COTTON HULLER, CLEANER, AND GIN-FEEDER.


To all whom it may concern:

Be it known that I, ERIC B. LARSON, of Dallas, Texas, have invented a new and useful Cotton Huller, Cleaner, and Gin-Feeder, of which the following is a specification.

My invention is an improved cotton huller, cleaner, and gin-feeder adapted for separating the hulls and foreign substances from the cotton, ejecting said hulls and foreign substances, and feeding the seed-cotton to a gin, whereby the cotton is cleaned and separated from the hulls, foreign substances, and dirt before being fed to the gin; and my invention consists in the peculiar construction and combination of devices hereinafter fully set forth and claimed.

In the accompanying drawings, Figure 1 is a vertical transverse sectional view of a combined cotton huller, cleaner, and gin-feeder constructed in accordance with my invention. Figure 2 is a detail elevation showing the rear side of the breast and a portion of the screen which is below the same. Figure 3 is a detail perspective view showing a portion of the breast.

The casing 1 may be either of the form here shown or of any other suitable construction, and the same is provided with a feed-chamber 2, in which, below the throat or opening 3 thereof, a pair of revoluble feed-rollers 4 are here shown, the said feed-rollers rotating so that their opposing sides move in the same direction as indicated by the arrows in Fig. 1 and being spaced apart appropriately to allow the cotton-bat to be fed downwardly between them into the feed-chamber 2. The lower front side of the feed-chamber is formed by a breast 5. Within the scope of my invention the breast may be of any approved construction. The same is here shown as formed of a single piece of sheet or plate metal concaved transversely on its front side, as at 6, and having bars 7 formed between openings 8, which are cut in the said plate, which openings are of sufficient length to extend at their upper and lower ends beyond said concaved portion of the breast and of sufficient breadth in their upper portions to admit of the passage of cotton-locks between them and which have their lower portions contracted in width to prevent the passage of hulls and foreign substances. The widened upper portions of the openings 8 are designated by the reference characters 9, and the lower contracted portions thereof are designated by the reference characters 10. It will be observed that these openings, as seen in elevation, appear to consist of an upper blade portion and a reduced tongue portion, with offsets or shoulders on either side of the tongue portion where the two meet. A short descriptive term for these openings would seem to be of "cricket-bat" outline.

A revoluble picker-roller 10 is disposed with one side proximate to the concaved side of the breast, and the said picker-roller revolves in a chamber 11, which communicates with the feed-chamber 2 through the spaces 8 between the bars of the breast. The front side 12 of the said picker-roller chamber is here shown as hinged at its upper side, as at 13, so that the said side 12 may be readily opened. The bearings for the picker-roller are carried by the hinged side 12, so that when the latter is opened the picker-roller is carried thereby out of the chamber 11 to give access to the breast 5. The latter is provided with peripheral spurs 14, which are disposed tangentially with reference to a circle concentric with the axis of the picker-roller, and the said spurs incline in the direction of the rotation of the picker-roller, as shown in Fig. 1, the picker-roller rotating in the direction indicated by the arrow a. The spurs of the picker-roller are disposed to operate in the openings 8 in the breast between the bars thereof, and the said spurs pass upwardly through and outwardly from the said openings and act to engage the cotton-locks and to draw the same through the openings 8 or rather through the widened upper portions of the said openings; but the hulls are arrested by the bars, and the cotton-seed or seed-cotton and lint are drawn from the hulls by the picker-roller through the spaces between the breast-bars and downwardly through the front side of the chamber 11.

In the lower portion of the feed-chamber 2 and near the breast is a revoluble feed-roller 15. The same is provided with bent peripheral spurs 16, which are inclined opposite the
direction of rotation of the said feed-roller, the same being indicated by the arrow b. The outer ends of the spurs of the feed-roller closely approach the outer ends of the spurs 5 of the picker-roller—that is to say, the respective planes of revolution of the picker-roller and the feed-roller closely approach each other on their opposing sides. In practice the feed-roller is adjustable toward and from the picker-roller, so that the distance between them may be regulated as may be required. The feed-roller 15 operates centrifugally to hurl the cotton against the spurs of the picker-roller, so that the cotton will be 15 engaged by the picker-roller and separated from the hulls and foreign substances by being drawn between the bars of the breast by the picker-roller, as hereinbefore stated. It will be understood that foreign substances such as nails and spikes fed into the machine with the cotton will be by the centrifugal force of the feed-roller 15, become loosened from the cotton and be arrested by the bars 20 of the breast, prevented from entering the chamber 11 and thereby separated from the cotton, together with the hulls. A door 17 is shown in an opening in the rear side of the casing and somewhat below the roller 15. This door is hinged at its lower side, as at 18, and is adapted to open inwardly, as is indicated in dotted lines in Fig. 1, and to be disposed with its free upper end below the breast, and when the door is thus disposed the same forms a chute which will discharge the hulls, nails, or other foreign substances separated from the cotton by gravity outwardly through the opening in the rear side of the casing.

