Nov. 11, 1947. W. J. ROEDER 2,430,686

GRAVITY FLOW COTTON DRYER HAVING OPPOSED THROWING MEMBERS

Filed May 3, 1945 2 Sheets-Sheet 1

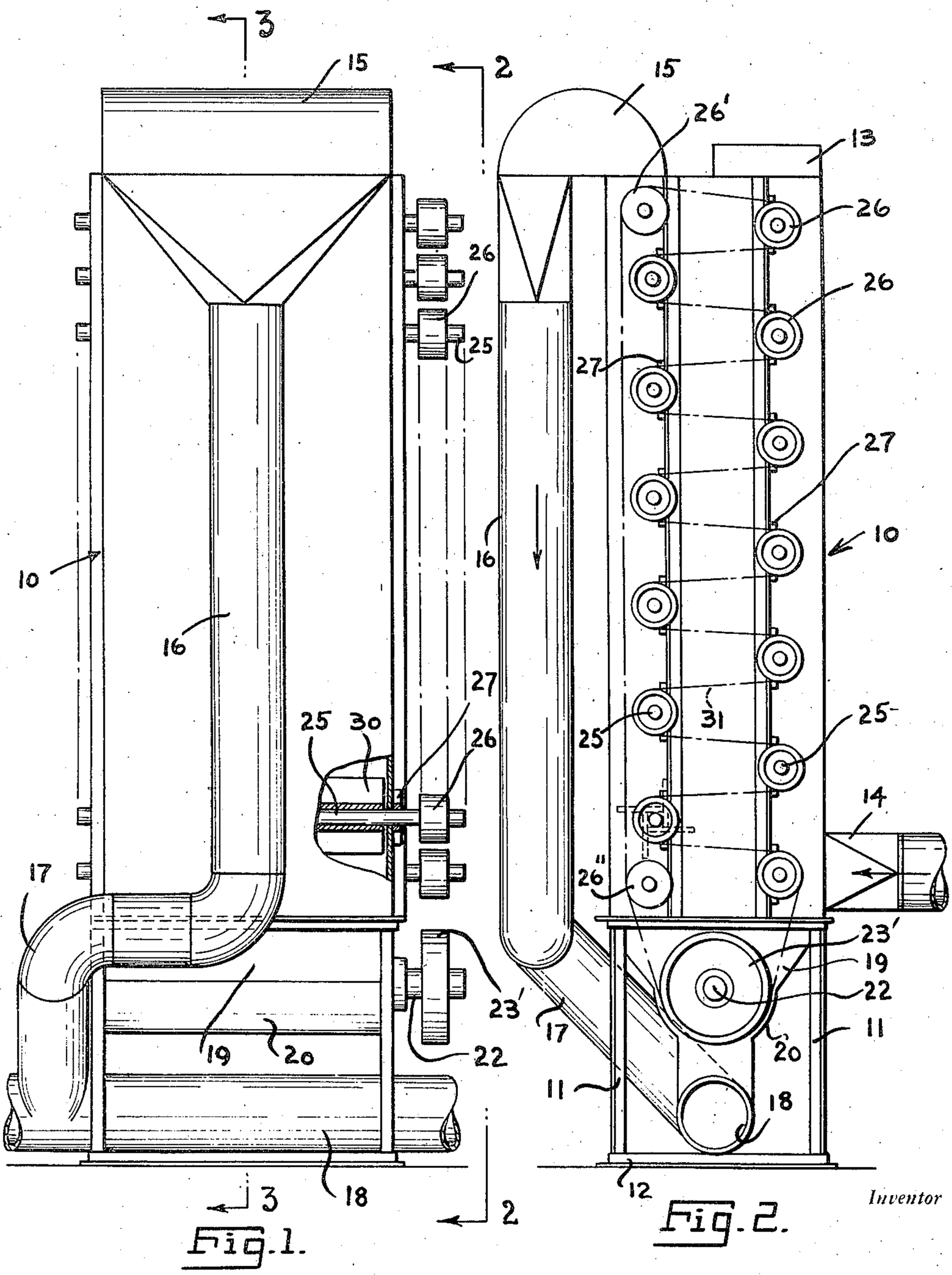

Fig. 1.

Fig. 2.

