

(No Model.)

2 Sheets—Sheet 1.

W. F. FALCONER.

MACHINE FOR CLEANING AND POLISHING VEGETABLE FIBER.

No. 436,870.

Patented Sept. 23, 1890.

Fig. 1.

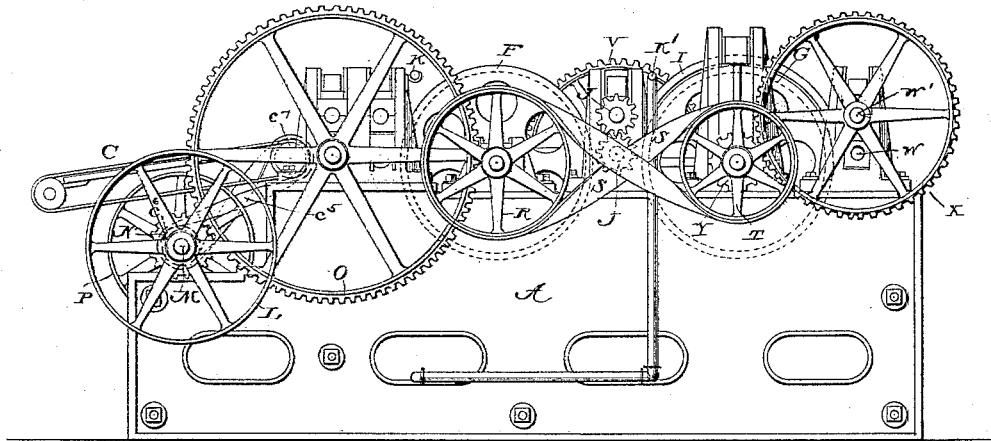
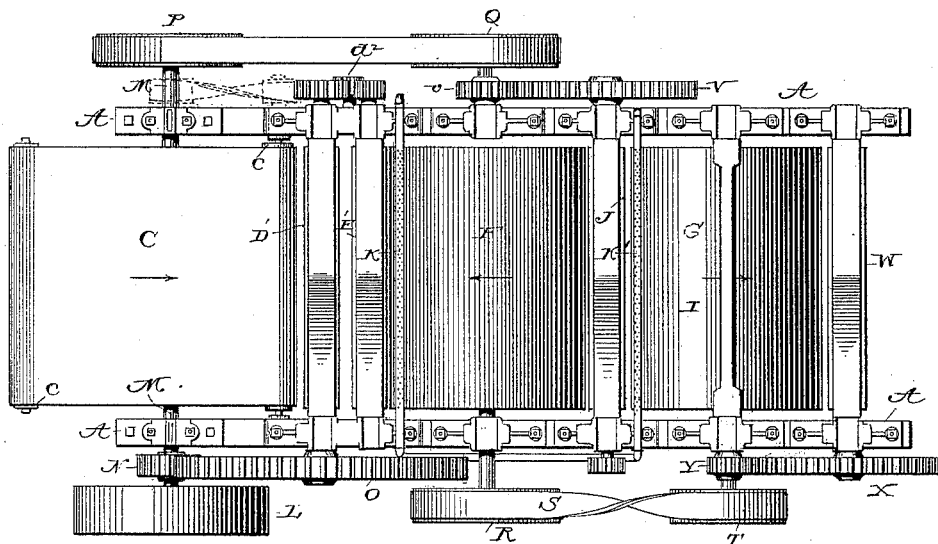


Fig. 3.



Witnesses:

W. W. Norton
To Stanley Elmore

Inventor:

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By Phil T. Dodge
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(No Model.)

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2 Sheets—Sheet 2.

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Fig. 2.

