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Rico et al.

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[54] HYDROPNEUMATIC MASSAGE EQUIPMENT

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[52] **U.S. Cl.** **128/66**, 4/180

[51] **Int. Cl.** **A61h 9/00**

[58] **Field of Search** 128/66; 4/180, 182

[56] **References Cited**

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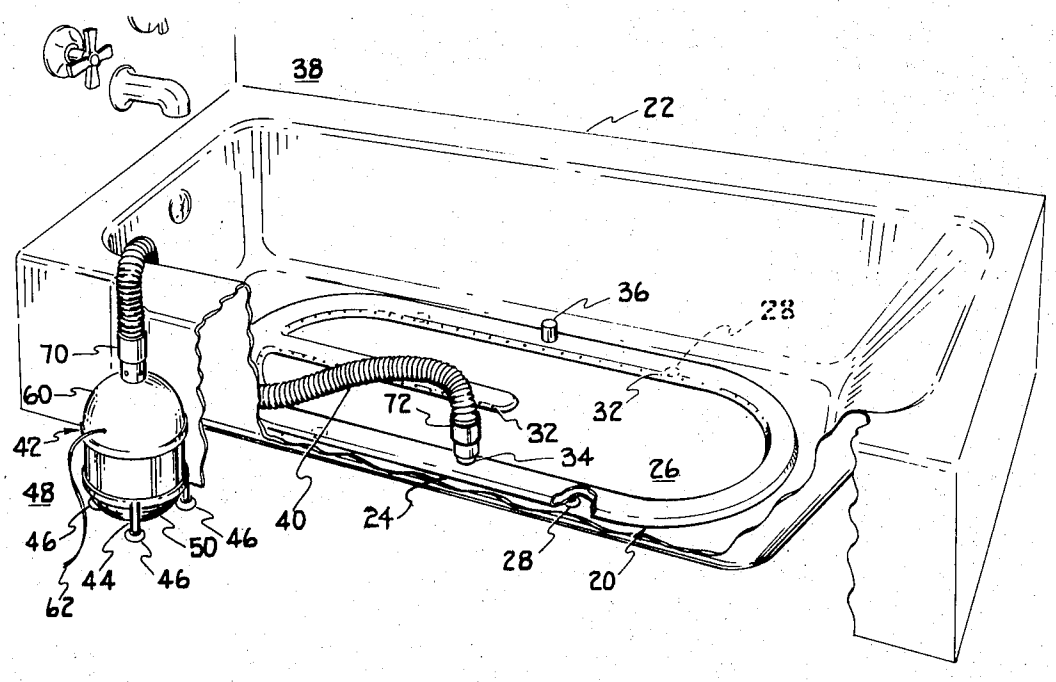
Primary Examiner—Lawrence W. Trapp

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[57] **ABSTRACT**

An air compressor assembled with and driven by an electric motor is mounted upwardly on three legs, each equipped with suction cups, and with respect to electrical energy, being well grounded and located sufficiently away from the immediate bathing locale, to compress, filter, and deliver air into a flexible air guiding conduit equipped with fittings, one being adjustable in conjunction with the air compressor exit to regulate the quantity of compressed air continuing on through the conduit into a unitized molded compressed air distributor placed about the bathing structure interior periphery and on the longitudinal center near the bottom of the bath structure, the distributor being formed with precisely located underwater air ejection orifices, suction cups, and dual compressed air receiving entry connectors, optionally selected to receive one or more compressed air conduit fittings located on one or both sides of the bathing structure.

