

March 30, 1948.

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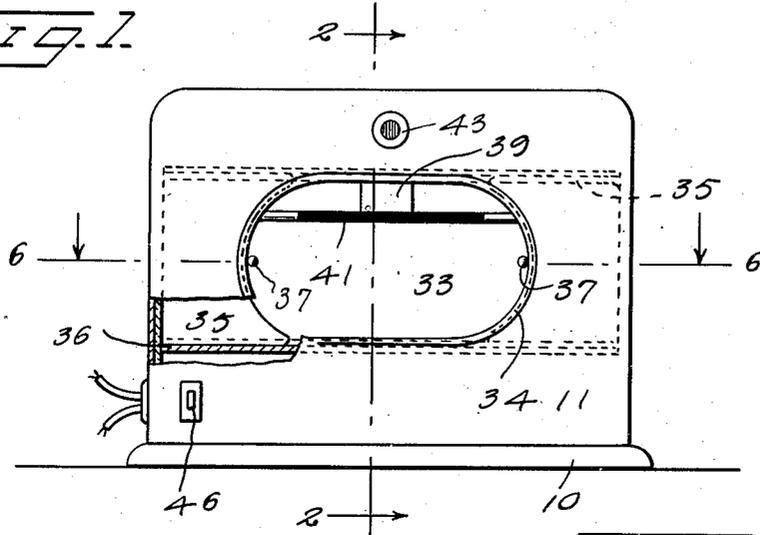
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HAND DRYER

