

June 5, 1951

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2,555,416

ELECTRICAL HEATING AND DRYING APPARATUS

Filed April 16, 1947

3 Sheets-Sheet 1

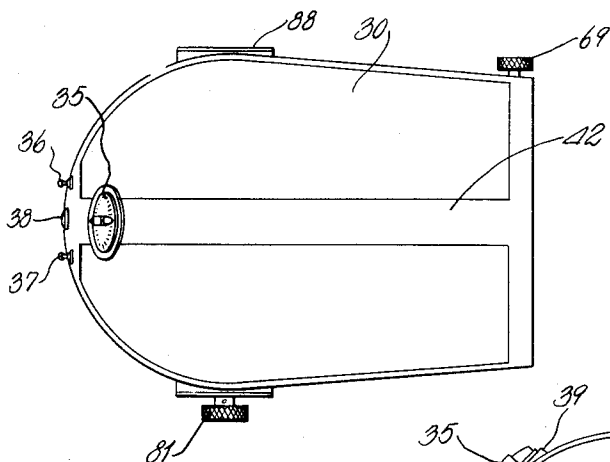


Fig. 1.

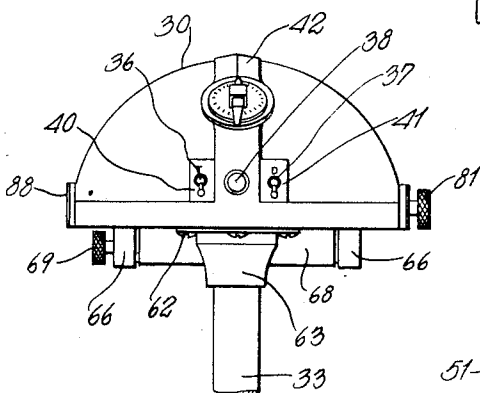


Fig. 2.

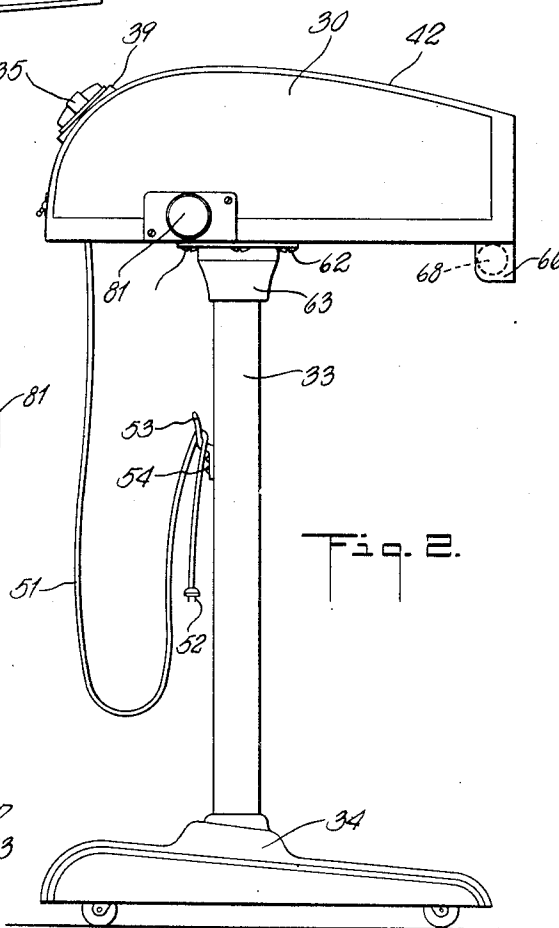


Fig. 3.

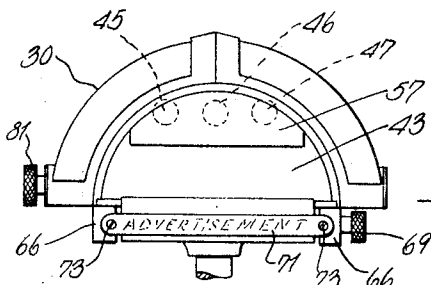


Fig. 4.

