

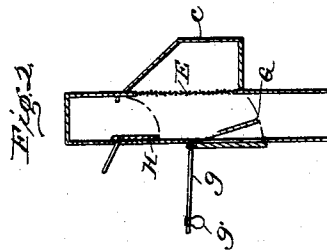
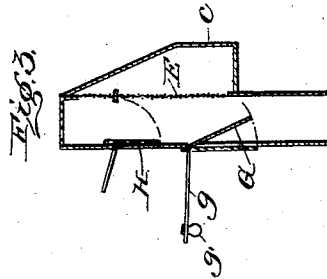
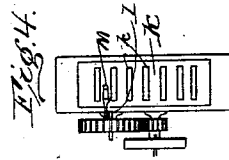
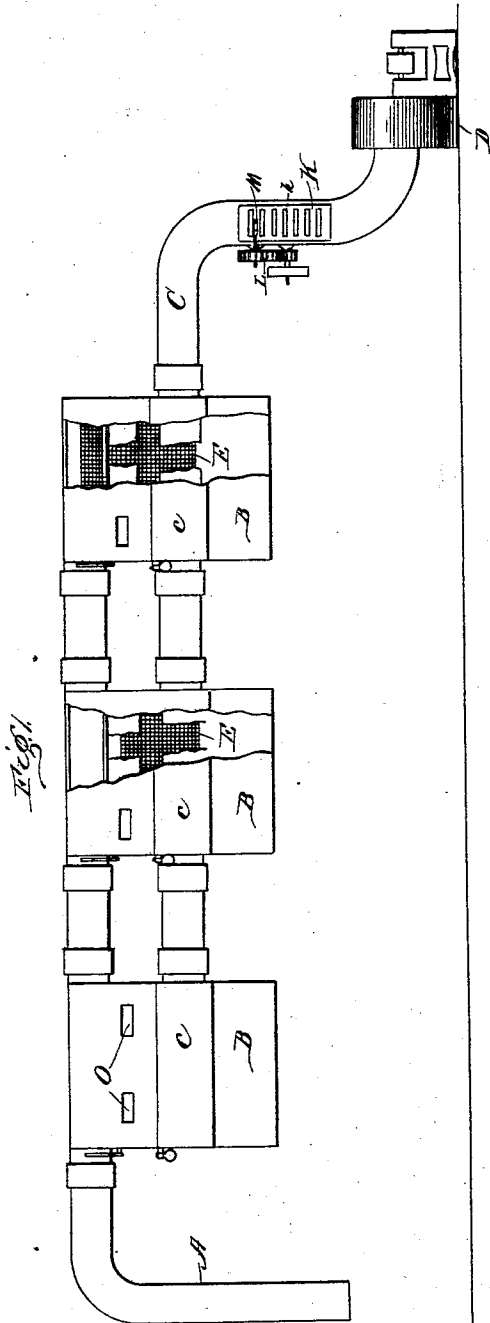
(No Model.)

E. L. SMITH.

PNEUMATIC SEED COTTON CONVEYER AND DISTRIBUTER.

No. 568,882.

Patented Oct. 6, 1896.



Witnesses:

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UNITED STATES PATENT OFFICE.

EMMETT L. SMITH, OF BIRMINGHAM, ALABAMA.

PNEUMATIC SEED-COTTON CONVEYER AND DISTRIBUTER.

SPECIFICATION forming part of Letters Patent No. 568,882, dated October 6, 1896.

Application filed May 15, 1896. Serial No. 591,676. (No model.)

To all whom it may concern:

Be it known that I, EMMETT L. SMITH, of Birmingham, in the county of Jefferson, State of Alabama, have invented certain new and useful Improvements in Pneumatic Seed-Cotton Conveyers and Distributers; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and to the letters of reference marked thereon.

This invention relates to improvements in that class of apparatus employed for elevating, conveying, and distributing seed-cotton, particularly in connection with ginning machinery, the object of the invention being to provide a mechanism which will distribute the cotton more evenly and allow the same to feed down to the gins more readily than previous apparatus of the same character.

Referring to the accompanying drawings, Figure 1 is a diagrammatic elevation of a conveyer and distributor embodying the present improvement. Fig. 2 is a cross-section through one of the distributing-compartments, and Fig. 3 is a similar view through another distributing-compartment located at a greater distance from the cotton supply and illustrating the difference in the size and location of the screen-surface. Fig. 4 is a plan view of the valve for interrupting the suction through the distributing-chambers to arrest the feed of cotton and allow the same to pass out of the distributing-chambers to the ginning machinery.

Like letters of reference in the several figures indicate the same parts.

The general arrangement of mechanism in my present apparatus is quite similar to old and well-known forms of pneumatic cotton-seed conveyers, and hence I have not deemed it necessary to illustrate well-known details. The letter A indicates a conveyer tube or conduit the end of which is adapted to be placed in proximity to the body of cotton to be conveyed and distributed, for instance, a wagon-load of cotton from the field. Arranged along this conveyer or conduit at suitable intervals are a series of distributing-chambers B, and communicating with the distributing-chambers B, through suitable screen-surfaces to be presently more particularly described, is a suction-pipe C, passing off and into a suitable fan-casing or suction apparatus D.

The conduit or conveyer proper passes along through the top or upper portions of the distributing-chambers, and in effect the distributing-chambers form simple downward enlargements of the conduit or conveyer, usually of rectangular shape and with their lower ends properly shaped and positioned to feed the cotton from the chambers to the rolls of a cotton-gin or other machine or compartment.

