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3,267,936

HYDROTHERAPY APPARATUS

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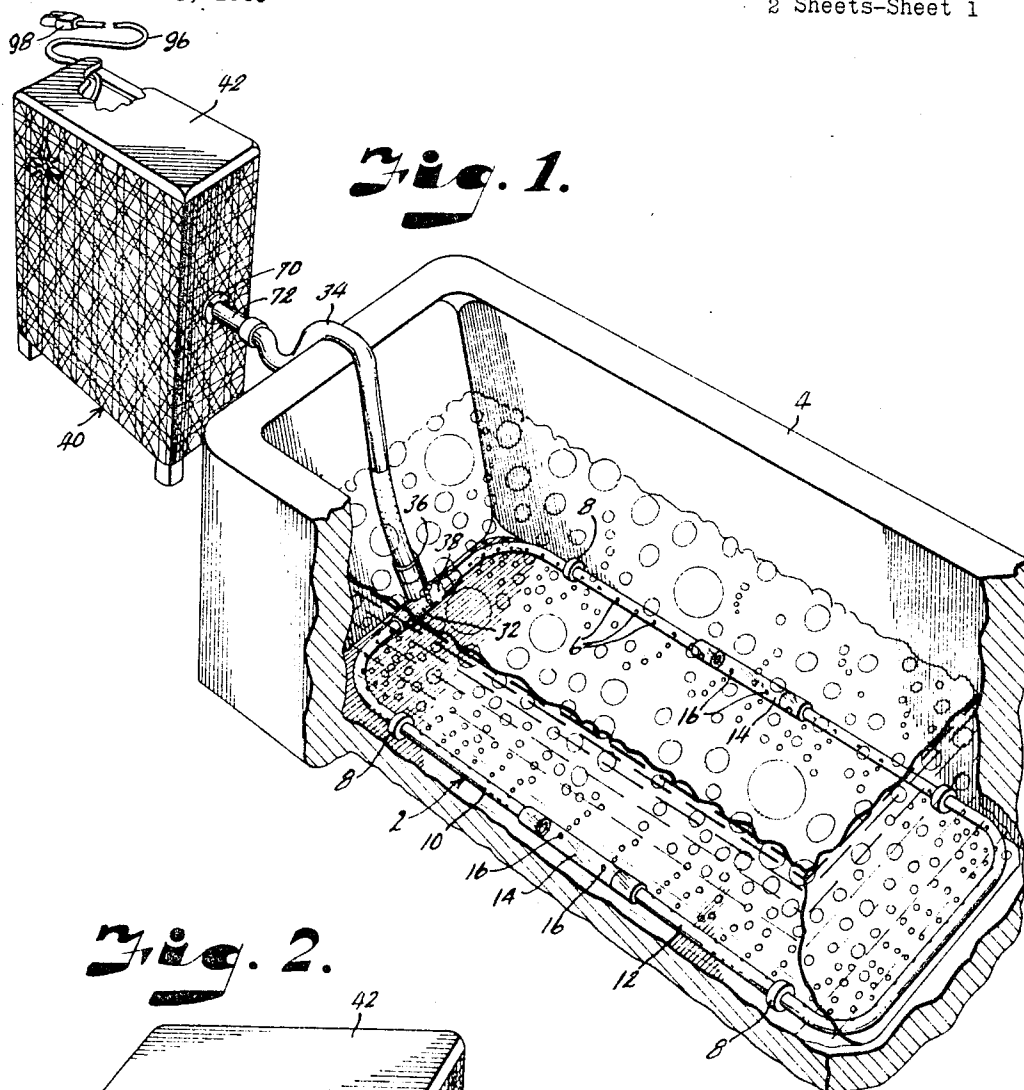
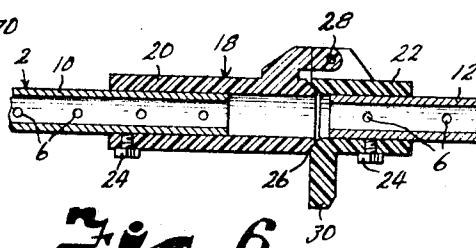
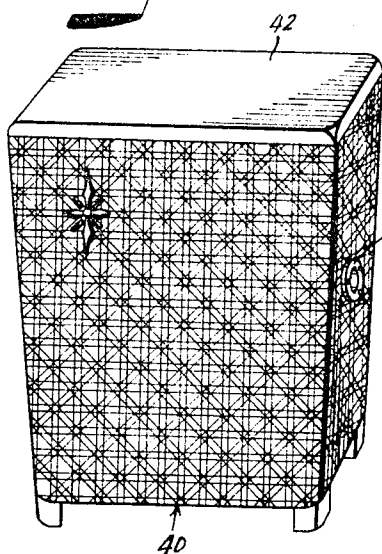