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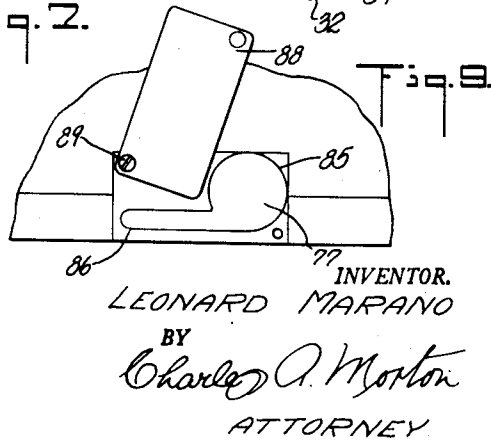
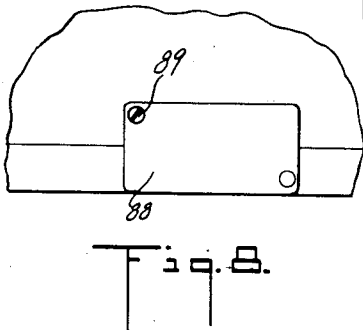
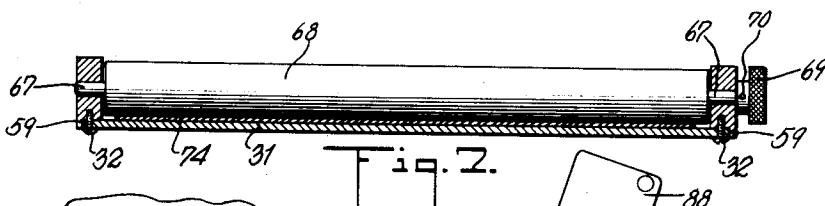
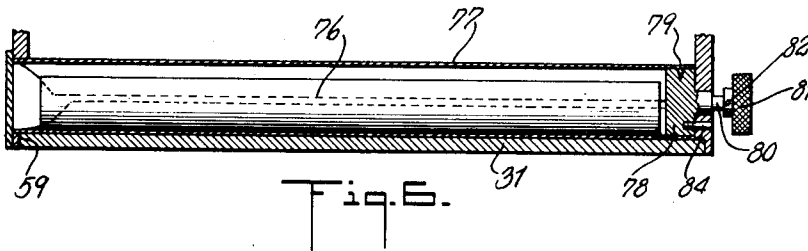
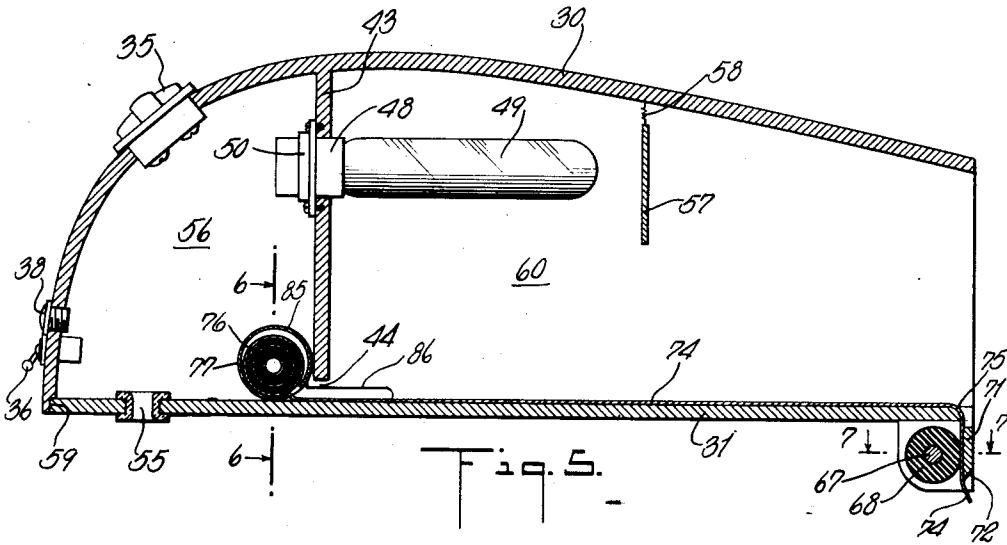
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ELECTRICAL HEATING AND DRYING APPARATUS

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ELECTRICAL HEATING AND DRYING APPARATUS

Filed April 16, 1947

3 Sheets-Sheet 3

Fig. 10.

