

(No Model.)

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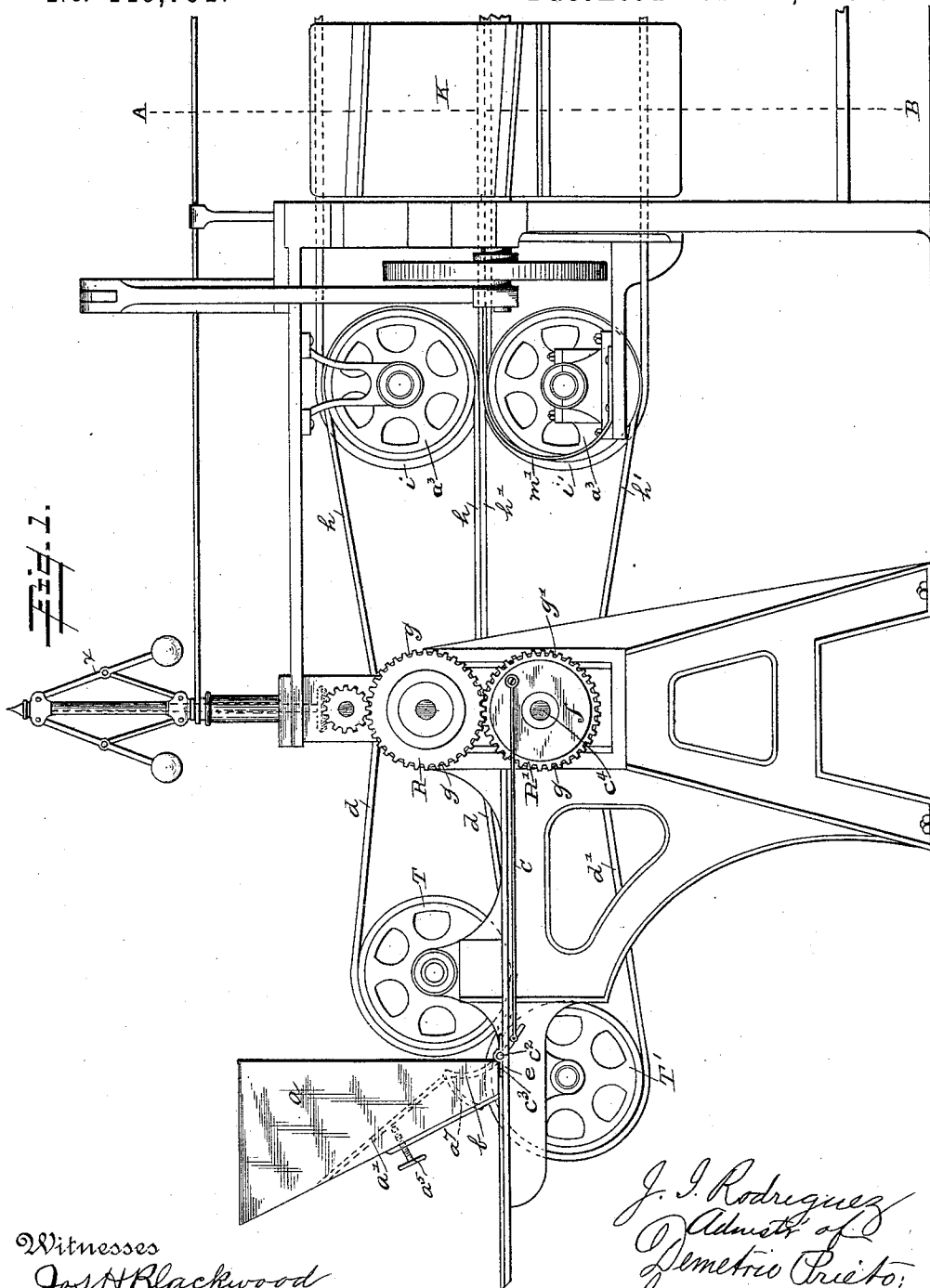
D. PRIETO, Dec'd.

J. I. RODRIGUEZ, Administrator.

MACHINE FOR DISINTEGRATING FIBROUS PLANTS.

No. 446,791.

Patented Feb. 17, 1891.



