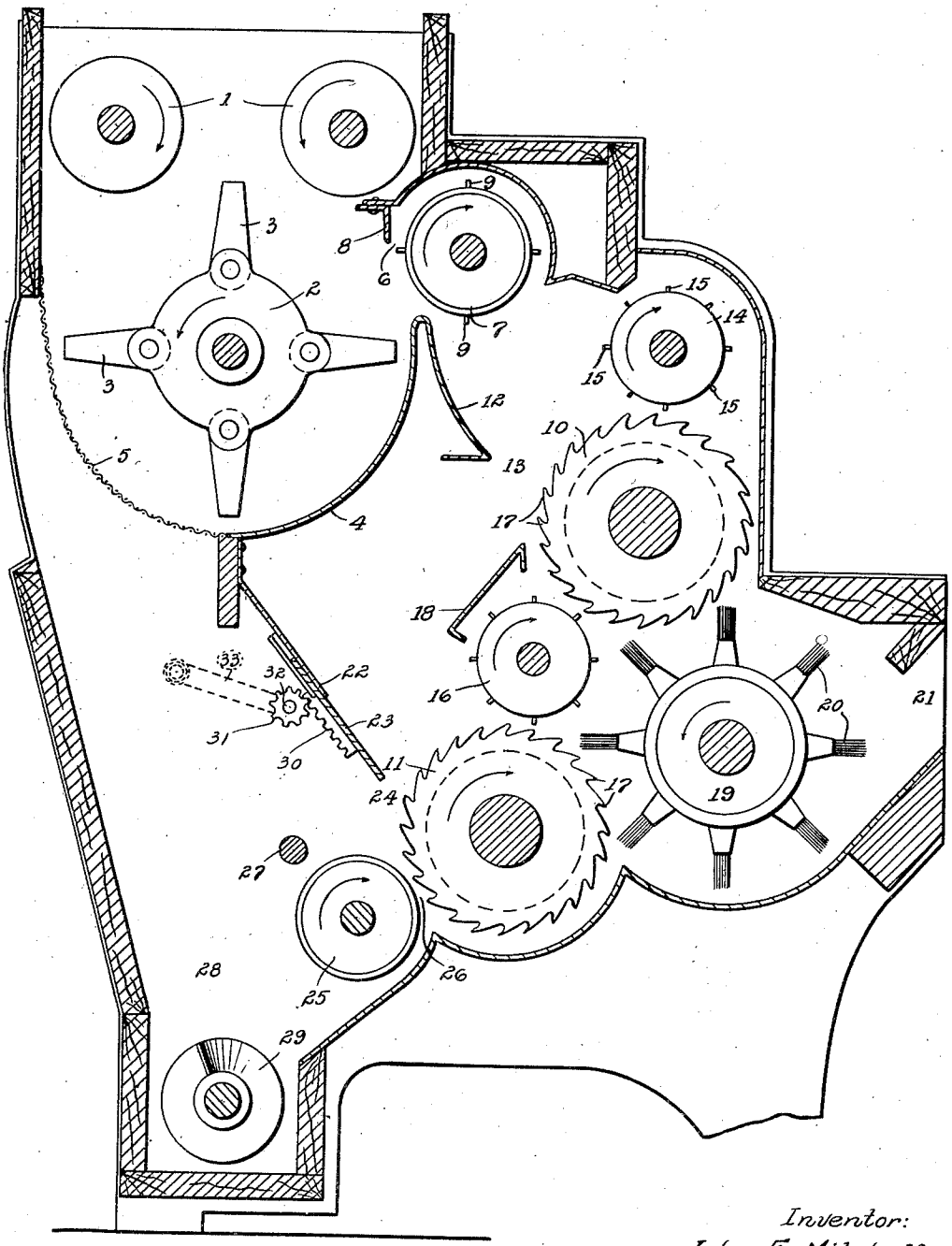
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COTTON EXTRACTING AND CLEANING MACHINE.

APPLICATION FILED MAR. 10, 1921.

1,383,007. **Patented June 28, 1921.**



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UNITED STATES PATENT OFFICE.

JOHN E. MITCHELL, OF ST. LOUIS, MISSOURI.

COTTON EXTRACTING AND CLEANING MACHINE.

1,383,007. Specification of Letters Patent. Patented June 28, 1921.

Application filed March 10, 1921. Serial No. 451,395.

To all whom it may concern:

Be it known that I, JOHN E. MITCHELL, a citizen of the United States, residing in the city of St. Louis and State of Missouri, have invented new and useful Improvements in Cotton Extracting and Cleaning Machines, of which the following is a specification.

