

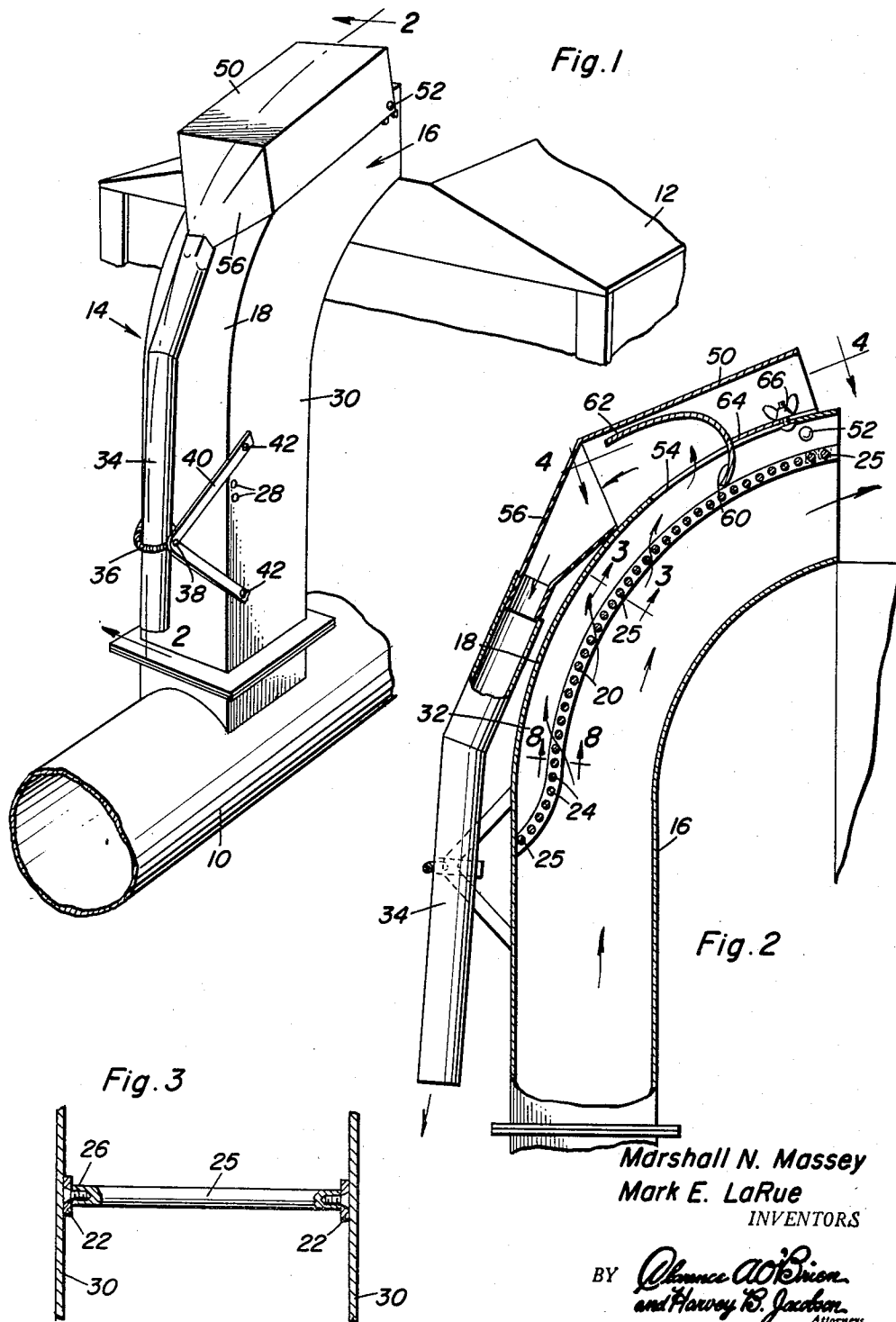
March 22, 1960

M. N. MASSEY ET AL
COTTON CLEANER AND SEPARATOR

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2 Sheets-Sheet 1



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Fig. 4

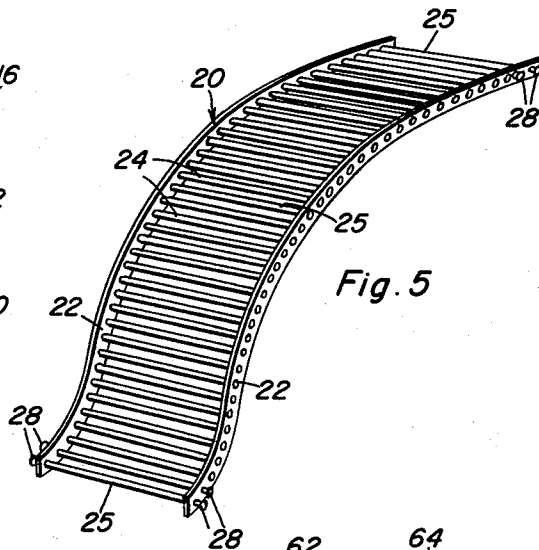
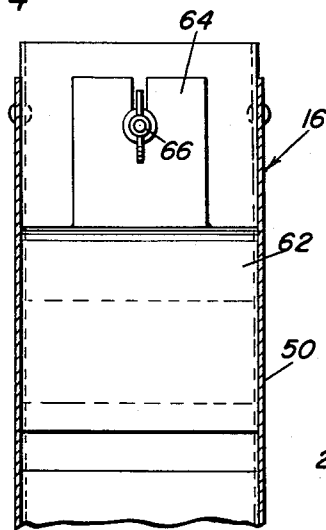


Fig. 5

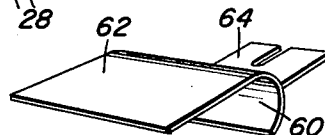


Fig. 6

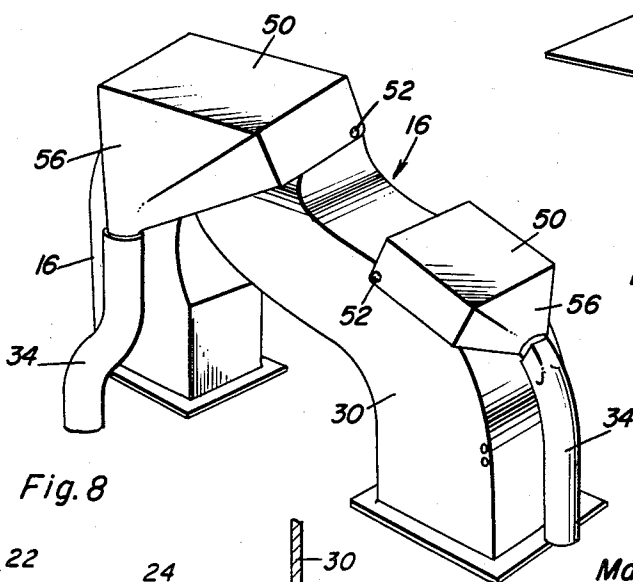
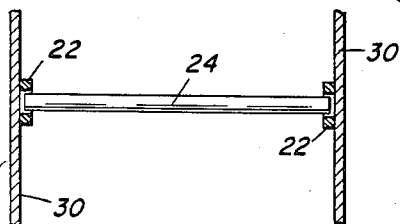


Fig. 7

Fig. 8



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COTTON CLEANER AND SEPARATOR

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7 Claims. (Cl. 19—72)

This invention comprises novel and useful improvements in a cotton cleaner and separator, and more specifically comprises an attachment adapted for use with mechanical cotton pickers for cleaning the cotton and separating the cotton fibers prior to their discharge from the blower fans of the picker into the basket for collecting the gathered cotton.

Mechanical cotton pickers customarily stretch the cotton fibers during the picking of the same from the boll, whereby the cotton delivered by the blowers of the picker into the collecting basket are usually compacted into globs or lumps of cotton with the fibers more or less interwoven and having a considerable amount of trash therein. Cotton in this condition has a relatively high breakage of the cotton fibers, causing a very uneven fiber length after it is ginned, and therefore usually brings a lower price because of its lower grade.

It is the primary object of this invention to provide an apparatus whereby the cotton fibers, after being picked by the mechanical cotton picker, are loosened or separated from each other, in order to produce a more fluffy cotton fiber, and are cleaned of a considerable quantity of the entrained trash prior to the delivery of the cotton into the collecting basket of the picker.

A further object of the invention is to provide an apparatus which may be readily interposed as an attachment between the blowers of the picker and the collecting basket for treating the cotton during its passage from the blowers to the basket and without interrupting such flow.

