No. 833,740. PATENTED OCT. 23, 1906.

C. G. GRAVES.

COTTON ELEVATOR.

APPLICATION FILED MAR. 10, 1906.

2 SHEETS—SHEET 1.

Fig. 1.

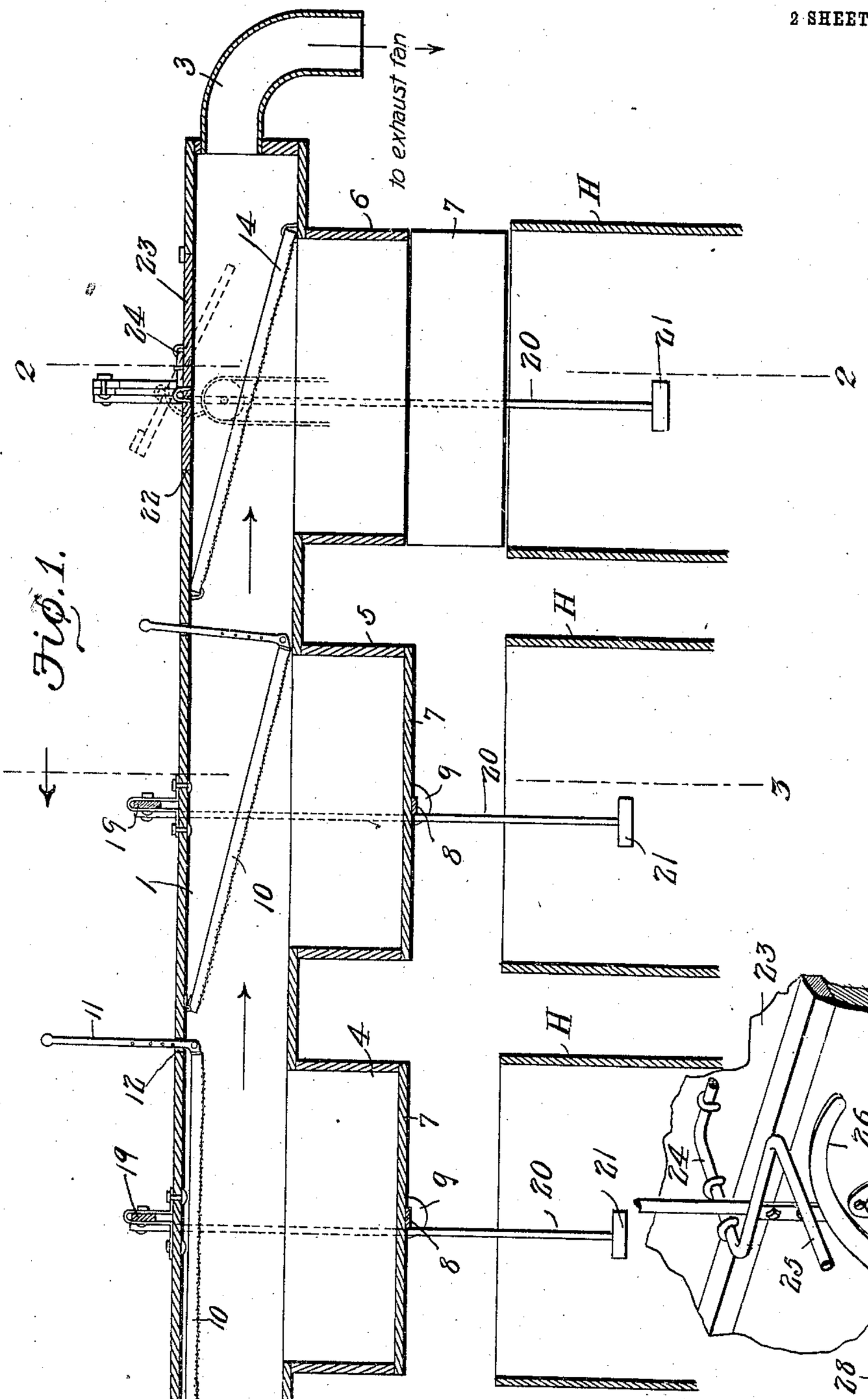


Fig. 4.