Filed March 29, 1944

3 Sheets-Sheet 1

FIG. 1



110 V. A.C.

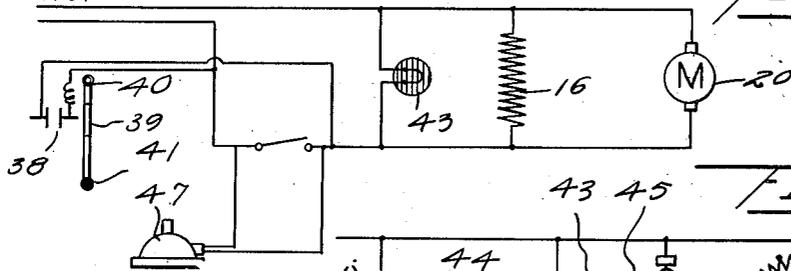


FIG. 5

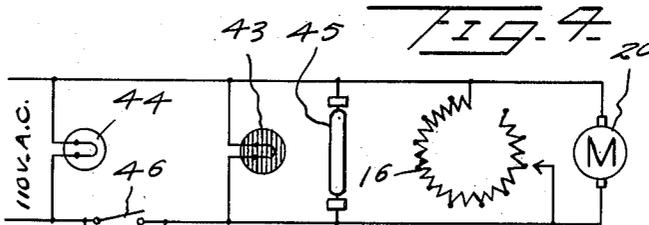


FIG. 4

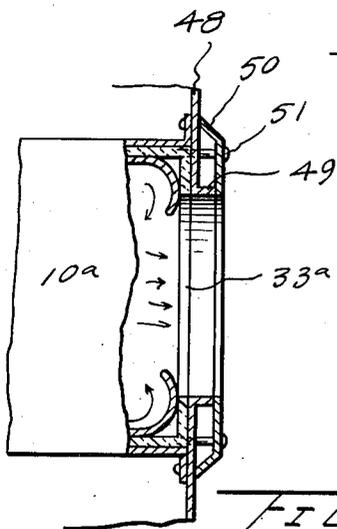


FIG. 7

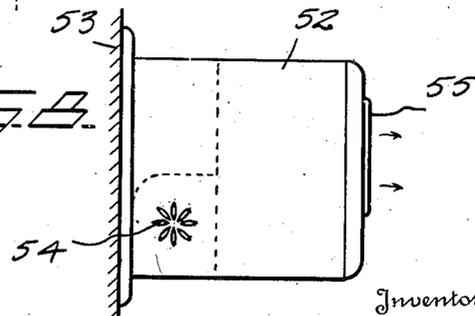


FIG. 6

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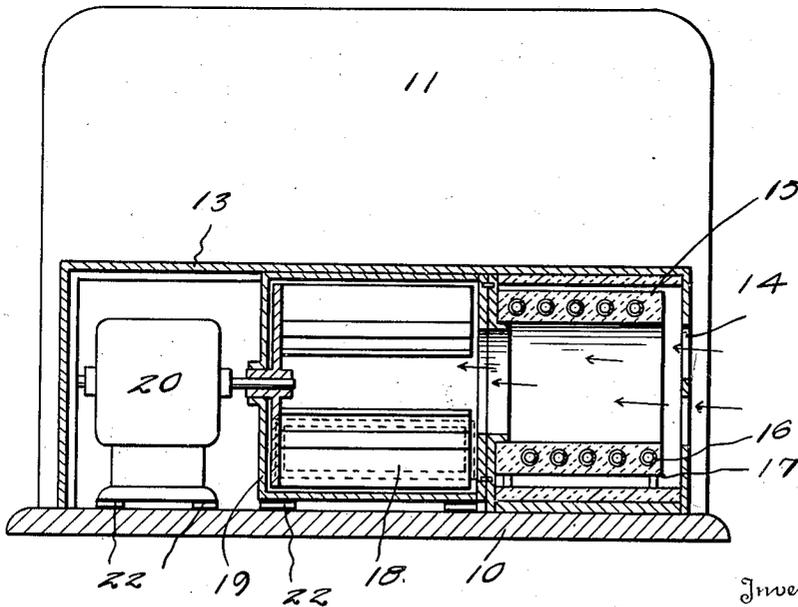
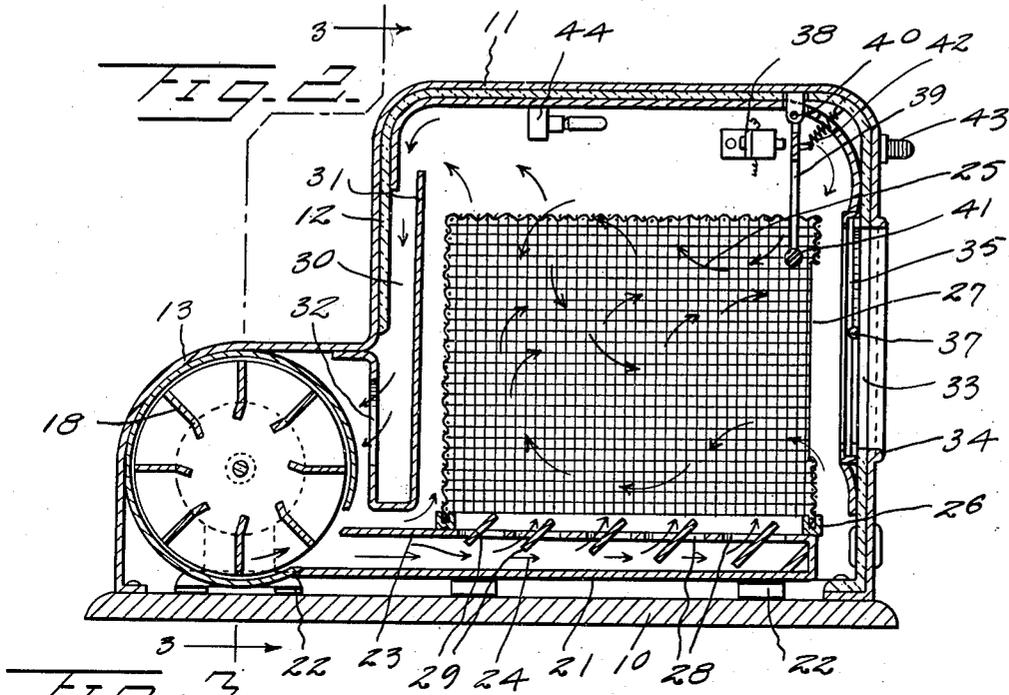
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HAND DRYER

