United States Patent

Dunoyer

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[54] **HYDROTHERAPEUTIC BREAST TREATING APPARATUS**

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[52] **U.S. Cl.**.....**128/66**

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

[58] **Field of Search**.....128/65, 66, 368

[56] **References Cited**

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[57] **ABSTRACT**

In an apparatus for the hydrotherapeutic treatment of breasts, the spray unit which rotates in the bottom of the conventional hollow bell-shaped body is made of two frustro-conical members, preferably of molded plastics, which are applied against each other, one at least of their facing sides being formed with grooves which realize in the assembly radial canals and tangential nozzles adapted to propel the unit by reaction effect, while the inner frustro-conical member has radial lines of perforations which communicate with these canals to produce the conventional inwardly directed treating jets. The central annular portions of the frustro-conical members are mounted on a common hub whereon they define an inner annular space which receives water under pressure from the fixed tubular shaft of the apparatus through radial perforations provided in same and through radial passages provided in the hub. The latter may be made of two sleeves the abutting ends of which are formed with indentations which protrude axially and radially.

3 Claims, 3 Drawing Figures

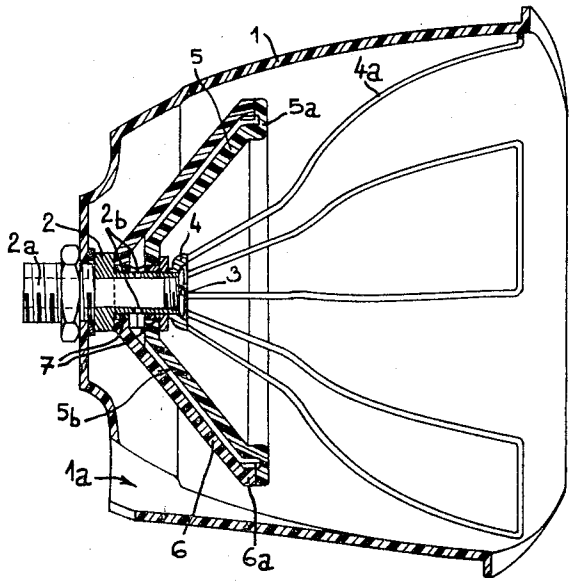
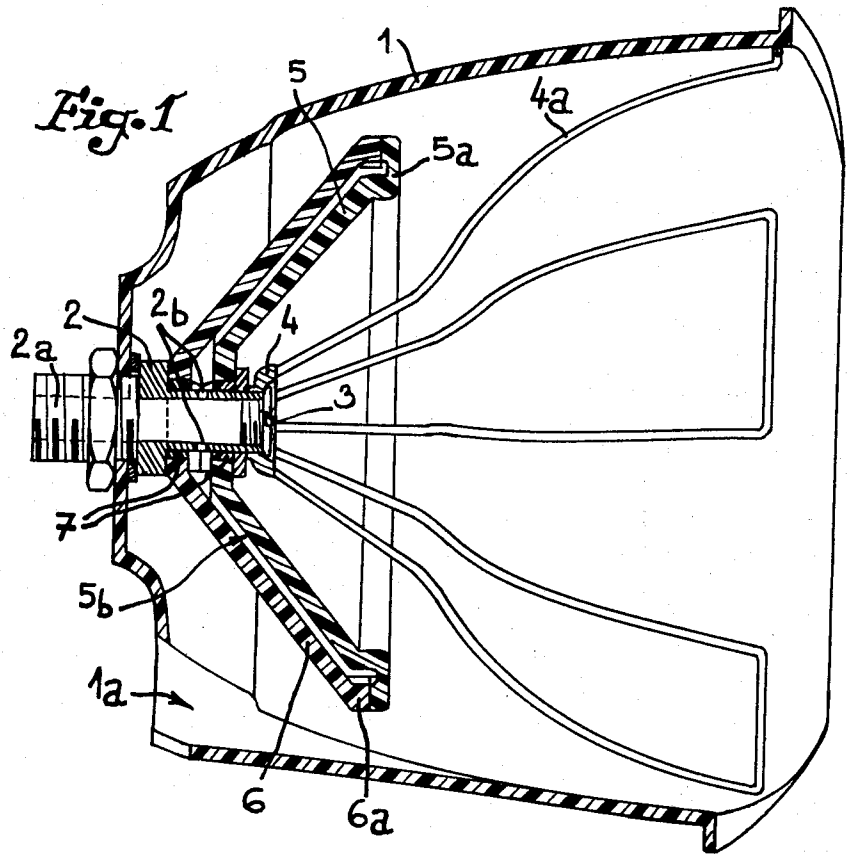