Fig. 2.



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Fig. 3.

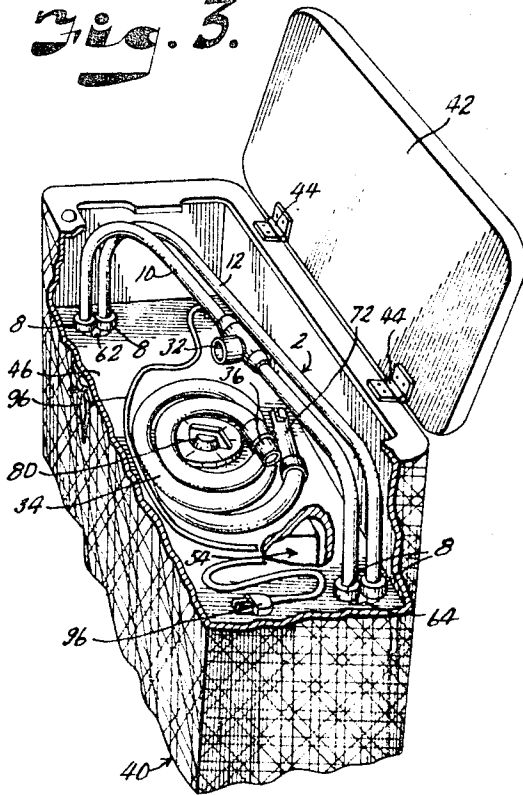


Fig. 4.

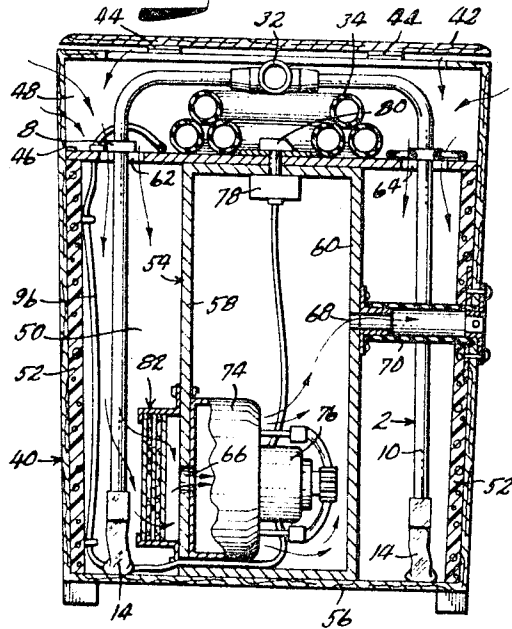
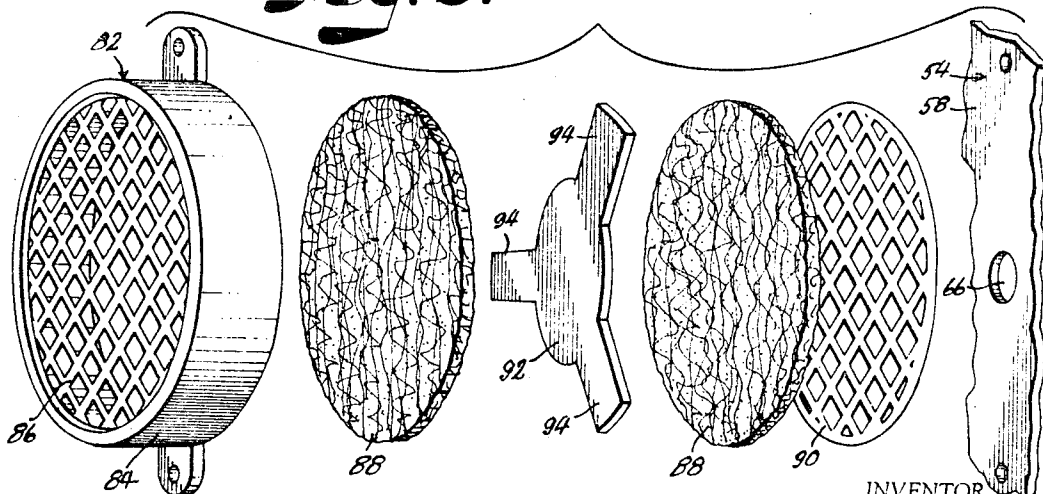