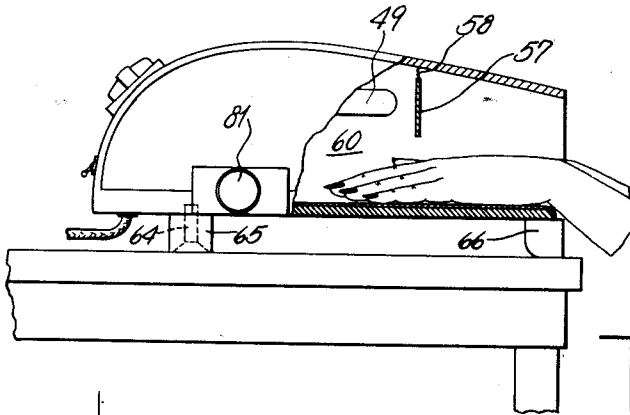
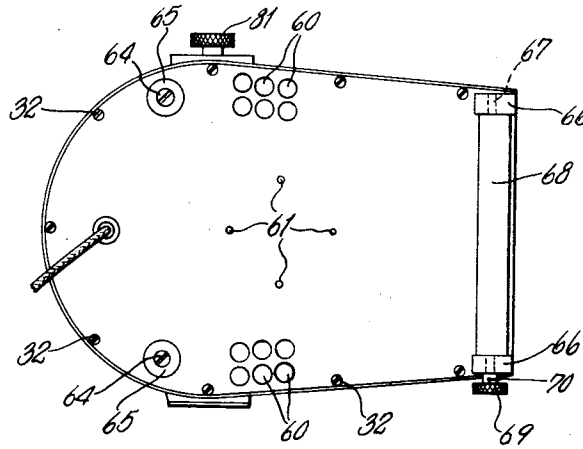


Fig. 11.

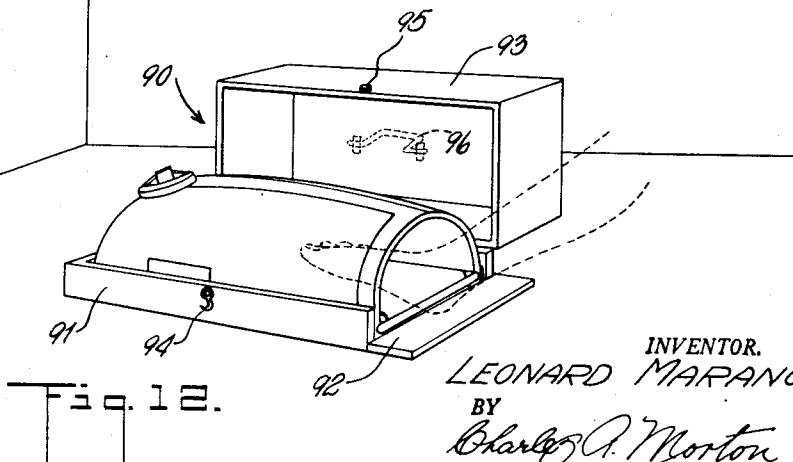


Fig. 12.

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UNITED STATES PATENT OFFICE

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ELECTRICAL HEATING AND DRYING
APPARATUS

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Application April 16, 1947, Serial No. 741,839

6 Claims. (Cl. 219—19)

1

This invention relates to improvements in an electrical heating and drying apparatus and more particularly an apparatus for drying nail polish which is also adapted for therapeutical use by heat and light treatments of the hands and feet. The present application is a continuation in part of my co-pending application Serial No. 652,147, filed March 5, 1946, now issued as Patent No. 2,493,541, January 3, 1950.

The object of this invention is an improved heating and drying apparatus.

Another object is a more sanitary apparatus.

Another object is an apparatus that can be quickly changed from a drying apparatus to a therapeutical device and back again.

Another object is an apparatus which can be used quite readily for drying either the hands or the feet.