Still another object of the invention is to provide an attachment in accordance with the foregoing objects which shall be of inexpensive and lightweight construction, shall be capable of being readily applied to conventional cotton pickers, and shall be highly efficient for the purposes intended.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is an elevational view showing the manner in which a preferred embodiment of this invention may be interposed between the cotton delivery conduit on the discharge side of the blower of a mechanical cotton picker and the collecting basket of the picker for cleaning and separating the cotton fibers prior to their discharge into the basket;

Figure 2 is a vertical, transverse sectional view taken substantially upon the plane indicated by the section line 2—2 of Figure 1;

Figure 3 is a transverse detail view taken substantially upon the plane indicated by the section line 3—3 of Figure 2 and showing certain structural details of the separating grill forming a part of this invention;

Figure 4 is a horizontal sectional detail view taken sub-

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stantially upon the plane indicated by the section line 4—4 of Figure 2;

Figure 5 is a perspective view of the trash separating grill forming a part of the attachment;

Figure 6 is a perspective view of a deflecting baffle for discharging trash separated by the grill into the discharge pipe of the attachment; and

Figure 7 is a perspective view of a somewhat modified construction wherein cotton from a pair of cotton discharge conduits from a pair of blowers of a cotton picker may be cleaned and separated before their discharge into the basket of the picker;

Fig. 8 is a transverse detail view taken substantially upon the plane indicated by the section line 8—8 of Figure 2 and showing certain structural details of the separating grill forming a part of this invention.

The present invention is similar in purposes to the cleaner disclosed in the prior patent of H. L. Gieszl, Patent No. 2,668,330 which was granted on February 9, 1954.

The conventional mechanical cotton picker has one or more blowers, not shown, by means of which cotton gathered by the picker heads from the cotton stalks are delivered through conduits, one of which is shown at 10, into a conventional cotton collecting or gathering basket or receptacle 12. The cotton cleaner and separator forming the present invention is designated generally by the numeral 14 and is interposed between the conduit 10 and the basket 12, whereby the cotton delivered by the conduit 10 is passed through this apparatus, is cleaned and has its fibers separated or opened prior to its introduction into the basket 12. Obviously, there will be provided as many of the attachments 14 as there are conduits 10, it being considered sufficient for an understanding of the principles of this invention to illustrate, as in Figures 1—6, the construction of one such attachment. Figure 7 indicates the manner in which the attachments of two conduits may be associated therewith for cleaning and separating the cotton prior to the introduction of the cotton through a single inlet opening into the basket 12.

Referring now more particularly to the construction shown in Figures 1—6, it will be seen that the attachment 14 consists of a duct 16 which has a curving outer wall 18. This curvature is such that the cotton conveying air passing therethrough in the direction indicated by the arrows in Figure 2 will be thrown by centrifugal force towards the outer wall 18 prior to its discharge from the exit of the duct into the inlet opening of the basket 12. The present invention, as does the prior patent of Gieszl, makes use of centrifugal force as the cotton and air stream passes the curving portion of the wall 18 as a means for bringing the trash and the cotton into engagement with said portion of the wall.

Disposed in the duct 16, adjacent to but in spaced relation to the curved wall 18 of the latter, is a grill or framework 20. As shown best in Figure 5, this grill includes a longitudinally disposed supporting framework including a pair of flat, parallel, curved metal strips 22 forming a rigid framework as set forth hereinafter, and between which are loosely mounted for rotation a plurality of transversely disposed rods 24 in parallel relation. A convenient manner of forming the rigid framework, referring to Figures 3 and 5, is as follows. At their opposite ends, and at a convenient middle portion of the strips 22, there are provided rigid connecting rods 25 whereby the strips are rigidly secured together. The rigidity of the framework serves to facilitate the installation of the grill into the duct; and further serves to facilitate transportation of the same.

Holes are drilled throughout the length of the strips 22 to receive the loosely mounted rods 24 and the rigid con-

necting rod members 25. The rigid connecting rod members 25 have their ends bored and internally threaded to receive fastening screws 26 which may conveniently be countersunk in their receiving holes in the strips 22. With the loosely mounted rods 24 disposed in the holes in the strips, and with the rigid rods 25 in place, the screws 26 are tightened to provide the grill assembly. If desired, very thin sheet metal strips may be spot welded to the outer sides of the strips 22 to assist in retaining the loosely mounted rods 24 in place during transportation of the grill or its mounting in the duct 16.

