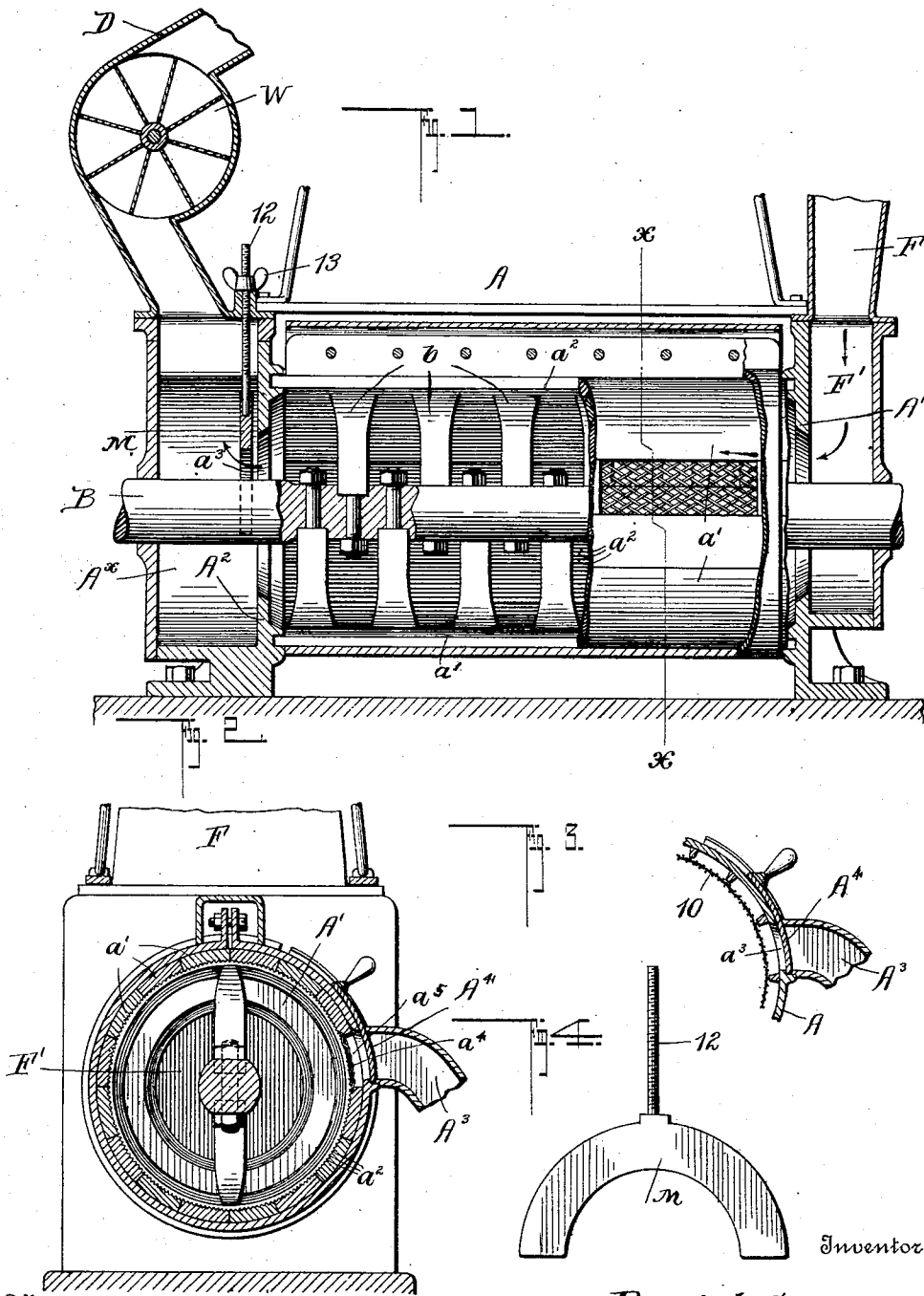


D. GRANT.
DELINTING MACHINE.
APPLICATION FILED NOV. 20, 1909.

964,909.

Patented July 19, 1910.



Witnesses

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DELINTING-MACHINE.

964,909.

Specification of Letters Patent.

Patented July 19, 1910.

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To all whom it may concern:

Be it known that I, DANIEL GRANT, a citizen of the United States, residing at Memphis, in the county of Shelby and State of Tennessee, have invented certain new and useful Improvements in Delinting-Machines, of which the following is a specification.

This invention relates to apparatus of the centrifugal type designed for defibrating cotton seed hulls, and the invention consists of the parts and the constructions, arrangements and combinations of parts which I will hereinafter describe and claim.

