No. 753,652. PATENTED MAR. 1, 1904.

W. H. ALLISON.

DECORTICATING MACHINE.

APPLICATION FILED MAY 20, 1902.

NO MODEL.

Fig. 1.

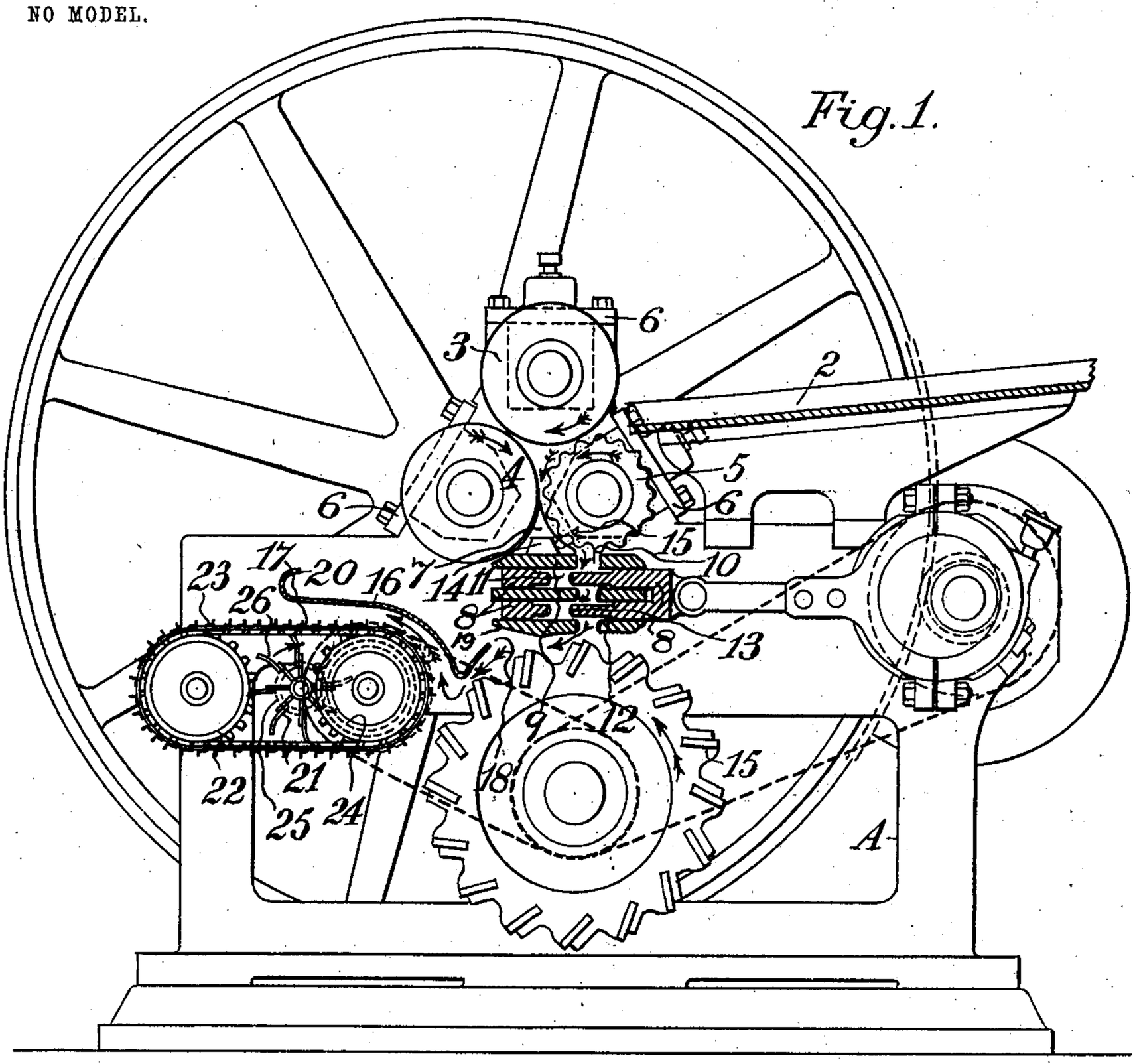



Fig. 2.

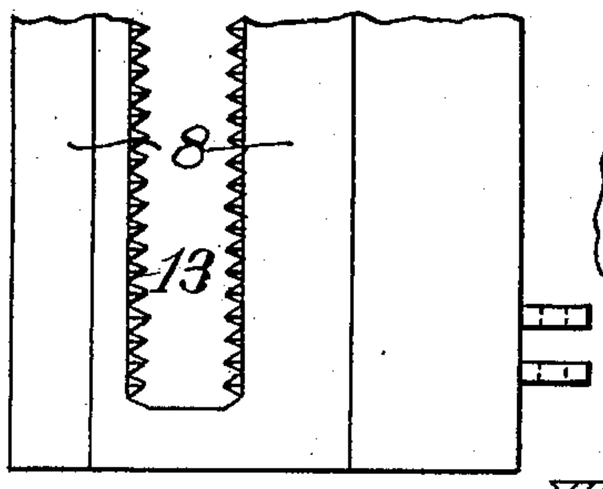



Fig. 3.

