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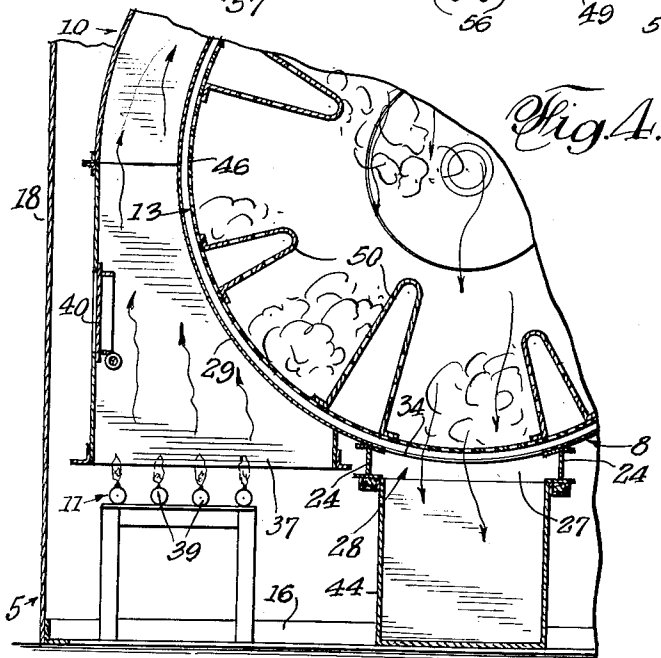
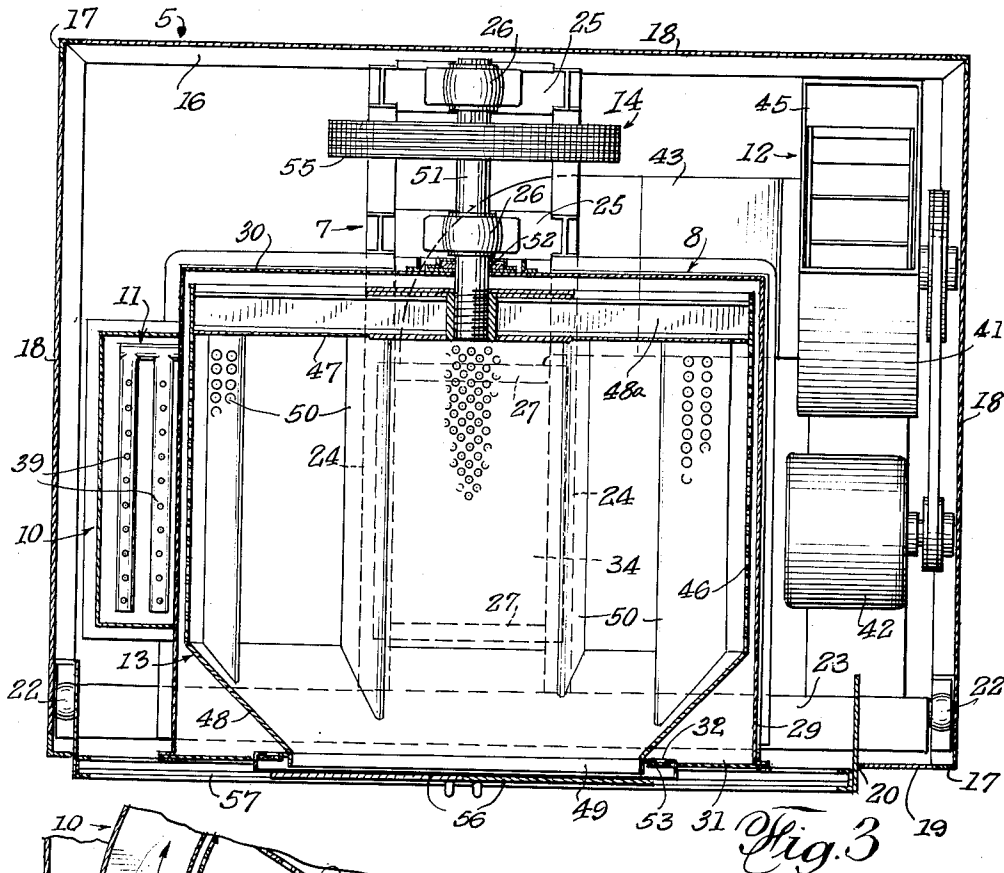
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CLOTHES PRE-CONDITIONER AND DRYER

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CLOTHES PRE-CONDITIONER AND DRYER

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This invention relates to a laundry machine that has the purpose of treating wet wash to condition and dry the same preparatory to ironing or folding, as the case may be.

The present invention is an improvement of the machine disclosed in my Patent No. 2,802,283, issued August 13, 1957.

