E. WRIGHT.

MACHINE FOR DECORTICATING THE FIBROUS LEAVES OR STEMS OF PLANTS.

APPLICATION FILED JAN. 4, 1909.

960,134. Patented May 31, 1910.

2 SHEETS—SHEET 1.

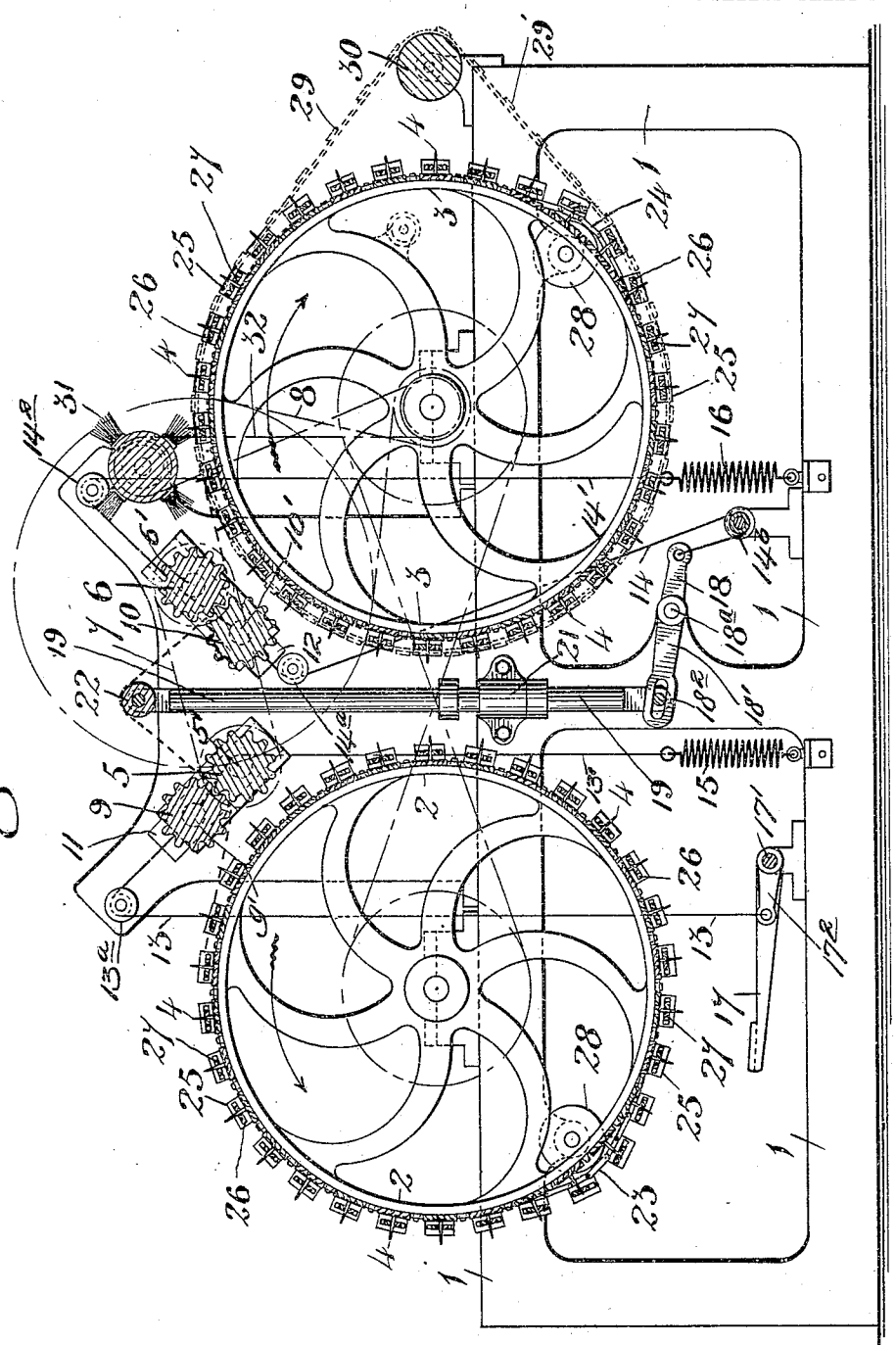

Fig. 1.