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2 SHEETS—SHEET 2.

Fig. 2.

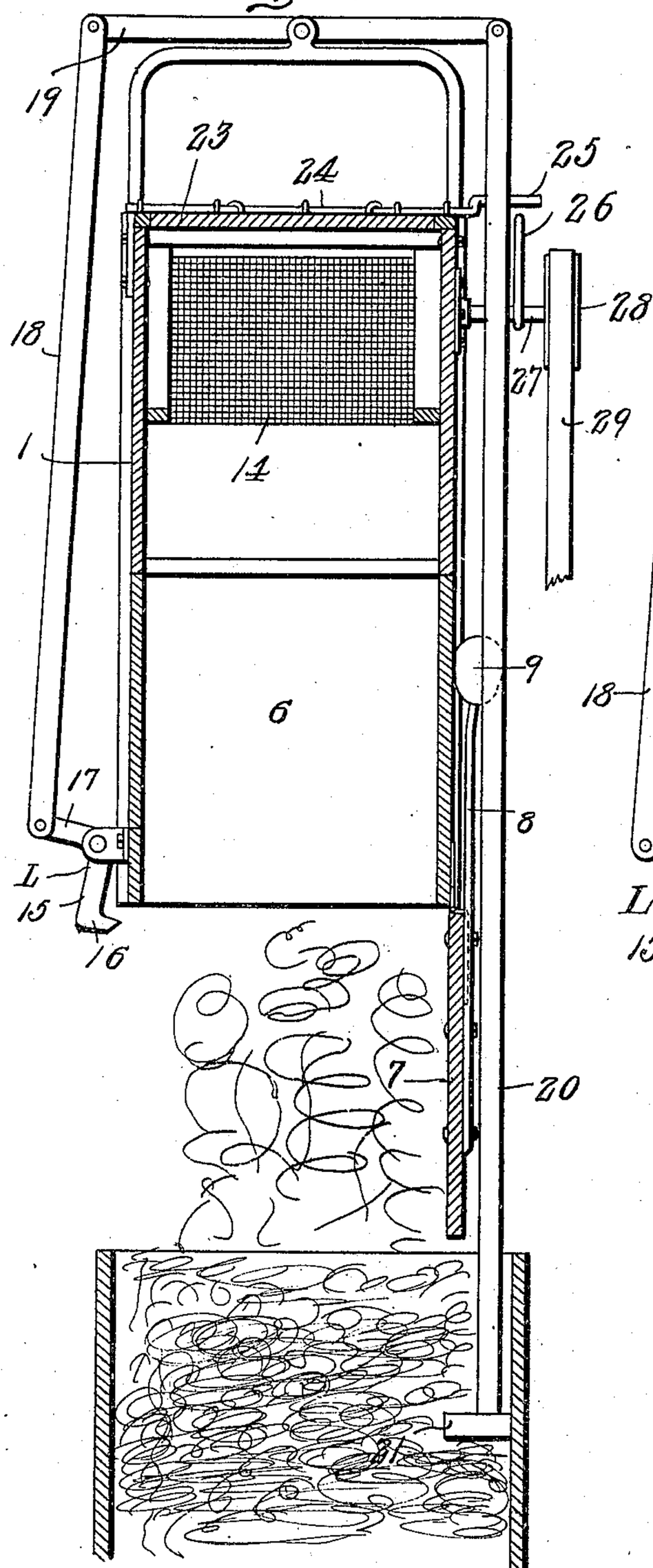
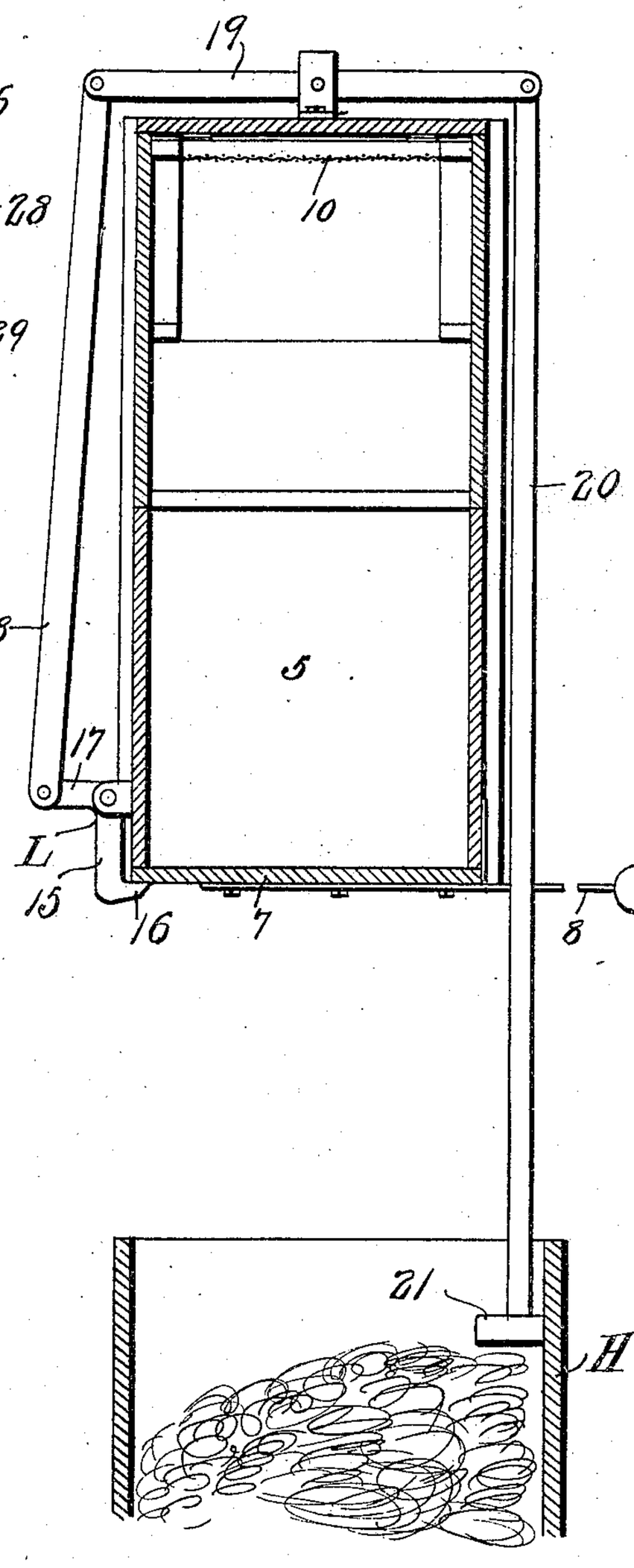



