(No Model.) 2 Sheets—Sheet 1.

G. SANFORD.

APPARATUS FOR REDUCING FIBROUS PLANTS.

No. 265,153. Patented Sept. 26, 1882.

Fig 1.

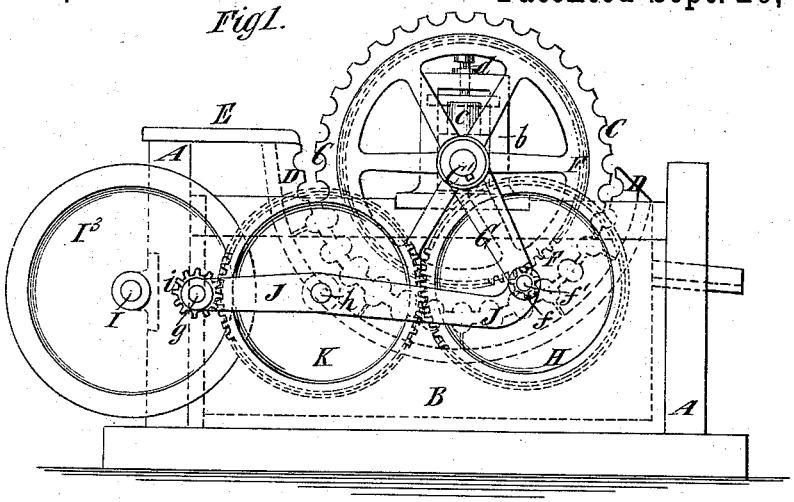
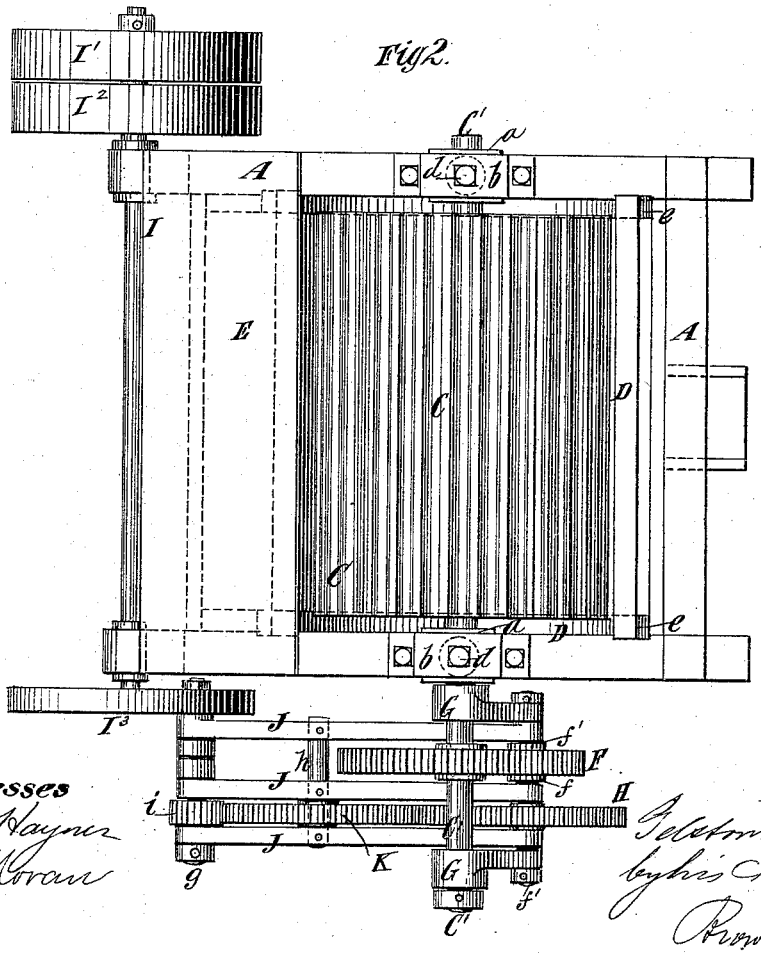


Fig 2.



