HAND-DRYING APPARATUS

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This invention relates to electrical hand drying apparatus of the type having a motor driven fan and heating means for the air delivered by the fan.

The main object of the invention is to provide simple apparatus of this character that can be operated without manual contact so that the user need have no fear of electric shock due to touching any part of the switching means with his wet hands.

It is already known to start up hand-driers by means of a pedal, or even by means of an automatic system sensitive to the approach of the hands. These ways of starting up already take into account the fact that for a hand-drier it is desirable to provide starting means other than a manual switch, but the operation of a pedal makes it very awkward for a person standing on one leg, without the use of his hands, and the known automatic system mentioned is very expensive. The invention provides a cheap means of starting up, placed on the apparatus itself, and not requiring the use of the wet hands or arms.

Another object of the invention is to provide improved hand drying apparatus with switching means that can be operated without manual contact and that will automatically switch off the current after a predetermined time.

A specific object of the invention is to provide a simple and inexpensive form of hand-drying apparatus which can be operated without manual contact but merely by blowing into the casing of the apparatus, the user being enabled to expose his hands to a heated current of air delivered by the apparatus in a downward direction as he stands in front of the casing.

Other objects and advantages of the invention will hereinafter appear from the following description of a preferred embodiment, given with reference to the accompanying diagrammatic sectional drawing.

This drawing shows the apparatus enclosed in a casing 1 provided with one or more apertures protected by a grid 2. Behind this grid there is disposed a vane 3 mounted on a lever arm 4 gravity biased to normal position as shown and capable of pivoting about an axis 5. The lever arm 4 is in contact with the push button 6 of a starter for a timing switch 7. This switch sets a fan driving motor (not shown) in action, thereby driving a centrifugal fan 8, it also delivers current for a heating resistance 9 placed in the fan outlet conduit 13, and it cuts off the current to both the motor and the resistance after a pre-determined time, sufficient for the user to dry his hands in the current of warm air discharged from the conduit 13. In addition, the timing switch 7 can for example also light up an ultra-violet ray lamp or disinfecting tube 10, which has a bactericidal effect upon the hands held below the outlet 13.

In accordance with the preferred embodiment shown, the vane 3 is disposed at the level of the fan 8, and a conduit 11 branching from the high pressure side of this fan directs a small jet of air on to the vane 3.

The person who wishes to use the improved hand-drier brings it into operation by blowing through the grid 2 on to the vane 3. The latter pivots about the axis 5 and presses the lever arm 4 against the push button 6 of the starter, thereby closing the switch 7. A spring (not shown) clamps contact of arm 4 with micro-switch 6. The fan 8 now comes into operation, drawing air at its open center, and delivers it into the conduit 12, in which the heating resistance 9 is placed. The hot air issues through the outlet 13 and rapidly dries the hands and, held out below the casing. A small jet of air also leaves the auxiliary conduit 11, pushes back the vane 3 and restores it to its initial position, against any force exerted by air drawn in by the fan 8 through the grid 2.

The starter button 6 then returns immediately to initial position after the starting of the fan 8, and the timing switch 7 cuts off the current to both the fan motor and the heating resistance after the lapse of the pre-determined time.

It will be understood that the invention is not limited to the particular arrangement described and illustrated in the accompanying drawing, but embraces all desired modifications within the scope of the appended claims.

What I claim and desire to secure by Letters Patent is:

1. A hand drier comprising, a motor driven fan, means for directing air from the fan externally of the drier as a stream, electrical means for heating the air stream delivered by the fan, an electrical circuit for energizing the fan motor and the heating means, a normally open breath-operated switch connected in said circuit for closing the circuit to control the simultaneous energization of the fan motor and said heating means, breath-operated means having a normal rest position and operable to an operative position for engaging and operating said switch to a closed position, timing means for maintaining the fan motor and heating means energized for a selected period of time subsequent to the closing of the circuit by said switch, means on said air stream directing means for diverting a portion of the air flow against said switch operating breath-operated means to return it to its rest position and to maintain it in this rest position during the period of time the fan is activated thereby to release the switch and allow it to open.

2. A hand drier comprising, a motor-driven fan, means for directing air from the fan externally of the drier as a stream, electrical means for heating the air stream delivered by the fan, an electrical circuit for energizing the fan motor and the heating means, a normally open breath-operated switch connected in said circuit for closing the circuit to control the simultaneous energization of the fan motor and said heating means, a breath-operated pivotally mounted vane having a normal rest position and operable to an operative position for engaging and operating said switch to a closed position, timing means for maintaining the fan motor and heating means energized for a selected period of time subsequent to the closing of the circuit by said switch, means on said air stream directing means for diverting a portion of the air flow against said vane to return it to its rest position and to maintain it in this rest position during the period of time the fan is activated thereby to release the switch and allow it to open.

3. A hand drier comprising, a motor-driven fan, means for directing air from the fan externally of the drier as a stream, electrical means for heating the air stream delivered by the fan, an electrical circuit for energizing the fan motor and the heating means, a normally open breath-operated switch connected in said circuit for closing the circuit to control the simultaneous energization of the fan motor and said heating means, a breath-operated pivotally mounted vane having a normal rest position and operable in a direction for engaging and operating said switch to a closed position, timing means for maintaining the fan motor and heating means energized...
for a selected period of time subsequent to the closing of the circuit by said switch, means on said stream directing means for diverting a portion of the air flow as a jet against said vane to return it to its rest position and to maintain it in this rest position during the period of time the fan is activated thereby to release the switch and allow it to open, to preclude movement of said vane in the switch operating direction, and a germicide ultraviolet ray lamp disposed internally of the drier in the path of the air delivered by the fan for treating said air and connected in said circuit.

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