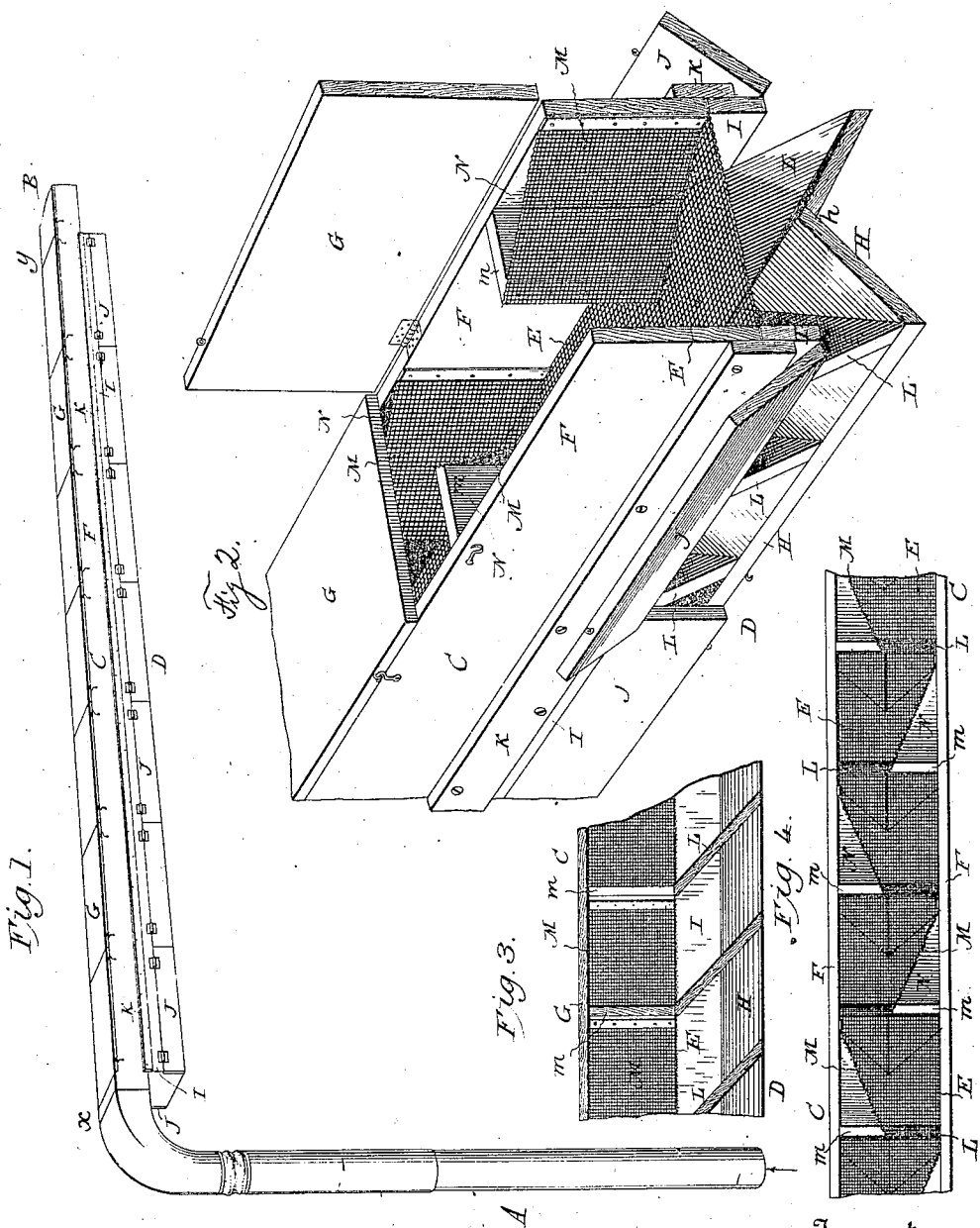


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Patented Jan. 29, 1901.

J. W. HICKS.
PNEUMATIC ELEVATOR.
(Application filed Sept. 18, 1900.)

(No Model.)



