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C. R. BENEFIELD.

MACHINE FOR ELEVATING AND FEEDING SEED COTTON.

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Fig. 1.

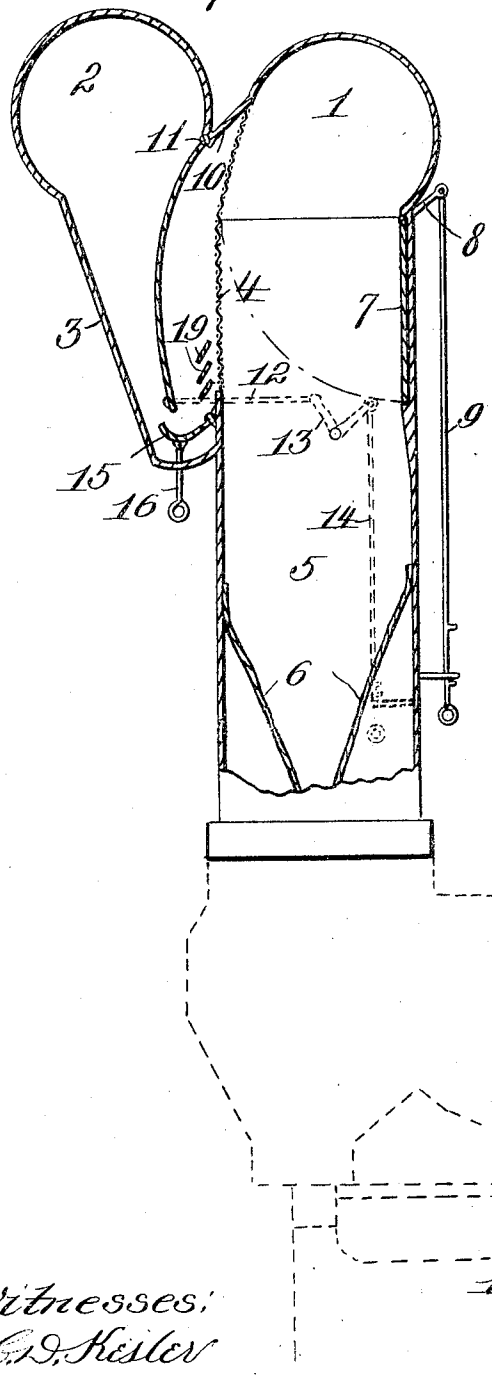
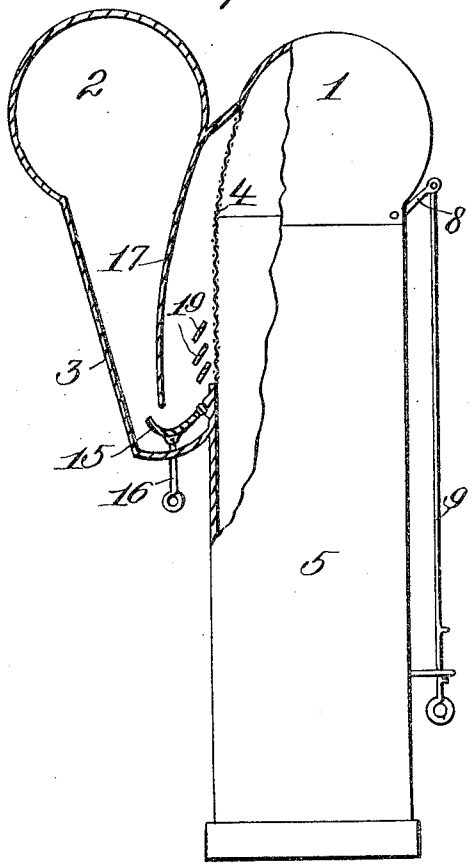


Fig. 2.



Witnesses:
C. D. Kesler
W. B. Kesler

Inventor
Chauncey R. Benefield
By James L. Norris.
Atty

UNITED STATES PATENT OFFICE.

