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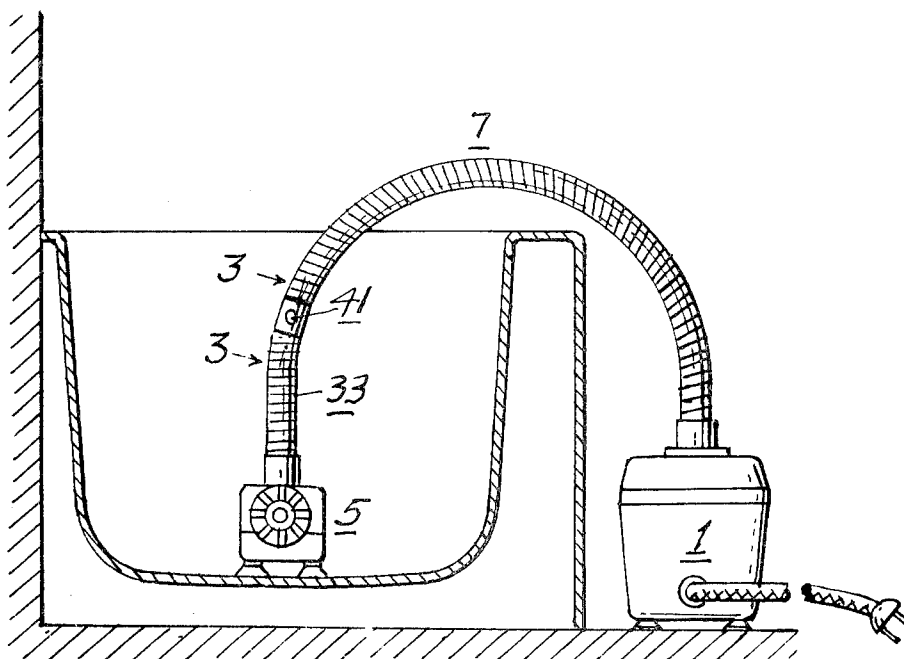
[56] **References Cited**
UNITED STATES PATENTS
2,730,095 1/1956 Scott 128/66
2,733,711 2/1956 Gibson 128/66UX
FOREIGN PATENTS
348,298 2/1922 Germany 128/66

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[54] **HYDROMASSAGE APPARATUS**
4 Claims, 4 Drawing Figs.

[52] U.S. Cl. 128/66
[51] Int. Cl. A61h 9/00
[50] Field of Search 128/66;
4/178, 180

ABSTRACT: In a hydromassage apparatus wherein the jet assembly pump is driven from an independent motor through a connecting flexible drive shaft, the air intake to the jet assembly is obtained through an adjustable opening in a flexible housing enclosing the flexible drive shaft.



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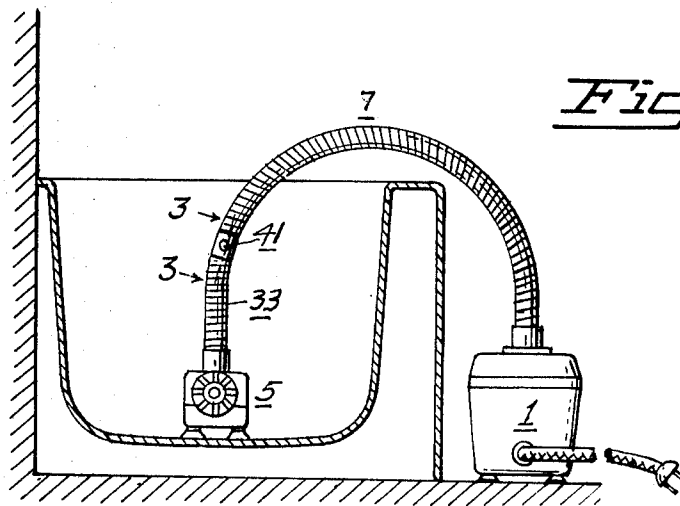


Fig. 2.