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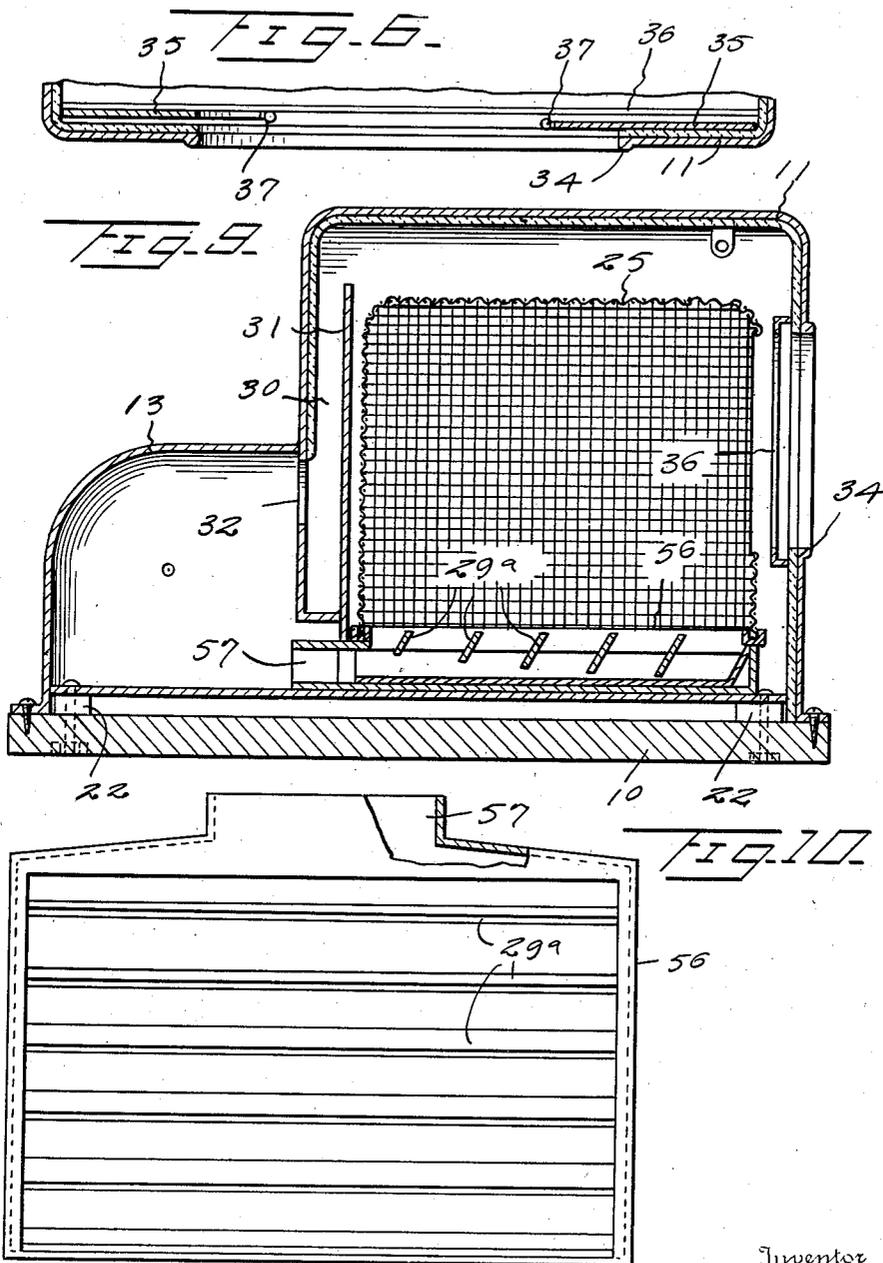
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HAND DRYER

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UNITED STATES PATENT OFFICE

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HAND DRYER

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Application March 29, 1944, Serial No. 528,588

3 Claims. (Cl. 34—87)

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This invention relates to a dryer for the hands and aims to provide a structure capable of general use, and manufacture according to particular uses and places, and especially aims to provide a structure which is adapted for manufacture in a form particularly facilitating use by doctors, dentists or others who frequently have to wash and dry their hands.

It is aimed to provide a relatively compact construction, one which is durable and efficient, one using electric energy and a fan whereby the air is recirculated and one which may have novel means for adjusting the size of the hand opening, novel controlling switch means, a novel signal lamp, and novel means for radiating ultra-violet rays.

