

March 16, 1971

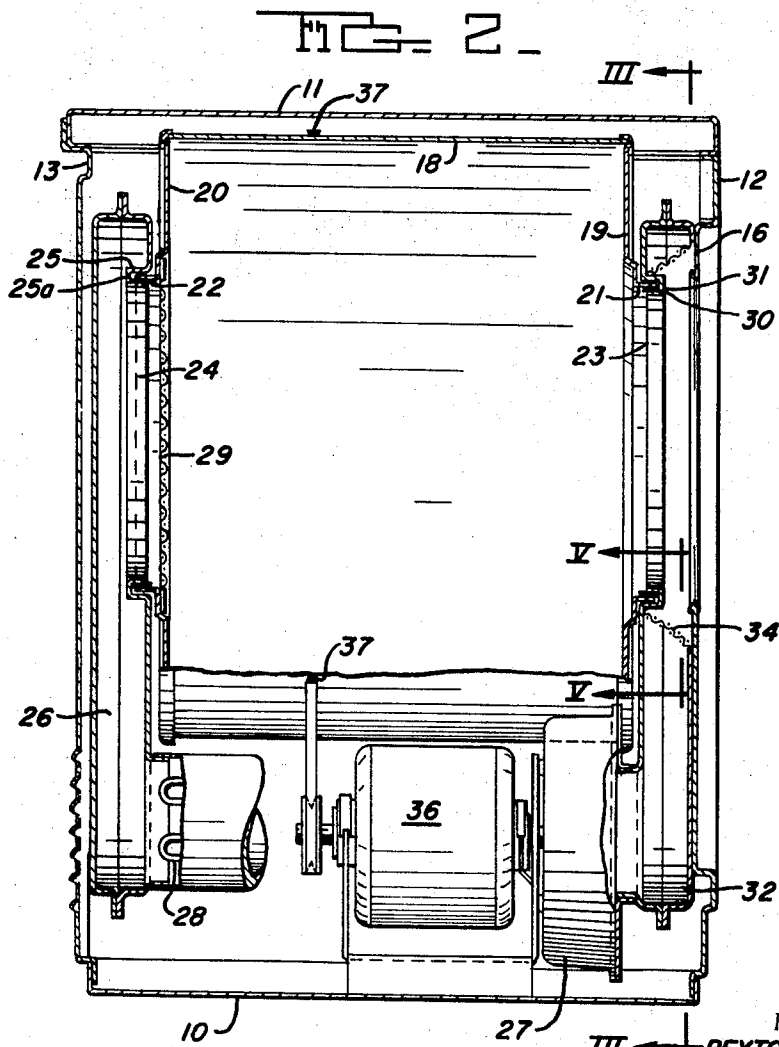
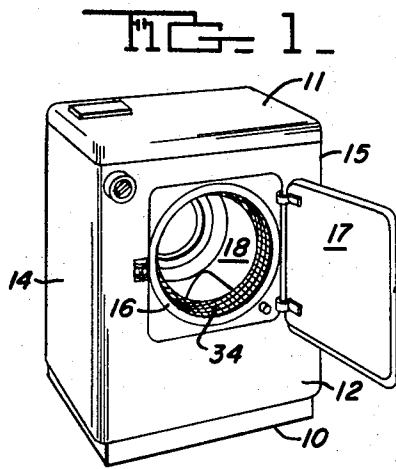
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3,570,138

CLOTHES DRYERS

Filed Nov. 12, 1968

2 Sheets-Sheet 1



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FIG. 3.