In the accompanying drawings forming part of this specification and in which similar reference characters indicate like parts in the several views: Figure 1 is a central vertical longitudinal section of a defibrating machine, partly in elevation, embodying the salient features of my invention; Fig. 2 is a cross sectional view of the same on the line X—X of Fig. 1; and Fig. 3 is a detail of a modification. Fig. 4 is a detail of the arc-shaped baffle detached.

In carrying out my invention I provide a hollow cylinder, A, which is constructed of any suitable material and in any manner capable of promoting the objects of the invention. The interior wall of this cylinder may be provided with a suitable material as a lining of wire cloth, 10, Fig. 3, or other roughened surface against which the material is rubbed. As this machine is designed particularly for the delinting of cotton seed hulls and the separation of the fiber therefrom, it will be understood that the fiber is rubbed from the hulls against the inner wall of the cylinder and that the cleaned hulls are thrown violently around the machine against the wire cloth and are finally beaten through the cloth, this operation being well known in this art. I do not, however, limit my present invention to a cylinder having an inner lining of wire cloth, because other roughened surfaces co-acting with the beaters, which I will presently describe, may be used without departing from the spirit of said invention. For instance, the cylinder may be made up of a series of lengthwise bars or staves a' of iron, provided on their inner surfaces with longitudinal ribs a'' , said ribs being shown in Fig. 2 as sharp at their edges.

At one end, the cylinder A is provided with a suitable head, A', having an opening at any suitable point therein through

which the material to be disintegrated, pulverized or agitated may be introduced. At the opposite end, the cylinder is provided with an annular head, A², extending from the periphery of the cylinder inward and leaving a central opening, a^3 , of less diameter than that of the interior of the cylinder itself.

In the axis of the cylinder, A, is mounted a shaft, B, and said shaft is provided with a number of radial arms or beaters, b, b , extending at their ends proximate to the inner surface or wall of the cylinder, said arms or beaters co-acting with the roughened surface before described to rub the fiber from the cotton seed hulls supplied to the cylinder. At one end of the cylinder outside of the aforesaid head, A², is formed an air chamber, A^x, in which suction is created by a fan, W, located in the pipe, D, which connects with the air chamber, A^x, the material drawn through this chamber by the action of the fan being carried to any suitable point of deposit. At the end of the machine opposite to that containing the air chamber is a chamber, F', to which leads a pipe or tube, F, adapted to convey the material to be disintegrated into the machine for treatment therein, said pipe F communicating with a suitable feed opening in the head end of the cylinder.

As shown in Fig. 2, a spout, A³, projects outwardly and has its inner end housing an opening a^5 , in the periphery of the cylinder, said opening being covered with a heavy wire netting or screen, a^4 , and said opening and the spout being preferably provided with a gate, A⁴, by which the passage through the spout may be closed to prevent the discharge of material through said opening and spout or open to permit such discharge.

The leading characteristic of the present improvement is the provision of means within the air chamber A^x, of the cylinder adapted to direct the air current close to the central shaft or nearer to the inner surface of the disintegrating cylinder as occasion requires. Accordingly, it will be observed that I suspend within the air chamber a baffle or arc shaped piece of metal, M, or other material having a rigid stem, 12, or other connection passing through the top wall of the shell of the chamber, said stem being threaded and carrying on the outside a suitable nut, 13, which may be manipulated

by hand or by the use of a suitable tool to raise and lower the stem with its attached arc-shaped piece to thereby direct the air current close to the central shaft or nearer to the inner surface of the disintegrating cylinder; the aforesaid head A^2 tends to retain the hulls in the cylinder until they have been sufficiently beaten or disintegrated by the co-action of the beater arms and the roughened interior of the cylinder, it being understood that the hulls are located around the outer edge of the beater arms and close to the lining of wire cloth 10, or other material, where the fiber is rubbed from the hulls. The cleaned hulls are thrown violently around the machine against the wire cloth or other surface and are finally beaten through the same; the fiber being lighter than the hulls travels on an inner circle toward the shaft of the machine. This being true, it will be readily understood that the air current can be changed by the adjustment of the arc shaped piece, M, in the chamber, A^* , as by moving said piece edge-wise toward or from the shaft, so that the current of air can be carried very near the shaft or close to the edge of the layer of hulls, thus readily freeing the machine of the fiber or lint.

