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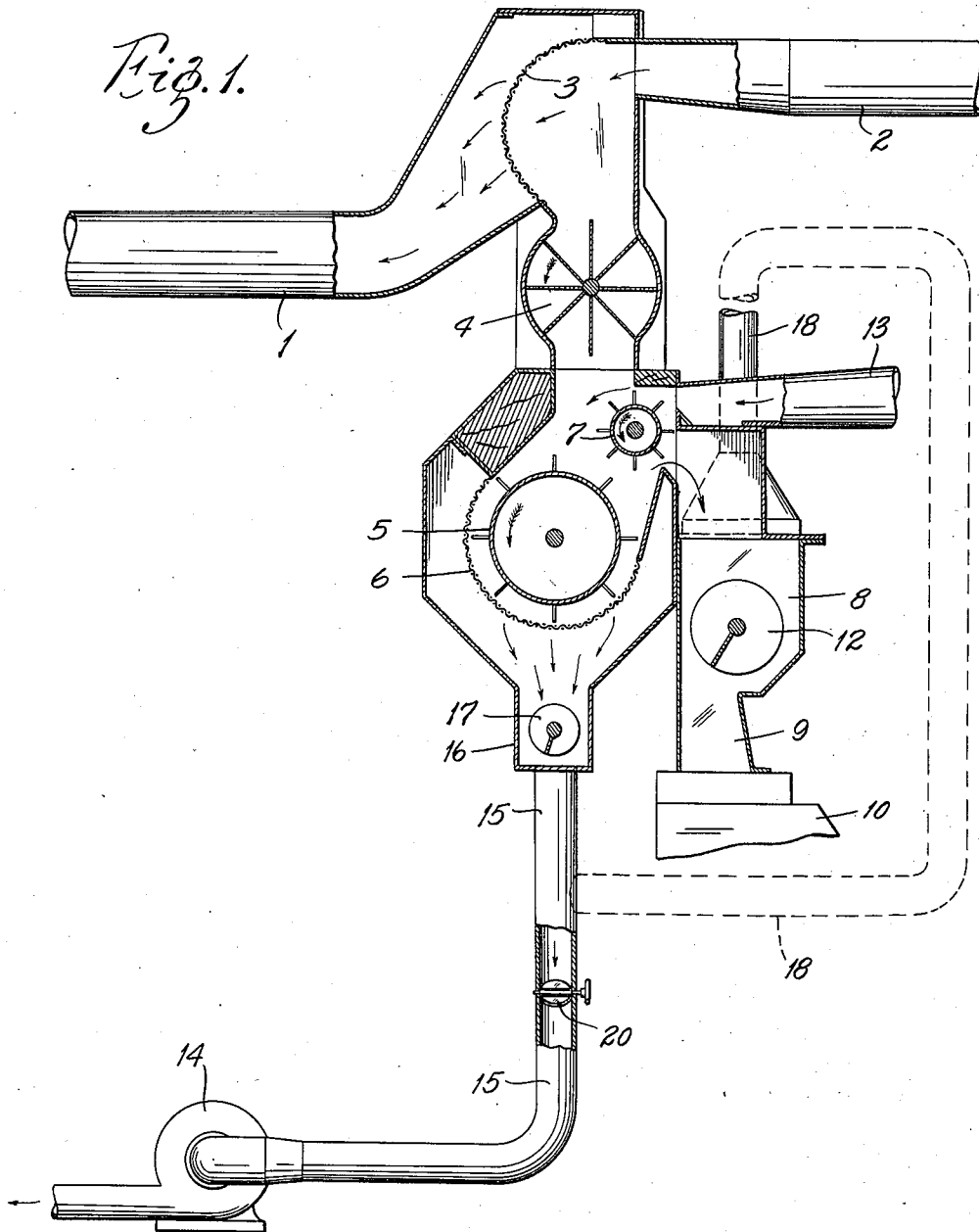
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COTTON CLEANING, DISTRIBUTING AND DRYING APPARATUS

