May 13, 1969 C. R. MUNROE ET AL 3,443,560

HYDRO-MASSAGE APPLIANCE

Filed Jan. 20, 1967 Sheet 1 of 2

FIG. 1.

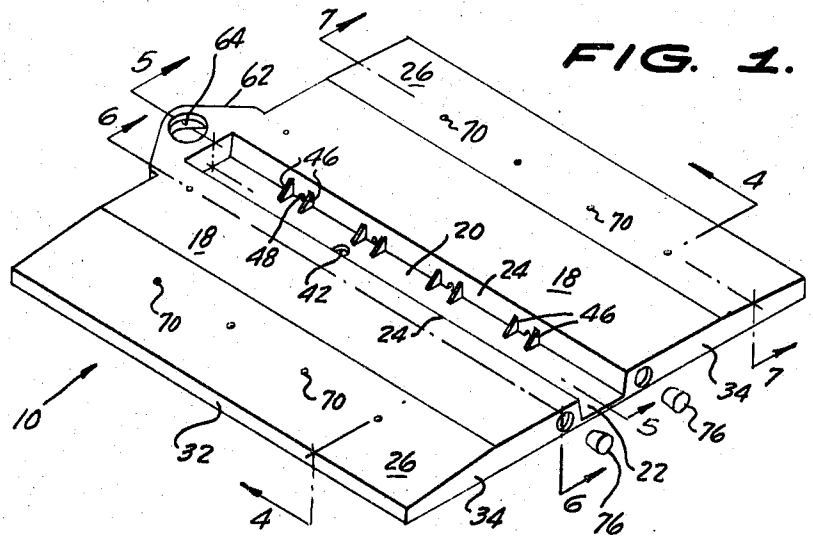


FIG. 2.

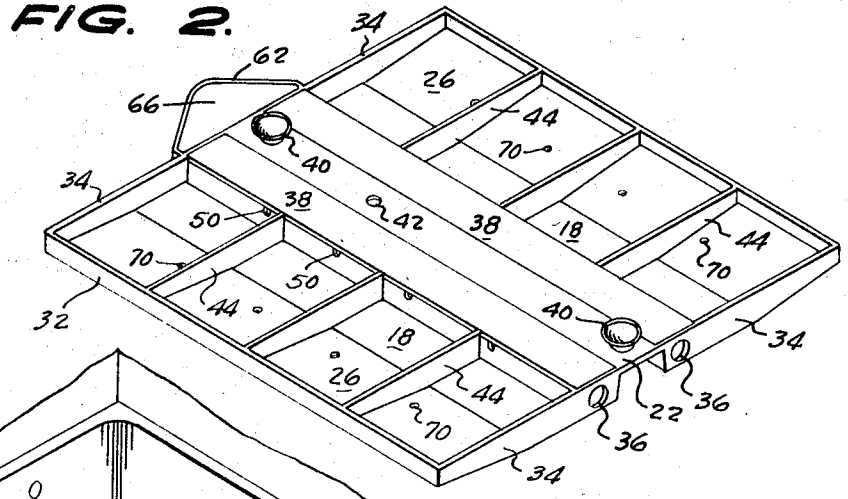
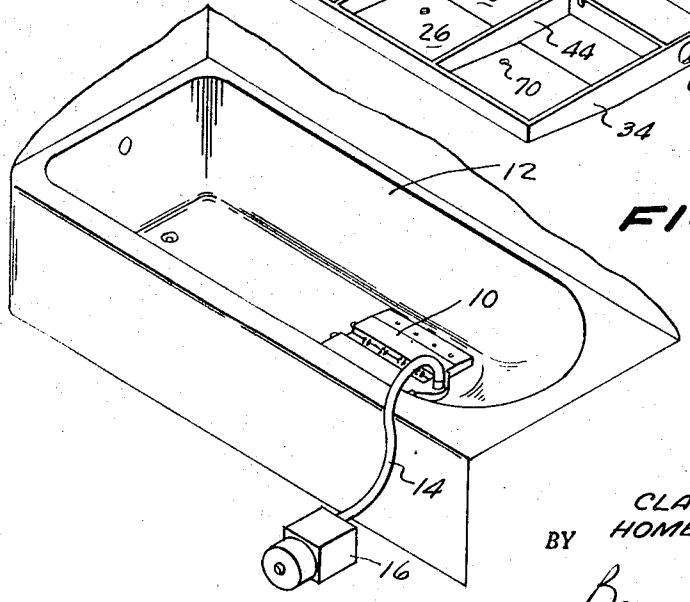


FIG. 3.