CHAUNCEY R. BENEFIELD, OF DALLAS, TEXAS.

MACHINE FOR ELEVATING AND FEEDING SEED-COTTON.

No. 807,654. Specification of Letters Patent. Patented Dec. 19, 1905.

Application filed March 30, 1905. Serial No. 252,947.

To all whom it may concern:

Be it known that I, CHAUNCEY R. BENEFIELD, a citizen of the United States, residing at Dallas, in the county of Dallas and State of Texas, have invented new and useful Improvements in Mechanism for Elevating and Feeding Seed-Cotton, of which the following is a specification.

This invention relates to mechanism for elevating, conveying, and feeding seed-cotton directly to one or more gins.

The mechanism embodying the features of the invention is of the pneumatic type, including a cotton pipe or conduit disposed at any suitable elevation for conveying the cotton from a vehicle, bin, or other storage receptacle and having coöperating therewith an air-pipe leading to a fan to create an elevating and conveying suction with respect to the said cotton-pipe. The difficulty encountered in cotton elevating and conveying mechanism of this class as heretofore constructed is that the pneumatic suction force operates directly on or opens to the cotton pipe or conduit and the effectiveness of the pneumatic pressure on the cotton is to a material extent modified or the cotton is obstructed in its descent or delivery to the gin or gins to such an extent as to render the feeding thereof disadvantageously irregular. A further and very essential objection desired to be overcome in elevating, conveying, and feeding mechanism of this character as heretofore ordinarily arranged is the restricted movement of the cotton over a screen usually employed or a failure to fully follow the screen to the bottom termination thereof, and thereby reduce the traverse of the cotton with respect to the screen as it descends into the chute or vacuum.

In the improved mechanism the pneumatic pressure is so deflected or shielded from direct engagement with the screen at the point of communication with the air-pipe that the cotton will be forced to traverse the entire screen length and descend into the chute or vacuum with obvious advantages. By the improved arrangement also a much larger mesh screen can be used without liability of drawing lint-cotton into it by reason of the fact that the air after passing through the screen travels downwardly as the cotton simultaneously moves in a like direction on the opposite side of the screen and separated by the screen from the pneumatic or air connection. By the improved organization also a greater screen-surface can be added and will permit the air to pass to the fan with a greater velocity, and, furthermore, the speed of the fan can be maintained regularly without requiring adjustment or slowing down of the same to obviate pulling the cotton into the screen. By permitting the fan to run at a higher speed double the amount of cotton can be moved with a fan of the same dimensions as that now ordinarily employed.

In the preferred form of the deflecting or shielding means interposed between the screen and the air-pipe it is intended to use a swinging board adjustable at will to control the amount of cotton drawn into each chute. In some instances the swinging board is made stationary.

In the drawings, Figure 1 is a transverse vertical section through a gin and the improved arrangement of the cotton and air pipes to coöperate therewith and showing an adjustable deflecting partition, board, or shield. Fig. 2 is a view similar to Fig. 1 without the gin, showing a slight modification in the deflecting or shielding partition located at the point of communication between the cotton and air pipes adjacent to the screen.

Similar numerals of reference indicate corresponding parts in the several views.

The numeral 1 designates a cotton pipe or conduit which may be of any length and connected to one or more gins. This cotton pipe or conduit, as in ordinary devices of this class, will extend away at opposite extremities to communicate or operate in conjunction with a cotton-storage means or a vehicle or be otherwise arranged, as found desirable and effective in cotton elevating and feeding. An air pipe or conduit 2 is arranged in communicative proximity to the cotton pipe or conduit 1 and has a depending trunk or body 3 projecting downwardly over the point of communication between the two pipes 1 and 2. The air pipe or conduit 2 is connected to a suitable fan, and the point of communication between the pipes 1 and 2 is in this instance controlled by an elongated screen 4 of a mesh considerably coarser than that usually employed and extending upwardly over a portion of the pipe 1 and downwardly to near the lower termination of the trunk or body 3. The cotton pipe or conduit 1 communicates with a down-chute or feeding pipe or vacuum 5, having the usual cloth-valve 6 at an intermediate point therein, and at the upper part of this down-chute is a controlling-gate 7, operated by a suitable lever 8 and pull-rod 9 to shut off the cotton-

pipe from the down-chute, the gate being hinged at its upper end, as fully shown.

