

Nov. 28, 1933.

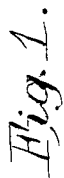
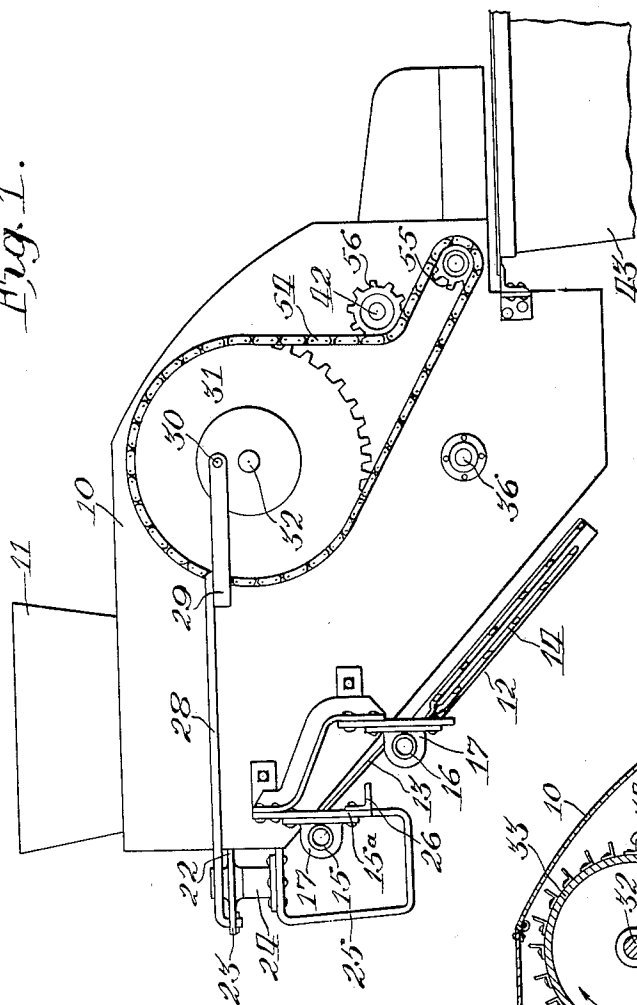
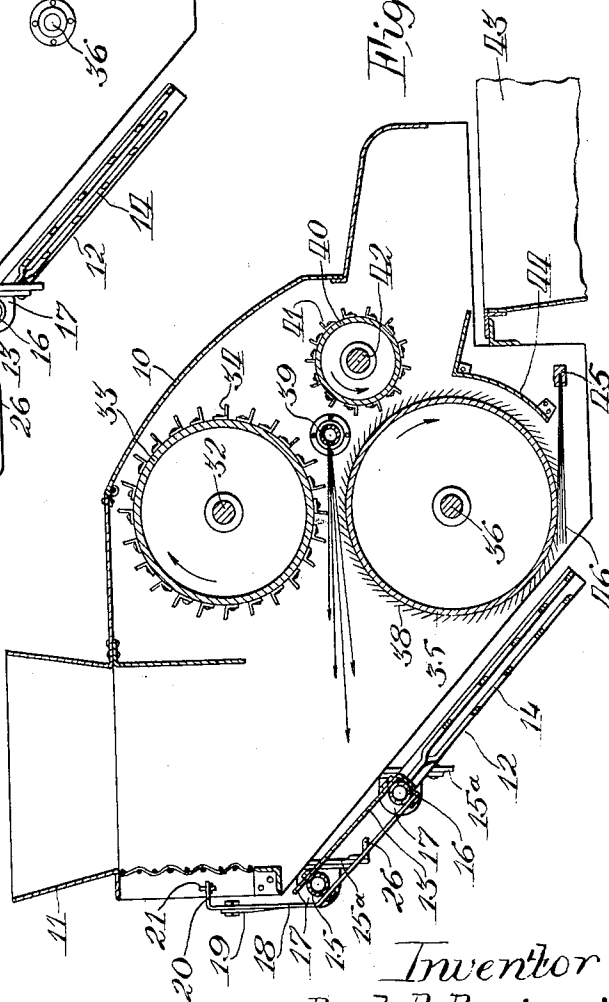
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COTTON CLEANER

