No. 773,180. PATENTED OCT. 25, 1904.

W. E. ANDERSON & S. TOMPKINS.

SEPARATING APPARATUS.

APPLICATION FILED JUNE 4, 1902.

NO MODEL.

Fig. 1

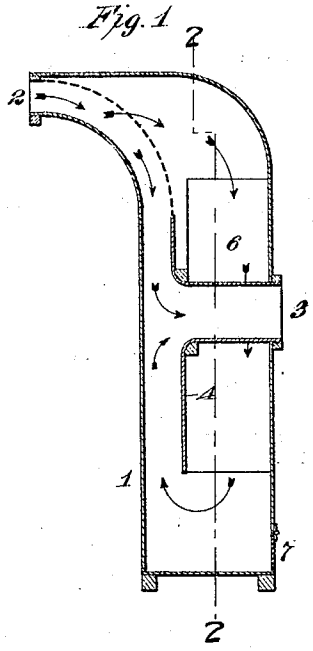


Fig. 2

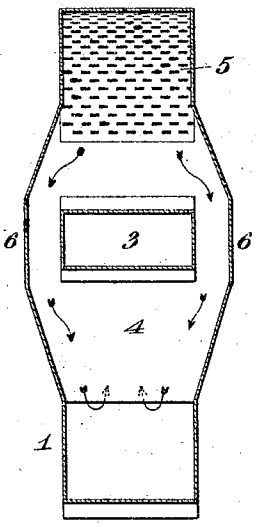


Fig. 3

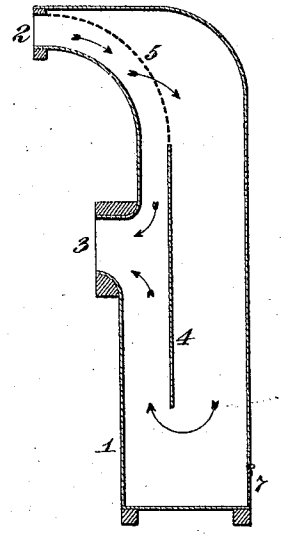


Fig. 4

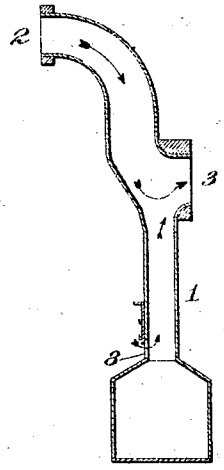
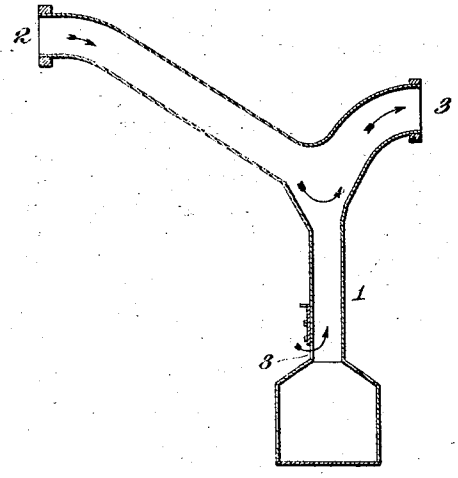


Fig. 5



Witnesses:

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No. 773,180. Patented October 25, 1904.

UNITED STATES PATENT OFFICE.

WILLIAM E. ANDERSON AND STONEWALL TOMPKINS, OF HOUSTON, TEXAS; SAID TOMPKINS ASSIGNOR TO SAID ANDERSON.

SEPARATING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 773,180, dated October 25, 1904.

Application filed June 4, 1902. Serial No. 110,168. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM E. ANDERSON and STONEWALL TOMPKINS, citizens of the United States, residing at Houston, in the county of Harris and State of Texas, have invented a certain new and useful Improvement in Separating Apparatus, of which the following is a description.

Our invention relates to improvements in separating apparatus which has been designed particularly for eliminating heavy solids from seed-cotton, cotton-seed, and other relatively light material which is handled in bulk by air-currents.

Our object is to provide a very simple apparatus for this purpose which shall be capable of efficient and economical operation.

Broadly considered, our invention comprises a relatively closed chamber interposed in the conduit through which the material is carried by air-currents and so constructed that the air-currents will be changed in the direction of their movement, whereby the momentum and weight of the heavy solids will effect a separation of the same from the lighter material, which substantially follows the currents in their course, while the heavy solids are removed from the influence of such currents, means being also provided for creating within the chamber an auxiliary current for carrying back into the path of the main currents any lighter material which may have been thrown off with the heavy solids or carried off by being mechanically entrained therewith. This auxiliary current or draft can be supplied from a separate exterior source, but preferably it is furnished by dividing the main air-currents, using a part of the air to effect the conveyance of the lighter material through the apparatus and the remainder thereof to furnish that necessary for the auxiliary current.