The more specific objects and advantages will become apparent from a consideration of the description following taken in connection with accompanying drawings illustrating an operative embodiment.

In said drawings:

Figure 1 is a view in elevation of one form of the invention, being partly broken away to disclose details;

Figure 2 is a vertical sectional view taken on the plane of line 2—2 of Figure 1;

Figure 3 is a vertical section taken on the plane of line 3—3 of Figure 2;

Figure 4 is an electric diagram of one arrangement of electrical parts;

Figure 5 is an electric diagram of another arrangement of the electrical parts;

Figure 6 is a fragmentary cross-sectional view taken on the plane of line 6—6 of Figure 1;

Figure 7 is a fragmentary view, partly in section, of a second form of the invention;

Figure 8 is a side elevation of a third form of the invention;

Figure 9 is a fragmentary section corresponding to Figure 2 taken through a final modified form; and

Figure 10 is a plan view of the louver structure of Figure 9.

Referring specifically to the drawings wherein like reference characters designate like or similar parts, and first to the form of Figures 1 to 6, I provide a suitable base 10 which may be relatively heavy and of metal if desired. Suitably fastened to such base is a housing or casing generally designated 11 which may be of any suitable size and configuration. It is also to be borne in mind that the casing as well as any of the other parts, may be finished or ornamented in any desired colors, materials or otherwise.

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Interiorly, the casing is preferably insulated at any portions or portion thereof as by means of asbestos at 12, in order to confine heat therein.

The casing at one portion thereof has an extension as at 13.

At any suitable point of the casing, as at one end of the extension 13, it has an opening 14 for the intake of air. Such air is adapted to be drawn through a heater 15 which is of hollow form and has its openings aligned therewith. This heater may be of any suitable construction, usually being electric and having a heated coil 16 embedded in a body of insulation at 17, and thus in effect being a muffle. The air is drawn through the heater 15 by an impeller or fan 18 located in an auxiliary casing 19 and rotated through the medium of an electric motor as at 20. Extending from the auxiliary casing 19 is a bottom wall 21. It will be noted that the auxiliary casing 19 as at wall 21 and the motor 20, have rubber blocks or cushions 22 disposed between them and the base 10, to absorb vibration and promote quiet operation.

Above the wall 21, I provide a parallel wall 23 which together with the wall 21 forms a duct 24 through which air is adapted to be discharged by the fan 18 as suggested by the arrows in Figure 2.

Above the wall 23, I provide an enclosure or guard 25 preferably made of metallic gauze and at its lower edge fastened in a U-shaped retainer 26 in turn also fastened to such wall 23. Such guard is approximately closed except for an opening 27 through one end through which the moist hands are adapted to be inserted into the guard 25 for drying by the heated air. Such heated air from the duct 24 passes into the guard through slots or louvers 28 in the plate 23, aided by inclined baffles 29 in such louvers and progressively increasing in depth in the direction away from the fan 18.

The air passing through the guard 25, returns to the auxiliary casing and fan through a duct 30 formed by a wall 31 within the casing, the turned portion of which has an opening 32 there-through communicating indirectly with the fan and auxiliary chamber 19. The air returning through opening 32 passes directly therefrom to the muffle or heater 15 and then to the fan and auxiliary chamber 19. This structure under the action of the fan provides for recirculation of the heated air and for the drying of the moisture therefrom, and from the hands.

Opposite the opening 27 of the guard 25, the end wall of the casing has an opening 33 aligned therewith. This opening may be of any suitable

size and the casing wall about the same may be of plastic or any other suitable material having a reinforcing and finishing bead 34 on the outside. In instances where the dryer is used repeatedly by one or several persons, it is advisable to provide means to adjust the size of the opening 33, for conservation of heat. This result may be attained by providing a pair of slidable closures 35 mounted by a frame 36 on the inner surface of the end wall of the casing having opening 33. These closures may be moved toward each other or away from each other by manipulating knobs 37 thereon.