Filed Jan. 19, 1931

1,936,748

2 Sheets-Sheet 1



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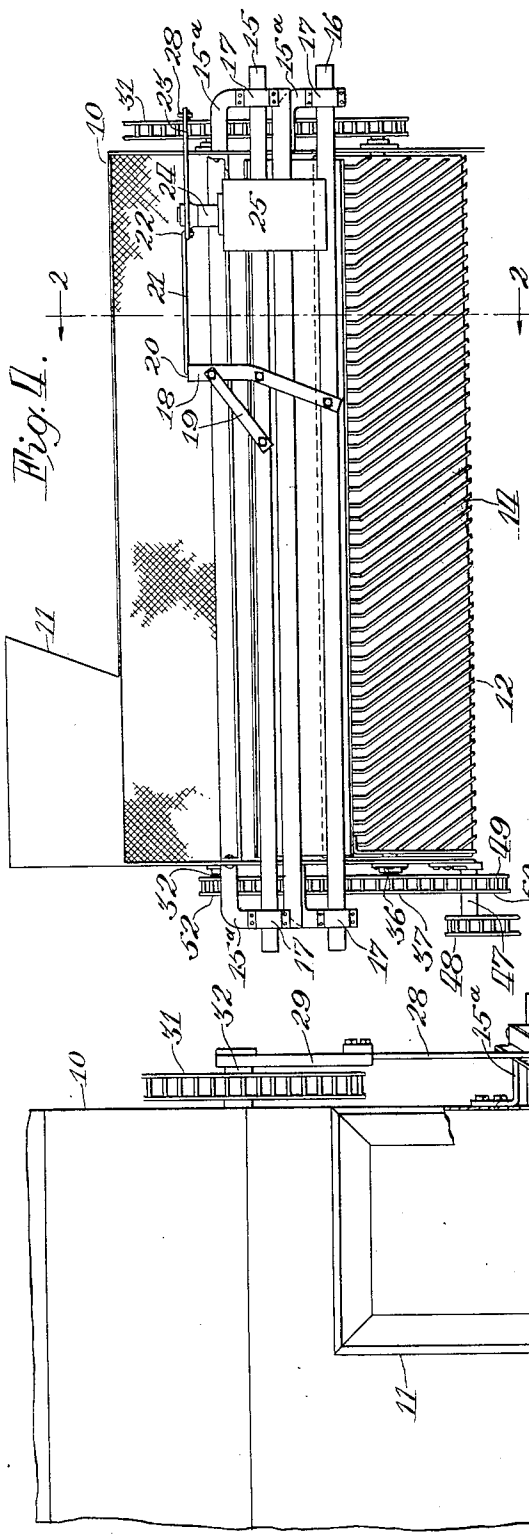
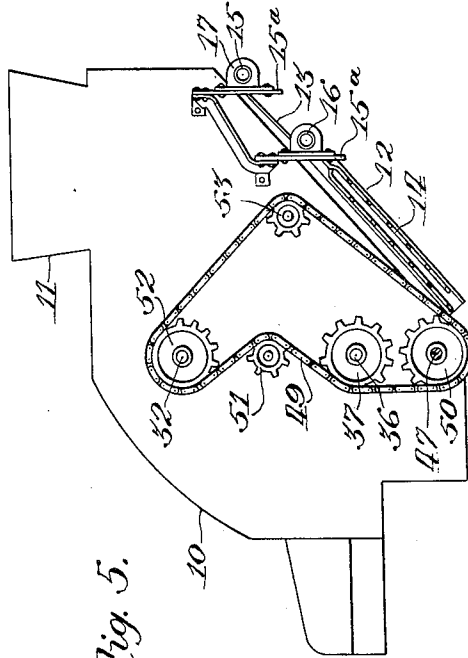


Fig. 5.

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UNITED STATES PATENT OFFICE

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COTTON CLEANER

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Application January 19, 1931. Serial No. 509,692

10 Claims. (Cl. 19—37)

This invention relates to cotton cleaners. More particularly, it relates to a cleaner adapted to be used for breaking the bolls and removing the cotton fibers from the material collected in stripping cotton as performed in the last picking.

When stripping cotton, the ripe bolls, the unripe bolls, and portions of the leaves and stems are stripped from the plants. This material must be cleaned in a device which will shake out the leaves and other foreign material and break the bolls so that the fibers may be removed therefrom. Various devices have been designed and utilized for this purpose. The device of this invention is adapted to be mounted on a tractor in combination with boll stripping mechanism and is particularly suitable for such use, but the principle of the invention is applicable to cotton cleaners generally. The co-pending application, Serial No. 509,690, filed Jan. 19, 1931, discloses and claims a general organization comprising such a cleaner in combination with stripper units mounted on a tractor.

The object of this invention is to provide a comparatively light and simple cleaner mechanism which will distribute the material being acted upon in such a way as to secure rapid and effective disintegration of the material and separation of the cotton fibers therefrom. This object is attained by embodying in the cleaner mechanism a novel form of reciprocating grate to assist in removing the foreign material and distributing the material to the fiber removing means.

Other and more specific objects and the means by which they are accomplished will be apparent from the detailed description to follow.

