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AIR RETURN FOR HAND DRIER

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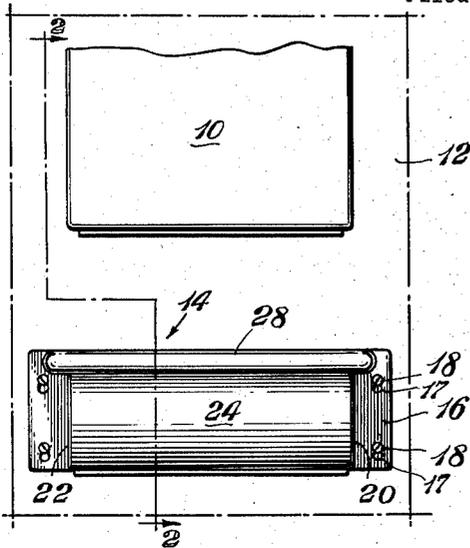


Fig. 1.

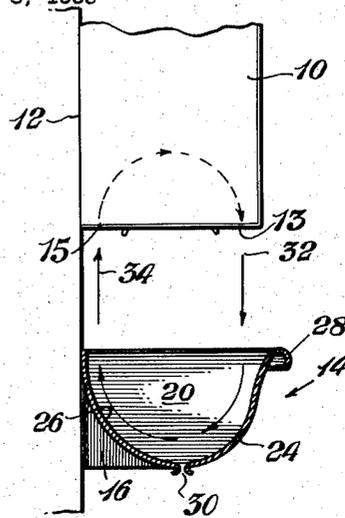
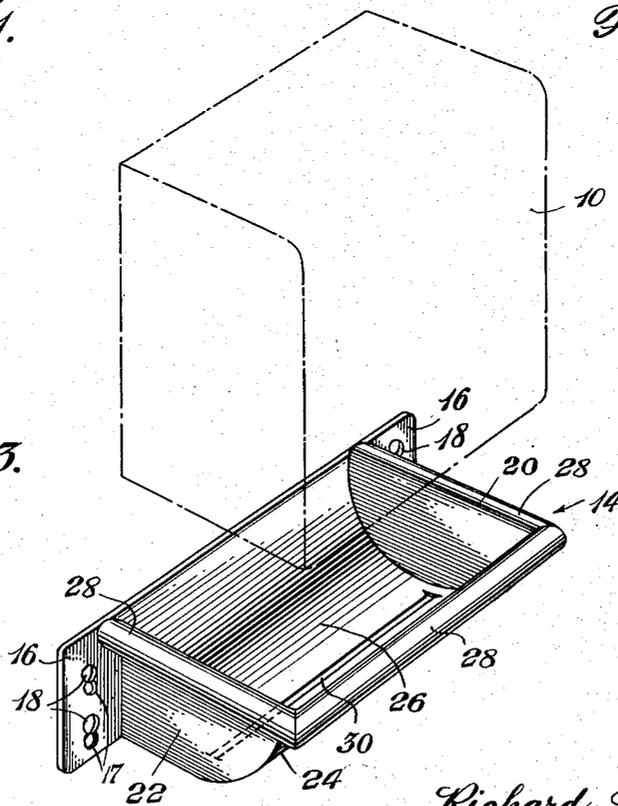


Fig. 2.

Fig. 3.



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**AIR RETURN FOR HAND DRIER**

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2 Claims. (Cl. 34—202)

The present invention relates to hand driers. More particularly, the present invention relates to an air return deflector for use with hand driers.

Hand driers which are normally installed in lavatories in commercial sites have been known for some time and are generally of the type which include a blower which is adapted to direct atmospheric air over a heating element. The resulting warmed air is directed downwardly from the drier casing and a person who has just rinsed his hands places his wet hands below the hand drier to receive the warmed air for effecting the drying of the hands. Under normal operation, these heretofore known hand driers are automatically operated to complete a drying cycle within a prescribed period of time, that is, when electrical means are energized the drier blower is actuated and operates to eject warm air from the drier casing for a definite period of time. Prior to the instant invention, it has been found that the normal drying cycle has been insufficient to complete the drying of a user's hands which have been recently rinsed. Consequently, the cycle has to be repeated one or two times to effect a complete drying of the hands. This procedure is not only objectionable since it is time-consuming, but results in inefficient operation due to the fact that the drier is operated more than the intended normal use.

