March 2, 1926.

J. A. STREUN

1,574,947

COMBINED HULLER AND CLEANER FOR COTTON GINS

Filed March 16, 1925 2 Sheets-Sheet 1

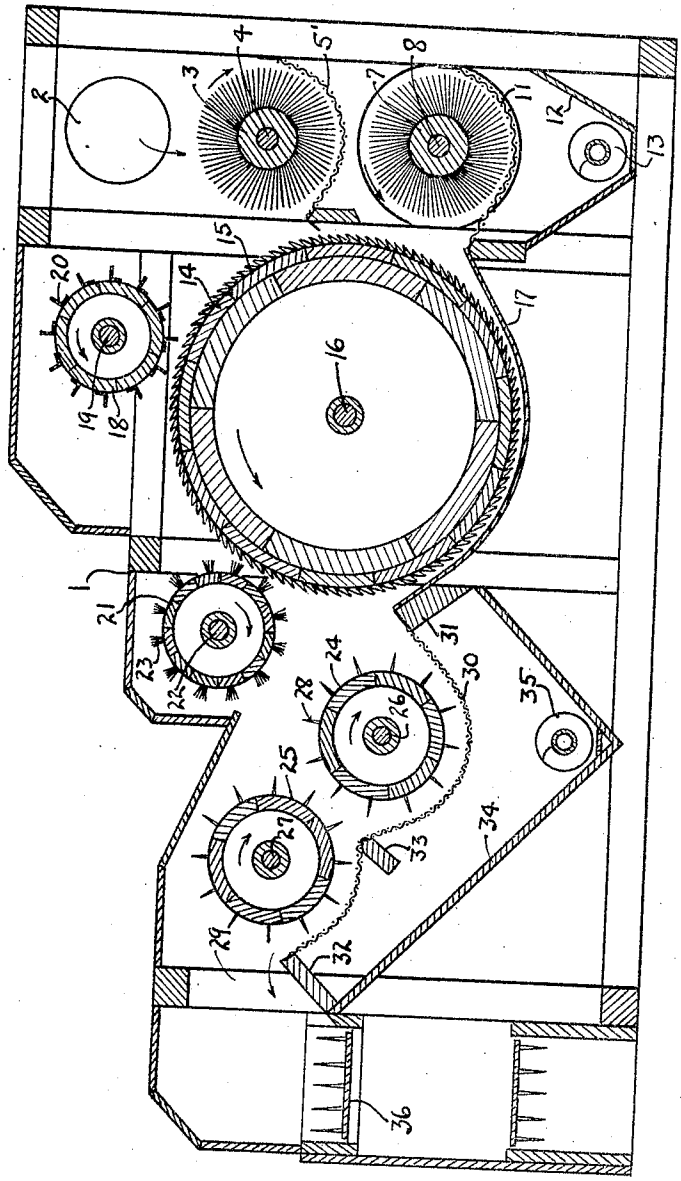


Fig. 1.

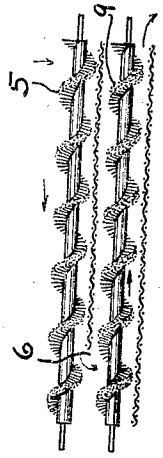


Fig. 2.

John A. Streun INVENTOR.

BY Jesse R. Stone

ATTORNEY.