Fig. 5.



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3,267,936

HYDROTHERAPY APPARATUS

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16 Claims. (Cl. 128—66)

This invention relates to new and useful improvements in hydrotherapy apparatus, and relates more specifically to a hydrotherapeutic bath apparatus consisting generally of a tubular ring conforming generally to the interior contour of a bathtub and adapted to be submerged therein, said tube being interconnected with an air compressor or blower and having apertures formed therein whereby to direct air jets into the water toward the person occupying the tub, thereby producing an agitation and pulsation of the water which has a beneficial massaging action against the body of the person, as is well known in the art.

Apparatus of this general type has been heretofore produced, but all such apparatus within my knowledge has been subject to certain shortcomings and disadvantages. For example, the tubular ring, when of a size suitable for use in a bathtub, is so large and awkwardly unwieldy as to be quite cumbersome to handle when inserting it into or removing it from a tub. Also, due to its size, it constitutes an unsightly eyesore when not positioned in the tub, and is hence extremely difficult to store or conceal in any ordinary container or enclosure when not in actual usage. Also, the air compressor or blower apparatus, which is normally placed adjacent the tub, is inherently quite noisy in operation due to the large volume of air which must be delivered to the ring thereby, and such noise is of course objectionable in that it is not conducive to the desired relaxation of the person under therapy, and may be disturbing or annoying to other persons nearby.

Accordingly, the principal object of the present invention is the provision of a hydrotherapeutic bath apparatus of the class described in which all of the above discussed undesirable characteristics of prior apparatus are overcome to a marked degree. Generally, this object has been accomplished by the provision of a tubular ring which is divided into sections connected together by tubular hinges, whereby said ring may be folded to occupy a relatively small space, by the provision of a neat and attractive container adapted to contain and conceal the folded ring when not in use, said container having the general appearance of, and being no larger than, the usual laundry hamper, and by the inclusion of the air blower apparatus within said container, together with special provisions for preventing the escape of noise generated by the blower from the container.

Other objects are simplicity, economy and compactness of construction, efficiency and dependability of operation, and ease and convenience of use.

With these objects in view, as well as other objects which will appear in the course of the specification, reference will be had to the accompanying drawing illustrating a preferred embodiment of my invention, and in which:

FIG. 1 is a perspective view of a bathtub having a hydrotherapeutic bath apparatus embodying the present invention applied operatively thereto, with portions broken away to better illustrate the invention,

FIG. 2 is an exterior perspective view of the container for the apparatus,

FIG. 3 is a fragmentary perspective view of the upper portion of the container, with portions broken away to show the mode of storage of the bath apparatus therein,

FIG. 4 is a slightly irregular transverse vertical sec-

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tional view through the container as shown in FIG. 3, with portions broken away,

FIG. 5 is an enlarged, exploded view showing the elements of the noise dampening means at the air intake of the blower, and

FIG. 6 is an enlarged, fragmentary longitudinal sectional view through a hinge of the tubular ring, showing a modified form of construction.

Like reference numerals apply to similar parts throughout the several views, and the numeral 2 applies generally to a tubular ring formed of any suitable material such as metal or plastic. It is of elongated form whereby to conform generally to the interior horizontal contour of a bathtub 4, when inserted therein as shown in FIG. 1. Inwardly directed apertures 6 are formed in the tube, for egress of air supplied thereto under pressure by means which will presently be described. Doughnut shaped collars 8 of rubber or other soft, resilient material are fitted about the tube at intervals whereby to support the ring out of contact with the tub to prevent vibrational rattling of the ring against the tub.