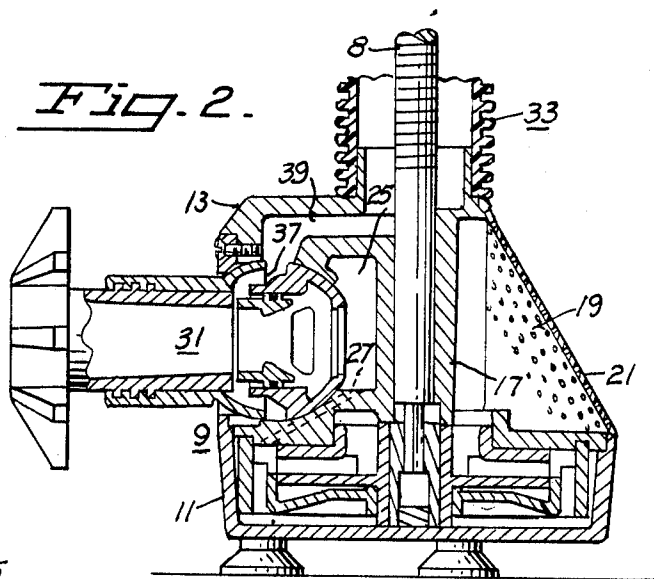


Fig. 3.

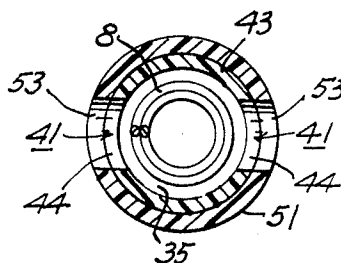
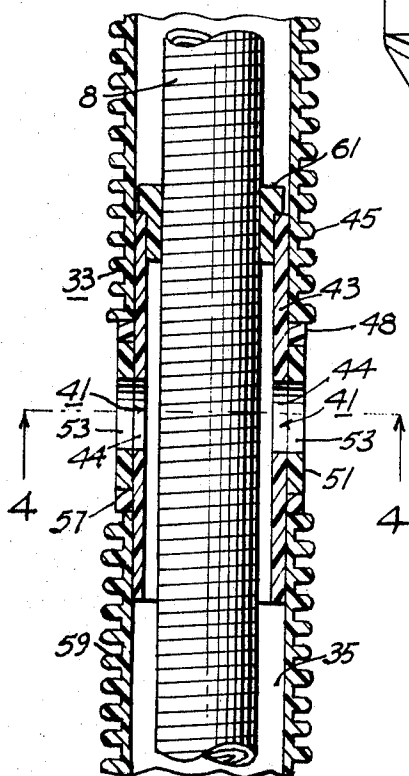


Fig. 4.

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HYDROMASSAGE APPARATUS

My invention relates to hydromassage apparatus, and more particularly to a hydromassage with improved air supply means to the jet assembly of such apparatus.

Among the objects of my invention are:

1. To provide a novel and improved hydromassage assembly;
2. To provide a novel and improved hydromassage assembly wherein the conventional snorkel tube for air intake is no longer required;
3. To provide a novel and improved hydromassage assembly wherein the air intake makes use of existing components of the hydromassage assembly; and
4. To provide a novel and improved hydromassage assembly wherein the jet nozzle assembly is driven through a flexible drive shaft, and a housing for said shaft is utilized for supplying air to the jet nozzle assembly.

Additional objects of my invention will be brought out in the following description of a preferred embodiment of the same, taken in conjunction with the accompanying drawings wherein:

FIG. 1 is a view depicting, in elevation, the hydromassage assembly of the present invention and its manner of use;

FIG. 2 is a view, in section, through the jet nozzle assembly and associated air intake means;

FIG. 3 is a view in section taken in the plane 3-3 of FIG. 1; and

FIG. 4 is a view in section taken in the plane 4-4 of FIG. 3.

Referring to the drawings for details of my invention in its preferred form, the hydromassage assembly, as illustrated therein, involves a power unit 1 for disposal beside a tub 3, a jet assembly 5 for disposition within the tub, and flexible drive shaft means 7 coupling the power unit to the jet assembly and including a flexible drive shaft 8.

Insofar as the present invention is concerned, the power unit may be of any suitable type such as an electric motor appropriately coupled to the drive end of the flexible drive shaft, such as disclosed in the application of Frank Jacuzzi et al. for Hydromassage Assembly, being filed concurrently herewith.

At the other end of the flexible drive shaft, is the jet assembly involving a two part housing 9, including a lower section 11 and an upper section 13. The lower section houses a horizontally disposed pump impeller connected through the suction end by the flexible drive shaft, the upper housing section enclosing the impeller while providing a bearing 17 for the drive shaft. In a wall of the upper section is an access opening 19 to the suction end of the impeller, the access opening being spanned by a screen 21, while at the opposite side of the upper section, there is formed a socket chamber 25 having a communication passageway 27 to the discharge side of the pump.