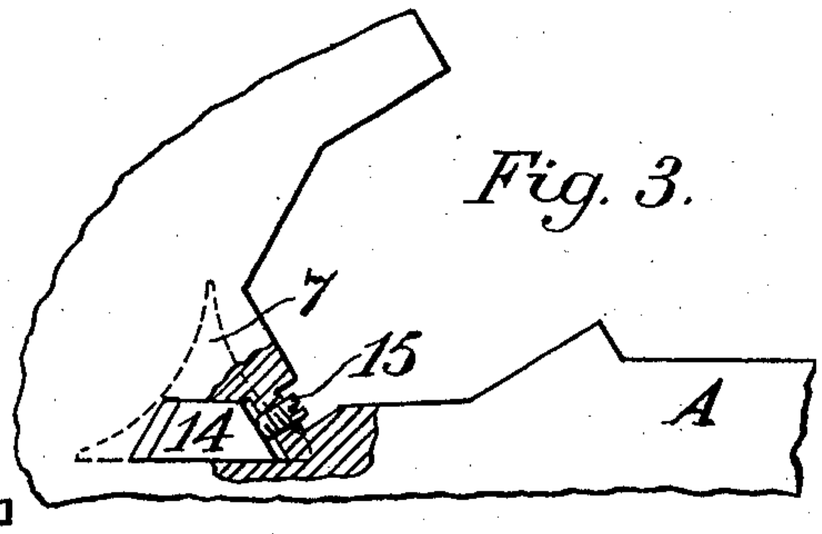
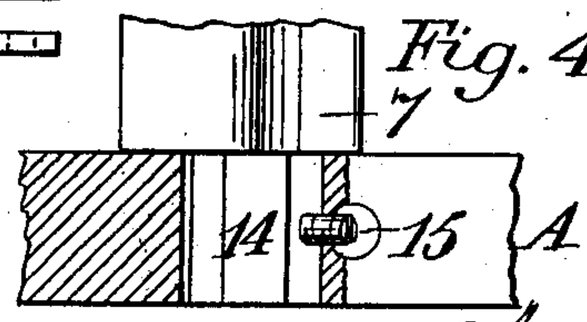



Fig. 4.

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No. 753,652. Patented March 1, 1904.

# UNITED STATES PATENT OFFICE.

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## DECORTICATING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 753,652, dated March 1, 1904.

Application filed May 20, 1902. Serial No. 108,214. (No model.)

*To all whom it may concern:*

Be it known that I, WALTER H. ALLISON, a citizen of the United States, residing in the city and county of San Francisco, State of California, have invented an Improvement in Decorticating-Machines; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to improvements in machines for separating the fiber from the woody parts of certain plants, such as ramie, hemp, and the like. Its object is to provide a decorticating-machine in which this separation will be more fully effected than has heretofore been possible in machines of this class.

My invention consists of the parts and the constructions and combinations of parts, which I will hereinafter describe and claim.

Figure 1 is a part longitudinal elevation and transverse section through the breakers embodying my invention. Fig. 2 is a portion of a plan of the breakers. Fig. 3 is a sectional view showing the adjustment of the block 7. Fig. 4 is a plan of the same.

A represents the framework of my machine. The stalks of ramie or hemp to be treated are fed through a chute 2 into the rollers 3, 4, and 5, by which they are crushed and split preliminary to their passing into the breakers. These rollers are journaled in boxes 6, removable in the frame A.

7 is a bar or block having a face fitting snug against the roller 4 and having a sharp upper edge and adapted to deflect the stalks around beneath the corrugated roller 5 into engagement with the breaker-bars 8.

The block 7 is formed with the ears 14 at either end, which are movable in the frame. By means of set-screws 15, countersunk in one of the walls of the sockets containing the journal-boxes of the roller 5, the block may be adjusted so as always to take up any space between the roller 4 and the block.

The bars 8 reciprocate between the guide-plates 9, which have the transverse openings or slots 10, with which the jaw-openings 11 of the breaker-bars are adapted to register on each reciprocation of the latter.

Any suitable means may be provided to rapidly reciprocate the bars 8 in unison. The latter have a snug fit with the plates 9 at the rear of the slot, while the front portion of the bars is reduced in thickness, so that a space 12 is left between each bar and its adjacent guide-plate.

While the stalks will be broken into numerous short sections, the interspaces 12 accommodate the fiber so that it will not be cut, and the thicker rear portion of the bars serves to push out on each forward reciprocation any woody particles that have a tendency to lodge between the bars and plates and so possibly clog the machine.

