UNITED STATES PATENT OFFICE

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SURGICAL GLOVE DRYING APPARATUS

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11 Claims. (Cl. 34—105)

1. This invention relates to an apparatus which is 5 designed and adapted to be used advantageously for 10 drying surgical gloves after they have been 15 washed.

The principal object of the invention is the provision 20 of an apparatus of the indicated character whereby 25 a large number of gloves may be dried simultaneously, and wherein provision is made for varying the flow of air and for varying the amount of heat according to the number of gloves 30 being dried.

A further object of the invention is the provision of an apparatus of the indicated character whereby a large number of gloves may be dried 35 simultaneously, and wherein provision is made for varying the flow of air and for varying the amount of heat according to the number of gloves being dried.

A further object is the provision of an apparatus of the indicated character which is compact, simple and durable, and which may be operated economically for the intended purposes.

With the foregoing, other objects of the invention will appear when the following specification is read in conjunction with the accompanying drawings, in which,

Figure 1 is a central vertical sectional view of an apparatus embodying the features of the present invention.

Figure 2 is a horizontal sectional view taken approximately on the line 2—2 of Figure 1.

Figure 3 is an enlarged sectional view showing certain features of the means for supporting a glove so that it may be dried.

Figure 4 is a sectional view taken on the line 4—4 of Figure 3.

Referring now more particularly to the drawings, it will be apparent that in the embodiment of the invention as illustrated, the apparatus includes a suitable base 10, a hollow outer stator structure 11 mounted on the base 10, and a hollow inner rotor structure 12 mounted to rotate within the structure 11. The structures 11 and 12 are substantially barrel shape and may be made of any suitable material or combination of materials. The stator structure 11 is large enough to combine with the rotor structure 12 to form an air chamber 13 extending entirely around the side and top of the member 12.

The outer structure 11 in the present instance consists of a casing of two sections 14 and 15 respectively. The section 14 constitutes a bottom and may be made of metal. The section 14 is of plastered construction to form a circular tray portion 15 surrounding an upstanding circular flange 17 which in turn surrounds a circular collar 18, and there being air inlet openings 19 in the bottom section 14 intervening the flange 17 and collar 18. A spider construction is thus provided centrally of the section 14. The upper section 15 is preferably made of suitable transparent plastic material or glass. The section 15 includes a hinged door 20 or other closure member which controls an opening 21 to afford access to the chamber 13. The outer upturned edge of the section 14 is rabbed to receive the lower circular edge of the section 15 as at 22.

The base 10 of metal is hollow in construction and has a cylindrical housing 23 at the top which fits in the collar 18. The housing 23 has a circular lateral flange 24 on which the collar 18 rests. The stator structure 11 is thus mounted on and supported by the base 10, to which it may be secured in any suitable manner.

The rotor structure 12 is in the form of a shell open at the bottom and closed at the top. It is made of any suitable material such as transparent plastic or glass. The structure 12 includes a removable section or door 25 to afford access to the interior thereof. The lower end of the rotor 12 surrounds the flange 17 and an anti-friction bearing 26 is interposed between said end and the flange. The rotor 12 is thus articulated with the stator 11 so that it may rotate with respect thereto and also receive atmospheric air through the air inlet openings 19. The rotor 12 serves as a carrier for the means which supports a plurality of the articles to be dried in the apparatus. The means provided is adapted to support rubber surgical gloves. Accordingly, each glove is supported on a short tube 31 carried by the side wall of the rotor 12 and opening there-through to communicate with the interior of the rotor. A suitable number of similar tubes 31 are provided and they project laterally upward from the side wall of the rotor, as shown in Figure 1. A single tube 31 is shown in Figures 3 and 4 on an enlarged scale. Each tube 31 is adapted to receive the cuff portion of a glove with the tube projecting into the cuff. Clamps 32 are pivotally mounted, as at 33, on brackets 34, respectively, fixed on the tube 31. Each clamp 32 is brought to a clamping position by a helical spring 35, which has one end secured to the clamp, and its opposite end secured to the bracket. The clamp 32 has a transverse bowed pressure member 38 to tightly engage the cuff of the glove with the tube. A pair of clamps 32 is used on each tube and the clamps are arranged diametrically opposite each other, as shown in Figure 4. A stop 37 on each bracket 34 limits the movement of the related clamp 32 to the open.
position off center with respect to its pivot. In the closed position, the pair of clamps engage the cuff of the glove arranged on the tube and retain it in position for the drying operation.

