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[33] **Great Britain**

[31] **30112/69**

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[54] **BODY DRYING APPARATUS**
14 Claims, 8 Drawing Figs.

[52] U.S. Cl..... **219/370,**
165/126, 219/213

[51] Int. Cl..... **F24h 3/04**

[50] Field of Search..... 34/229, 34,
53, 243; 98/39, 40; 126/110; 219/341, 213,
347-349, 363, 364, 366-371, 373, 377; 230/259,
270, 271; 165/126

ABSTRACT: An apparatus is provided for drying the whole body of a person by hot air with the assistance of paper or other towels. The apparatus comprises a conduit or duct for hot air having an outlet. A deflector is arranged to deflect a stream of hot air issuing from the outlet, and is oscillated so as to cause the stream of air to sweep upwards and downwards over the body.

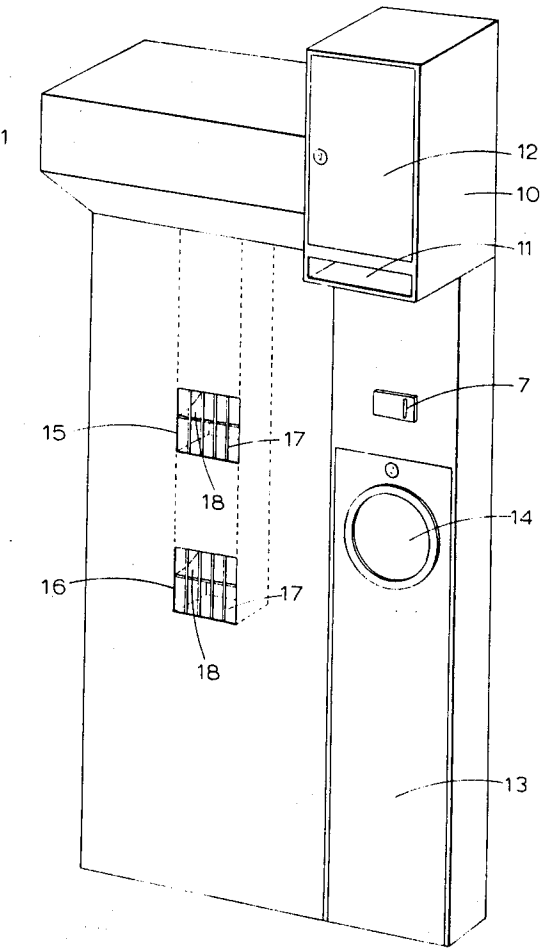
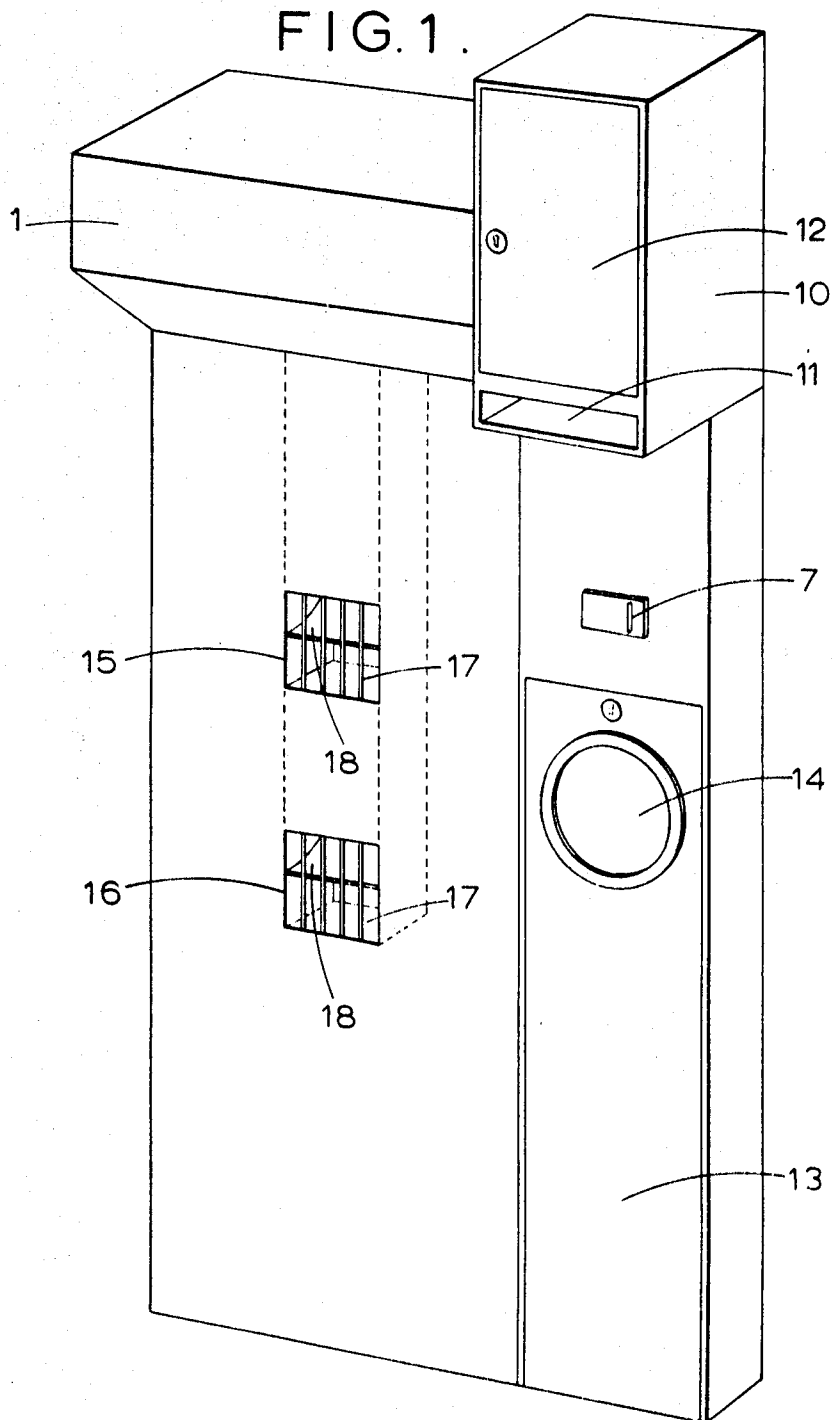


