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ROTARY GARMENT DRIER

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Fig. 1.

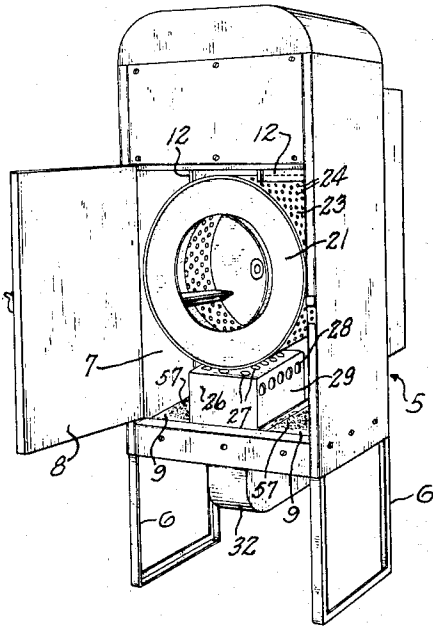


Fig. 2.

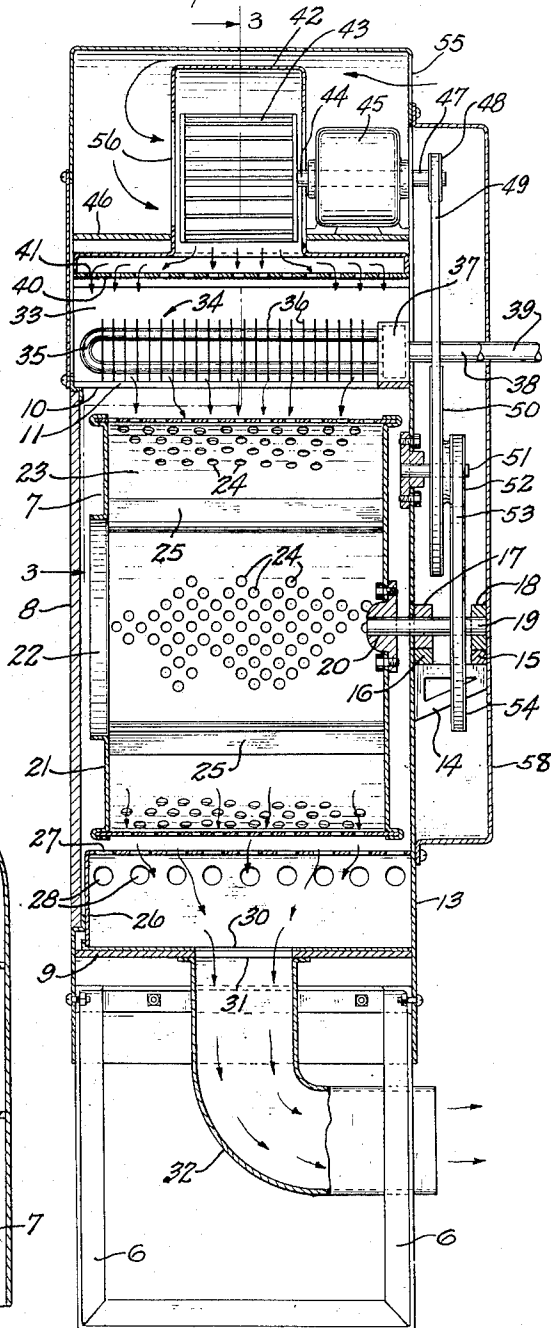


Fig. 3. is a cross-sectional view of a mechanical device, likely a clock or watch movement, showing internal components and a curved housing. The device is shown in a cross-section, revealing internal parts. A large, curved, dome-shaped component (13) is at the top. Below it, a circular dial or face (42) is visible, with a central screw (43) and a small circular element (44). The dial is mounted on a base (46). A horizontal plate (10) is positioned below the dial. Below the plate, a rectangular component (33) is shown, which appears to be a stack of plates or a frame. This component has a series of small circular openings (35) along its bottom edge. The entire assembly is supported by a base (11) and is enclosed within a curved housing (21). Other labeled parts include 12, 13, 20, 21, 22, 37, 40, 41, 42, 43, 44, 46, and 55.

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ROTARY GARMENT DRIER

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3 Claims. (Cl. 34—79)

This invention relates to improvements in rotary garment driers, and more particularly to driers adapted for use following laundering or dry cleaning operations.

