

United States Patent

Krohn

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[45] June 27, 1972

[54] WHIRLPOOL BATH ATTACHMENT

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

[58] Field of Search 128/66, 369; 4/178, 180, 182

[56] References Cited

UNITED STATES PATENTS
3,571,818 3/1971 Jacuzzi4/180

3,530,852 9/1970 Fattor128/66
2,799,866 7/1957 Jawett4/180

Primary Examiner—L. W. Trapp

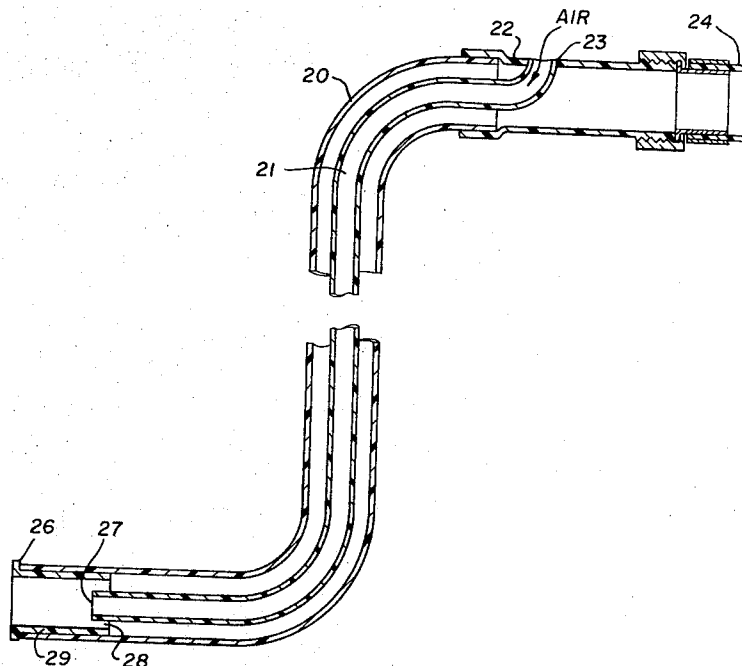
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[57]

ABSTRACT

Substantially coaxial conduits provide a jet of water from the outer conduit along with relatively large bubbles from the inner conduit. The emission end of the inner conduit terminates upstream the emission end of the outer conduit, and there is a restriction in the outer conduit upstream the end of the emission inner conduit.

