

May 19, 1959

J. P. FLANNERY
DRIER LINT COLLECTOR

2,886,900

Filed April 15, 1955

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FIG. 1.

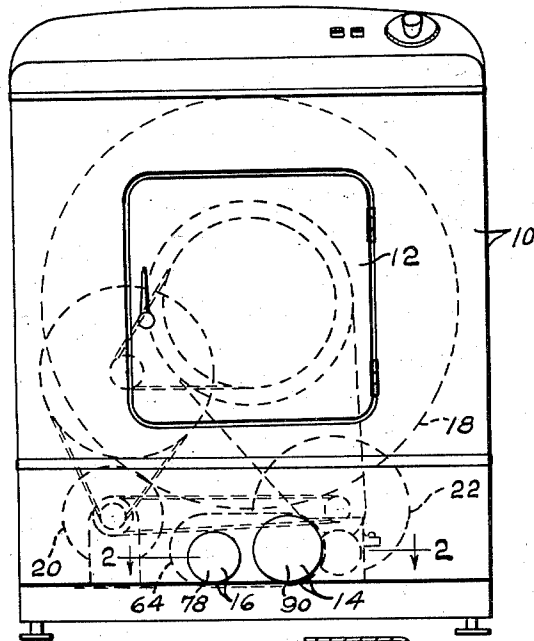
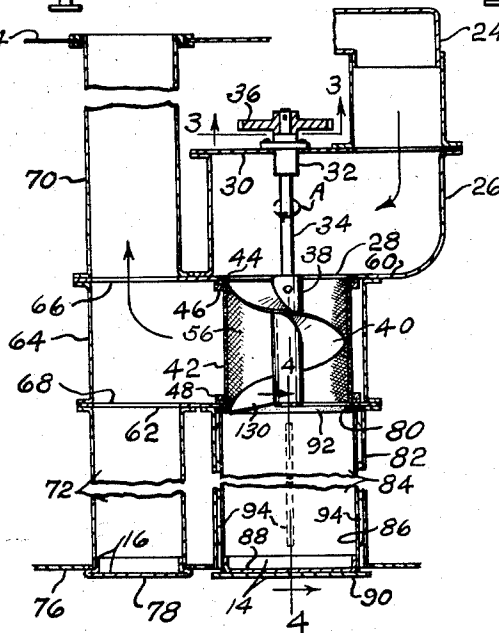


FIG. 2.



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FIG. 3.

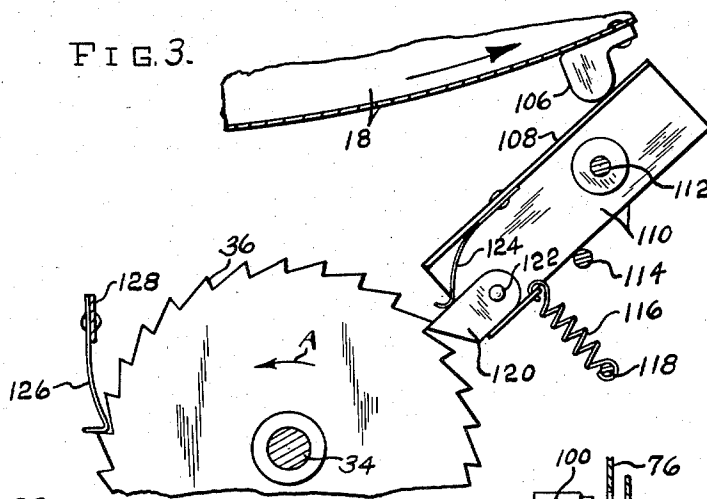


FIG. 4.