Witnesses

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Albert. B. Blackwood

J. I. Rodriguez
Adminr of
Demetrio Prieto

By his Attorney

Wm H Doolittle

(No Model.)

7 Sheets—Sheet 2.

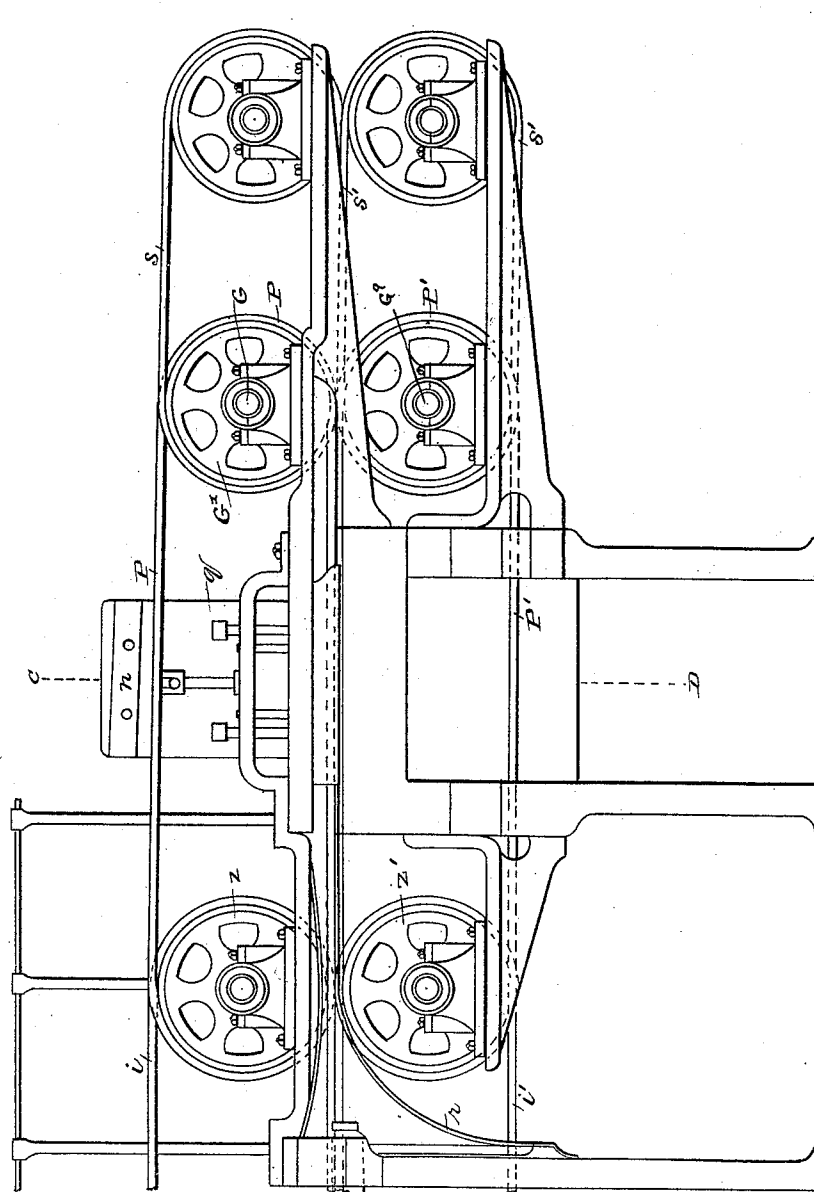