Filed April 1, 1935

2 Sheets-Sheet 1



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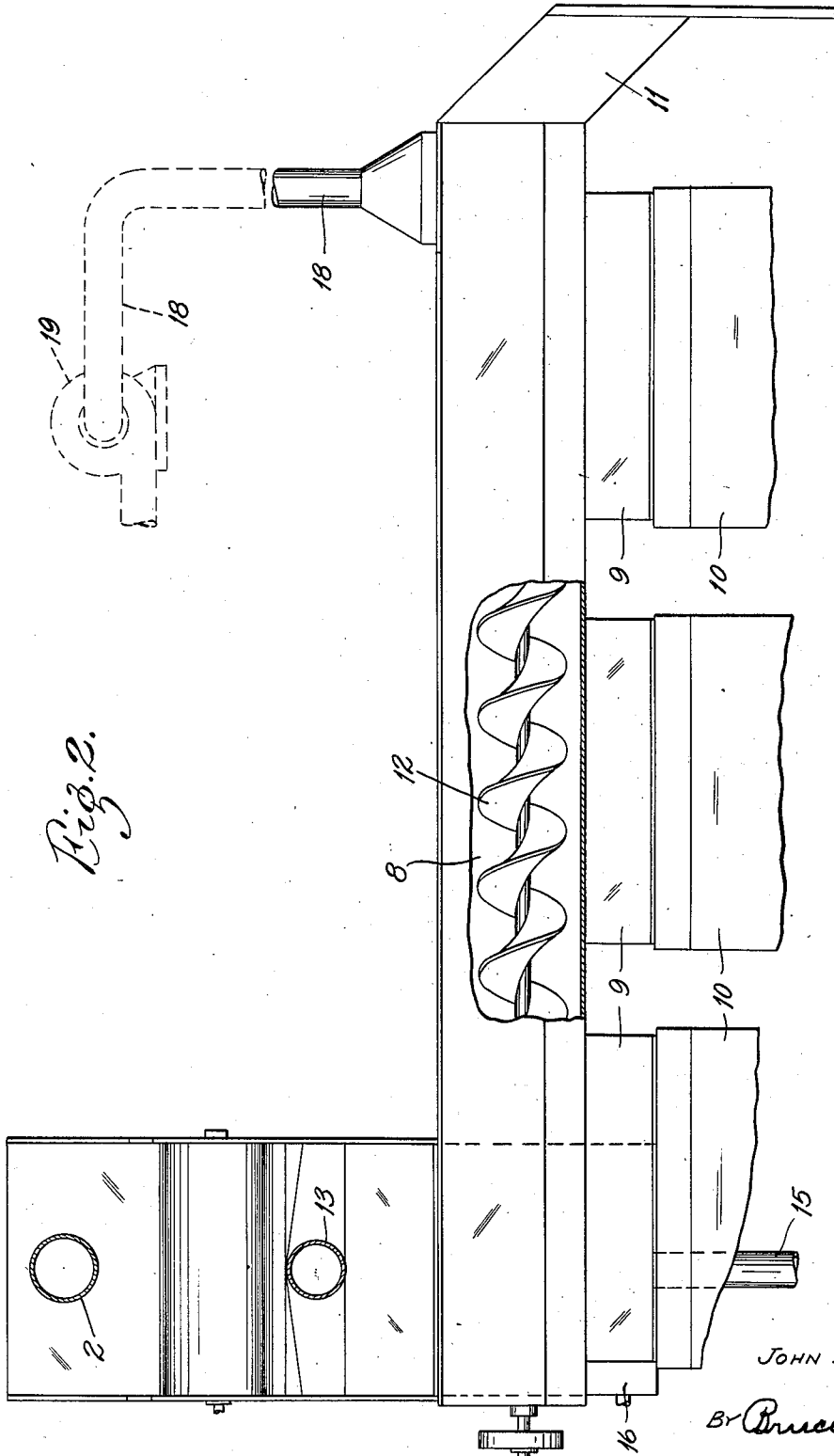
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UNITED STATES PATENT OFFICE

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COTTON CLEANING, DISTRIBUTING, AND
DRYING APPARATUS

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7 Claims. (Cl. 19—74)

This invention relates to apparatus for cleaning distributing and drying cotton in which the cotton from the cleaning machine is discharged into the receiving end of a conventional distributor, which operates to convey the cotton over a battery of gins so that the feeders above the same may be supplied with cotton, the surplus cotton being discharged from the end of the distributor remote from the receiving end, and known as the overflow.

The cleaning machine has an inlet for hot air above the screen which serves to separate the hot air and trash from the cotton, and suction means located below the screen for causing the passage of the hot air through the cleaner.

The hot air is blown or forced through the inlet of the cleaning machine, and it is desirable to have a portion of this hot air enter the distributor and pass to the overflow end thereof so as to continue the drying operation while the cotton is being distributed.

