H. PETTIT.

FIBER CLEANER.

APPLICATION FILED FEB. 8, 1909.

950,757.

Patented Mar. 1, 1910.

2 SHEETS—SHEET 1.

Fig. 1.

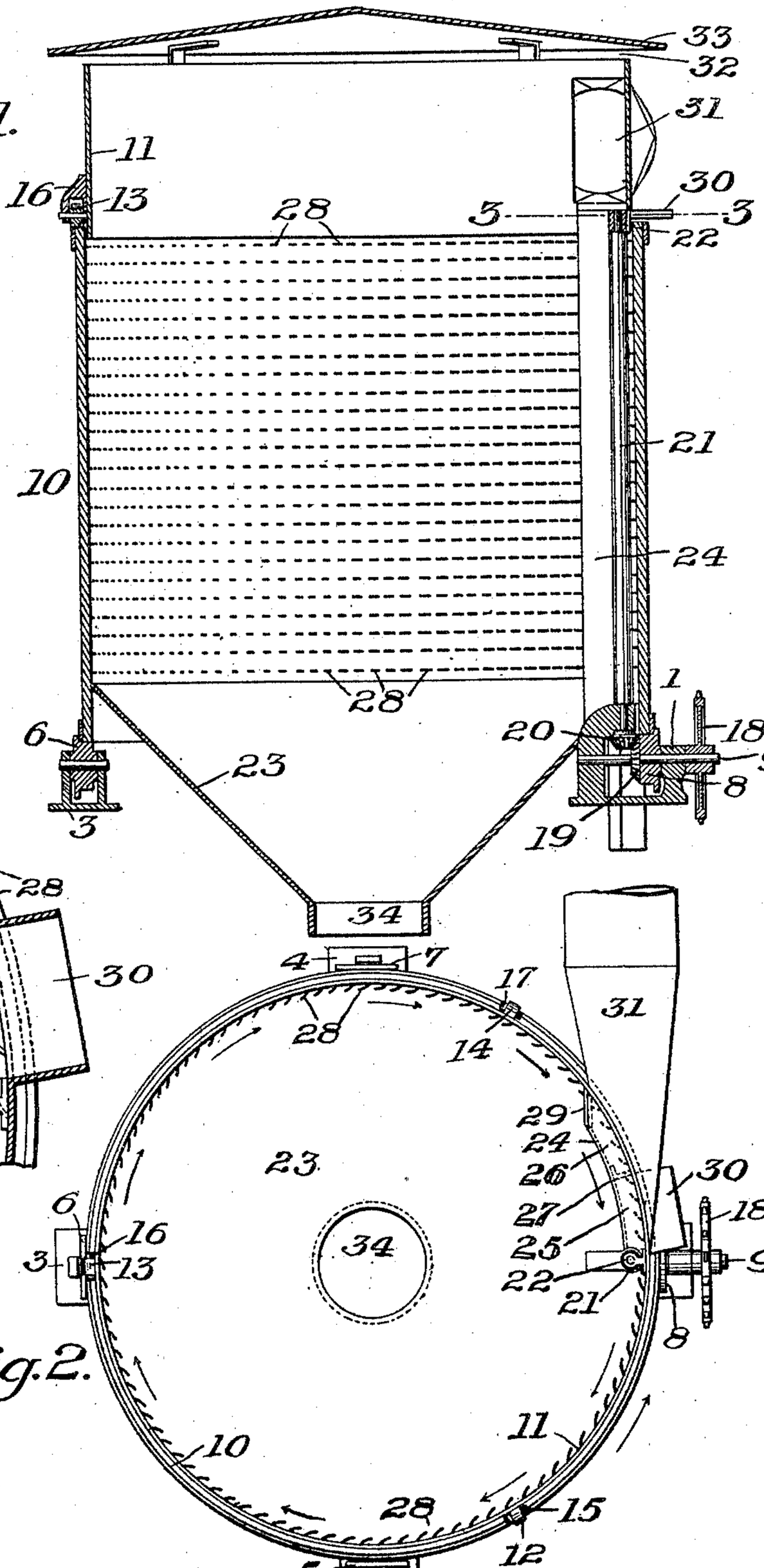

Fig. 3.

Fig. 2.

WITNESSES

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2 SHEETS—SHEET 2.

Fig. 4.