In order that our invention may be better understood, attention is directed to the accompanying drawings, forming a part of this specification, and in which—

Figure 1 is a vertical sectional view of a separating device of the preferred type; Fig. 2, a section on the line 2 2 of Fig. 1; Fig. 3, a vertical sectional view illustrating a modified construction of separator; Fig. 4, a corresponding view illustrating a still further modification, wherein the auxiliary air-currents are supplied from the exterior of the device; and Fig. 5, a corresponding view illustrating a further modification of the device shown in Fig. 4.

In all of the above views corresponding parts are represented by the same numerals of reference.

A casing 1 is provided with an inlet 2 and an outlet 3, said casing being interposed in the conduit through which the material is conveyed by air-currents generated by a pressure or suction fan. The exit-pipe 3 leads from a baffle-plate 4, which extends from side to side. Above this baffle-plate or partition is a curved perforated metal screen 5, arranged as shown. Preferably the chamber 1 is formed at each side with extensions 6 6, allowing for sufficient area on each side of the outlet-pipe for the proper circulation of the auxiliary air-current. The bottom of the casing is provided with a door 7, which may be opened from time to time for the removal of the eliminated solid material.

In operation the air-currents, carrying the material with them, sweep in through the inlet-opening past the screen 5 and out through the outlet-pipe 3. Any solids will be projected past the outlet-opening 3 by reason of their momentum and weight, so as to be withdrawn from the influence of the air-currents, and these solids will accumulate in the bottom of the casing. A part of the air will pass through the screen 5, down around the outlet-pipe 3, and up under the baffle-plate or partition 4, so as to leave the casing through the outlet-opening. These auxiliary air-currents passing upwardly toward the outlet-opening are not powerful enough to carry the heavier solids back into the path of the air-current, although any light material which may have become accidentally withdrawn from the influence of the main currents will be caught thereby and passed to the outlet-opening. If

these auxiliary air-currents were not employed, these lighter particles when once withdrawn from the effect of the main current would fall with the heavier particles to the bottom of the casing.

With the device shown in Fig. 3 the outlet-opening is arranged on the opposite side of the casing from that shown in Figs. 1 and 2; but the operation is the same, and the directions of the air-currents are indicated by arrows.

With the device shown in Fig. 4 the heavier particles are separated from the lighter material by causing the main air-currents to change their direction approximately from the vertical to the horizontal. Below the outlet-opening 3 the casing is provided with an adjustable air-inlet 8 for admitting sufficient air to constitute the desired auxiliary current for carrying back into the path of the main air-currents any lighter material which may have become accidentally removed from the influence thereof.

The construction shown in Fig. 5 is substantially identical with that indicated in Fig. 4 and differs only in details of arrangement, which are clearly obvious.

Although we have described our device as being particularly adapted for the separation of heavy solids from seed-cotton, it will be understood that it may be employed for the separation of sand and dirt therefrom, the impurities being removed by reason of their greater specific gravity.

Having now described our invention, what we claim as new, and desire to secure by Letters Patent, is as follows:

1. In a separating apparatus, the combination of an approximately vertical chamber, having an air-inlet opening near the top thereof, an air-outlet in the chamber above the bottom thereof and so arranged relatively to the inlet-opening that air-currents passing from the inlet to the outlet opening will be changed in direction, and heavy solid matter in suspension will drop to the bottom of the chamber, and means for creating a vertical auxiliary air-current upward in said chamber toward the outlet for conveying the lighter matter in the bottom of the chamber to the outlet-opening, substantially as set forth.

2. In a separating apparatus, the combination of an approximately vertical chamber having an air-inlet opening near the top thereof, a baffle-plate in said chamber dividing the chamber into two parts, the said baffle-plate being above the bottom of the chamber, so that the two divisions of the chamber communicate below the baffle-plate, a screen in the chamber connecting the baffle-plate with the inlet-opening, and an outlet-opening in the chamber, substantially as set forth.

3. In a separating apparatus, the combination of an approximately vertical chamber having an air-inlet opening near the top thereof, a baffle-plate in said chamber dividing the chamber into two parts, the said baffle-plate being above the bottom of the chamber, so that the two divisions of the chamber communicate below the baffle-plate, a screen in the chamber connecting the baffle-plate with the inlet-opening, and an outlet-opening in the chamber above the lower edges of the screen, substantially as set forth.

4. In a separating apparatus, the combination of a closed chamber, a baffle-plate in said chamber, an air-opening leading into the chamber at one side of said baffle-plate, an outlet-pipe connected with said baffle-plate, and a screen between the baffle-plate and the inlet-opening, substantially as set forth.

5. In a separating apparatus, the combination of a closed chamber, a baffle-plate in said chamber, an air-opening leading into the chamber at one side of said baffle-plate, an outlet-pipe connected with said baffle-plate, a screen between the baffle-plate and the inlet-opening, and extensions at the sides of the chamber in line with the outlet-pipe forming air-passages connecting the spaces above and below the baffle-plate, substantially as set forth.

This specification signed and witnessed this 17th day of May, 1902.

WILLIAM E. ANDERSON,
STONEWALL TOMPKINS.

Witnesses:
J. M. CRAWFORD,
W. L. THOMASSON.