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CLOTHES DRYER WITH CLOTHES ODORIZING MEANS

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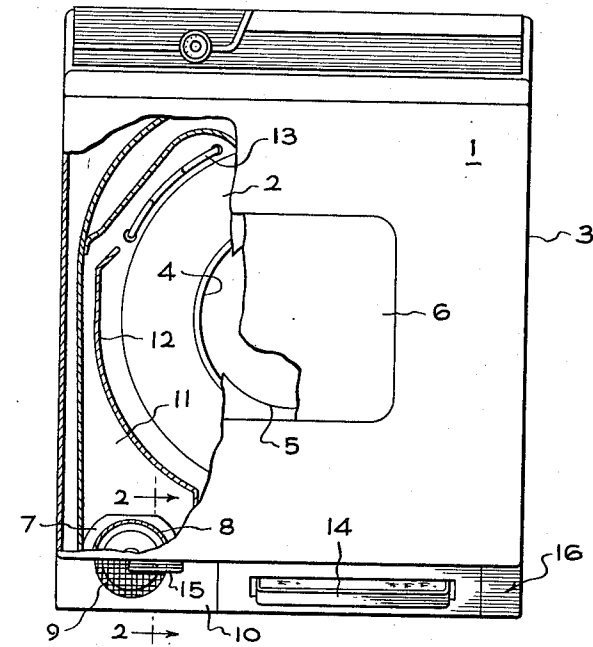


FIG. 1

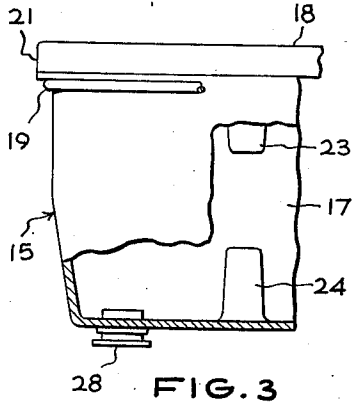


FIG. 3

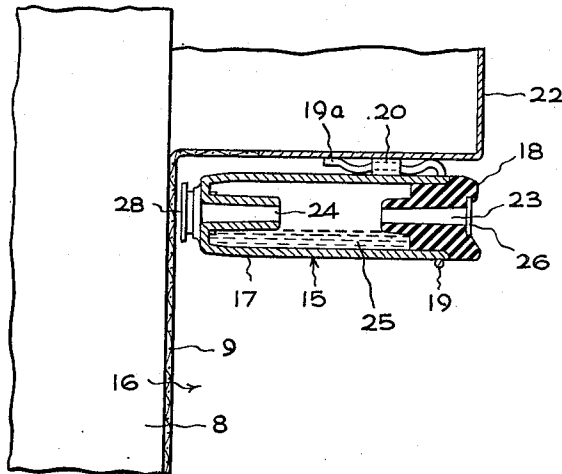


FIG. 2

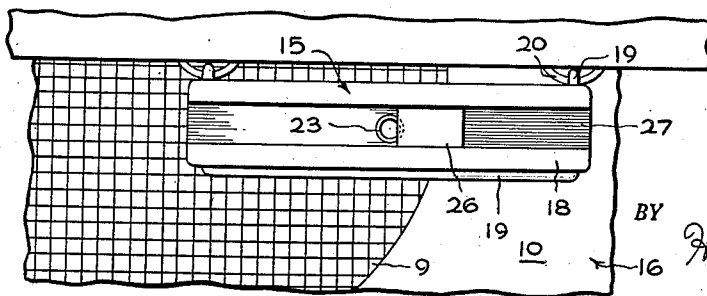


FIG. 4

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1

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CLOTHES DRYER WITH CLOTHES ODORIZING MEANS

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2 Claims. (Cl. 34—133)

My invention relates to clothes dryers and more particularly to clothes dryers having a forced air circulation system for blowing a stream of heated air through the clothes basket for drying the clothes.

It is an object of my invention to provide a new and improved clothes dryer having means for introducing a treating vapor into the air stream passing through the clothes basket, thereby to impart a pleasant odor to the clothes being dried.

Another object of my invention is to provide a new and improved dispenser for odorizing vapors particularly suited for use in clothes dryers, which dispenser is adapted to be positioned in the dryer air stream and which is so arranged that the dryer air stream itself volatilizes the odorizing vapor from a pool of odorizing liquid within the dispenser and carries the vapor from the dispenser onto the clothes.