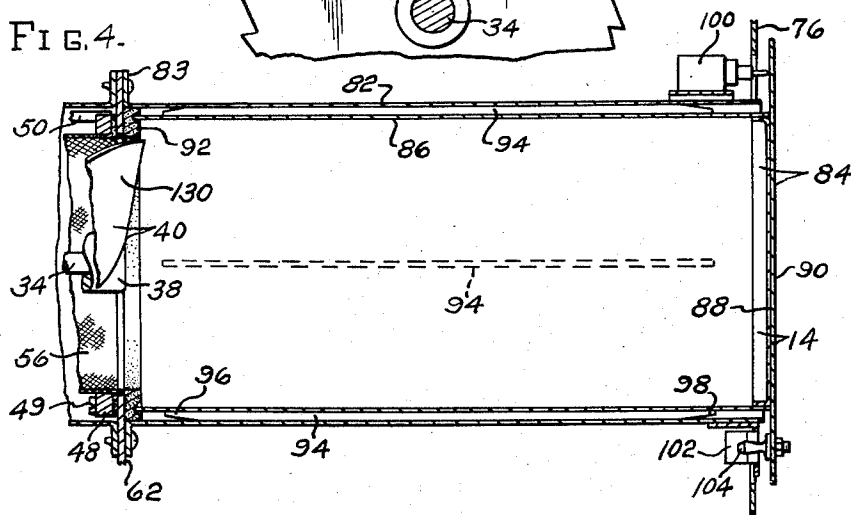
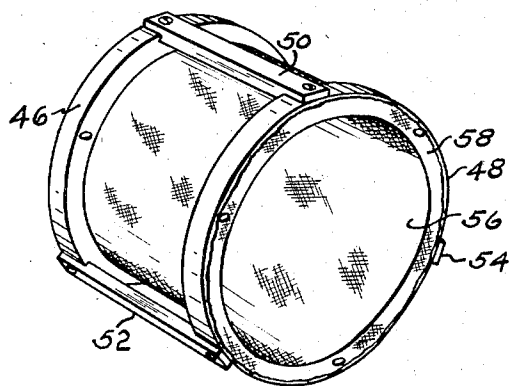


FIG. 5.



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2 Claims. (Cl. 34—82)

This invention relates to laundry driers and more particularly to a lint collector for such driers.

In laundry driers, particularly of the tumbling drum type, lint is loosened from the laundry during the drying operation and discharged with the drying air blast, unless some form of lint trap or screen is provided. Such lint quickly accumulates on a screen or trap in sufficient quantity to restrict the normal flow of air. Various lint-collecting devices have been developed to minimize the difficulty resulting from the restriction to flow caused by the lint, but in most instances, the lint is collected upon a screen and after one or more operative cycles have been performed, the screen becomes clogged sufficiently to interfere with the circulation of heated air, and the efficient operation of the drier. Any reduction from the normal flow of air through the drier tends to raise the temperature of the drier, causing the protective thermostatic cutouts to operate, temporarily suspending drier operation.

The present invention is directed to a lint screen arrangement wherein the screen is continually cleared of lint, so that the flow of air through the machine will always remain the same. The invention is further directed to collecting the lint in a compacted form so that the machine may operate through a large number of cycles, before requiring any attention. The invention is so conceived as to render the drier operation consistently the same during the performance of many drying cycles, since the screen is maintained clear at all times and the lint is caused to be compacted in a receptacle separate and apart from the air passages.

The above and other novel features of the invention will appear more fully hereinafter from the following detailed description, when taken in conjunction with the accompanying drawings. It is expressly understood that the drawings are employed for purposes of illustration only and are not designed as a definition of the limits of the invention, reference being had for this purpose to the appended claims.

In the drawings, wherein like reference characters indicate like parts:

Figure 1 is a front elevation of a drier to which the lint collector has been applied;

Figure 2 is a sectional view through the lint collector and air passages taken substantially on the line 2—2 of Figure 1;

Figure 3 is a fragmentary elevational and sectional view of the drive mechanism for the lint screen cleaner and lint compacter;

Figure 4 is a fragmentary sectional view taken substantially on the line 4—4 of Figure 2; and

Figure 5 is a perspective view of the lint screen.