Another object is a drying apparatus of few and simple parts, which is inexpensive to manufacture, compact, light in weight, easy to assemble, disassemble and manipulate, and very efficient and durable in use.

With these and other objects in view, there has been illustrated in the accompanying drawings consisting of three sheets of twelve figures numbered Figs. 1 to 12 inclusive, one form in which the invention may be conveniently embodied in practice.

In the drawings:

Fig. 1 is a top plan view of the drying apparatus;

Fig. 2 is a side view of the drying apparatus and its supporting pedestal adapted for manual use;

Fig. 3 is a rear view of the device of Fig. 2, with the supporting pedestal partially broken away;

Fig. 4 is a front view of the device of Fig. 2, with the supporting pedestal partially broken away;

Fig. 5 is a longitudinal sectional view taken along the line 5—5 of Fig. 1;

Fig. 6 is a cross-sectional view of a detail taken along the line 6—6 of Fig. 5;

Fig. 7 is a cross-sectional view of another detail taken along the line 7—7 of Fig. 5;

Figs. 8 and 9 are side views of a fragment looking in the direction of the arrows in Fig. 6, with the cover plate up and down;

Fig. 10 is a plan view of the base plate of the drying apparatus viewed from beneath;

Fig. 11 is a side view partly in cross-section showing the apparatus in use as a hand drier; and

2

Fig. 12 is a perspective view showing the apparatus in use as a foot drier.

Like reference characters designate corresponding parts throughout the several figures of the drawings.

As best shown in Fig. 5, the drying apparatus includes a hood 30 and a base plate 31, to which the hood 30 is suitably attached as by means of the machine screws 32 (Fig. 10). When used commercially as in a beauty parlor, the drying apparatus may be supported upon a suitable pedestal 33, which may be a hollow tube (Fig. 2), provided with a roller-equipped base 34.

The hood 30 may be cast in one single piece of any suitable metal such as aluminum. When so cast, the casting may be provided with suitable openings in hood 30 for an automatic timing switch 35, a manually operated switch 36 for controlling the therapeutic lamp, a manually operated switch 37 for controlling the drying lamp and a pilot light 38 for visibly indicating when any of the electrical circuits are in operation. The areas surrounding the openings for the various switches 35, 36 and 37, may be suitably strengthened or reinforced to form bosses 39, 40 and 41; and the hood 30 may be further reinforced by a centrally disposed rib 42 which also acts as a boss for the pilot lamp 38.

The hood casting 30 also includes a vertically disposed partition wall 43 which forms an integral part of the hood casting. The partition wall 43 merges with the ground and side walls of the hood, and extends downwards for substantially the entire depth of the side walls, but terminates short of the bottom edge of the side walls of the hood to form a slotted opening 44 extending across the hood between the bottom of the partition wall 43 and the base plate 31.

The partition wall 43 is provided with a plurality of holes 45, 46 and 47, which may be formed when the hood 30 is cast for receiving suitable base sockets 48 (Fig. 5), for the screw base type lamps 49. The base sockets 48 may be mounted in the partition wall 43 in any suitable manner, as by means of the collar 50 and the machine screws 51. Two or more lamps 49 (Fig. 5), may be mounted in the base sockets positioned in the holes 45, 46 and 47.

The current for the lamps 49 is supplied through a flexible cord 51 which terminates in the conventional base plug 52 which is adapted to engage the conventional outlet socket of an electrical distribution system. The flexible cord 51 may be coiled up when not in use and hooked 55 around a hook 53 attached to the pedestal 33 in

any preferred way as by the rivets or screw fasteners 54. The cord 51 passes upwards through a sleeve bushing 55 which is secured in a suitable hole in the base plate 31. The cord passes into the rear compartment 56 where it is suitably interconnected with the various switches 35, 36, 37, and through said switches with the various lamps 49 and the pilot light or monitoring lamp 38.

An opaque shield or deflector 57 is suspended from the ceiling of the hood 30 by means of a spring 58. The shield serves to protect the eyes of the patient against direct rays from the lamps 49, and to deflect said rays downwards upon that portion of the hand (Fig. 11), or foot (Fig. 12), which is to be treated.