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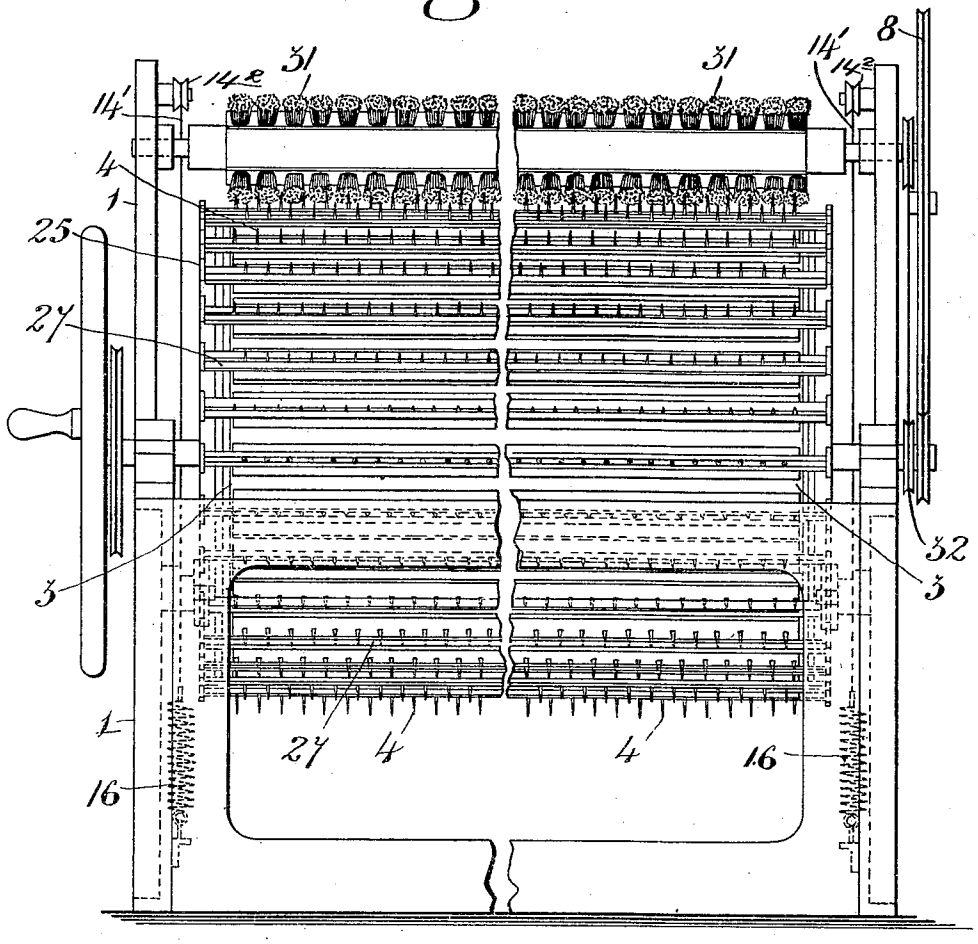
2 SHEETS—SHEET 2.

Fig. 2.



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MACHINE FOR DECORTICATING THE FIBROUS LEAVES OR STEMS OF PLANTS.

960,134. Specification of Letters Patent. Patented May 31, 1910.

Application filed January 4, 1909. Serial No. 470,656.

To all whom it may concern:

Be it known that I, ERNEST WRIGHT, a subject of the King of Great Britain, residing at Pinner, Middlesex, 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.

The object of this invention is to construct a machine for separating the fibrous parts of leaves or stems of plants from the pulpy or woody parts thereof in such a manner that the whole of the leaf or stem is efficiently acted upon without removal from the machine.

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 machine. Fig. 2 is an end view from the right-hand side of Fig. 1.