on line $\alpha-\alpha$

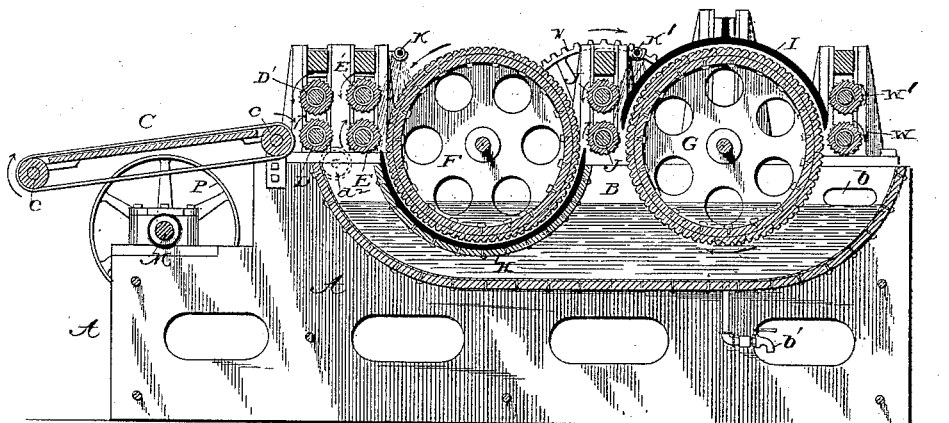
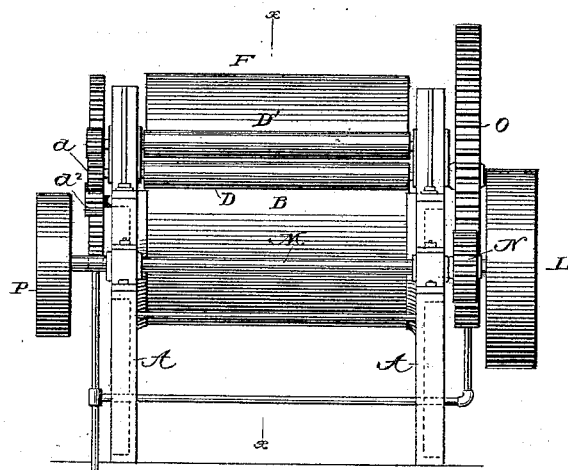


Fig. 4.



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UNITED STATES PATENT OFFICE.

WILLIAM FLEMING FALCONER, OF CHARLESTON, SOUTH CAROLINA,
ASSIGNOR TO CHARLES F. PANKNIN, OF SAME PLACE.

MACHINE FOR CLEANING AND POLISHING VEGETABLE FIBER.

SPECIFICATION forming part of Letters Patent No. 436,870, dated September 23, 1890.

Application filed October 28, 1889. Serial No. 328,368. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM FLEMING FALCONER, of Charleston, in the county of Charleston and State of South Carolina, have invented certain Improvements in Machines for Cleaning and Polishing Vegetable Fiber, of which the following is a specification.

My invention is intended for treating ramie, jute, and similar fibrous plants to separate the pulpy, gummy matters from the fiber and polish the latter without waste or injury.

To this end it consists in the construction and arrangement of feeding, drawing, and retaining rolls, cylinders and concaves, and washing-jets, as hereinafter fully explained.

In the accompanying drawings, Figure 1 is a side elevation of my machine. Fig. 2 is a longitudinal vertical section of the same on the line *xx* of Fig. 4. Fig. 3 is a top plan view. Fig. 4 is an elevation of the receiving end, the feed-apron being omitted.

Referring to the drawings, A represents a rigid main frame, which may be of any appropriate form, containing a large vat or tank B, provided with an overflow-opening *b* and a drainage-cock *b'*. At one end of the frame there is an endless feed-apron C, carried by supporting-rolls *c* in fixed bearings. This apron will be driven continuously by any suitable means—such, for example, as a crossed belt *c⁵*, extending from a pulley *c⁶* on shaft M to a pulley *c⁷* on the apron-carrying roll *c*, as shown in dotted lines in Fig. 2. Adjacent to the inner or delivery end of the apron over the end of the vat are mounted in bearings on the frame two pairs of transverse rolls D D' and E E'. These rolls are ribbed or toothed longitudinally, in order that they may bite upon the fiber passing between them and carry the same into the machine. The rolls of the second pair are driven at a greater surface speed than the first pair, so that they exert a drawing, scraping, and cleansing action upon the fiber. Within the vat are mounted two horizontal cylinders F and G, their surfaces preferably composed of grooved or ribbed bars of non-corrosive material. The first cylinder is inclosed on the under side by the fixed metal concave H, and has its bearings mounted to slide vertically, in order that it

may accommodate itself to the varying amount of material passing between it and the concave. The second cylinder G is exposed on the under side, but covered by a metal concave I, which is mounted in vertical guides on the frame, as shown, or otherwise mounted, so that it may rise and fall freely. Between the two cylinders is mounted a pair of ribbed rolls J J' to deliver the fiber from the first to the second cylinder and to retard its advance while it is being drawn out and acted upon between the second cylinder and its concave. At the rear side of the second cylinder over the end of the tank are mounted two rolls W W', by which the fiber is delivered from the machine.

