

E. WRIGHT.
MACHINE FOR DECORTICATING THE FIBROUS LEAVES OR STEMS OF PLANTS.
APPLICATION FILED NOV. 29, 1909.

1,002,107.

Patented Aug. 29, 1911.

3 SHEETS-SHEET 1.

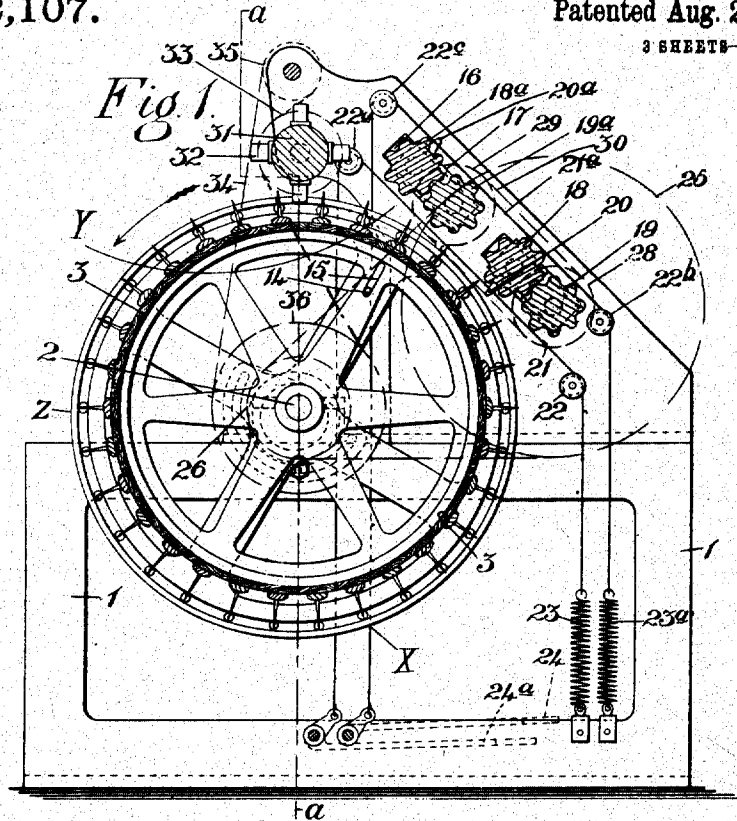


Fig. 2.

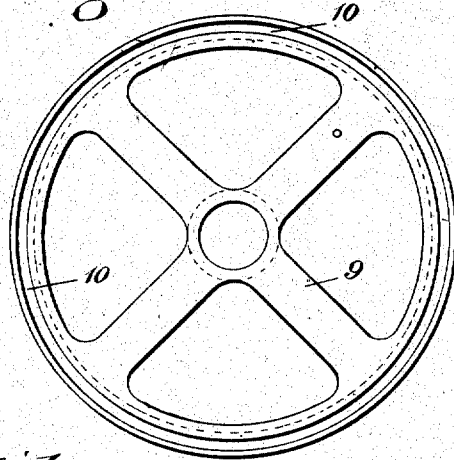


Fig. 3.

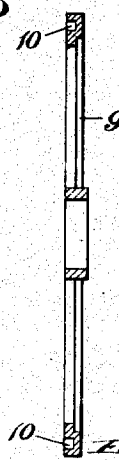
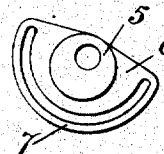


Fig. 4.



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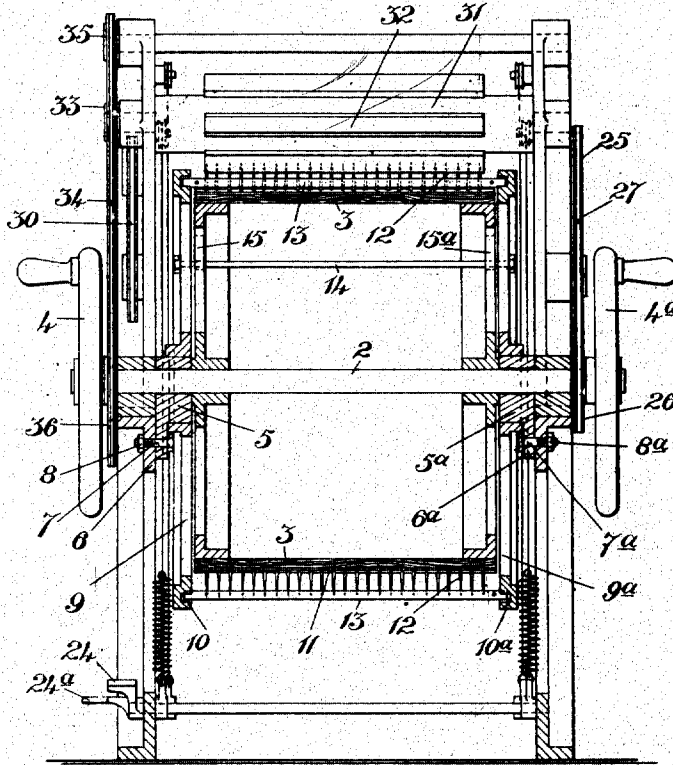
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Fig. 5.



