Aug. 7, 1962 F. H. RICHTERKESSING 3,047,963

LINT COLLECTOR

Filed Sept. 21, 1959 2 Sheets-Sheet 1

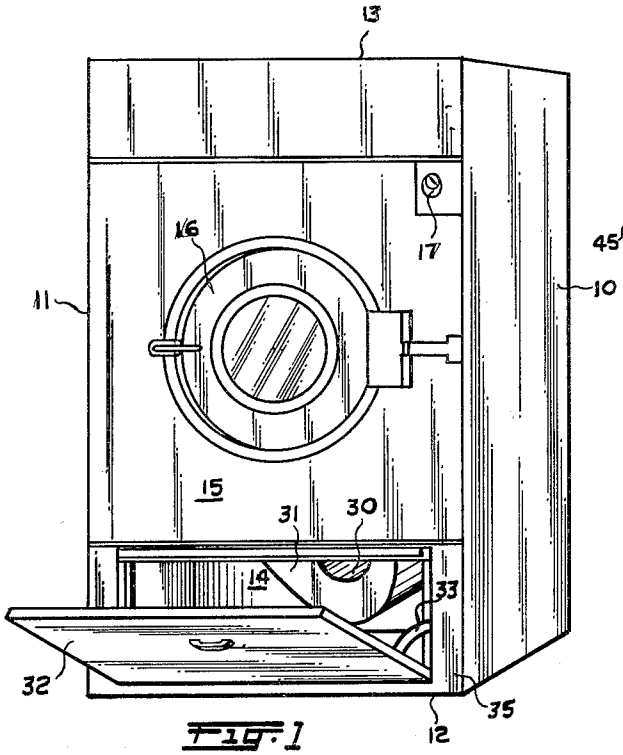


FIG. 1

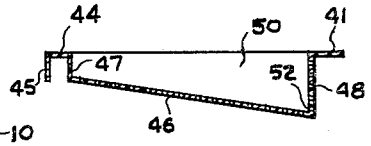


FIG. 6

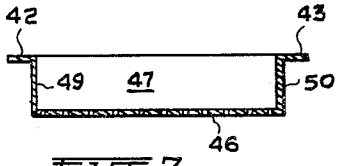


FIG. 7

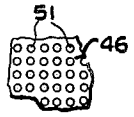


FIG. 8

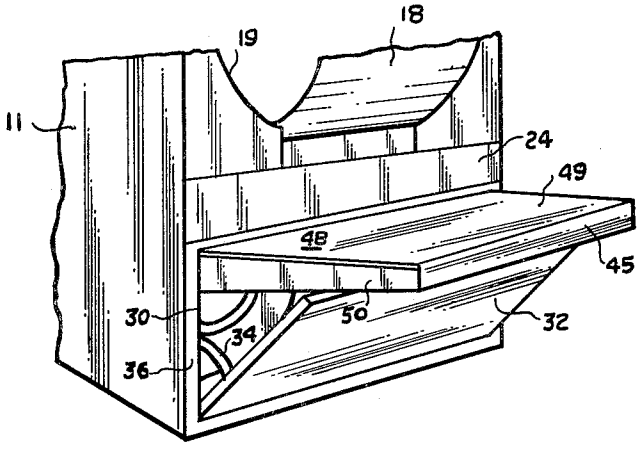


FIG. 2

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LINT COLLECTOR

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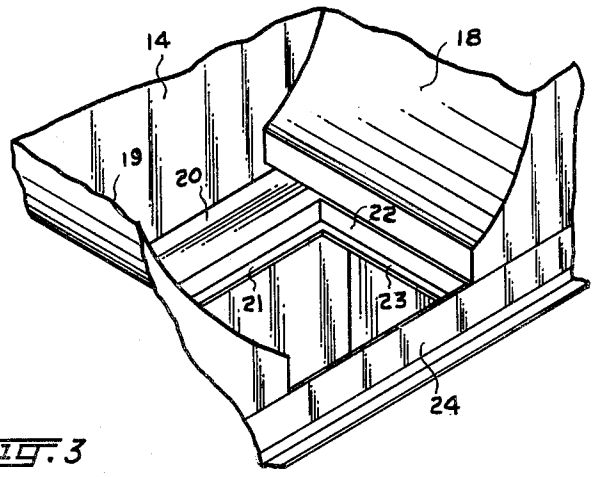