For the purpose of my invention, I journal on a frame 1 two drums or rollers 2, 3, having on their periphery the usual pins or combs 4, and I arrange such drums 2 and 3 side by side. In proximity to the drums, and between the same, are located two fixed fluted rollers 5 and 6 arranged transversely of the machine and driven by belts 7 and 8. These rollers are designed to coöperate with a pair of similar rollers 9 and 10 mounted on bearings slidable in the frame normally held in engagement therewith. To effect this engagement, the roller 9 has the ends of its shaft 9′ connected to a pair of cords 13′ which are led downwardly across the ends of the shaft 5′ of the roller 5 and are attached to springs 15 secured to the frame sides; in like manner, the ends of the shaft 10′ on which the roller 10 is mounted are connected to cords 14′, the latter being led first upwardly across the roller shaft 6′ and over guide rollers 14^2, and then downwardly, the lower ends of the cords being fastened to similar springs 16. In order to disengage rollers 9 and 10 from the fixed rollers, when the occasion arises, their shafts have further connected thereto, the upper ends of pairs of cords 13 and 14, the former of which are led over guide rollers 13^a and are secured at their lower ends to arms 17^2 rigidly secured to a transverse rock shaft 17′ operated by a treadle 17, while the latter cords are led around guide rollers 14^a and 14^b and have their lower ends attached to arms 18 secured to a second rock shaft 18^a. To accommodate this movement of the rollers 9, 10, their shafts are journaled in bearing boxes which fit in slots 11 and 12 formed in the frame sides. Between the two drums, there is also arranged a vertically-movable frame, generally designated by the numeral 19, and provided at its top with a transversely positioned supporting roller 22. In the present instance, this frame is shown as comprising a pair of vertical rods slidable in bearings 21 secured to the frame sides and having their upper ends connected by the shaft on which roller 22 is mounted. The lower end of each bar has a pin-and-slot connection 18^2 with a lateral arm 18′ secured to rock shaft 18^2, the arms 18′ projecting in the opposite direction from the arms 18 above referred to. It is to be understood, however, that the exact form of frame described is not essential, since the two rods may be replaced by a single rod located centrally of the machine, the supporting roller being connected at its center to such rod. In either case, the frame is held normally in elevated position by the action of the springs 16, as will be apparent.

In order to keep the combs clean while the machine is running, I may provide each edge of the drums 2, 3, with chains or bands 23, 24, having each alternate link provided with an up-turned portion 25 having slots 26, each of these slots carrying a pair of flat strips 27 of wood, metal or other suitable material, arranged in spaced relation to each other to permit the pins or combs 4 to pass therebetween, so that the pins or combs are engaged on each side by the strips. The chains or bands carrying these strips pass over a second set of smaller rollers 28 (preferably one on each side of the drum) which cause the cleaning strips 27 to be lifted outwardly along the pins in the known manner, but without being removed therefrom, once in each revolution, effectually preventing the pulp and waste matter from clogging the pins, which clogging prevents the pins or combs from performing their work efficiently.

In order to prevent the long finished fiber from wrapping around the drum, I may pass a band of slats 29 around each drum between the pins, and over a roller 30, as shown in dotted lines, Fig. 1, so that the ends of the fiber are lifted off the drum at the point where the roller 30 is located. For clear-

ness of illustration, however, only one band and roller are shown.

The operation is as follows: I place the center of the leaf or leaves or stem or stems all preferably of about the same length over the roller 22, whereupon the rollers 5, 9, and 6, 10, will grip the leaf and pass each end thereof over the adjacent drum, the pins of which are thus brought into contact with the leaf and comb the same. As the leaf tightens between the two pairs of rollers, it presses down upon the roller 22 and lowers the frame 19, which in turn rocks the shaft 18ª, thereby tensioning the cords 14 and drawing roller 10 away from the roller 6. The leaf immediately is drawn back from between the rollers 10 and 6, and continues to pass on in the opposite direction between the rollers 9 and 5, until the whole of the leaf is combed. The fiber is then permitted to be withdrawn from between the rollers 9 and 5 by depressing the treadle 17, thereby releasing the former roller from engagement with the latter, after which the fiber is removed from the machine by hand. It may then be tied and bound in any suitable manner. The gripping rollers 5, 9 and 6, 10, move slowly, and the drums 2, 3, quickly, so that the action of the pins 4 performs an effective combing.