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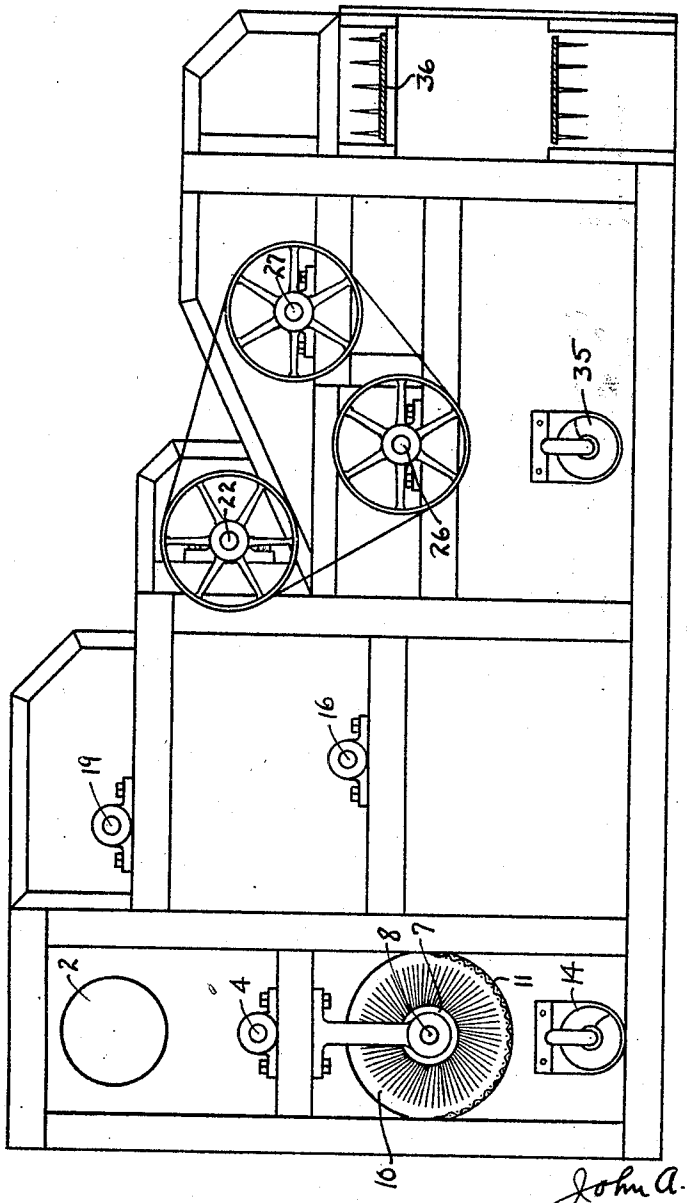


Fig. 3.

John A. Streun INVENTOR.

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Patented Mar. 2, 1926.

1,574,947

UNITED STATES PATENT OFFICE.

JOHN ARNOLD STREUN, OF SHERMAN, TEXAS.

COMBINED HULLER AND CLEANER FOR COTTON GINS.

Application filed March 16, 1925. Serial No. 15,790.

To all whom it may concern:

Be it known that I, JOHN ARNOLD STREUN, a citizen of the United States, residing at Sherman, Grayson County, Texas, have invented a certain new and useful Improvement in Combined Hullers and Cleaners for Cotton Gins, of which the following is a specification.

My invention relates to devices for eliminating the dirt and hulls from cotton before it is fed to the gin.

It is an object of the invention to provide a machine of some size which is adapted to eliminate hulls and also the dirt and chaff from the cotton before it is fed to the gins. It is desired that the machine be capable of cleaning the cotton for a series of gins and to have distributing means connected with the cleaner for feeding the cotton to the various gins supplied through the cleaner.

It is an object of the invention therefore to provide a device for eliminating the hulls from the cotton and then breaking up and distributing the cotton further so that the dirt and chaff may be eliminated thereafter.

Referring to the drawings herewith, Fig. 1 is a vertical section through a device embodying my invention, showing the position of the various rolls and cylinders. Fig. 2 is a small detail view illustrating the operation of the hulling conveyers, and Fig. 3 is a side elevation of the device illustrating the discharge of the hulls and the positioning of the parts relative to each other. Like numerals of reference are employed to designate like parts in all the views.

In the drawing I have shown the various rolls and cylinders mounted upon a frame work 1, which need not be particularly described, it being the purpose thereof to furnish a substantial bearing support at each end of the rotating cylinders and rolls so that they may function in the manner later described. This manner of mounting contains no novelty, and is common in the art.

I shall designate the end at which the cotton is fed to the cleaner as the front end thereof, and with particular reference to Fig. 1, I provide a lateral opening 2 at one side toward the upper part of the front portion of the frame work to provide an entrance for the cotton which is being fed to the cleaner. This cotton may be fed in through means of a conveyer, or through a pneumatic feeding device such as is common in the art. Cotton thus fed through the opening 2 is adapted to be received upon the upper side of a rotating feeder roll 3. Said roll is mounted upon a shaft 4 journaled at each of its ends in the sides of the frame. It is provided with a spiral row of spikes or bristles 5 thereon, said spikes being inclined slightly forward in the direction of rotation of the roller, and in case of the roll 3 the rotation is in a clockwise direction, as viewed in Fig. 1. Below the roll 3 is a trough 5′ of foraminous material and I prefer to employ a woven wire screen for this purpose. This trough extends from the end adjacent the opening 2 to a point spaced somewhat from the opposite end of the roll 3 where it terminates, leaving a space designated at 6 in Fig. 2 for the cotton and hulls to be discharged downwardly onto a second conveyer or feeding roll 7.