6 Claims, 2 Drawing Figures



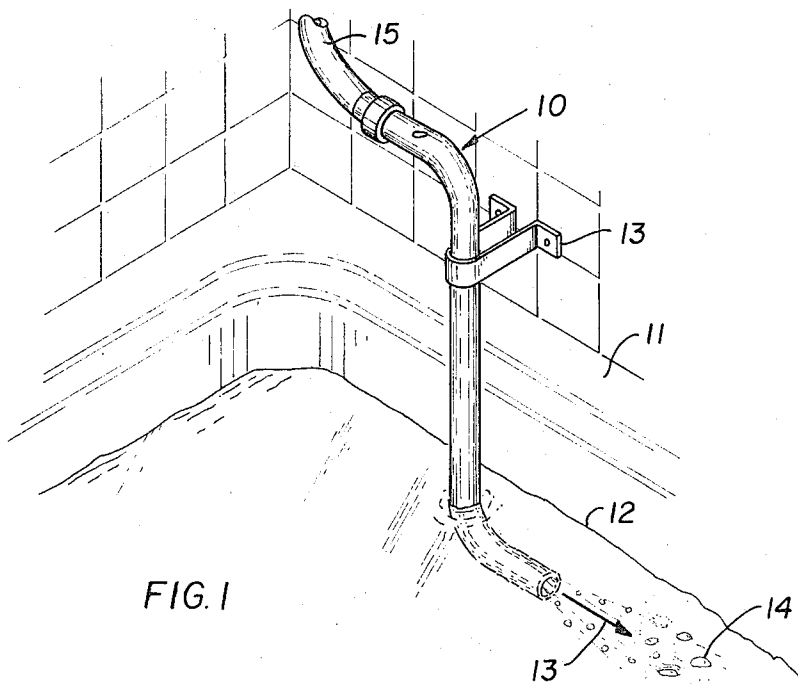


FIG. 1

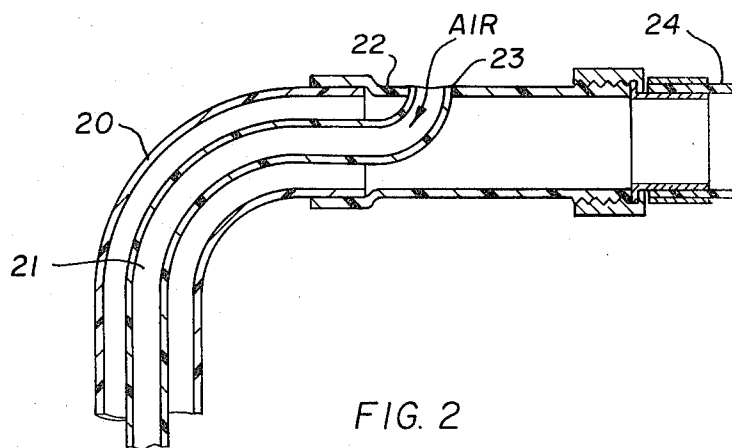
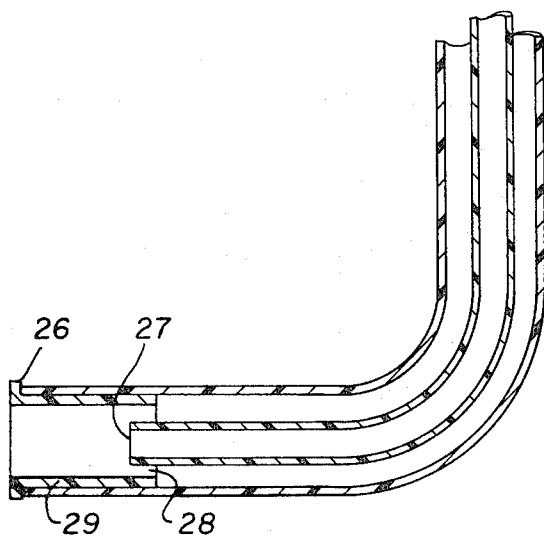


FIG. 2



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WHIRLPOOL BATH ATTACHMENT

FIELD OF THE INVENTION

This invention relates to whirlpool baths; and more particularly to portable attachments suitable for imparting whirlpool action to conventional still water plumbing facilities.

DESCRIPTION OF THE PRIOR ART

It has long been recognized that whirlpool baths are of value in the treatment of such conditions as arthritis, neuritis, rheumatic disorders, traumatic injuries, stiff joints, etc. Hydrotherapy apparatus has been provided for the conversion of existing bathtubs and similar units in order to make available such treatment in the home. However, there has been a general problem in that such equipment generally employs electrical pumping apparatus or does not establish the desired degree of whirlpool action.

Portable apparatus has been available wherein air and water under pressure are mixed and applied to a pool of water within a tub. This apparatus utilizes the normal water pressure available in private dwellings and has been of considerable value in many instances. Improvements are still required, however, in maximizing the whirlpool action for any given water pressure and in the simplification of the apparatus utilized.

SUMMARY OF THE INVENTION

The present invention provides relatively simple apparatus for attachment to the existing plumbing in most residential dwellings. This apparatus is operative to provide a combined output of air and water in a form arranged to yield maximum water turbulence and current for the pressure of the water applied.

In contrast with prior attempts to provide a combined air and water mixture for hydrotherapeutic applications, the present invention administers a combination of air and water wherein the air remains substantially independent of the water. In other words, whereas prior apparatus has been designed to provide for the entrapment of minute air particles within the water stream (what may be referred to as aerated water), the present invention relates to apparatus which yields relatively large bubbles of air in combination with a strong jet stream of water.

It is an object of the present invention to provide an improved whirlpool bath attachment.

It is another object of the invention to provide an improved whirlpool bath attachment which utilizes no electrical components.

Another object of the invention is to provide an improved whirlpool bath attachment suitable for connection to conventional plumbing facilities.

Another object of the present invention is to provide an improved whirlpool bath attachment providing for maximized current and water flow within an enclosed container in response to existing water pressure.

Another object of the present invention is to provide an improved whirlpool bath attachment which delivers air which is substantially independent of the water stream.

In accordance with a particular embodiment of the invention there is provided a whirlpool bath attachment comprising a pair of coaxial conduits adapted to be mounted on a bathtub with the upper end above the water level. The upper end of the inner conduit is open to the surrounding atmosphere and the lower end of the inner conduit terminates a predetermined distance within the corresponding end of the outer conduit. By connecting the outer conduit to a source of water, this whirlpool attachment is enabled to induce the desired action within the tub enclosure.

The various objects and features of the invention will be more clearly understood and appreciated from the following detailed description of a typical embodiment which is illustrated in the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a pictorial illustration of a whirlpool bath attachment embodying the features of the invention and mounted in a typical bathtub; and

FIG. 2 is a longitudinal sectional view taken through a whirlpool bath attachment embodying the features of the invention and illustrating the upper and lower ends thereof.

DESCRIPTION OF THE PREFERRED EMBODIMENT

The attachment 10, shown in FIG. 1, may be mounted to the wall by means of a bracket 13, or the like. It will be noted that this attachment has offset ends in order to conveniently permit attachment to a water supply at the top and provide the desired direction of water and air stream at the bottom. Bracket 13 permits rotation of the attachment to direct the water flow as desired. In the illustration, there is shown a portion of a bathtub 11 containing water reaching to a level 12. The lower end of the attachment projects beneath the water level and ejects a jet stream of water and air as shown by arrow 13 and bubbles 14. The upper portion of attachment 10 is connected via a flexible hose means 15 to the shower head or any other convenient valved water outlet.