FIG. 1.



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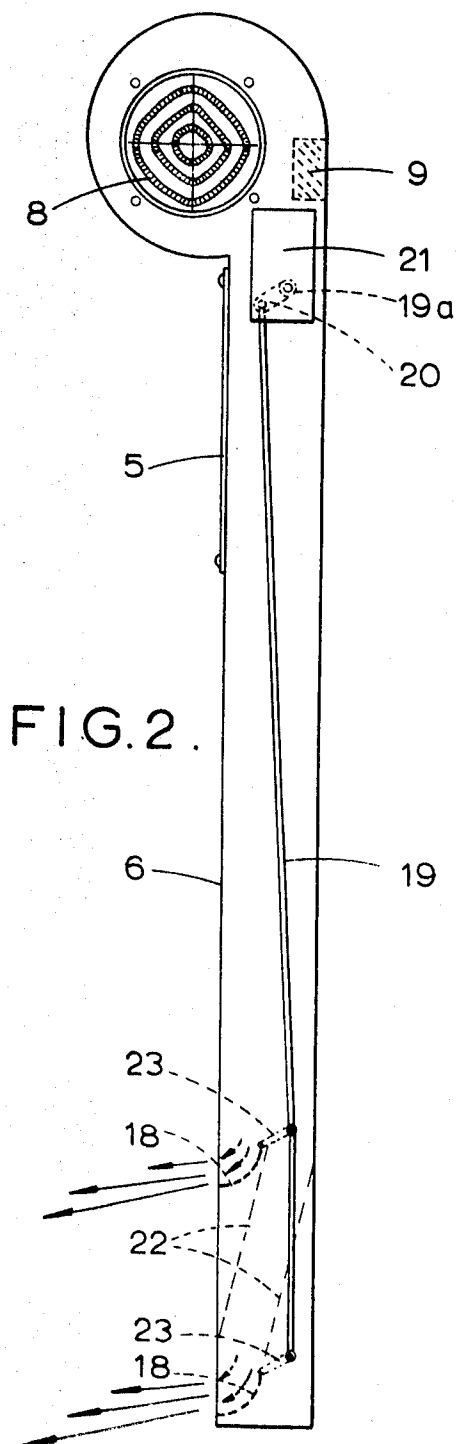


FIG. 2.