It will be seen that ring 2, when of a size suitable for use in a bathtub, is so large as to be unwieldy and cumbersome to handle, and difficult to store and conceal when not positioned in the tub, being far too large to be inserted in any normal container or enclosure normally available in a bathroom. To overcome this difficulty, the ring is rendered folding in nature by dividing each of the longer side reaches thereof, whereby the ring constitutes two substantially U-shaped sections 10 and 12, said sections being joined, at each side of the ring, by a tubular hinge 14. As shown in FIG. 1, said hinge may consist of a short length of pliable flexible hose having its opposite ends interconnected respectively to the two sections of the ring tube. The hoses 14 may also have holes 16 for the egress of air. FIG. 6 shows an alternative form of hinge 18 which may be used in place of hoses 14. Hinge 18 comprises a pair of rigid, tubular body members 20 and 22 formed of any suitable material such as molded plastic. The distal ends of said body members each receive one end of the respective ring sections telescopically therein, said ring sections being secured by set screws 24. Body section 20 is made of substantial length as shown, so that by loosening the associated set screws 24 and sliding ring section 10 therein, the effective length of the tube may be adjusted to fit bathtubs of various lengths. The contiguous ends of hinge body sections 10 and 12 are formed to present mating seating surfaces as indicated at 26 whereby to seal the hinge when the body portions are brought into axial alignment as shown. The hinge body sections are pivotally joined on a horizontal transverse axis as indicated at 28, whereby the ring may be folded so that sections 10 and 12 lie in parallel, coextensive planes, the same as shown in FIGS. 3 and 4 wherein pliable hinge tubes 14 are illustrated. The axis of hinge pin 28 is disposed above the plane of the ring, and one of the hinge body members is provided with a downwardly extending integral tab 30 which engages the floor of the bathtub to support the weight of the ring. Thus the weight of the ring urges the hinge sections 20 and 22 constantly toward the axially aligned position shown in FIG. 6 wherein they have sealing contact at 26. This eliminates any need for any fasteners or locks for securing the hinge in its aligned position, since the air pressures involved are of course low.

One of the sections of the tubular ring, section 10 as shown, is fitted intermediate its ends with a T-fitting 32 through which air is supplied to the ring through a flexible hose 34 adapted to be connected at its opposite end to an air blower, as will presently be described. Preferably, hose 34 is provided with a rigid, tubular bayonet connector 36 adapted to be releasably inserted and secured

in T-fitting 32. Also, said T-fitting may include a manually operable valve, indicated at 38 in FIG. 1 and accessible to a person in the tub, whereby the rate of delivery of air to the ring may be regulated.

For containing the tubular ring 2 when not in use, and for containing the blower apparatus to be described, there is provided a container indicated generally by the numeral 40 having the approximate size and configuration of an ordinary laundry hamper, constituting a generally rectilinear box having a top opening and a top cover 42 hinged thereto at 44. The front, back and side walls of the container are preferably formed of woven wicker as shown, or are otherwise foraminous to permit free passage of air therethrough. Within said container is affixed a horizontal partition wall 46 which divides the interior of the container into an upper chamber 48 which is accessible by opening cover 42, and a lower chamber 50. The front, rear and side walls of chamber 50 are provided with sound absorbent lining panels 52, which also inhibit the passage of air through said walls, but which assist materially in quieting the device as will appear.

Mounted in chamber 50 is a box-like enclosure 54 of rectilinear form said enclosure resting on floor 56 of container 40, and the top of said enclosure being disposed immediately beneath partition wall 46, as best shown in FIG. 4. Said enclosure is transversely narrower than container 40, the side walls 58 and 60 of said enclosure being spaced inwardly from the sides of the container to leave portions of chamber 50 unobstructed. Said enclosure is also spaced forwardly from the rear wall of container 40, as indicated in FIG. 3, whereby to permit flow of air from one side of the enclosure to the other within chamber 50, for a purpose which will presently appear. A pair of holes 62 and 64 are formed in partition wall 46, respectively at opposite sides of enclosure 54. When tubular ring 2 is folded as has been previously described, whereby to present a substantially U-shaped configuration, the free ends thereof may be inserted downwardly through holes 62 and 64, as shown in FIGS. 3 and 4, so that said ring may be completely enclosed and concealed in container 40 when not in use. In this position, cushioning collars 8 of the ring engage and are supported by the upper surface of partition wall 46, whereby to assist in supporting the weight of the ring.