Heretofore it has been common practice in laundry driers to utilize a suction system for extracting moisture from the garments. This type of system, however, is objectionable because all of the lint-laden air takes the path of least resistance, with the result that the suction fan eventually clogs up with lint, materially reducing the efficiency of the device.

It is a general object of the present invention to provide a construction wherein heated air is forcibly blown through the garments in a perforated rotary drum.

A further object of the invention is to provide a system utilizing a forced down draft wherein there is means for trapping lint to prevent the latter from being discharged with the moisture-laden air and create a dust nuisance in the vicinity of the laundry or dry cleaning establishment.

A further object of the invention is to provide a construction as above described wherein the blower is directly above a heating unit to eliminate losses due to changing direction of air in motion.

A further object of the invention is to provide a construction wherein the air outlet is below the rotary drum but elevated above the floor of the cabinet to provide lint traps into which lint may fall by gravity, with the moisture-laden air discharged at a point above the lint trap, the construction also being such that the rotating drum tends to brush the lint toward the sides of the outlet unit so that the latter may fall by gravity to the floor of the cabinet without being blown into the outlet openings.

Other objects of the invention are to provide a drier which can be operated at low cost; which provides for approximately sixty complete air changes per minute in the drying chamber; which so exposes the garments to the heated air that the latter contacts all parts of the fabric a maximum number of times during each minute of operation; which materially reduces the required drying time; and which is simple and inexpensive in construction.

With the above and other objects in view, the invention consists of the improved rotary garment drier and all its parts and combinations as set forth in the claims, and all equivalents thereof.

In the accompanying drawing illustrating one complete embodiment of the preferred form of

the invention, in which the same reference numerals designate the same parts in all of the views,

Fig. 1 is a perspective view of the improved drier, with the cabinet door in open position;

Fig. 2 is a vertical sectional view through the drier on an enlarged scale, and

Fig. 3 is a fragmentary vertical sectional view taken on line 3—3 of Fig. 2.

Referring more particularly to the drawing, the numeral 5 designates the main body of the drier, which is preferably supported on legs 6 and which drier is preferably formed of sheet metal. The main body 5 includes a drying chamber 7 adapted to be closed by a front door 8. At the bottom of the compartment 7 is a floor 9, and at the top of the drying compartment is a horizontal partition 10 formed with an opening 11 through which heated air is discharged downwardly into the drying compartment 7. Air guiding flanges 12 may project downwardly from the sides of the opening 11. Secured to the rear wall 13 of the cabinet are spaced triangular brackets 14 which support horizontal members 15 and 16. The horizontal member 16 in turn supports an inner bearing 17, and the horizontal member 15 supports an outer bearing 18. Journalled within the bearings 17 and 18 is a shaft 19, the inner end of which extends rotatably through the wall 13 of the cabinet and is connected rigidly as at 20 to a rotary drum 21.

The drum 21 has a front opening 22 and has its peripheral wall 23 formed throughout with apertures 24. The interior of the drum periphery is also formed with tumbling ribs 25, preferably four in number.

Below the drum and resting on the floor 9 of the drying chamber is an outlet box 26 formed with top apertures 27 and also formed with openings 28 at the upper portions only of the box side walls 29. The bottom of the outlet box is formed with a discharge opening 30 communicating with an opening 31 in the floor 9 of the drying chamber. A discharge pipe 32 is adapted to convey moisture-laden air discharged through the openings 30, 31 to a suitable outside point of discharge.

Mounted on the upper partition 10, and extending from the front and rear of the cabinet, is a heater chamber 33 for receiving a unit heater 34. In the form of the invention illustrated the heater comprises a plurality of tubes 35 provided with vertically extending fins 36. The tubes communicate with a rear header 37. A steam inlet pipe 38 may allow steam to pass from a suitable

outside source into the heater tubes 35. A steam outlet pipe 39 is also provided.

In lieu of the steam heater illustrated, a suitable gas or electric heater may also be utilized. The bottom of the heater chamber 33 is open throughout its length to communicate with the opening 11 in the partition 10, which latter opening also extends substantially from the front to the rear of the cabinet.

Spaced above the heater in the chamber 33 is an air distribution plate 40 formed with spaced openings 41. The upper portion of the chamber 33 communicates with the housing of a squirrel cage blower 42, and said blower includes a rotary impeller 43 mounted on the shaft 44 of an electric motor 45. The motor is supported on a motor supporting partition 46.