In Figure 1 there is shown a drier having a cabinet 10, access door 12, a lint screen collector 14 and a front discharge outlet 16. Within the cabinet there is provided the usual drier tumbling drum, for example as is shown in application 365,309 filed July 1, 1953. In general, there is provided a revolving drum 18 which

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is driven by the motor indicated at 20. As is well understood in the art, heated air is caused to circulate through the drum 18 by a blower 22, the discharge outlet of which is indicated at 24. The outlet is connected to the

5 lint collector and screen mechanism shown in Figure 2. The blower outlet duct 24 connects with a housing 26 having a large circular outlet aperture 28 in the forward wall thereof. In the rear wall 30 there is provided an elongated bearing 32 through which extends a shaft 34. The shaft is provided with a drive ratchet 36 at its rear-
10 ward end for step by step rotation and such shaft extends through the aperture 28 and is substantially concentric therewith. Mounted on the end of the shaft is a hub 38 having a helical blade 40, the outer diameter of which is substantially that of the internal diameter of a tubular filter screen 42 which surrounds the blade, and is positioned concentric with the shaft 34 and held against the forward face of the marginal edge 44 of the opening 28.

The filter screen as shown in Figure 5 comprises a pair of rings 46 and 48 which are spaced by three column members 50, 52 and 54. The rings 46 and 48 support a section of tubular nylon mesh filter material, such as is indicated at 56 and the end edges of the material are turned outwardly over the outer faces of the rings 46 and 48 and cemented thereto in the manner indicated at 58. The internal diameter of the nylon mesh tube 56 is substantially the same as the external diameter of the helical blade 40, so that as the helical blade 40 rotates, the blade will sweep the lint from the nylon mesh, moving the lint axially forward through the forward opening of the filter screen.

The filter screen is mounted between the forward wall 60 of the housing 26, and a further plate 62 which is spaced therefrom by a flanged housing member 64. The housing member 64 is somewhat oval in section and comprises spaced semi-cylindrical end portions. Its elongated shape provides a discharge passage laterally disposed in relation to the filter screen referred to. The housing member also surrounds at one end, the filter screen, in spaced relation, so that the full cylindrical area of the screen will be effective. The wall member 60 and the plate 62 are provided with forward and rearward apertures 66 and 68 which couple with ducts 70 and 72 which extend to the rear panel 74 and to the discharge outlet 16 in the front panel 76, respectively. A cap 78 is provided to close off the duct 72 or the duct 70 depending upon whether discharge is desired at the front or rear of the machine. The plate 62 has an aperture 80 in axial alignment with the aperture 28, and there is provided a tubular housing 82 having a flanged end 83, which extends from the plate 62 to the front panel 76. The filter screen ring 48 is secured to the plate 62 by screws 49.

As is shown in Figure 4, the housing 82 is adapted to receive a cylindrical container 84 having an inner open end adapted to collect lint which is removed from the internal wall of the filter 56 by the rotary movement of the helical blade 40. The container comprises a cylindrical body portion 86 closed at the outer end by a cap 88 having a circular flange plate 90 of substantially greater diameter than the cap 88. The inner end of the cylindrical portion 86 abuts against an annular yielding felt seal such as 92, and externally, the cylindrical member 86 is provided with four wire guides such as 94, which are soldered to the exterior of the container at the ends as at 96 and 98, which ends are beveled to facilitate insertion of the container into the housing. Such wires may have a slight resilient outward bow so as to frictionally grip the internal wall of the housing 82. The end plate 90 is adapted to engage a switch 100 in the master control circuit of the drier, and the flange and

forward panel 76 are also provided with a tapered pin 104 and spring clip 102 for normally holding the container seated within the housing 82, in the position shown in Figure 4, with the switch 100 held closed.

In order to rotate the helical blade relatively slowly in the direction of arrow A during drier operation, a ratchet feed mechanism such as is indicated in Figure 3 is provided. As is shown, the drum 18 is provided with a rubber bumper 196, which on each revolution engages the flange 108 of a lever 110, pivoted as at 112 on a pivot pin which may be mounted upon the back wall 30 of the housing 26. Return movement of the detent lever is limited by a stop pin 114, the return movement being effected by a light coil spring 116, extending to a pin 118. The pins 114 and 118 may likewise be mounted on the back wall 30 of the housing 26. The pawl 120 is pivoted as at 122 to the lever and resiliently urged to the position shown by a leaf spring 124. Retrograde movement of the ratchet wheel 36 is prevented by a spring pawl 126 which is supported on a bracket 128 likewise extending from the wall 30.