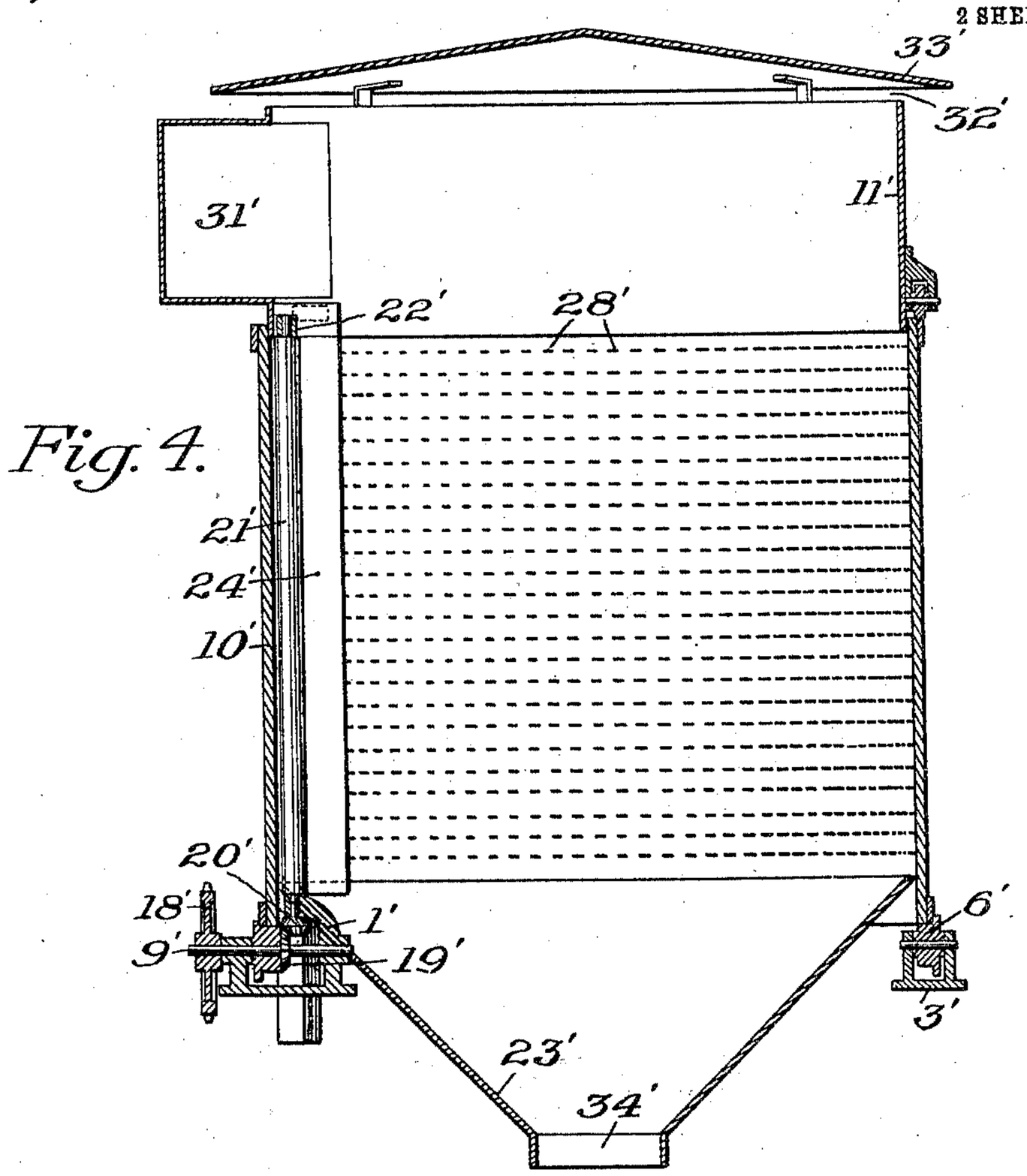
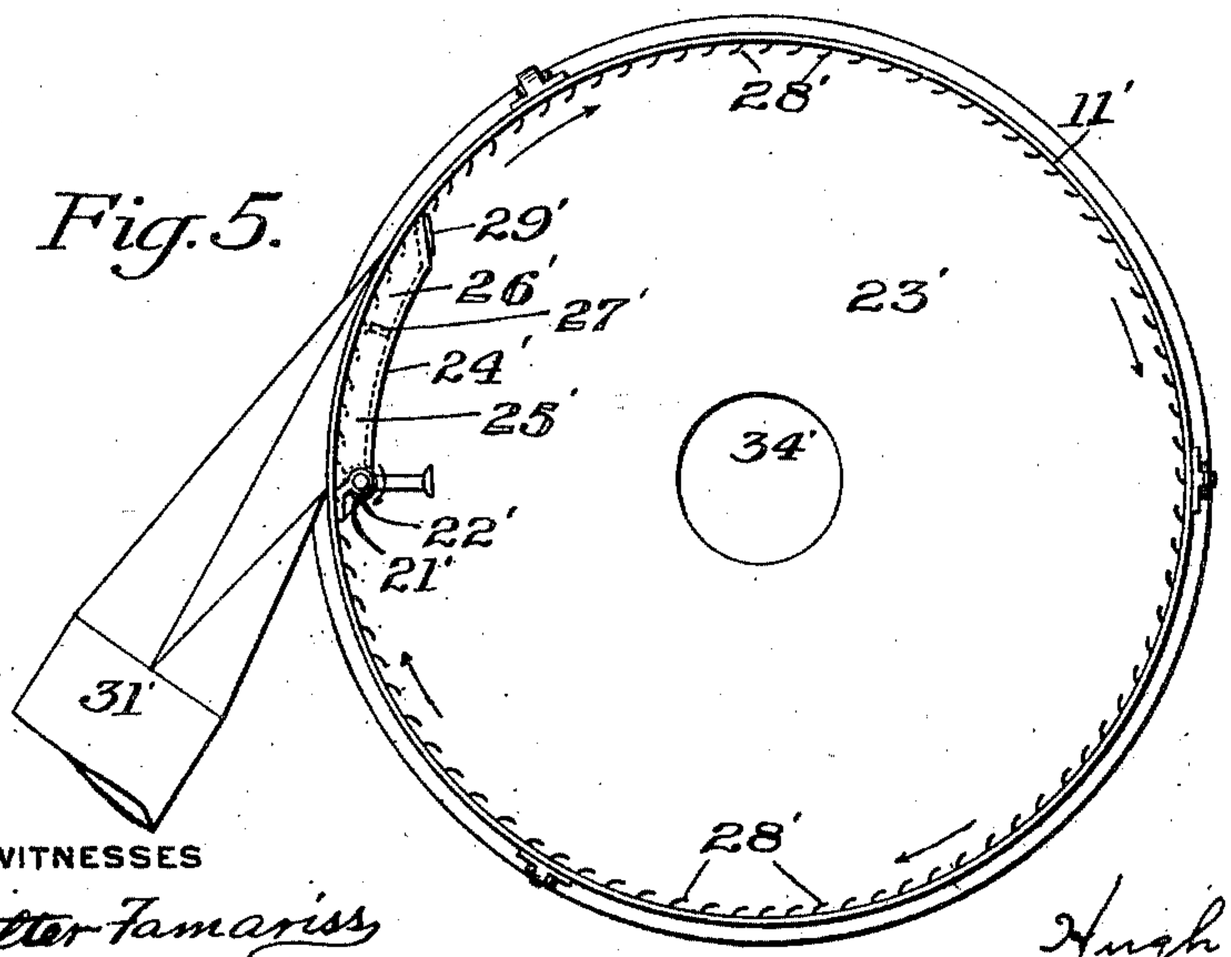