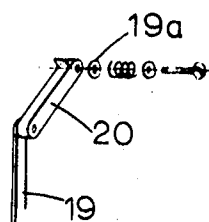
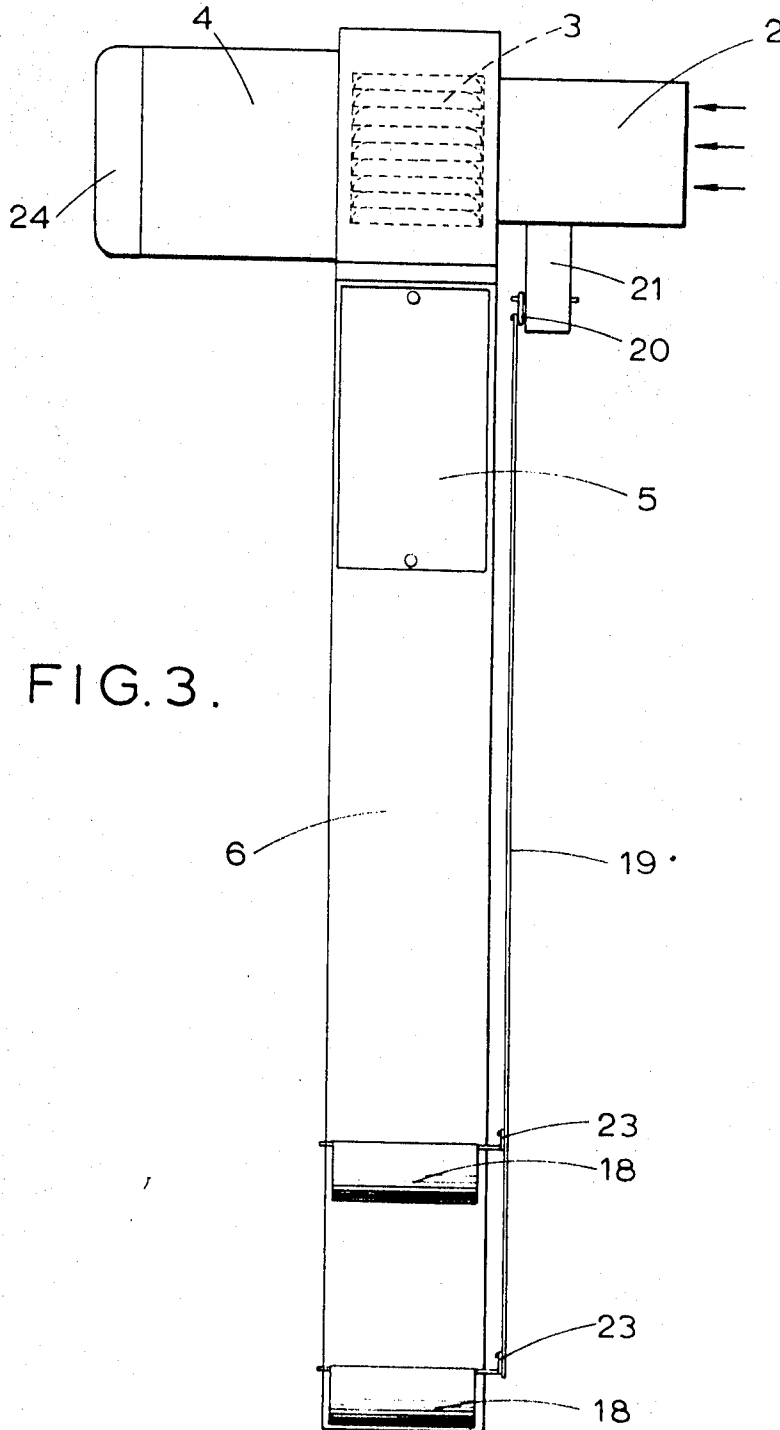