Enclosure 54 is completely sealed except for an air inlet opening 66 formed in sidewall 58 thereof, and an air outlet opening 68 formed in side wall 60 thereof. Outlet opening 68 has interconnected therewith a tubular fitting 70 which extends horizontally outwardly through chamber 50, and through the adjacent side wall of container 40 (see FIG. 4). Flexible hose 34 is provided with a rigid tubular bayonet fitting 72 which may be releasably inserted and secured in fitting 70 (see FIG. 1), whereby ring 2 is interconnected to the interior of enclosure 54. When the ring is not in use, hose 34 may be disconnected from both the ring and from fitting 70, and coiled to rest on partition wall 46 within chamber 48, as shown in FIGS. 3 and 4.

Mounted within enclosure 54 is an air blower mechanism including a housing 74 in which is carried suitable impeller blades, not shown, driven by an electric motor 76, said mechanism being positioned to draw air inwardly through inlet opening 66 and deliver it under pressure to the interior of enclosure 54, from which it passes through hose 34 to ring 2. Motor 76 is provided with a timer mechanism 78 controllable by a knob 80 positioned above partition wall 46 within chamber 48, whereby the motor may be set to operate for any desired predetermined time period, as may be dictated by the therapy being administered. Air cannot enter chamber 50 directly through the vertical walls thereof, these walls being rendered substantially air-tight by the sound-proofing lining 52 thereof. Instead, air enters upper chamber 48 through the foraminous walls of container 40 above partition wall

46, or between cover 42 and the container, then flows downwardly through holes 62 and 64 into chamber 50 and thence to inlet opening 66 of enclosure 54, air from hole 64 flowing between the rear walls of the enclosure and container 40 to gain access to opening 66. Since the rushing or roaring noises of the blower are largely air-borne, particularly of the blower is properly mounted, this devious path of the inlet air is effective in reducing the amount of such noise which escapes into the room. Such noise as would otherwise be transmitted by air downstream from the blower is effectively damped by the fact that said air is fully enclosed until it is discharged from ring 2 beneath the water level in the bathtub.

Upstream air transmission of noise from the blower is further reduced by a sound dampener indicated generally at 82 in FIG. 4, and as detailed in the exploded view of FIG. 5. Said dampener includes a hollow cylindrical housing 84 secured to the outer surface of side wall 58 of enclosure 54, in coaxial relation with air inlet opening 66 thereof. The outer end of said housing has an open-work grill 86 fitted therein. Disposed behind grill 86 are a pair of flat circular pads 88 of fibrous material capable of passing air therethrough, said pads being retained by a second grill 90. Interposed between said pads is a sheet metal deflector consisting of a central disc 92 having a diameter less than that of housing 84 but greater than that of inlet opening 66, and a plurality of radially extending integral arms 94 which engage housing 84 to support disc 92 coaxially therein. Disc 92 breaks up any streamline axial flow of air through the damper to opening 66, in that such air is deflected radially outwardly by said disc, and must reverse its direction around the edge of the disc to reach opening 66. This reversal of air flow direction, particularly where it must occur at least partially within fibrous pads 88, has been found extremely effective in preventing the escape of blower noises into the room. Motor 76 is provided with operating electric current by means of a cable 96 extending from said motor through a wall of enclosure 54 into chamber 50, upwardly through partition wall 46 into chamber 48, and outwardly from container 40 under the edge of cover 42, being provided at its outer end with a plug 98 suitable for insertion into the usual electrical wall outlet. When the device is not in use, the extending portion of cable 96 may be concealed entirely in chamber 48, resting on partition wall 46 as shown in FIGS. 3 and 4.