Fig. 3.

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# UNITED STATES PATENT OFFICE.

CHARLES GREEN GRAVES, OF GLOSTER, LOUISIANA.

## COTTON-ELEVATOR.

No. 833,740. Specification of Letters Patent. Patented Oct. 23, 1906.

Application filed March 10, 1906. Serial No. 305,376.

*To all whom it may concern:*

Be it known that I, CHARLES GREEN GRAVES, a citizen of the United States, residing at Gloster, in the parish of De Soto and State of Louisiana, have invented a new and useful Cotton-Elevator, of which the following is a specification.

This invention relates to devices for elevating or handling seed-cotton in bulk and for distributing the same to feeders for cotton-gins, and especially to that class of devices in which the seed-cotton is carried by an air-current into a flue or wind-trunk having so-called "vacuum-boxes" in which the cotton is distributed or deposited and from which it is conveyed to the gins, the objects of the present invention being to simplify and improve the construction and operation of this class of devices.

With these and other ends in view, which will readily appear as the nature of the invention is better understood, the same consists in the improved construction and novel arrangement and combination of parts, which will be hereinafter fully described, and particularly pointed out in the claims.

In the accompanying drawings has been illustrated a simple and preferred form of the invention, it being, however, understood that no limitation is necessarily made to the precise structural details therein exhibited, but that changes, alterations, and modifications within the scope of the invention may be made when desired.

In the drawings, Figure 1 is a longitudinal sectional view of a pneumatic elevator constructed in accordance with the principles of the invention. Fig. 2 is a transverse sectional view taken on the plane indicated by the line 2 2 in Fig. 1 and showing the device in discharging position. Fig. 3 is a transverse sectional view taken on the plane indicated by the line 3 3 in Fig. 1 and showing the vacuum-box with its lid locked to prevent the discharge of the contents. Fig. 4 is a perspective detail view illustrating the trip mechanism for the air-valve.

Corresponding parts in the several figures are indicated throughout by similar characters of reference.

A flue or wind-trunk 1 of suitable dimensions is provided at one end with an inlet 2, which is to be connected with the source of supply of seed-cotton, and at the other end with an outlet 3, which is to be connected in any suitable manner with the casing of an exhaust-fan or with other means for inducing the passage of an air-current through the trunk or flue in the direction indicated by arrows in Fig. 1 of the drawings. The trunk or flue 1 is provided with a plurality of depending branches constituting the so-called "vacuum-chambers," of which any desired number may be used. In the drawings only three of these chambers have been shown, the same being designated, respectively, 4, 5, and 6, the former being located near the inlet and the latter near the outlet of the main flue or wind-trunk. Each of the vacuum-chambers is provided with a lid 7, hinged at the lower rear edge of the chamber, and each of said lids is provided with a rearward-extending arm 8, carrying a counterweight 9, whereby the lid or cover is automatically retained in a closed position. The feeder is supported above a battery of gin-stands the receiving-hoppers of which, H, are disposed directly beneath the vacuum-boxes, being so positioned as to receive the material discharged from said boxes.

Within the flue or wind-trunk above and adjacent to each of the vacuum-boxes, except the one which is located adjacent to the outlet 3, there is hingedly mounted a screen 10, which is provided at its free end with an operating-rod 11, extending through an aperture 12 in the top of the flue or wind-trunk, said operating-rods serving to raise or lower the free ends of the screens, each of which is sufficiently long to extend over the entire length of one of the vacuum-chambers. A similar screen 14 is permanently secured in an oblique or inclined position within the flue 1 directly above the vacuum-chamber 6 adjacent to the outlet 3. The adjustable screens 10 are normally disposed in an unobstructing position within the flue 1 in the position shown at the left end of Fig. 1; but any one of the adjustable screens may be at any time dropped to the inclined or obstructing position shown above the middle vacuum-chamber 5 in Fig. 1 of the drawings.

Pivoted upon the front side of each of the vacuum-boxes is a latch member, consisting of a bell-crank lever L, having a depending arm 15, provided with a terminal hook 16, adapted to catch under the free edge of the lid 7 of the vacuum-box. The forwardly-

extending arm 17 of the bell-crank is connected, by means of a link 18, with one end of a lever 19, pivotally supported above and extending across the flue or wind-trunk and provided at its other end with a depending rod 20, which extends into the hopper H of the gin disposed underneath and is provided with a terminal float 21. Normally the rod 20, with its float 21, overbalances the link 18 and the latch-lever 12, which latter is thereby retained in the non-engaging position. (Shown in Fig. 2 of the drawings.) In case, however, that the gin is not able to take care of the material fed thereto the cotton will rise in the hopper H, thus elevating the float 21 and tilting the latch-lever to the door-engaging position, (shown in Fig. 3 of the drawings,) where it secures the door of the vacuum-chamber against opening until the cotton-level in the hopper 8 has been lowered sufficiently to permit the float 21 to descend, when the latch-lever will be automatically thrown open, as will be readily understood.