Fig. 5.



WITNESSES

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FIBER-CLEANER.

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To all whom it may concern:

Be it known that I, HUGH PETTIT, a citizen of the United States, residing at Memphis, in the county of Shelby and State of Tennessee, have invented certain new and useful Improvements in Fiber-Cleaners, of which the following is a specification.

This invention relates to fiber cleaners and has for its object to provide an improved device whereby loose fibers may be cleaned expeditiously, thoroughly, and in a more economical manner than it has been done heretofore.

Other and further objects will appear in the specification and be more particularly pointed out in the appended claims.

In the drawings,—Figure 1 is a vertical longitudinal section of the preferred embodiment of my invention, Fig. 2 is a top plan view of the embodiment shown in Fig. 1, with the hood removed, Fig. 3 is an enlarged detail section on the line 3—3, Fig. 1, Fig. 4 is a vertical longitudinal section of another embodiment of my invention, and, Fig. 5 is a top plan view of the embodiment shown in Fig. 4, with the hood removed.

Referring more particularly to the drawings, and first to the embodiment shown in Figs. 1 and 2, the journal pedestal or stand 1 and the roller supports 2, 3 and 4 are all rigidly mounted upon suitable foundation (not shown in the drawings). Within the supports 2, 3 and 4, are journaled the flanged rollers 5, 6 and 7 while in the pedestal 1 is rotatably mounted a flanged roll 8 upon a short spindle 9, upon the outer end of which is a sprocket wheel 18 by means of which the rotating drum is driven in a manner presently to be referred to. The cylindrical drum 10 is supported around its lower edge by the rollers 5, 6 and 7 and roll 8 which are suitably arranged for this purpose to adapt the drum to be rotated about its vertical axis. The upper end of the drum 10 is adapted to serve as a runway upon which the metallic cylindrical casing 11 is rotatably mounted by means of the rollers 12, 13 and 14 carried by brackets 15, 16 and 17 rigidly fastened to the outer wall of the casing 11.