The drive shaft of the motor also extends rearwardly as at 47 and carries a rigidly mounted pulley 48 connected by an endless belt 49 with a pulley 50 mounted rigidly on a shaft 51. The shaft 51 also carries a rigidly mounted smaller pulley 52 which is connected by an endless belt 53 with a large pulley 54 mounted rigidly on the drum shaft 19 to drive the latter and the drum from the electric motor. A removable rear housing 58 encloses the above drive.

In operation, with the blower motor started and with steam admitted to the heater tubes 35, air will be drawn into the rear opening 55 of the blower chamber and will pass into the front end opening 56 of the blower 42. The blower will discharge the air with static pressure into the heater chamber 33. This air will then strike the air distribution plate 40 and some of the air will pass directly downwardly through the perforations in said plate, and other air which strikes the solid plate portions between the perforations will be directed toward the front and rear, as indicated by the arrows in Fig. 2, so that the air is distributed throughout the length of the heater chamber 33. The air will pass downwardly between the fins 36 of the heater and will be discharged in heated form downwardly into the drying chamber 7 through the opening 11. The air guiding flanges 12 extend close to the periphery of the drum so that most of the air is directed into the perforations 24 of the drum as the latter is rotating. Garments which have been placed in the drum and which are being tumbled back and forth by the rotation and by the drum ribs 25 will be subjected to the force of this down draft, and due to the rotation of the drum and the tumbling action of the garments all portions of the fabric will be wiped by the heated air currents many times during each period of operation, and thus moisture will be extracted from the garments as well as dry cleaning odors. The moisture-laden air will pass out of holes at the bottom of the drum into the openings 27 and 28 of the outlet box to be discharged.

Inasmuch as a great deal of lint and dirt is loosened from the garments during the washing or dry cleaning operation, there is considerable lint removed from the garments during the drying operation. With suction drying systems this lint has to pass through the suction fan and eventually clogs the latter. Furthermore the lint is objectionable in the exhausted air. With the present invention the lint is thrown by the rotating drum to the sides of the outlet box 29, and due to the fact that the outlet holes 27 and 28 are spaced above the floor 9 of the cabinet this lint will fall by gravity onto the floor 9 on each

side of the outlet box, as indicated at 57 in Fig. 1. Thus lint traps are provided by the novel outlet box arrangement.

The improved drier is inexpensive to operate, requiring only 130 watts when it is fully loaded, and requiring less than one boiler horsepower. Sixty complete air changes per minute take place in the drying chamber; thus drying time is reduced as much as 50% and the heated air contacts every part of the fabric a maximum number of times during each minute of operation. The dryer is relatively small and compact, and it is easy to load and unload. Due to the elevation of the floor 9 of the drying chamber, baskets may be placed adjacent the front of the cabinet to receive the unloaded garments.

The drier is adapted for use by commercial laundries, dry cleaners, institutions, and gymnasiums. It is also adapted for home use and in apartments where there is a problem in connection with hanging clothes outdoors.

Although only one form of the invention has been shown and described, it is obvious that various changes and modifications may be made without departing from the spirit of the invention, and all of such changes are contemplated as may come within the scope of the claims.

What I claim is:

1. A drier comprising a cabinet having a drying chamber, a drum having a perforated periphery rotatable on a horizontal axis in said chamber, means above said drum for blowing drying air downwardly through said perforated drum while the latter is rotating, an outlet box below the drum having a plurality of relatively small inlet openings through which moisture-laden air is adapted to pass and having a bottom outlet opening, and means adjacent the exterior of at least one side of the outlet box and below the outlet box inlet openings and above the outlet box opening for trapping lint or the like.

2. A drier comprising a cabinet having a drying chamber provided with a floor and side walls, a drum having a perforated periphery rotatable on a horizontal axis in said chamber, means above said drum for blowing drying air downwardly through said perforated drum while the latter is rotating, and an outlet box extending upwardly above said floor of the drying chamber and spaced from the side walls thereof, thereby forming traps for lint between said box and the side walls, said box having openings in its upper portion, and means establishing communication between said box and the atmosphere.

3. A drier comprising a cabinet having a drying chamber provided with a floor and side walls, a drum having a perforated periphery rotatable on a horizontal axis in said chamber, means above said drum for blowing drying air downwardly through said perforated drum while the latter is rotating, and an outlet box extending upwardly above said floor of the drying chamber and spaced from the side walls thereof, thereby forming traps for lint between said box and the side walls, said box having openings in its upper portion, and means establishing communication between said box and the atmosphere, said outlet box extending in a direction substantially parallel to the axis of the drum and being of substantially the same length as the axial length of the drum.

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