June 28, 1960 E. J. BARNETT 2,942,353

APPARATUS FOR DRYING FABRICS

Filed Dec. 11, 1956

FIG. 2.

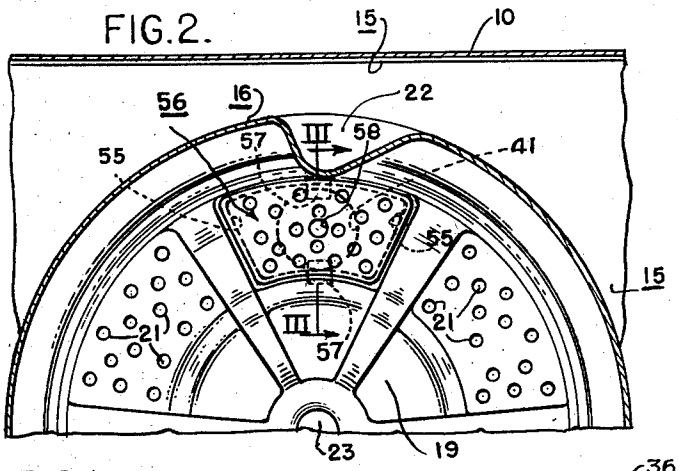


FIG. 3.

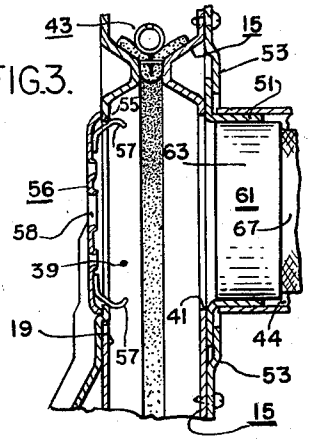
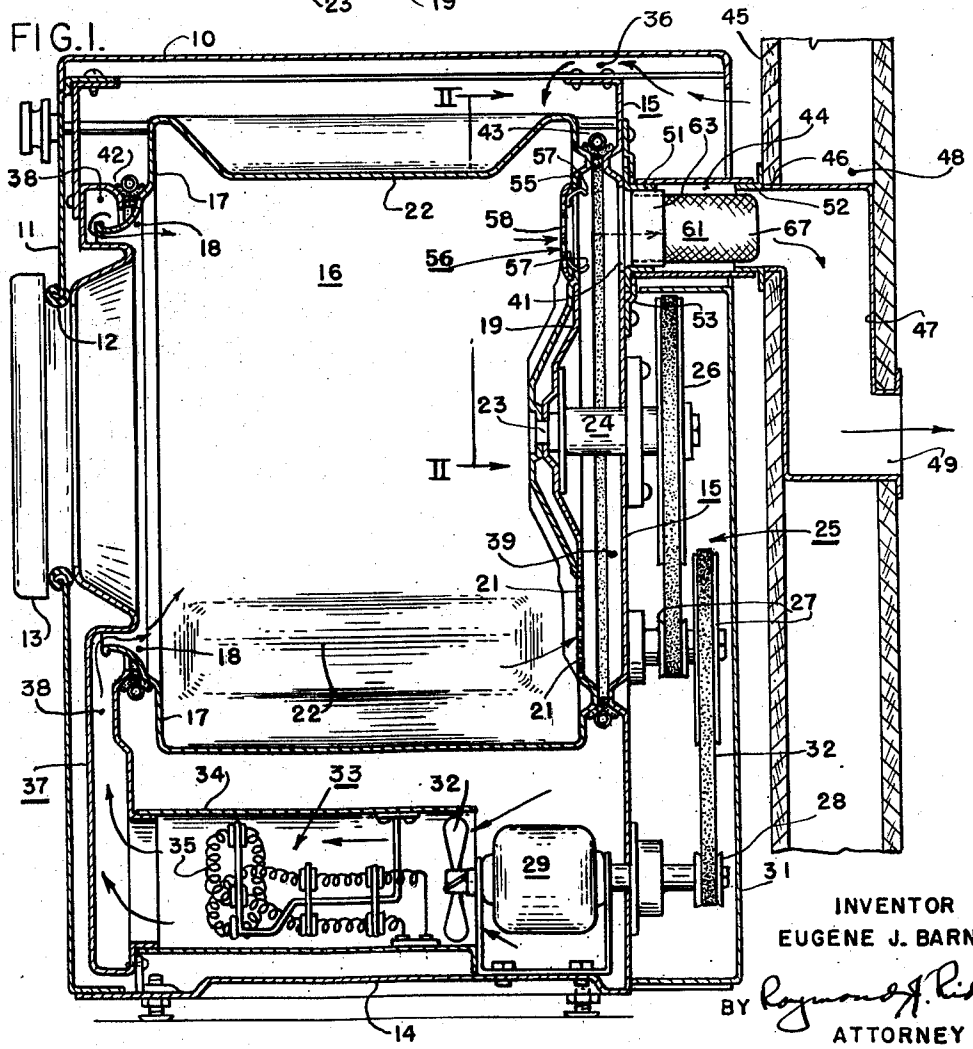


FIG. 1.



