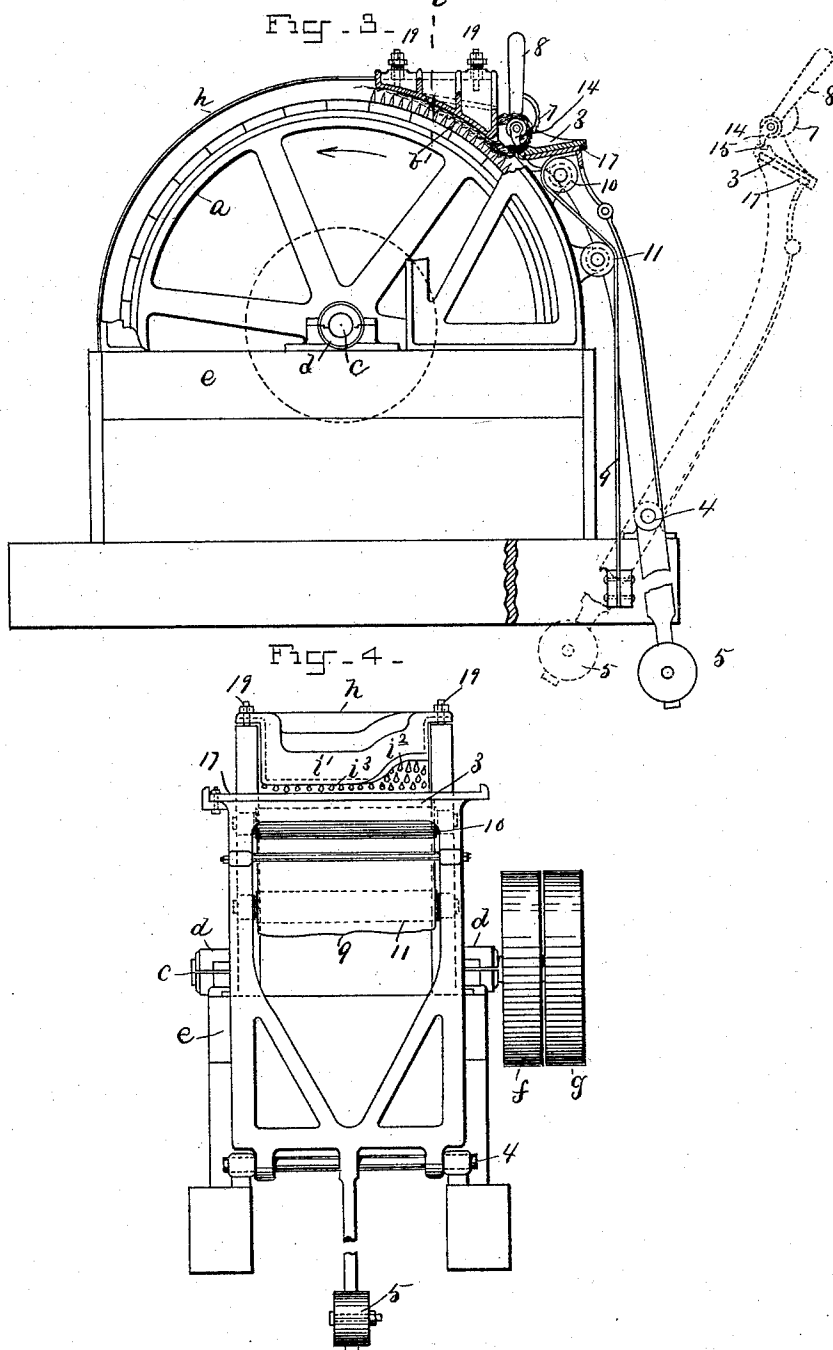
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3 Sheets—Sheet 2.

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3 Sheets—Sheet 3.