The flue or wind-trunk 1 is provided between the stationary screen 14 and the outlet 3 with an aperture 22, adapted to be obstructed by a valve or closure 23, mounted upon a rock-shaft 24, which latter is provided at one end with a crank 25, disposed in the path of an arm 26, radiating from a shaft 27, which is slowly rotated, as by means of a pulley 28 and a belt 29, from any suitable source of power. By this simple mechanism the valve 23 may be tripped and momentarily thrown open at regular predetermined intervals, one end of said valve being weighted, so that the valve will close by gravity.

In the operation of the device the hinged screens 10 10 are normally all in an unobstructing position. When suction is set up within the flue or wind-trunk, the seed-cotton will be carried by the air-current into the trunk, and a portion of the cotton will drop or settle in each of the vacuum-chambers, from which latter the air is being exhausted, so that the cotton will readily settle therein. The stationary screen 14 will permit dust and dirt to pass with the air-current to a point of discharge. At regular predetermined intervals the valve 23 is thrown open, and air will thus enter through the opening 22, thus causing the doors 7 of the vacuum-chambers, which were hitherto kept closed by external atmospheric pressure in addition to that of the weights 9, to swing open under the impulse of the weight of the cotton supported thereon, and thus causing the cotton to be discharged into the gin-hoppers. Immediately following the discharge of the cotton the doors 7 will swing shut under the impulse of the weights 9, and the valve 23 will gravitate to a closed position, thus causing the operation of the device to be resumed.

If one of the gins should get out of order, the obstructing-screen 10 between the vacuum-box communicating with such gin and the inlet-pipe 2 will be moved to an obstructing position in the flue or wind-trunk until the condition can be relieved. When this takes place, the vacuum-chambers between the obstructed chamber and the outlet 3 will be temporarily out of commission.

If any one of the gin-hoppers should be overfed, the float 21 will rise in such hopper and lead to the temporary locking of the door or outlet of the vacuum-chamber disposed above such hopper. This will not interfere with the operation of the device, since when a vacuum-chamber has become filled cotton will continue to pass through the flue above such vacuum-chamber.

This improved feeding device is simple in construction, easily installed and operated, and it has proven in practice to be thoroughly efficient for the purposes for which it is provided.

Having thus described the invention, what is claimed is—

1. In a device for distributing cotton, a wind-trunk having a plurality of depending vacuum-chambers, provided with hinged lids, latch-levers adapted to engage the free edges of the lids, and gravity means for retaining the latch-levers normally in non-engaging position; said gravity means including floats operable by upward pressure to move the latch-levers to engaging position.

2. In a device of the class described, a flue or wind-trunk having an inlet, an outlet, and a plurality of depending vacuum-chambers, lids for said vacuum-chambers, gravity means for closing said lids, an inclined obstructing-screen disposed within the flue above the vacuum-chamber nearest the outlet, and hinged screens supported adjustably above the remaining vacuum-chambers.

3. In a device of the class described, a flue or wind-trunk having an inlet, an outlet, and a plurality of depending vacuum-chambers, lids for said chambers, gravity means for closing the lids, an obstructing-screen disposed obliquely in the wind-trunk above the vacuum-chamber adjacent to the outlet, a valve connected with the wind-trunk between the obstructing-screen and the outlet, and means for tripping said valve to admit air at predetermined intervals.

4. In a device of the class described, a wind-trunk having an inlet and an outlet, vacuum-chambers depending therefrom, hinged closures for said vacuum-chambers, means in addition to the external atmospheric pressure for keeping said closures shut against the weight of cotton supported thereon, and means for equalizing the atmospheric pressure upon said doors to permit them to swing open under the weight of the cotton.

5. In a device for distributing cotton, a wind-trunk having depending vacuum-chambers provided with downwardly-opening lids, and float-actuated means for securing the lids in a closed position.

6. In a device for distributing cotton, a wind-trunk having depending vacuum-chambers provided with downwardly-opening lids, and float-actuated means for securing the lids in a closed position, said means being normally out of engagement with the lids.

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

CHAS. GREEN GRAVES.

Witnesses:

J. E. HEWITT,

A. M. RIVES.