Sept. 8, 1942. H. W. HILDEBRAND 2,295,402

SOLAR BATH CABINET

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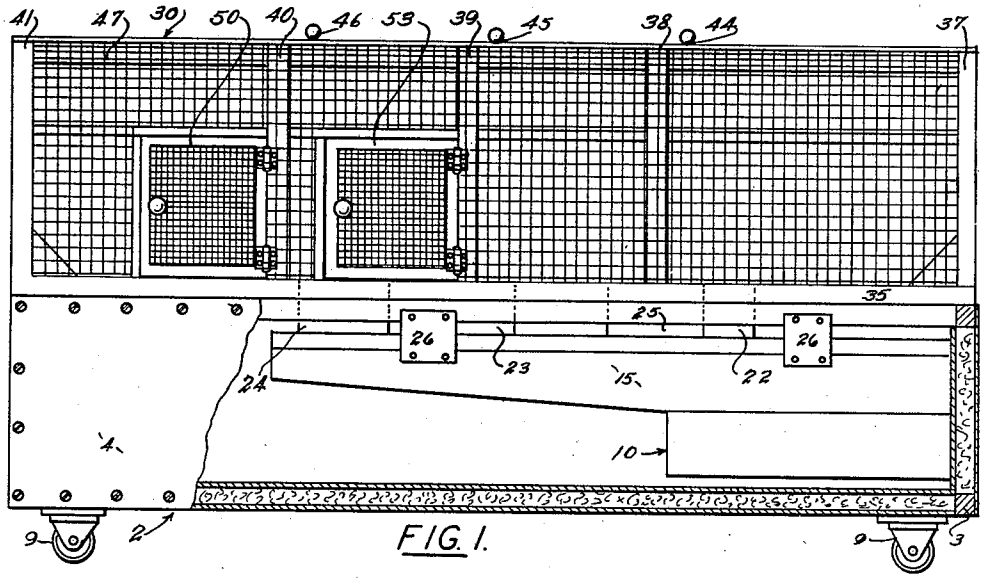


FIG. 1.