8 Claims, 5 Drawing Figures



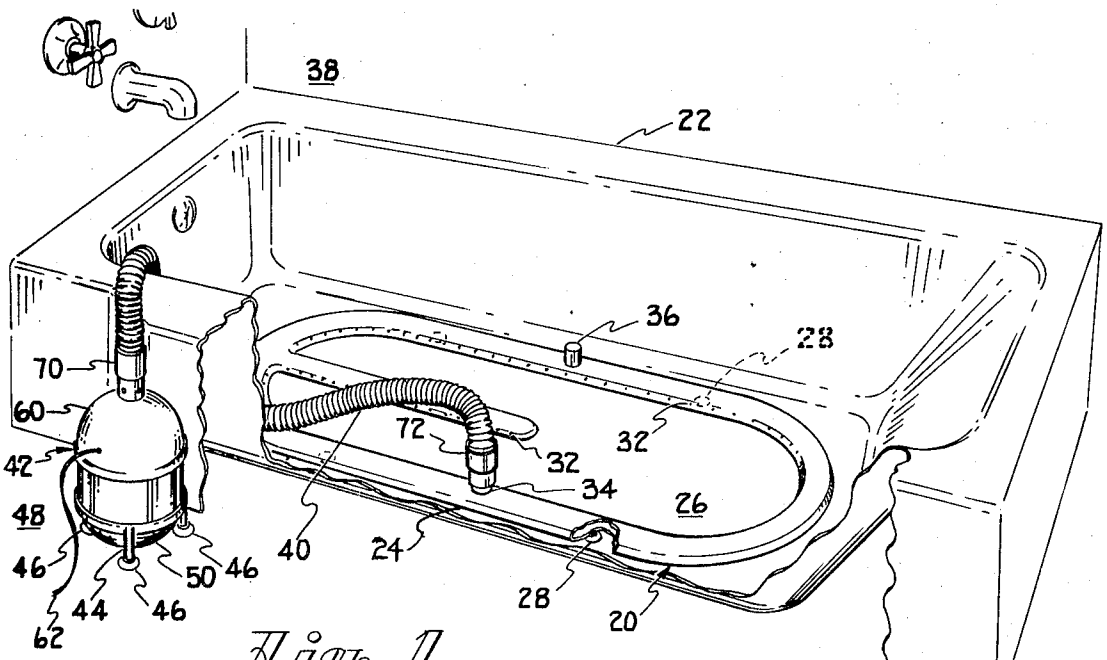


Fig. 1

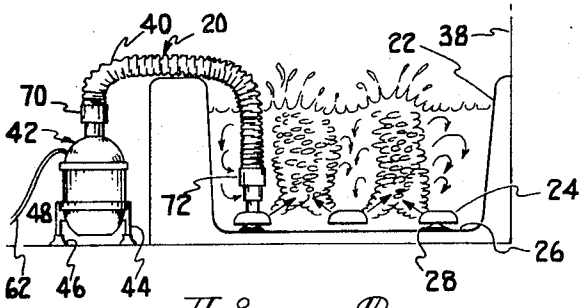


Fig. 2

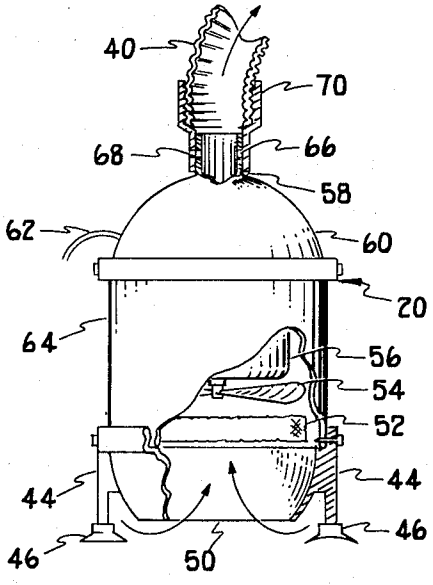


Fig. 3

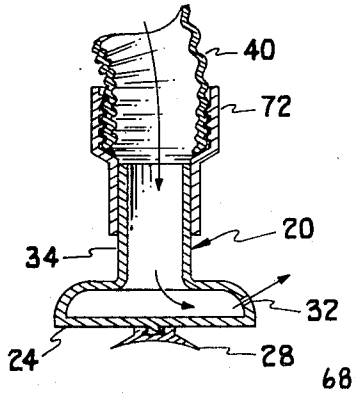


Fig. 4

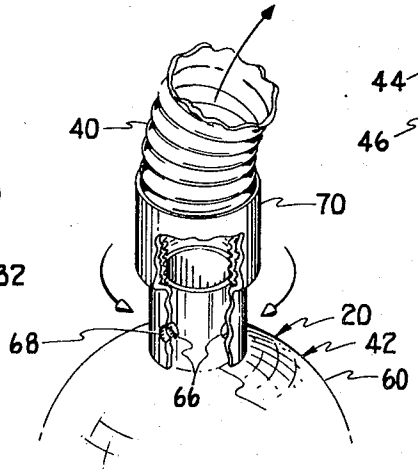


Fig. 5

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HYDROPNEUMATIC MASSAGE EQUIPMENT

BACKGROUND OF THE INVENTION

Any form of body massage is especially good treatment for common tension and soreness in human muscles. Massage generally dilates blood vessels, increases blood circulation, and expedites removal of carbon dioxide from muscle tissue, thereby relaxing and revitalizing a person. Hydrotherapeutic massage is often considered as the best form of needed massage. In administering this form of massage, a person is partially immersed in water and circulating currents are imposed within the water, thereby gently massaging a person.

SUMMARY OF THE INVENTION

Discomfort, pain and afflictions in human muscles, joints, and tissue are conveniently, safely, and inexpensively treated in the privacy of one's own bath, using this hydropneumatic massage equipment which at all times provides stimulation to nerve fibers and circulatory systems of all persons, creating for them a greater sense of well being. The hydropneumatic massage device is simply, quickly and conveniently installed. One of the two conductor hose connector stubs on the air distribution manifold is cut open. Then the pressurized or forced air conductor conduit is connected to it. After this connection, the air distribution manifold is positioned within the bath tub or vessel. The other end of the flexible compressed air conductor hose or conduit is connected to the exhaust outlet of the air compressor unit. After water is in the bath tub or vessel, the electrical connection of the air compressor motor to a conventional AC receptacle is made and the system is ready to operate. During operation, the flow of air reaching the air distribution manifold is regulated by the adjustment of the effective size of the exhaust or bypass opening at the air compressor discharge.