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UNITED STATES PATENT OFFICE.

JOHN W. HICKS, OF NEW LEWISVILLE, ARKANSAS.

PNEUMATIC ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 667,169, dated January 29, 1901.

Application filed September 18, 1900. Serial No. 30,416. (No model.)

To all whom it may concern:

Be it known that I, JOHN W. HICKS, a citizen of the United States, residing at New Lewisville, in the county of Lafayette and State of Arkansas, have invented certain new and useful Improvements in Pneumatic Elevators, of which the following is a specification.

My invention relates to cotton-elevators of the class in which seed-cotton is carried from the wagon or storehouse to the gins by a current of air produced in a pipe or flue of suitable size and suitably arranged. The seed-cotton as it comes from the gin-house or from the wagon is filled with sand, dust, and other foreign matter, which should be separated from the cotton before it reaches the gins.

The object of my invention is to provide improved means for this purpose, and in carrying out my invention I interpose between the opposite ends of the flue a separator comprising a flue through which the cotton passes and a box or trough which receives the sand, dust, &c., from the cotton while passing through the separating-flue. The separating-flue is a continuation of the usual flue, and between it and the trough or dust-box is a partition of wire-cloth, over which the cotton passes and through which the dust, &c., fall. Within the flue are arranged at suitable distances apart a series of vertical sheets of wire-cloth, against which the cotton as it passes through the flue strikes and by which it is made to take a zigzag course, which effectually shakes and stirs it and causes it to deposit its dust into the dust-trough below. The dust-trough is divided in such manner that air-currents are prevented from circulating in it, and provision is made for opening and cleaning the dust-trough whenever desired.

Further details of construction will be described hereinafter.

In the accompanying drawings, Figure 1 shows a perspective view of a cotton-elevator flue with my improvements applied. Fig. 2 shows a perspective view of a portion of the separating-flue and dust-trough made in accordance with my invention. Fig. 3 is a detailed view, in longitudinal section, through a portion of the separator-flue and dust-trough. Fig. 4 shows a plan view of the separator-flue, the top being removed.

The portions A and B of the pneumatic elevator-flue may be of ordinary construction. The portion A is adapted to pass to a wagon brought to the gin-house with seed-cotton or to be connected to a storehouse where cotton has been stored ready for ginning. To the end B of the flue may be connected gin-feeders or distributors of well-known construction. Ordinarily between the points *x* and *y* of Fig. 1 the flue is a plane passage through which the seed-cotton filled with sand, dirt, &c., passes and is delivered to specially-constructed apparatus for separating impurities or foreign matter; but between the points *x* and *y* of the flue I interpose my improved conveying and separating arrangements, and thus render unnecessary the use of specially-constructed separators at the end of the elevating-flue.

My improved apparatus consists of two main parts—the conveying and separating flue C and the dirt trough or box D. These two main parts are separated in the manner indicated in Fig. 2 by a partition of wire-cloth E, which extends from end to end of the flue C and trough D and also from side to side thereof. The flue C and trough D are preferably of the same width and length; but the flue C is preferably somewhat higher than the trough D. The bottom of the flue C consists of the wire-cloth E, as before stated. The sides F F are solid, while the top preferably consists of doors G, hinged and hooked, as indicated. The trough D has a bottom H, doubly inclined from the central line *h* to opposite sides, while the sides of the trough are closed by strips I and swinging doors J, hinged to the strips I. In order to connect the flue C and trough D together, strips K, extending longitudinally across the joint between the sides F, and strips I may be employed and may be firmly secured in place by screws or otherwise.

The trough D is divided up into sections by slanting boards L, which extend across the trough from one side to the other and also from the lower end of the trough to the upper end thereof in contact with the wire-cloth partition E. These boards L preferably incline forwardly at an angle of about forty-five degrees.