The present invention contemplates the use of an air return deflector which is formed as a separate element from the hand drier and may be removed from the operating position below the hand drier for cleaning or repairing, whenever desired. The deflector element is adapted to recirculate the heated air to the hand drier and thereby decreases the drying time for drying one's hands. The deflector element embodied in the present invention is easily adaptable for use with any of the heretofore known hand driers and is constructed such that it may be put in position with a minimum of time and effort. In practice, the deflector is positioned on a wall directly below the hand drier and is spaced therefrom so as to allow one to place the hands directly below the hand drier but above the deflector. The deflector has curved front and back walls which form a scoop effect and the deflector thereby directs the air ejected from the hand drier back within the hand drier for recirculation. By recirculating the warm air that is ejected from the hand drier, the user's hands, which are placed directly in the path of the recirculating air, are more thoroughly dried and in a lesser period of time than known heretofore. Furthermore, by employing the deflector embodied in the present invention, the heated air is restricted to a limited area and the deflector thereby prevents any outside air from contacting the hands. As a result, the normal drying time is materially reduced.

It is, therefore, an object of the present invention to provide hand drying apparatus which includes means for decreasing the normal hand drying cycle.

It is another object of the present invention to provide an air return deflector in combination with a hand

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drier for deflecting heated air ejected from the hand drier for recirculation thereof.

It is a further object of the present invention to provide a deflector for use with a hand drier that is removable and may be easily and quickly installed.

5 A still further object of the present invention is to provide a deflector for use with a hand drier which is provided with curved walls for recycling heated air ejected from the hand drier.

10 Still a further object of the present invention is to provide a deflector for use with a hand drier which includes vent means for venting residual water accumulating in the deflector.

Other objects and the nature and advantages of the instant invention will be apparent from the following description taken in conjunction with the accompanying drawings, wherein:

15 Fig. 1 is a front elevational view of the apparatus embodied in the present invention;

20 Fig. 2 is a section taken along the line 2—2 of Fig. 1; and

Fig. 3 is a perspective view of the deflector embodied in the present invention.

25 Generally, the apparatus embodied in the present invention includes a deflector which is adapted to be utilized in conjunction with a hand drier in a lavatory in a commercial installation. The deflector is secured to the lavatory wall directly below the hand drier and is spaced therefrom. It is apparent that the deflector will be spaced from the hand drier a sufficient distance to allow a user to place his hands in position under the drier without contacting the drier or the deflector. The spacing of the deflector with respect to the hand drier is such that when heated air is ejected from the hand drier it will be directed entirely within the walls of the deflector.

30 The hand drier is electrically operated and is provided with a suitable motor which is adapted to rotate a blower, the blower directing atmospheric air over a heating element positioned directly before the outlet of the drier. The heating element thereby warms the air prior to its being ejected from the drier. The user who has just rinsed his hands which, therefore, require drying, actuates the drier switch which turns on the motor in the drier. The user then places his hands beneath the drier and directly above the deflector. The blower then directs the air over the heating element and the heated air envelops the user's hands. The deflector, which is positioned at a predetermined distance from the drier, is provided with curved walls which are adapted to recirculate the warmed air over the user's hands and thereby decrease the normal drying cycle, as will be more clearly described hereinafter.

35 Referring now to the drawings, a hand drier, which may be of any convenient construction, and which includes the drier motor, blower and heating element, is shown at 10 and is mounted on a wall 12. The hand drier 10 includes an air discharge opening 13 which is located in the bottom of the drier adjacent the front edge thereof. Also located in the bottom of the drier adjacent the rear edge thereof is an air inlet opening 15 for directing air to the drier blower. The air return deflector for the hand drier embodied in the present invention is generally indicated at 14 and includes a bracket 16. The bracket 16 is adapted to be secured to the wall 12 by bolts 18 extending through slots 17 formed in the bracket 16. Secured to the bracket 16 and extending perpendicularly thereto are side walls 20 and 22, the side walls determining the width of the hand drier and normally dimensioned so as to extend outwardly from the wall 12 slightly beyond the hand drier 10. Secured to the side walls 20, 22 are a curved front wall 24 and a curved rear wall 26, the curved

rear wall 26 joining the bracket 16 at the uppermost portion thereof and forming with the curved front wall 24 a scoop-like element. The curved front wall 24 is located adjacent the discharge opening 13 of the drier while the curved rear wall 26 is located adjacent the air inlet opening 15.