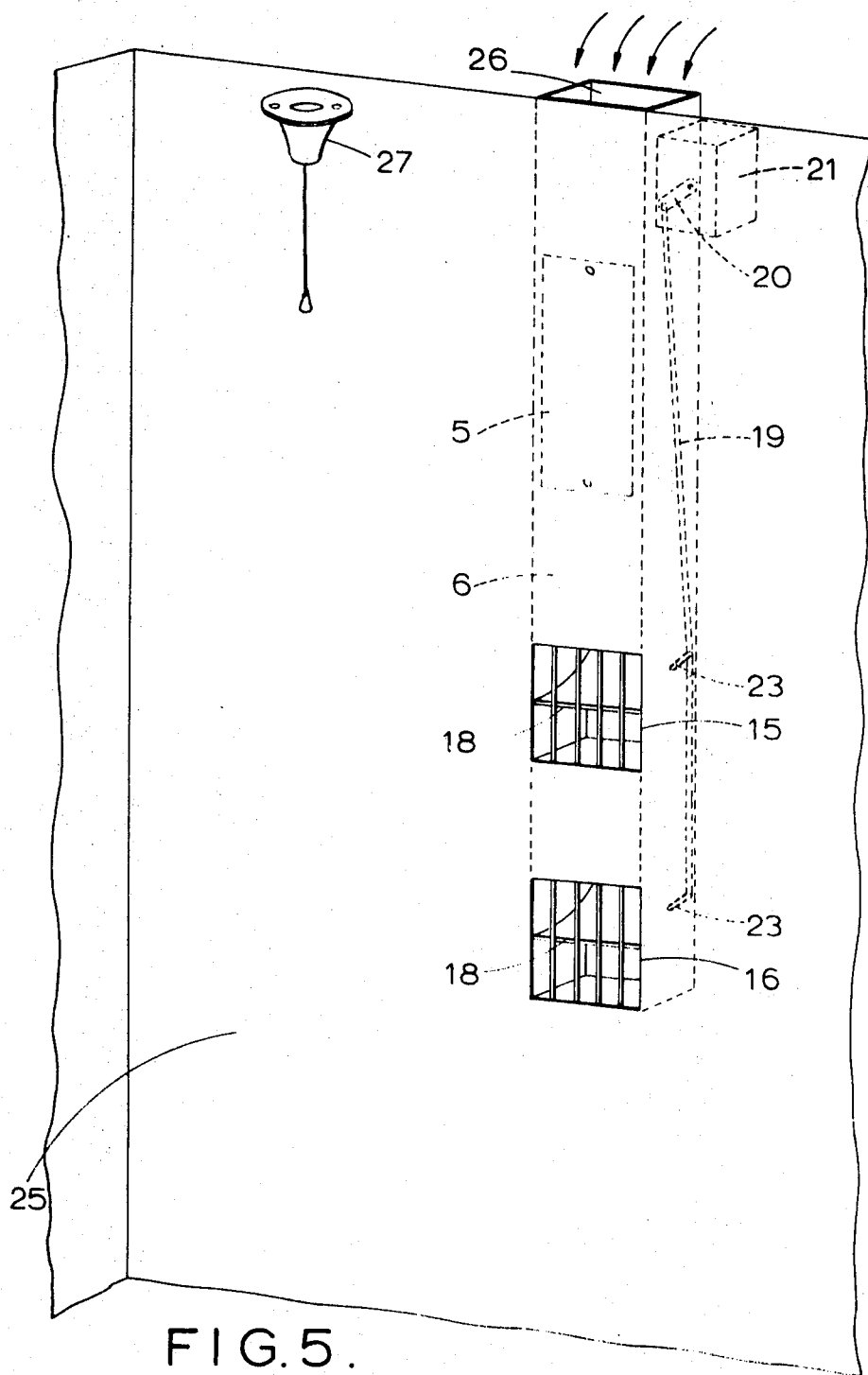