The said roll 7 is similar in all respects to the roll 3, and is mounted for rotation upon a shaft 8. It has a spiral row of spikes 9 thereon, as shown particularly in Fig. 2, and is adapted for rotation in a counter clockwise direction, as seen in Fig. 1. At the end of roll 7 the wall of the housing is cut away to form an opening 10 to allow the discharge of the hulls from the casing after they have reached the end of the said roll 7. The roll 7 has a trough of screen 11 below it of the same construction as the trough 5′. It extends the full length of the roll and terminates at the opening 10 in the side of the housing. Below the screen 11 is provided an imperforate trough 12 to receive the chaff and dirt dropping through the screens 5 and 11, and a screw conveyer 13 is shown in this trough for conveying said material to an opening 14 in the side of the housing where it may be discharged.

Closely adjacent the conveyer rolls 3 and 7, is a saw cylinder 14. This cylinder is of materially larger diameter than are the feeding rolls, and is provided with rows of teeth 15 thereon, said teeth being inclined forwardly in the direction of rotation, which direction in this particular case is counter clockwise. The cylinder is mounted upon a central shaft 16 rotatable in its bearings in the frame work of the housing. It has a trough 17 of imperforate sheet metal closely adjacent its lower side.

Closely adjacent the upper side of the saw cylinder 14 is a rotating beater roll 18. Said roll comprises a cylinder mounted upon a shaft 19 and provided on its periphery with a series of radially projecting flights 20. These flights may be made of angle iron laid longitudinal of the cylinder and secured thereto with one of the arms of the angle iron presented radially of the cylinder. It will be noted from Fig. 1 that the beater roll is mounted slightly forward from a vertical position above the saw cylinder. Its flights are closely adjacent the saw cylinder and the rotation of the beater roll is in the same direction as that of the saw cylinder whereby the flights act to prevent the passage of hulls which may adhere to the cotton on the saw cylinder.

Mounted in the frame of the housing immediately to the rear of the saw cylinder, and above the center of said saw cylinder, is a brush roll 21, said roll being mounted upon a shaft 22 and provided with rows of radial bristles 23. Said cylinder is adapted to rotate in a clockwise direction and the brushes are presented closely adjacent the teeth of the saw cylinder so that the brushes will act to remove the cotton from the teeth of the cylinder as the machine operates.

To the rear of the saw cylinder, and slightly beyond the brush roll, I provide two picker cylinders 24 and 25. These two cylinders are of practically identical construction, and are mounted to rotate on shafts 26 and 27, respectively. They have radial projecting pins or teeth 28 adapted to catch the cotton and carry the same to the rear of the machine where it is to be discharged through an opening 29.

The first of the picker cylinders 24 is mounted materially below the brush roll and the axis 26 thereof is lower in position than the axis 16 of the saw cylinder. The cylinder 25, however, is higher in position in the housing than the roll 24, as will be seen particularly in Fig. 1. Below the two picker cylinders is a screen 30 which is secured at its forward end to a transverse support 31, and at its rearward end to a similar support 32 forming one side of the opening 29 previously noted. Between the two picker cylinders is a transverse support 33, which holds the screen in a position conforming to the curvature of the picker cylinders.

Below the two picker cylinders the wall 34 of the housing is inclined downwardly to direct the dirt and chaff to a conveyer roll 35 adapted to discharge the said dirt and chaff from the machine.

The cotton discharged through the opening is received upon a conveyer belt 36, of the usual construction. This belt is adapted to carry the cotton laterally to feed the same to the gins which are mounted along the line of the said belt. This type of distributer is of ordinary construction, and need not be further described.

In the operation of this device, the cotton being fed in through the opening 2 is understood as carrying with it a large amount of hulls, dirt and chaff. Said cotton falls upon the feeding roll 3 and is fed longitudinally of the saw cylinder, and the teeth of said cylinder are adapted to engage the lint of the cotton thus being fed along its surface and carry the cotton away from the hulls and chaff and discharge it rearwardly. Such hulls or bolls of cotton as adhere to the cotton are engaged by the flights 20 of the beater roll and thrown back upon the feeder roll. When the cotton has reached the end of the screen trough 5 below the feeder roll 3, it is discharged upon a lower feeder roll 7 and is carried by the spiral teeth thereon back again longitudinally of the saw cylinder and finally the hulls and chaff which remain are discharged through the opening 10 from the housing. The two feeder rolls thus carry the cotton back and forth across the length of the saw cylinder and before the hulls are eliminated from the machine, all of the lint will be engaged by the teeth of the saw cylinder and carried rearwardly.