In order to prevent scraping or cutting of the hands and to provide a smooth surface upon which the hands may rest, the side walls 20, 22 and the front wall 24 are each formed with an overturned beaded portion 28. The beaded portion 28 may vary in size as to the size of the bead, but it is apparent that the purpose which has been mentioned above is to provide a smooth-topped surface for the deflector walls.

During operation of the hand drier and when the user's hands are placed above the deflector, it is apparent that some water may fall into the deflector and unless means are provided for venting the water, the water will accumulate and thereby will be objectionable from a sanitary point of view. In order to prevent any residual water from accumulating in the deflector 14, the curved front and back walls 24 and 26 are turned outwardly at the bottom-most portion thereof to form a slot 30. The slot 30 is thus positioned at the lowermost point in the deflector and any residual water dropped onto the deflector walls will move downwardly by gravity and then be removed by means of the vent 30. A drain (not shown) may be conveniently attached to the lower portion of the deflector for capturing the waste water vented through the vent 30 and may be removed at intervals for removing the waste water.

In operation, the motor for the drier is actuated by the user and the drier-blower directs the heated air toward the deflector as shown by the arrows indicated at 32 in Fig. 2. The user's hands are placed between the deflector 14 and the drier 10 and are enveloped by the heated air emanating from the air discharge opening 13 of the drier 10. As the heated air strikes the curved walls 24, 26 of the deflector, it is deflected upwardly into the air inlet opening 15 and back into the interior of the drier 10, as shown by the arrows indicated at 34 in Fig. 2. It is apparent then that during the drying cycle, the heated air will be recirculated by means of the deflector back to the drier 10 and then redirected by means of the drier blower to the user's hands. Thus, the air for drying the user's hands is continuously re-heated and thereby induces a shorter drying time. Since the deflector is limited by the walls thereof, the air directed from the drier 10 will be restricted within the walls of the deflector. It is therefore assured that the heated air will be reheated and then redirected to the user's hand. By employing the deflector, outside air is also prevented from contacting the user's hands which further aids in reducing the normal

drying time. It is seen that by providing the deflector for use with the hand drier and thereby restricting the heated air to a limited area, there is less disruption to air conditioned rooms and furthermore air is prevented from being drawn from the floor which, from a sanitation point of view, would be objectionable.

It is apparent that a hand drier, which incorporates a deflector of the type embodied in the present invention, is economical since it reduces the overall drying and thereby reduces the normal usage of the hand drier. It is known that hand driers are normally employed since they are economical, eliminating the use of paper towels and the need for maintenance therefor. By incorporating a deflector of the type described herein, the drier is even more economical since the normal drying cycle is materially reduced. Furthermore, the deflector described herein may be conveniently removed for maintenance whenever necessary without disrupting the operation of the drier, and a new or clean deflector may be placed in position below the drier, as required.

It will be obvious to those skilled in the art that various changes may be made without departing from the spirit of the invention and therefore the invention is not limited to what is shown in the drawings and described in the specification, but only as indicated in the appended claims.

What is claimed is:

1. In an air return deflector for use with a hand drier, said hand drier having an air discharge opening and an air inlet opening located in the bottom thereof, said deflector being mounted below said hand drier in adjacent relationship and being substantially coextensive in size therewith, said deflector including side walls and curved front and rear walls, said curved front and rear walls defining a concave bottom wall, the drier air discharge opening being located adjacent said curved front wall and directing heated air downwardly along said curved front wall, said drier air inlet opening being located adjacent said curved rear wall and receiving air directed thereto from said curved rear wall, said heated air from said air discharge opening thereby being returned to the interior of said hand drier for recirculation.

2. In an air return deflector for use with a hand drier as set forth in claim 1 including an opening formed in said bottom wall, said opening forming a vent for discharging waste water accumulating in said deflector.

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