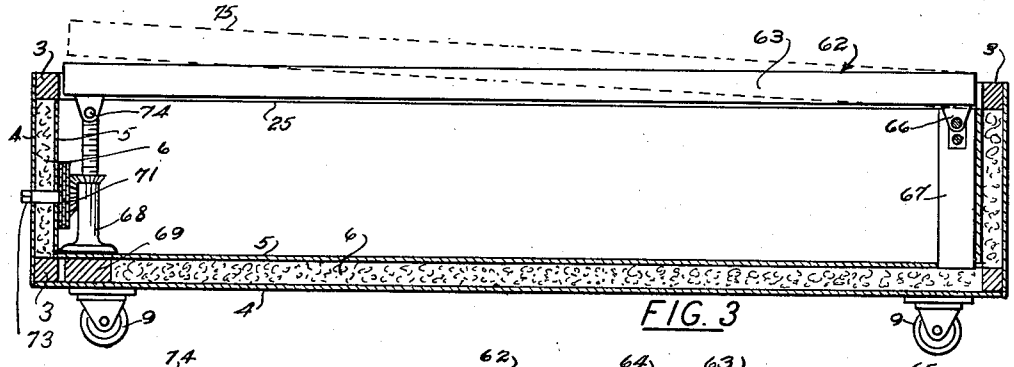


FIG. 3

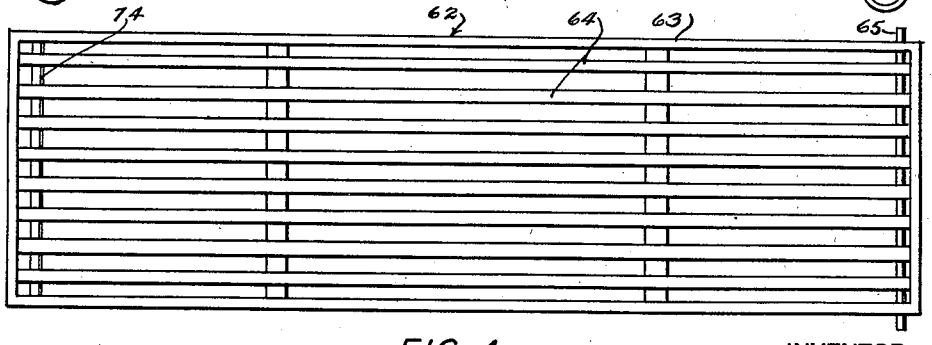


FIG. 4

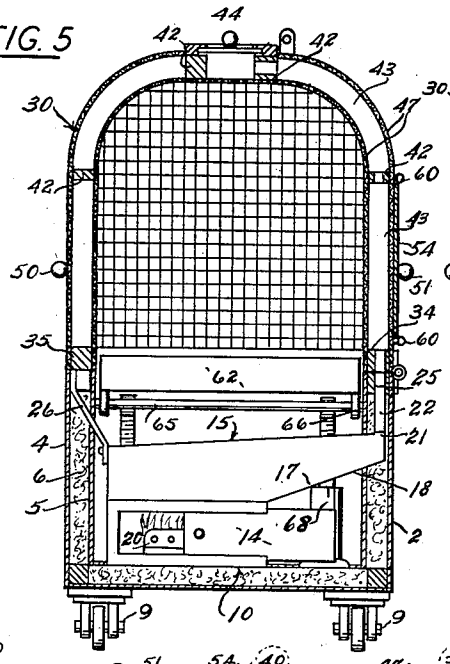
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FIG. 5



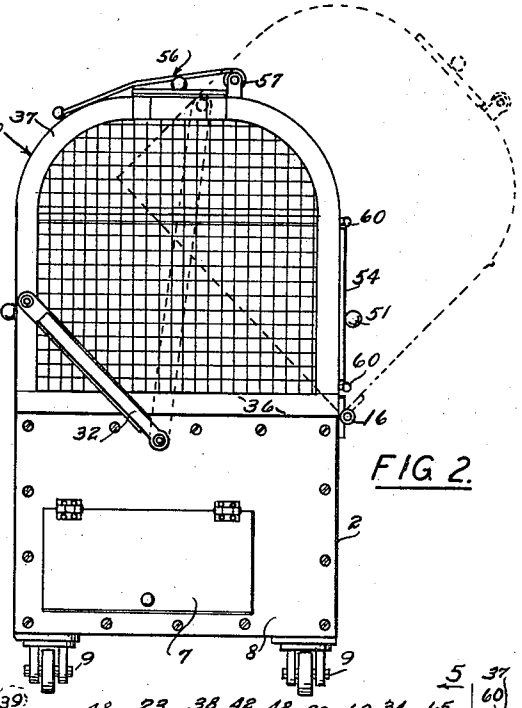


FIG 2.

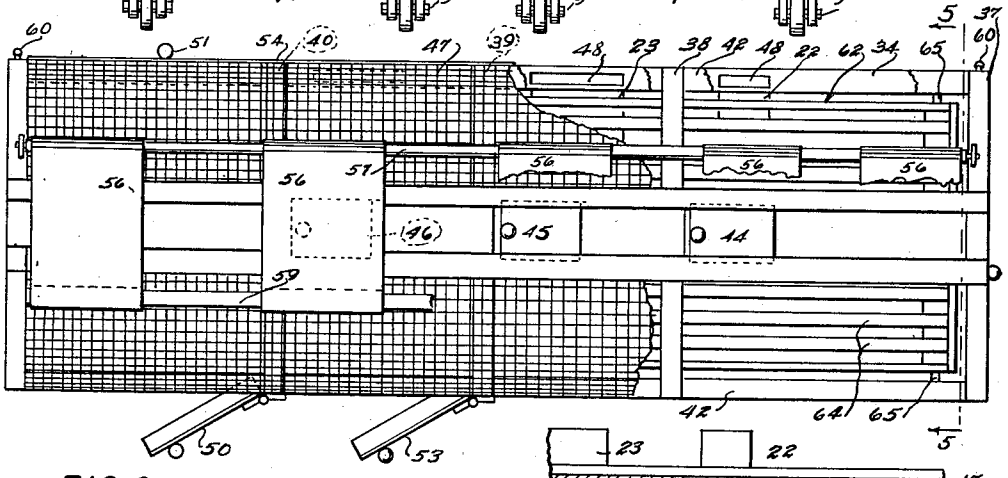


FIG. 6.