A further object of my invention is to provide a new and improved arrangement for mounting a dispenser for odorizing vapors in a clothes dryer, in which arrangement the dispenser is mounted on the exterior of the dryer cabinet for ready removal and refilling but yet is effective to introduce the odorizing vapor into the air stream passing through the clothes basket.

Still a further object of my invention is to provide a new and improved dispenser for odorizing vapors particularly adapted for use in clothes dryers, which dispenser includes means for selectively varying the amount of odorizing vapor passed onto the clothes and which is so arranged that there is very little loss of odorizing material by diffusion during the inoperative periods of the dryer.

In carrying out my invention in one form thereof, I provide a clothes dryer having suitable clothes tumbling means such as a rotating drum. A heater is mounted within the dryer and a blower is arranged for blowing a stream of air over the heater and through the drum for drying the clothes being tumbled. By my invention a dispenser is provided in the dryer for introducing a treating or odorizing vapor into the air stream passing through the drum, thereby to impart a pleasant odor to the clothes being tumbled. The dispenser comprises a container for holding odorizing or treating liquid, which is provided with an air inlet opening and an air outlet opening. The dispenser is so arranged in the dryer air stream upstream of the drum that at least a portion of the air stream flows through the openings and the container. The air stream thereby volatilizes the odorizing vapor from the liquid in the container and carries the vapor onto the clothes to give them a pleasing odor.

The subject matter which I regard as my invention is particularly pointed out and distinctly claimed in the concluding portion of this specification. My invention, however, both as to its organization and method of operation, together with further objects and advantages thereof, may be best understood by reference to the following description taken in conjunction with the accompanying drawings in which:

2

Fig. 1 is a front elevational view of a clothes dryer embodying my invention in one form thereof, the view being partially broken away in order to show details;

Fig. 2 is a fragmentary sectional view taken on the line 2—2 of Fig. 1;

Fig. 3 is a bottom view of the odorizing vapor dispenser included in the dryer of Fig. 1, the view being partially broken away to show the filling opening and the air inlet and outlet openings of the dispenser; and

Fig. 4 is an enlarged fragmentary frontal view of the dispenser and the air inlet opening of the dryer.

Referring now to Fig. 1, I have shown therein a clothes dryer 1 which incorporates my new and improved clothes odorizing means in one preferred form thereof. The dryer 1 includes a rotatable drum or basket 2 which is mounted for rotation around a generally horizontal axis. The basket 2 is disposed within an outer enclosing cabinet structure 3 and aligned openings 4 and 5 are provided respectively in the front walls of the basket and the cabinet structure for the loading and unloading of the clothes from the basket. The openings 4 and 5 are preferably flanged in order to prevent clothes from dropping down between the basket and the cabinet. A door 6 hingedly mounted on the cabinet closes the opening 5 during the operation of the machine.

The basket 2 is rotated during the operation of the dryer by means of an electric motor (not shown) which is connected to the basket by any suitable drive, as for example a belt drive. This drive is so arranged that the basket is driven at a suitable speed for tumbling articles of clothing placed therein. The basket 2 preferably includes upstanding ribs on the inner surface thereof to aid in producing the tumbling action. Besides driving the basket, the drive motor also serves to drive air moving means for circulating a stream of air through the basket during the operation of the machine. The air moving means comprises a centrifugal blower 7 which is driven from the motor by means of a direct coupling or other suitable drive. The blower 7 draws in air from the surrounding room through a conduit 8 which leads from a screened air inlet opening 9 in the toeboard panel 10 of the cabinet.

The air drawn in by the blower 7 is discharged through an opening at the top thereof into a duct 11 which is separated from the rotating basket 2 by a baffle 12. As shown, the baffle 12 extends upwardly from the base of the machine to a point in the general vicinity of an electric heating element 13 mounted adjacent the upper portion of the basket, the baffle 12 being curved arcuately around the side wall of the basket for a portion of its length. The air discharged from the blower 7 flows upwardly through the duct 11 and passes outwardly therefrom across the heating element 13. The heated air still under pressure from the blower then flows downwardly through the side wall of the basket, the side wall being perforated or foraminated for that purpose. The air moves through the basket and the articles of clothing being tumbled therein extracting moisture from the clothes and next passes into a collecting chamber lying beneath the basket 2 on the opposite side of the baffle 12 from the duct 11. From the collecting chamber the air is discharged out of the cabinet into the surrounding room through an appropriate lint trap structure 14 mounted in the toeboard 10.