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APPARATUS FOR DRYING FABRICS

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5 Claims. (Cl. 34—82)

This invention relates to apparatus for drying fabrics or the like and has for an object to provide improved apparatus of this kind.

The invention is more particularly directed to a domestic clothes dryer, having a housing and a basket rotatable therein for tumbling the fabrics during a drying operation. This form of dryer is frequently built into an assembly of cabinets or counters or backed flush against a wall so that, the air discharge duct, usually and preferably at the rear of the housing, is inaccessible from the front of the housing during installation or servicing. Furthermore, where a lint trap is employed in the discharge duct, access to the trap from the front of the housing creates a problem.

A further object of the invention is to provide ready access to the discharge duct at the rear of the housing of a clothes dryer, as set forth, and, also, to a lint trap which may be located within the duct for the removal of lint from air passed therethrough.

The foregoing and other objects are effected by the invention as will be apparent from the following description and claims taken in connection with the accompanying drawing, forming a part of this application, in which:

Fig. 1 is a vertical sectional view of a dryer constructed and arranged in accordance with the invention and disposed adjacent a wall structure, certain elements of the dryer being shown in elevation for the sake of clearness;

Fig. 2 is a section of a portion of the dryer basket as viewed from the plane II—II of Fig. 1; and

Fig. 3 is a vertical section taken along the line III—III of Fig. 2.

Referring now to the drawing, a domestic clothes dryer is disclosed installed in a room with the rear side of the dryer closely adjacent a wall of the room. While the invention may be applied to various forms of dryer structures, it has, for convenience, been shown applied to a dryer generally of the type disclosed and claimed in the application of Edgar L. Zehrbach, Serial No. 618,071, filed October 24, 1956. This form of dryer includes a casing structure 10 having a front wall 11 provided with an access opening 12 and a door, generally indicated at 13, for closing the access opening 12. The door 13 may be suitably hinged to the front wall 11 so that it may be moved to open position for gaining access to the interior of the casing. The casing also includes a relatively stiff base 14 and a rear supporting wall, indicated at 15, extending above the base and adjacent the rear of the casing.

A basket, generally indicated at 16, is disposed within the casing for rotation about a substantially horizontal axis. The basket 16 includes a front wall 17 having a relatively large access opening 18 formed therein and a rear wall 19 provided with a plurality of perforations 21 for the discharge of humid, vitiated air from the basket. Except for the access opening 18 and the perforations 21, the basket 18 is otherwise imperforate. Suitable vanes 22 are provided interiorly of the basket 10 for tumbling the fabrics contained therein during rotation of

the basket, all of which is well understood. The basket 16 is carried by a shaft 23 fixed to its rear wall 19 and journalled in a bearing 24 carried by the rear supporting wall 15 of the cabinet. A belt and pulley transmission 25 for driving the basket is employed and includes a sheave 26 keyed or otherwise secured to the shaft 23 of the basket. The sheave 26 is belted through idler wheels, as shown at 27, to the pulley 28 of a motor 29 carried by the base 14. A cover 31 secured to the rear wall 15 in any suitable manner encloses the belted transmission 25 as shown.

The air translating and heating means includes a fan 32, also driven by the motor 29, and a heater structure, generally indicated at 33 and including a duct 34 and a suitable electric heater 35 arranged within the duct 34. The fan 32 is disposed adjacent the upstream side of the duct 34 and functions to induce a flow of air from the ambient atmosphere into the casing and thence over the heater 35. Air from the ambient atmosphere enters the casing 10 through an opening 36 defined by the top edge of the supporting wall 15 and the top wall of the casing. The casing is open immediately to the rear of the opening 36 so that air can freely flow to the opening 36 as shown by the arrows. After entering the casing 10, air flows downwardly within the casing 10 and exteriorly of the basket 16, and is entrained by the fan 32 for delivery to the heater 35. The heater duct 34 includes an upwardly extending portion 37 immediately to the rear of the front wall 11 and enclosing a plenum chamber 38 through which the heated air is delivered, as shown by arrows, to the access opening 18 of the basket. The heated air passing through the basket contacts the tumbling fabrics for vaporizing water therefrom, and the air and water vapor pass through the perforations 21 to a space 39 intermediate the rear wall 19 of the basket 16 and the vertical supporting wall 15 of the casing. This vitiated air then passes through a discharge opening 41 formed in the rear supporting wall 15, further reference to which is made hereinafter.