One side of the distributing-chamber has an opening therein across which, and preferably in line with the side wall of the distributing-chamber, there is arranged a relatively-fine screen E, and outside of this screen is formed the suction-box c, in communication with or forming a portion of the suction-pipe C, the top of the suction-box being preferably inclined. The effect of such an arrangement is, when the air is exhausted through the suction-pipe, to cause an inward draft is of sufficient strength to carry the cotton along with it; but as the cotton cannot pass through the screens E it is arrested in the distributing-boxes, from whence it may be fed by a sufficient accumulation of cotton for the force of gravity to overcome the suction, or by the interruption of the suction by means to be presently described. With such an arrangement difficulty has been experienced in getting the cotton to distribute itself evenly throughout a series of distributing-chambers all communicating with one feeder or conduit, also in interrupting the draft or suction instantaneously at the desired moment, and further in checking the draft or intake of air through the discharge-opening in the distributing-box when it is desired to start the apparatus; and it is the principal object of my present invention to overcome these difficulties.

To secure a regular and even distribution of the cotton to all of the distributing-chambers, I make the screen-surface of the furthest distributing chamber or chambers of greater superficial area than that in the chambers nearer the source of cotton supply, the result of which arrangement is that the draft is maintained evenly throughout the whole series instead of progressively diminishing, and hence the cotton will be carried along and distributed uniformly to each of the chambers.

In the preferred arrangement, and as shown in Figs. 1 and 3 of the drawings, I form the last chamber with its screen-surface extending to a higher level than the screen-surface in the next distributing-chamber, and such screen-surfaces also preferably extend up into line with the conduit or conveyer itself, making in effect a direct draft through the conveyer tube or conduit to the farthest distributor. This arrangement is found to give the best results and give a practically uniform distribution of the cotton. In starting the apparatus when air would be supplied through the lower ends of the distributing-chambers, and to interrupt such action as well as to interrupt the back draft should any of the distributing-chambers have its cotton discharged before the others or to such a degree as to prevent the proper feeding of the cotton from the distributing-chamber, and to check such action, I locate in each of the distributing-chambers below the screen-surface a balanced valve G, which valve normally stands so as to partially close the lower portion of the distributing-chamber and to entirely close the same should any upward draft take place in said chamber. At the same time the valve, being balanced, is readily pushed back by the weight of the cotton when the same feeds out of the distributing-chamber. As a convenient means for balancing said valve I extend a lever *g* out to one side and apply an adjustable weight *g'* thereto, as shown clearly in Figs. 2 and 3. In addition to this valve to prevent any back draft, a second valve H is provided in each of the distributing-chambers at the top, which valve H may be closed by hand or otherwise when it is desired to cut that particular distributing-chamber out of operation.

For the purpose of checking the draft through the distributing-box at predetermined intervals and allowing the cotton accumulating therein to feed down to the ginning machinery, a valve is placed in the suction-pipe between the distributing-boxes and fan-casing, which valve is provided with a multiplicity of ports whereby a relatively short movement of the valve a very large number of openings may be made in the suction-pipe, the combined area of said openings being greater or as great as the cross-sectional area of the pipe, whereby sufficient air will be admitted from the exterior to effectually interrupt any suction through the distributing-chambers. In the preferred arrangement this valve is a flat slide-valve K, having a multiplicity of ports *k*, and by a relatively short movement all of said ports are opened or closed, as the case may be. To secure such movement, a gear-wheel is provided at one side of the pipe and adapted to be driven by any suitable power-shaft so as to open the valve periodically. The valve may be closed by gravity alone, and a simple pin or projection L on the side of the gear-

wheel and contacting with the projection M on the valve will serve to move the same the requisite distance to open it. The valve action, it will be observed, is extremely rapid, and hence the interruption to the distributing operation is so slight as to be practically imperceptible, and although the interruption in the suction is of very short duration, yet the weight of the cotton accumulated in the distributing-chambers will cause the same to feed down promptly to the rolls of the ginning machinery.

For the purpose of observation the distributing-chambers may be provided with openings O in one side thereof, said openings being closed by glass or other transparent material.

There is no opening necessary for operating the cut-off valve in the distributing-chambers, and consequently little or no air is allowed to enter the chambers except through the conduit or conveyer, and hence the efficiency of the apparatus is greatly increased, for under ordinary working conditions the cotton previously fed down chokes up the lower ends of the distributing-chambers completely and prevents any entrance of air at this point, while if there was an opening above this point it would be in position to allow air to pass up into the suction-pipe.

Having thus described my invention, what I claim as new is—

1. In an apparatus for conveying and distributing seed-cotton the combination with the conduit or conveyer proper, a series of distributing-chambers communicating with said conduit at different points in its length and a suction-pipe communication with said distributing-chambers with means for creating an air-draft as described, of screens interposed between the distributing-chambers and suction-pipe, the screen in the distributing-chamber farthest from the source of cotton supply being of greater area than the screen in the distributing-chamber nearest the source of cotton supply; substantially as described.

2. In an apparatus for conveying and distributing seed-cotton, the combination with the conduit or conveyer proper, a series of distributing-chambers communicating with said conduit at different points in its length and a suction-pipe communicating with said distributing-chambers with means for creating an air-draft as described, of screens interposed between the distributing-chambers and suction-pipe, the screen nearest the source of cotton supply extending below the conduit or conveyer, and the screen in the distributing-chamber farthest from the source of cotton supply being extended up into the conduit or conveyer; substantially as described.

EMMETT L. SMITH.

Witnesses:

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