At any convenient position upon the frame of the grill, fasteners in the form of screws or the like, as at 28, as for example, adjacent the opposite ends of the grill, extend through the side walls 30 whereby the grill is securely and detachably secured in place in the duct. As will be noted, the grill extends entirely across the width of the duct and divides the interior of the same into a passageway of major cross-sectional area for the air and cotton carried thereby, and a passageway of reduced area forming a chamber 32 which constitutes a trash receiving chamber. This chamber is disposed between the grill 20 and the curved outer wall 18 of the duct. As will be noted, one end of the grill abuts and contacts the wall 18, while its other end adjacent the exit of the duct into the cotton collecting basket is open.

In the operation of the device, the loose mounting of the rods 24 enable the latter to rotate, thereby minimizing and preventing the clinging of cotton bolls and locks of cotton fibers to the rods.

The arrangement is such that as the air carrying the cotton flows through the duct in the direction indicated by the arrows, centrifugal force will cause material in the air stream, including the cotton and trash, to move against the grill, and the smaller and denser trash particles will be caused to pass through the rods of the grill into the chamber 32 by the air flowing therein. The larger and less dense cotton bolls and locks of cotton fibers will pass below the grill and so be discharged into the basket 12. Since much loose trash accompanies the cotton, this will be largely separated before the cotton enters the basket. Means are provided for removing the trash received in the trash receiving chamber 32 whereby the same may be discharged through a trash discharge pipe 34. The latter consists of a suitable length of pipe which is supported as by a spring ring 36 which in turn is pivoted as at 38 between a pair of supporting brackets 40 secured as by screws 42 to the sides 30 of the duct 16. By means of the spring mounting 36, the trash discharge pipe 34 is allowed a limited amount of swinging movement for a purpose which will be later set forth. The trash is discharged from the pipe 34 from its lower end, as viewed in Figures 1, 2 and 7, either to the atmosphere or to any desired collecting receptacle.

Means are provided for discharging the trash received in the chamber 32 from the upper end of the latter into the upper end of the trash discharge pipe 34. This discharging means consists of a hood 50 provided with top and side walls, but preferably open at its bottom and at its upper end. The upper end of the hood is pivoted, as by means of pivot pins 52, to the side walls 30 of the duct 16 and constitutes a closure for an opening or cut-away portion in the discharge end portion of the wall 18 of the duct. This opening, indicated at 54 in Figure 2, provides communication between the trash receiving chamber 32 and the hood. The lower end of the hood is provided with a spout 56 adapted to be received in the upper end of the discharge pipe 34 as shown in Figure 2. By means of the swinging mounting of the discharge pipe 34 and of the pivotal connection of the hood, the pipe and hood may be manipulated to engage the end of the spout 56 in the upper end of the discharge pipe or to disconnect the same, as desired.

Disposed in the hood is a deflector baffle of a construction shown in Figure 6, by means of which the trash

received in the chamber 32 may be caused to pass through the opening 54 and into the spout 56 and from thence into the discharge pipe 34. This baffle preferably consists of a sheet of metal or other suitable material having a lower lip portion 60 extending across the entire width of the hood and extending through the opening 54 into the chamber 32 and curving downwardly and towards the inlet of the duct 16 and into close proximity to the rods 24 of the grill. At its upper end, the baffle is provided with a plate 62 which extends into the hood 50 into close proximity with the top wall of the same, and in the direction of flow from the hood to the discharge pipe. Upon its convex surface, the baffle is provided with a laterally projecting lug 64 which is bifurcated and which is adjustably secured to the end portion of the top wall 18 of the duct, as by a wing nut or the like 66. By this means, the baffle is supported upon the top wall of the duct and is mounted in the hood and is adapted to be adjusted longitudinally of the duct and hood.

The adjustable mounting of the deflector baffle in the hood is more clearly shown in Figure 4. When the attachment is applied to a cotton picker having two or more cotton delivering conduits, a plurality of the ducts 16 will be provided, as shown in Figure 7, each duct receiving the delivery from a blower of the picker. At their upper or discharge ends, the ducts merge into a common exit by which the cotton is discharged into the basket 12 previously mentioned. Each of the ducts 16 is provided with the construction previously described of attachment, and it will be understood that the somewhat diagrammatic showing of Figure 7 depicts the pair of hoods 50 each pivoted, as at 52, to its duct and each having its discharge spout 56 for delivering the trash from the trash receiving chamber to the trash discharge pipe 34.