Fig. 1



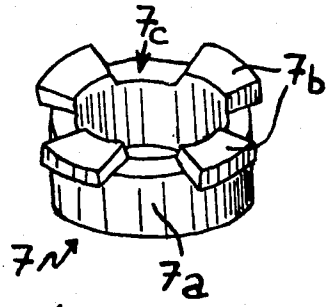


Fig. 3

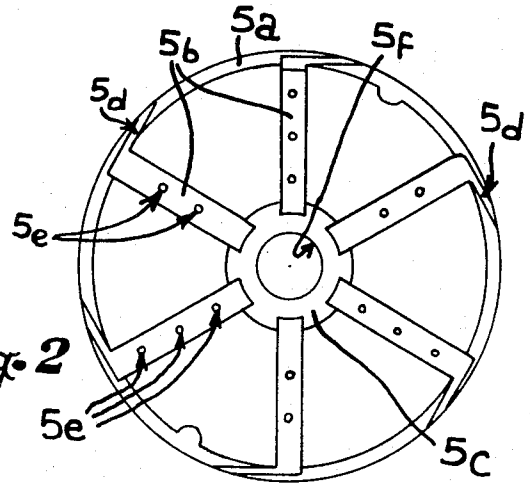


Fig. 2

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HYDROTHERAPEUTIC BREAST TREATING APPARATUS

DESCRIPTION

The present invention relates to apparatus used for the hydrotherapeutic treatment of breasts.

Under their conventional form these apparatus comprise a hollow bell-shaped body enclosing a rotating spray unit formed of a number of substantially radial tubular arms provided with perforations to produce treating water jets which strike the breast on which the hollow body is disposed. Water is supplied to the spray unit through the tubular shaft on which the said unit is rotatably mounted and rotation of the latter is obtained by providing in the tubular arms additional apertures or propelling nozzles opening substantially tangentially in such manner that the reaction of the water jets issuing from these nozzles may propel the arms.

The bell-shaped body is generally made of plastics by an appropriate molding process, or it is obtained from sheet metal by a suitable embossing method. In any case it is an inexpensive part. On the contrary the spray unit is formed of a number of separate parts (namely the tubular arms and their supporting hub) which have to be manually assembled, as for instance by soldering, and its manufacturing cost is much higher.

It is an object of the present invention to provide an apparatus of the kind above referred to wherein the rotating spray unit will be of quite simple and inexpensive construction, the manufacturing cost of the apparatus as a whole being thus considerably reduced with respect to the prior art.

Another object of this invention is a spray unit for an apparatus of the kind in question which is comprised of a turbine including two substantially frustro-conical cheeks applied against each other, one at least of these cheeks being formed on its side which engages the other one, with a number of substantially radial grooves adapted to form canals which communicate with radial water passages formed in a hub whereon the cheeks are mounted, and one of the cheeks having perforations or apertures through which water injected into the said canals may issue therefrom in the form of treating and of propelling jets.

Each canal preferably comprises at its outer end a tangential aperture or outlet, the jets which issue from these outlets imparting to the spray unit a reactional force or torque which insures its rotation.

IN THE ANNEXED DRAWINGS:

FIG. 1 is a general vertical section of an apparatus according to the invention.

FIG. 2 is a view in elevation illustrating the outer side of the inner frustro-conical cheek of the rotary spray unit.

FIG. 3 is a perspective view of one of the sleeves which form the hub of the rotary spray unit of the apparatus.

The apparatus generally illustrated in FIG. 1 comprises in the conventional manner a hollow bell-shaped body 1, made of a molded plastics having a lower opening 1*a* adapted to form a water outlet. The transverse end wall of body 1 has a circular axial bore adapted to receive a tubular non-rotatable shaft having a screw-threaded outer end 2*a* adapted to be connected with an appropriate flexible conduit or hose through which

water under pressure may be supplied to the apparatus. Shaft 2 is secured to body 1 by means of a nut 10 screwed on end 2*a* and which clamps the transverse wall of the said body against a shoulder 2*c* formed on shaft 2. The inner end of shaft 2 is internally screw-threaded to receive a screw 3 which clamps thereon an annular cup 4. Cup 4 carries a resilient frustro-conical protecting grid 4*a* made of an appropriately shaped wire and which prevents any contact between the breast being treated and the rotating spray unit mounted on shaft 2.

In accordance with the present invention this rotating spray unit comprises an inner and an outer frustro-conical cheeks, respectively 5 and 6, made of molded plastics which are applied against each other and are appropriately secured to each other, as for instance by means of a suitable adhesive. The inner cheek 5 has a radially flanged marginal edge 5*a* adapted to be assembled with a corresponding flanged edge 6*a* formed on the outer cheek 6. The side of the inner cheek 5 which is applied against the outer cheek 6 is formed with a series of equally spaced channels or grooves 5*b* which extend radially from the annular transverse central portion 5*c* of cheek 5 to a substantially tangential outlet groove 5*d* formed in the flanged edge 5*a*. It will be understood that when both cheeks are assembled against each other, grooves 5*b* form inner radial canals and grooves 5*d* tangential outlet nozzles. Cheek 5 is perforated as at 5*e* along the axis of each groove 5*b*. In the embodiment illustrated cheek 5 has six grooves 5*b* which are alternately formed with three and two perforations 5*e*.