In the arrangement shown by Fig. 1 a partition 10 is interposed between the cotton pipe or conduit 1 and the air-pipe 2 over the screen 4, the lower extremity of this partition depending below the termination of the screen and curved for a greater portion of its length to provide a greater distance between the screen 4 and the partition to prevent too close confinement of the suction force with respect to the screen. This partition is hinged, as at 11, and suitably connected to the lower extremity thereof, which is free for adjustment, is a rod 12, connecting with one arm of a bell-crank lever 13, and to the other arm of said bell-crank lever a pull-rod 14 is attached, both rods 9 and 14 extending downwardly over the chute 5 within convenient reaching distance of an operator. By preference a regulating valve or gate 15 is also located in the lower extremity of the trunk or body 3 to work in conjunction with the lower end of the partition and serve as a further means of controlling the suction force with respect to the screen 4. The valve or gate 15 is hinged at its inner extremity and movable vertically by an exteriorly-located pull-rod or analogous device 16.

In the modification shown by Fig. 2 the partition 17 is stationary and straighter than the partition 10, the remaining parts of the organization embodying the features of the invention being similar to those illustrated by Fig. 1.

The suction force is exerted through the pipe 1 and the screen 4 in the direction shown by the arrows and strikes the partition 10, which serves as a shield or deflector, and descends over the latter to the lower extremity and then passes upwardly through the trunk or body 3 back to the fan through the pipe or conduit 2. By a suction force it will be understood that the air drawn from the conduit or pipe 1 by the fan connected to the pipe or conduit 2 is meant, and by such operation the cotton moved through the pipe 1 is caused to wash the full length of the screen 4 and fall into the chute or vacuum-pipe 5 and from the latter be fed to the gin 18. As before noted, the curved partition 10 (shown by Fig. 1) forms a larger air-chamber with respect to the screen 4, and the retardation or restriction of the movement of the air toward the lower end of the partition and fan around the latter upwardly through the trunk or body 3 is reduced to a minimum, and the size of this air-chamber may be regulated at will by the adjustment of the partition. At any time desired the rapidity of updrawing of the air through the trunk or body 3 may be regulated by adjusting the gate or valve 15. By having the air pass downwardly in close relation to the side of the screen next to either of the partitions and force the direct outlet of the air near the lower end of the trunk or body 3 around the lower extremity of the partition causes the cotton to be drawn down closely against the screen with a beneficial wash and assurity in the delivery of the cotton into the chute 5 below the lower end of the screen and the effect of the suction, without liability in the least of packing the cotton against the screen, as in elevating and feeding mechanism wherein the air communication between the cotton-pipe and the air-pipe is direct and not intercepted, as in the present instance. As a further means for rendering the air more effective in drawing down the cotton and preventing too rapid exhaust at the lower outlet extremity of the screen the latter between the same and the partition may have lapping blades or slats 19 arranged thereover, as clearly shown, and at a suitable distance from the lower end of the screen without interfering with the adjustment of the movable form of partition shown by Fig. 1.

It will be understood that changes in the proportions, dimensions, and minor details may be resorted to without departing from the spirit of the invention.

Having thus described the invention, what is claimed is—

1. In a pneumatic cotton-feeding organization of the class set forth, the combination of a cotton-pipe, a chute communicating with said pipe, an air-conduit applied adjacent to a portion of the chute and cotton-pipe, an elongated screen interposed between a part of the air-pipe, cotton-pipe, and chute, and an imperforate partition in a part of the air-pipe and serving as a shield means for the screen.