Each tube 31 has air outlet apertures 39 therein near the inlet end of the tube and beyond the entrance end edge of the cuff of the glove. The port area of the inlet end of the tube 31 is greater than the total outlet port area of the apertures 39. This enables air to enter the tube and to cause the glove to be inflated as the air circulates within the glove by entering the tube 31 through the inlet end from the interior of the rotor, and to flow out through the apertures 39 into the chamber 13.

In order to rotate the rotor structure 12 so that the gloves arranged thereon travel around in the chamber 13, there is provided an electric motor 40, which is supported on a plate mounting 41 secured to the flange 17 by screws 42. The motor is disposed within the housing 23 of the base 10. A vertical shaft 43 is geared to the motor shaft by speed reducing gearing (not shown) so that the shaft 43 will turn slowly. The upper end of the shaft 43 is rigidly secured to the top of the rotor 12 by a flanged coupling element 44 bonded to the shaft and a clamping nut 45 threaded on the element 44. This element 44 is received in a bearing 46 carried by the stator 11. The motor 40 drives the shaft 43 which in turn rotates the rotor 12.

In order to circulate heated air to the tubes 31 if there are provided cooperatively arranged electric fans 47 and heaters 48 within the rotor 12. The fans and heaters are mounted in pairs on perforated circular shelves 49 arranged in superposed spaced relation with respect to each other. Each shelf 49 has three fans 47 and three heaters secured thereon. The fans 47 are disposed innermost with respect to the axis of the shaft 43 so that the fans cause a laterally outward circulation of heated air distributed evenly. The fans have cupped blades. The heaters of any suitable electrical type. A sleeve 50 surrounds the shaft 43. The lower end of the sleeve has a flange 51 which has holes to accommodate the screws 42. The sleeve is thus rigidly secured. The shelves 49 are secured to the sleeve 50 in any practical manner. As shown, the sleeve is stepped to provide shoulders on which the shelves respectively rest, while set screws 52 secure the shelves against movement.

Electric current from a suitable source is supplied to energize the fans and heaters. The fans and heaters on each shelf are electrically connected in separate circuits with a common feed conductor and a common return conductor. Thus, there are three fan circuits and three heater circuits, with a switch 53 for each fan circuit and a switch 54 for each heater circuit. The motor 40 also receives current from said source and a switch 55 is included in the motor circuit. The switches 53, 54 and 55 are arranged on a plate 56 having appropriate indices to identify the switches. It will be understood that the fans and heaters may be employed severally, or all at one time, according to the number of gloves to be dried.

The lower end of the rotor 12 has a circular channel 57 formed thereon to catch water which may run down from the tubes on the side wall of the rotor. The channel 57 has a pet cock 58.

The tray 18 has a drain tube 59. A suitable conduit may be connected with the pet cock 58 and the tube 59 when it is desired to drain off any water which may have accumulated in the channel 57.

The door 20 may be opened for the purpose of clamping the gloves 30 on the tubes 31. It is understood the rotor 12 may be turned by hand to enable these operations to be carried out. Also, the section 25 of the rotor 12 may be removed while the door 20 is open to afford access to the fans and heaters for any purpose.

After the gloves have been washed and sterilized, they are clamped on the tubes 31, and the door 20 is closed, the proper switches are closed to energize the fans, heaters and the motor. The rotor 12 will be caused to rotate causing the gloves to travel slowly around in the chamber 13. At the same time atmospheric air will be drawn upwardly into the interior of the rotor 12 through the openings 19 by the fans 47 and will be blown across the heater 48 into the tubes 31 evenly distributed. The heated air entering the tubes will cause inflation of the gloves and subject the interior surfaces thereof to a drying action before passing out of the openings 20 of the chamber 13. The section 18 has a plurality of vent holes 60 in the top thereof to liberate the heated air from the chamber 13 to complete the circulation of the air. The gloves travelling around in the chamber 13 containing the heated air will have the exterior surfaces thereof dried simultaneously with the drying of the interior surfaces of the gloves. The thoroughly dried gloves may then be removed in an obvious manner.