The socket chamber is adapted to receive the ball end of an adjustable jet nozzle assembly 31, the details of which are disclosed and described in an application of Floyd M. Nash for Discharge Fittings Assembly, Ser. No. 494,344, filed Oct. 11, 1965. Thus there is completed a flow path from the pump to the end of the nozzle. However, for hydromassage purposes, air must be supplied to the discharge of the pump in sufficient quantities to create air bubbles which, upon collapsing due to impact, will produce the desired massaging effect on the individual exposed thereto.

Toward this end, use is made of a flexible housing 33 for the flexible drive shaft, which is of sufficient diameter to create a chamber 35 about the drive shaft when installed. This chamber is brought into communication with the flow path of the pump discharge, and more particularly at the air intake point 37 of the conventional jet nozzle assembly, by a passageway 39 in the upper section of the jet assembly housing.

Communication with the atmosphere is provided for, through an opening 41 formed in the drive shaft housing, at a distance from the pump, exceeding the maximum anticipated submergence depth of the pump when in use.

In providing for such air intake opening, a cylinder 43 having diametrical intake openings 44 in the wall thereof, is inserted into an end of a section 45 of said shaft housing to a point determined by a stop collar 48, and may be bonded to said housing if desired. A valve sleeve 51 having similar diametrical openings 53 is slipped over the cylinder 43 and retained therein by a collar 57 which acts as a stop for the remaining section 59 of the flexible housing 33. Rotation of the valve sleeve 51 will enable adjustability of the air intake.

By thus providing for adjustable intake of air to the jet nozzle assembly, I have made use of existing components of the hydromassage assembly utilizing a flexible drive shaft, and thereby, have eliminated the requirement for the snorkel tube type intake, conventionally employed in hydromassage equipment.

As a protection against any escape of water from the tub to the motor by way of the flexible housing, a flanged plug 61, about the shaft and closing the space between the shaft and the housing at the upper end of the air intake cylinder, will permit rotation of the flexible shaft, while blocking such possible escape route.

From the foregoing description of my invention in its preferred form, it will be apparent that the same fulfills all the objects of my invention, and that the structure illustrated and described is subject to alteration and modification without departing from the underlying principles involved. I accordingly do not desire to be limited in my protection to the specific details illustrated and described, except as may be necessitated by the appended claims.

I claim:

1. Hydromassage apparatus comprising:

- a jet assembly including a pump, a jet nozzle assembly, and means flow connecting the discharge of said pump to said jet nozzle assembly to complete a flow path from said pump to the discharge end of said nozzle assembly;
- pump drive means including a power unit and a flexible drive shaft in drive connection from said power unit to said pump;
- a flexible housing enclosing said flexible drive shaft in spaced relationship thereto to create a chamber about said shaft, said flexible housing including two sections;
- a passageway connecting said chamber to said flow path;
- air intake means in said flexible housing at a location from said pump, exceeding the maximum anticipated submergence depth of said pump when in use; and
- said air intake means including a cylinder insert snugly fitting in said flexible housing and spanning the proximate ends of said sections, said cylinder insert having an air intake opening intermediate the proximate ends of said housing sections, and a valve sleeve rotatably fitting about said cylinder between the said ends of said housing sections, said valve sleeve having an opening adapted to align with said cylinder insert opening.

2. Hydromassage apparatus in accordance with claim 1 characterized by a stop collar on said cylinder insert to one side of said cylinder insert air intake opening and constituting an abutment for the proximate end of one of said two flexible housing sections, a second stop collar on said cylinder insert to the other side of said cylinder insert air intake opening and constituting an abutment for the other of said two flexible housing sections, and said valve sleeve being located between said stop collars.

3. Hydromassage apparatus comprising:

- a jet assembly including a pump, a jet nozzle assembly, and means flow connecting the discharge of said pump to said jet nozzle assembly to complete a flow path from said pump to the discharge end of said nozzle assembly;
- pump drive means including a power unit and a flexible drive shaft in drive connection from said power unit to said pump;
- a flexible housing enclosing said flexible drive shaft in spaced relationship thereto to create a chamber about said shaft;
- a passageway connecting said chamber to said flow path;

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air intake means in said flexible housing at a location from said pump, exceeding the maximum anticipated submergence depth of said pump when in use; and means blocking said chamber at a point above said air intake means.

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4. Hydromassage apparatus in accordance with claim 3 characterized by said air intake means including a cylinder insert in said flexible housing and having an opening therein to said flexible housing chamber.

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