O. SHEEHAN.

FIBER DECORTICATING MACHINE.

APPLICATION FILED NOV. 19, 1907.

1,009,589.

Patented Nov. 21, 1911

2 SHEETS—SHEET 1.

Fig. 1

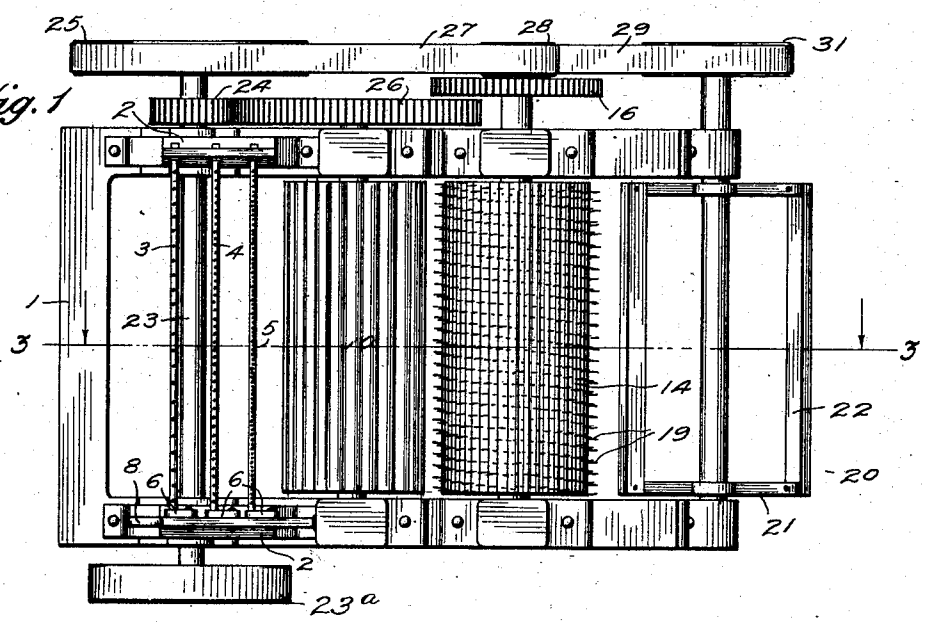
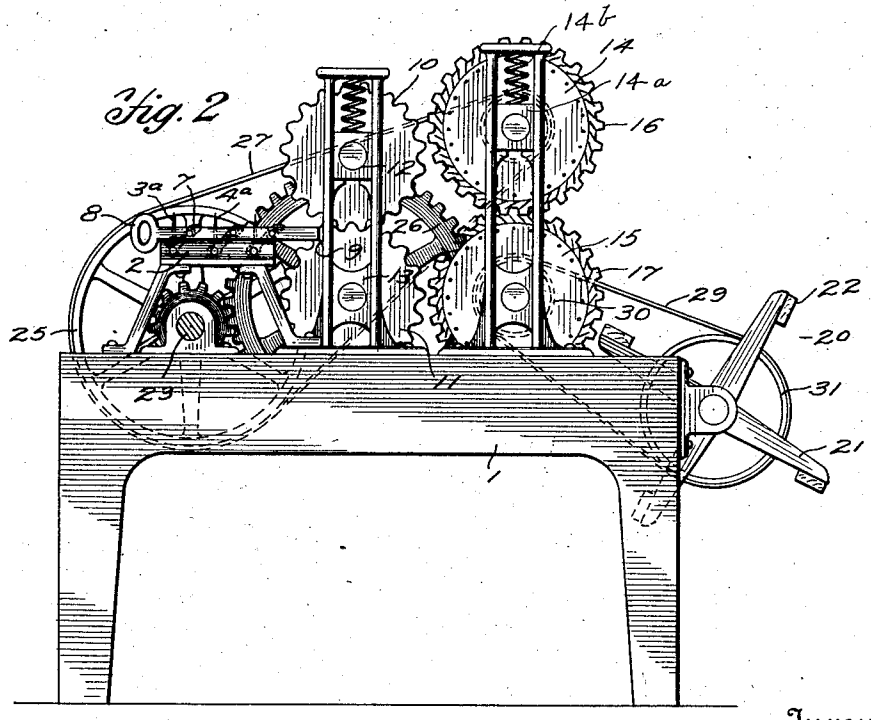