While I have shown and described what I consider to be the preferred embodiment of my invention, I wish it to be understood that such changes in construction, materials, design, and use as come within the scope of the appended claims may be resorted to if desired without departing from the spirit of my invention as thus described the invention, what I claim as new and desire to secure by Letters Patent is:

1. In an apparatus of the character described, an outer stationary casing, an inner rotating casing within the outer casing, therewith an air chamber extending entirely around the side and top of the inner casing, means for rotably supporting and driving said inner casing, said outer casing having air inlets communicating with the interior of the inner casing at the bottom thereof, said outer casing having air vents in the top thereof, means arranged within said inner casing to draw atmospheric air into the inner casing through said inlets and promote circulation of the air, and means on the inner casing communicating with the interior thereof and projecting into said chamber to receive air from the inner casing and let it flow into said chamber for the purpose of drying articles arranged on said last means, said outer casing having means of access to the interior thereof.

2. Apparatus as set forth in claim 1, having heating means arranged within said inner casing to heat the air passing therethrough.

3. In an apparatus for drying articles such as surgical rubber gloves, a hollow rotatable member having exterior tubular parts communicating with the interior of said member to receive air and to support the articles for subjection to the air, said tubular parts having ports which
are normally uncovered when supporting the articles, means to rotate said hollow member, and means inside said member for forcing the air into the tubular parts for distribution for the interior and exterior surfaces of the articles simultaneously to dry the same during the rotation of said rotatable means.

4. In an apparatus for drying rubber gloves, a hollow rotatable structure, motor means to rotate said structure, tubes on said structure and projecting therefrom and in communication with the interior of said structure, said tubes having ports which are normally uncovered, means to detachably hold a glove on each of said tubes with the tube serving as an air conduit communicating with the interior of the glove, and air circulating means comprising fans within said structure for delivering air to said tubes and out of said uncovered ports during the rotation of said structure.

5. An apparatus as set forth in claim 3, having heaters associated with said fans to heat the air.

6. An apparatus as set forth in claim 4, having stationary shelves wherein said fans are mounted.

7. In a drying apparatus of the character described, a hollow rotor, means to drive said rotor, means on said rotor and communicating with the interior thereof to support each of a plurality of gloves so that air may circulate to dry the interior surfaces of each glove, said supporting means being on the outside of the rotor, means comprising fans within said rotor for circulating air over said gloves, means within said rotor for supporting said fans, and a hollow stator providing an air chamber in conjunction with the rotor within which the glove may travel in response to the movement of said rotor to dry the exterior surfaces of said gloves.

8. A drying apparatus as set forth in claim 7, having a heater mounted on said fan-supporting means cooperating with said fans whereby the circulated air is heated.

9. A drying apparatus as set forth in claim 7, wherein said air flows from the interior of said gloves into said chamber and out through outlet means for the chamber and embodied by said stator.

10. In a drying apparatus of the character described, a hollow member to support each of a plurality of surgical rubber gloves so that the interior surfaces of each glove may be dried, circulating means for heated air within said hollow member, means for rotatably supporting and driving said member, a tubular member having an air inlet end communicating with the interior of said hollow member and an air outlet end communicating with the interior of the related glove, means to detachably hold a glove on said tubular member, said tubular member also having outlet apertures in the side wall near the inlet end thereof, the port area of said inlet end being larger than the total port area of said outlet apertures by virtue of which the air entering said inlet end causes inflation of the related glove while circulating within the glove and out of said apertures to also dry the exterior surfaces of the glove.

11. A drying apparatus as set forth in claim 10, having fans and stationary supports therefor within said hollow member to cause the air to circulate for the stated purposes.

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