This is accomplished by regulating the quantity of air withdrawn by suction with the trash through the screen of the cleaning machine. The amount of hot air forced into the cleaning machine or receiving end of the distributor in excess of that withdrawn by suction through the screen of the cleaning machine, is forced to move with the cotton the entire length of the distributor. Excessive blowing out of the hot air with the cotton discharged from the overflow end of the distributor is prevented by a suction pipe from the housing at the overflow end of the distributor and connected preferably to the same fan which exhausts the regulated portion of the hot air through the screen of the cleaner.

With a given quantity of hot air forced into the cleaner at the receiving end of the distributor, if, either by using a larger size suction pipe or opening a damper, a large portion of the hot air is permitted to go through the screen of the cleaner direct to the suction fan, a correspondingly smaller quantity of the hot air will be permitted to flow with the cotton through the distributor and exhausted from the overflow end of a distributor back to the suction fan; but by decreasing the quantity of air exhausted through the screen of the cleaner, either by the use of a smaller suction pipe or by closing a damper in the pipe, a correspondingly larger amount of the hot air will, of course, flow with the cotton through the distributor and exhaust from the distributor to the suction fan.

While a separate suction fan may be used for exhausting enough of the hot air reaching the end of the distributor to prevent excessive blowing out with the cotton, it is preferable to use a single exhaust fan for the reason that it makes a balanced system regardless of the amount of the hot air that is permitted to go through the

screen of the cleaning machine or through the distributor.

It is the principal object of this invention, therefore, to provide a cleaning machine with its outlet communicating with the receiving end of the distributor to supply hot air to the cleaner, and to regulate the amount of the hot air passing through the screen of the cleaner with the trash, so as to determine the amount or volume of hot air flowing out of the cleaner with the cotton into the receiving end of the distributor, and to provide a suction at the overflow end of the distributor to prevent excessive blowing out of that portion of the hot air which reaches the overflow end of the distributor.

A further object of the invention is to utilize a single suction fan for exhausting both the hot air permitted to escape through the screen of the cleaner and that which escapes from near the overflow end of the distributor, whereby an automatically balanced system may be provided, as hereinafter explained.

In the accompanying drawings,—

Figure 1 is a cross sectional view of the combined cleaning, distributing and drying apparatus; and

Figure 2 is a view in side elevation, partly broken away, looking toward the left of Figure 1.

Referring now to the drawings, numeral 1 indicates a pipe leading to a suction fan which operates to produce suction in a pipe, 2, to draw cotton through said pipe from a wagon, or other source of supply. The air drawn in with the cotton passes through a curved screen, 3, while the cotton falls from said screen into a rotating sealing member, or pocket valve, 4, and is delivered to a cleaning cylinder, 5, and is forced thereby around and over a circular screen 6 and upward into contact with a directing cylinder, 7, which discharges the cotton through an outlet formed by a casing section, 5a, of the cleaner into a distributor, 8. The distributor conveys the cotton in the usual way to a plurality of feeders, 9, above the gin stands, 10, the surplus cotton being discharged from the end of the distributor remote from the receiving end and known as the overflow, this part of the distributor being indicated by the numeral 11. The conveyor 12, which distributes the cotton from the receiving to the overflow end of the distributor, is completely housed, the distributor casing being open only at the receiving end to receive the cotton from the cleaner and at the overflow end for discharging the surplus cotton. The numeral 13 indicates a hot air pipe through which hot air is forced into the cleaner at a point above the screen 6 by a conventional blower, (not shown).

In order to cause the hot air entering through pipe 13 to be passed continuously through the cleaning machine in intimate contact with the

cotton being cleaned, a suction fan 14 is connected by pipe 15 with a conveyor housing 16, formed at the bottom of the housing of the cleaner and in which is located a conveyor 17 for moving trash passing through the screen 6 under the combined actions of the cleaning cylinder 5 and suction induced in the cleaning machine by drawing air therefrom through pipe 15. At the overflow end 11, of the distributor, the top, or upper portion of the distributor housing is provided with a suction pipe, 18, for exhausting the hot air which reaches the end of the distributor, thus serving to prevent blowing out. That is to say, I provide that the amount of the suction at the overflow end of the distributor is only approximately enough to exhaust the amount of hot air forced into the distributor, so that it neither draws cold air into the overflow outlet at 11 nor permits hot air blowing out at that point. Thus, the overflow outlet of the distributor is practically balanced as to the air currents.