This attachment is of inexpensive construction and is adapted to provide a maximum of trouble-free service. It does not interfere with the volume or velocity of flow of the cotton delivered by the blowers of the picker into the basket since the ducts will be of greater cross-sectional area than the conduits 10. However, the apparatus is extremely effective for removing trash from the cotton fibers before the cotton has been discharged into the collection basket 12 where it is liable to be compacted and pressed together so that trash separation thereafter will be rendered more difficult. In addition, the fibers of the cotton will be fluffed or separated by turbulence during their passage through the attachment, thereby minimizing or reducing the tendency of the fibers to compact into masse and to become interlocked or tangled. Accordingly, a cleaner and superior grade of cotton will be supplied to the basket, and one which will gin more readily, more cleanly, and with less broken fibers.

It should be particularly noted that the cross-sectional areas of the trash and air discharge pipe is sufficiently large in order to induce air flow and will be such as to avoid any appreciable restriction to flow therethrough which might prevent efficient egress of the trash from the hood 50. There is a differential in pressure between the interior of the duct 16 and discharge pipe 34 that causes the trash to enter the chamber 32 and to be carried into said pipe for discharge.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly, all suitable modifications and equivalents may be resorted to, falling within the scope of the appended claims.

What is claimed as new is as follows:

1. A cotton cleaner and separator of the character described, including, an elongate duct adapted to convey cotton delivered thereto and having a curved outer wall, an opening in said outer wall, a plurality of closely spaced parallel and freely rotatable rods spaced inwardly of and

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adjacent to said curved outer wall, said rods being round with smooth exterior surfaces and extending transverse of the duct forming a receiving chamber, and a discharge pipe in communication with said opening for discharging material passed by the rods.

2. A cotton cleaner and separator of the character described, including, an elongate duct adapted to convey cotton delivered thereto and having a curved outer wall, terminating at the discharge end of the duct, an opening in said outer wall at said discharge end of the duct, a plurality of closely spaced parallel and freely rotatable rods substantially coextensive with and spaced inwardly of and adjacent to said curved outer wall, said rods being round with smooth exterior surfaces and extending transverse of the duct forming a receiving chamber, and a discharge pipe in communication with said opening for discharging material passed by the rods.

3. A cotton cleaner and separator of the character described, including, an elongate duct adapted to convey cotton delivered thereto and having a curved outer wall, an opening in said outer wall, a plurality of closely spaced parallel and freely rotatable rods occupying said opening, said rods being round with smooth exterior surfaces and extending transverse of said opening, overlying the opening in the duct and having a convexly curved baffle extending transverse of the duct and adapted to direct flow laterally of the duct, and a discharge pipe in communication with the hood for discharging material passed by the rods and received in the hood.

4. A cotton cleaner and separator of the character described, including, an elongate duct adapted to convey cotton delivered thereto and having a curved outer wall, an opening in said outer wall, a plurality of closely spaced parallel freely rotatable rods occupying said opening, said rods being round with smooth exterior surfaces and extending transverse of said opening, a hood overlying the opening in the duct, a convexly curved baffle extending transverse of the duct and shiftable longitudinally of the duct and adapted to direct flow laterally of the duct, and a discharge pipe in communication with the hood for discharging material passed by the rods and received in the hood.

5. A cotton cleaner and separator of the character described, including, an elongate duct adapted to convey cotton delivered thereto and having a curved outer wall, an opening in said outer wall, a plurality of freely rotatable rods occupying said opening, said rods being round with smooth exterior surfaces and extending trans-

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verse of the duct, and a discharge pipe in communication with said opening for discharging material passed by the rods.

6. A cotton cleaner and separator of the character described, including, an elongate duct adapted to convey cotton delivered thereto and having a curved outer wall terminating at the discharge end of the duct, an opening in said outer wall at said discharge end of the duct, a plurality of closely spaced parallel and freely rotatable rods substantially coextensive with and spaced inwardly of and adjacent to said curved outer wall, said rods being round with smooth exterior surfaces and extending transverse of the duct forming a receiving chamber, and a discharge pipe in communication with said opening for discharging material passed by the rods.

7. A cotton cleaner and separator of the character described, including, an elongate duct adapted to convey cotton delivered thereto and having a curved outer wall, an opening in said outer wall, a plurality of freely rotatable rods occupying said opening, said rods being round with smooth exterior surfaces and extending transverse of the duct, a hood overlying the opening in the duct and having a convexly curved baffle extending transverse of the duct and adapted to direct flow laterally of the duct, and a discharge pipe in communication with the hood for discharging material passed by the rods and received in the hood.

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