An adjusting-board 19 in the rear side of the feed-chamber 2, which is here shown as hinged at its upper side, as at 20, may be so set as to widen or contract the feed-chamber, and hence regulate the quantity of material contained in the feed-chamber and disposed for the operation of the feed-roller 15 and picker-roller 10.

A doffing-cylinder 21, which is rotated at a high rate of speed, is disposed in a chamber 22 below the chamber 11 and which communicates therewith. The rear side of the chamber 22 is formed by a screen 23, which is concentric with the doffing-cylinder. The latter is provided with radial peripheral spurs 24, and the plane of revolution of the said doffing-cylinder is at its upper side nearly in contact with the lower side of the plane of revolution of the picker-roller. The chamber 22 has a discharge-opening 25 in its front side, and an inclined board or chute 26 leads downwardly and outwardly from the lower side of the said opening and the lower front side of the screen 23, the said board or chute being adapted to discharge the cotton into a gin, (indicated at A.) The rotation of the doffing-cylinder is reverse to that of the picker-roller, and its direction is indicated by the arrow c. The cotton is drawn from the picker-roller by the doffing-cylinder and carried by the doffing-cylinder over the screen 23, the latter serving to screen out and separate from the cotton the finer dirt particles and other finer foreign substances. Hence the cotton is separated from its hulls from nails, spikes, and other substances which might injure the saws or other portion of the gin, and the cotton is also cleaned while being fed to the gin and before it reaches the same. The casing shown in Fig. 1 of the drawings is provided with a chamber 27 below the chamber 22 and which also extends upwardly in rear thereof and communicates with the feed-chamber 2.

In the bottom of the chamber 27 is a conveyer-trough 28, in which is a suitable conveyer. (Here shown as a worm 29.) The same operates to eject the foreign substances separated from the cotton and which fall from the breast when the door 17 is opened and disposed in a vertical position and the earth particles and other finer substances which fall from the screen 23. The bottom of the chamber 27 is formed by oppositely-inclined boards 30, which conduct the foreign substances to the trough 28 and the conveyer therein.

No means are here shown for revolving the feed rollers 4, the feed-roller 15, the picker-roller 10, the doffing-cylinder 21, and the conveyer-worm 29. The same may be rotated by any suitable means, such as is well understood by persons skilled in the art to which my invention relates, and I do not deem it necessary to include the same in this specification.

I do not desire to limit myself to the precise construction and combination of devices herein shown and described, as modifications may be made therein without departing from the spirit of my invention.

Having thus described my invention, I claim—

1. In a machine of the class described, a breast having openings of cricket-bat outline and concaved on its front side, the upper and lower ends of said cricket-bat-shaped openings being extended beyond said concaved portion of the breast.

2. The combination of a breast having openings approximately of cricket-bat outline, and a revoluble picker-roller having spurs disposed to operate in the said openings.

3. The combination of a feed-chamber having means to vary its effective width, a breast in one side of the feed-chamber, a revoluble picker-roller having spurs disposed to operate in the spaces between the bars of the breast, and a revoluble feed-roller having peripheral spurs and disposed in the feed-chamber near the breast, substantially as described.

4. In a cotton-cleaner and gin-feeder, a casing having a feed-chamber, a picker-chamber, a cleaning-chamber and a discharge-chamber for the impurities, in combination
with separating, doffing and screening elements in the respective picker and cleaning chambers, and a door in the rear side of said casing, adapted when disposed in one position, to establish communication between the feed and cleaning chambers, and when disposed in another position to form a chute to discharge cotton-hulls and foreign substances directly from the lower side of the breast, substantially as described.

5. The combination of a breast having openings therein of cricket-bat outline of sufficient width at its upper and widest portion to allow cotton-locks to pass through, and a revoluble picker-roller having spurs, disposed to operate in the said openings, substantially as described.

6. The combination of a breast, a revoluble picker-roller having peripheral spurs disposed to operate in the spaces between the bars of the breast, the said spaces being approximately of cricket-bat outline and means to feed cotton to said picker-roller and breast.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

ERIC B. LARSON.

Witnesses:
O. E. CHRISTENSEN,
C. E. PAINTER.