Witnesses
Fred Haynes
Ed Moran

Inventor
Selatus Sanford
by his Attorneys
Brown & Brown

N. PETERS, Photo-Lithographer, Washington, D. C

(No Model.) 2 Sheets—Sheet 2.

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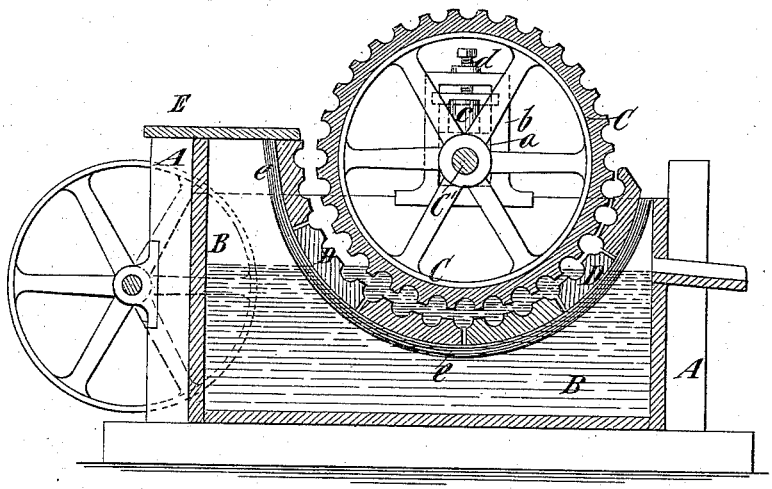
Fig 3.



Witnesses
Fred. Haynes
Ed. Moran

Inventor
Celestin Sanford
by his Attorneys
Brown & Brown

N. PETERS. Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

GELSTON SANFORD, OF BROOKLYN, ASSIGNOR TO W. M. SAFFORD AND THE SANFORD UNIVERSAL FIBRE COMPANY, BOTH OF NEW YORK, N. Y.

APPARATUS FOR REDUCING FIBROUS PLANTS.

SPECIFICATION forming part of Letters Patent No. 265,153, dated September 26, 1882.

Application filed November 4, 1881. Renewed July 19, 1882. (No model.)

To all whom it may concern:

Be it known that I, GELSTON SANFORD, of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Apparatus for Reducing Fibrous Plants, of which the following is a specification.

My invention relates generally to the treatment of the leaves, stalks, and other parts of fiber-bearing plants to free from them feculaceous and all other non-fibrous matters; but my invention is more particularly intended for the treatment of the leaves of plants of the Agave family.

The invention consists in a machine comprising a semicircular or arc-shaped bed, and a cylinder arranged adjacent thereto and having a progressive alternate rotary motion—that is to say, an alternate rotary motion which is greater in one direction than the other—whereby the materials which are inserted between the cylinder and the bed on one side are moved forward slowly over the bed at the same time that they are rubbed, and finally delivered on the opposite side from that on which they are fed in. The bed should be yielding, and may be composed of a number of strips or pieces supported at their ends on elastic supports. The cylinder is placed slightly eccentric to the bed, so as to leave a wider space between the cylinder and bed on the entrance side than on the delivery side; and the invention further consists in the combination, with the bed and cylinder, of mechanism, hereinafter described, for imparting the desired motion to the cylinder.

In the accompanying drawings, Figure 1 represents a side view of a machine embodying my invention. Fig. 2 represents a plan thereof, and Fig. 3 represents a vertical section of the machine.

Similar letters of reference designate corresponding parts in all the figures.

A designates the frame-work of the machine, and B designates a tank arranged therein.

C designates the cylinder, which may be composed of a metal skeleton body having a wood covering grooved or fluted longitudinally, so as to form longitudinal ribs. The shaft C′ of the cylinder is adapted to rotate in bearings *a*, and these bearings are held down in suitable housings or frames, *b*, by means of rubber blocks *c* or other springs, which are adjusted by means of set-screws *d* to exert more or less downward pressure on the bearings.