The central hole 5*f* of the transverse wall 5*c* of cheek 5 receives a sleeve 7 made of a synthetic material having a low frictional coefficient and which is rotatably mounted on shaft 2. This sleeve 7 comprises a cylindrical portion 7*a* (FIG. 3) and flat indentations 7*b* which extend radially and longitudinally from one end thereof, thus leaving between them radial passages 7*c*. These extensions 7*b* are applied against the outer side of the transverse wall of cheek 5, i.e. the side which faces the outer cheek 6, and sleeve 7 is secured to the inner cheek 5 by means of an appropriate adhesive.

In the same manner the outer cheek 6 is formed with an annular transverse central wall which also receives a sleeve 7. But here the flat indentations 7*b* are applied against the inner side of this central wall. Cheeks 5 and 6 are so formed that when they are applied against each other, there remains between their transverse central walls a space just sufficient for the indentations 7*b* of both sleeves.

The two sleeves 7 with their indentations 7*b* in mutual contact are rotatably mounted on shaft 2 between the shoulder thereof 2*c* and the annular end cup 4 so as to form the hub of the rotary spray unit. Shaft 2 is provided with radial perforations 2*b* which are so disposed as to open substantially in the transverse plane of the contacting end faces of the indentations 7*b* of both sleeves 7.

In operation water under pressure from the inner bore of shaft 2 passes through perforations 2*a*, passages 7*c* and grooves or canals 5*b*, and it issues through perforations 5*e* and through grooves or nozzles 5*d*. The jets issuing from perforations 5*e* are directed inwardly towards the breast to be treated. As to the jets which

issue from the tangential nozzles 5*d*, they apply to the spray unit 5–6–7 a propelling reaction which insures the rotation thereof. In other words unit 5–6–7 operates as a reaction turbine.

It will be understood that cheeks 5,6 and sleeves 7 may be manufactured in an inexpensive manner by the conventional injection molding processes. The assembling operation is quite easy. The manufacturing cost of the whole apparatus is therefore reduced.

I claim:

1. An apparatus for the hydrotherapeutic treatment of breasts, comprising:

a hollow bell-shaped body adapted to be disposed on the breast to be treated so as to surround same, said body having a closed end and an open end;

a rotary spray unit disposed within said body adjacent the closed end thereof, substantially co-axially to said body, said unit including an inner and an outer frustro-conical cheeks applied against each other, said frustro-conical cheeks opening towards the open end of said body, with one at least of said cheeks having on its side which faces the other cheek a number of substantially radial channels forming radial canals when both cheeks are assembled, with the inner cheek having perforations which communicate with said channels to produce treating liquid jets, and with one of said cheeks having on its side which faces the other cheek substantially tangential grooves which, when both cheeks are assembled, form tangential outlet nozzles communicating with said canals to produce tangential liquid jets to propel said unit by reaction effect;

means carried by said body to rotatably support said rotary spray unit within same;

and means to supply said rotary spray unit with liquid under pressure.

2. In an apparatus as claimed in claim 1, said means to rotatably support said rotary spray unit and said means to supply same with liquid under pressure comprising:

a tubular shaft passing through the closed end of said body and secured thereto, said shaft having an open outer end to receive said liquid under pressure, and a closed inner end, and said shaft being formed with radial perforations in the portion thereof situated within said body;

a tubular hub rotatably mounted on said tubular shaft, said hub being formed with radial passages;

and means to axially retain said hub on said shaft at such a position that the radial perforations of said shaft communicate with the radial passages of said hub during rotation thereof;

said cheeks of said rotary spray unit each having an annular central portion secured onto said hub and said central portion being so formed that when said cheeks are applied against each other said central portions are spaced from each other to define an inner space which communicates with the perforations of said hub and with the canals formed between said cheeks.

3. In an apparatus as claimed in claim 2:

said hub being formed of a first and of a second sleeves each comprising a tubular cylindrical portion and substantially flat indentations protruding outwardly axially and radially therefrom, with said indentations being spaced from each other so as to define intermediate radial passages;

the central annular portion of said outer cheek being mounted on the cylindrical portion of said first sleeve with the side of the central portion of said outer cheek which faces the central portion of said inner cheek being applied against the indentations of said first sleeve;

the central portion of said inner cheek being mounted on the cylindrical portion of said second sleeve with the side of the central portion of said inner cheek which faces the central portion of said outer cheek being applied against the indentations of said second sleeve;

and the indentations of said first and second sleeves being in axial abutting relation within said inner space.

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