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Fig. 6 -

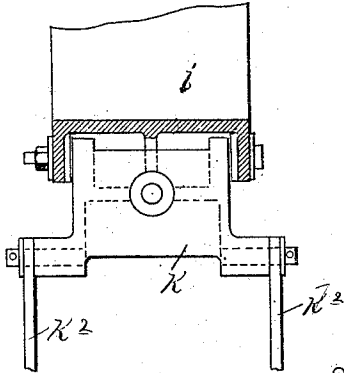


Fig. 7 -

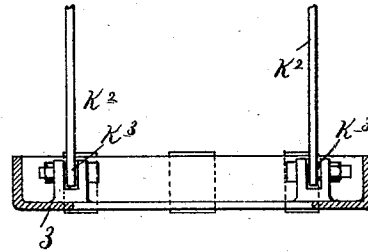


Fig. 5 -

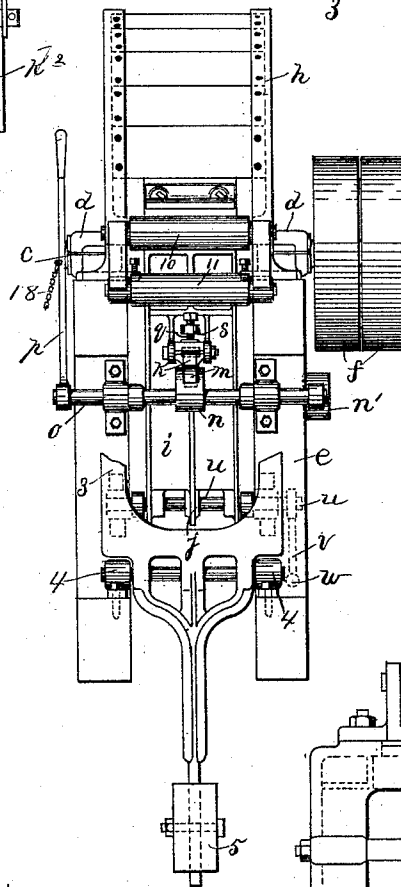


Fig. 8 -

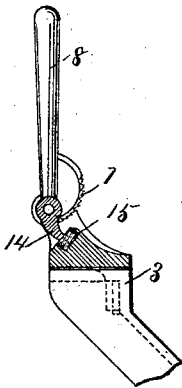
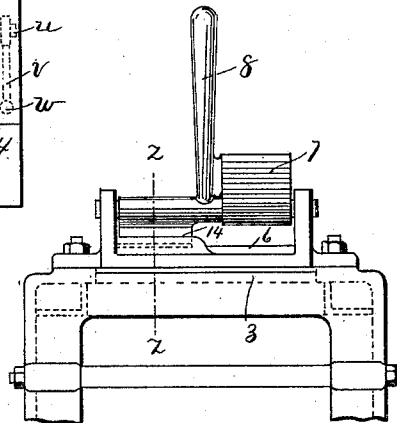


Fig. 9 -



WITNESSES -

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UNITED STATES PATENT OFFICE.

FRANK DARKIN, OF PASSAIC, NEW JERSEY.

MACHINE FOR EXTRACTING FIBER.

SPECIFICATION forming part of Letters Patent No. 473,826, dated April 26, 1892.

Application filed July 6, 1891. Serial No. 398,624. (No model.)

To all whom it may concern:

Be it known that I, FRANK DARKIN, a subject of the Queen of Great Britain, and a resident of Passaic, in the county of Passaic and State of New Jersey, have invented certain new and useful Improvements in Machines for Extracting Fibers, of which the following is a specification.

My invention relates to apparatus or machinery for separating the fibers of plants, more particularly of tropical varieties, as *Jeniquen*, *Maguey*, and the like, from the pulpy matters; and it consists in the improved apparatus for presenting or feeding the leaves to the pulp separating, beating, scraping, or combing drum and controlling them while being dressed thereby, all as hereinafter fully described, reference being made to the accompanying drawings, in which—

Figure 1 is a side elevation of my improved extracting-machine with some parts in vertical transverse section. Fig. 2 is a side elevation with some of the parts in vertical transverse section and with some of the parts in modified form. Fig. 3 is also a side elevation with some of the parts in vertical transverse section and showing other modifications. Fig. 4 is a front elevation of the machine as represented in Fig. 3. Fig. 5 is a front elevation of the machine as represented in Fig. 2. Fig. 6 is a detail in horizontal section on line *x x*, Fig. 2, on an enlarged scale. Fig. 7 is a detail in horizontal section on line *y y*, Fig. 2, also enlarged. Fig. 8 is a detail of Fig. 1 in vertical section on line *z z*, Fig. 9; and Fig. 9 is a front elevation of the holding-clamp and feeding-table of Fig. 1, also on a larger scale.