D designates the bed, of semicircular or arc shape, here represented as composed of longitudinal fluted or grooved sections or bars supported at the ends upon rubber flanges or straps *e*, which may be inserted in semicircular grooves in the ends of the tank B. This construction enables the bed to yield downward, while the cylinder may yield upward; but the cylinder might be mounted in fixed bearings, or the bed may be fixed.

E designates a feed-table arranged on one side of the cylinder, and, as clearly represented, the cylinder is arranged slightly eccentric to the bed, so that a somewhat wider space will be left between the bed and the cylinder on the side adjacent to the feed-table than on the opposite side.

F designates a spur-gear wheel fixed upon the shaft C′ of the cylinder, and *f* designates a pinion engaging with the wheel F, and fixed upon a shaft, *f′*, which is supported in bearings in the ends of the arms G, loosely fitting on and depending from the cylinder-shaft C′. On the same shaft, *f′*, with the pinion *f* is fixed a wheel, H, as best seen in Fig. 2.

I designates a driving-shaft, which may be rotated by a belt passing over fast and loose pulleys I′ I², and I³ designates a crank fixed on the end of said shaft, and carrying a long crank-pin, *g*.

Motion is imparted from the crank-pin *g* to the shaft *f′* by means of three pitman rods or bars, J, connected together by a pin, *h*, as seen in Fig. 2, and on said pin *h* is loosely mounted a gear-wheel, K, which gears with a pinion, *i*, fixed on the crank-pin *g*, and with the wheel H. As the crank I³ is rotated the arms G are swung back and forth on the shaft C′, carrying with them the shaft *f′*, with the pinion *f* and wheel H, and as the connected pitman-rods J move they carry with them the wheel K. Rotary motion is constantly transmitted from the pinion *i* through the several wheels

and pinions to the cylinder; but the cylinder will be rotated alternately in opposite directions. When the pinion *f*, however, is moved bodily in one direction its rotary motion will accelerate the cylinder, and when moved in the reverse direction its rotary motion will retard the cylinder, and the cylinder will have a rotary or reciprocating motion alternately in opposite directions; but as the movement is greater in one direction the cylinder will have a progressive movement, which will carry the materials forward between the cylinder and bed, and finally deliver them on the delivery side of the machine. With the gearing here shown the cylinder would have a forward movement of about fifteen inches and a reverse movement of about twelve inches, thus giving a progressive movement to the materials being operated on of about three inches at each turn of the crank I^3. Where the bed D is made of sections, as here represented, space is afforded between the sections for the extraneous matters separated by the rubbing to pass through; or the bed might be perforated for a like purpose.

The materials to be treated are fed into the machine transversely to their length—that is, they are introduced lengthwise of the cylinder—and all the rubbing is done in a direction transverse to their length.

When the machine is used for producing fiber from leaves and plants in a green state I prefer to have water running in the tank, as it greatly assists the cleaning operation by washing out everything injurious to the fiber, leaving it soft and pliable.

My improved machine is equally advantageous for softening hemp, jute, and other fibrous materials in a dry state.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a machine for obtaining fiber, the combination of a semicircular or arc-shaped bed, and a cylinder arranged adjacent thereto and having a progressive alternate rotary motion, substantially as specified.

2. In a machine for obtaining fiber, the combination of a semicircular or arc-shaped bed composed of bars or sections and yielding supports therefor, and a cylinder arranged adjacent to the bed and having a progressive alternate rotary motion, substantially as specified.

3. In a machine for obtaining fiber, the combination of a semicircular or arc-shaped bed, D, a cylinder, C, arranged adjacent thereto, and having a gear-wheel, F, upon its shaft, the oscillating arms G, the shaft *f'*, journaled therein, and carrying the pinion *f* and wheel H, the crank I^3 and crank-pin *g*, the pinion *i* on said pin, and the pitman-rods J and wheel K, substantially as specified.

GELSTON SANFORD.

Witnesses:
FREDK. HAYNES,
ED. MORAN.