

July 30, 1935.

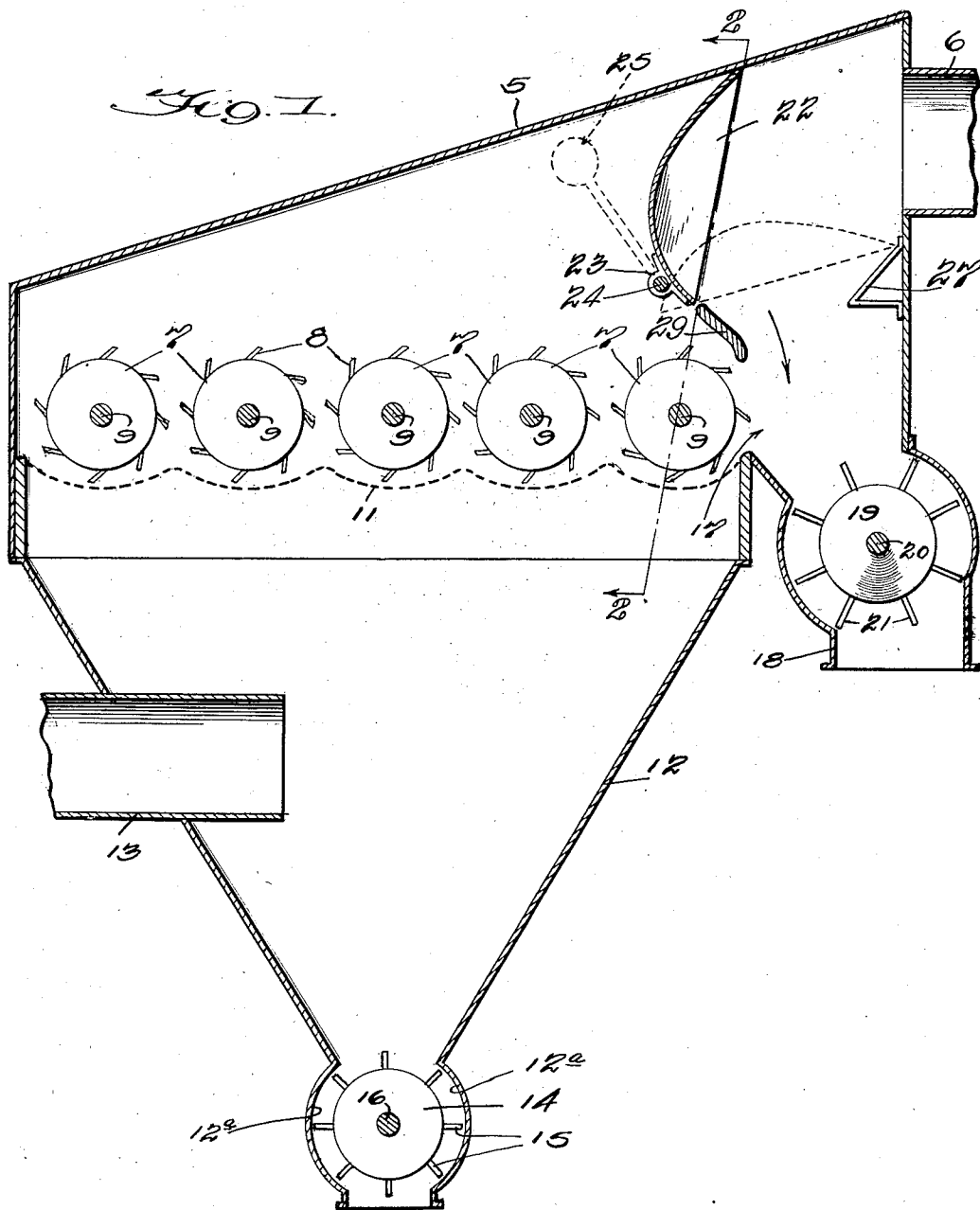
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2,009,928