FIG. 4.

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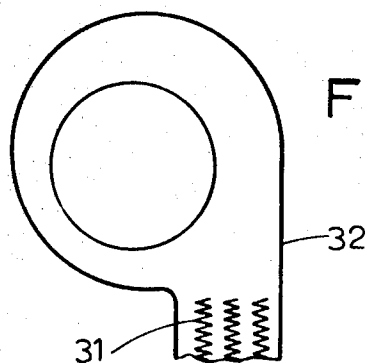


FIG. 6.

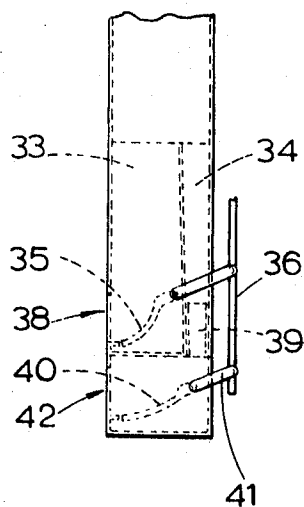


FIG. 8.

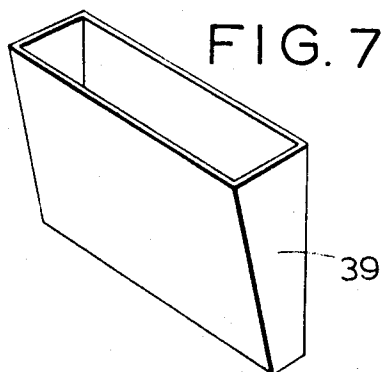
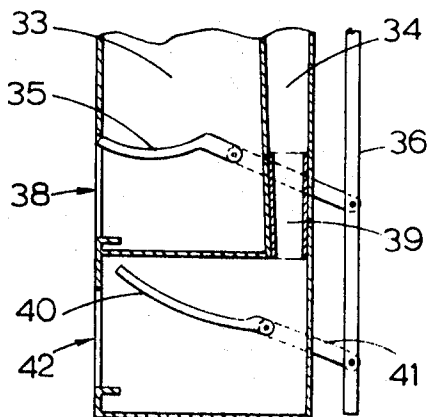


FIG. 7.

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BODY DRYING APPARATUS

CROSS-REFERENCE TO RELATED APPLICATION

The present application is a continuation-in-part of copending application, Ser. No. 799,797 filed 17th Feb. 1969.

SUMMARY OF THE INVENTION

According to the invention, there is provided an apparatus for drying the body of a person comprising a conduit for hot air, said conduit having an outlet, a deflector arranged to deflect a stream of hot air issuing from said outlet, and means for oscillating said deflector about a horizontal axis so as to cause said stream of air to sweep upwards and downwards over the body of a person standing in front of said outlet.

Preferably, the outlet is provided with two deflectors one of which is arranged to cause hot air to sweep over the lower half of the body and the other of which is arranged to cause hot air to sweep over the upper half of the body. The device is useful in domestic or hotel bathrooms or the like or it can be fitted in swimming pools or hospitals. It makes it possible to dry the body after bathing without the use of towels or, alternatively, with the assistance of paper towels or small textile towels.

In a modification, a single conduit carrying the hot air is divided in its lower portion into two conduits each of which leads to an outlet having a deflector arranged to deflect a stream of hot air issuing from the outlet, the two outlets being arranged one above the other. Each deflector can oscillate to and from a position in which it closes or substantially closes its outlet. This causes the temperature of the air in the conduits to rise. One of the conduits has a larger cross-sectional area than the other, the smaller conduit tapering towards the deflector associated with it, thereby to increase the velocity of hot air issuing from that outlet. The larger conduit may be arranged to direct air on to an upper deflector flap having an upper concave surface and mounted for oscillation about a horizontal axis, and the smaller conduit is arranged to direct air onto a lower flat deflector flap. This arrangement makes it possible to reduce the size of the apparatus as well as to provide a satisfactory drying effect with smaller electrical heaters.

The apparatus can be coin operated in which case the supply of hot air can be limited by operation of a timer controlled by a coin-free mechanism. In such a case, the coin-free mechanism can also be arranged to issue paper towels simultaneously with the setting in operation of the means for supplying hot air.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of an apparatus according to the invention for drying the body of a person,

FIG. 2 is a side view of a drying unit forming part of the apparatus,

FIG. 3 is a front view of the unit illustrated in FIG. 2,

FIG. 4 is a detail view of a clutch,

FIG. 5 is a diagram illustrating a modification intended for use in hotels and the like,

FIG. 6 is a sectional diagram of part of a modified body drying apparatus according to the invention,

FIG. 7 is a detailed perspective view illustrating part of a conduit for hot air with deflectors in an open position and

FIG. 8 is a further detail showing deflectors in a closed position.

DESCRIPTION OF PREFERRED EMBODIMENTS

In the embodiment of the invention illustrated in FIGS. 1 to 4, an apparatus for drying the body of a bather comprises a cabinet 1 having an inlet tube 2 for air and containing a blower 3 which is driven by an electric motor 4 and draws air in through the inlet and passes it via a main electric heater 5 to a downwardly directed opening (not visible) and thence into a duct or conduit 6.

A switch operated by a coin-freed mechanism having a coin acceptor slot 7 is provided for setting the blower 3 in opera-

tion and the main electric heater 5 (conveniently of 4-kw. capacity) is switched on when the blower is switched on. The main tube also contains a preheater 8. This preheater 8 is permanently switched on whether the apparatus is working or not, so that preheated air is always available when the machine is switched on by the activation of the coin-freed mechanism. Thus, no stream of cool air will issue while the main and first stage electric heaters are warming up.