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Filed Jan. 20, 1967 Sheet 2 of 2

FIG. 4.

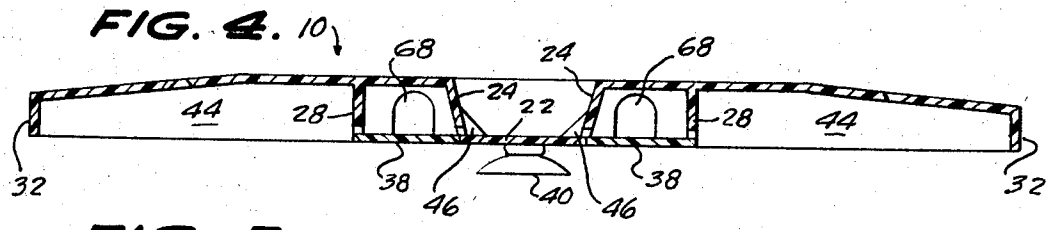


FIG. 5.

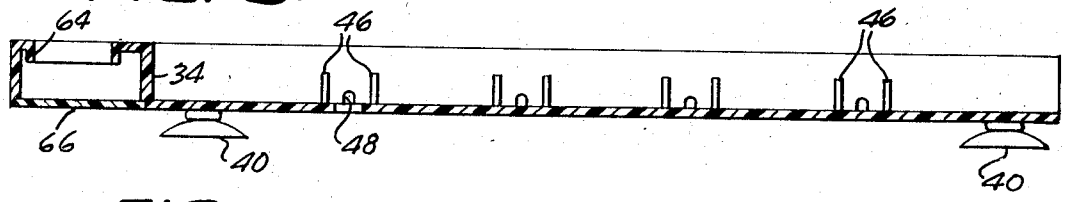


FIG. 6.

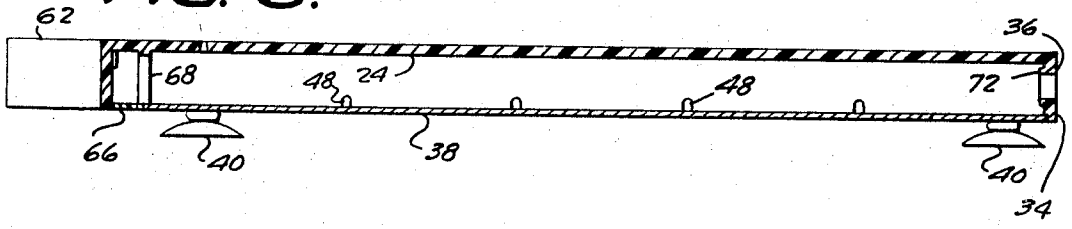
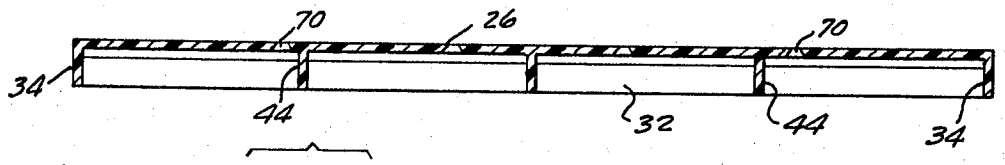


FIG. 7.



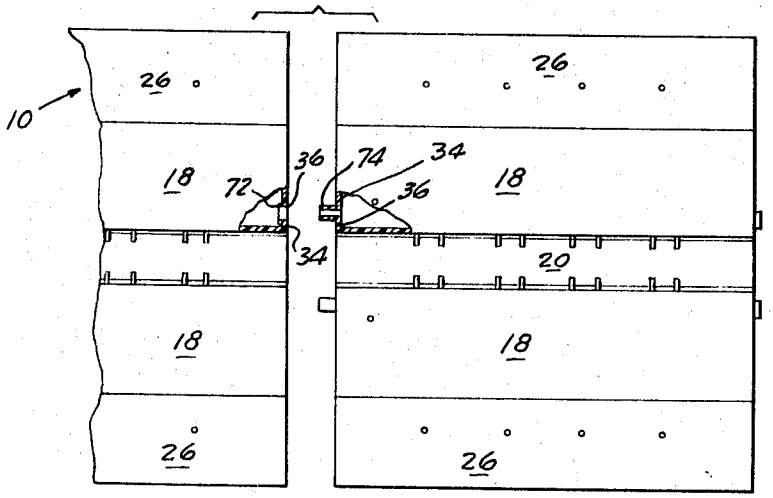


FIG. 8.