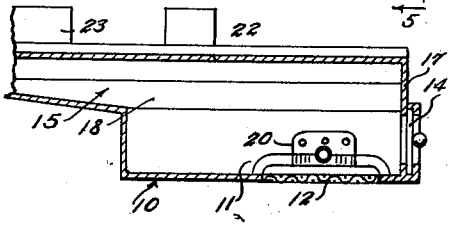


FIG 8

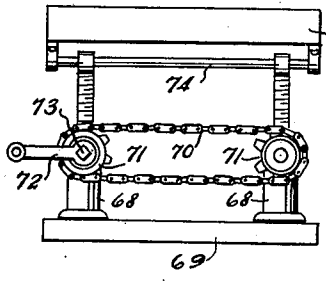


FIG. 7.

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SOLAR BATH CABINET

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Application August 4, 1941, Serial No. 405,331

4 Claims. (Cl. 128—372)

This invention relates to solar bath cabinets of the type wherein the patient can be subjected to those rays of the sun having therapeutic value, and wherein the temperature may be maintained at a predetermined degree at or slightly above normal blood temperature.

While numerous sun bath cabinets have heretofore been made, none of these have provided adequate means for both the admission of the maximum amount of beneficial sun rays, exclusion of undesirable rays therefrom, and control of the interior temperature of the cabinet by individual means or artificial heat. Within the cabinet a temperature must be maintained at blood heat or slightly above and the patient's pores when undergoing treatment are open and he normally perspires freely. Under these conditions the temperature of the patient must be closely watched and he must be protected from dropping temperatures and drafts, as would be occasioned by opening the cabinet immediately after undergoing the treatment. It is to be assumed that a patient requiring treatment is not in robust health and should be carefully guarded from rapid changes in temperature. Therefore, means should be provided for maintaining an even temperature within the cabinet, regardless of the outside air temperature.

With these facts in mind, the objects of this invention are—

First, to provide a cabinet having a double walled covering with a maximum area exposed to the sun and with the walls of this covering composed of a substance adapted to admit those rays having the greater therapeutic value, and at the same time, filtering out or excluding other rays having no beneficial value;

The second object is to provide such a cabinet having dead air space between the inner and outer walls to provide in part for insulation and in part for a passage for heated air to circulate through the cabinet covering;

A third object is to provide a sun bath cabinet with a double walled insulating covering in combination with a heat device adapted to supply heat to maintain the interior of the cabinet at predetermined controlled temperatures;

A fourth object is to provide a cabinet as above described, in such a form as to be easily mobile; and

A fifth object is to provide a cabinet containing a pallet on which the patient reclines that is adjustably supported so that the head end may be raised when desired so as to afford more comfort for the patient.

Other objects will appear hereinafter.

I attain the foregoing objects by means of the device and structure as shown in the accompanying drawings, in which

Figure 1 is a side elevation of the entire cabinet, certain portions being broken away to show interior construction;

Figure 2 is an end elevation;

Figure 3 is a side sectional elevation of the lower portion of the cabinet showing the construction of the elevating mechanism of the pallet;

Figure 4 is a plan view of the pallet;

Figure 5 is an end view of the cabinet taken in section substantially on lines 5—5, Figure 6;

Figure 6 is a plan view of the cabinet with certain portions broken away to show construction therebeneath;

Figure 7 is an end elevation of the head end of the pallet showing the elevating mechanism; and

Figure 8 is a fragmentary sectional elevation of the auxiliary heating device.