All the top rolls may be, and preferably are, mounted in vertically-sliding boxes, as shown. If desired, weights, springs, or other pressure devices, such as are familiar to every mechanic, may be applied to the boxes.

Above the respective cylinders I mount transverse perforated pipes K K', connected with a pump or reservoir supplying water, so that the cylinders and the fiber passing to them are constantly showered with fresh water.

Motion may be communicated to the various parts of the machine from any appropriate driving-gear. In the drawings, L represents the driving-pulley on one end of a transverse shaft M. This shaft carries a pinion N, which imparts motion directly to the large gear-wheel O, fixed on the end of the roll D. At its opposite end roll D carries a pinion *d*, which transmits motion directly to a pinion on the end of roll D', and also through an intermediate pinion *d²* (see Fig. 2) to a pinion on the roll E, the latter being geared in turn directly to its companion E'. The main shaft M carries also the pulley P, connected by a belt to a driving-pulley Q on the shaft of cylinder F. The cylinder-shaft carries at the opposite end a pulley R, which is connected by a cross-belt S to a pulley T on the second cylinder, the two cylinders being thus turned in opposite directions. The feed-rolls J J' are geared together at one end and receive motion through a gear V, fixed to the roll J, and engaging a pinion *v* on the shaft of cyl-

inder F. The delivery or wringing rolls W W' are geared together and receive motion through a gear X, fixed to the roll W', and driven by a pinion Y on the shaft of the second cylinder.

The operation of my machine is as follows: The plants to be treated are first subjected to the action of a weak alkaline solution, or are otherwise suitably treated, and while in a moist condition are spread evenly upon the feed-apron C, by which they are delivered between the rolls D D', and thence between the rolls E E'. The latter, owing to their greater surface speed, act to draw out and scrape the fiber and remove therefrom a large part of the gummy, pulpy, and other soluble matters. From the rolls E E' the fiber passes downward between the first cylinder and concave, being constantly showered with fresh water by the pipe K. As the fiber is retarded by the rolls E E' it is drawn out between the cylinder and concave, and while submerged in the water in the vat subjected to a strong rubbing and scouring action. The upper surface of the cylinder being constantly cleansed by the water, the cylinder acts very effectively in removing the remaining pulpy and woody matters. The fiber is delivered from the first cylinder between the rolls J J', and thence between the second cylinder and its top concave. The fiber is retarded by the rolls J J', and in passing from the rolls to the cylinder is thoroughly washed by water from the pipe K'. It therefore passes in a comparatively clean condition between the second cylinder and concave above the level of the water in the vat. The result is that the fiber is effectively polished and delivered to the rolls W

W', which remove the excess of moisture and deliver the fiber from the machine.

Having thus described my invention, what I claim is—

1. The two pairs of ribbed rolls driven at different surface speeds, in combination with the conductor for showering the fiber with water as it issues from the second rolls.

2. A vat, a cylinder, and concave therein, and feed-rolls delivering to the cylinder and concave above the vat, in combination with a conductor for showering the fiber as it issues from the feed-rolls.

3. A vat, a cylinder running at its under side only within the vat, and a concave beneath the cylinder, in combination with a water-pipe discharging on top of the cylinder.

4. A vat, two cylinders revolving at their under sides within the vat; two concaves mounted, respectively, below the first and above the second cylinder, and feed-rolls between the cylinders.

5. The feed-apron and the two pairs of rolls having different surface speeds, in combination with the vat, the two cylinders, their concaves, the rolls between the cylinders, the delivery-rolls, and the showering-pipes above the cylinders.

6. Two rubbing-cylinders and concaves located below one cylinder and above the other, in combination with intermediate rolls.

In testimony whereof I hereunto set my hand, this 27th day of September, 1889, in the presence of two attesting witnesses.

WILLIAM FLEMING FALCONER.

Witnesses:

JOHN H. MICKLE,
JOHN VON OVEN.