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3,443,560

HYDRO-MASSAGE APPLIANCE

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Int. Cl. A61h 9/00, 33/02; A47k 3/00
U.S. Cl. 128—66 6 Claims

ABSTRACT OF THE DISCLOSURE

A hydro-massage device for submergence in a conventional bathtub, said device comprising a bather's supporting member having a central, spine clearing channel in its upper surface, closed passages on its underside adjacent said channel, open bottom passages on each side of said closed passages, and perforations providing communication between said closed passages, said channel and said open bottom passages.

This invention relates to a hydro-massage home appliance for use in bathtubs and the like and adapted to be supplied with air under pressure. It is an improvement of the disclosure of Patent 2,921,579, dated Jan. 19, 1960.

It is an object of this invention to provide a device as aforesaid made up of separable sections, with the sections so nearly mutually identical that a single mold with a minimum of inserts may be used to produce all of the sections.

It is a further object of this invention to provide sections as aforesaid so designed as to have a substantially closed upper surface and a substantially open lower surface whereby to minimize the weight and material content of each section.

It is a further object of this invention to provide sections as aforesaid designed to permit the utmost ease of cleaning.

The above and other objects will be made clear from the following detailed description taken in connection with the annexed drawings, in which:

FIGURE 1 is a perspective top plan view of one of the sections in this case designed to be the leading or air inlet section and adapted for either operation by itself or for connection to subsequent similar sections;

FIGURE 2 is a view similar to FIGURE 1, showing the underside of that structure;

FIGURE 3 is a perspective view of a bathtub showing the section of FIGURE 1 in operative position;

FIGURE 4 is a section of the line 4—4 of FIGURE 1;

FIGURE 5 is a section on the line 5—5 of FIGURE 1;

FIGURE 6 is a section underlying line 6—6 of FIGURE 1;

FIGURE 7 is a section on the line 7—7 of FIGURE 1; and

FIGURE 8 is a plan view partly broken away, showing how one section is joined to another.

Before discussing the structural details as depicted in the drawings, it is necessary to understand certain collateral objectives achieved by this design. Theoretically, of course, an indefinite number of sections could be joined. In practice, three will usually suffice and in many cases only one section will be used. It has been found that injection molding of a thermosetting resin produces extremely satisfactory results in this product. Thermosetting resin formulations are so well known and so numerous as not to require specification here. The fact that injection molding is the preferred process, however, introduces some special considerations. For one thing, operating pressures in injecting molding are higher than in other forms of molding which means that the die or

mold must be extremely rugged. Secondly, whether injection or compression molding be used thermosetting compounds have a definite shrinkage depending, of course, on the formulation, and the mold, therefore, must be designed to compensate for this shrinkage. As a result, mold design is almost as much an art as a science and injection molding dies are extremely expensive articles. One of the objectives sought in the present design is a product which may be produced, in certain variational forms, by the use of a single die modified by the addition or removal of inserts such as to provide structural differences between one section and the next, but at a minimum die cost overall.

Although this application is concerned primarily with an article of manufacture, it is considered that such design feature of the article as contribute to ease of manufacture and reduction of cost of the article are equally as much patentable advantages of the article as its more functional aspects.

In FIGURES 1, 2 and 3, the basic section is designated generally by the numeral **10** and in FIGURE 3 is shown in location on the bottom of a bathub 12 and is connected by a hose **14** to a source of air pressure **16**. As shown in FIGURE 1, the upper surface **18** of the section **10** has a central longitudinal channel **20** having a flat bottom **22** and side walls **24** inclined slightly to the vertical, as shown in FIGURE 4. The top surfaces **18** are horizontal and mutually coplanar and are bordered by integral sloping planar surfaces **26**. Spaced from the walls **24** of the channel **20** and integral with and normal to the top walls **18** are molded ribs **28** (FIGURE 4) so that the panels **18**, the walls **24**, and the ribs **28** define three sides of passageways **30** on each side of and adjacent to the channel **20**.

Vertical side walls **32** are formed on each of the margins of the panels **26**. Integrally molded at the free ends of each set of panels **18–26** are end walls **34**. In the particular section shown in FIGURES 1 and 2, the end walls **34** are imperforate at one end and at the other end have circular openings **36** communicating with the passageway defined by panels **18** and walls **24** and **28**.

