W. R. LAMB.

SEED COTTON CLEANER AND DISTRIBUTER.

APPLICATION FILED JUNE 22, 1912.

1,105,441.

Patented July 28, 1914.

2 SHEETS—SHEET 1.

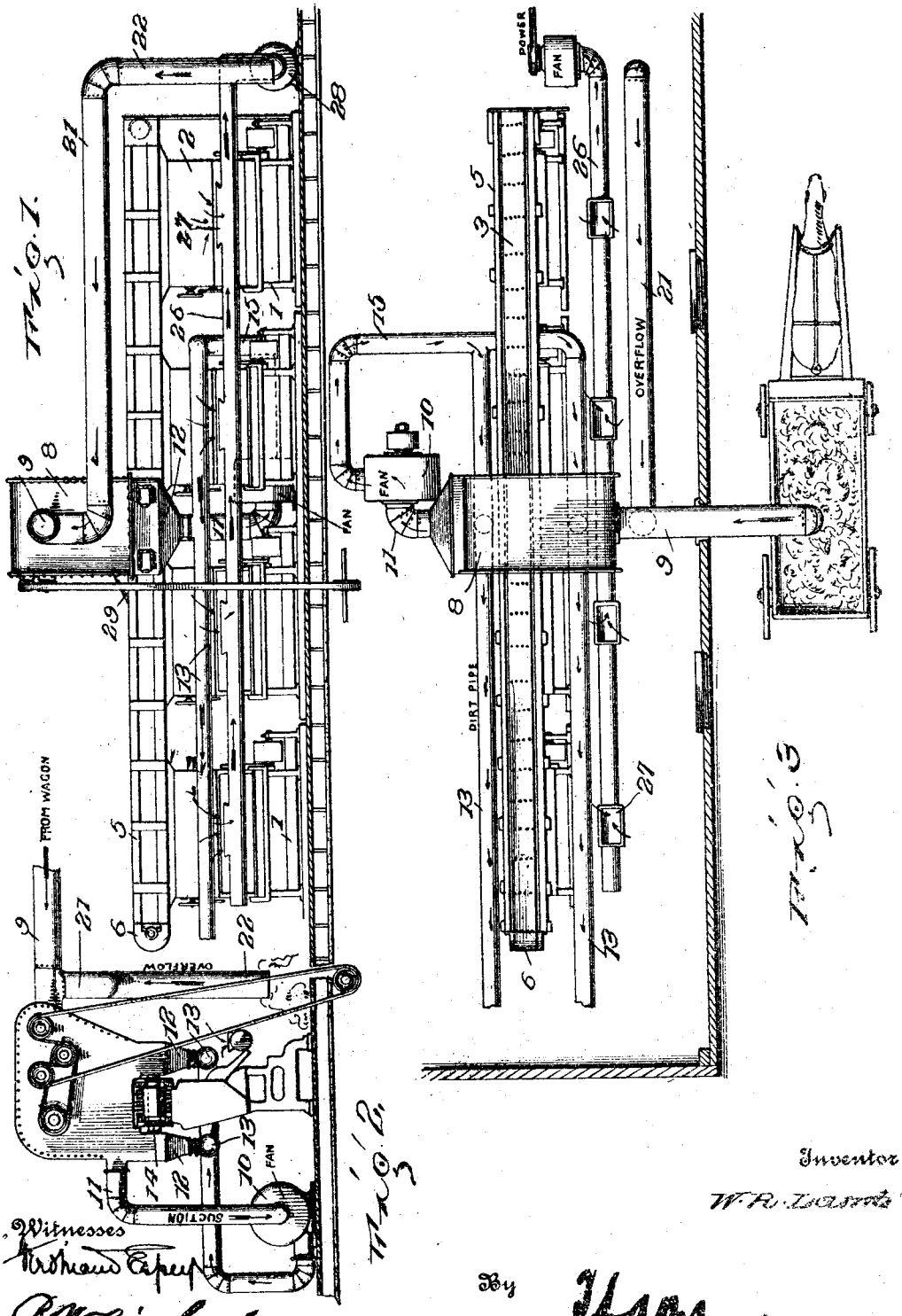


FIG. 1.

FIG. 3.