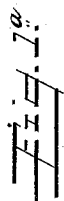
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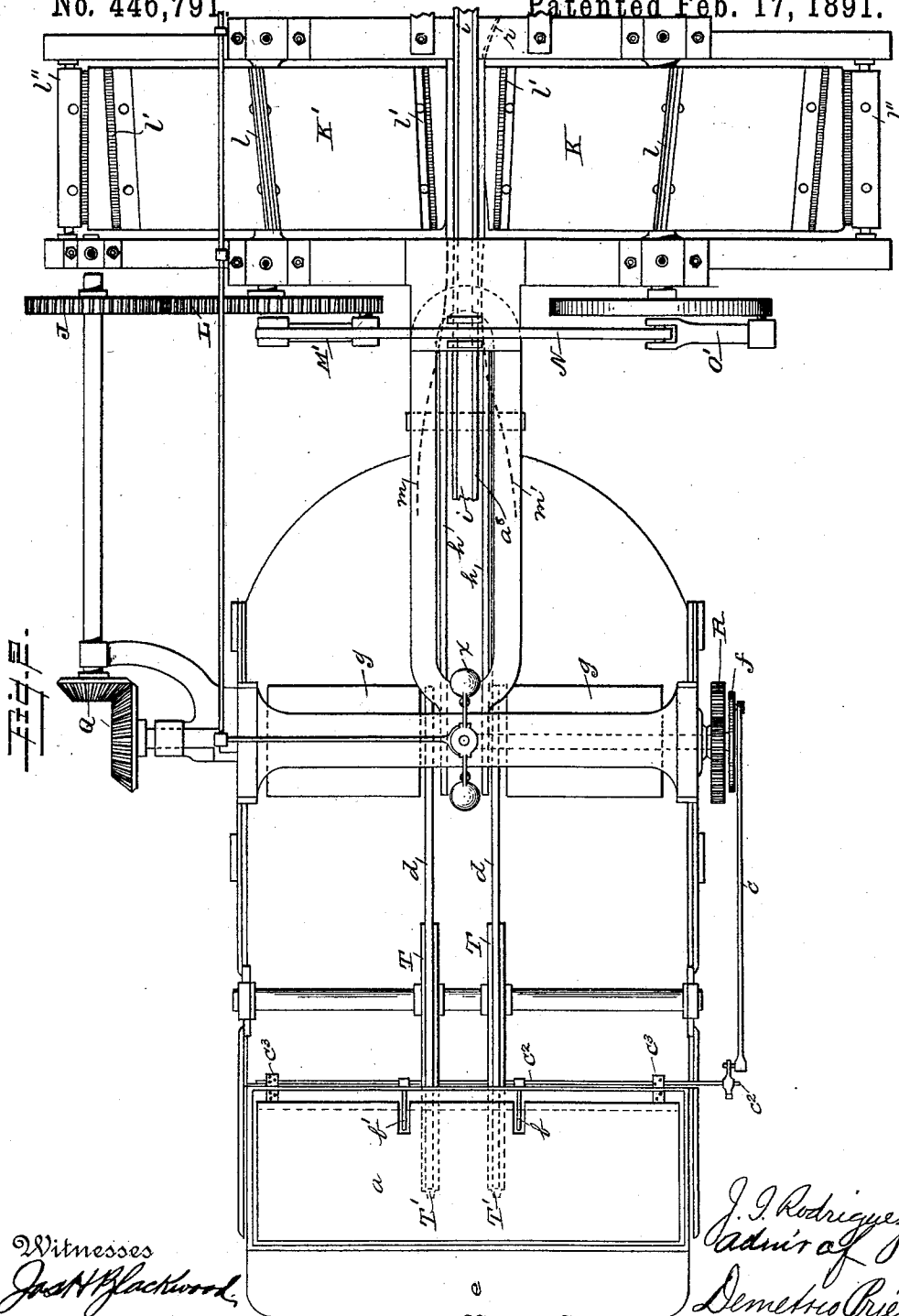
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(No Model.)