31 is a brush revolved by the belt 32 from the adjacent drum axle, to press the leaf or stem down on to the pins.

I am aware that it has been proposed to use a band of strips to remove the tow or other materials from the pins arranged across the drums, but in all such cases the band of strips has been so positioned that the strips are completely removed from the pins during a portion of their travel and then have to reëngage the pins. This has been found in practice to be ineffectual, as the space necessary between the strips to allow of reëngagement of the latter with the pins proved too great to insure a proper and effectual cleaning of the pins. In my invention, on the contrary, the strips are not completely removed from contact with the pins, but only work up and down along the same. By this means, a relatively narrow space between the strips is possible, and in consequence the strips are always in contact with the pins, insuring effectual removal of all material therefrom.

What is claimed is:

1. The combination, in a decorticating machine, of a yieldingly-mounted supporting frame; a stretching mechanism comprising two sets of feeding devices, one set located upon each side of the frame, for engagement with the material supported thereupon, one set of feeding devices comprising normally interengaged, relatively fixed and movable members; and connections between said frame and the movable member, for automatically moving the latter away from the fixed member during the stretching operation, to permit the material to be fed through the other set of feeding devices.

2. The combination, in a decorticating machine, of a yieldingly-mounted support; a stretching mechanism comprising devices located upon opposite sides of said support for engagement with the material supported thereupon, each material engaging device comprising normally interengaged relatively fixed and movable members; connections between said support and the movable member of one device for automatically moving said member away from the corresponding fixed member; and manually-operated means connected with the movable member of the other device for moving the same away from the fixed member thereof.

3. The combination, in a decorticating machine, of a yieldingly-mounted material support; means for holding said support normally in elevated position; feeding devices located upon opposite sides of the support, said feeding devices forming, in combination, a device for stretching the material, to depress said support, one of said devices comprising interengaged relatively fixed and movable members; and connections between said support and the movable member, for automatically disengaging the latter from the fixed member, when the support is depressed, to permit the material to be fed through the other feeding device.

4. The combination, in a decorticating machine, of a yieldingly-mounted material support; means for holding said support normally in elevated position; a pair of interengaged feed rollers located upon each side of the support, said feed rollers forming, in combination, a device for stretching the material, to depress the said support, one roller of one pair being fixed and the other roller movable with respect thereto; and connections between the support and the movable roller for automatically disengaging the latter from the fixed roller when the support is depressed, to permit the material to be fed through the other pair of rollers.

5. The combination, in a decorticating machine, of a yieldingly-mounted material support; means for holding said support normally in elevated position; a pair of interengaged feed rollers located upon each side of the support, said rollers forming, in combination, a device for stretching the material, to depress said support, one roller of each pair being fixed and the other roller movable with respect thereto; connections between the support and the movable roller of one pair for automatically disengaging said roller from the corresponding fixed roller when the support is depressed, to permit the material to be fed through the other

pair of rollers; and manually operated means connected with the movable roller of said other pair, for disengaging the same from the fixed roller thereof.

6. The combination, in a decorticating machine, of a yieldingly-mounted member provided with a horizontal supporting roller; means for normally holding said member in elevated position; a pair of inter-engaged feed rollers located upon each side of said member, said rollers forming, in combination, a device for stretching the material to depress said supporting roller and said member, one roller of each pair being fixed and the other roller movable with respect thereto; means automatically operated by the depression of said supporting roller and said member for disengaging the movable roller of one pair of feed rollers from the fixed roller, to permit the material to be fed through the other pair of rollers; and manually operated means for disengaging the movable roller of said other pair from the fixed roller.

7. The combination, in a decorticating machine, of a pair of drums, each provided with a peripheral series of rows of combs; a material support located between said drums; feeding devices located upon each side of said support and between the latter and the adjacent drum; means for cleaning the combs of each drum during the rotation thereof; and means for preventing the material from being wound around the drums.

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

ERNEST WRIGHT.

Witnesses:
PERCY E. MATTOCKS,
F. C. SMITH.