Operation and use of the device is believed to be reasonably self-evident from the foregoing description, and it is clear that a therapeutic bath device having several novel advantages has been produced. The ring 2 itself may be folded to occupy only about one-half of its normal space requirement, thus permitting far easier handling and storing thereof when not in use. This would be a substantial advantage even if no container therefor were provided. Also, the folding of the ring requires no separation or disassembly of parts, which would be more tedious and might result in loss of parts, and requires no manually operable screws, clamps or other fasteners. The container 40 not only provides a neat and decorative enclosure for the ring when folded, said enclosure being of a size which can conveniently and unobtrusively be kept in even a small bathroom, but also encloses the blower mechanism. Both the ring and the blower mechanism are inherently of such a nature as to be unattractively obtrusive in a bathroom if they were not so enclosed. Furthermore, the container is sound-proofed in such a manner as to effectively reduce the noise inherently attendant on the operation of the blower to an entirely acceptable level.

While I have shown and described a specific embodiment of my invention, it will of course be readily apparent that many minor changes of structure and operation could be made without departing from the spirit of the invention as defined by the scope of the appended claims.

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Having thus described my invention, what I claim as new and desire to protect by Letters Patent is:

1. A hydrotherapeutic bath apparatus comprising, in combination:

- (a) an elongated tubular ring adapted to be placed in a bathtub and to conform generally to the bottom interior contour thereof, said ring having apertures formed therein at intervals along its length and communicating with the interior thereof, the longer reaches of the tube forming said loop being divided substantially at their midpoints, whereby said ring is divided into two generally U-shaped sections,
- (b) a tubular hinge joining each of the pairs of associated ends of said ring sections, the axis of said hinges being transverse to the hinged reaches of said ring whereby said ring may be folded into a position wherein the sections thereof are parallel and coextensive, each of said hinges being of a type such that when said ring is extended to its planar position the tubular interior thereof are uninterrupted through said hinges, and
- (c) means for supplying air under pressure to the interior of said ring.

2. An apparatus as recited in claim 1 wherein each of said tubular hinges constitutes a length of pliable flexible hose the opposite ends of which are respectively interconnected to a pair of corresponding ends of said ring sections.

3. An apparatus as recited in claim 1 wherein each of said tubular hinges constitutes a length of pliable flexible hose the opposite ends of which are respectively interconnected to a pair of corresponding ends of said ring sections, each of said hoses having apertures formed in the walls thereof at intervals along their lengths, and communicating with the interior thereof.

4. An apparatus as recited in claim 1 wherein each of said tubular hinges comprises a pair of rigid tubular body members interconnected respectively at their distal ends to a pair of corresponding ends of said ring sections and having mating seating surfaces at their contiguous ends, said body members being pivotally connected together on an axis transverse to the flow axis of said hinge and parallel to but spaced apart from the plane of said ring, the pivotal axes of said two hinges being coaxial.

5. An apparatus as recited in claim 1 wherein each of said tubular hinges comprises a pair of rigid tubular body members interconnected respectively at their distal ends to a pair of corresponding ends of said ring sections and having mating seating surfaces at their contiguous ends, said body members being pivotally connected together on an axis transverse to the flow axis of said hinge and parallel to but spaced apart from the plane of said ring, the pivotal axes of said two hinges being coaxial and spaced above the plane of the ring when said ring is positioned in a bathtub, one of said hinge body members being provided with a downward projection operable to engage the floor of said tub whereby to support said hinge and the adjacent portions of said ring sections out of engagement with the tub floor, as a result of which the weight of said ring sections urges said hinge body sections pivotally to press the mating seating surfaces thereof into sealing engagement with each other.

6. An apparatus as recited in claim 1 with the addition of:

- (a) a plurality of members formed of resilient cushioning material affixed to said tubular ring at spaced intervals about the periphery thereof, whereby said ring is supported out of engagement with said bathtub.

7. An apparatus as recited in claim 1 wherein said means for supplying air to said tubular ring includes a flexible hose interconnected at one end to said ring and at its opposite end to a source of pressured air, and with the addition of:

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- (a) a manually operable regulating valve disposed directly adjacent the point of connection of said hose to said ring and operable to control the volumetric rate of air flow through said hose.