The electric circuit is normally open but is adapted to be closed by a switch 38 in combination with an actuator 39 pivoted at 40 within the casing and movable against the switch through contact of the hands being dried with an insulated portion or rod 41. Such actuator is normally retracted through the medium of a biasing spring 42. Exteriorly of the casing, a pilot lamp 43 having a red globe or shade preferably, is provided while interiorly of the casing I may provide a constantly illuminated lamp 44 for heating purposes, to enable more rapid heating of the parts between intervals of idleness.

The electrical parts are shown in diagram in Figure 4, from which it will be noted that the coil 16 in the circuit is variable. It will also be noted that I include an ultra-violet ray emanating lamp or structure at 45 within the housing 11 for sterilizing purposes. Any suitable switch arrangement may be used and can be wired to serve as a master switch 46. If desired, it can also be wired so as to serve as a duplicate switch to be used instead of switch 38. Figure 5 shows switch 46 shunted across 38. This feature is optional with the manufacturer. As shown in Figure 5, it may be used as a duplicate or auxiliary switch in the model most suitable for dentists.

In Figure 5, I show a somewhat different arrangement of the parts in electrical diagram and it is additionally indicated that the switch may be a foot-operable switch 47.

It is to be understood that I may build the dryers for any particular use, that is general or specialized, and may mount the same in any desired way. For example, where the structures are built for use in Pullman cars, they are fastened to and behind a wall of the car as at 48. The dryer is generally designated 10a, and has the hand-receiving opening at 33a. A registering opening is formed in the wall 48 and it has an outwardly extending rim 49. An ornamental and finishing plate 50 also having an opening there-through registering with that at 33a, bears against the rim 49 and wall 48 and has screws 51 passed therethrough, through wall 48 and into the casing 10a.

In Figure 8 I have shown a form of the invention generally designated 52 which is attached to a wall 53. Air is adapted to be taken into the structure through a suitable opening or openings, preferably ornamental as shown at 54 in the side wall of the casing. The hands are placed into the dryer through an opening 55 in the front wall.

The modified form of Figures 9 and 10 differs essentially from that of the first form of the invention, particularly with respect to a combined air outlet and drip pan in the form of a pan generally designated 56. This pan may be made of any suitable material, for instance copper, and secured in place in any suitable manner. Such part 56 has an open neck at 57 forming the inlet

for the air as received from the fan or blower 18. The top wall of the pan-shaped structure 56 is open to provide for passage of the air therethrough. At intervals, such open top is provided with louvers or baffles 29a, arranged like those at 29 and progressively increasing in width in a direction away from the fan like those at 29. Otherwise, the parts are essentially the same as in the preceding form of Figures 1 to 6 and the same reference characters have been applied.

Various changes may be resorted to provided they fall within the spirit and scope of the invention.

I claim as my invention:

1. A hand dryer of the class described having a casing, said casing being open for insertion of the hands into the interior, a guard interiorly of the casing, to confine the hands, a heater within the casing, means to draw air through the heater and discharge it within the guard, a wall at the base of the guard mounting the same, said wall being open and having louvers therethrough to direct the air into the guard, said wall forming part of a pan-shaped structure, said structure having a neck for the inlet of air.

2. A structure of the class described comprising a casing, a heater in said casing, a blower, means to operate the blower to draw air over the heater, a guard within the casing into which the hands are adapted to be disposed, a support for the guard having openings therethrough, the air being adapted to travel beneath said support, through the same and into the guard, and a baffle wall extending from adjacent the base of the guard to the top thereof and combining with a wall of the casing to form a return conduit for the air, said baffle having a U-shaped portion provided with an opening adjacent the intake side of the blower.

3. A structure of the class described comprising a casing, a heater in said casing, a blower, means to operate the blower to draw air over the heater, a guard within the casing into which the hands are adapted to be disposed, a support for the guard having openings therethrough, the air being adapted to travel beneath said support, through the same and into the guard, a baffle wall extending from adjacent the base of the guard to the top thereof and combining with a wall of the casing to form a return conduit for the air, said return conduit having an opening therein located adjacent the intake side of the blower, whereby the fan will recirculate air within the casing, the heating means being electric and tubular, means to operate the fan being electric, and a normally open switch for the circuit of said motor and heater extending into the guard for operation by the hands.

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