FIG. 3

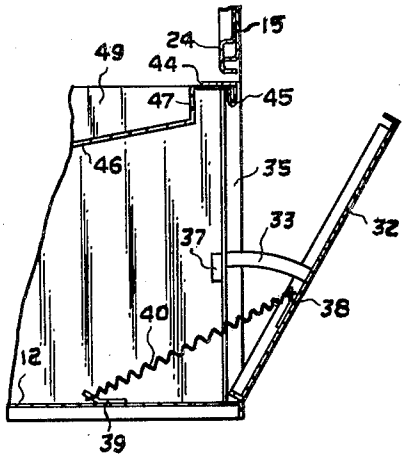


FIG. 4

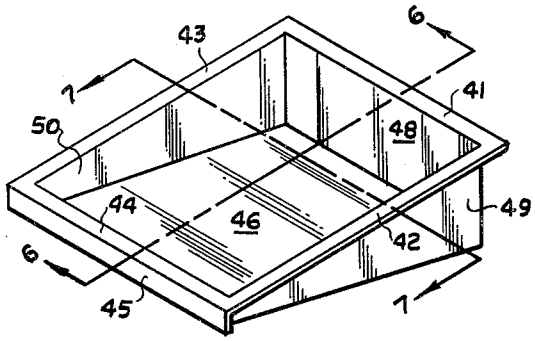


FIG. 5

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United States Patent Office

3,047,963
Patented Aug. 7, 1962

3,047,963

LINT COLLECTOR

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Filed Sept. 21, 1959, Ser. No. 841,311
6 Claims. (Cl. 34—82)

This invention relates to an improved lint collector for clothes dryers and more particularly to lint collectors employed upon dryers equipped for coin-control operation, as in unattended washer and dryer establishments.

While it is commonplace to provide automatic clothes dryers with some type of lint collecting agency and many varieties of such agencies located at the exhaust side of such dryers have been proposed, nevertheless it is found that when the dryer is employed at installations where it may be used almost continuously by many users, some of whom are relatively unskilled in proper operating procedures, the efficient usage of the equipment is frequently handicapped by limitations imposed by the type of lint collector employed. As the description proceeds it will be apparent that the present invention is in no way limited to use on dryers employed in commercial installations, but, as an example, the dryer herein illustrated is of the commercial coin-controlled type.

Such dryers are customarily arranged in batteries having suitable venting arrangements for preventing blowback of pressure from one dryer to another and also may have an electrical circuit which interrupts the supply of heat to any given dryer when the dryer basket door is opened, or when the dryer lint tray is opened, or when the lint tray requires cleaning, or when various abnormal conditions are encountered. It is therefore an object of the present invention to provide an improved lint collector which may be employed with various types of clothes dryers and which requires no modification of controls, operation, or construction of such dryers when used in unattended coin-controlled installations.

Another object is to provide a lint collector of enlarged lint-holding capacity permitting operation of the dryer for extended periods of time before cleaning of the collector is required.

Another object is to provide a lint collector mounted for rapid and easy cleaning.

A further object is to provide a lint collector which builds up a lint collection progressively from a predetermined area and permits the dryer to operate at substantially uniform efficiency until the lint collector is filled.

Other objects and advantages will become more apparent as the description proceeds and when considered in conjunction with the accompanying drawings in which

FIG. 1 is a perspective view of a dryer equipped with the lint collector of the invention and showing the collector in place prior to removal for cleaning.