AIR DRAFT COTTON CLEANER

Filed Jan. 29, 1932

2 Sheets-Sheet 1



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*Fig. 2.*

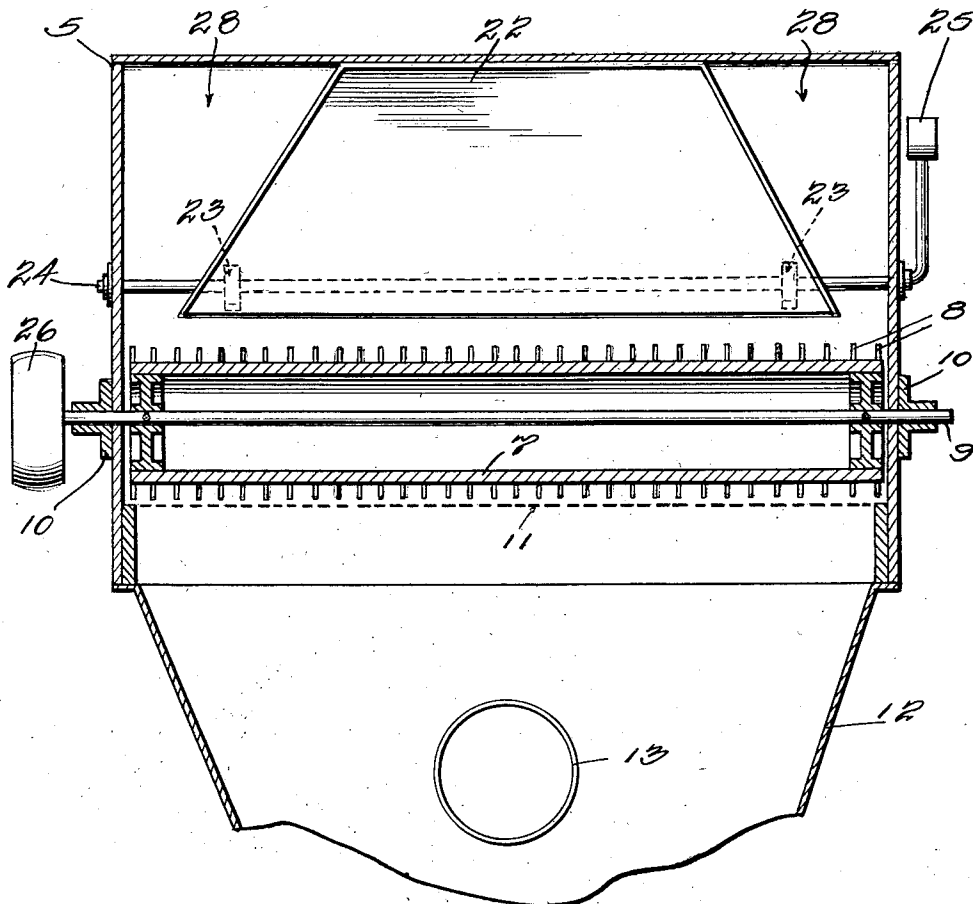
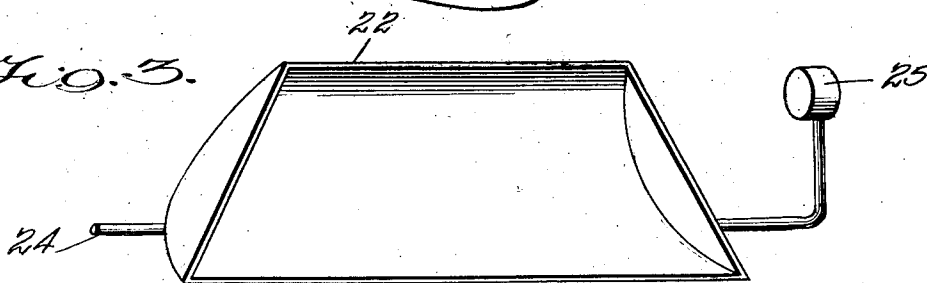


*Fig. 3.*



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## UNITED STATES PATENT OFFICE

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## AIR DRAFT COTTON CLEANER

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12 Claims. (Cl. 19—72)

My invention relates to improvements in seed cotton cleaners such as are used for removing dirt and foreign material therefrom.