For reasons of safety, the upper portion of the cabinet 1 is positioned above the average height of persons likely to be using the apparatus and is preferably at or above ceiling level. The conduit or duct 6 is electrically insulated from the cabinet.

The cabinet has a towel storage compartment 10 with a towel delivery slot or opening 11 and a lockable door 12. It also has a used towel compartment 13 with a door flap 14.

The conduit or duct 6 has two front outlet openings 15, 16 through which hot air can issue. These openings are preferably arranged at midheight for a person of average height and have guard grilles 17. A deflector 18 is arranged in each opening 15 or 16. The deflectors are conveniently curved metal plates. Each deflector is arranged to oscillate about a horizontal axis. It is caused to oscillate about its axis by means of an actuating or connecting rod 19 connected to a crank 20 or the like rotated by an electric motor 21 which is set in operation when the blower is switched on. The oscillation of each deflector about a horizontal axis causes the streams of hot air issuing from the outlets to sweep upwards and downwards over the body of a person standing in front of the outlet. The deflector at the upper opening 15 causes the hot air to sweep the upper part of the body and deflector at the lower opening 16 causes the hot air to sweep the lower part of the body.

The downward movement of the deflectors during oscillation causes some of the warm air to be sucked back into the duct or conduit 6 so that such air will be subjected to some reheating before being again expelled through the openings. The lower part of the duct or conduit 6 has baffles 22 defining a channel for hot air which supplies the lower opening 16. The connection between the motor 21 and the crank 20 is by way of a suitable slipping clutch 19a illustrated in detail in FIG. 4 so that if, for example, a child should place its fingers into the opening 15 or 16 the clutch would slip and the fingers would not be damaged. Links 23 connect the rod 19 with the deflectors 18.

Insertion of a coin through the acceptor slot 7 switches on the blower motor 4 and the heat 5. It also sets in operation a timing device 24 which can be of any convenient type, but is conveniently constructed as described in British Pat. specification No. 1,108,513. After a predetermined time, the main heater 5 and the motor 4 are switched off.

A modification intended primarily for hotel use is illustrated in FIG. 5 in which like parts are designated by like reference numerals. In this modification the duct 6 is built into a wall 25 and connected to a master supply of warm air. The duct is controlled by a valve 26 (which may be a flap) and a diffusion element not shown. A ceiling switch 27 can be operated to open the valve 26, for example by means of a solenoid, and to switch on the main heater 5.

If desired, means can be provided for adjusting the amount of oscillating movement of the deflector or deflectors. Means can also be provided for disengaging the deflector oscillating mechanism to enable a steady stream of air to be directed on to, for example, the head of a person sitting in front of the outlet thereby to permit the hair to be dried.

In the modified apparatus illustrated in FIGS. 6, 7 and 8, the air is heated by a main electric heater 31 and is passed through a trunk or duct 32 under the action of a blower which is not shown in the drawings. The lower part of the trunk 32 is divided into two separate conduits 33 and 34. The front conduit 33 has a cross-sectional area which is larger than the cross-sectional area of the rear conduit 34. Preferably, the conduit 33 has a cross-sectional area which is about three-quarters of the total cross-sectional area of the duct and the conduit 34

has a cross-sectional area which is equal to about one-quarter of the total cross-sectional area of the duct.

The air passing downwards through the conduit 33 strikes a curved deflector plate 35 which is caused to oscillate between an upper, or closed position and a lower or open position about a horizontal axis by means of an actuating rod 36 connected to the deflector 35 by a link 37. The actuating rod 36 is operated by an electric motor in the manner described with reference to FIGS. 1 to 4. The oscillation of the deflector 35, which is a curved plate having an upper concave surface, causes air to sweep upwards and downwards over the upper half of the body of a person standing in front of an outlet 38 in the front of the lower part of the conduit 33. The conduit is arranged to direct air onto a deflector plate 40 arranged to oscillate about a horizontal axis under the action of the actuator rod 36 and a link 41 between closed or open positions.

When the deflectors 35 and 40 are in their upper or closed position, the exit of air from the conduits 33, 34 is substantially or completely cut off. As a result of this the temperature of the air trapped in the conduit will rise because the heating elements will glow momentarily hotter so that in effect, less electric current is required to warm the air than would otherwise be possible.