In operation the casing 11 is held stationary by any suitable attachment (not shown) while the drum 10 rotates between the upper and lower rollers already described. For the purpose of driving the drum 10, the flanged roll 8 is rigidly secured to the spindle 9 driven by the sprocket wheel 18 and imparts its motion to said drum by engaging its lower edge. On the inner face of the roll 8, a bevel gear 19 which is keyed to spindle 9, engages a second bevel gear 20 keyed to the lower end of the vertical roll 21 to be again referred to presently. Roll 21 is rotatably mounted below in an overhanging portion of the pedestal 1 and above in a bracket 22 fastened to the inner wall of the casing 11. The roll 21 is thus adapted to rotate independently of the drum 10. Upon the inner cylindrical surface of the drum 10 are a multitude of small wire hooks 28 which are designed to catch and hold the fiber as it is blown into the drum. Extending throughout the vertical height of the drum and mounted rigidly with the upper casing 11 and the hopper 23 is a sheet metal casing 24 arranged adjacently to the inner wall of said drum along a small angular portion thereof. Said casing 24 comprises two vertical flues 25 and 26 formed therein by a vertical partition 27 whose projecting edge is in close proximity to the circular path of hooks 28. Along one longitudinal edge of the flue 25 is arranged the vertical roll 21, while along the opposite edge of the flue 26 is secured a leather flap 29 which is suitably notched along its free edge to permit the passage of the hooks 28. At the upper end of flue 25 is an air-inlet 30, while the lower end of flue 26 is connected with a suitable vacuum producing device (not shown in the drawing) which creates a flow of air inwardly through the opening 30, through flue 25 around the edge of partition 27, and through the hooks passing said edge and out the lower end of flue 26. Intersecting the cylindrical wall of the stationary casing 11 is a fiber-conveying tube 31, through which the fiber is introduced to the machine by an air blast. Said tube 31 is arranged tangentially to the casing 11 so that as the fiber is borne in by a blast of air, a whirling motion is imparted to the mass which causes the fiber to slide around the inner cylindrical wall of the casing 11 and drum 10 as it descends into the drum.

Referring now to Figs. 4 and 5 of the drawings, the foregoing description will be seen to apply fully to the embodiment of my invention shown herein. In Figs. 4 and 5 the same reference characters have been made use of, but in each instance have had

a prime mark (′) added to distinguish the parts from their counterparts shown in Figs. 1 and 2.

Referring first to Figs. 1 and 2, the operation of the machine is as follows:—In this embodiment, the parts are constructed and arranged in such a way that the drum 10 is caused to rotate about its vertical axis in a direction contrary to the direction of the flow of wind. In Fig. 2, the direction of the drum's rotation is indicated by the arrow on the outside, while the flow of air is indicated by the series of arrows arranged along the inside wall of the drum. Cotton or other fiber is conveyed by a strong blast through the flue 31 into the stationary casing 11, and by reason of the tangential arrangement of the flue 31 is whirled along the inside wall of said casing. As the fiber descends during its travel around the cylindrical wall, it meets the hooks 28 carried in an opposite direction by the rotating drum 10. The fiber is thus carried against the blast and dragged between the circumference of the roll 21 and the inside wall of the drum 10 into the vertical flue 25. The roll 21 being rotated in the same direction as drum 10 assists in drawing the fiber into the flue 25. When the fiber on the hooks 28 reaches the narrow passage formed between the partition and the inner wall of the drum, the intensified draft of air dislodges the fiber from the hooks whereupon it is drawn downwardly through the flue 26 and conveyed to a suitable receptacle (not shown). During the passage through the machine, as just described, the fiber is finely distributed, the dust being dislodged and passing out at the top through the annular opening 32 provided at the top between the casing 11 and the hood 33. The heavier particles of dirt and debris on the other hand gravitate into the hopper 23 and through the outlet 34 in the bottom thereof. The fiber is thus finely divided, cleared and collected again all in an automatic manner.

Referring now to Figs. 4 and 5 the same general process is carried out. In this embodiment, however, the drum 10′ is made to rotate in a direction corresponding to the flow of air and the several parts are constructed and arranged accordingly. The direction of rotation and of the flow of air is indicated by the arrow shown in Fig. 5.