In the drawings:

Figure 1 is an end elevation of a cleaner unit embodying the invention;

Figure 2 is a transverse vertical section taken on the section line 2—2 of Figure 4;

Figure 3 is an enlarged plan detail, partly broken away in section to show the agitating mechanism for the grating of the cleaner unit;

Figure 4 is a side elevation of the unit shown in Figure 1, viewed from the left; and

Figure 5 is an end elevation showing the opposite end of the unit from that shown in Figure 1.

The cleaner unit consists essentially of a casing 10 to which various angle bars are secured for supporting the casing and to provide means for attaching various elements thereto, a cleaning mechanism mounted in the casing, and means externally of the casing operative to drive said

mechanism. The casing 10 is of a considerably greater dimension in length than in breadth. In cross section it is of the peculiar shape seen in Figure 2, the walls of the casing being formed to provide for the mechanism within the casing. At one end of the casing 10 an inlet hopper 11 is positioned above the casing at one end thereof, to provide means for delivering the stripped cotton to the cleaner. Diagonally downward, across what may be termed the rear side of the casing, a grating 12 is mounted. The grating 12 consists of an apron 13 and grating bars 14 extending downward therefrom in the same plane as the apron 13. The bars 14 are diagonally disposed (Figure 4) and are spaced from each other. Said bars are also staggered or arranged in two spaced planes, alternate bars being positioned in the respective planes. The apron 13 is securely fastened to supporting members 15 and 16, which may be in the form of pipes. Said pipes extend longitudinally of the casing and through each end thereof. Beyond each end of the casing the pipe 15 is slidably mounted in bearing journals 17 secured to brackets 15^a, which are rigidly secured at the ends of the casing. The pipe member 16 is similarly mounted at each end of the casing in journals 17 secured to brackets 15^a, which are similarly secured to the ends of the casing. Intermediate their ends at the underside thereof an upwardly extended member 18 connects the members 15 and 16 and a bracing member 19 is secured to the pipe 15 and to the upper portion of member 18. By this construction a rigid connection is provided for reciprocating the members 15 and 16 and the elements carried thereby.

As clearly shown in Figure 2, the member 18 is bent vertically upward and is provided at the top with a bent over portion 20, to which an actuating link 21 is pivotally attached. At its other end link 21 is pivoted to an arm 22 on an actuating lever 23 which is rotatably mounted on a support 24. The support 24 is mounted on a bracket 25, (Fig. 1), which is secured to angle bars 26 extending along the rear of the casing. The actuating lever 23 has its other arm connected by a link 28 with a pitman member 29, which is journaled on a crank pin 30, mounted for rotation with a chain sprocket 31. The chain sprocket 31 is mounted on a shaft 32, which extends longitudinally through the casing and carries a beater drum 33. The beater drum 33, as shown in Figure 2, is of a considerable diameter and carries around its periphery a plurality of beater elements 34. The beater drum 33 is posi-

tioned in the upper portion of casing 10. Directly below said drum a lint picking fiber collecting drum 35, ordinarily called a carding cylinder, is mounted on a shaft 36. The shaft 36 extends through the ends of the casing 10 and is driven by a chain sprocket 37 mounted at one end thereof. The drum 35 carries a plurality of teeth 38 which may be of any form used in cotton cleaning devices. Said teeth are preferably slanted in the direction of rotation, indicated by the arrow in Figure 2. The drum 35 is so positioned that its lower edge lies substantially tangent to the shaker grating. The beater drum is so positioned with respect to the collecting drum that the bars 34 rotate sufficiently close to the teeth 38 to remove material therefrom other than cotton fibers. Preferably, an air blast pipe 39 is mounted longitudinally of the casing 10 with perforations for directing a blast of air between the fiber collecting drum and the beater drum. A doffer cylinder 40 carrying blades 41 projecting therefrom, is mounted on a shaft 42 which extends longitudinally through the casing 10. The doffer is positioned with the blades 41 operating closely adjacent the teeth 38 on the cleaning drum and is rotated in the direction of the arrow. An outward extension on the casing throughout its length provides a discharge opening opposite the doffer. Means are provided for supporting a suitable receiving receptacle 43 below said opening. An apron member 44, which is a portion of the casing, circumferentially surrounds a portion of the fiber collecting drum and extends outwardly therefrom towards the receiving means. A supporting bar 45 below apron 44 carries a series of horizontally extending bristles 46 and is positioned with said bristles extending horizontally beneath the cleaning drum and tangent thereto.