As the cotton passes through the flue C

sand, dust, &c., will sift through the meshes of the wire-cloth E into the compartments in the dust-trough formed by the boards J and will slide down the inclined bottom pieces H of the trough and collect near the doors J. These doors may be opened to remove the dirt when required but ordinarily they are kept closed; as nearly air-tight as possible, as it is important that a vacuum should be formed in the dust-trough in order that the dust may fall into it. If the dust-trough were continuous and were not interrupted by the boards J, a current of air would be produced in the trough, which would defeat the purpose of the apparatus. For instance, referring to Fig. 1, if the air entering in the manner indicated by the arrow should pass through the screen at this end of the apparatus into the dust-trough a current would be drawn through the dust-trough, extending the entire length thereof, and then pass out through the end B of the flue; but the boards J interrupt such a current, and, in fact, prevent the formation of such a current in the apparatus. In order to more effectually separate the sand, dust, and other impurities from the cotton as it passes through the dust-flue, I arrange in the flue over the wire-cloth partition E a series of vertical reticulated deflectors, which cause the cotton to move through a zigzag course, first striking one side of the flue and then the other, causing it to most effectually deliver up the sand, dust, and such like impurities that it contains. These reticulated deflectors M are preferably arranged as shown in perspective view in Fig. 2. The first deflector, located at the point *x* of Fig. 1, is preferably arranged on the right-hand side of the apparatus and consists of a piece of wire-cloth extending vertically from the horizontal partition E to the top of the flue. The front end of the wire-cloth M is secured in any suitable way to the end of the side piece F, while the inner end of the wire-cloth M is secured to the end of a board *m*, which projects laterally out from the side piece F and holds the end of the wire-cloth a considerable distance from the side piece—that is to say, the deflector M is arranged diagonally across the entrance to the flue, and the cotton entering the flue is caused to strike against this inclined deflector and caused to move in an inclined direction toward the opposite side of the flue. Similar deflectors M are arranged in like manner alternately on opposite sides of the flue C from one end thereof to the other, as indicated in Fig. 4. Thus the cotton as it passes through the separating-flue is enabled to shake out the dirt at the bottom through the partition E, while the dirt at the sides is caused to pass through the deflectors M. The deflectors M are so disposed that each one of them is arranged to slant toward the central portion of the next succeeding deflector, so that when the cotton abuts against a deflector it is guided in such man-

ner as to thereafter abut against the next succeeding deflector.

It will be noted that the construction is such that the deflectors M and boards *m* form chambers N at each deflector, which communicate with the chambers of the dust-trough through openings in the wire-cloth partition, as indicated in Fig. 4, the construction being such that no currents of air are allowed to circulate in the chambers N, but there is a vacuum in them sufficient to allow the dirt to pass into them and drop down through them into the main dust-trough below.

A cotton-elevator made in accordance with my invention may be economically constructed, and when once put in place will be found to operate efficiently and to require but little repair, while not requiring any power to operate it.

The apparatus may be applied to pneumatic cotton-elevators already in use by simply taking out a section of the flue and substituting a section of flue made in accordance with my invention.

I claim as my invention—

1. A pneumatic elevator for cotton, comprising a separating-flue, a dust-box below it, a partition between the dust-box and the separating-flue, and a series of wire-cloth deflectors arranged in the flue alternately on opposite sides thereof, and having chambers behind them communicating with the dust-box through openings in the partition, each of said deflectors being arranged to slant toward the central portion of the next succeeding deflector whereby the cotton is caused to strike or abut against the deflectors successively, and the dust is thereby shaken out of the cotton and caused to pass into the dust-box through the communications between the dust-box and the chambers behind the deflectors.

2. The combination of the separating-flue through which the cotton passes, a dust-trough below this flue, having a bottom made of oppositely-inclined boards, a series of inclined boards extending from the bottom of the trough to the top thereof and arranged at suitable distances apart to divide the trough into compartments, and deflectors in the separating-flue which cause the cotton to move through a zigzag course while being elevated.

3. The combination of the separating-flue, the dust-trough below the separating-flue, divided into sections, a partition of reticulated material between the dust-trough and the separating-flue, and a series of deflectors in the separating-flue having vacuum-chambers behind them communicating with the dust-trough.

In testimony whereof I have hereunto subscribed my name.

JOHN W. HICKS.

Witnesses:

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C. W. FOOSE.