7 Sheets—Sheet 4.

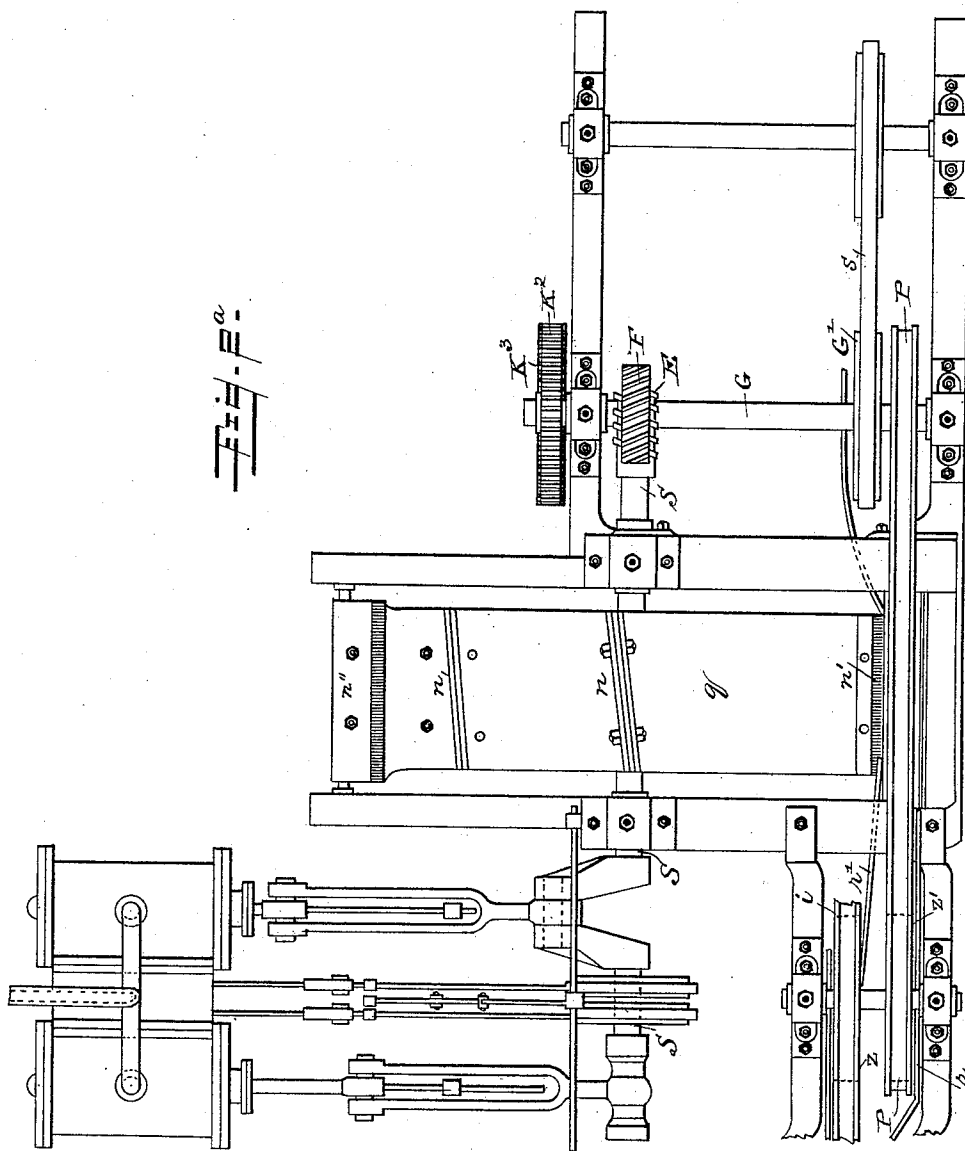
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7 Sheets—Sheet 5.

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Fig. 5.

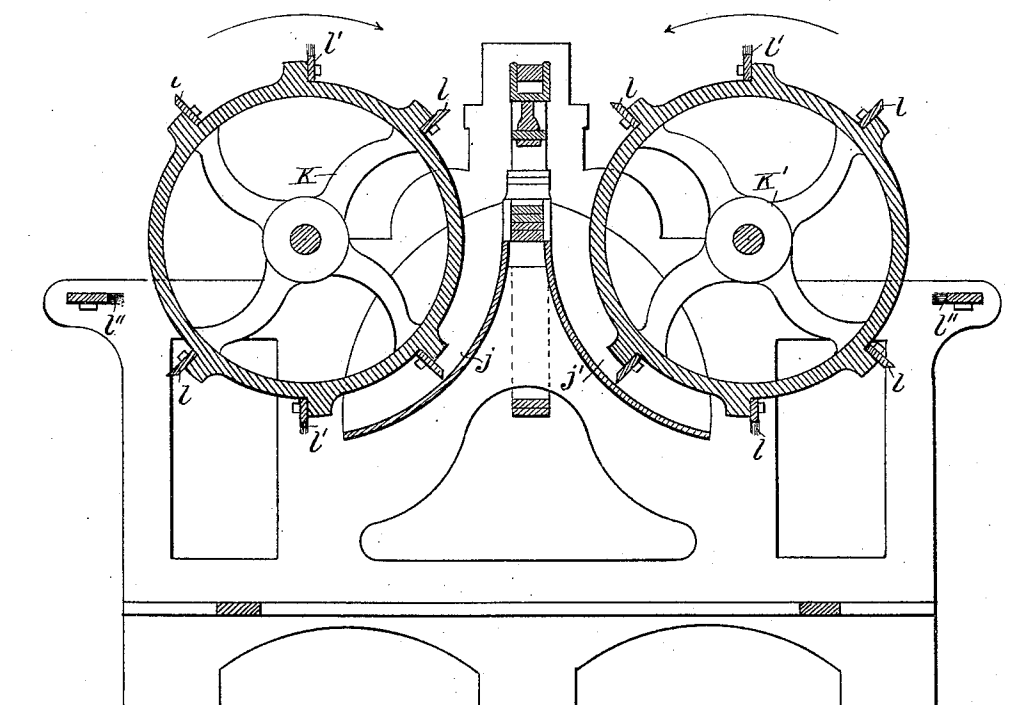
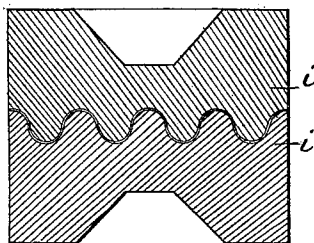