As shown in Figure 4, a counter shaft 47 is mounted for rotation at one end of the casing and is driven by a chain 48 from any suitable source of power, such as a tractor power take-off when the cleaner is on a tractor. As shown in Figure 5, a driving chain 49 extends around a sprocket 50 on the shaft 47, around the sprocket 37 on the shaft 36, over an idler sprocket 51, around a sprocket 52 on the shaft 32, and over an idler sprocket 53. At the other end of the casing a driving chain 54 extends around the sprocket 31, around an idler sprocket 55 and over a sprocket 56 mounted on the doffer shaft 42.

In the operation of the device as above described, power is transmitted to the counter shaft 47 and drives the beater drum, the cleaning drum and the doffer by means of the sprockets and chains, as previously described. The rotatable elements within the casing are driven in the casing as indicated by the arrows in Figure 2. The material to be cleaned and delivered into the hopper 11 slides down apron 13 on to the shaker grating attached thereto. The grating is reciprocated longitudinally of the casing by the link connections above described. The material passing downwardly over the grating is fed along the grating and delivered below the cleaning drum 35. The teeth on said drum engage the bolls and the fiber of the open bolls, and carry said material upwardly. The bars on the beater drum 33 engage the material carried on the teeth and throw all of the material, with the exception of the fibers, from said drum back to the grating. As the drum further rotates the doffer 40, which is traveling in a reverse direction to the drum 35, removes the cotton fiber

from the teeth and delivers it into the receiving bag 43. The blower pipe 39 assists the heater drum in removing leaves and other light foreign material from the cleaning drum. Said material is projected by both the beater bars and the air blast to the upper portion of the shaker grating. The material is again shaken down the grating with the result that the foreign material finally passes between the bars 14.

It has been found that the arrangement of the bars in two spaced planes is more effective in removing the foreign material such as leaves and twigs from the cotton. As the bars 14 extend diagonally toward the end of the cleaner casing opposite the inlet, the material is continually moved longitudinally in the casing away from the inlet end. In this manner the material delivered to the casing is distributed along the cleaning drum and repeatedly subject to cleaning action.

It is to be understood that applicant has shown only a preferred embodiment of his improved cotton cleaner and that he claims as his invention all modifications falling within the scope of the appended claims.

What is claimed is:

1. A cotton cleaner comprising a casing, a carding drum arranged longitudinally of the casing, a downwardly slanting distributor grating terminating adjacent the carding drum, and means for reciprocating the grating longitudinally of the carding drum.
2. A cotton cleaner comprising a casing, a carding drum arranged longitudinally of the casing, a downwardly slanting distributor grating terminating adjacent the carding drum, and means operable to vibrate the distributing means, said distributing means being formed with means operable to move material diagonally there across during vibration thereof.
3. A cotton cleaner comprising a casing, a carding drum arranged longitudinally of the casing, a downwardly slanting distributor grating terminating adjacent the carding drum, said grating consisting of spaced elements extending diagonally across the grating, and means operable to reciprocate the grating.
4. A cotton cleaner comprising a casing, a carding drum arranged longitudinally of the casing, a downwardly slanting distributor grating terminating adjacent the carding drum, said grating consisting of a plurality of rods, alternate rods being positioned in spaced planes, and means operable to reciprocate the grating longitudinally of the carding drum.
5. A cotton cleaner comprising a casing, a carding drum arranged longitudinally of the casing, a downwardly slanting distributor grating terminating adjacent the carding drum, means for reciprocating the grating longitudinally of the carding drum, and a beater positioned above the carding drum and operative to remove material from said drum other than cotton fibers.
6. A cotton cleaner comprising a casing, a carding drum arranged longitudinally of the casing, a downwardly slanting distributor grating terminating adjacent the carding drum, means for reciprocating the grating longitudinally of the cleaning drum, a beater drum positioned above the cleaning drum and operative to remove material from said drum other than cotton fibers, and doffing means operative to remove cotton fibers from the cleaning drum.
7. A cotton cleaner comprising a casing, a carding drum arranged longitudinally of the casing

adjacent the bottom thereof, said casing having an inlet opening in the top at one end thereof, a downwardly slanting distributor grating terminating adjacent the carding drum, and means for reciprocating the grating longitudinally of the carding drum.

8. In a cotton cleaner, a carding drum, and a grating for delivering material to be cleaned to the carding drum comprising a plurality of downwardly and diagonally extending spaced elements, and means for reciprocating the grating with respect to the carding drum.

9. In a cotton cleaner, a carding drum, and a shaker grating for delivering material to be

cleaned to a carding drum comprising a plurality of downwardly and diagonally extending spaced rods, and means for reciprocating the grating with respect to the carding drum in the direction of the axis of said drum.

10. A cotton cleaner comprising a casing, carding drum arranged longitudinally of the casing, downwardly slanting distributing means terminating adjacent the carding drum, means operable to vibrate the distributing means, and means forming a part of the distributing means operable to move material diagonally across the distributing means during vibration thereof.

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