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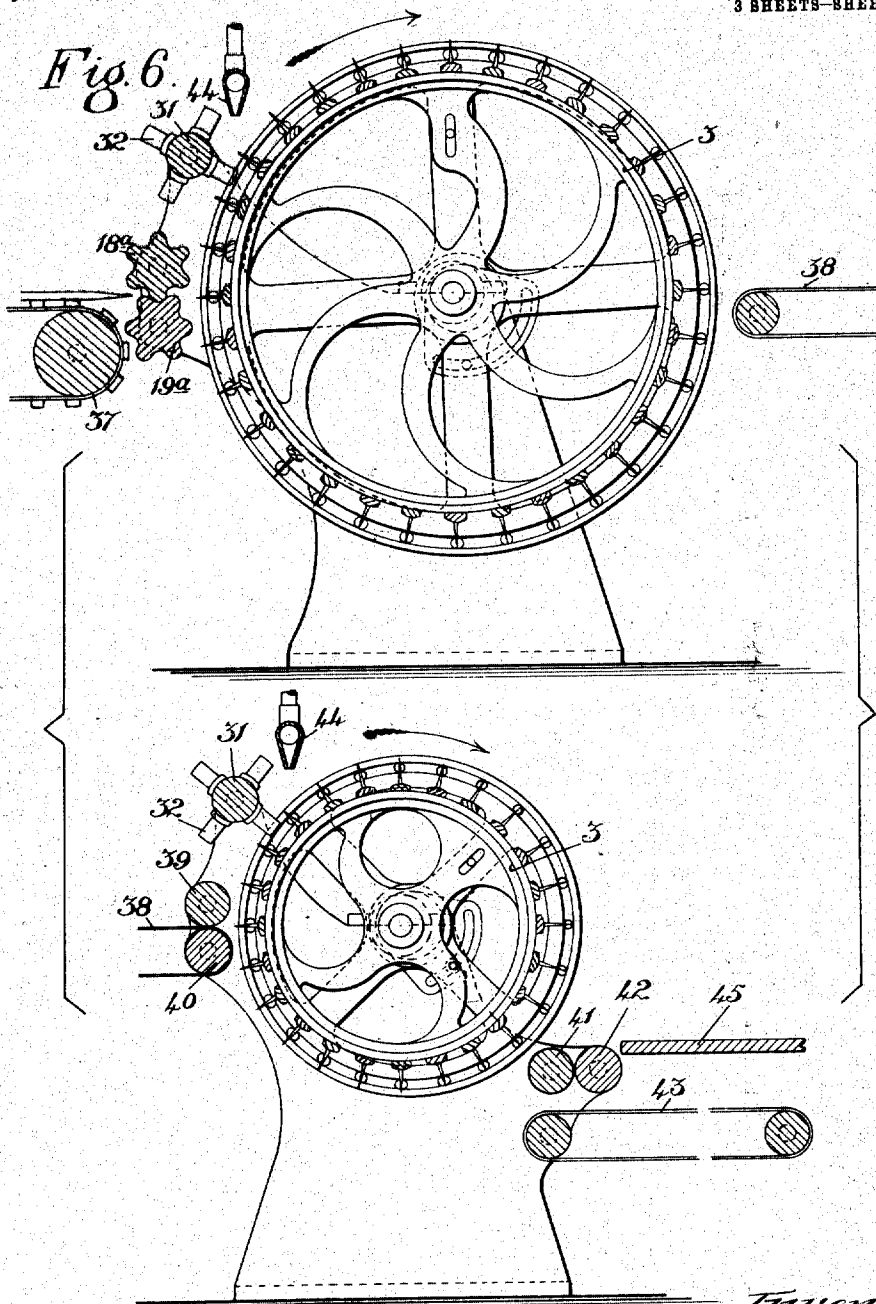
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UNITED STATES PATENT OFFICE.

ERNEST WRIGHT, OF PINNER, ENGLAND.

MACHINE FOR DECORTICATING THE FIBROUS LEAVES OR STEMS OF PLANTS.

1,002,107.

Specification of Letters Patent. Patented Aug. 29, 1911.

Application filed November 29, 1909. Serial No. 530,437.