The lower end wall of the hood 30 may be rabbetted to form a flanged seat 59 for the edge of the base plate 31. The peripheral marginal edge of the base plate 31 is drilled at suitably spaced intervals and the flanged seat 59 is correspondingly drilled and tapped to receive a series of machine screws 32 (Fig. 10), by which the base plate 31 may be attached to the flanged seat 59 of hood 30 to form the supporting base for the drying apparatus. The base plate 31 is also provided with (a) groups of air holes 60 through which air may enter the forward compartment 60 and circulate around the lamps 49; (b) a series of tapped holes 61 for the machine screws 62 by which the collar 63 which is bolted to the upper end of the pedestal 33, is secured to the base plate 31 to support the drying apparatus at a convenient height above floor level so that the patient when seated may conveniently insert the hand in the forward compartment 60 of the apparatus; and (c) one or more drilled and tapped holes for receiving the machine screws 64 whereby one or more detachable feet 65 may be secured to the base plate 31.

The forward end of base plate 31 is provided with a plurality of feet 66, cast as an integral part of the base plate and which are spaced apart and drilled to provide bearings for the shaft 67 of a feed roller 68 which turns under control of a knob 69 which is anchored on shaft 67 by a grub screw 70. A paper cutter having a bevelled cutting edge 72 is mounted across and in front of the feed roller 68 and is secured to the spaced feet 66 by the set screws 73, in spaced relation to the feed roller 68, so that a sheet of paper 74 may feed over the rounded front edge 75 of the base plate 31 between the face of roller 68 and the paper cutter 71 with sufficient tension so that when the knob 69 is turned, roller 68 will draw the sheet of paper 74 downwards and the paper may be cut off by drawing the face of the paper across the bevelled cutting edge 72 of the paper cutter 71.

The sheet of paper 74 is supplied from a roll of paper 76 housed in a tubular housing 77 which is removably journaled at one end in a circular opening in the wall of the hood 30, and at its opposite end is anchored to a plug 78. The plug 78 is secured in the tubular housing 77 by one or more bevelled screw(s) 79. The plug 78 is provided with a reduced shaft 80 which is journaled in a hole in the wall of the hood 30. The free end of the shaft 80 may be flattened so that the set screw 82 of the knob 81 will engage the flat surface of the shaft 80 to lock the knob 81 to the shaft 80 and rock the tubular housing 77 when knob 81 is turned. The tubular housing 77 is slotted lengthwise to provide a transverse opening through which the roll of paper 76 may

feed forwards along the face of the base plate 31 and then threaded between the feed roller 68 and paper cutter 71, so that as the feed roller 68 is rotated the roll of paper 76 will revolve in the tubular housing 77 and release the sheet of paper 74 which is fed forwardly towards the feed roller 68.

When the knob 81 is turned, the tubular housing 77 is moved clockwise or counterclockwise, as the case may be, to vary the position of the slotted opening in the tubular housing 77 with respect to the slotted opening 44 between the partition wall 43 and the face of the base plate 31. This variation of the position of the slotted opening of tubular housing 77 with respect to the slotted opening 44, tends to vary the tension upon the roll of paper 76 and therefore the tension of the sheet of paper 74, which is stretched over the face of base plate 31 between the roll of paper 76 and the feed roller 68. The outer face of the plug 78 is provided with a curved slot 83 extending concentric with the hub of the roller for a short sector of the plug 78, and a pin 84 anchored in the side wall of the hood 30 and projecting laterally inwards therefrom extends into the curved slot 83 to engage the end wall of one or the other closed end of said curved slot 83 to limit the extent of the rocking movement of the plug 78 and therefore of the tubular housing 77. The opposite end of the tubular housing 77 which is journaled in an opening 85 in the side wall of the hood 30 is completely open to permit insertion of a new roll of paper within the tubular housing 77, whenever the roll of paper 76 is exhausted. The side wall of the hood 30 is channelled at 86 to form a guideway or channel wherein the edge of the free end of the sheet of paper 74 of the paper roll 76 may be threaded as the roll 76 is inserted in the housing 77 to insure the forward positioning of the sheet of paper 74 when the roll of paper 76 is completely housed within the tubular housing 77. By this arrangement, the free end of the sheet of paper 74 is prevented from slipping through the transverse slot 87 backwards into the tubular housing 77 as the roll of paper 76 is being inserted. If the free end of the sheet 74 slipped back into the tubular housing 77 during the filling operation, it would be necessary to withdraw the roll of paper 76 and perform the threading operation all over again.