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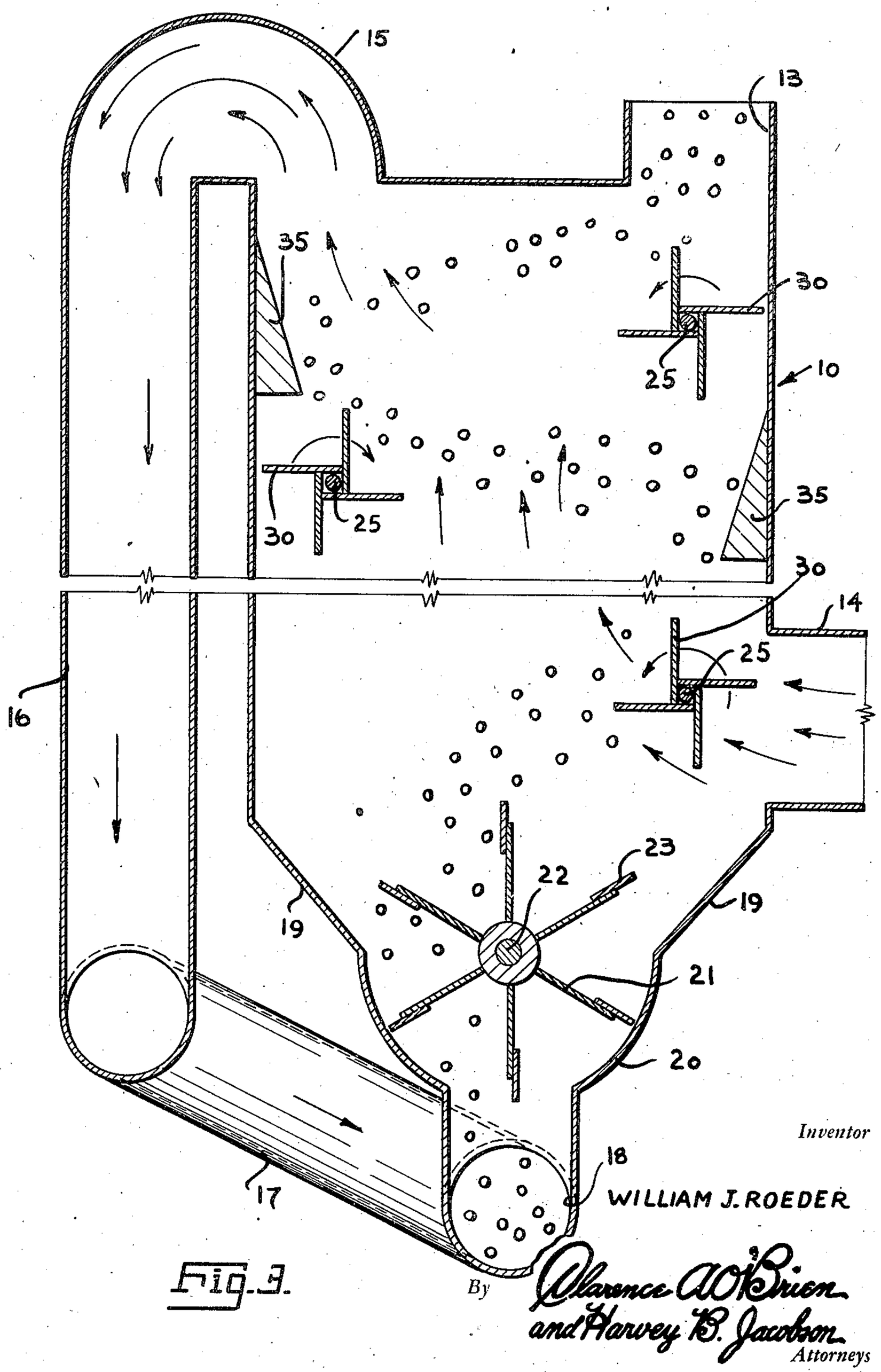

Fig. 3.

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GRAVITY FLOW COTTON DRYER HAVING OPPOSED THROWING MEMBERS

William J. Roeder, Robstown, Tex.

Application May 3, 1945, Serial No. 591,676

2 Claims. (Cl. 34—171)

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This invention relates to a cotton dryer, and more particularly to such a device adapted for the drying of cotton prior to the ginning and baling thereof.

A primary object of this invention is the provision of an improved cotton dryer, characterized by means whereby cotton is fed into the upper end of a vertical chamber, and passed over series of rotating paddles, against the counterflow of a blast of hot air fed into the bottom of the vertical chamber.

A further object of the invention is the provision of such a device wherein the fall of the cotton from the top to the bottom of the device is relatively slow and continuous through a stream of dry, warm air, in such manner that when the cotton reaches the outlet at the bottom of the device, the same is thoroughly dried and ready for ginning.

A still further object of this invention resides in the provision of such a construction which is reliable and efficient in operation, sturdy and durable in construction, and relatively simple and inexpensive to manufacture, assemble and install.

Other objects reside in the combinations of elements, arrangements of parts, and features of construction, all as will be more fully pointed out hereinafter, and disclosed in the accompanying drawings, wherein there is shown a preferred embodiment of this inventive concept.

In the drawings:

Figure 1 is a side elevational view, certain portions thereof being broken away, showing one form of the device embodying this inventive concept.

Figure 2 is an end elevational view of the device shown in Figure 1, taken substantially along the line 2—2 of Figure 1.