The operation of the machine is substantially as follows: Cotton seed hulls or other material to be defibrated or delinted being introduced to the cylinder through the feed pipe, F, and through the opening in the head, A' , and the beater shaft, B, being set in motion at a high rate of speed the material is hurled by the beaters against the interior surface of the cylinder and thereby cut or broken up. Owing to the rapid revolution of the beaters, the material in the cylinder is violently agitated and swept about over the inner peripheral surface of said cylinder the hulls or heavier particles seeking the outer portion of the cylinder and the fibers or lighter particles being less subject to centrifugal force occupying the central part of the cylinder. The fan produces an outward air current from the central part of the cylinder, occupied by the fiber or lighter particles of material and draws the light fibers off through the opening, a^3 , in the head, A^2 , delivering them through the pipe, D, to any appropriate collector, not shown. As fast as material in the cylinder is sufficiently reduced, the separated fibers measurably lose subjection to centrifugal force and therefore move to the central part of the cylinder, and are acted upon by the central outward air current and are carried away, while the heavier particles less subject to said current and more subject to centrifugal force, pass through or remain outside the layer of fiber until further reduced. The annular head, A^2 , and the arc-shaped piece, M, will aid in confining such heavier

or insufficiently reduced portions of the material to the cylinder; the said arc-shaped piece is adapted, moreover, to somewhat narrow the field within the discharge end of the cylinder through which the air current passes. The gate, A^4 , being opened and the screen, a^4 , being uncovered, the heavier particles which hug the periphery of the cylinder, will be discharged through the screen, while the lighter particles are drawn off by the fan through the central passage, a^3 , as described; the path of the air current at the delivery end of the cylinder may be altered as the circumstances require, by the adjustment of the arc-shaped piece relatively to the axis of the beater shaft. The leading feature of the present improvement is therefore, the employment of the arc-shaped piece in the air chamber of the cylinder, capable of adjustment from the outside for forcing the air current to the exact location of the fiber on the inside of the machine so that the current of air can be carried very near the shaft or close to the edge of the hulls, thus more readily freeing the machine of the fiber or lint.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. The combination with a cylinder having a defibrating chamber with a feed opening at one portion and a centrally located discharge opening at its opposite portion, and a rotatable shaft carrying beaters within the cylinder, of an air chamber at the discharge portion of the cylinder connecting with the interior of said cylinder through the centrally located discharge opening thereof, and a substantially arc-shaped baffle member mounted in the air chamber and extending about the shaft and radially adjustable across the centrally located discharge opening of the cylinder, and adapted to direct the air current close to the said shaft or nearer to the inner surface of the disintegrating cylinder.

2. The combination with a cylinder having heads at opposite ends, one of said heads provided with an inlet opening and the other provided with a centrally located discharge opening, and a rotatable shaft within the cylinder and provided with beater elements co-acting with the interior of the cylinder to reduce material admitted to said cylinder, of an air chamber at the end of the cylinder connecting with the chamber of said cylinder through the central discharge opening in one of the end heads thereof, and a substantially arc-shaped deflector mounted in the air chamber and extending about said shaft and radially adjustable across said centrally located discharge opening and adapted to direct the air current close to the central shaft or nearer to the inner surface of the cylinder.

3. The combination with a cylinder provided with an inlet opening through one of its heads, and a centrally located discharge opening in the opposite head, and a rotatable shaft within the cylinder carrying beater elements, of an air chamber at the discharge end of the cylinder connecting with the interior of said cylinder through the centrally located discharge opening in one of the heads thereof, a fan connected with the air chamber, and an arc-shaped member in the air chamber and extending about the shaft and radially adjustable across the centrally located discharge opening, and adapted to direct the air current close to the central shaft or nearer to the inner surface of the cylinder.

4. The combination with a defibrating cylinder provided with an inlet opening through one of its heads and a centrally located discharge opening in the opposite head, and a rotatable shaft within the cylinder carrying beater elements, of an air chamber at the discharge end of the cylinder connecting with the interior of said cylinder through the centrally located discharge opening in one of the heads thereof, a fan connected with the air chamber, and an arc-shaped member in the air chamber and ex-

tending about the shaft and radially adjustable across the centrally located discharge opening, and adapted to direct the air current close to the central shaft or nearer to the inner surface of the cylinder, said arc-shaped member having a projecting stem leading to outside the air chamber, and a nut on said stem for adjusting the said member relatively to the said discharge opening.

5. In machines of the character described, having a cylinder and a shaft with beater elements, said cylinder having a head with a centrally located discharge opening, of an air chamber connecting with the interior of the cylinder through said discharge opening, and a substantially arc-shaped damper-like member extending about the shaft and radially adjustable across the centrally located discharge opening to increase or decrease the size of said opening and to direct the air current nearer to the inner surface of the cylinder or close to the central shaft.

In testimony whereof I affix my signature in presence of two witnesses.

DANIEL GRANT.

Witnesses:

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EUGENE WEBB, Jr.