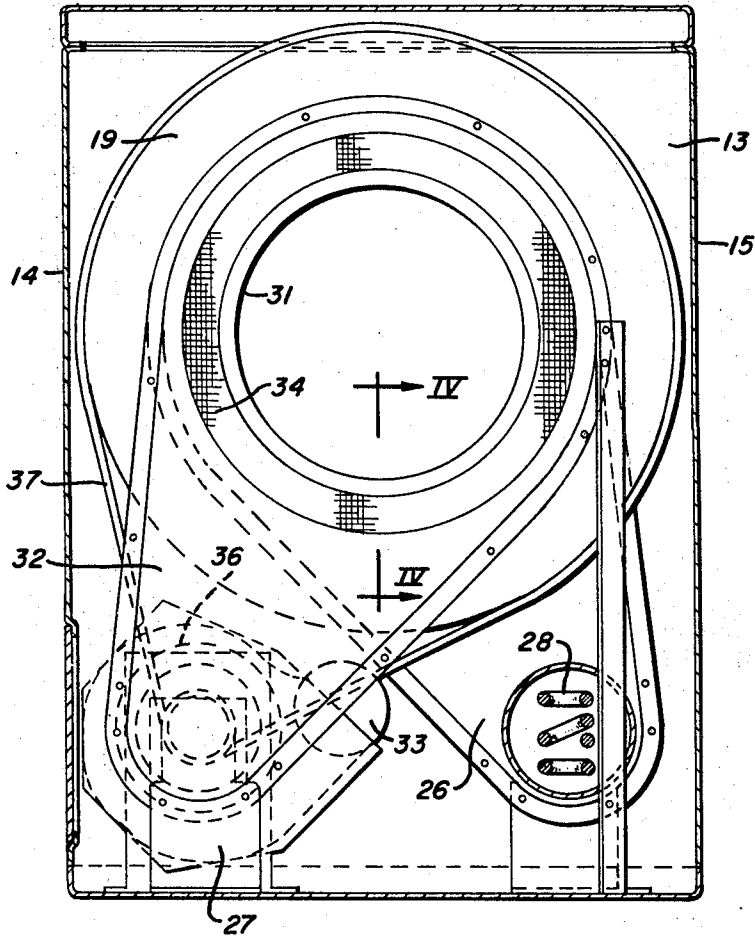


FIG. 4.

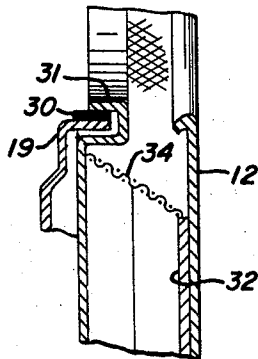
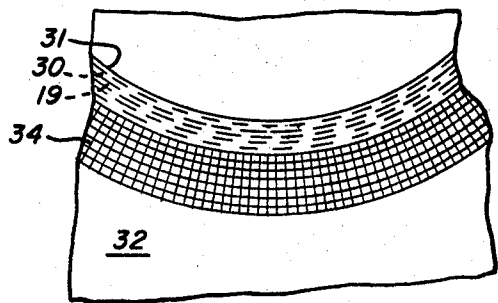


FIG. 5.



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CLOTHES DRYERS

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U.S. Cl. 34—133

7 Claims

ABSTRACT OF THE DISCLOSURE

A clothes dryer having a housing with a top, bottom and four sidewalls, one sidewall having an opening coaxial with a rotatable drum in the housing having axial end openings bounded by axial flanges supported in radial ducts, one on the wall surrounding the opening and the other on the opposite sidewall, means for delivering hot air through the ducts and drum and a drive means engaging the periphery of the drum for rotating the same.

This invention relates to clothes dryers and particularly to a clothes dryer for domestic use including a drum for handling clothes rotatable on a horizontal axis, through which heated air is passed.

Clothes dryers of the type in which clothes are tumbled within a horizontally rotating drum in the presence of a controlled quantity and flow of heated air are old. However, the structures of prior art dryers are less compact than is desirable and are relatively complex in structure. Certain features of our present dryer are disclosed in Douglas Patents 2,861,355, issued Nov. 25, 1958; 3,066,422, issued Dec. 4, 1962; and 2,751,688, issued June 26, 1956.

In the dryer of our present invention, we provide a substantially larger capacity as compared with prior art dryers without increasing the external dimensions. We have improved the air handling system and the lint screen and thereby eliminated, for practical purposes, the problem of lint collection on relays, timers, valves and drive mechanisms. We have also simplified the drive means and the general construction of the dryer.

Preferably, we provide in a clothes dryer, a housing having a top, a bottom and sidewalls, an opening in one of said sidewalls, a closure for said opening, a drum rotatably supported within said housing, said drum having an imperforate circumferential wall and endwalls coaxial with the opening in the said one wall of the housing, said endwalls having axial openings therein, an axially extending flange surrounding each opening, an input duct surrounding and supporting the flange opposite the opening in the one sidewall in supporting relation and extending radially therefrom, heater means in said input duct, a source of air under pressure connected to said input duct, an outlet duct surrounding and supporting the other flange and the opening in said one sidewall and extending radially therefrom, discharge means connected to said duct and lint screen means between said flange and opening in the sidewall between the interior of the drum and the outlet duct. Preferably, the flanges at each end of the drum are separated from the supporting duct by a sealing bearing member in the form of an impregnated felt ring. A screen is preferably provided between the inlet duct and interior of the drum. The lint screen is, in a preferred form, in the form of a frustum of a cone.

In the foregoing general description, we have set out certain advantages, objects and purposes of our invention. Other objects, purposes and advantages of our invention will be apparent from a consideration of the following description and the accompanying drawings in which:

FIG. 1 is an isometric view of a dryer according of our invention with the door open;

FIG. 2 is a vertical longitudinal section through the machine of FIG. 1;

FIG. 3 is a section on the line III—III of FIG. 2;

FIG. 4 is an enlarged fragmentary section on the line IV—IV of FIG. 3; and

FIG. 5 is a section on the line V—V of FIG. 2.

