No. 749,280. PATENTED JAN. 12, 1904.

O. S. EMERSON.

SEPARATOR.

APPLICATION FILED FEB. 9, 1903.

NO MODEL.

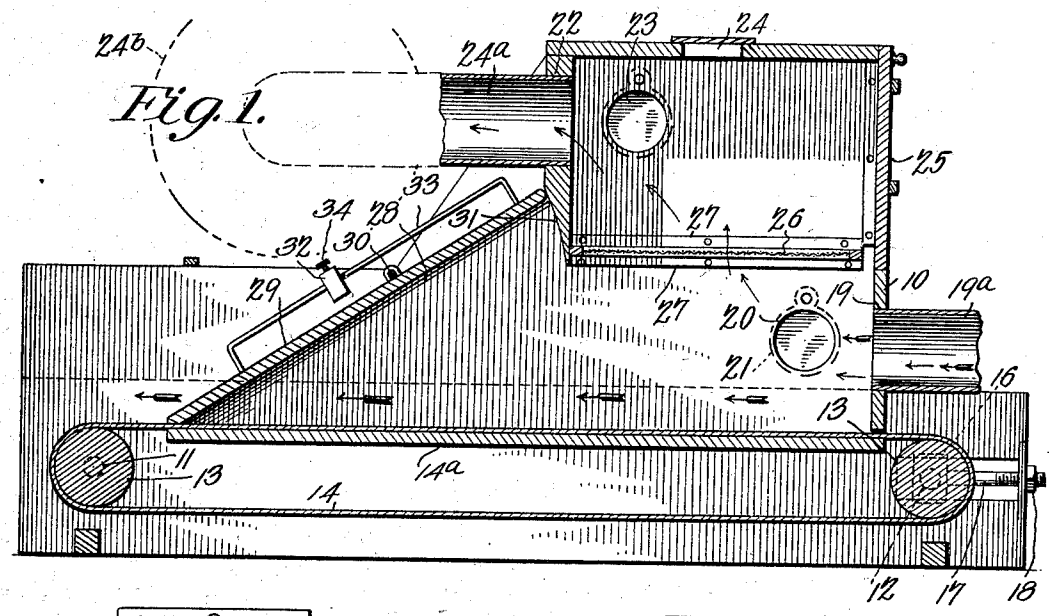


Fig. 1.

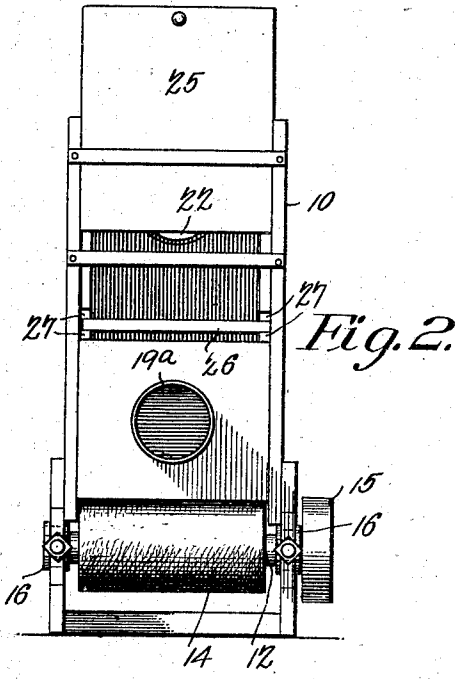


Fig. 2.

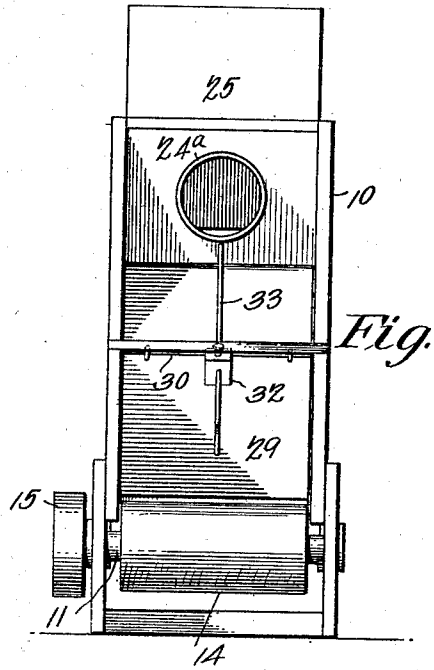


Fig. 3.

Witnesses
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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 749,280. Patented January 12, 1904.

UNITED STATES PATENT OFFICE.

OLIVER S. EMERSON, OF LUXORA, ARKANSAS.

SEPARATOR.

SPECIFICATION forming part of Letters Patent No. 749,280, dated January 12, 1904.

Application filed February 9, 1903. Serial No. 142,628. (No model.)

To all whom it may concern:

Be it known that I, OLIVER S. EMERSON, a citizen of the United States, residing at Luxora, in the county of Mississippi and State of Arkansas, have invented a new and useful Separator, of which the following is a specification.

My invention relates to separators, and more particularly to that class used for removing dirt and various extraneous matters from cotton, grain, or other material and to separate such substances from air when they are handled by pneumatic conveyers.

It consists in the various features hereinafter described and more particularly claimed.

In the accompanying drawings, Figure 1 is a central vertical longitudinal section through one form of my improved separator; and Figs. 2 and 3 are full end elevations looking, respectively, from the left and right in Fig. 1.

Similar characters indicate like parts throughout the several figures of the drawings.