By my invention the dryer 1 is provided with means whereby a pleasant odor is imparted to the clothes during the drying operation. Specifically, the dryer is provided with means whereby a treating or odorizing vapor is passed onto the clothes during the drying operation. In my preferred embodiment this odorizing vapor is carried onto the clothes by means of the main air stream through

the dryer so that the air stream not only dries the clothes but also gives them a pleasant odor.

The odorizing vapor is introduced into the air stream by means of a dispenser 15 which is mounted on the dryer cabinet within the recessed kick space 16 in front of the toeboard 10 (Fig. 2). The dispenser 15 comprises a relatively flat elongated container including a main body portion 17 and a front wall or cap 18, and it is mounted within the kick space 16 by means of a generally U-shaped clip 19. The dispenser fits within and is held by the clip 19, and the clip in turn is held by brackets 20 attached to the dryer casing. The clip is provided with rearwardly extending portions 19a at the ends of its vertical legs and these extensions 19a fit within and are held by the brackets 20. The engagement between the dispenser 15 and the clip 19 is, however, not such that the dispenser is fixedly mounted in place. Rather the dispenser may be readily withdrawn from the clip and replaced therein by the operator of the machine. In the illustrated embodiment a side flange 21 on the front wall or cap 18 of the dispenser engages the clip so as both to hold the dispenser within the clip and prevent any tilting thereof, but the engagement between the flange and the clip does not interfere in any way with the removal of the dispenser.

When the dispenser is pushed back to the proper position wherein the flange 19 engages the clip, the dispenser is wholly within the kick space 16, i. e., it lies wholly in back of the front panel 22 of the cabinet 3. The dispenser is thus out of the way where it will not be accidentally bumped by the operator of the machine as she loads and unloads the clothes from the machine. However, it is still readily accessible for removal and replacement within the clip.

The dispenser 15 is positioned within the kick space 16 generally in front of the air inlet opening 9 through the toeboard 10. It is so positioned in order to dispense the odorizing vapor into the air stream entering the dryer. The air stream then carries the odorizing vapor upward through the duct 11 and thence downwardly through the perforated wall of the basket onto the clothes. The container 15 is so arranged that the action of the air stream itself removes the vapor from the dispenser without any additional means being required. For that purpose the dispenser is provided with a front air inlet opening 23 and a rear air outlet opening 24. Both the air inlet opening and the air outlet opening are tubular in form. That is, they are not simply apertures in the walls of the dispenser but rather are slightly tapered, tube-like elements extending for a distance into the interior of the dispenser. The rear or air outlet opening 24 is formed in the main body portion 17 of the dispenser and the front or air inlet opening 23 is formed in the front wall or cap 18.

The air inlet and outlet openings 23 and 24 of the dispenser are positioned generally in line with each other and are also in line with the air inlet opening 9 to the dryer. The outlet opening 24 of the dispenser in fact lies closely adjacent the dryer inlet 9. As a result a portion of the air entering the opening 9 will first be drawn through the opening 23, then through the dispenser or container and out through the opening 24 before it enters the opening 9 to the dryer. This air passing through the dispenser 15 flows over a pool 25 of odorizing liquid contained in the dispenser and volatilizes or evaporates a portion of the odorizing liquid into a vaporous form. It then carries this odorizing vapor inwardly to the opening 9, and from there it passes through the blower and the duct 11 into the tumbling drum and onto the clothes. In this manner a pleasing odor is imparted to the clothes simultaneously as they are dried. The tapered, tubular openings 23 and 24 pass air freely through the dispenser or container so long as the blower is in operation. However, when the dryer is turned off so that the blower is inoperative, then the tubular openings act to prevent diffusion of the odorizing liquid out of the receptacle. This

tubular form of the openings is much more effective than simple apertures in preventing diffusion. Thus much less odorizing liquid is lost during inoperative periods of the dryer than if simple aperture-like air inlet and outlet openings were provided in the dispenser.

