MACHINERY FOR DECORTICATING VEGETABLE FIBERS.

(Application filed Dec. 30, 1897.)

2 Sheets—Sheet 1.
MACHINERY FOR DECORTICATING VEGETABLE FIBERS.

Inventor
R. J. EKE

Attorneys

Witneses
John Catalano
D. H. Blacklock

by Wilkinson & Fisher
THE NIXON PRINTING CO., PRINTERS, WASHINGTON, D.C.
MACHINERY FOR DECORTICATING VEGETABLE FIBERS.

To all whom it may concern:

Be it known that I, ROBERT JAMES EKE, a subject of the Queen of Great Britain and Ireland, residing at 34th White Lion street, Pentonville, London, England, have invented an Improvement in Brakes, of which the following is a specification.

My improved brake is especially designed for the decortication of rhea. Before my invention, no machine was ever produced which would successfully accomplish this object, although many efforts have been made in this direction, the reason being that on account of the peculiar structure of rhea the ordinary brakes will not successfully treat it.

The ordinary method of treating rhea by machinery is to pass it through plain rollers and then through breaking-rollers and beaters. The plain rollers crush the stem, thus embedding the woody portion of the stem in the bark, epidermis, and gum. The breaking-rollers then break the stems across, and as the woody portions are cemented to the bark, they break the bark, and with it the fiber contained therein. It has also been proposed to split the stems; but so far as I am aware, no machine, prior to my invention, has been devised which will do this successfully.

Rhea has been successfully decorticated by hand by stripping the bark and fiber from the woody stick. The expense of this method has prevented it from coming into general use.

The object of my invention is to imitate by machinery this hand process, and this object I have perfectly attained by means of the machine described and shown.

My invention consists in the construction and combination of parts, as hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a side elevation of my improved brake. Figure 2 is a side elevation of part of the splitting-rollers. Figure 3 is an end view of the same. Figure 4 is a diagrammatic representation of the driving-gear. Figure 5 is a plan view of the driving-gear. Figure 6 is a side view of the beaters. Figure 7 is a side view of the breaking-rolls; and Figure 8 is a plan view of the machine, the gearing being omitted.

The same letters and numerals denote the same parts in all the figures.

α α show the standards of the machine, β β the rollers for splitting or wedging open the stalks as they are fed into the machine. A plan of a portion of these rollers is shown at Fig. 2, drawn to an enlarged scale, showing their position in respect to one another when fitted in the machine. It will be seen that the edges c of the circumferential V-grooves are rounded, so that the stalks may not be cut, but only wedged open longitudinally. It will also be observed that the rollers b b do not touch at any part.

δ δ show the rollers for breaking the stalks transversely after they have been wedged open by the rollers β β. I may have the grooves on the rollers δ δ of any suitable form, and I prefer to have both the rollers provided with longitudinal U-grooves (see Fig. 7) or V-grooves.

ε ε show the beaters. These are provided with blades which intermesh, as shown at Fig. 6, detached. The edges f of the blades are rounded, so that the fiber may not be cut.

η η show the tension-rollers, which I prefer to have grooved longitudinally in the same way as the rollers δ δ.

h shows the feeding-table or endless band, i and j the delivery-table or endless band. These tables or bands travel on the rollers k k l l, respectively.

The beaters ε ε are caused to rotate at a high speed by means of the pinion m, which engages with a spur-wheel μ, keyed on the pulley-shaft ν. On the shafts of the rollers b b are keyed spur-wheels which engage with one another, so that one of these rollers is driven by the other. Onto each of the shafts of the rollers δ δ, ε ε, and η η is likewise keyed a coupling-wheel, so that each of the upper rollers is connected with a corresponding lower one. These coupling-wheels are not shown on the drawings. The splitting-rollers b b and beaters ε ε are adjusted by the handles τ τ.

θ θ shows a shield for preventing the woody portions from mixing with the treated fiber on the table φ φ.

The bearings r s τ ν slide in pockets r' s' t' w' in the frame φ, so that the rollers b b δ δ,
beaters e e, and tension-rollers g g can be adjusted according to the nature of the fiber to be treated, as the different fibers require more or less pressure exerted on them.

The action of a machine constructed as above is as follows: The pulley-shaft o is driven by suitable means. The pinion p engages with the spur-wheel q, which is keyed on the shaft 5 of the bottom splitting-roller b, which insures this pair of rollers b b rotating. The spur-wheel w on the shaft 5 engages with the idle-wheel x, (see Fig. 4,) and thus drives the spur-wheel y on the shaft 6, thereby actuating the pair of breaking-rollers d d. Another spur-wheel z is also keyed on the shaft 6, and this spur-wheel gears with another idle-wheel x' and so transmits motion to the spur-wheel y', keyed on the shaft 8, thereby actuating the pair of tension-rollers g g. The roller k is provided with a sprocket-wheel k', connected by means of a chain x' with another sprocket-wheel w', keyed on the shaft 5. The system of gearing between the various rolls is not shown in Fig. 8, but is an ordinary toothed gearing, suitably arranged for driving the rolls in their proper directions or in respect to each other, as will be readily understood by reference to Figs. 4 and 5. The stalks are fed onto the band or table h and are then carried to the rollers d d. The stalks enter the grooves of the upper and lower rollers b b and are wedged open as they pass between the said rollers. They are then conveyed to the rollers d d, where they are broken transversely, and in this form are carried between the beaters e e, where, on account of the interior being exposed, the woody portions are beaten out, and the fiber then passes between the tension-rollers g g and is delivered onto the band or table e.

I have found that it is necessary to set the beaters e e as close as possible to the tension-rollers g g, so that the ribbons may be cleaned right to the end.

I may have additional pairs of beaters and tension-rollers if found desirable.

If desired, the fiber treated as above can be passed through the machine a second time; but this will not be found necessary as a rule.

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

In a brake, the combination of a conveyor, and two rolls, h, one above the other, provided with similar circumferential grooves and elevations, the edges of the grooves and elevations being rounded, and said rolls being so located that the convex portions of one roll enter the concave portions of the other roll, but so that the surfaces of the rolls are not in contact, with breaking-rolls, beaters and drawing-rolls, all the parts being arranged in the order mentioned, substantially as described.

R. J. EKE

Witnesses:
J. M. Landon,
A. E. Vidal.