The open end of the tubular housing 77 is formed on a bias so that the rear lip of the transverse slot 87 projects longitudinally beyond the forward lip of said transverse slot. By this arrangement, tearing of the roll of paper at the lip of the transverse slot 87, is avoided.

As best illustrated in Figs. 8 and 9, access to the tubular housing 77 is furnished by a shutter 88 which is pivoted at 89 to the outer wall of the hood 30. In its normal position, the shutter 88 incloses the open end of the tubular housing 77, but when the shutter is lifted, it turns about its pivot 89 to expose the open end of the tubular housing 77 and permit the insertion of a new roll of paper 76 therein. The guide channel 86 for retaining the free end of the sheet of paper 74 in a forward position, is clearly shown in Fig. 9.

The paper cutter 71 may also be used as an escutcheon or name plate if desired.

The lamps 49 which are arranged in a row are infra-red lamps. They are all wired under control of the automatic timing switch 35 in such a manner that when the automatic timing switch 35 releases the control circuit to all of the lamps

49, is opened. The three lamps 49 are preferably connected to the manually operated switches 36 and 37 under control of the timing switch 35 in such a manner that when the switches 35 and 36 are both closed, the center lamp 49 only is lighted, while when the switches 35 and 37 are both closed the two outer lamps 49 are lighted. The switch 36 may be closed when a heat or light treatment only is desired; and the switch 37 may be closed when drying of the nail polish is required. In either case, the lamps 49 will not be lighted unless the automatic timing switch is also operated to indicate a selected treatment time.

For convenience in using, the central hub 63 may be attached to the base plate 31 of the drying apparatus by the screws 62, and the central hub 63 which in turn forms the upper end of the pedestal 33 may be supported on the roller-equipped base 34. This arrangement (Fig. 2), is particularly useful when the apparatus is used in a beauty shop, to facilitate rapid transfer of the apparatus from one portion of the premises to another. The drying apparatus is thus supported at a level convenient for use by the customer when seated for treating the hands or drying the finger nails.

By removing the machine screws 62 the apparatus unit may be completely detached from the hub 63, pedestal 33 and roller-equipped base 34, and may now be packed in a portable hand trunk or box such as the box 90 (Fig. 12). The box 90 is provided with a tray 91 having a hinged end 92 which can be dropped down to furnish access to the mouth of the drying apparatus. The cover 93 is hinged to the tray 91 in any suitable manner as by means of pintle hinges which permit the pintles to be displaced laterally to disengage the hinge plates and allow the cover 93 to be completely detached from the tray 91. The tray 91 and cover 93 may be secured together in any suitable manner as by means of a hook 94 and eye 95 fastener. The hand trunk may be provided with a carrying handle 96 (Fig. 12). In addition to the feet 66, the base plate 31 is now equipped with one or more (and preferably two) detachable feet 65 which are screwed to the base plate 31 by suitable machine screws 64. The drying apparatus when thus modified is ideally suited for home use. For drying the finger nails or treating the hands, it may be placed on any convenient support, such as the table 97 (Fig. 11), while for drying the toe nails or treating the feet, it may be placed upon the floor (Fig. 12).

The automatic timing switch 35 prevents accidental overexposure of the treated hand or foot to the infra-red or other rays generated by the lamp bulbs 49.

In operation the hand (Fig. 11) or foot (Fig. 12), is inserted in the apparatus so that the fingers or toes are in the forward compartment 60. The proper switch 36 or 37 is closed and the automatic timing switch 35 is then moved to indicate the prescribed exposure time interval. One or more of the lamps 49 now lights to generate the correct heat or light ray and the nails are dried or the skin is treated for the selected time interval. When the prescribed exposure time has elapsed, the timing switch 35 automatically releases to restore the apparatus to condition of non-use.