In order to prevent leakage of air from the plenum chamber 38 and the space 39 at the rear of the basket, air seals 42 and 43 of any suitable construction are employed. The seal 42 is disposed between the front end 17 of the basket and the rear wall of the plenum chamber structure 37, while the seal 43 closes the space between the rear wall 19 of the basket 16 and the supporting wall 15 of the casing. The seals 42 and 43 are disclosed and claimed in the aforementioned application of Edgar L. Zehrbach.

Vitiated air discharged from the opening 41 passes through a suitable duct 44 to a point of discharge. As shown, by way of example, the dryer is backed against a wall 45 having an opening 46 formed therein with the duct 44 communicating with the opening 46. The preferred arrangement would be to have the duct 44 extend completely through the wall 45 to the outside but this is not always possible, so a duct 47 is shown built into the stud space 48 of the wall 45 and discharging to the ambient atmosphere through an opening 49 offset from the duct 44. A duct of the type shown at 47 will usually be necessary where the dryer is installed backed against an interior wall of the building. From the foregoing it will be apparent that access to the duct 44 for properly positioning the same during installation of the dryer is practically impossible. When the dryer is "built-in," surrounded by an assembly of cabinets or beneath a counter top, access to the duct 44 is out of the question. As shown, the duct 44 is supported by collars 51 and 52, the latter being secured to the wall 45 in any suitable manner. Preferably, the collar 51 is adjustably carried by the casing rear wall 15 so that it may be aligned with the collar 52 when assembling the duct 44 to the collars,

As shown, the collar 51 has a flange held against the wall 15 by a spring plate 53 screwed, or otherwise fixed, to the wall 15. It will be seen that the collar 51 may be moved in the plane of the wall 15 and is frictionally held in its adjusted position by the spring member 53.

In accordance with the invention, access is had to the discharge opening 41, the duct 44 or the collars 51 and 52 during installation of the dryer by means of an aperture or hand hole 55 formed in the rear wall 19 of the basket and aligned in one position of the basket with the opening 41. The hand hole 55 may be of arcuate configuration and closed by a cover 56 of similar shape. Springs 57 secured to the cover engage the margin of the hole 55 for retaining the cover 56 in position. The springs 57 deflect as the cover is snapped into and out of place on the basket wall 19. A finger hole 58 is provided in the cover 56 by means of which, the cover 56 may be gripped and readily removed from the wall 19 or attached thereto. Preferably the cover 56 is perforate as shown. It will be understood that the hand hole 55 and the opening 41 may be aligned by manually moving the basket 16 or energizing and de-energizing the motor 29 for inching the basket into position.

During installation of the dryer against a wall, as shown, the cover 56 is removed from the basket, so that the mechanic may reach through the hand hole 55 for adjusting the duct 44 or the collar 51. During movement of the dryer to its final position, the duct 44 may be guided on the collar by reaching through the hand hole. Regardless of whether a rigid duct is employed or one of flexible construction, access to it is desirable during movement of the dryer to its final position.

The use of a lint trap is usually desirable in domestic dryers, even though vented to the outside atmosphere. In accordance with the present invention, a lint trap 61 may be installed in the duct 44 as shown. The trap 61 may include a fabric bag 67 carried by a band 63, the latter being supported by the collar 51, preferably, frictionally. Suspended lint carried by the air stream is separated and gathered in the bag 62 as the contaminated air flows through the band 63 and bag 67 to duct 47, all of which is well understood. Access to the trap 61 for servicing is through the hand hole 55. Preferably, the trap is withdrawn from the duct and emptied and then reinstalled by pushing the trap into position in the duct 44.

While the invention has been shown in but one form, it will be obvious to those skilled in the art that it is not so limited, but is susceptible of various changes and modifications without departing from the spirit thereof.

What is claimed is:

1. In apparatus for drying fabrics or the like, the combination of a casing including a front wall and enclosing a drying chamber, a generally cylindrical basket for containing the fabrics and disposed within the drying chamber, means rotatably supporting the basket for movement about a substantially horizontal axis, said basket having an axially extending access opening formed therein and said front wall of the casing having a second access opening in registry with the first access opening, said basket having an imperforate annular wall and a rear wall, the latter wall having a multiplicity of perforations for the discharge of lint laden air from the basket, a door carried by the casing sealing said second access opening, said door being movable to an open position, an air heating structure, means for translating air to the air heating structure, means including a duct connecting the air heating structure and the access opening in the basket for conveying heated air to the basket for the abstraction of moisture from fabrics contained therein, annular seals interposed between the basket and the respective front and rear walls of the casing, means extending rearwardly from the casing and including a passage for discharging the lint laden air issuing from said perforations, said basket having an aperture formed in the rear wall thereof in registry with the discharge passage in one position of the rotatable basket, and a cover for closing the aperture, said cover being readily removable from its normally closed position.