Inasmuch as the invention has particular reference to a cleaner of the air draft variety, wherein the cotton is drawn from a suitable source by an air conveyor into the cleaner where it is subjected to the action of rolls working over screens, it may be well to discuss some of the disadvantages of this type of cleaner, and which disadvantages the present invention is designed to overcome. In this connection, perhaps the outstanding difficulty with the cleaner of the prior art is that the seed cotton is compelled to pass into the cleaning chamber and to be subjected to the action of the cleaner or picker roll instrumentalities. Where the cotton is green and damp or of exceptionally long staple it is liable to be damaged by excessive cleaning. It, therefore, is frequently necessary and advisable to dispense with the mechanical cleaning action of the rolls, and it is one of the important objects of my invention to provide a novel cleaner whereby the operator can, at will, direct the cotton into the portion of the cleaner where it will be subjected to the action of the cleaning rolls, or merely effect a separation of the cotton from the air-current and loose dirt that would naturally be carried by the air current upon separation of the cotton therefrom. In this way the operator is enabled to feed the seed cotton to the gin, or storage bin, whether the mechanical cleaning instrumentalities are employed or not, at his option. The present invention, therefore, enables the ginner to employ a single air conveyor or system with a single cleaner employed therein regardless of the nature or condition of the cotton being drawn thereinto.

More specifically, it is an object of the invention to provide a cotton cleaner, or the like, incorporating a valve or deflector which is operable to separate the incoming cotton from the air current so that the cotton will pass through the discharge outlet of the feeder while permitting the air and dirt, with which it is laden, to pass out of the cleaner either through the screened bottom thereof below the cleaning rolls, or otherwise.

The invention also contemplates a cleaner having what might be termed an inlet chamber communicating directly with an outlet, there being combined with the inlet chamber, the usual cleaning chamber having mechanical cleaning instrumentalities therein, the inlet and cleaning

chamber discharging to a common outlet, and there being a valve for controlling the flow of cotton, whereby it can be passed into the cleaning chamber or deflected directly to the outlet of the inlet chamber while permitting the air current to continue on into the cleaner chamber along with the dirt and foreign matter.

The invention also aims to provide in a cotton cleaner, or the like, baffle means for preventing the setting up of eddy currents and associated with deflector means, which is adapted to separate the incoming cotton from the air current, an element of the deflector means being arranged so as to provide a support for the baffle means when the same is in operative position.

The invention also resides in certain novel features of construction, combination and arrangement of parts and in modes of operation, all of which will be readily understood and appreciated by those skilled in the art upon reference to the accompanying drawings in connection with the detailed description following.

It is to be understood that the drawings illustrate what is regarded as a preferred form of the invention. Obviously, however, the invention is susceptible of other mechanical expressions within the spirit and scope of the subject matter claimed hereinafter.

In the drawings, wherein the same reference characters have been used to designate the same parts in all views,

Figure 1 is a lineal sectional view through a cleaner incorporating my invention;

Figure 2 is a sectional view taken on the line 2—2 of Figure 1, and,

Figure 3 is a perspective view of a novel valve or baffle member incorporated in the invention.

Referring specifically to the drawings, numeral 5 denotes the casing of the cleaner which may be substantially of conventional construction and which, as shown, is provided with the inlet 6 from the pneumatic conveyor which supplies the cotton to the casing 5.

The casing 5 is provided with the usual series of transverse cleaner rolls 7 provided with teeth 8, bars or other well known cleaning means, and operating above the screen 11. The rolls 7 are journaled upon shafts 9 secured in bearings 10 and driven in the usual fashion.

The casing 5 is provided with a substantially conical dirt receptacle 12 forming the bottom of such casing, the receptacle 12 having the air outlet pipe 13 to which may be connected the usual suction fan for supplying the cotton to the cleaner from the bins or wagons via the conveyor pipe

6. This structure is more or less conventional and it will be readily apparent that the cotton is drawn into the cleaner and that the air and dirt will pass through screen 11 with the heavier particles of dirt dropping down onto the dirt ejector roll 14 at the bottom of the receptacle 12, while the lighter particles of dirt will be drawn out through the pipe 13 through the fan (not shown).

The dirt ejector roll 14 is provided with flexible vanes 15 which wipe against the opposed surfaces 12<sup>a</sup> at the outlet end of the dirt receptacle 12. These vanes 15 form a seal to prevent the access of outside air to the dirt chamber 12. The dirt ejector roll 14 is mounted on the shaft 16 which may be driven by a belt or otherwise from one of the other moving elements of the cleaner,—probably one of the shafts 9 of the cleaner rolls 7.

As usual the cotton fed into the cleaner 5 is discharged against the rear wall thereof to subsequently pass over the screen 11 by the action of the rolls 7 until the screened cotton is discharged into the chamber 17 (Figure 1) to be ejected therefrom by the seed cotton ejector roll 19 mounted on the shaft 20 and having flexible vanes 21 operating on the arcuate surfaces of the discharge or outlet portions 18 of the casing. The seed cotton ejector roll therefore, as will be apparent, prevents the entry of air into the chamber 17 and the main chamber of the cleaner 5. Thus, the vacuum or pull in the elevator 6 will not be diminished as a result of either the dirt outlet of the dirt chamber 12 or the seed cotton outlet 18.