I am aware that fiber-cleaning machines have been constructed in which the fiber is caught on the outer surface of a cylindrical drum and an air blast applied exteriorly or through perforations in the drum. Such constructions, however, are defective in that the draft leaves the drum without thoroughly cleaning the cotton. According to my invention on the contrary, the blast is caused to travel in the form of a cyclone within a cylinder provided with hooks on the interior wall, said hooks being pointed against the blast. While the rotation of the drum may be in the same direction with the blast or contrary thereto, the action causes the cotton to be pressed outward against the wall of the drum and on to the hooks where the fiber is subjected to a rigorous cleaning before being passed under a light roll presser and removed from the hooks by a distinct air blast.

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

1. In a fiber cleaning machine, the combination with a cylindrical drum provided interiorly with hooks; of means for introducing fiber into said drum, tangentially thereto, so that the fiber assumes a whirling motion within said drum, whereby the fiber is forced on to said hooks; means for producing an air blast to remove the dirt from the fiber, and means for removing the fiber from said drum.

2. In a fiber cleaning machine, the combination with a rotating drum; of a conveyer for introducing fibers tangentially into said drum; hooks arranged around the interior wall of said drum and adapted to catch the fibers as they are moved around the wall of the inner wall thereof; and a second conveyer for conveying the fibers from the drum, said second conveyer being provided with means for detaching the fibers from said hooks.

3. In a fiber cleaning machine, the combination with a rotating drum provided with hooks arranged around its inner wall; of a cylindrical casing arranged above said drum; a conveyer arranged and adapted to introduce the fibers into said casing under air blast and tangentially to the inner wall of said casing; a pressure roller within said drum and rotating therewith to press the fiber on said hooks; and an air conveyer arranged and adapted to detach the fibers from said hooks.

4. In a fiber cleaning machine, the combination with a drum rotating about its vertical axis, said drum being provided around its inner wall with hooks for engaging the fiber; a stationary casing coaxially arranged above said drum; a conveyer for fiber extending through the wall of said casing, said conveyer being arranged tangentially to said wall to impart a whirling movement to the fiber whereby said fiber is caused to become engaged by said hooks during its descent through said drum; a pressure roller for pressing the fiber upon said hooks; and a second conveyer adapted to detach the fiber from the hooks under the action of air blast and to remove it from said drum.

5. In a fiber cleaning machine, a cylindrical casing provided with means for introducing fiber thereinto tangentially under

air blast; a rotating drum provided with hooks around its inner wall, said hooks pointing against the air blast; a roller for pressing the fiber on to the hooks; a conveyer for removing the fiber from said drum; and means connected with said conveyer for causing an air draft to pass said hooks in such manner as to remove the fiber therefrom.

6. In a fiber cleaning machine, the combination with a cylinder rotating about its vertical axis, said cylinder being provided around its inner wall with hooks for engaging the fiber; of a coaxial stationary cylindrical casing above said rotating cylinder; a stationary coaxial hopper below said rotating cylinder; an air duct for conveying fiber to said casing, said duct being arranged to introduce the fiber tangentially to the inner surface of said casing, whereby a whirling movement is imparted to the fiber; and a conveyer extending lengthwise between said casing and hopper, said conveyer being mounted to have the hooks of the rotating cylinder pass therethrough, said conveyer being provided with a narrowed wind-passage extending throughout the full vertical extent of the hooks in said rotating cylinder whereby the fiber is disengaged from the hooks.

7. In a fiber cleaning machine, a vertical cylindrical casing provided with means for introducing fiber tangentially to the inner surface to impart a whirling motion to said fiber; a cylinder coaxial with said casing and below the same, said cylinder rotating in a direction opposite to the movement of the fiber and provided with hooks pointing in the direction of its rotation; and an exhaust air flue arranged parallel to the vertical axis of the cylinder in close juxtaposition to the inner wall thereof, said flue being provided at one edge with a pressure roller for compacting the fibers on the hooks, with a constricted air passage wherein the fiber is removed from the hooks by air blast during its passage therethrough, and a flap along the other edge adapted to permit the passage of the hooks while maintaining a partial vacuum in said flue.

8. In a fiber cleaning machine, the combination with a hook bearing cylinder rotating about a vertical axis, said cylinder being provided with means for introducing fiber thereto tangentially in a direction opposite to its rotation; and a conveyer mounted within and parallel to the axis of said cylinder close to the inner surface of the cylinder, said conveyer having a partial vacuum maintained therein, and means permitting the hooks to pass in and out of said conveyer during which passage the fiber is drawn from the hooks.

The foregoing specification signed at Memphis, Tenn. this sixth day of February, 1909.

HUGH PETTIT.

In presence of—
ELMO F. READ,
H. E. STONE.