The cabinet consists mainly of two portions, a base 2, and a hood 30. As the device is viewed in Figures 1 and 6, the right hand end may be considered the foot and the left hand the head. As viewed in Figures 2 and 5, the right hand may be considered the back and the left the front of the cabinet.

The base is rectangular in shape, built upon a framework 3 of suitable material such as seasoned redwood, and the bottom and sides of this are covered inside and out with sheet material such as presswood to form a double walled construction. Between the outside sheathing 4 and the inside covering 5 there is "Rockwool" 6, or the like, to afford adequate insulation. Access is had to the interior of the base through door 7 cut in the foot end 8. The entire base rests on large swivel casters 9 to make the entire device easily movable.

Within this base there is an oven heater 10 made of sheet iron plates with adjoining edges welded. The lower right end portion of this heater is rectangular and forms a firebox 11. The bottom of this is provided with an opening covered by a screen 12 to afford ventilation and a sliding door 14 permits access to the interior. This door is positioned so as to be adjacent door 7. Above the fire box there is a flue 15. The upper plate 16 of this flue, while substantially horizontal, has an angular pitch so that there is an upwardly extending passageway from the fire box forward and toward the back edge of the base. The side plates 17 and bottom 18 are proportioned and positioned accordingly.

The fire box may be of any convenient size to take the burner 20, but the flue is made with a width closely approximating the interior of the base, and a length about equal to two-thirds of its length.

Along the upper rear edge 21 of the flue there are three vertical draft vents 22, 23, and 24, which

extend upwardly through holes cut in the right hand or back top rail 25 of the base. The oven and flue and vents are constructed to form a unit and all held in place in the base by brackets 26.

The hood 30 is hinged to the back or rear rail 25 of the base by hinges 16. When open it assumes the position shown in dotted outline, Figure 2. Its motion is limited by the sliding stop 32 adapted to lock when extended and hold it in opened position.

The hood is constructed on a framework consisting of longitudinal bottom members 34 and 35 connected at the ends by cross members 36 and covered by arched top members 37, 38, 39, 40 and 41. Suitable upper spacing members 42 are provided to hold the tops of the arches together and, save for vents and doors hereinafter mentioned, the whole hood is covered inside and out with Cello-glass 47, or other suitable material adapted to admit rays of the sun including, particularly, those in that portion of the band between 2900° and 3200° Angstrom units. These portions of the rays are considered to be most beneficial to the treatment herein concerned and to have the therapeutic properties considered most beneficial. Beneficial rays admitted are considered to have wave lengths of .000042 cm. and smaller. The covering material may be commonly termed translucent but not transparent, thus providing privacy for the patient during treatment. It may also be made with pigments, or other substances to retard passage of those portions of the sun's rays considered less beneficial and adapted to unnecessarily heat the interior of the cabinet. These less desirable rays are considered to be those having wave lengths of .000068 cm. or greater. Cello-glass is named as one desirable material for this covering for the additional reason that it is translucent and not transparent, thus affording the patient privacy during treatment. This material is made by filling the meshes of a screen base with a cellulose composition and is indicated conventionally by cross lines; but it is to be understood that other material having the desired properties may be used and may consist of sheets of composition only.

Due to this construction double filtering of the sun's rays is had, and a double walled construction is afforded so as to provide an insulating air space, in part, and draft passageways in part.

The rear bottom member 34 of the hood is provided with rectangular openings 48 to register with the mouths of vents 22, 23, and 24 from the oven. These openings communicate with the double walled construction of the hood between respective arched members 37 and 38, 38 and 39, 39 and 40. The spaces between these members and the covering 47 forms draft passageways 43 which also act as heating cells. The construction provides a continuous passageway extending from the bottom rail 34 to sliding draft control doors 44, 45 and 46 at the top of the hood. The longitudinal upper spacing members 42 are pierced to make this passageway continuous.