This invention relates to cotton separating and cleaning machines of the general type illustrated in my prior applications, Serial No. 406,117, filed August 26th, 1920 and Serial No. 423,298, filed November 11th, 1920. Both of these inventions involve the use of two saw cylinders which have the cotton separated therefrom by means of a single doffer brush, and in connection with the lower saw cylinder there is provided a smooth roller having a bumper which coöperates to move the cotton into engagement with the saw and to knock out hull particles that are mixed with the cotton. There is also provided additional means for preventing the escape of cotton along with the hull particles knocked out by the bumper comprising saw teeth on the under side of the lower hull board.

It has been found that while the latter combination, that is, the hull board having saw teeth on its under side in combination with a bumper roller, is very effective in preventing the loss of any cotton that might have escaped extraction by the two saw cylinders, there sometimes occurs an impedance in the discharge of the hulls, which are thrown up by the bumper roller, deflected by the saw teeth of the hull board and which drop back upon the bumper roller, producing a congestion of hulls in the space between the bumper roller and the saw cylinder.

It is the purpose of the present invention to provide simple and efficient means for accomplishing the object or recovering the maximum amount of cotton passing through the machine, as outlined in my said prior applications, with greater economy of construction and without the disadvantage referred to.

To this end I employ a smooth roller as heretofore, but without the bumper, and rely upon the teeth of the saw cylinder to knock back, and out of the zone of operation, the larger hull particles mixed with the cotton, and I provide in connection with this smooth roller a hull-guard which is positioned above the smooth roller and which operates to obstruct the backward movement of any cotton thrown out by the teeth of the saw cylinder with the hulls, but which hull-guard will not interfere with the backward throw of the larger hull particles.

In the accompanying drawing, I have shown a preferred embodiment of the invention, but it will be obvious to those skilled in the art, and it is contemplated by me, that the broad principle of my invention as outlined in the claims, may find other embodiments than the particular one shown in the drawing. In said drawing the single view is a vertical section of a machine of the type of my prior application referred to and having the improvements constituting my present invention embodied therein.

Referring now to the drawing, the numeral 1 indicates two feed rollers which operate to pass the mixed cotton and bolls to the boll breaking cylinder 2 having pivoted fingers 3 and revolving in a casing 4, one side of which carries a screen 5 of wire mesh through which dirt and small particles of hulls may pass. The casing 4 has an outlet 6 located opposite to the screen, the size of which is determined by a picker roll 7 operating in proximity to one edge of an angle bar 8 as shown, and which roll carries pins or pickers 9 and rotates in a clockwise direction. This picker roll operates to withdraw the cotton and the broken bolls as the latter are reduced by the breaking cylinder, and to deliver the mixed product to the cotton separating mechanism. This mechanism will now be described.

Mounted to rotate within the main casing of the machine are two saw cylinders 10 and 11, the latter of which is located below the former and to one side thereof. The cotton and hull particles are directed by the picker roll toward the upper saw cylinder 10 and to facilitate this operation, I provide an inclined hull board 12 which projects toward the adjacent side of the saw cylinder 10 in such a way as to leave an opening 13 between its lower end and the side of the saw cylinder. Coöperating with the saw cylinder 10 and located above the same is a kicker roll 14, the blades 15 of which rotate in proximity to the upper side of the saw cylinder 10 in a direction, as shown by the arrow, to knock back boll pieces, or hulls, and other solid particles, toward the opening 13. The numeral 16 indicates a similar kicker roll which is located to oper-

ate in a similar manner with the lower saw cylinder 11, and is located between the two saw cylinders. These saw cylinders are driven in the same direction and are provided with the usual teeth 17 projecting in the direction in which the saws rotate. If the amount of the mixed cotton and hulls delivered to the first saw cylinder is in excess of the capacity of this cylinder, the residue will pass downwardly through the opening 13 to be operated upon by the saw cylinder 11. In order to direct the same toward this latter saw cylinder and to exclude it from contact with the kicker roll 16, I provide a guard in the form of a cant board 18 which is disposed in an inclined position and covers the side of the kicker roll 16 which would otherwise be exposed to the product passing to the lower saw cylinder. The kicker rolls, as shown, rotate in the same direction as the saw cylinders so that the working side of each roll rotates in the opposite direction to the adjacent side of the saw cylinder, thereby operating to kick off pieces of hulls which may be adhering to the cotton carried by the saws. The numeral 19 indicates a rotary doffer provided with a plurality of radial brushes 20. This doffer is located between the two saw cylinders 10 and 11, at an equal distance from each, and is so positioned that it functions simultaneously with both saw cylinders. The doffer rotates in an opposite direction to said saw cylinders so that the brushes move in the same direction with the saw teeth with which they coöperate, but at a higher speed, so as to enable the brushes to remove the cotton from the saw cylinders and discharge the same through the cotton discharge opening 21. The numeral 22 indicates a hull board, which extends in an inclined direction toward the side of the saw cylinder 11 opposite to the doffer 19, and this hull board preferably includes an adjustable extension 23 which may be extended to any desired point in order that its lower edge may define the size of an opening 24 past the saw cylinder 11. Just below this opening I provide a hull roller 25 which rotates in the same direction as the saw cylinder 11, and the surface of which is preferably smooth. In other words, I dispense with the bumper shown in the construction of the applications above referred to. Between this hull roller and the saw cylinder 11 a space 26 is provided through which small hull particles may escape. Located above the roller 25 is a hull guard 27 which is positioned to one side of a vertical plane embracing the axis of the hull roller 25 in a direction away from the working surface of the saw cylinder 11. The hull guard 27 in the present embodiment of the invention is shown as a round iron rod which extends from side to side of the casing of the machine and is secured at its ends therein. This hull guard, however, need not be round and by referring to the same in the claims by the term "bar," I intend thereby to refer to a member of any shape whatsoever, located above and extending throughout the length of the hull roller 25 and operating to obstruct the throw of cotton while permitting the larger hull particles knocked back to hurdle it and be discharged from the machine.