One suitable electrical circuit for the lamps 49 may be wired from the cord 51 through pilot lamp 38 which may be a low voltage lamp, through the timing switch 35, where the circuit may divide into two branch circuits; one branch

circuit including the switch 36 and the center lamp 49 to the ground side of the circuit; and the other branch circuit including the toggle switch 37 and the two outer lamps 49 of the group, to the ground side of the circuit.

By this arrangement, the pilot lamp 38 will always be lighted in series with one of the branch circuits when the timing switch 35 and one or the other of the toggle switches 36 or 37 is closed, as a visible indication that the apparatus is operating. Any false circuit condition which draws current through the cord 51 will also light the pilot lamp 38, while a short circuit or ground condition inside the rear compartment or at the switches or lamps will burn out the low voltage pilot lamp, thus protecting the apparatus against damage from any serious trouble in the circuit wiring.

What is claimed is:

1. In an electrically heated oven for drying the hands and feet, a substantially semioval shaped hood truncated at the front end to form an opening for the passage of the hands or feet, a flat plate secured to the bottom of the hood and forming a hand and foot rest, a transverse partition secured to the inner face of said hood and subdividing said oven into a rear compartment and a front compartment, the bottom edge face of said partition terminating short of the bottom edge face of said hood and in spaced relation to said plate to define in conjunction with said plate a narrow slotted opening interconnecting said rear and front compartments, a tube for housing a rolled sheet of paper mounted in said rear compartment, said tube being slotted lengthwise to provide an exit slot through which said paper may be fed as it is unrolled, said hood having an opening in the side thereof, said opening registering both with the open end of the housing tube and with the slotted opening to allow a roll of paper with its outer end hanging free to be loaded through said opening into said housing tube and its outer free end to be simultaneously threaded into the forward compartment of said oven, and said exit slot and said partition cooperating as said paper is unrolled and fed from said rear compartment through said slotted opening into said front compartment to impart tension to the sheet thereby forming a progressively replaceable sanitary covering for the hand and foot rest.

2. In an electrically heated oven for drying the hands and feet, a substantially semioval shaped hood truncated at the front end to form an opening for the passage of the hands or feet, a flat plate secured to the bottom of the hood and forming a hand and foot rest, a transverse partition secured to the inner face of said hood and subdividing said oven into a rear compartment and a front compartment, lamp sockets mounted in said partition, the bottom edge face of said partition terminating short of the bottom edge face of said hood and in spaced relation to said plate to define in conjunction with said plate a narrow slotted opening interconnecting said rear and front compartments, a tube for housing a rolled sheet of paper mounted in said rear compartment, said tube being slotted lengthwise to provide an exit slot through which said paper may feed as it is unrolled, said hood having an opening in the side thereof, said opening registering both with the open end of the housing tube and with the slotted opening to allow a roll of paper with its outer end hanging free to

7

be loaded through said opening into said housing tube and its outer free end to be simultaneously threaded into the forward compartment of said oven, and said exit slot and said partition cooperating to feed said unrolled paper through said slotted opening under tension to form a progressively renewable sanitary covering for the bottom of the front compartment.

3. An oven in accordance with claim 1 having the housing tube mounted to revolve to vary the position of its exit slot relative to the bottom edge face of the transverse partition to regulate the tension upon the fed paper.

4. An oven in accordance with claim 1 having the open end of the housing tube formed on a bias with the rear lip of its exit slot projecting beyond the forward end thereof whereby tearing of the paper is avoided.

5. An oven in accordance with claim 1 having a paper cutter mounted across the opening of the front compartment and a feed roller mounted adjacent said paper cutter, so that the free end of the paper may be threaded between said cutter and said feed roller.

8

6. An oven in accordance with claim 1 wherein the housing tube is revoluble in its mounting to vary the position of its exit slot relative to the bottom edge face of the transverse partition to regulate the feed tension upon the paper, and means comprising a roller and a paper cutter mounted across the opening of the front compartment and beneath the oven, whereby the paper may be fed over the hand and foot rest, held under tension when in use, and thereafter detached and discarded.

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REFERENCES CITED

The following references are of record in the file of this patent:

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