Preferably the hydropneumatic massage equipment consists of: an air distribution manifold secured above the bottom by integral suction cups and made in a generally elliptical shape with a central longitudinal branch extending to the center, all portions of which have spaced and angled small orifices, and having two oppositely located, originally sealed hose connector stubs, upstanding on the elliptical portion; a flexible hose or conduit; and an air compressor and filter unit with an electrical motor having a groundable three-wire electrical cord, and being mounted upstanding on three legs equipped with suction cups.

DRAWINGS OF THE PREFERRED EMBODIMENT

The preferred embodiment of the hydropneumatic massage equipment is illustrated in the accompanying drawing, wherein:

FIG. 1 is a perspective view of the hydropneumatic massage equipment in and about a bathtub, with portions broken away for illustrative purposes;

FIG. 2 is a partially crossectioned view, showing a bathtub with the equipment installed;

FIG. 3 is an elevational view with portions broken away to show the air compressor unit, its air filter, its adjustable air flow hose connector; and its three leg suction cup mounting;

FIG. 4 is a sectional view of the flexible conduit connection to the compressed air distributor; and

FIG. 5 is a partial perspective view with a portion broken away, to illustrate the rotative connection of the flexible conduit to the air compressor unit, indicating the size selectability of its pressure relief ports.

DESCRIPTION OF PREFERRED EMBODIMENT

The hydropneumatic massage equipment **20** is illustrated in FIG. **1** ready for use in a bathtub **22**, however, it may be used in any sized embodiment and in any bathing facility.

Compressed Air Distributor

Within bathtub **22**, a compressed air distributor **24** is placed near the bottom **26**, being slightly raised by resting on its own spaced integrally molded suction cups **28**, thereby providing secured placement and clearance for circulating water pathways all about it. Further, this elliptical hollow molded compressed air distributor **24** has a central branch **30** of similar hollow shape extending longitudinally to its center, which upon installation, is often times the center of the flat bathtub bottom **26**. The crossectional proportions are substantially constant throughout the entire compressed air distributor **24**. As observed in FIGS. **1**, **2**, and **4**, a hollow flattened crossectional shape is used for its low profile and to obtain a preferred airflow directed to many upwardly inclined orifices **32**, located at spaced locations throughout all inside edges of distributor **24**. Compressed air enters distributor **24** on either side through upstanding connectors **34**, **36**. Generally, only one connector **34** is used, as shown in FIG. **1**, and the other connector **36** remains molded shut or is capped where a bathtub **22** is mounted next to a wall **38**. Preferably both connectors **34**, **36**, during manufacture, are molded shut and one or the other are cut open when the hydropneumatic massage equipment **20** is installed in a particular bathtub **22**. In some bathing facilities where there is adequate clearance both connectors **34**, **36** might be utilized. Generally, however, one is sufficient to receive the incoming compressed air. As completely molded in one operation, compressed air distributor **24**, with its integral central branch **30**, integral suction cups **28**, and integral upstanding paired connectors is manufactured, stored, transported, and installed at reasonably low cost.

Flexible Conduit or Hose

As shown in FIGS. **1** and **2**, compressed air is directed to an upstanding connector **34** and **36** of compressed air distributor **24** through a flexible conduit or hose **40**. Preferably, it is long and during operations only a sufficient portion of it remains inside the bathtub **22**, and the remaining conduit or hose length is utilized outside bathtub **22**. Then air compressor unit **42** may be located some distance away from the bathtub **22**, substantially more than illustrated, so no electrical energy will ever reach the bathing facility and/or bather.

Air Compressor Unit

An air compressor unit **42** is arranged for an axial upwardly air flow. Three legs **44**, all alike and all equipped with suction cups **46**, hold the balance of the assembled air compressor unit **42** above its support which is generally the floor **48**. Air enters lower intake chamber **50** and then passes upwardly through filter **52**, which is easily cleaned and/or replaced periodically. Thereafter, the air is drawn by a compressor fan **54** which is driven by an electrical motor **56**. The com-

pressed air cools motor **56** before it is ejected through an upstanding connector **58** located at the center of discharge chamber **60**. Electrical motor **56** is supplied with electrical energy through electrical cord **62** which is adapted to be plugged in to a 110 volt receptacle, not shown. The entire outer portions of air compressor unit **42** are made of molded plastic eliminating any possibility of an electrical shock being received by touching it. However, as a very excellent precaution, flexible conduit or hose **40** is made long enough to locate air compressor unit **42** at a considerable distance away from the bathtub **22**. Also, at its remote location and in its upright position, the operating air compressor unit **42**, having its axial upwardly air flow, draws cooler air from the floor level locale at a sufficient distance away so a bather is not affected by any discomforting air drafts. Also, if any bath water should ever be splashed into the vicinity of the air compressor unit **42**, the electrical motor **56** is very well protected from the falling water.