As has been stated earlier herein, considerable cotton will be received which does not require cleaning or at least any substantial amount of cleaning. The usual cleaner, as already pointed out, makes no provision for the elimination of mechanical cleaning of the cotton and therefore all cotton must be subjected to the action of the rolls 7. In order to meet this situation, I have provided my cleaner with the novel deflector 22, which is trapezoidal, or which may be trapezoidal, in shape, and which, as shown in Figure 1, is keyed to the shaft 24 by means of brackets or bearings 23, the shaft being suitably journaled in the walls of the casing 5. One end of the shaft is preferably turned laterally, as indicated in Figure 1, and is provided with a weight 25 at its end so that the shaft can be rocked to dispose the valve or deflector 22 in either the full or dotted line position (Figure 1).

In the full line position of the deflector or valve 22 it will be noted (Figure 2) that a space 28 is provided between the ends of the deflector 22 and the adjacent walls of the casing 5 so that the air current with the dirt or a substantial portion of it will pass around the deflector and into the main chamber of the cleaner 5 to pass through the screen 11 as usual. However, the incoming seed cotton, entering the casing 5 at high velocity and striking the deflector 22 (full line position, Figure 1) will drop down on to the seed cotton ejector roll 19. Baffles 27, 29 serve to prevent the setting up of eddy currents and effect an even and uniform feed of the cotton on to the ejector roll when the deflector 22 is in the full line position of Figure 1.

In this connection it will be noted that the baffle 27, which is carried by the front wall of the casing 5 serves as a support for the deflector 22 when in the dotted line position which, of course, is the position the deflector assumes when the cotton is to be supplied to the main chamber of the cleaner and subjected to the ac-

tion of the rolls 7. The weight serves to maintain the deflector 22 in either the full or dotted line position, as will be apparent from an inspection of Figure 1.

When the deflector 22 is in the dotted line position its upwardly disposed convex surface tends to assure upward deflection of the cotton in its passage to the rear of the cleaning chamber,—thus obviating likelihood of cotton dropping through the openings 28. The top of the casing (see Figure 1) forms a stop for the deflector 22 when in the full line position and sustains the pressure of the air current.

Also respecting the baffle 29, it is also to be observed that it cooperates with the deflector 22 and lower casing portion 18 to define the inlet or feeding chamber 17,—such baffle 29 preventing passage of the air current below the deflector 22 and over the rolls 7 as indicated in Figure 1.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In a pneumatically fed cotton cleaner comprising a casing having a cotton inlet and outlet, and cleaning elements through which the air current is discharged; the combination of a single imperforate deflector positionable to deflect the incoming cotton from said air current to the cotton outlet without presentation to said cleaning elements and permit of the passage of air at its opposite sides, baffle means in said casing and cooperating with said first mentioned cotton deflecting means when the same is in operative position for providing an inlet chamber in direct communication with said cotton inlet and outlet, said baffle means including one baffle member below the deflector and spaced above the cleaning elements.

2. In a pneumatically fed cotton cleaner comprising a casing having a cotton inlet and outlet and cleaning elements through which the air current is discharged; the combination of imperforate deflector means positionable to deflect the incoming cotton from said air current to the cotton outlet without presentation to said cleaning elements, and permit of the passage of air at its sides, baffle means for preventing eddy currents in said casing and cooperating with said aforementioned cotton deflector means when the same is in operative position for providing an inlet chamber in direct communication with said cotton inlet and outlet.

3. A cotton cleaner or the like comprising a single casing providing a cleaning section and a receiving section, the former having an inlet and an outlet communicating with the latter and the receiving section having an inlet and an outlet for the cotton, driven cleaning elements in said cleaning section, a screen subjacent to said driven cleaning elements and over which the cotton is adapted to be actuated and discharged through said receiving section, a subjacent dirt chamber beneath said screen and providing an air exhaust outlet and dirt ejector means independent of said exhaust outlet and having means for substantially preventing the entry of air into said dirt chamber through the dirt outlet opening shiftable deflector means in the path of said cotton inlet and positionable to intercept and extract the cotton from an air current to cause the cotton to pass directly through the receiving chamber outlet without presentation to said cleaning chamber, said deflecting means when in intercepting position presenting a concave surface toward the incoming cotton and when in

non-intercepting presenting an upwardly inclined surface to the incoming cotton whereby to deflect same away from said receiving section outlet and toward the cleaning section inlet, said deflecting means being arranged to provide air current passages at its sides whereby the air blast may be exhausted through said screen regardless of the position of said deflecting means, and ejecting means for discharging the cotton from said receiving chamber while preventing the entry of air thereinto.