The cotton thus cleaned of its hulls will be removed from the saw cylinder by the brush roll and discharged upon the picker cylinders 24 and 25. These two cylinders rotate in a counter clockwise direction, and will thus carry the cotton downwardly along the screen 30 so that all the dirt and chaff remaining in the cotton will have an opportunity to drop through the screen 30 before the lint is discharged to the distributer. The cotton will pass beneath the roll 24 and as it passes over the ridge above the support 33, it will be engaged by the teeth of the cylinder 25 and be turned over and again be carried over the screen 30 before it is finally discharged through the opening 29 to the distributer.

This particular arrangement of the huller and picker rolls, and the breaking up of the bolls and locks of cotton by the passage of the same around the saw cylinder, will result in the elimination from the cotton of practically all of the foreign matter before the cotton is fed to the gin. In this way the quality of the cotton being ginned is not only greatly improved because of its superior condition, but the ginning operation is more evenly performed because of the absence of hulls and chaff which hinder this operation in ordinary conditions. The device is simple in construction, and it is contemplated that one cleaner will supply a plurality of gins, as has been previously noted.

What I claim as new and desire to protect by Letters Patent is:

1. In a device of the character described, a housing, a saw cylinder rotatable therein, feeder rolls spaced one above the other in front of said cylinder and adapted to convey the cotton longitudinally of said cylinder, a beater roll above and forwardly of said saw cylinder, a brush roll adjacent the rearward side of said saw cylinder, picker rolls arranged to receive the cotton from said brush roll and carry it upwardly to the discharge opening, and a screen below said picker cylinders over which the cotton is carried to said discharge opening.

2. In a device of the character described, a housing having a feeding opening at one side at the forward end thereof, a feeder roll adapted to receive said cotton and carry it transversely of the housing, a saw cylinder adjacent said feeder roll, a trough below said roll having an opening at one end, a second feeder roll below said trough adapted to receive the cotton therefrom, and convey it longitudinally of said saw cylinder, there being an opening in said housing at one end of said second feeder roll, means to prevent the hulls from being carried off by said saw cylinder, means to remove the cotton from said saw cylinder, a perforate screen to the rear of said saw cylinder, and means to carry the cotton over said screen in the manner described.

3. In a device of the character described, a housing having a feeding opening adjacent the forward end thereof, a pair of superposed feeding rolls in said housing beneath said feeding opening, forwardly inclined teeth on said rolls arranged to carry the cotton longitudinally of said rolls, a saw cylinder adjacent said rolls, having teeth adapted to engage the lint on said cotton, a means to prevent hulls from passing said saw cylinder, means to remove the cotton from said cylinder and means to eliminate the dirt from said cotton.

4. In a device of the character described, a housing having a feeding opening adjacent the forward end thereof, a saw cylinder in said housing below and to the rear of said opening, a feeding roll below said opening, spirally arranged spikes on said roll to convey the cotton from said opening longitudinally of said cylinder, a second feeding roll below said first named roll, troughs below said rolls arranged to discharge cotton from the upper to the lower roll at one end and to discharge from the lower roll from said housing at the other end, a beater roll, a brush roll, and picker rolls screened to eliminate dust and dirt from said cotton.

5. In a device of the character described, a housing having a feeding opening at one side at the front thereof, a pair of spirally toothed feeding rolls below said opening, a saw cylinder adjacent said feeding rolls, a beater roll above said cylinder arranged to prevent hulls from passing said cylinder, a brush roll at the rear of said cylinder, a picker cylinder arranged to discharge cotton from said housing and a screen beneath said picker cylinder for the purpose described.

6. In a device of the character described, a housing having a cotton receiving opening at one side thereof, a saw cylinder rotatable therein, means to receive cotton at one end of said cylinder and move it longitudinally of said cylinder and back again, means to prevent the hulls from passing said cylinder with said cotton, a brush roll, and a plurality of picker cylinders arranged to receive cotton from said brush roll and to eliminate the dirt from the cotton and discharge said cotton from said housing.

In testimony whereof I hereunto affix my signature this 10 day of March A. D. 1925.

JOHN ARNOLD STREUN.