The machine presently contemplated heats clothes while the same are being tumbled by directing a stream of heated air in a path along which the clothes fall during tumbling, thereby providing for improved and efficient contact of the clothes and the heated air stream.

Another object of the invention is to provide an air stream that is drawn through the clothes rather than being forced through the clothes, thereby minimizing cooling of the air stream.

A further object of the invention is to provide for a top-to-bottom flow of heated air through the tumbling clothes to separate the flow passages from the axis of rotation of the drum, thereby providing improved strength with attending simplicity.

The invention also has for its objects to provide such means that are positive in operation, convenient in use, easily installed in a working position and easily disconnected therefrom, economical of manufacture, relatively simple, and of general superiority and serviceability.

The invention also comprises novel details of construction and novel combinations and arrangements of parts, which will more fully appear in the course of the following description. However, the drawings merely show and the following description merely describes, one embodiment of the present invention, which is given by way of illustration or example only.

In the drawings, like reference characters designate similar parts in the several views.

FIG. 1 is a vertical sectional view of a clothes pre-conditioner and dryer according to the present invention.

FIG. 2 is a broken side view taken on a plane forward or in front of the plane of FIG. 1.

FIG. 3 is a plan sectional view as taken on line 3—3 of FIG. 1.

FIG. 4 is a vertical sectional view as taken on the line 4—4 of FIG. 1.

The machine that is illustrated comprises, generally, a stationary housing 5, a tiltable frame 7 carried by said housing and including a drum housing 8 affixed to said frame, means 9 to tilt the frame to move the drum housing from a normal horizontal position to a forwardly tilted position, a hot air duct 10 disposed alongside of and carried by said drum, means 11 to supply heat to said duct, means 12 to move air heated by the means 11 vertically through the drum housing and then to atmosphere, a clothes-tumbling drum 13 within the drum housing 8 and tiltable therewith, and means 14 to rotate said drum.

The housing 5 is provided with a base frame 16, vertical corner members 17, and side and rear enclosing walls or panels 18 which, in part, may comprise access doors to the interior of the housing. A front wall 19 has a front opening 20 into which the front portion of the drum housing is disposed. The top of the housing 5 is left open substantially in the manner shown.

The tiltable frame 7 is carried by trunnions 21 in

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bearings 22 affixed to the top of the base frame adjacent the front thereof and at opposite sides. The frame is formed with a front transverse member 23, a pair of rearwardly directed members 24, and a rear frame part that comprises support feet 24a and bearing supports 25. The latter carry aligned bearings 26, one forward of the other. As can best be seen from FIG. 3, the frame 7 has an inverted T form in which the arms terminate in the mentioned trunnions 21 and the rearwardly directed members are spaced and connected by cross members 27. Thus, the members 24 and 27 cooperate to define a rectangular opening 28 (FIG. 4).

The drum housing 8 is affixed to said frame and comprises a cylindrical wall 29 that is closed at the rear by a flat wall 30 and at the front by a wall 31 that has a large circular opening 32. At the top, wall 29 is provided with a rectangular opening 33 and at the bottom a similar opening 34 is framed by the mentioned members 24 and 27. Thus, the drum housing is open at the top and at the bottom, as well as at the front.

The means 9 for tilting the frame 7 and the drum housing 8 is shown as a machine such as a pneumatic piston cylinder unit connected, at 35, to the base 16 and, at 36, to the frame 7. Extension of the means 9 will cause tilting of the frame and drum housing in a forward direction through wall opening 20 so that the front opening 32 of the drum is sloped upwardly and forwardly.

The hot air duct 10 is best seen in FIGS. 3 and 4. The same has a bottom opening 37 alongside and at the level of opening 34. The duct conforms to the outer curvature of housing wall 29 and terminates in a curved hood 38 that opens on opening 33 at the top of the drum housing. Thus, air from below may be carried by the duct and discharged in a downward direction into the interior of said drum housing 8.

The means 11 to supply heated air to the duct is carried by the base frame 16 beneath the duct opening 37. In this case, said means is shown as a set of gas burners 39 that may be thermostatically controlled. In any case, the same supplies heated air as desired for conduction by the duct 10 to the interior of the drum housing. The means 11 may be devised to supply steam-heated air, in which case a damper 40 in the duct may be regulated to provide the draft and steam conduction desired. Thus, the burners may be replaced by steam-heated air through the medium of a conventional heat exchanger. Thus, the air may be heated either by direct heat or by steam.