The wheel or drum *a*, carrying the beating or scraping blades *b*, or it may be hackling or combing pins, is mounted on a shaft *c*, arranged in bearings *d* or any approved supporting-bench *e*, and the shaft is provided with fast and loose pulleys *f g* for the driving-belt. Over the upper part of the drum is a curb *h* for protection of the drum and the attendant, and under the lower front face of the drum is an apron *i*, onto which the leaves are fed and whereon the fibers lie in the process of beating, scraping, or combing the pulpy matters away; but it is preferred to arrange said apron over the drum, as at *i'*, Figs. 3 and 4, when the machine is constructed for the use of the combing-pins *b*, said

drum then being turned in the opposite direction. All these parts thus far generally described are old, and the beaters and the apron have long been used for separating fibers by presenting and holding the leaves and withdrawing the separated fibers by hand, and I do not claim them as of my invention, but will now proceed to point out and claim the improvements that I have invented and which I claim.

In the first place I have provided better means of slacking off the apron for facilitating the entering of the leaves between it and the beaters to begin with, as is required for each leaf, and for gradually closing it up again as the pulp is carried away, and have so mounted said apron that it may be adjusted readily, and in case of extra large leaves requiring more than the normal space between the apron and the blades it will yield automatically under the greater pressure, and thus avoid undue stress liable in some cases to break and scrape away some of the fibers. For so shifting the upper portion of the apron to receive the leaves and then press them on the beaters, scrapers, or pins I mount it on the pivot-support *j* near the lower end, and near the upper end I provide it with the bearer *k*, having, as in Fig. 1, the inclined bottom *l*, resting on the friction-roll *m*, carried in the free end of the short arm *n* of a rock-shaft *o*, on which is a hand-lever *p* to work the shaft and swing arm *n* forward and a weighted arm *n'* to swing it backward under said inclined bottom of the bearer *k*, and thereby swing the said upper portion of the apron toward and allow it to fall away from the beaters, scrapers, or pins more or less, as required. The rocking arm *n* may of course be contrived for being actuated by any other means, as desired, or it may be dispensed with, and the bearer *k* may be pivoted at *k'* with the links *k²*, jointed at the other ends *k³* to the feeding-stand, so that when it is swung back the apron will drop and will rise again when the stand is shifted forward. Said links may be jointed directly to the apron instead of the bearer *k*, if desired.

The apron is made to rest on the bearer *k* by the temper-screw *q*, which is adjustable in the lug *s* to alter the set of the upper portion of the apron as may be required by the wear of the plates *b* or by other cause, and for similarly adjusting the lower portion of the

apron the pivot *j* is mounted in the ends of the short horizontal arms *t*, carried on the rock-shaft *u*, which has a long arm *v*, the outer end of which is confined adjustably along the stud-screw *w* by the nuts *x*, where-
 5 by said lower portion of the apron is shifted toward or from the beaters, and the elastic washer *y* is interposed between the arm and the nut on the side subject to the thrusts of
 10 the apron for yielding to excessive thrusts of the beaters on the apron. For enabling the upper portion of the apron to similarly yield to said thrusts the bearer *k* is in Fig. 1 made in two jaws, which are pivoted to the
 15 apron at *z*, and an elastic cushion 2 is confined between them intermediate of the temper-screw *q* and the roll *m*, on which cushion such thrusts will be relieved to a considerable extent. In Fig. 2 the temper-screw extends
 20 through the bearer *k* to the lug *s* below and has the cushions 2 under its head above the bearer, which is a practically equivalent device.