FIG. 2.

Witnesses

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2 SHEETS—SHEET 2.

Fig. 4.

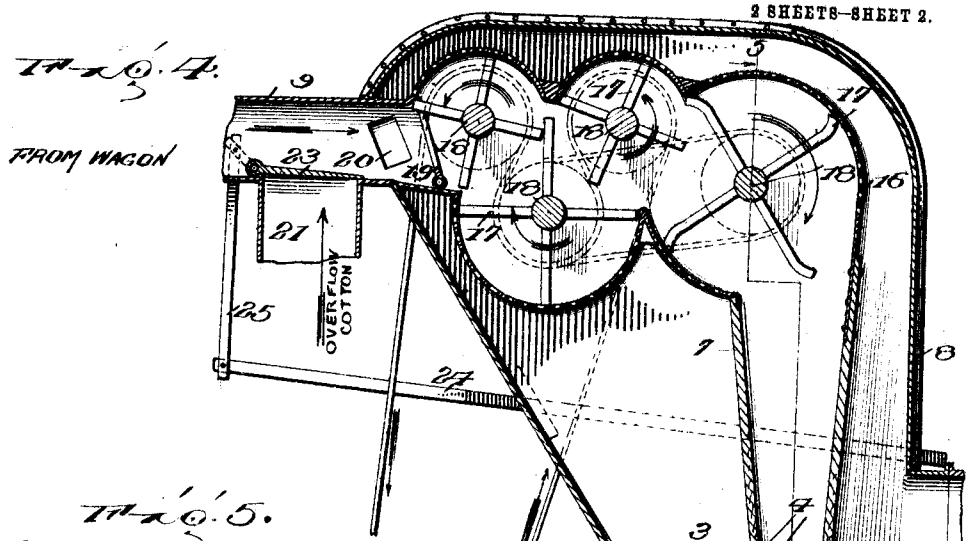
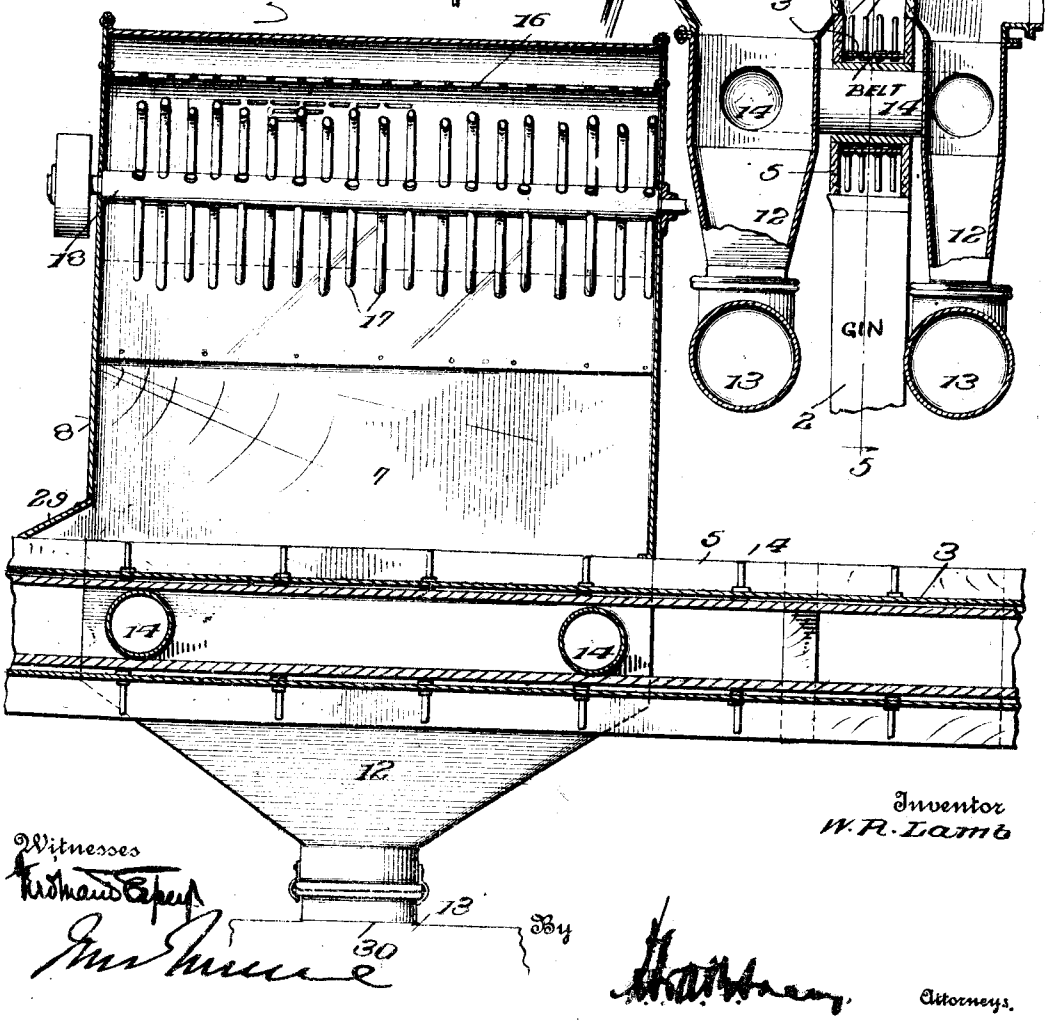