2. In apparatus for drying fabrics or the like, the combination of a casing structure including a front wall and enclosing a drying chamber, a rotatable drying basket disposed in spaced relation with the walls of said chamber, means for rotatably supporting the basket for movement about a substantially horizontal axis, said basket having an axially extending front access opening formed therein and said front wall of the casing having a second access opening in substantial alignment with the first access opening, said basket having an imperforate side wall therein, a door carried by the casing sealing said second access opening and movable to an open position, an air heating structure, means for translating air to the air heating structure, means including a duct connecting the air heating structure and the access opening in the basket for conveying heated air to the basket for the removal of moisture from damp fabrics contained therein, means extending rearwardly from the casing and including a passage for evacuating air and suspended lint from the drying basket, first sealing means interposed between said air conveying means and the basket, second sealing means interposed between the basket and the air evacuating means, said drying basket having an aperture formed in a wall thereof, said aperture being in substantial alignment with the evacuation passage in one position of the rotatable drying basket, a readily displaced cover for said aperture, a lint trap, and means for supporting said lint trap within said passage and in the path of the lint laden air discharged therethrough.

3. A dryer for fabrics adapted for installation adjacent a room wall structure having an opening therein, the combination of a cabinet having an access opening in the front wall thereof and a door for sealing the access opening and movable to an open position, a generally cylindrical, rotatable drying basket disposed within said cabinet and having an access opening formed in the front end thereof in registry with the access opening of the cabinet, said basket having an imperforate side wall and a perforate rear wall, means for translating heated air to the basket through its access opening for the abstraction of moisture from fabrics contained therein, means including a passage in the rear wall of the cabinet for exhausting vitiated air from the basket, sealing means interposed between the cabinet and the basket for directing the flow of heated air and moisture discharged through said perforate rear end wall to the air exhaust means, said basket having a hand hole formed in the rear wall thereof and opposite the exhaust passage in one angular position of the basket, a readily removable cover for the hand hole, a conduit for conducting air from the exhaust passage to said opening in the room wall structure and adjustable means carried on the rear wall of the cabinet for supporting the conduit, the construction and arrangement being such that access is had to the conduit and its adjustable supporting means through the hand hole of the basket.

4. In a dryer for fabrics, the combination of a cabinet including a front wall, a rear wall and a plurality of side walls, said front wall having an access opening therein and a door for the access opening movable to open and closed positions, said rear wall having a passage for the discharge of air from the cabinet, a basket for containing the fabrics and disposed within the cabinet, said basket having an imperforate side wall and an access opening in the front end thereof in alignment and in communication with the access opening of the cabinet and a plurality of air discharge perforations in the rear end thereof, means for rotating the basket about a generally horizontal axis for tumbling the fabrics therein, means for translating heated air into contact with the tumbling fabrics, said cabinet rear wall and said basket rear end providing a passage therebetween for directing

vitiated air and lint discharged from said perforations to the passage in the cabinet rear wall, a lint trap, means for removably supporting the lint trap in said passage for the separation of lint from the stream of discharged air, said basket having a hand hole formed in said rear end thereof opposed to the passage and providing access to the lint trap in one angular position of the basket, a cover closing the hand hole and readily detachable means positioning the cover on the basket.

5. In a dryer for fabrics, the combination of a cabinet including a front wall, a rear wall and a plurality of side walls, said front wall having an access opening therein and a door for the access opening movable to open and closed positions, said rear wall having a passage for the discharge of air from the cabinet, a basket for containing the fabrics and disposed within the cabinet, said basket having an access opening in the front end thereof in alignment and in communication with the access opening of the cabinet, an imperforate side wall and a plurality of air discharge perforations in the rear end thereof, means for rotating the basket about a generally horizontal axis for tumbling the fabrics therein, means for translating heated air through the basket and into contact with the tumbling fabrics, said cabinet rear wall and said basket rear end providing a passage therebetween for directing vitiated air discharged from the perforations in the basket to said passage in the cabinet rear wall, said basket having a hand hole formed in its rear end for providing access to said air discharge passage of the cabinet in one angular position of the basket, a cover for the hand hole and readily detachable means securing the cover to the basket.

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