Fig. 5.



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Fig. 4.

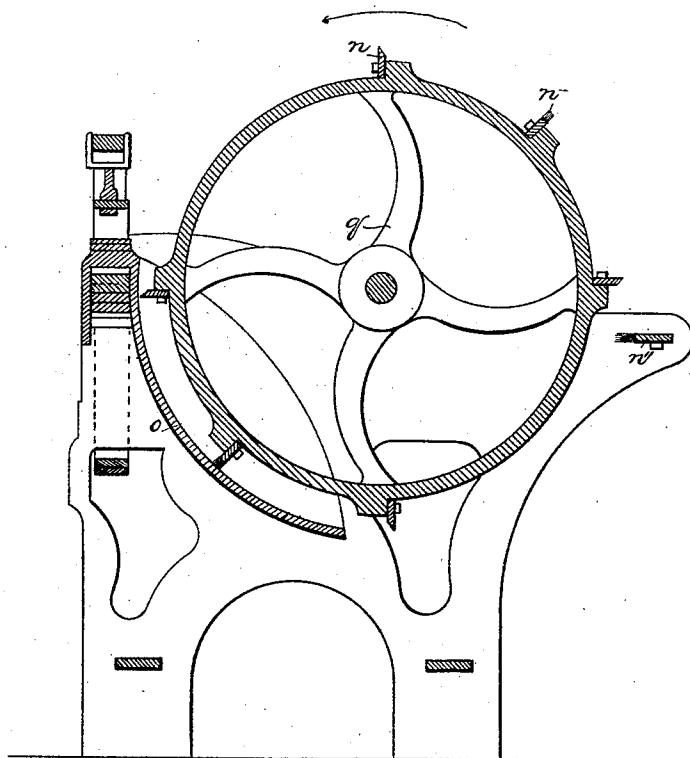
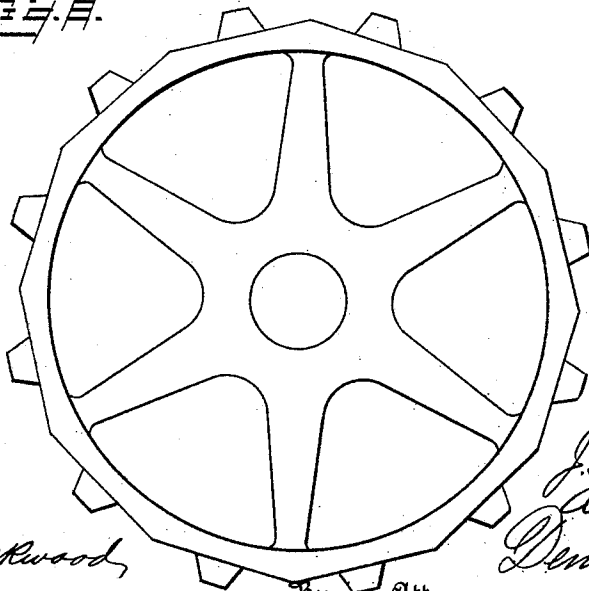


Fig. 5.