An important feature of this breaker aside from the use of a plurality of breaker-bars and the closing of the space between the bars and plates behind the jaw-openings is the forming of the walls of the openings 10 and 11 with a series of vertical ribs or angular corrugations 13. These ribs or corrugations are substantially sharp-edged and extend lengthwise in a vertical plane, and they are designed to split the stalk in the direction of the fiber. Also by convexing the breaking-surfaces of the bars all sharp angles that tend to break the fiber are avoided, the brittle stalk being broken substantially the same as were square-faced bars used; but the different effect on the fibers is noticeably in favor of the convexed surface. The breaker thus becomes a combined breaker and comber. The rear wall of the slot 10 of the uppermost of the plates 9 is preferably left straight in order to serve as a deflector to the stalks and prevent their following around the roller 5. In the present instance the front wall of the slot is also straight. Passing in sinuous form downwardly through the breakers the now thoroughly broken stalks are met by the rapidly-revolving beater or cylinder 15, which whips most of the woody portion free from the fiber. The latter then passes down and under the shield 16, where it is met by the horizontal carrier 17, by which it is drawn on through the machine and discharged therefrom practically free from all refuse matter. The

shield 16 is of V form, with its walls concaved and one wall considerably extended over the carrier 17. The other wall extends backwardly toward the breaker, but terminates a space below the lowermost of the plates 9, so as to leave a passage 18, through which the woody material is driven by the cylinder. The under surface of the lower plate 9 is inclined, as shown at 19, in order to aid in the separation of the refuse and fiber. While the latter passes around beneath the shield, the refuse and wood is thrown out through the opening 18 upon the top of the shield. The latter has an upwardly-curved flange 20 along the outer edge of its longer wall, which prevents any trash from again coming in contact with the sliver on the carriers 17.

Each roller, beater, and carrier in the machine will have a speed greater than its predecessor, so that the fiber will be kept taut and be drawn through the machine.

Within the carrier 17 is a whipper 21, which is made to revolve at much greater speed than the carrier and in a reverse direction. The carrier is composed of a pair of endless chains passing over sprockets 22 and connected at intervals by the angle-bars 23. In order to effect the reverse and accelerated movement of the whipper, the shaft of one of the pairs of sprockets 22 carries a gear 24, meshing a smaller gear 25, on the shaft of the whipper. The latter consists of leather flaps 26, secured to the spokes and adapted when the carrier and whipper are at rest to project up through the intervals of the carrier-bars. When the carrier is traveling at a high rate of speed in the direction of the rear of the machine and the whipper is revolved still more rapidly in the opposite direction, the flaps beat against the sliver on the carrier and serve still more effectually to separate and fan out the fibers and free them completely of all woody particles.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a decorticating-machine, the combination with feed-rollers and whipping and fiber-cleansing devices, of a plurality of reciprocable slotted breaker-bars having sharp-edged ribs or corrugations extending lengthwise in a vertical plane and adapted to split the stalk in the direction of the fiber, and guiding means for said bars.

2. In a plant-decorticating machine, the combination with feeding mechanism and parallel guide-plates, of a slotted breaker-bar having the walls of the slots provided with vertically-extending, sharp-edged corrugations capable of splitting the stalk in the direction of the fiber.

3. In a plant-decorticating machine, the combination with feeding mechanism and parallel guide-plates, of a slotted breaker-bar, having the walls of said slots convexed in horizontal planes and provided with corrugations extending vertically and capable of splitting the stalk in the direction of the fiber.

4. In a plant-decorticating machine, the combination of parallel guide-plates, a slotted breaker-bar reciprocable between the plates, said plates having transverse slots adapted to register with the slot-opening in said bar on each reciprocation of the latter, and the walls of the slots in the plates being provided with sharp edges extending vertically to split the stalks in the direction of the fiber.

5. In a decorticating-machine, the combination of slotted parallel guide-plates, a slotted breaker-bar reciprocable between said plates, said bar having corrugations with sharp edges extending in the direction of the length of the fiber, and said bar having a portion whose thickness is equal to the width of the space between said plates, and having a portion adjacent to said slot-openings of reduced thickness whereby a space is formed on either side of said bar between the plates, the thickened portion of said bar serving to expel the woody matter lodging between the plates.

6. In a decorticating-machine, the combination with the feed-rollers and breaker thereof, of a beating-cylinder disposed beneath said breaker, a V-shaped shield as 16 around which the fiber is directed, a carrier upon which the sliver is supported, and a whipper revoluble within the carrier.

7. In a decorticating-machine, the combination with upper and lower guide-plates and a breaker-bar reciprocable between said plates, of a beating-cylinder beneath said lower plate, a horizontal endless carrier, and a V-shaped shield disposed between said cylinder and carrier, said shield having one wall extending over a portion of the carrier, the other wall adapted to deflect the fiber passing through the breaker downward onto the carrier, said wall terminating beneath the lower plate of the breaker, said lower plate having an outwardly and upwardly inclined surface between which and the upper edge of the last-named wall a passage is formed through which the woody matter may be expelled by the action of the cylinder.

8. In a decorticating-machine, the combination with plant-breaking and fiber-treating devices, of an endless-chain carrier, a whipper revoluble within the carrier, flexible radial flaps on said whipper, the beating-surfaces of said carrier consisting of transversely-disposed angle-bars, and means for driving the whipper in a direction opposite to the carrier to cause the whipper to act upon the sliver supported on said bars.

In witness whereof I have hereunto set my hand.

WALTER H. ALLISON.

Witnesses:
G. Wm. Schlichten,
D. B. Richards.