Fig. 5.



Witnesses

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UNITED STATES PATENT OFFICE.

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SEED-COTTON CLEANER AND DISTRIBUTER.

1,105,441. Specification of Letters Patent. Patented July 28, 1914.

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To all whom it may concern:

Be it known that I, WILLIAM R. LAMB, citizen of the United States, residing at Dallas, in the county of Dallas and State of Texas, have invented certain new and useful Improvements in Seed-Cotton Cleaners and Distributers, of which the following is a specification.

This invention relates to mechanism for elevating cotton and conveying the same to a cotton gin or battery of gins, and has special reference to the means for cleaning the cotton as it passes to the gin feeders or the gins.

The invention has for one object the provision of a pneumatic cleaning mechanism, the parts of which will be so disposed as to occupy a minimum amount of space while increasing the cleaning capacity, the air flowing through the apparatus being permitted to circulate in every direction through the cleaning devices so that the cotton will be thoroughly treated and effectually cleaned before it passes to the gin feeders.

A further object of the invention is to so construct and arrange the tubes for conveying the air blast or suction that an under current will be created whereby a partial vacuum or dead air space will be created in the discharge portion of the cleaner or beater casing to facilitate the discharge of the dirt removed from the cotton.

These stated objects, and such other objects as will incidentally appear as the description of the invention proceeds, are attained in an apparatus of the general character illustrated in the accompanying drawings, and the invention consists in certain novel features which will be particularly pointed out in the claims following the description.

In the drawings: Figure 1 is a front elevation of a battery of gins having my present invention applied thereto; Fig. 2 is an end view of the same; Fig. 3 is a plan view thereof; Fig. 4 is an enlarged vertical section of the cotton cleaning mechanism; Fig. 5 is a vertical section taken on the line 5—5 of Fig. 4.

In the drawings, a battery of gins 1 is illustrated, the said gins being of any preferred form and being equipped with gin feeders and receiving tubes, indicated at 2, as usual. An endless conveyer belt 3 is arranged to travel over the upper ends of the said receiver tubes and is provided with series of fingers 4, as shown. The belt is arranged between the side walls 5 of a belt casing or housing, one end of which is closed, as indicated at 6, while the opposite end is open. The side walls 5 constitute a part of a cotton conveying tube 7 which is arranged within the casing 8 of the cleaner mechanism, as shown most clearly in Fig. 4. This cleaner casing 8 is disposed preferably at the center of the battery of gins, and from one side of the same an inlet tube 9 extends to take up the cotton from a wagon driven thereunder or the said tube may be extended into a storage room or compartment, as will be readily understood. A fan 10 is connected by a tube or pipe 11 with the opposite side of the casing 8, so that, when the fan is in operation, a suction will be created through the casing which will draw the cotton from the wagon or storage room into and through the cleaning mechanism, whence it will pass to the gins. The casing 8 extends below the suction tube 11 and below the said tube takes the form of spaced discharge pipes 12 which lead into dirt pipes 13 extending to any convenient point of deposit outside the gin-room. Near the upper ends of the said discharge pipes 12, vacuum or dead air tubes 14 are provided to constitute lateral connections between the said discharge tubes, as clearly shown. The provision of these tubes diverts the air current so that, instead of passing downwardly through the discharge spouts 12, it will circulate through the said tubes and escape therefrom to the suction tube 11, consequently creating a partial vacuum or dead air space in the discharge tubes so that the dirt and dust removed from the cotton will be caused to drop directly into the dirt discharge pipes and thence be removed, as will be readily understood. To facilitate the removal of the dirt from the said dirt pipes, the outlet of the fan is connected by a tube 15 with the ends of the dirt pipes so that the fan not only creates a suction through the cleaning mechanism but also drives a blast or undercurrent of air through the dirt pipes so as to positively blow therefrom the matter which is deposited therein.