From the structure shown, it will be seen that upon each rotation of the drier basket, the lever 110 will be rocked sufficiently in a clockwise direction to drive the ratchet wheel 36 one notch, so that gradual rotation of the helical blade 40 will be effected. Since the drier drum rotates around 50 or 60 revolutions per minute, and a drying cycle takes about 30 minutes, it will be seen that the helical blade will be rotated a number of times during each drying cycle. The rotation of the blade and its helical outer edge will continuously wipe the surface of the nylon filter screen and remove such lint as collects thereon. At the same time, such helical blade will move the lint loosened from the nylon screen forward within the screen and into the container 84. The lint will gather in such container until the container is full, and will continue to gather since the end 130 of the helical blade will tend to compact the lint until a substantial degree of compactness has been effected.

When additional lint is forced into the container against the compacted mass already present, the helical blade will tend to overload the container 84 and will gradually tend to move the same forward in the housing 82, and when sufficient pressure is exerted, movement will occur, the latch 102, 104 yielding to allow the plate 90 to move away from the housing 82, at which time the switch 100 will be caused to open, thereby suspending the operation of the drier. The container 84 will then be removed and the compacted slug of lint discarded, after which the container will be replaced, the switch closed, and operation of the drier restored. The container is of such capacity as to store a large quantity of lint when compacted so that hundreds of repeated operations of the drier may be effected without interruption or the necessity of considering the effect of the lint undergoing collection. The nylon screen will be maintained clear at all times and the operating characteristics of the drier will remain unchanged. Even when the container 84 becomes filled, the drier operating characteristics still remain unchanged and although the drier operation will be temporarily suspended by operation of the switch 100, the drier will continuously operate at full efficiency throughout the many cycles required to fill the container 84 to such an extent as to cause stoppage.

It will be understood that the operator may on occasion remove the container 84 and empty the lint contained therein, and if such practice is followed, the opera-

tion of the drier will never be suspended by the overloading or compacting of the lint in the container. On the other hand, the operator may disregard the collection of the lint until the container is filled and the switch opened, which will occur only infrequently. Whichever practice is resorted to, the drier will operate at all times at full efficiency.

Although a single embodiment of the invention has been illustrated and described, it is to be understood that the invention is not limited thereto. As various changes in the construction and arrangement may be made without departing from the spirit of the invention, as will be apparent to those skilled in the art, reference will be had to the appended claims for a definition of the limits of the invention.

What is claimed is:

1. In a laundry drier lint collector, a drier discharge duct, a lint screen of cylindrical form and open at both ends, arranged in said duct and adapted to receive lint laden expended drying medium in one end, and pass said expended drying medium with the lint removed radially through the cylindrical screen, means for collecting lint connected to the other end of said screen, rotary radial spiral bladed means operable continuously during drier operation for wiping lint from the internal surface of the screen and delivering such lint axially to the collecting means, said bladed means being adapted to compact the lint in said collecting means, and means responsive to an overloading and compacting of lint in said collecting means for suspending drier operation.
2. In a laundry drier lint collector, a drier discharge duct comprising a lint screen chamber having opposite parallel walls and having aligned circular apertures therein, a cylindrical lint screen aligned with said apertures and extending from one wall to the other, a shaft journaled in the duct, and extending axially into said filter and having a helical wiper blade adapted to traverse the internal wall of said screen and move lint therefrom axially toward one of said walls and the aperture therein, said blade having a radial lint compacting end portion adapted to sweep the aperture in said one wall, means to deliver lint laden expended drying medium to the other aperture and into said cylindrical screen, said chamber having a wall surrounding said screen and extending between said parallel walls and constituting a discharge duct for lint free expended drying medium, and a collection chamber having an open end yieldingly secured against said first named aperture and adapted to receive lint moved from said screen wall by said helical wiper, means for substantially continuously rotating said shaft during drier operation, and means responsive to movement of said collector chamber away from said first named aperture in response to compacting of lint in said collector chamber by said helical wiper for suspending drier operation.

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