Witnesses

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(No Model.)

7 Sheets—Sheet 7.

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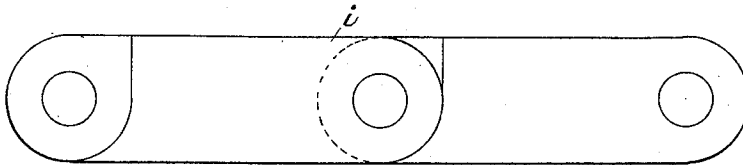
J. I. RODRIGUEZ, Administrator.

MACHINE FOR DISINTEGRATING FIBROUS PLANTS.

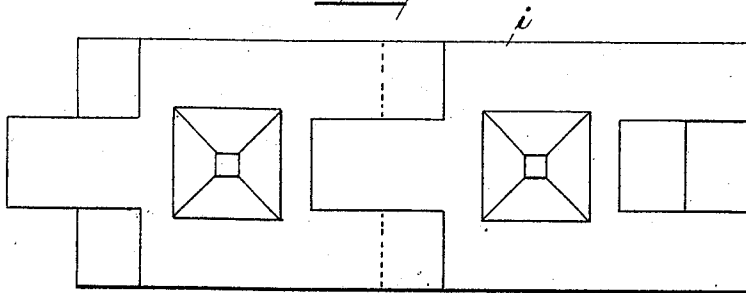
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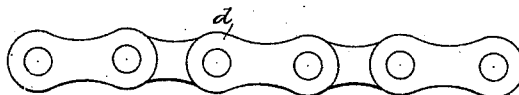
~~Fig. 6.~~



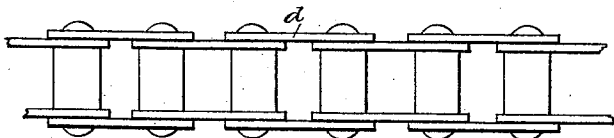
~~Fig. 7.~~



~~Fig. 8.~~



~~Fig. 10.~~



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By his Attorney,
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UNITED STATES PATENT OFFICE.

JOSÉ IGNACIO RODRIGUEZ, OF WASHINGTON, DISTRICT OF COLUMBIA,
ADMINISTRATOR OF DEMETRIO PRIETO, DECEASED.

MACHINE FOR DISINTEGRATING FIBROUS PLANTS.

SPECIFICATION forming part of Letters Patent No. 446,791, dated February 17, 1891.

Application filed February 26, 1890. Serial No. 341,893. (No model.)

To all whom it may concern:

Be it known that DEMETRIO PRIETO, (deceased,) late a citizen of Spain, having invented certain new and useful Improvements in Machines for Disintegrating Fibrous Plants, I, JOSÉ IGNACIO RODRIGUEZ, a citizen of the United States, residing at Washington, District of Columbia, administrator of the estate of the said DEMETRIO PRIETO, 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.

It is well known that Mexico, Central and South America, and the southern parts of this country abound in tropical plants the fiber of which is or may be used for commercial purposes; and the object of this invention is to provide a new and improved machine for economically extracting the fiber from such plants by mechanical means and leaving the fiber in a sound and uninjured state, such as cannot be obtained when chemical processes are employed.

In this machine, which is an improvement on another machine of said Prieto's invention, for which he obtained United States Letters Patent No. 278,668, dated May 29, 1883, the textile material whose fiber is to be extracted is subjected to three principal operations, the first operation being a pressure between rollers, the second operation consisting in holding the leaf or stem by the middle point and subjecting it to the action of knives and combs or brushes to clean off all the bark and pulpy matter from the free part, and the third operation consisting in holding it at a different point and again subjecting it to the action of knives and brushes to clean off that part which had remained untouched by the previous operation.

In the accompanying drawings are shown various views and sections of the machine.