2. In a cotton elevating and feeding organization of the class set forth, the combination of a cotton-pipe, a chute communicating with said pipe, an air-conduit applied adjacent to a portion of the chute and cotton-pipe, an elongated screen interposed between a part of the air-pipe, cotton-pipe and chute, and an adjustable imperforate partition in a part of the air-pipe.

3. In a cotton elevating and feeding mechanism of the class set forth, the combination of a cotton-pipe having a feeding-chute communicating therewith, an air-pipe applied adjacent to the cotton-pipe and a portion of the chute, a screen interposed between a part of the cotton-pipe, air-pipe and the upper portion of the chute, and an intercepting means disposed in a part of the air-pipe and forcing the air from the cotton-pipe to pass downwardly below the lower terminal of the screen in its passage to the air-pipe.

4. In a cotton elevating and feeding means of the class set forth, the combination of a cotton-pipe communicating with a feeding-chute, an air-pipe located adjacent to the cotton-pipe at the upper part of the chute, and communicating with the latter, and an imperforate depending intercepting means in the air-pipe for causing the air drawn into

the air-pipe from the cotton-pipe to escape solely at a point below the termination of the communicating opening between the cotton-pipe and chute and the air-pipe means.

5. In a cotton elevating and feeding mechanism of the class set forth, the combination of a cotton-pipe communicating with a feeding-chute, a valve means operative to cut off communication between the cotton-pipe and chute, an air-pipe having a depending body arranged adjacent to the cotton-pipe and the upper part of the chute, an elongated screen forming the means of communication between the cotton-pipe and upper part of the chute and air-pipe and its body, and a deflecting-partition depending through a part of the air-pipe and the body to shield the screen and terminating below the lower end of the latter.

6. In a cotton elevating and feeding mechanism of the class set forth, the combination of a cotton-pipe having a depending chute, an air-pipe having a depending body arranged over a portion of the cotton-pipe and upper part of the chute, an elongated screen forming the means of communication between the cotton-pipe and upper part of the chute and the air-pipe and its body, a deflecting-partition depending through a part of the air-pipe and its body to shield the screen, and a valve means in the lower part of the body to coöperate with the lower end of the deflecting-partition.

7. In a cotton elevating and feeding mechanism of the class set forth, the combination of a cotton-pipe communicating with a feeding-chute, a valve means operative to cut off communication between the cotton-pipe and chute, an air-pipe having a depending body arranged adjacent to the cotton-pipe and the upper part of the chute, an elongated screen forming the means of communication between the cotton-pipe and upper part of the chute and air-pipe and its body, a deflecting-partition depending through a part of the air-pipe and the body to shield the screen and terminating below the lower end of the latter, and a valve means in the lower part of the body coöperating with the lower end of the partition.

8. In a mechanism of the class set forth, the combination with a cotton-conveying conduit and a depending feeding-chute, of a pneumatic conduit communicating with the cotton-conduit and upper part of the chute, an elongated screen over the point of communication between the conduits, and a depending adjustable means in the pneumatic conduit to shield the screen, the said deflecting means being curved outwardly with respect to the screen to increase the space between the latter and the said means.

9. In a device of the class set forth, a cotton conveying and feeding conduit, a pneumatic conduit communicating with the former conduit, a screen disposed over the communicating opening between the conduits, and an intercepting device depending downwardly through the pneumatic means at a distance from the screen and forming an air-shield for the latter.

10. In a mechanism of the class set forth, the combination with an elevating and feeding conduit having a chute connected therewith, of a pneumatic conduit communicating with the said elevating and feeding conduit and a part of the chute, a screen extending over the communicating opening between the conduits and chute, a deflector within the pneumatic conduit and projecting below the lower terminal of the screen and forming an air-shield for the latter, and overlapped blades or slats arranged adjacent to the lower end of the screen within a portion of the pneumatic conduit between the said screen and lower extremity of the deflector.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

CHAUNCEY R. BENEFIELD.

Witnesses:
GEO. W. MITCHELL,
S. W. MARSHALL.