The numeral 10 designates a casing of suitable form to support and properly inclose the parts to be hereinafter described, it conveniently having an upward extension 10^a of less than its total length. Preferably in the lower portion and at the ends of this casing are journaled transverse shafts 11 12, carrying cylinders 13, over which operates an endless belt or conveyer-apron 14, moving over a floor 14^a in the casing and through a slot in the wall at the feed end. Travel may be imparted to this apron through a pulley 15 on the shaft 11 and the tension of the belt varied by the adjustment of the shaft 12, its bearings 16 sliding in ways in the frame and having connected to them screws 17 and nuts 18 to change their position. At the feed end of the casing an opening 19 is provided for the introduction of the pipe or conduit 19^a of a pneumatic conveyer, and a pair of adjacent openings 20 20 may be located at opposite sides for convenience in attaching the pipe in certain situations. Covers 21 are provided for the closure of these openings when not in use. At the upper portion of the extension 10^a, which extension contains the separating-chamber, are similar openings 22, 23, and 24, at the end, sides, and top, respectively, for the connection of the conveyer-pipe 24^a from the separator, in which pipe is shown the suction-fan 24^b. In the wall at the feed end of the separating-chamber is a door 25, giving access to a suitable screen 26, preferably sliding in ways 27 to permit the removal through the door-opening. This screen is shown as substantially horizontal and extends across the casing between the induction and eduction openings. The wall of the extension over the belt toward the delivery end of the machine is open at 28, and to close this opening a movable inclined wall 29 is provided, forming a door or valve. This door is shown as pivoted between its ends upon a transverse rod 30, turning in the walls of the casing, and is weighted so that its lower end may rest normally upon the upper surface of the conveyer-belt, while its upper end works throughout its movement in close proximity with a curved wall 31 at the end of the casing extension. The force with which the lower end rests upon the belt may be varied by the movement along it of a weight 32, mounted to slide on a longitudinal rod 33, upon which it may be held in place by a set-screw 34.

In operation the seed-cotton or other material being conveyed to the gins or places where it is to be operated upon or stored enters the separating-chamber with the air-current through the pipe 19^a. As this chamber is of greater transverse area than the pipe, the conveying force of the current is weakened and the heavier portions of the material drop upon the belt 14, while the lighter portions, which are carried against the screen, soon drop upon the belt by the weight of the accumulation. The screen-openings are of such size that substantially all the cotton or other valuable material may be retained in the lower portion of the separating-chamber, while the air-current will pass through the screen and off through the pipe 24^a, carrying bits of leaves and similar trash or waste. As the cotton falls upon the belt it will be moved along thereby in the direction of the arrow in Fig. 1, carried under the end of the valve, which is raised by its contact sufficiently to allow it to pass, and is delivered at the end of the belt to a con-

veyer, receptacle, or other desired place. All openings in the casing above the belt are made as small as possible to avoid reducing the force of the suction-current. The door 29 aids in this by keeping the opening between its end and the belt of the least width which will permit the material to pass and by its close relation with the curved end wall. As the pivot of the door is arranged it will be seen that the force which the suction exerts upon it will be largely balanced, the tendency being to draw it in at both sides of the pivotal point; but as this pivot is preferably situated nearer the top than the bottom there will be an excess of the force acting to hold the lower end of the door in its desired closeness to the belt. This force may be still more exactly adjusted by the movement of the weight 32 to prevent the offering too great resistance to the passage of material. If the screen 26 becomes clogged, it may be readily removed through the door 25 and burned off or otherwise cleared.

Though well adapted for use with a pneumatic conveyer and for the separation of cotton, it is evident that such material as grain might be introduced through one of the feed-openings 19 20 by any suitable feeder and the removal of the dirt and chaff be effected by the suction through the eduction-opening, as before.

Having thus described my invention, I claim—

1. In a device of the class described, a casing having a level floor, an endless-belt conveyer having its upper lead supported upon said floor, and extended through openings at the ends of the casing, induction means at the head of the casing which is entered by the upper lead of the endless carrier-belt, and an inclined door pivotally mounted at the tail end of the machine and bearing against the upper surface of the upper lead of the endless-belt carrier to admit of the escape, under the edge of said door, of material passing through the casing.

2. In a machine of the class described, a casing having an inclined front end, and endless carrier-belt having its upper lead supported upon the floor of the casing, said upper lead extending through a slot at the feed end of the casing, and a pivotally-mounted door, fitting between the sides of the casing, with its lower edge normally resting upon the upper lead of the endless carrier-belt, and means for regulating the pressure of said door upon said belt.

3. In a device of the class described, the combination of a casing, an endless carrier-belt with its upper lead supported on the floor of said casing, a pivotally-mounted door with its lower edge normally bearing upon the upper lead of the endless carrier-belt, a longitudinal guide-rod connected with said pivoted door, a weight adjustable upon said guide-rod, and means for retaining said weight in adjusted position.

4. In a device of the class described, a casing having an inclined delivery end, endless carrying means for conveying material through said casing, an upward extension of said casing having a curved wall, a pivotally-mounted discharge-door having its upper edge engaging said curved wall and its lower edge normally resting upon the upper lead of the endless carrying device, means for regulating the pressure of said door against the carrier, and means for admitting material to the casing.

5. In a device of the class described, a casing having an upward extension provided with a sliding door, a horizontally-disposed screen mounted detachably in said casing beneath the upward extension thereof, induction and eduction means connected respectively with said casing and its upward extension, an endless carrier disposed to convey the inducted material through the casing, and a pivoted pressure-door mounted between the sides of the casing and exerting downward pressure, capable of being regulated, against the upper side of the endless carrier.

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

OLIVER S. EMERSON.

Witnesses:
H. A. WISE,
J. L. DEAN.