Referring to the drawings, we have illustrated a cabinet having a bottom 10, top 11, front 12, rear 13 and sidewalls 14 and 15. The cabinet parts are stamped from sheet metal and fixed together by suitable fastening means. The front wall 12 of the cabinet is provided with a circular opening 16 having a door 17 hinged at one side to close the opening. Horizontally arranged within the cabinet on a horizontal axis is a rotary drum 18 having a solid imperforate circumferential wall with endwalls 19 and 20 at the front and rear respectively. Each of these endwalls is provided with an axially extending flange 21 and 22 respectively, surrounding an axial opening 23 and 24 at each end. The rear flange 22 is mounted in a graphite impregnated felt bearing 25a supported by an annular channel 25 on the inner wall of a vertical duct 26 which extends from the flange to the bottom 10 of the cabinet diagonally across the rear wall 13. A blower 27 is connected to the duct and blows air from the outside of the cabinet over a heating means 28 which may be an electrical heating device or a gas heating device or a combination, as the case may be. The heated air is drawn through the blower 27 through the duct 26 into the axial opening 24 of the drum 18 through a screen 29 in the opening 24. At the opposite end of the drum, the axial flange 21 is supported on an impregnated felt bearing and sealing member 30 held in a channel 31 on the inner wall of the vertical component of a duct 32 which extends diagonally downwardly on the front wall 12 of the cabinet to a discharge means 33 which discharges air out of the cabinet. A frusto-conical screen 34 is fixed to the periphery of door opening 16 and extends axially inwardly and radially outwardly to the opening 23 in drum 18. This screen 34 is a lint screen and picks up lint carried by the air passing over the drying clothes. This screen is very simply cleaned by opening the door 17 and moving the hand around the screen to pick up the lint. This eliminates the necessity for removable screens and for screen containers in the duct and provides a much more effective means for lint removal than has heretofore been available.

A drive motor 36 is mounted in the cabinet and drives a belt 37 which surrounds the outer wall of the drum and drives the drum for rotation. The reduction in speed from the belt pulley to the outer periphery of the drum is such that no intermediate gearing or speed reducers are required and the complexity and expense of such a device is eliminated.

The operation of the device of our invention is as follows: The damp or wet clothes to be dried are inserted into the drum 18 through the opening 16. The door 17 is closed and a switch (not shown) of conventional type is operated to start the drive motor 36 and the heating means. As the drum 18 is rotated, the clothes within the drum are tumbled and are exposed to air which is blown across the heating means through the duct 26 by the blower 27 and through the axial opening 24 into the interior of the drum. The heated air moves through the clothes and through the lint screen 34 into the duct 32 from which it passes to the discharge means 33. When the clothes are dried, door 17 is opened, the operator removes the lint from the lint screen 34 by passing a hand around the screen and the clothes are removed in dried condition.

It will be readily seen that as a result of the simplicity and compactness of construction, the machine of our invention is highly efficient in operation, will provide the maximum in drying capacity within a given cabinet, elimi-

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nates complex drive mechanisms and complex lint removing systems and substitutes therefor highly effective, inexpensive means for accomplishing the drying operation.

While we have illustrated and described a presently preferred embodiment of our invention, it will be understood that this invention may be otherwise embodied within the scope of the following claims.

We claim:

1. In a clothes dryer, a housing having a top, a bottom and sidewalls, an opening in one of said sidewalls, a closure for said opening, a drum rotatably supported within said housing on a horizontal axis, said drum having an imperforate circumferential wall and endwalls coaxial with the opening in said one wall of the housing, said endwalls having axial openings therein, a flange surrounding each said axial opening, a free-standing input duct surrounding and supporting one drum flange and thereby one end of said drum opposite the opening in the said sidewall and extending radially therefrom, heater means in said duct, means for inducing a flow of air in said inlet duct, a free-standing outlet duct having a first opening with a flange surrounding and supporting the other drum flange and thereby the other end of said drum and extending radially therefrom, a second opening in said outlet duct surrounding the opening in the sidewall, the periphery of said opening engaging said sidewall discharge means connected to said duct, annular lint screen means between the first opening in the outlet duct and the second opening in the

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outlet duct and drive means acting on the imperforate circumferential wall of the drum.

2. A clothes dryer as claimed in claim 1 wherein each flange of said drum is surrounded by a lubricated impregnated bearing member engaging the adjacent supporting duct.

3. A clothes dryer as claimed in claim 1 wherein the opening is in the front wall of the housing concentric with the axis of the rotatable drum and surrounded by the outlet duct.

4. A clothes dryer as claimed in claim 1 wherein the lint screen surrounds the front opening.

5. A clothes dryer as claimed in claim 1 wherein the lint screen opening area is greater than the exhaust opening area.

6. A clothes dryer as claimed in claim 1 wherein the lint screen is between the drum and housing closure in the sidewall.

7. A clothes dryer as claimed in claim 1 wherein the output duct is the drum supporting member and houses the lint screen.

References Cited

UNITED STATES PATENTS

2,878,580	3/1959	Hughes	34-133X
3,270,436	9/1966	Fairgrieve	34-133X
3,364,588	1/1968	Ziegler	34-133X
3,399,464	9/1968	Erickson	34-133

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