Figure 3 is an enlarged sectional view, certain parts thereof being broken away, taken substantially along the line 3—3 of Figure 1, as viewed in the direction indicated by the arrows.

Similar reference characters refer to similar parts throughout the several views of the drawings.

Having reference now to the drawings, there is shown at 10 a hollow, rectangular, vertical housing, adapted to be supported, as by legs 11 carried by a suitable base 12, and provided with a cotton inlet 13 at its upper extremity, and an air inlet 14 adjacent the lower portion thereof. An air outlet comprises a hood 15 from which a tube 16 extends downwardly and thence through an inwardly inclined portion 17 to an outlet 18 adapted

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to be connected to a conventional suction fan of any desired type (not shown).

The base of the receptacle 10 is inwardly tapered, as at 19, and terminates in a semi-cylindrical channel 20, within which is positioned a rotating paddle member 21 mounted on an axle 22 extending transversely across the receptacle and being suitably journaled in the sides thereof, the ends of the paddle blades being provided with flexible portions 23, serving to brush the cotton, which falls to the bottom of the receptacle into the outlet tube 18. As best shown in Figures 1 and 2, the axle 22 is driven, as by means of a flywheel 23', which in turn may be rotated by any desired source of power.

Transversely extending across the interior of the receptacle are a plurality of additional axles 25, each provided at its outer end, exteriorly of the receptacle, with a driver pulley 26, and each being suitably journaled for rotation, as in bearings 27 positioned in the side walls of the receptacle 10.

Each of the axles 25 carries within the receptacle 10 a plurality of paddle blades 30, preferably four in number to each axle, and assembled in right angled relation. The axles are arranged in vertical rows, and the paddles in opposite rows are staggered with respect to each other. Means including an endless belt 31, passed over upper and lower idler pulleys 26' and 26'' provided for rotating all of the driver pulleys 26, and correspondingly the axles 25 and their associated paddle blades 30, the belt being suitably driven from the flywheel 23' and its associated source of power.

From the foregoing, the operation of the device should now be readily understandable. Cotton is fed into the inlet 13 simultaneously with a blast of air from the inlet 14. The air passes upwardly through the container and out through the hood 15 and thence through the tube 16 to the outlet 18, being drawn therethrough by the previously mentioned suction fan. The air may be heated to any desired temperature, as for example, in the neighborhood of 140° F., and is preferably thoroughly dried before injection into the apparatus. The blast of air is of insufficient strength to force the cotton outwardly through the inlet 13, and passes therearound, the cotton gently falling down through the receptacle, and striking first the uppermost of the paddle and axle assemblies which is disposed immediately below the inlet. The paddle on opposite sides of the receptacle revolve in opposite directions, in such manner as to rotate and force the cotton across the receptacle towards the next adjacent

set of paddles. In this way, the cotton is caused to follow a zig-zag path downwardly through the receptacle, suitable baffles 35 being provided interiorly of the device at points which would normally be struck by the cotton as deflected by an associated paddle, until ultimately it passes into the paddle assembly 21, by means of which it is conveyed into the outlet tube 18 and thence by means of the suction fan to a gin or the like.

From the foregoing it will now be seen that there is herein provided an improved cotton dryer accomplishing all the objects of this invention, and others, including many advantages of great practical utility and commercial importance.

As many embodiments may be made of this inventive concept, and as many modifications may be made in the embodiment hereinbefore shown and described, it is to be understood that all matter herein is to be interpreted as illustrative and not in a limiting sense.

I claim:

1. In a cotton dryer, a vertically elongated receptacle, having a cotton inlet at one side of the upper end thereof, a cotton outlet at the lower end thereof, a warm air inlet at an intermediate point adjacent the lower end, and a warm air outlet at the other side of the upper extremity thereof; and a plurality of rotatable paddle members in said receptacle adapted to agitate the cotton, said members being arranged in opposite rows adjacent the sides of the receptacle, and staggered with respect to each other, with an unobstructed vertical passageway extending between said rows, said members in one row rotating oppositely to those in the other row, in a direction to impel the cotton transverse said passageway to the members in the other row and said members being spaced so that opposed paddle members are in non-overlapping relation thereby leaving the unobstructed passageway.

2. In a cotton dryer, a vertically elongated receptacle, having a cotton inlet at one side of the upper end thereof, a cotton outlet at the lower end thereof, a warm air inlet at an intermediate point adjacent the lower end, and a warm air outlet at the other side of the upper extremity thereof; and a plurality of rotatable paddle members in said receptacle adapted to agitate the cotton, said members being arranged in opposite rows adjacent the sides of the receptacle, staggered with respect to each other, with a vertical unobstructed passageway extending between said rows, rotating in opposite directions to urge the material horizontally toward the center of the receptacle and to pass the cotton back and forth, as it descends in the receptacle, in the path of the warm air, said paddle members being spaced so that opposite paddle members are in non-overlapping relation.

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