Fig. 2



Witnesses

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Fig. 3

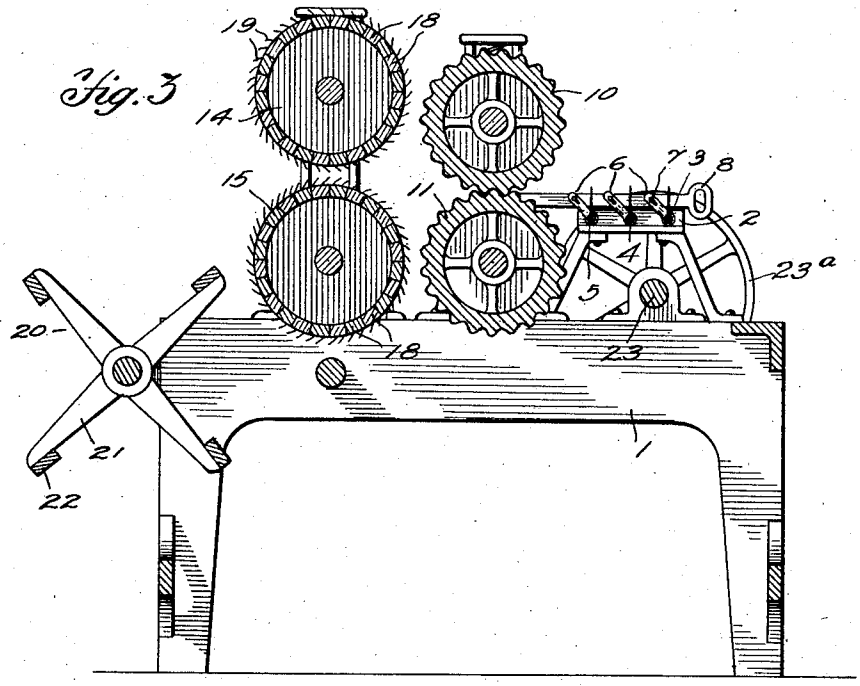
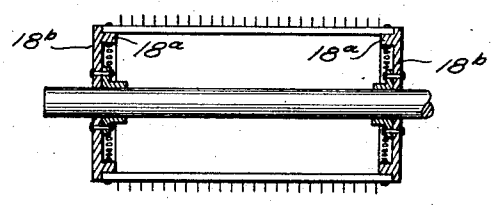


Fig. 4



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UNITED STATES PATENT OFFICE.

OWEN SHEEHAN, OF NEW BEDFORD, MASSACHUSETTS, ASSIGNOR TO THE HOLLINGSWORTH AND VOSE COMPANY, OF BOSTON, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

FIBER-DECORTICATING MACHINE.

1,009,589. Specification of Letters Patent. Patented Nov. 21, 1911.

Application filed November 19, 1907. Serial No. 402,862.

To all whom it may concern:

Be it known that I, OWEN SHEEHAN, a citizen of the United States, residing at New Bedford, in the county of Bristol and State of Massachusetts, have invented certain new and useful Improvements in Fiber-Decorticating Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to decorticating machines for extracting and cleaning fiber from fibrous plants.

It has for its object to extract a much larger percentage of fiber from leaves, bark, etc. and in a more efficient and practical manner than has been possible with machines heretofore employed for this work.

The invention contemplates a complete splitting or shredding of fibrous substances, especially leaves, from end to end, whereas in former machines it has been impossible to properly separate the fibers of the ends of the leaves, etc. which pass into the machine last.

The invention also consists in arranging the teeth on the cleaning rolls in such a way that they will accomplish their work in the best manner and the substances acted upon by them will not adhere to said teeth and be wound upon said rolls.

The invention further consists in the features of construction and combinations of parts hereinafter described and specified in the claims.

In the accompanying drawings, illustrating the preferred embodiment of my invention: Figure 1 is a plan view of a machine constructed in accordance with my invention. Fig. 2 is a side elevation. Fig. 3 is a longitudinal vertical section, and Fig. 4 is a central longitudinal section of a modified construction of cleaning roll.

Referring more particularly to the drawings, 1 designates the frame of the machine on which the various working parts are supported. Loosely mounted in bearing rails 2 are three toothed bars or combs 3, 4 and 5. The teeth on all three bars are preferably about three inches long and extend substantially across the machine. The teeth 3^a on bar 3 are arranged about one-fourth of an inch apart. The teeth 4^a on bar 4 are set about one-eighth of an inch apart and the teeth 5^a on bar 5 about one-sixteenth of an inch apart. Secured to the ends of said toothed bars are slotted crank arms 6. Lugs or pins 7, carried by hand levers 8, engage the slots in said crank arms, whereby said toothed bars may be turned to bring their teeth to either a horizontal or a vertical position. The ends of the levers 8 are adapted to abut against projections 9 on the framework to hold the teeth in a vertical position. The object of this arrangement of the toothed bars is to permit them to be raised or lowered as desired in working different kinds of leaves, bark, etc.

Upper and lower fluted iron draft rolls 10 and 11 are arranged in suitable bearings 12 and 13 respectively. Said rolls mesh with each other and are in position to receive between them the leaves, etc. as they come from the toothed bars.