As best seen in FIGURES 2 and 4, each of the passages defined by panel **18** and walls **24** and **28** is closed after the molding operation by simple rectangular panels **38** which are cut out of sheets of the same material and secured in place by adhesive, heat healing or other suitable means. Thus, there are formed on the underside of the member **10** and on each side of the channel **20** closed passages defined by panels **18**, walls **24** and **28** and independent closure panels **38**, while beside the closed passages are open bottomed passages defined in part by horizontal panels **28**, sloping continuations **26**, side walls **32** and end walls **34**.

Conventional suction cups **40** are secured by any suitable means to the underside of the bottom portion **22** of the channel **20**. Incidentally, except for the subsequently applied panels **38**, the entire section is molded at one injection stroke through a single gateway indicated at **42** in FIGURES 1 and 2. Strengthening ribs **44** form transverse and spaced strengthening and compartmentalizing means throughout the length of the open bottom passages. Within the channel **20** there are integrally molded strengthening ribs **46** connecting the side walls **44** with the bottom **22**, as best shown in FIGURES 1, 4 and 5, and between each pair of ribs is formed an aperture **48**, giving access from the closed passages to the central channel **20**. Similarly, vertical ribs **28** are formed with a series of apertures **50**, giving access from the closed passage to the open bottom passages on each side of the central channel. As is best shown in FIGURE 2, each of the apertures **50** gives access from the closed passage to a compartment having its top formed by the

panels **18** and **26**, its side by the side wall **32** and its ends either by end walls **34** or partitions **44**.

To the fundamental structure thus far described, there may be added, by an insert in the mold, an entry portion of triangular shape integral with the rest of the structure and having an air inlet **64** which receives a suitable connection from the hose **14**. A plate **66**, best shown in FIGURE 5, is used to close the underside of the member **62** in the manner of the plates **38**, while passages **68**, best shown in FIGURES 4 and 6, bring the entry piece **62** into communication with the closed passageways of each side of the channel **20**. Air, entering the device through the entrance **64**, divides between the gateways **68** into the closed passages on each side of the channel **20**. From these closed passages, it is delivered through the apertures **48** into the channel **20**, while another portion of the air goes through the apertures **50** into the compartments alongside the closed passages. From these compartments air emerges through a series of apertures **70** formed in the surfaces **26**.

Referring now to FIGURES 6 and 8, it will be noted that the openings **36** in one of the end walls may, at their inner peripheries, be surrounded by either a molded or attached ring or flange **72** for mating with a protuberant male portion **74** either integrally molded with or secured in an aperture **36** of an adjacent member **10**, permitting easy joinder of adjacent members **10** with continued air passage from the closed channels of one to the closed channels of the other. The joint need not be hermetic since the air pressure involved are low and leakage merely contributes to the general bubbling effect. Again, in FIGURE 1, there are indicated plugs **76** which may be inserted in the orifices or apertures **36** when it is desired to use, for example, a single section **10** in the form shown in FIGURE 1, including the entry piece **62**.

While certain specific details have been illustrated in the drawings and described in the specification, modifications of these details no doubt will occur to anyone skilled in the art. It is not the intention, therefore, that this invention be limited to the details thus disclosed but only as set forth in the subjoined claims.

What is claimed is:

1. A hydro-massage device for use in a conventional bathtub, said device comprising: a unitary section having a central channel in its upper surface, said channel being bounded by closed passages formed in the undersurface of said section, said passages having access to said channel by perforationus formed in the side walls of said channel; an open bottom passage formed beside each of said closed passages, said closed passages having access to said open bottom passages by perforations formed in the side walls of said closed passages, and the upper sides of said open bottom passages being perforated.

2. A device as set forth in claim **1**, in which said open bottom passages are compartmentalized by transverse ribs.

3. A device as set forth in claim **1**, including means at one end of said section for joining said section to an adjacent similar section.

4. A device as set forth in claim **1**, including an integral entry portion having an inlet opening, a closed bottom, and exit openings into each of said closed passages.

5. A device as set forth in claim **4**, in which said open bottom passages are compartmentalized by transverse ribs.

6. A device as set forth in claim **4**, including means at one end of said section for joining said section to an adjacent, similar section.

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LAWRENCE W. TRAPP, *Primary Examiner.*

U.S. Cl. X.R.

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