Figures 1 and 1^a together represent in side elevation the entire machine for extracting fiber from plants. Figs. 2 and 2^a together show the same in top plan view. Fig. 3 is a transverse section through the line A B of Fig. 1, or transversely to the axes of the two knife

and brush carrying cylinders that perform the second operation. Fig. 4 is a section on the line C D, or transversely to the axis of the knife and brush carrying cylinder that performs the third operation. Fig. 5 is an enlarged cross-section of the corrugated endless belts by which the plants are securely held while subjected to the action of the scraping-cylinders. Fig. 6 is a side view of one of the same endless belts, showing the manner of joining the links. Fig. 7 is a plan view thereof, showing the manner of engaging with the teeth of the sprocket-wheel shown in side elevation in Fig. 8. Figs. 9 and 10 are side and plan views, respectively, of endless chains that assist in operating the mechanism.

The same letters designate corresponding parts in the several views.

The machine is supported upon a suitable frame of the same general form as that shown in the drawings, at the left of which, Figs. 1 and 2, is shown a hopper *a*, provided with an adjustable apron *a'*, into which the plants are fed. The apron *a'* is adjusted by means of a set-screw *a²*, which passes through the wall of the hopper.

b b' are teeth or spurs provided with wings *a²* on the rear thereof, which when the teeth are moved forward close the space between the apron *a'* and the front of the hopper *a*, and thus regulate the feed of the material to the machine. These teeth or spurs are fixed to the rod *c²*, which is mounted in bearings *c³* on a table *e*, and are actuated by the rod *c*, which at one end is eccentrically pivoted to and gets its motion from the revolving disk *f*, mounted on the shaft *c⁴*, and at the other end is pivoted to an arm of the shaft *c²*.

d d' are endless chains or link belts of form shown in Figs. 9 and 10 by which motion is imparted from the rollers or crushers *g g'* to the double pair of feed-wheels *T T'*, and between which belts the material is carried from the hopper to the rollers.

e is a table supporting the hopper and also the bearings for the rod *c²* on which the spurs are mounted.

g g' are horizontal rollers between which the plants are thoroughly pressed and crushed.

R R' are toothed gearing for imparting motion from the upper roller *g* to the lower *g'*.

h h' are endless carrying-belts, similar to and performing the same function as *d d'*, which impart motion to a double pair of wheels *a³*, one vertically over the other, which are concentric with a third pair of sprocket-wheels *a³*, fixed centrally between them on the same axis, which latter are traversed by the pair of endless corrugated belts *i i'*, (shown in detail in Figs. 5, 6, and 7,) which belts *i i'* receive the material from the grip of the belts *h h'* and carry it along securely held to the action of the knife and brush carrying cylinders K K'. The construction and function of these latter are plainly illustrated in Fig. 3, in which *l* are knives or blades attached to lugs on the periphery of the cylinders, and are for the purpose of scraping the bark and pulpy matter from the textile plant, and *l'* are combs or brushes to assist in the cleansing and freeing of the fiber.

l'' are stationary brushes fixed on the frame for the purpose of cleansing the revolving blades *l* and brushes *l'*.

m m' is a concave frame, somewhat of a plowshare shape, for receiving and spreading the down-hanging ends of the plants as they come from the rollers *g g'*, guiding them onto the concave saddle-plates *j j'* and preventing them from getting entangled in the gearing.

j j' are concave saddle-plates, the use of which is obvious by a glance at Fig. 3. They serve as a backing or bed for the material while it is subjected to the action of the knives *l* and brushes *l'*.

In the rear of the cylinders K K' are fixed on the same axes a double pair of sprocket-wheels *z z'*, which are traversed by the endless corrugated belts *i i'* and P P', said belts P P' being similar to and serving the same purpose as *i i'*. They receive the plant from the belts *i i'*, after the action of the cylinders K K', and holding it in a new place subject that part formerly held between the belts *i i'* to the action of the single cylinder *q*, provided with knives *n* and brushes *n'*, similar to K K'. The cylinder *q* is disposed to the right of the cylinder K' and in proximity to the belts P P'.

r r' are concave guides or fenders, somewhat of a plowshare shape, serving the same purpose as *m m'*.

s s' are another pair of endless belts of form shown in Figs. 9 and 10, which receive the fiber from belts P P', pass it out, and drop it at the tail of the machine. The axle G at its inner end is provided with a wheel G', by which motion is imparted to the belt *s*, and at its opposite end with two cog-wheels F and K², the former of which receives motion from a worm E on the main shaft S of cylinders K' and *q*, while the wheel K² by cog-gearing imparts motion to the wheel K³ on the shaft G³, around which passes the belt *s'*, and thus imparts motion to the said belt *s'*.