It is particularly convenient to use the shower head for the water supply since independent valves are generally available for controlling the water through this head. A gate valve may be installed on the shower head so that one may alternatively utilize either the shower or the whirlpool bath attachment. The specific connection to existing plumbing is not germane to the invention. Any of the many means familiar to those in the art may be selected for the most serviceable interconnection.

The details of the invention may be more clearly viewed in the longitudinal cross-section of FIG. 2. As shown therein, there is an outer conduit 20 having substantially right angle bends at upper and lower ends. Within outer conduit 20 there is disposed an inner conduit 21. The upper end of conduit 20 is inserted in a water-tight fashion into a sleeve 22 which in turn is connected to a flexible conduit 24 adapted for coupling to the existing plumbing system. A standard hose connection is an advantageous coupling between sleeve 22 and conduit 29. The function of inner conduit 21 is to conduct air and therefore an aperture 23 is provided in sleeve 22 within which conduit 21 terminates. The aperture 23 is provided with suitable sealing means to prevent the escape of water at this point. It has been found preferable to utilize a flexible tubing for inner conduit 21; and a rigid tubing for outer conduit 20; however, in certain applications it may be found to be advantageous to utilize either rigid members or flexible members throughout.

The lower end 27 of inner conduit 21 terminates a predetermined distance within, or short of, the end 26 of outer conduit 20. This is an important feature of the invention. It is also important that the inner conduit be the air conductor whereas the outer conduit is the water conductor. A bushing, or sleeve 29, may also be provided on the end of outer conduit 20. This bushing projects inwardly to a position upstream of end 27 and develops a restricted cylindrical aperture 28 with the outer surface of conduit 21.

In a particular embodiment of the invention, outer tubing 20 had an inner diameter of 7/16 of an inch, and inner tubing 21 was a flexible tubing having an outer diameter of 1/4 of an inch. Bushing 29 was securely fitted into end 26 and had an inner diameter of approximately 5/16 of an inch at its upstream end and approximately 3/8 of an inch at the ejection end.

In operation, water under pressure is applied via input hose 24 and flows around the inner conduit 21 and out at the end of outer conduit 20. As a result of the restricted cylindrical aperture 28, the rate of water flow from the end of the apparatus is quite rapid and water is ejected as a jet stream. Air is drawn in at the upper end of conduit 21 and taken up and carried along

in large bubbles with the water jet. Thus, at the exit of the attachment, there is a jet stream of water accompanied by air.

Although not yet fully established, it is believed that the advantages of the invention directly accrue from the use of relatively large air bubbles. It appears desirable to initially form the air into relatively large bubbles and to retain this condition as long as possible. This condition is effected by delivering the air at end 27 of the inner conduit in what may be conceived as a "rod-like" form. The length of such a "rod" of air, before it breaks into a bubble, is determined by the dimensions and materials of the conduits, the size of aperture 28, and the water pressure. These relatively large bubbles in turn are acted upon and co-act with, the jet stream of water to perform the function of pushing the existing water in the bath. In effect, one may consider the large bubbles of air as acting somewhat like sails pushed by the jet stream and acting upon the impeding still water of the bath. The co-action of the air and water jet stream is effective in beginning and maintaining a whirlpool action in the bath.

A particular embodiment of the invention has been described. Those skilled in the art will immediately recognize modifications that may be made. All such modifications which come within the spirit and teaching of the invention are intended to be covered by the attached claims.

What is claimed is:

1. A whirlpool bath attachment comprising a pair of substantially coaxial conduits adapted to be mounted on a bath tub with the upper end above water level and means for con-

necting the outer conduit to a source of water, the upper end of the inner conduit being open to the surrounding atmosphere and the lower end of said inner conduit terminating a predetermined distance within the corresponding end of the outer conduit, the cross-sectional area of the water passage at its narrowest point is less than the cross-sectional area of the inner conduit.

2. A whirlpool bath attachment as defined in claim 1, wherein said inner conduit is flexible.

3. A whirlpool bath attachment as defined in claim 1, including a sleeve forming a fluid-tight connection with the upper end of said outer conduit, said sleeve having an aperture therein, and the upper end of said inner conduit forming a fluid-tight connection with the perimeter of said aperture.

4. A whirlpool bath attachment as defined in claim 1, wherein there is a restriction in the cross-sectional area of the outer conduit at a position upstream the end of said inner conduit.

5. A whirlpool bath attachment as defined in claim 4, wherein said restriction is created by an internal sleeve member projecting from a position within said outer conduit and downstream to a position upstream the end of said inner conduit.

6. A whirlpool bath attachment as defined in claim 5, wherein the aperture created by said sleeve member and the outer surface of said inner conduit has a cross-sectional area of approximately one-half that of said inner conduit.

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,672,359 Dated June 27, 1972

Inventor(s) Charles Krohn

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

In the Abstract

Line 5, before "end" insert --emission--;

Line 6, delete "emission".

Signed and sealed this 17th day of October 1972.

(SEAL)
Attest:

EDWARD M. FLETCHER, JR.
Attesting Officer

ROBERT GOTTSCHALK
Commissioner of Patents