Another pair of rolls 14 and 15, which I call cleaning rolls are arranged on the other or discharge side of the fluted rolls. Said cleaning rolls are mounted in suitable bearings and are adapted to revolve toward each other by means of meshing gears 16 and 17. The bearings 14^a of the upper roll 14 are cushioned or pressed by springs 14^b, see Fig. 2, whereby said roll is elastic, that is, free to give or yield upwardly away from the lower roll 15 during the passage of the fibers between said rolls. This elasticity of the upper cleaning roll prevents it from cutting or hacking up the fiber. The peripheries of said cleaning rolls may be made up of longitudinally extending wooden lags 18 properly shaped and provided with perforations through which fine steel pins or cutting teeth 19 are driven from within. The wooden lags may be secured to flanges 18^a on metal end disks 18^b by means of bolts 18^c as shown in Fig. 4, if desired. Said cutting teeth are set at an angle against or away from the direction of motion of said rolls to prevent the adhesion of fibrous or other substances to the teeth and prevent fiber from winding around the rolls. Practice has shown that when the teeth are not set at the proper angle, they will not clear themselves from the fiber and consequently said fiber will wind on the rolls. The teeth on the two rolls do not intermesh, a slight clearance being provided for them. The general alinement of the teeth on each roll is spiral, the purpose of which is to open or spread the fibrous matter acted upon as the teeth cut into and throw off the pulpy and other undesirable matter from the fiber.

A clearing reel or "take off" 20 is mounted in front and below the lower cleaning roll, as shown. Said reel is adapted to be revolved at just sufficient speed to take the fiber from the cleaning rolls and lay it on the floor. Said reel comprises spokes or arms 21 across the outer ends of which are secured strips 22 of suitable material, said strips running across the width of the machine.

The driving shaft 23, on which is mounted the drive wheel 23ª, also carries a gear 24 and a pulley 25. Said gear meshes with a gear wheel 26 on the shaft of the lower fluted roll which provides for the turning of said fluted rolls. The cleaning rolls are rotated by means of a belt 27 running over the pulley 25 and a pulley 28 on the shaft of the upper cleaning roll. Another belt 29 passed over pulleys 30 and 31 respectively mounted on the shafts of the lower cleaning roll and the clearing reel, serves to drive said reel.

In the operation of the machine, the ends of the plants or leaves are fed between the fluted rolls, the leaves being pressed (immediately, if necessary) upon the toothed bars through which they are drawn and by which they are split to a certain extent before being engaged by said fluted rolls. The split leaves, etc. then pass between the cleaning rolls which being revolved at a much greater speed than the fluted rolls cut into and throw off the pulpy matter from said leaves. The "take off" reel then removes the fiber from the cleaning rolls and drops it to the floor.

The object of the pivotal adjustment of the toothed bars is to permit leaves etc. to be split for different distances. Some leaves and bark, which have very soft pulps or gums, do not require to be split by said toothed bars, the action of the cleaning rolls being all that is necessary to separate their fiber. All leaves, however, require splitting on the ends that enter the machine last. About two inches of these ends of the leaves are not acted upon by the teeth of the cleaning rolls, that is to say, when said ends pass between said cleaning rolls after coming from the fluted rolls, they are not acted upon sufficiently. The desired splitting is obtained by raising the toothed bars to a vertical position just as the last two inches of the leaves are about to enter the machine. By this means the leaves, bark, etc. are completely split and cleaned from end to end. In working leaves or plants having hard pulps or gums, it is necessary to have them pulled their full length through the toothed bars and it is then necessary to keep said bars with their teeth in a vertical position from the time the leaves enter the machine until their last ends have passed through.

I claim:

1. In a machine of the character described, the combination, with a pair of draft rolls, of a toothed bar and means to turn said bar to bring its teeth to either a horizontal or vertical position for splitting fibrous substances for different distances.

2. In a machine of the character described, the combination, with a pair of draft rolls, of a plurality of toothed bars having differently spaced apart teeth, and means to turn said bars to bring said teeth to either a horizontal or vertical position for splitting fibrous substances for different distances.

3. In a machine of the character described, the combination, with a pair of draft rolls, of a toothed bar mounted loosely in suitable bearings, slotted crank arms on the ends of said bar, a hand lever having a lug engaging the slots in said crank arms, and a stop for retaining said bar with its teeth in a vertical position.

4. In a machine of the character described, the combination, with a pair of draft rolls, of a toothed bar, means to turn said bar to bring its teeth to either a horizontal or vertical position for splitting fibrous substances for different distances, and a pair of spaced apart cleaning rolls driven at the same speed toward one another, said rolls having teeth on their peripheries which are inclined away from the direction of motion of said rolls for the purpose specified.

5. In a machine of the character described, the combination, with a pair of draft rolls and a pair of cleaning rolls, of a clearing reel arranged at the discharge end of the machine and driven at a slower speed than said rolls, said reel comprising radial arms and cross pieces secured to the outer ends of said arms and extending across the machine.

6. In a machine of the character described, the combination, with a pair of draft rolls, of a toothed bar, means to turn said bar to bring its teeth to either a horizontal or vertical position, a pair of cleaning rolls carrying teeth on their peripheries, said teeth being inclined away from the direction of motion of said rolls, and a clearing reel arranged at the discharge end of the machine, all for the purposes specified.

In testimony whereof, I affix my signature, in presence of two witnesses.

OWEN SHEEHAN.

Witnesses:
LESTER W. JENNEY,
WILLIAM HENRY SHEEHAN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."