The inlet tube 9 enters the cleaner casing 8 near the upper end thereof and passes directly into an inner perforated casing consisting preferably of slotted metal as indicated at 16, the said inner casing being spaced from the outer casing 8 and so shaped

as to follow closely the paths of movement of the outer ends of a series of beater arms 17 carried by a plurality of shafts 18 journaled in the sides of the casing, as will be readily understood upon reference to Figs. 4 and 5. These several beater shafts are disposed so that the alternate shafts will lie approximately in the planes of the upper and lower sides of the inlet tube and the beater arms projecting from the said shafts will extend across the path of the cotton delivered from the inlet tube and thoroughly beat and agitate the same so that any particles of dust and dirt which may be commingled with the cotton will be thoroughly separated therefrom and drawn through the perforated casing to drop into the discharge spouts 12, as will be readily understood. To assist in the agitation of the cotton and the separation of the dirt and dust therefrom, a gate 19 is provided at the end of the inlet tube 9 and extends across the same immediately adjacent the first beater, the said gate or valve being slotted to accommodate the arms of said beater and permit the flow of the cotton while subjecting it to a combing action. An inspection opening 20, normally closed by a sliding door, is provided adjacent the said gate so that the progress of the operation may be noted at any time.

The several beaters may be driven by any convenient type of gearing so that they will rotate in opposite directions and, consequently, the cotton will be thoroughly agitated by the several beaters as it passes between the same on its way to the belt 3. As the cotton leaves the beaters it will pass through the discharge tube 7 to the belt 3 and will be caught by the fingers 4 projecting therefrom so that it will be carried by the belt to the several gins, and, as the belt passes over the receiving tubes 2 of the gins, the gin feeders will draw the cotton from the fingers into the gin. Should the cotton be fed to the gins faster than the gins can treat the same, the surplus cotton will be carried to the open end of the housing 5 and will there drop from the belt onto the floor of the gin-room. As this cotton must not be lost, I provide an overflow or return conduit 21 which leads into the inlet tube 9 adjacent the casing 8 and is provided at its outer end with a flexible spout 22 which may be carried to and over the accumulation of surplus cotton so that suction through the machine will then draw the said cotton into the cleaners and deliver it onto the feeding belt by which it will be conveyed to the gins. The end of this overflow pipe 21 is normally closed by a valve 23 extending over the same so that the cotton passing through the inlet tube 9 cannot drop into the overflow tube but will be forced to enter the cleaner casing. When it is desired to take up the surplus cotton and return the same to the cleaner mechanism, the valve 23 is opened by means of an operating rod or lever 24 pivoted at any convenient point and connected with the said valve by a link 25, as shown and as will be readily understood.

To overcome the tendency of dust and lint to accumulate in the gin-room and deleteriously affect the health of the operatives, I provide a ventilating tube or pipe 26 which may extend around and through the gin-room and is provided on its upper side with inlet nozzles 27, as shown. The said ventilating pipe 26 may discharge into the dirt pipes 13 or may be carried independently from the gin-room, as will be understood, and to provide a suction through the said pipe which will draw the impurities of the room thereinto, I provide a fan 28 which may be actuated from the same prime motor that drives the other mechanism. Valves 30 are provided at the junctions of the pipes 12 and 13 and are held closed by the air blast below and the suction above until the weight of the accumulated dirt overcomes the force of the blast.