To all whom it may concern:

Be it known that I, ERNEST WRIGHT, a subject of the King of Great Britain, residing at Pinner, England, have invented certain new and useful Improvements in Machines for Decorticating the Fibrous Leaves or Stems of Plants, of which the following is a specification.

This invention relates to that class of machine for separating the fibrous parts of leaves or stems of plants from the pulpy or woody parts thereof, and in which rows of pins are affixed to a drum and such pins are cleared by metal or other strips moving up and down them during the travel of the drum, the fiber being lifted by the strips from the pins after the combing has been effected, and thus prevented from wrapping around the drum. In such class of machine it has been found that in consequence of the extensive movement of the various parts, great friction was created and this in consequence entailed great power to drive same and in addition great noise was created during working.

Now the object of the present invention is to overcome these disadvantages by simplifying the construction of the machine to such an extent that a great percentage of the friction is obviated, little noise is created and the apparatus can be operated by much less power than formerly.

My invention will be clearly understood from the following description, aided by the accompanying drawings in which—

Figure 1 is a side sectional elevation of the apparatus employing a single drum only. Fig. 2 is a face view of one of the grooved disks hereafter explained. Fig. 3 is a longitudinal section of Fig. 2. Fig. 4 is a face view of the eccentric hereafter explained. Fig. 5 is a transverse section on the line *a a* of Fig. 1. Fig. 6 is a side sectional elevation of an installation of apparatus employing two drums for completely combing the stems or leaves.

The chief feature of my invention is the employment of eccentrically mounted grooved disks for receiving and carrying the strips which engage and clean the pins on the drum and lift the fiber from the pins, said disks revolving with the drum so that the strips move about the pins only at a certain portion of the travel of the drum.

1 is the frame of the machine, carrying in suitable bearings an axle 2, said axle

having affixed thereto a drum 3, and driving wheels 4, 4^a.

Surrounding the axle 2 are two eccentrics 5, 5^a, said eccentrics preferably having wings 6, 6^a, provided with slots 7, 7^a, whereby said eccentrics can be held in proper position by bolts 8, 8^a, to the frame 1, these eccentrics being positioned between the bearings and the drum 3. Surrounding each eccentric 5, 5^a, is a disk 9, 9^a, having formed in its inner face near its periphery grooves 10, 10^a, positioned outside the periphery of the drum 3. The drum 3 carries on its periphery a series of plates 11, arranged at equal distances apart across the drum, and each of these plates 11 carries a row of pins 12 which constitutes a comb. On each side of each row of pins 12, and in touch or nearly so therewith, is arranged a strip of metal 13, or other material, each pair of strips 13 being connected at their ends to inclose the pins 12, and such ends are positioned in the grooves 10, 10^a, of the two disks 9, 9^a, suitable openings being arranged in the grooves 10 for placing the strips 13 in position. The two disks 9, 9^a, are connected to the drum 3 by a rod or driving bar 14, said rod being positioned in slots 15, 15^a, in opposite spokes or ends of the drum 3, so that the drum 3 drives the disks 9, 9^a, around with it, and at the same time allows of the eccentric movement of the disks 9, 9^a.

In inclined slots 16 formed in the frame 1, of the machine, are positioned sliding blocks 17, these carrying corrugated rollers 18, 18^a, and in said frame 1 are journaled other corrugated rollers 19, 19^a, these meshing with and driving the rollers 18, 18^a.

One of the blocks 17 is provided with a lug 20 having attached thereto a cord 21 which is rove over pulleys 22 and 22^a, one end of said cord being connected to a spring 23 fastened to frame 1, while its other end is fastened to a foot lever 24^a; the other block 17, in like manner, is provided with a lug 20^a that has secured to it a cord 21^a which is rove over pulleys 22^b and 22^c, and is connected at one end to a spring 23^a fastened to frame 1 and at the other end to a foot lever 24. Depression of either foot lever will, in consequence, effect the movement of the corresponding block and its roller along its slot.

One end of the axle of the roller 19 is provided with a relatively large pulley 25, which is connected with a small pulley 26

on the axle 2, by a belt 27, whereby the drum 3 is caused to revolve at a much greater speed than the roller 19. The axle of the said roller 19 is also provided with a pulley 28, connected with a pulley 29 (of equal diameter) on the axle of the roller 19^a by a belt 30, so that both corrugated rollers 19 and 19^a, move at equal speeds. On the frame 1, is also mounted a roller 31, having preferably four longitudinal ribs 32, said roller 31 being provided with a pulley 33, and being revolved by a belt or chain 34 which is held against the side of pulley 33 and passes around an idle pulley 35, and around the pulley 36 on the axle 2, the arrangement being such that the ribs are successively introduced between the rows of pins as the drum 3 is revolved.