8. An apparatus as recited in claim 1 with the addition of:

- (a) a container of generally box-like form, and being of a size to receive and contain said tubular ring when the latter is in its folded position.

9. An apparatus as recited in claim 1 with the addition of:

- (a) a container of generally box-like form, and being of a size to receive and contain said tubular ring when the latter is in its folded position, said container having a height greater than the longitudinal extent of said ring when folded, and having a horizontal partition wall therein adjacent but spaced below the top thereof, said partition wall having a pair of holes formed therein at a spacing equal to the transverse width of said ring, whereby the hinged ends of the longer reaches of said loop may be inserted downwardly through said holes, while the connecting end portions of the ring sections remain above said partition wall.

10. An apparatus as recited in claim 1 wherein said means for delivering air to said tubular ring includes a blower and a flexible hose interconnecting said blower and said ring, and with the addition of:

- (a) a generally rectilinear container adapted to rest on the floor adjacent the bathtub and being of a size to receive said ring therein when the latter is in its folded position, said blower also being mounted in said container.

11. An apparatus as recited in claim 10 wherein said flexible hose is detachably connected to said blower and said ring, and wherein said container is provided with a compartment in which said hose may be stored when disconnected.

12. An apparatus as recited in claim 1 wherein said means for delivering air to said tubular ring includes a blower and a flexible hose interconnecting said blower and said ring, and with the addition of:

- (a) a container adapted to rest on the floor adjacent the bathtub and having a portion of the wall thereof foraminous to provide an inlet for air,
- (b) an enclosure smaller than and mounted within said container, said enclosure being substantially sealed except for air inlet and outlet openings, said flexible hose being interconnected with said outlet opening, said blower being mounted within said enclosure to draw air through said enclosure inlet opening and to deliver it to said outlet opening, and
- (c) partition means in said container whereby air flowing from said container inlet to said enclosure inlet opening must follow a devious path.

13. An apparatus as recited in claim 12 with the addition of:

- (a) a lining of sound proofing material covering the interior walls of said container surrounding said enclosure.

14. An apparatus as recited in claim 1 wherein said means for delivering air to said tubular ring includes a blower and a flexible hose interconnecting said blower and said ring, and with the addition of:

- (a) a container adapted to rest on the floor adjacent the bathtub and having a portion of the wall thereof foraminous to provide an inlet for air,
- (b) an enclosure smaller than and mounted within said container, said enclosure being substantially sealed except for air inlet and outlet openings, said flexible hose being interconnected with said outlet opening, said blower being mounted within said enclosure to draw air through said enclosure inlet opening and to deliver it to said outlet opening, and
- (c) sound dampening means disposed in said container

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over the air inlet opening of said enclosure, and operable to force air flowing through the container to change its direction of flow just prior to entering said inlet opening.

15. An apparatus as recited in claim 14 wherein said sound dampening means comprises:

(a) an open-ended tubular housing affixed to said enclosure in coaxial relation to the air inlet opening thereof, and of larger internal diameter than said opening, and

(b) a disc-like deflector disposed in said housing intermediate its ends, said deflector disc being of larger diameter than said inlet opening but smaller than the diameter of said housing, and being disposed coaxially with said housing.

16. An apparatus as recited in claim 14 wherein said sound dampening means comprises:

(a) an open-ended tubular housing affixed to said enclosure in coaxial relation to the air inlet opening thereof, and of larger internal diameter than said opening,

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(b) a disc-like deflector disposed in said housing intermediate its ends, said deflector disc being of larger diameter than said inlet opening but smaller than the diameter of said housing, and being disposed coaxially with said housing, and

(c) a pair of discs of fibrous material capable of passing air therethrough disposed respectively adjacent opposite faces of said deflector disc, said fibrous discs being of larger diameter than said deflector disc.

References Cited by the Examiner

UNITED STATES PATENTS

115,895	6/1871	Reese	285—235
2,528,249	10/1950	Serwin.	
3,031,685	5/1962	Baumann	4—180
3,043,296	7/1962	Gregory	4—180

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