The machine is actuated by any suitable

motor. In the drawings it is shown driven by a steam-engine, the power being applied directly to the main shaft S of cylinders K' and *q*, and thence transmitted by suitable gearing both fore and aft of the machine. By cogs L, J, Q, and R and shaft J' the rollers *g g'* are actuated from the main shaft S. Motion is transmitted from cylinder K' to cylinder K by a walking-beam N and pitmen O' and M'.

In this machine it is to be understood that the number, form, and arrangement of many of the parts may vary *ad libitum*. In the drawings is shown two spurs *b*, two pairs of feeding-belts *d d'*, two pairs of carrying-belts *h h'*, two pairs of corrugated belts, of which one pair is lettered *i i'* and the other pair P P', one pair of discharging-belts *s s'*, four knives and two brushes on each of the cylinders K K' and *q*. The number, form, and arrangement of these may vary, as practical experience shall determine for the best.

The working of the machine is as follows: The textile plant is introduced at the hopper in a position such that the fiber is in general transverse to the length of the machine. It is fed regularly to the belts *d d'* by the action of the spurs *b*, or both hopper and spurs may be discarded and the plants fed to the machine by hand from the table *e*. The plant being seized between the belts *d d'* at about its central part it is by them carried to the rollers *g g'*, between which it is crushed and matted and then delivered to the belts *h h'*, which latter carry it along and deliver it to the grip of the corrugated belts *i i'*. The plant being securely held by said belts *i i'* is passed along over the concave saddle-plates *j j'*, where it is subjected to the scraping and brushing action of the cylinders K K'. Issuing from the belts *i i'* it is seized in a new place by the similar belts P P', by them carried along over the concave saddle-plate *o*, where the part formerly held between belts *i i'* is subjected to the scraping and brushing action of the cylinder *q*, and the fiber is thus left entirely free from bark and pulpy matter, in which state it is passed along by belts *s s'*, and dropped at the tail of the machine.

Having thus fully described the invention, what I claim is—

1. In a machine for treating fibrous plants, a hopper provided with an apron adjusted by a set-screw, in combination with spurs for regulating the feed of the material and mechanism for operating the said spurs, substantially as described.

2. In a machine for treating fibrous plants, the combination, with a hopper provided with an adjustable apron, of spurs for regulating the feed of the material, and mechanism for operating the said spurs, endless belts *d d'*, arranged in vertical pairs to carry the material to the rollers, and rollers for pressing and crushing the material, substantially as described.

3. In a machine for treating fibrous plants,

the combination, with the corrugated endless belts *i i'*, running on suitable sprocket-wheels, of the cylinders *K K'*, placed directly opposite each other and provided with knives and combs or brushes for scraping the material, substantially as described.

4. In a machine for treating fibrous plants, the combination, with the corrugated endless belts *i i'*, running on suitable sprocket-wheels, of cylinders *K K'*, placed directly opposite each other and provided with knives and combs or brushes, and concave saddle-plates *j j'*, substantially as described.

5. In a machine for treating fibrous plants, the combination of the double cylinders *K K'* and the single cylinder *q* with the single shaft *S*, the walking-beam *N*, and pitmen *O'* and *M'* for actuating said cylinders, substantially as described.

6. In a machine for treating fibrous plants, the combination, with a hopper provided with an adjustable apron, of spurs to regulate the feed-carrying belts *d d'* and *h h'* to pass the material along, rollers or crushers *g g'*, endless corrugated carrying-belts *i i'* and *P P'*, running on suitable sprocket-wheels, guides or fenders *m m'* and *r r'*, concave saddle-plates *j j'* and *o*, and cylinders *K K'* and *q*, all arranged substantially as shown.

In testimony whereof I affix my signature in the presence of two witnesses.

JOSÉ IGNACIO RODRIGUEZ,
Administrator of the estate of Demetrio Prieto,
deceased.

Witnesses:

S. THOMPSON, Jr.,
M. J. GRIFFITH.