In the second part of the invention I have
 25 provided improved means of feeding and holding the leaves to be treated and withdrawing them and reversing the partly-dressed leaves as follows: 3 represents a feeding, holding, and
 30 withdrawing stand, which is in this example mounted on the pivot 4 at the base and in front of the drum *a* and apron *i*, so as to swing toward and from them. I prefer to pivot it as a simpler construction than a sliding table and because it will work easier, particularly
 35 when counterbalanced, as by a weight 5. Over the top of the stand, which is serrated or otherwise roughened at 6, is a correspondingly-roughened eccentric clamping-jaw 7, to which a lever-handle 8 is attached for lifting
 40 it to open to insert the leaves between it and the part 6, constituting the fixed jaw, and pressing it down to grip and hold the leaves, the grip being caused partly by the operator pressing on the lever and partly by the pull
 45 of the beaters or scrapers on the leaves, which tends to increase the grip. An apron 9, of leather, rubber, canvas, or other flexible material, is attached at one end to stand 3 below
 50 its top and extended toward the drum and downward over roll 10, over which the leaves enter between the apron *i* and scrapers and over guide-roll 11, both mounted in brackets
 55 12, supported on the frame of the machine, from the latter of which rolls it hangs free, with a weight 13 attached to the lower end to keep it taut. The feeding-stand is swung
 60 back, as indicated in dotted lines in Figs. 1 and 3, and the lever-jaw 7 is opened to apply the leaves, which are inserted one or more at
 65 a time, preferably point forward, between the gripping-jaws and along the flexible apron over and beyond roll 10 and the upper end of the apron *i*, on which they are to be dressed and down which they are drawn over said roll 10 by the beaters or scrapers, until entered nearly the whole length. The lever-jaw is then pressed down and the leaf or leaves

gripped near the butt end or ends for holding against the pull of the beaters and preventing the leaves being pulled through the
 70 jaws. The feeding-stand then swings forward by the further pull on the leaves or by the push of the attendant, or both, to the position shown in full lines in Figs. 1, 2, and 3 for entering the leaves to be dressed the whole
 75 length within reach of the beaters, scrapers, or pins, lever *p* being at the same time allowed to swing back by the weighted arm to swing apron *i* closer to the beaters or scrapers as the pulp is gradually scraped away, as
 80 arranged in Figs. 1 and 5; but it is the links *k*² that so shift the apron in Figs. 2, 6, and 7.

The purpose of the flexible apron 9 is more particularly to hold up and enter the butt-ends of the partly-dressed leaves when
 85 gripped by the dressed fibers for finishing the butts, as will be more fully explained farther on; but it also facilitates entering the ends of the leaves in the first place until they pass over the feeding-roll 10; but in the case
 90 of some leaves which are quite stiff and may be kept up by the attendant with a little care the said flexible apron may not be required. When the fibers have been sufficiently dressed, the stand is then pulled back by the attendant
 95 to withdraw the dressed portion of the fibers and the apron *i* is slacked off ready for another operation. The clamp-jaw 7 is then raised to release the grip on the leaf held by it, and the leaf is then drawn back a suitable
 100 distance to enable the portion of the butt not dressed to be swung back over the axis of the jaw at one side of said jaw and entered between the beaters and apron *i* to be dressed, the leaf being at the same time shifted later-
 105 ally from between jaws 6 7, so that the dressed portion of the fibers drawn back into the clamp will now be gripped between the end of another jaw 14 and the part 15 of the base or fixed jaw of the clamp, said part preferably having an elastic surface, against which
 110 the fibers are to be pressed, as a piece of soft rubber set in a recess in the jaw. The fibers thus drawn backward a suitable length are turned over the jaw-axis for entering the butt
 115 to be dressed, as above stated, and pull in the opposite direction to that of the pull in the first jaws. Hence jaws 14 and 15 are adapted to close on the fibers by raising lever 8 and to resist the pull in said opposite direction.
 120 The lever *p* may be connected by a slack rope 18 with the feeding-stand or its support in such manner that just before the stand comes to rest when pulled back the rope will come taut and will pull the lever automatically for slack-
 125 ing off apron *i*.

When it is preferred to employ combing or hackling pins on the drum, as in Figs. 3 and 4, instead of the beaters or scrapers, the clamp-
 130 ing-jaws will preferably be mounted on a slideway, as 17, so that they may be shifted to and fro laterally a few times quickly while the leaves are being dressed to more effectually intersperse the pins among the

fibers, and the apron *i'* will preferably be extended upward instead of downward from the part where the leaves enter, the drum being turned the reverse way; but the leaves may be combed downward, if preferred. This apron *i* is adjustable relatively to the combing-pins by the adjusting and holding-down bolts 19.