The operation of the apparatus is believed to be evident from the foregoing description, taken in connection with the accompanying drawings. The inlet tube 9 being disposed over the supply of cotton, the fan 10 is set in motion, thereby creating a suction through the apparatus which will draw the cotton from the supply through the said inlet tube into the cleaner casing, whence it will escape to the belt 3. As the said belt is constantly traveling during the operation of the apparatus, the cotton will be impaled upon the fingers 4 on the belt and will be consequently carried from the cleaner mechanism, as before stated, being laid smoothly on the belt by an evener 29 arranged on the side of the cleaner casing, as shown clearly in Fig. 1, so that the supply of cotton to the gins will be regular and uniform as far as possible. As the cotton passes between the several beaters, it will be thoroughly agitated so that the dust and dirt commingled therewith will be loosened and will be drawn through the slotted material 8, under the influence of the suction, and deposited in the dirt pipes 13 from which it will be blown, as before stated.

It will be noted that the discharge tube 7 leading from the beaters to the distributer belt is imperforate so that the air blast does not act directly upon the cotton within the said tube, which is consequently permitted to descend to the conveyer belt in a steady stream. The air blast, however, circulates around the said tube and will pass out through the casing 16 in all directions so that the dirt will be very effectually separated and drawn from the cotton. The interposition of the tubes 14 diverts the air

currents, so that, instead of a back draft being created through the dirt pipes, a partial vacuum or dead air space is effected below the said tubes and above the valves 30, and an under current or blast is sent through the dirt tubes so that the dust and dirt is efficiently and rapidly driven from the apparatus. As the ends of the dead air tubes are spaced apart below the slotted material, the air current is spread and passes through the material in all directions instead of merely flowing in one stream through the length of the casing as heretofore so that a more thorough cleaning of the cotton is effected.

The screen is preferably slotted metal having openings two inches long and five thirty-seconds of an inch wide as these dimensions are found to give the most satisfactory results in removing large particles of leaf from the cotton and permitting said particles to pass out with the air.

The dust collecting and ventilating pipe may be located any where in the gin building but is preferably arranged just over the breasts of the gins in front of the gin feeders.

While I have illustrated the invention applied to a battery of gins fed by a distributer belt, it will be understood, of course, that the improvements may be applied to a gin fed pneumatically and other changes may be made in the minor details of construction and arrangement without departing from the spirit or scope of the invention as the same is defined in the following claims.

What I claim is:

1. In an apparatus for the purpose set forth, the combination of an inlet tube, means for creating a suction through the said tube, a cleaner mechanism interposed in the said tube, dirt and cotton discharge tubes leading from the said cleaner mechanism, a dead air tube connecting the said discharge tubes, and means traveling between the dirt discharging tubes and below the cotton discharging tube for conveying the cleaned cotton from the cleaner mechanism to a gin.

2. In an apparatus for the purpose set forth, the combination of a cleaner casing, a foraminous casing having its upper and lower walls spaced from the cleaner casing throughout their extent, a cotton-discharging tube leading directly downward from the said foraminous casing, a train of beaters within the said foraminous casing and moving over the surface of the same, an inlet tube leading through the cleaner casing to the interior of said inner foraminous casing, a suction tube leading from the said cleaner casing, dirt-discharging tubes leading from the bottom of the cleaner casing, and a distributer traveling between the dirt-discharging tubes and below the cotton-discharging tube.

3. In an apparatus for the purpose set forth, the combination of an outer casing, a train of beaters therein, a foraminous casing fitting close to the said beaters, a discharge for the cleaned cotton leading directly from the said beaters, a discharge for the dirt from the outer casing, means for creating a suction through the beaters, means for creating an under current through the discharge for the dirt, and a cotton distributer traveling past the side of the discharge for the dirt and below the discharge for the cotton.

4. The combination of a cleaner casing having outlets for cleaned cotton and for dirt, a distributing belt passing under the outlet for the cotton and between the outlets for the dirt, means for creating a suction through the cleaner casing, and dead air spaces in the outlet for the dirt.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM R. LAMB. [L. S.]

Witnesses:
J. D. YOAKLEY,
SAMUEL N. ACKER.