The hood is provided with screened ventilating draft doors 50 and 51 on each side near the head end. These are hinged to afford easy communication from an attendant to the patient. A similar door 53 is positioned somewhat nearer to the center and approximately opposite the position occupied by the patient's arm to enable an attendant to take pulse readings or the like without opening the hood.

The rear vertical side of the hood is provided with a heat reflector 54, which may be made of a sheet of aluminum fastened on the outside as indicated in section in Figure 5, and as shown in Figure 2. This is designed to reflect rays received through the front side of the cabinet back through the hood covering onto the patient.

Where the sun's rays are so intense as to need regulating an adjustable shade 56 is provided. This shade is supported on a spring window shade roller 57 and consists of a number of strips of treated fabric similar to window shade material. The ends of these are all attached to a slat 59.

When the device is used in extremely cold climates where the air temperature is considerably below the desired interior temperature, extra insulation may be provided in the form of quilted pads cut the shape of the back side and ends of the hood. These pads are provided with grommets and these, in turn, fit over grommet pegs 60 positioned on the upright corner members of the frame.

Within the cabinet the patient reclines on a pallet 62 made of a box-like rectangular frame 63 with slatted bottom 64. This fits within the top of the base with ample clearance at both sides and ends. It is pivotally supported at the foot end by cross rod 65 attached to the frame 63 by lugs 66 and positioned with the ends bearing in plates set in vertical frame members 67. The height of the head end is adjusted by means of a pair of jack screws 68 resting on a transverse bottom frame member 69, positioned beneath each side of the pallet, and running together by means of the chain 70 and sprocket 71. The shaft 73 of one jack extends through the end wall at the head end of the base and is squared to receive crank 72. The tops of the jacks are attached at the top to the pallet by means of a cross bearing rod 70. By manipulation of these jacks the head end of the pallet may be raised as indicated by dotted outline 75, Figure 3, and in this way the head of the patient may be elevated when desired to gain comfort for the patient.

A mattress of any type desired may be placed on the slatted bottom of the pallet. Heat comes in contact with the patient from the oven flue top by radiation in a degree depending on the thickness of this mattress. Heat also reaches the interior of the hood by convection and circulation of air since a space is provided between the sides and ends of the pallet and the interior of the base.

In use, the cabinet is opened by raising the hood as indicated by dotted lines in Figure 2. The patient is then placed upon the pallet on a suitable mattress and the hood closed. Adjustment of the pallet level may then be made. The entire cabinet is then rolled to a convenient open space with the front exposed to the rays of the sun. Obviously, this position depends upon the time of day and upon the season of the year. If too much sunlight is being admitted to the cabinet the adjustable roller shade 56 is drawn over the top and front side of the hood as desired. If the cabinet is placed with the front side facing east in the morning, the sun's rays will be admitted directly until almost noon and due to the shape of the hood it will be unnecessary to shift the position of the cabinet. The same is true of the afternoon sun.

It has been found that where outside air temperatures are low it is often advisable to supply artificial heat by means of the oven and burner above described. While the double walled construction herein provided affords a considerable amount of insulation and will maintain the interior of the cabinet at the proper temperature under normal conditions, it is easily understood that some artificial heat must be supplied where the air temperatures are considerably below blood temperature. The patient undergoing treatment being in the nude is sensitive to temperature variations and, therefore, it is highly desirable to control the temperature of the interior of the cabinet at all times. Where the outside temperature drops below sixty degrees, or thereabouts, I find that artificial heat should be supplied. If the cabinet is positioned near a source of gas the burner in the oven may be connected by means of a flexible tubing. Otherwise, an electrical heating unit may be substituted and connected by the flexible wire. If neither of these sources of heat are available heat may be supplied by compositions of chemicals ordinarily sold on the market and known as "canned heat." I have found that four of these units of canned heat are entirely adequate to maintain the temperature of the cabinet at the proper degree when the outside temperatures are as low as 40 degrees Fahrenheit.