The operation is as follows, having regard to Figs. 1 and 5. If the eccentrics 5, 5^a, are adjustable they are placed and secured to the frame in adjusted position by the bolts 8, 8^a; that is to say, if the two sets of rollers 18, 18^a, and 19, 19^a, are employed, the eccentrics are so adjusted that the strips 13 begin to recede from the points of the pins 12 just before they reach the rollers 18, 19; but if only one set of rollers, say 18^a, 19^a, are employed, the eccentrics 5, 5^a, are so adjusted that the strips 13, begin to recede from the points of the teeth just before reaching that set of rollers. The eccentrics being positioned, say for the use of the two sets of rollers 18 and 19, and 18^a and 19^a, the operator first starts the machine by the driving wheels 4, 4^a, after which he places one end of the leaf or stem between the rollers 18^a and 19^a, and then places the other end of the leaf between the rollers 18 and 19. As the drum 3 is now revolved, the ends of the leaf are passed on to the drum 3 by the rotation of the rollers 18^a and 19^a, and 18 and 19, and acted upon by the pins in the well known manner, the leaf being pressed between the rows of pins by the ribs 32 on the roller 31. The movements of the rollers carry the leaf on to the drum, and as soon as the body of the leaf becomes taut between the two sets of rollers, the operator, by pressing on the foot lever 24, opens the two rollers 18, 19, thereby releasing the leaf at that end, whereupon its other end is advanced between the rollers 18^a and 19^a, and the part untouched by the pins is acted upon, so that the whole leaf eventually becomes combed. During the revolution of the drum between the points marked X, Y, say $\frac{1}{2}$ of a revolution, each set of strips has been gradually (by reason of its connection to the grooved disks 9, 9^a) caused to move inward toward the axle, so as to expose the pins and allow of their gradually increasing action on the leaf. During the revolution of the drum between the points Y, Z, the strips are moving away from the axle so as to

allow of a gradually increasing action of the pins on the leaf, the strips at the same time clearing the pins and lifting the fiber from the pins, whereupon it falls away or is collected by the attendant. During the remaining movement *i. e.* from Z to Y, the strips are at the points of the pins and travel concentrically with the drum.

In Fig. 6, I have shown a system whereby two drums are employed, each being constructed as in Fig. 1. In this machine the leaf is delivered between one pair of corrugated rollers 18^a, 19^a, from an endless band 37, is passed around the drum and acted upon by the combing pins, but the stump or end is not acted upon by the pins of the first drum in consequence of its leaving the corrugated rollers 18^a, 19^a. When this takes place the whole of the fiber together with the end or stump of the original leaf is carried around with the drum. On reaching the other side of the drum, the stump is lifted off by the outward movement of the strips upon the pins and falls upon an endless band 38 on which it is carried with the fiber attached, between a pair of rollers 39, 40, from which it is passed stump or end first around another smaller drum 3. The stump is then acted upon by the pins of the second drum so that the whole of the leaf is combed, the fiber passing from this drum between rollers 41, 42, on to an endless band 43 to be carried away for collection and subsequent treatment.

44, are water nozzles for supplying water to wash the pulpy or fleshy matter away from the fibers as is usual, and 45 is a guard to prevent the fiber falling on to the belt 43, without first having passed between the rollers 42, 43.

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

1. In a decorticating machine, the combination of a drum provided with a series of rows of combing pins; a pair of disks arranged at the ends of said drum and supported eccentrically with respect thereto, said disks having their inner faces formed with annular grooves; a series of pairs of strips arranged upon opposite sides of said rows of pins and with their mutually adjacent inner longitudinal edges substantially in contact with the same, said strips having their ends fitted in the grooves in said disks, for connecting the latter; means for rotating said drum; and means connecting said drum and disks for causing the same to rotate in unison, whereby said pairs of strips are caused to move forward and backward relatively to said rows of pins at predetermined intervals and to act directly thereon, to clean said rows and remove the combed material therefrom.

2. In a decorticating machine, the combination of a drive shaft, and means for rotat-

ing the same; a drum mounted concentrically on said shaft; a series of rows of toothed combs carried by said drum; an eccentric secured to said shaft adjacent each
5 end of said drum; a disk carried by each eccentric and having its inner face formed with an annular groove; means connecting said disks and drum for causing the same to rotate in unison; and a series of cleaning
10 and lifting devices connecting said disks and having their ends fitted in the grooves there-

in, for action directly upon the teeth of said combs at predetermined intervals during the rotation of said drum and disks.

In testimony whereof I have hereunto set 15 my hand in presence of two subscribing witnesses.

ERNEST WRIGHT.

Witnesses:

RICHARD COXE GARDINER,
LYNWOOD A. GARDNER.