With regard to the type of odorizing liquid which may be used in the dispenser 15, it will be understood that any suitable volatile liquid may be used. It is preferred however to use a liquid which will give a fresh outdoor odor to the clothes.

In order to control the amount of fragrance or odor imparted to the clothes, the dispenser 15 is provided with means for controlling the amount of odorizing vapor introduced into the inlet air stream entering the dryer. This control means comprises a flat cover element 26 which is slidably mounted in a track 27 formed in the front element 18 of the dispenser. This cover 26 may be slid in the track 27 by the operator so as to close off more or less of the air inlet opening 23 of the dispenser. It may be moved so as to completely close off the air inlet opening 23 whereby no odorizing vapor will be introduced into the air stream during the operation of the dryer. Alternatively, it may be moved so as to partially cover the air inlet opening 23, such as is shown in Fig. 4, or it may be moved so as to completely uncover the opening 23. The more of the opening that is uncovered, the more air is passed through the dispenser and the more treating liquid is volatilized and introduced into the dryer air stream. Thus by the use of the sliding cover the amount of odor added to the clothes may be controlled at the selection of the operator.

In order to provide for refilling the dispenser 15 when the pool of odorizing liquid therein is depleted or exhausted, a filling opening is formed in the rear wall of the body member 17 near the air outlet opening 24. The filling opening is normally closed by a plug 28 so that liquid is not lost through it during the operation of the dryer. However, when the dispenser is removed from the dryer, the plug 28 may be taken out of the filling opening and the supply of odorizing liquid replenished through the filling opening. It will be noted incidentally that the air inlet and outlet openings 23 and 24 are disposed at both the vertical and horizontal centers of the front and rear walls respectively. This allows the receptacle to be tipped on end when the dispenser is removed without any leakage through these openings. Also, the tubular form of the openings and their extension into the interior of the dispenser allows the dispenser to be placed on its front wall 18 or its rear wall without leakage. As a result no matter how the dispenser is tipped during filling, there will be no spillage unless it is overfilled.

From the above it will be seen that I have provided a new and improved arrangement of a clothes dryer whereby a pleasing odor may be imparted to the clothes simultaneously as they are dried. In this arrangement the air stream flowing through the dryer, itself volatilizes a treating or odorizing vapor from a supply of odorizing liquid in a dispenser, whereby no additional vaporizing means are required. The dispenser is arranged on the exterior of the cabinet so that it is readily accessible for refilling, but yet is out of the way so that it will not be accidentally bumped or damaged by the operator. Further, the air inlet and outlet openings into the dispenser are themselves so arranged that they allow little loss of treating liquid by diffusion during inoperative periods of the dryer, while nonetheless providing for a substantial air flow through the dispenser during the operation of the dryer thereby to carry the treating vapor onto the clothes. The dispenser also includes means whereby the amount of vapor introduced into the dryer air stream may be varied at the selection of the operation to obtain the desired odor of the clothes.

While in accordance with the patent statutes I have described what at present is considered to be the preferred embodiment of my invention it will be obvious to

5

those skilled in the art that various changes and modifications may be made therein without departing from the invention, and, therefore, it is aimed in the appended claims to cover all such changes and modifications as fall within the true spirit and scope of my invention.

What I claim as new and desire to secure by Letters Patent of the United States is:

1. In a clothes dryer, a clothes tumbling drum, a heater, a blower for blowing a stream of air over said heater and through said drum to dry the clothes therein, a cabinet enclosing said drum, said heater and said blower and having a recessed kick space, an air inlet from said kick space into said cabinet for said stream of air, and a dispenser for introducing a treating vapor into said stream of air to impart a pleasant odor to said clothes, said dispenser being mounted on said cabinet in said kick space in the path of said stream of air as it enters said air inlet, and comprising a container for treating liquid having an air inlet opening and an air outlet opening, with said dispenser being positioned so that at least a

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portion of said stream of air flows through said openings and said container as it passes into said air inlet whereby said treating vapor is volatilized from said liquid and carried onto said clothes.

2. The combination of claim 1 wherein said dispenser is removably mounted in said kick space, and includes a filling opening whereby said container may be refilled with liquid when the supply in said container becomes depleted, and a manually adjustable cover for one of said openings whereby the amount of air passing through said container may be varied to control the amount of treating vapor carried to the clothes.

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