While the heated air or steam will rise in the duct 10 naturally, the speed of such movement would normally be too slow for effective clothes heating and drying. Hence, the means 12 is provided for creating a rapid and effective movement of the air. The means 12 is shown as a fan or blower 41, carried by the base frame 16 and driven by an electric motor 42, a conduit or duct 43 extending from the inlet of the fan, and an air box 44 connected to said conduit 43. Said fan 41 establishes a movement of air outwardly through the outlet 45 thereof, drawing the heated air or steam upwardly in duct 10 and downwardly in drum housing 8.

The clothes-tumbling drum 13 is disposed within the drum housing 8. The same comprises a perforated cylindrical wall 46 closely adjacent to and inward of the wall 29, a rear end wall 47 provided with stiffening or reinforcing members 48a, and a conical front wall 48 that has a relatively large access and clothes-discharging front opening 49. It will be clear that the air stream between the duct hood 38 and the air box 44 passes through the interior of the drum by reason of the perforated wall 46 thereof and that said air stream moves in a downwardly vertical direction.

Clothes-tumbling vanes or blades 50 are provided in the drum 13, it being understood that, upon rotation of the drum, said vanes lift clothes out of the air stream and release the same to fall into the air stream as they near an upper position, as carried by the vanes. Since the clothes are falling while in the air stream, they are in loosened condition and uncompacted, thereby being effectively permeated by the moisture-drying heated air or steam, as the case may be.

The reinforced back wall 47 of the drum has a drive shaft 51 affixed thereto and extending rearwardly through an opening 52 in the rear wall of the drum housing 8. Said opening may be sealed off, as shown, to prevent egress of heated air or ingress of atmospheric air.

The open end of the drum 13 extends through the opening 32 in the drum housing and a seal 53 is provided at this point to seal in the interior of said housing, as does the seal at opening 52 in the rear wall 30 of said housing. As a consequence, all heated air or steam that is provided must pass through the drum 13 to the air box 44.

The means 14 to rotate the drum comprises a motor 54 carried by the frame 7, and a drive 55 between said motor and the shaft 51. The latter is mounted in the mentioned bearings 26 in a manner to support the drum in an outboard manner within the drum housing.

When the dryer is operating, the opening 49 of the drum is closed by a pair of sliding doors 56 carried by a guide frame 57 affixed to the front wall 31 of the drum housing. Said frame 57 is of such transverse size as to allow the doors 56 to be separated fully to expose the drum opening 49.

Control of drum rotation may be both automatic (timed) and manual, the former to provide efficient pre-conditioning of the clothes and the latter to slowly revolve the drum during its forwardly tilted position to allow dried clothes to fall outwardly through the opening 49, during such slow rotation, into a receptacle truck placed against the front of the machine.

While the foregoing specification illustrates and describes what I now contemplate to be the best mode of carrying out my invention, the construction is, of course, subject to modification without departing from the spirit and scope of my invention. Therefore, I do not desire to restrict the invention to the particular form of construction illustrated and described, but desire to cover all modifications that may fall within the scope of the appended claims.

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

1. A clothes pre-conditioner and dryer comprising a drum having a perforated cylindrical wall and an open front, said drum being tiltably mounted, means support-

ing the drum for rotation, a set of hollow, perforated clothes-lifting vanes in the drum, a drum housing within which the drum is disposed and having an open front into the opening of which the open front of the drum extends, a closure for said open front of the housing and spaced from the open front of the drum, an air seal between the outer surface of the open end of the drum and the front of the housing, said closure being spaced from the open front of the drum, means to conduct heated air from beneath into the upper portion of the drum housing, the housing having an opening into which the duct discharges, and means to draw said air downwardly through the drum housing, the housing having a second opening from which the air therein discharges, the air stream thus created moving partly through the perforations in the vanes and downwardly through the perforated drum and permeating clothes being tumbled by the vanes in the drum during rotation of the latter and being sealed against lateral egress by said closure and air seal.

2. A clothes pre-conditioner and dryer comprising a front-open drum housing having a cylindrical wall provided with an upper and a lower opening, laterally-separable doors to close the open front of the housing, a revolvable drum disposed within the housing and having an open front that extends through the opening in the housing and is directed toward and spaced from the housing doors, said drum having a perforated cylindrical wall in the path of movement of air passing said openings, a set of hollow, perforated vanes in the drum, an air seal between the outer surface of the open end of the drum and front of the housing, means mounting the housing and drum for tilting movement from a horizontal position of the drum axis of rotation to an up-tilted position thereof in which the front opening of the drum is forwardly tipped, a bottom-open duct to conduct heated fluid to the top opening of the drum housing, and means to move said fluid connected to the lower opening of the drum housing, the air stream thus created moving partly through the perforations in the vanes and downwardly through the perforated drum and permeating clothes being tumbled by the vanes in the drum during rotation of the latter.

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