FIG. 2 is a perspective view of the lower portion of the dryer with parts of the casing omitted to show internal construction and with the lint collector in withdrawn position for cleaning.

FIG. 3 is a detail perspective view showing the guide flanges for the lint collector with parts of the dryer casing omitted.

FIG. 4 is a vertical sectional view of parts of the access door and lint collector.

FIG. 5 is a perspective view of the lint collector.

FIG. 6 is a sectional view taken on line 6—6 of FIG. 5.

FIG. 7 is a sectional view taken on line 7—7 of FIG. 5, and

FIG. 8 is a detail face view of a portion of the lint collector surface.

In accordance with the invention a dryer casing having a first compartment housing the dryer basket and a communicating second compartment at the lower end of the dryer and serving as a large air collecting chamber, herein called an air plenum chamber, is provided. A motor driven blower pulls air and lint from the first compartment and discharges air from the second compartment through the usual discharge vent having a control damper arrangement connected thereto. The lint leaving the first compartment is collected upon a tray structure of non-uniform depth and which is interposed between the first and second compartments thus requiring substantially all air reaching the blower to pass through the lint collector. The deepest portion of the lint collector is nearest the intake to the blower and the collected lint is progressively built up from a region nearest that blower intake.

Referring first to FIG. 1, a suitable dryer embodying the invention may include a casing having side walls 10 and 11, a bottom 12, top 13 and rear wall 14. A front panel 15 having an opening therein for insertion and removal of clothes and closed by the basket door 16 is affixed to the casing, and when the dryer is employed in unattended installations a coin-control means 17 may be incorporated in the front panel at a convenient height thereon. It will be understood that the dryer includes an air intake, means for heating the incoming air in a controlled manner, a rotatable basket, means for driving the basket and the blower, and suitable controls for operating the dryer through a prescribed cycle of operation. These parts are not shown, however, since they are conventional and as such form no part of the present invention and in the interests of clarity are therefore omitted from the drawings.

Considering now FIGS. 2 and 3, the interior space within the casing includes arcuate sweep sheets 18 and 19 affixed to rear wall 14 and serving to define a generally cylindrical compartment in which a cylindrical dryer basket such as shown in U.S. Patent 2,816,742, Richterkessing and Ingold, may be rotatably mounted along a generally horizontal axis. Heating air supplied to the dryer passes between these sweep sheets as shown in U.S. Patent 2,870,545, Richterkessing, and after contacting the clothes in the basket, is withdrawn from the dryer in the manner later to be disclosed. At its greatest diameter, the basket compartment has an area transversely of the casing which is less than the transverse area of the air plenum compartment later to be described.

Extending inwardly from the rear wall 14 (FIG. 3) is an imperforate shelf 20 having an inwardly projecting flange 21 for supporting a lint tray or collector, this shelf being rigidly mounted on the casing below the lower ends of the sweep sheets. Cooperating shelves with similar flanges, one being shown at 22 and 23 respectively, extend inwardly from sides walls 10 and 11, thus defining, in conjunction with a horizontal facing strip 24 on the front of the casing, a generally rectangular aperture through which air and lint carried thereby are removed from the basket compartment. As best seen in FIG. 4, the lower edge of horizontal facing strip 24 is spaced above the upper surface of the lint tray sufficiently to permit an upward tilting of that tray when removal of the same from the casing is desired.

At the bottom of the casing and below the shelves, an enlarged space of appreciable depth and herein called an air plenum compartment is provided, this space having a transverse area appreciably larger than the transverse area of the basket compartment or of the aperture leading therefrom. Near the floor 12 of the casing and mounted upon the rear wall 14 thereof a conventional blower 30, having a central intake and a peripheral discharge leading into an air discharge duct 31 extending from the casing, is located. Any suitable damper means, not shown, for