The interior temperature is controlled in two ways: First, by the extent of the heat supplied at the oven and, second, by the amount of heat circulated through the double walled construction of the hood and controlled by the sliding draft doors **44**, **45** and **46** at the top of the hood. Aside from this, obviously heat is radiated and circulated directly from the oven up through and around the pallet.

While the control of heat in the interior of the cabinet is important during the treatment, it is even more important after treatment has been completed. Upon completion of a treatment period the cabinet is rolled into a reception room, or other convenient housing, away from the sun but the hood is not opened at once until the patient has had time to slowly cool off from the treatment temperature. Under these circumstances the temperature of the interior of the cabinet is controlled so that the temperature slowly drops to room temperature. When these temperatures are approximately equal the patient may then be safely removed.

From the foregoing it will be seen that I have provided a cabinet in accordance with the objects previously stated, in which the maximum benefit of the sun's rays may be had, and at the same time, a temperature of any desired degree may be maintained within the cabinet and that this temperature may be maintained both during and after treatment.

The foregoing description and illustrations should be considered as exemplary only. To those familiar with the art, many changes and alternative constructions may suggest themselves. All of these, however, may well remain within the spirit of the invention and, therefore, I wish to be limited only by the following claims.

I claim:

1. A solar bath cabinet having a base, an arched hood fitted thereover and hinged thereto to provide access to the interior, said base having sides, a bottom of double walled insulated construction, a heating oven provided with a flue having a substantially horizontal heat radiating surface, and a plurality of flues adapted to connect with draft passageways in said hood, said hood having a double walled covering of sheet material adapted to pass rays of the run at the blue end thereof and to filter out rays at the red end thereof, said double walled construction forming draft passageways through the sides thereof connecting at the bottom to the oven flues in said base and extending to the top of said hood, together with means for regulating the draft through said passageways.

2. A solar bath cabinet comprising a base, an arched hood attached thereto by hinges so as to afford access thereto, means for producing artificial heat within the interior of said cabinet including an oven in said base having a radiating flue thereabove and vents leading therefrom adapted to connect with draft passageways in said hood and a heating element therein, together with a hood having a double walled covering of Cello-glass, or the like, for the admission of desired portions of the sun's rays, constructed so that the space between these walls forms passageways connecting at the bottom with said oven vents in said base, adjustable draft doors closing the tops of said passageways, together with an adjustable shade adapted to extend over the side of said hood exposed to the sun's rays composed of strips of opaque material, spring shade roller carrying said strips.

3. A solar bath cabinet comprising in combination, a box like base having insulated sides and bottom and adapted to hold a pallet within its upper rim, mechanism for adjustably raising the head end of said pallet, a wheeled support for said base, and a heating oven positioned within said base beneath said pallet having a fire box, a radiating flue thereabove and vents leading therefrom to one side of said base, a hood hinged along the back bottom edge to said base, having an arched section and a double walled construction so as to provide draft passageways between said walls, said passageways communicating at the bottom with the vents in said base, adjustable draft doors operative in the top of said hood closing said draft passageways, the walls of said hood being composed of translucent sheet material adapted to transmit those rays of the sun at the ultra violet end of the spectrum, but to filter out rays at the red end of said spectrum, and a reflector positioned along the outer back side of said hood to direct rays passing through both front and back walls thereof toward the pallet in said base.

4. A solar bath cabinet having a base, provided with sides and a bottom of double walled heat insulating material, a heating oven in said base provided with a flue having a substantially horizontal heat radiating surface, a pallet positioned within said base and above said oven, means for effecting vertical adjustment of one end of said pallet, an arched hood fitted over said base and hinged there to provide access to the interior, a double walled covering on said hood of sheet material adapted to pass rays of the sun at the blue-violet end of the light spectrum considered therapeutically beneficial, and arranged to provide draft passageways extending through the sides of said hood connecting at the bottom to said oven flue in said base and extending to the top of said hood, and adjustable draft doors closing the top of said passageways.

HENRY W. HILDEBRAND.