The deflector flap or plate 40 may be concave as illustrated or flat and arranged at an inclination which is determined by the height of an outlet 42 from the conduit above the ground and the distance at which a person will normally stand in front of the outlet 42 when wishing to be dried.

The rear or smaller conduit 39 tapers towards its lower end, such taper preferably being produced by the insertion of a nozzle into the lower part of the conduit 39.

The form of the oscillating deflectors can be—if viewed in cross section—a straight flat sheet or a curved or semicircular sheet or a deflector made in a tubular cross section.

What I claim is:

1. An apparatus for hot air drying of the body of a person comprising a conduit for the passage of hot air therethrough, said conduit having an air inlet and an air outlet at opposite ends thereof, continuously operable means adjacent the inlet to preheat air, second air heating means within the conduit and spaced between the air preheating means and the air outlet, means to activate said second heating means, means to move air through the conduit, means to activate the air moving means, an air deflector disposed within and adjacent the outlet end of the conduit, and means to oscillate said deflector about a horizontal axis to direct heated air issuing from the outlet responsive to activation of the second air heating means and air moving means upwards and downwards from a horizontal line.

2. An apparatus as claimed in claim 1 including a pair of outlets through which hot air can issue the two outlets being arranged one above the other, a pair of air passageways adjacent the outlet end of the conduit through which hot air can pass, one of the passageways communicating with an outlet and one of the passageways tapering towards its outlet, and a pair of deflectors one of which is arranged at each outlet to deflect a stream of hot air issuing from each outlet, and means for oscillating each of the deflectors about a horizontal axis to and from positions in which they substantially close the outlets, the deflectors being also arranged so to cause the air issuing from the outlets to sweep upwards and downwards over

the body of a person standing in front of the outlet.

3. An apparatus as claimed in claim 2 wherein the tapering conduit has a smaller cross-sectional area than the other conduit and is arranged to direct air on to the lower deflector flap, the larger conduit being arranged to direct air on to the upper deflector flap having an upper concave surface.

4. An apparatus as claimed in claim 1 wherein said conduit is provided with two outlets and each outlet has a deflector, one of said deflectors being mounted to direct air over the lower half of said body and the other of said deflectors being mounted to direct air over the upper half of said body.

5. An apparatus as claimed in claim 1, wherein said conduit has a plurality of outlets, a plurality of deflectors one of which is located at each outlet, each said deflector including a curved flap mounted for rotation about a horizontal axis, said flaps being mounted to provide an upper concave surface, a flap actuator drive motor and a flap actuating rod connecting said motor with said flaps.

6. An apparatus as claimed in claim 5 in which said drive motor is connected with said actuating rod by means of a crank and a slipping clutch.

7. An apparatus as claimed in claim 5 comprising a blower for passing air through said conduit, means for driving said blower, an electric heater operable to heat air passing through said conduit, means for setting said blower and said heater in operation, and an electric timing device arranged to be set in operation when said blower and said heater are set in operation operable after a first predetermined time to reduce the amount of heat provided by said heater subsequently after a second predetermined time to switch off said heater and said blower.

8. An apparatus as claimed in claim 6 comprising a coin freed mechanism operable to set said blower, said heater and said timing device in operation.

9. An apparatus as in claim 1, including coin freed means to activate said blower and said second air heating means independent of the first air heating means.

10. An apparatus as claimed in claim 1 wherein said conduit is provided with two outlets and there is provided a deflector for each outlet, one of said deflectors being arranged to direct air downwardly from said horizontal line and the other of said deflectors being arranged to direct air upwardly from the horizontal line.

11. An apparatus as claimed in claim 10 wherein each deflector comprises a curved flap having an upper concave surface, a flap actuator drive motor and a flap actuating rod connecting said motor with said flaps.

12. An apparatus as claimed in claim 11 in which said drive motor is connected with said actuating rod by means of a crank and a slipping clutch.

13. An apparatus as claimed in claim 1 including a blower for moving the air through said conduit, means for actuating said blower and said second air heater, and an electric timing device operable on activation of said blower and said second heater after a first predetermined time to reduce the amount of heat provided by said second heater subsequently after a second predetermined time to deactivate said second heater and said blower.

14. An apparatus as claimed in claim 13 comprising a coin-freed mechanism to activate said blower, said heater and said timing device.

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