Regulator of Compressed Air Flow To Distributor

Each user of this hydropneumatic massage equipment has a preference at various times for the amount of flow of the compressed air being ejected from orifices **32** throughout compressed air distributor **24**. Therefore, alignable groups **66**,**68** of orifices are provided, respectively in upstanding connector **58**, of discharge chamber portion **60** of the entire plastic outer shell or housing **64** of air compressor unit **42**, and in an end connector **70** joining the compressor unit **42** and flexible hose **40**. The joint is made as the end connector **70** is snugly and often threadably secured above to the intake end of flexible conduit or hose **40** and is closely and rotatably fitted below about upstanding connector **58** of air compressor unit **42**. Group **68** of orifice holes of end connector **70** at this location is then fully aligned, partially aligned, and/or completely misaligned as selective relative rotation is undertaken by a bather to regulate the ejection of bypass compressed air leaving through these orifice groups **66**, **68**. Such selective ejection of bypass compressed air, controls the quantity of compressed air being actively ejected through angled orifices **32** of compressed air distributor **24**, thereby creating the favorable bathing water currents. An end connector **72**, similar to end connector **70** but without having any group of orifices, is used in joining flexible conduit or hose **40** to either upstanding connector **34** or **36** on the compressed air distributor **24**. Such similarity also lowers production costs which are at all times kept as low as possible without departing from the objective of obtaining the best performing hydropneumatic massage equipment.

We claim:

1. A compressed air distributor for use in hydropneumatic massage equipment, comprising: an elliptical passageway structure having a partial central connected passageway, spaced suction cup mountings to secure it near a bottom of a bathing facility, two oppositely positioned air intakes, and spaced orifices to eject compressed air into the interior of the bathing facility.

2. An air compressor unit for use in hydropneumatic massage equipment, comprising: an upright housing of non conducting material having legs at the bottom each equipped with suction cups and positioned about an intake of the housing which is located just above the suction cups, having a central portion of the housing supporting internally a filter, fan, and electrical motor, and having an exhaust chamber at the top of the housing equipped with a central discharge having bypass orifices adapted to be aligned, partially aligned, and misaligned with orifices on an end connector of a conduit to receive compressed air in regulated flows.

3. Hydropneumatic massage equipment for use with a bathing facility to eject compressed air underwater creating effective currents of water about a bather, comprising:

a. a compressed air distributor having a partial central portion and a surrounding eliptical portion and positioned near the bottom of the bathing facility;

b. a conduit to direct compressed air from outside the bathing facility into the compressed air distributor within the bathing facility; and

c. an air compressor unit to compress air and discharge it into the conduit.

4. Hydropneumatic massage equipment for use with a bathing facility to eject compressed air underwater creating effective currents of water about a bather, comprising:

a. a compressed air distributor positioned near the bottom of the bathing facility and having oppositely positioned intakes;

b. a conduit to direct compressed air from outside the bathing facility into the compressed air distributor within the bathing facility; and

c. an air compressor unit to compress air and discharge it into the conduit.

5. Hydropneumatic massage equipment for use with a bathing facility to eject compressed air underwater creating effective currents of water about a bather, comprising:

a. a compressed air distributor positioned near the bottom of the bathing facility;

b. a conduit to direct compressed air from outside the bathing facility into the compressed air distributor within the bathing facility, said conduit having end connectors at each end and one connector having a group of orifices; and

c. an air compressor unit to compress air and discharge it into the conduit.

6. Hydropneumatic massage equipment, as claimed in claim **5**, wherein the air compressor has a group of orifices at its discharge which are aligned, partially misaligned, and completely misaligned with the group of orifices on the end connector to regulate the ejection of bypass compressed air, thereby controlling the flow of compressed air to the compressed air distributor positioned near the bottom of the bathing facility.

7. Hydropneumatic massage equipment for use with a bathing facility to eject compressed air underwater creating effective currents of water about a bather, comprising:

a. a compressed air distributor positioned near the bottom of the bathing facility;

b. a conduit to direct compressed air from outside the bathing facility into the compressed air distributor within the bathing facility; and

c. an air compressor unit to compress air and discharge it into the conduit, said air compressor unit having legs terminating in suction cups to position it above a supporting structure.

8. Hydropneumatic massage equipment, as claimed in claim 7, wherein the air compressor unit draws air in below at floor level and discharges it directly above into the conduit.

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