Hot air is forced by a fan through the pipe 13 at the top of the cleaner on the receiving end of the distributor, and the amount of hot air which passes through the screen 6 of the cleaner and out with the trash to the suction fan 14, is regulated, so that there is an excess or surplus amount of hot air which flows from the cleaner with the cotton through the distributor 8, to the overflow 11, thereof from where it is exhausted through the pipe 18. The suction pipe 18 may lead to a separate exhaust fan, 19, as indicated in Figure 2, but preferably I connect this pipe with the same fan 14 which exhausts the regulated portion of the hot air which passes with the trash through the screen 6 of the cleaner. This preferred arrangement is illustrated in Figure 1.

The advantage of using the same suction fan for exhausting both the hot air permitted to escape through the screen of the cleaner, and that which escapes from the overflow end of the distributor is, that when the fan is operated at a speed to exhaust practically the same volume of hot air forced into the cleaner through the pipe 6 by the separate hot air fan, it provides an automatically balanced system, regardless of the quantity of air that is permitted to pass downward through the screen of the cleaner. In other words, it is only necessary to regulate or control the quantity of hot air passing through the screen of the cleaner in order to force the right amount of hot air with the cotton down through the distributor 8 to its overflow end.

The regulation or control of the volume of hot air passing through the screen can be effected in various ways, as by increasing or decreasing the volume of hot air blown into the cleaner per unit of time, or by increasing or decreasing the speed of the fan 14 to correspondingly modify the power of the suction.

As this method of regulation is not apparent from the drawing, in order that the invention may be better visualized, I have illustrated a conventional damper, 20, in the pipe 15, for controlling the amount of air withdrawn by suction from the cleaner.

I claim:

1. In combination with a cotton cleaning machine, a distributor for receiving at one end cotton discharged from the cleaning machine and having an overflow end remote from said receiving end, means for forcing hot air into the cleaning machine, means for withdrawing hot air from the machine and means for withdrawing by suc-

tion hot air from the overflow end of the distributor.

2. In combination with a cotton cleaning machine, a distributor for receiving at one end cotton discharged from the cleaning machine and having an overflow end remote from said receiving end, means for forcing hot air into the cleaning machine and means for simultaneously withdrawing hot air from the cleaning machine and the overflow end of said distributor.

3. In combination with a cotton cleaning machine, a distributor for receiving at one end cotton discharged from the cleaning machine and having an overflow end remote from said receiving end, means for forcing hot air into the cleaning machine, a suction pipe leading from the cleaning machine, a suction pipe leading from the overflow end of said distributor and a single fan for simultaneously creating suction in said pipes.

4. In combination with a cotton cleaning machine, a distributor for receiving at one end cotton discharged from the cleaning machine and having an overflow end remote from said receiving end, means for forcing hot air into the cleaning machine, a suction line associated with the cleaning machine, a suction line associated with the overflow end of the distributor, and means for controlling the volume of hot air withdrawn by suction from the cleaning machine to substantially balance the volumes of hot air passing through said respective suction lines.

5. In combination with a cotton cleaning machine having a screen therein for separating trash from cotton, a distributor for receiving at one end cotton discharged from the cleaning machine and having an overflow end remote from said receiving end, means for forcing hot air into said cleaning machine above said screen, a suction line communicating with said cleaning machine below said screen, a suction line communicating with said distributor at the overflow end thereof, a single fan for simultaneously producing suction in both of said suction lines and means for controlling the amount of hot air withdrawn from said cleaning machine.

6. In combination with a cotton cleaning machine having a screen therein for separating trash from cotton, a distributor for receiving at one end cotton discharged from the cleaning machine and having an overflow end remote from said receiving end, means for forcing hot air into said cleaning machine above said screen, means for withdrawing only a portion of the hot air through the screen of the cleaning machine whereby the balance of the hot air is forced to flow along with the cotton from the receiving to the overflow end of the distributor, and a suction line communicating with the distributor at its overflow end to prevent excessive blowing out of hot air with the cotton discharged from the distributor.

7. In combination with a cotton cleaning machine having a screen therein for separating trash from cotton, a distributor for receiving at one end cotton discharged from the cleaning machine and having an overflow end remote from said receiving end, means for forcing hot air into said cleaning machine above said screen, and means for withdrawing only a portion of the hot air through the screen of the cleaning machine whereby the balance of the hot air is forced to flow along with the cotton from the receiving to the overflow end of the distributor.

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