To facilitate the entry of the stiff leaves, and particularly the butt-ends, in the upward direction to the combing-pins, the apron *i'* has an upwardly-flared opening *i''* in the front end, through which the stiff leaves enter in a straight line, or thereabout, after which they are shifted laterally under the more downwardly-projecting part *i'''*, which holds the leaves down to the pins more closely.

It is obvious that inasmuch as the jaws 7 and 14 work alternately and in opposite directions they may be in the same plane—that is, one behind the other—instead of being placed apart laterally or in different planes, which will obviate shifting the partly-dressed fibers laterally, as they can be swung directly over jaw 7 just about as well, and I do not limit myself to the particular arrangement shown in the drawings.

I claim—

1. In a fiber-extracting machine, the combination, with the beating, scraping, or combing drum and the apron whereon the fibers are dressed, of the pivoted feeding-stand and holding-clamp located in front of and movable toward and from said drum, substantially as described.

2. In a fiber-extracting machine, the combination, with the beating, scraping, or combing drum and the apron whereon the fibers are dressed, of the pivoted feeding-stand and holding-clamp located in front of and movable toward and from said drum and the roll over which the leaves enter between the beaters and the said apron, substantially as described.

3. In a fiber-extracting machine, the combination, with the beating, scraping, or combing drum and the apron whereon the fibers are dressed, having pivotal support of one end, of the feeding-stand located in front of and movable toward and from the drum, and connections between said apron and feeding-stand, whereby the end of the apron may be adjusted by the movement of the feeding-stand, substantially as described.

4. In a fiber-extracting machine, the combination, with the beating, scraping, or combing drum and the apron whereon the fibers are dressed, having pivotal support of one end, of the feeding-stand located in front of and movable toward and from the drum, and adjusting-supports for one end of the apron, and connections between said supports and feeding-stand, whereby the end of the apron may be adjusted by the movement of the feeding-stand, substantially as described.

5. In a fiber-extracting machine, the combination, with the beating, scraping, or comb-

ing drum and the apron whereon the fibers are dressed, of the feeding-stand and holding-clamp located in front of and movable toward and from said drum, the roll over which the leaves enter between said drum and said apron, and the flexible feeding-apron attached to said stand and movable forward and backward over said roll in unison with the movements of the feeding-stand, substantially as described.

6. In a fiber-extracting machine, the combination, with the beating, scraping, or combing drum and the apron whereon the fibers are dressed, of the pivoted feeding-stand and holding-clamp located in front of and movable toward and from said drum, the roll over which the leaves enter between the beater and said apron, the weighted feeding flexible apron working over said roll in unison with the movements of the feeding-stand, and the guide-roll for the said flexible apron below the feed-roll, substantially as described.

7. In a fiber-extracting machine, the combination, with the beating, scraping, or combing drum, the apron whereon the fibers are dressed, and the feeding-stand, of a duplex holding and gripping clamp, one pair of the jaws being adapted for holding the leaves by an undressed portion and the other part for holding by the dressed fibers, substantially as described.

8. In a fiber-extracting machine, the combination, with the beating, scraping, or combing drum, the apron whereon the fibers are dressed, and the feeding-stand, of a duplex gripping and holding clamp, one pair of the jaws being adapted for holding the leaves by an undressed portion against the pull directly toward the drum and the other pair adapted to hold by a dressed portion of the fiber and against the pull in the reverse direction and over the axis of the movable jaws, substantially as described.

9. In a fiber-extracting machine, the combination, with the beating, scraping, or combing drum and the feeding-stand, of a duplex gripping and holding clamp, one pair of the jaws adapted to hold the leaves by an undressed portion and the other pair adapted to hold by a dressed portion of the fibers, and said clamp mounted on a slideway for shifting laterally in front of the drum, substantially as described.

10. In a fiber-extracting machine, the combination, with the beating, scraping, or combing drum and the feeding-stand, of the apron whereon the fibers are dressed, having the flared opening in the end for the entry of the butt-ends of the leaves, substantially as described.

Signed at New York city, in the county of New York and State of New York, this 20th day of June, A. D. 1891.

FRANK DARKIN.

Witnesses:

W. B. EARLL,
W. J. MORGAN.