4. A pneumatically fed cotton cleaner comprising a casing having a cotton inlet and an outlet at one end and a separate outlet for the air current and dirt, cotton cleaning means in said casing and terminating short of the inlet and outlet end wall thereof, a movable deflector member in said casing adjacent said inlet and adapted in one position to substantially cut off incoming cotton from said outlet and in another position to extract the cotton from the air current and deflect it toward said outlet, and an eddy current-preventing baffle between said deflector member and the cotton discharge end of said cleaning means, and forming a substantial continuation of said deflector when the latter is in operative position.

5. A pneumatically fed cotton cleaner comprising a casing having a cotton inlet and an outlet at one end and a separate outlet for the air current and dirt, cotton cleaning means in said casing and terminating short of the inlet and outlet end wall thereof, a movable deflector member in said casing adjacent said inlet and adapted in one position to substantially cut off incoming cotton from said outlet and in another position to extract the cotton from the air current and deflect it toward said outlet, and an eddy current-preventing baffle on the casing wall between said cotton inlet and outlet and providing a support for one end of said deflector in its first mentioned position.

6. A pneumatically fed cotton cleaner comprising a casing having a cotton inlet and an outlet at one end and a separate outlet for the air current and dirt, cotton cleaning means in said casing and terminating short of the inlet and outlet end wall thereof, a movable deflector member in said casing adjacent said inlet and adapted in one position to substantially cut off incoming cotton from said outlet and in another position to extract the cotton from the air current and deflect it toward said outlet, and a pair of eddy current-preventing baffles between said inlet and outlet, one of said baffles being spaced from said inlet wall and disposed between said deflector and the discharge end of said cleaning means and the other baffle being carried by said wall and providing a support for said deflector in its first-mentioned position.

7. A cotton cleaner or the like comprising a casing providing distinct feeding and cleaning

sections, the feeding section having a cotton inlet and a cotton outlet and there being an inlet to said cleaning section in substantial alignment with said feeding section inlet, a deflector selectively positionable in front of said cleaning section inlet, and also in a position substantially parallel to said inlets, and said deflector member in said last named position having an inclined surface directed generally toward said cleaning section inlet and away from said feeding section outlet, and the length of said deflector member being less than the width of said feeding section whereby to provide a dirt and air outlet opening to said cleaning section when said deflector is in the first mentioned position.

8. The combination set forth in claim 7 and including a pair of eddy current preventing members, one carried adjacent and below said feeding section inlet, and the other adjacent and below said cleaning section inlet, and above said cleaning section outlet, the first mentioned eddy-current-preventing member providing a support for said baffle in its second mentioned position, and the other eddy-current-preventing member providing a continuation of said baffle member when it is in the first mentioned position whereby to guide the incoming cotton toward said feeding section outlet.

9. In an air draft cotton cleaner, cleaning means, means for delivering cotton thereto in an air stream, and means operable to bypass cotton but not air from the cleaning means, said bypass means including a baffle for sharply deflecting the air stream to cause its contained cotton to separate therefrom by its inertia, and end walls on the baffle perpendicular thereto.

10. In an air draft cotton cleaner, cleaning means, means for delivering cotton thereto in an air stream, a baffle for sharply deflecting the air stream to separate out its contained cotton by inertia of the cotton, said baffle constituting a cotton bypass for the cleaning means, and end walls on said baffle.

11. In an air draft cotton cleaner, a casing, cleaning means therein, a combined cotton and air inlet to said casing, a baffle having perpendicular end walls and operable in said casing into spaced relationship from said inlet to sharply divert the air stream issuing therefrom whereby to cause the air carried cotton to separate therefrom by its inertia, and means for bypassing the separated cotton with respect to the cleaning means.

12. In an air draft cotton cleaner, a casing, means for delivering cotton thereto in an air stream, an air and cotton impactor in the casing and movable into the air stream, said impactor having a body substantially concave to the air stream when in operative position, and end walls on said body substantially perpendicular thereto.

NELSON B. HENRY.