preventing blow-back into the dryer may be incorporated into the discharge duct. Also at the front of the air plenum compartment and forming a wall of the same, an access door 32 is pivotally mounted on the casing. This door is pivotable along its lower edge and is movable to an extent permitting complete removal of the lint collector when desired, as well as to provide a support for the lint collector when complete removal of the same is unnecessary. As seen in FIGS. 2 and 4 the door has attached thereto adjacent its side edges, arcuate arms 33 and 34 engageable in slots in the vertical facing strips 35 and 36 on the front of the casing. Each arm, moreover, is equipped with an abutment 37 at its distal end in order to limit outward pivoting of the access door. Fastened at one end to a bracket 38 centrally located on the inner side of the access door and to a bracket 39 on the floor 12 of the casing, is a tension spring 40 serving to bias the access door normally into closed position. By mounting the spring at appropriate points and with appropriate tension, the counter balancing weight of door 32 may also be employed to hold the door in fully opened position, as when the tray is to be completely removed from the dryer, but permitting the spring to become operative to close the door merely by exerting a slight push upon that door.

With the foregoing in mind, reference now is made to FIGS. 5 to 8 showing an improved lint collector of tray form for use in combination with the described dryer. This collector preferably is formed of a metal resistant to corrosion resulting from contact with vapors encountered in dryer usage, and is characterized by its relatively large holding capacity making it particularly suitable for use with dryers employed at the aforementioned unattended establishments. Along its top the tray includes a rear flange 41 adapted for seating upon the stationary flange 21 of shelf 20 and cooperating side flanges 42 and 43 adapted for seating upon the stationary side flanges such as shown at 23. Completing the upper periphery of the tray is a front flange 44 extending into an overhang portion 45 and serving as a handle for manipulating the tray. As a significant feature, the tray is formed with a sloping floor 46 extending from a lower edge of front wall 47 to the lower edge of a deeper rear wall 48 and having a sufficient incline to assist in the sliding of collected lint therealong under the draft imposed by the blower. Parallel side walls 49 and 50 are attached to the front and rear walls and help to reinforce the tray into a rigid structure.

Although the floor, front and rear walls and side walls, may all be made of perforated construction without departing from the invention, I prefer to leave side walls 49 and 50 imperforate in order to assure a better control of lint collection. As noted in FIG. 8, the metal surface of floor portion 46, for example, includes a series of uniformly spaced small apertures 51 having a size sufficient to intercept lint contained in the air being removed from the dryer, but not so small as to build up an excessive pressure head in the dryer basket compartment and which would result in tripping the controls of the dryer prematurely. In addition to the floor portion of the tray, the rear wall portion 48 and the front wall portion 47 also are perforated. Accordingly, with a clean tray in place and with the dryer beginning operation, lint contained in the outgoing air can strike the tray surfaces along rear wall 48, floor 46 and front wall 47. However, since the deepest portion of the tray is nearest the blower intake and the shallowest portion is farthest removed from that intake, the lint tends to collect in the trough 52 (FIG. 6) and to build up progressively from that trough region. This predetermined depositing of lint resulting from the tray construction assures that the large capacity tray will be substantially completely filled before the critical air flow resistance, ultimately caused by the apertures in front wall 47 being blocked by a heavy lint deposit, reaches the point at which the automatic controls of the dryer operate to shut off heat to that dryer. As above mentioned, this feature is of particular value in unattended coin-control installations of such dryers.

An additional convenience in manipulating such a filled tray is noted in FIG. 2. When the operator desires to clean out and dispose of the collected lint, it merely is necessary to open access door 32 outwardly and to pull the filled tray outwardly by its handle portion 45. As this occurs, the tray slides along its flanges 42 and 43, and with the bottom 46 of the tray coming to rest upon the top edge of the access door as a support. No lifting of the tray is required and after being cleaned while resting in the position of FIG. 2, the tray may then be promptly moved back into its operative position.