To the left of the hull roller 25 as shown in the drawing, and between said hull roller and the side of the casing there is a passage 28 for the escape of hulls which fall onto a conveyer 29 and are thereby removed from the machine.

The extension 23 of the lower hull board can be adjusted in any suitable manner, for example, by means of racks 30 disposed near each end of the extension and engaged by pinions 31. These pinions may be carried on a common shaft 32 operated on the outside by means of a crank 33.

The operation of the machine as a whole is exactly the same as described in my prior applications referred to and the same need not be repeated here. I will, therefore, refer only to the operation of the present improvement beginning at the point where mixed cotton and hulls pass through the opening 24 adjacent the lower saw cylinder. This material falls upon the roller 25 which operates to bring the same into contact with the teeth of the saw cylinder 11. Whatever cotton there is in this mixture is engaged by the teeth of the saw cylinder and extracted; the small hulls and shale in the mixture work themselves through the passage 26 and fall upon the conveyer 29. The hulls that are too large to go through the passage 26 are knocked by the saw teeth over the hull guard 27 and fall through the passage 28 upon the conveyer 29 and are discharged, with the small hulls and other trash, from the machine. The detached wads or locks of cotton thrown back by the teeth of the saw cylinder 11 are obstructed in their course by the hull guard 27 and are again carried by the smooth roller into contact with the teeth of the saw cylinder and extracted. The hull guard 27, therefore, prevents the passage and consequent loss, of any cotton through the space 28 without in any way obstructing the discharge of the larger hulls which when knocked by the teeth of the saw cylinder, easily hurdle the hull guard and fall through the space 28 as above described.

While I have described my invention in connection with a two cylinder machine, I wish it understood that the same can be employed, if desired, with a machine having only one saw cylinder of the type shown in various prior patents granted to me.

I claim:—

1. In a cotton extracting and cleaning machine providing a saw cylinder and a restricted opening past the same for the passage of material, means located in spaced relation to said saw cylinder and beneath said opening for receiving such material, and operating to move the same toward the saw cylinder, and a member located above said means for intercepting cotton particles thrown back by the teeth of the saw cylinder while permitting hull particles to hurdle the same.

2. In a cotton extracting and cleaning machine, in combination with a saw cylinder and a hull board, the lower end of which latter defines the size of an opening past the saw cylinder, a roller located below said opening to receive material passing therethrough, and rotating in the same direction as, and in relatively close proximity to said saw cylinder, and a bar located above and extending over said roller and positioned to obstruct the backward movement of cotton particles while permitting hull particles knocked back by the saw cylinder to hurdle the same.

3. In a cotton extracting and cleaning machine providing a saw cylinder and a restricted opening past the same for the passage of material, means located beneath said opening for receiving such material and moving in a direction toward the saw cylinder and defining at one side the size of an opening past the saw cylinder of less width than the opening first named, and a member located above said means and located in the normal path of the cotton and below the normal path of the hulls thrown backward by the teeth of the saw cylinder.

4. In a cotton extracting and cleaning machine in combination with a saw cylinder and a hull board, the lower end of which latter defines the size of an opening past the saw cylinder, a roller located below said opening to receive material passing therethrough and rotating in the same direction as said saw cylinder and defining the size of an opening past the same of less width than the opening first named, and means located above and extending over said roller and positioned in the normal path of cotton and below the normal path of hulls, thrown backward by the saw cylinder whereby the cotton will be obstructed and the hull particles will hurdle said member.

In testimony whereof, I have hereunto set my hand.

JOHN E. MITCHELL.