Having thus described the invention, various features thereof will be apparent to those skilled in the art. The blower draws air from a relatively large air plenum compartment and with the exception of minor leaks, for example about access door 32, all air moving into the blower intake must first pass through the lint tray. Any buttons, or other objects dislodged from the clothes in the basket are intercepted by the tray. The tray is a simple construction with a simple slidable mounting contributing to an inexpensive but fully reliable structure. Full air flow is maintained through the dryer until the tray is completely filled with lint and thus the interval between required tray cleanings is extended. Since the size of the air plenum compartment transversely of the casing is larger than the sizes of the basket compartment transversely of the casing, a relatively large size tray may be used and air can be drawn through that tray simultaneously over a large surface area comprising the sum of the surfaces of the floor, front and rear wall portions of the tray. Thus, sensitive controls for the dryer which are dependent on a continued air flow for dryer operation may be used, even through the tray is to be cleaned at relatively long intervals.

While I have shown a particular embodiment of my invention, it will be understood, of course, that I do not wish to be limited thereto since many modifications may be made; and I, therefore, contemplate by the appended claims to cover any such modifications as fall within the true spirit and scope of my invention.

What is claimed is:

1. In a clothes dryer, a casing having a basket compartment and an air plenum compartment in communication with each other, an air discharge duct leading from said air plenum compartment, means including a blower disposed at the rear of said air plenum compartment for effecting flow of air through said compartments and thence into said duct, a lint collector mounted in said air plenum compartment upstream of said blower and through which air moving from said basket compartment is required to pass, a movable access door pivotally mounted on said casing at the front thereof and serving as a wall of said air plenum compartment, and means including a rigid support interiorly of said casing and slidably supporting said collector for withdrawal of the same with a generally horizontal movement from said casing upon opening of said door, said collector having an inclined floor extending downwardly from a front edge adjacent said door to a rear edge adjacent the intake of said blower thereby to provide on said collector a deeper collection of earlier deposited lint in the region adjacent said blower intake and a gradually decreasing thickness of subsequently deposited lint in the direction of said door.

2. A dryer as defined in claim 1 wherein said lint collector comprises side walls, a rear wall, a front wall and said floor; said rear wall and said front wall and said floor being perforated for passage of air therethrough.

3. A dryer as defined in claim 1 wherein the size of said air plenum compartment transversely of said casing is greater than the size of said basket compartment transversely of said casing.

4. A dryer as defined in claim 1 wherein said rigid support comprises generally horizontal flanges mounted

upon the back wall and side walls of said casing and defining an aperture connecting said compartments, the size of said aperture transversely of said casing being less than the size of said air plenum compartment transversely of said casing.

5. In a clothes dryer, a casing having a basket compartment and an air plenum compartment in communication with each other, an air discharge duct leading from said air plenum compartment, means including a blower for effecting flow of air through said compartments and thence into said duct, a lint collector mounted in said air plenum compartment upstream of said blower and through which air moving from said basket compartment is required to pass, a movable access door pivotally mounted along a lower edge upon said casing at the front side thereof and serving as a wall of said air plenum compartment, said door being detached from said lint collector, means including a rigid support interiorly of said casing and slidably supporting said collector for removal of the same with a generally horizontal movement from said casing upon opening of said door, said rigid support being disposed in a plane above the upper edge of said door when said door is fully opened, and spring means attached to said door and to said casing for holding said door in normally closed position on said

casing, said collector having an inclined floor extending downwardly from a front edge adjacent said door to a rear edge adjacent the intake of said blower thereby to provide on said collector a deeper collection of earlier deposited lint in the region adjacent said blower intake and a gradually decreasing thickness of subsequently deposited lint in the direction of said door, said floor having a dimension sufficient to engage said floor with the top edge of said door in opened position thereof thus to support the collector upon the opened door during removal of lint from said collector.

6. A dryer as defined in claim 5 wherein said rigid support comprises generally horizontal flanges extending inwardly from the rear and side portions of said casing and said collector includes flanges at the rear and sides thereof for resting upon said first mentioned flanges.

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