

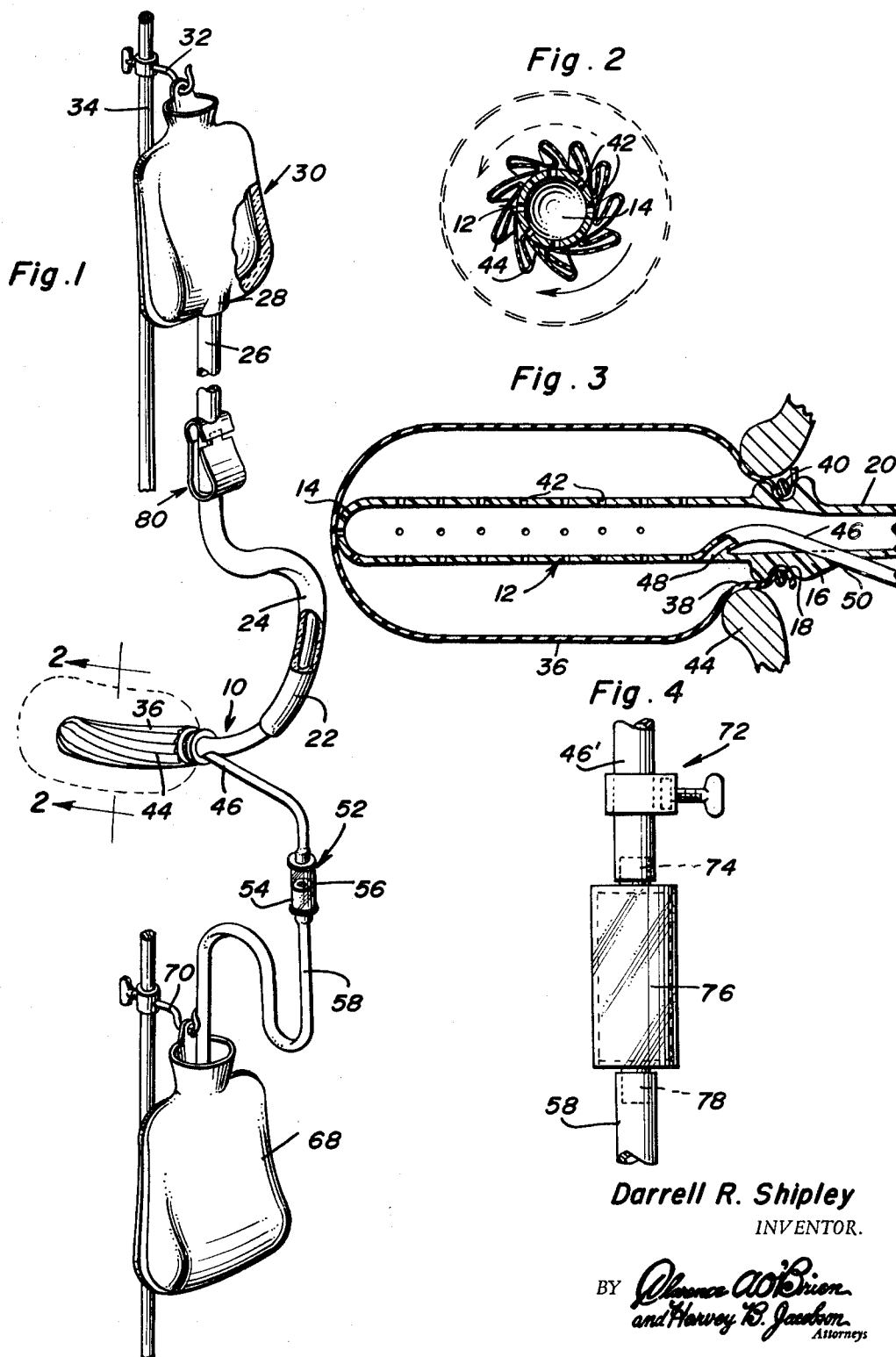
Feb. 24, 1970

D. R. SHIPLEY

3,496,942

HEATER FOR INTERNAL USE

Filed March 1, 1968



1

3,496,942

HEATER FOR INTERNAL USE

Darrell R. Shipley, Box 2037, Clarksville, Tenn. 37040

Filed Mar. 1, 1968, Ser. No. 709,679

Int. Cl. A61f 7/12; F28f 7/00

U.S. Cl. 128—401

6 Claims

ABSTRACT OF THE DISCLOSURE

A syringe-type nozzle adapted to be inserted into a body cavity and including an inlet end for connection with a suitable supply of heated liquid under slight pressure such as an elevated hot water bottle or the like and an outlet end including at least one outlet opening and having an expandable bladder disposed thereabout which may be expanded by fluid pressure within the bladder after the inlet end of the nozzle has been inserted in the associated body cavity. The nozzle is provided with liquid outlet means opening into the interior of the bladder exteriorly of the outlet end of the nozzle and which opens at its outlet end through the inlet end of the nozzle.

The heater of the instant invention has been designed to provide a simple but effective heater for internal use that may be used by an unskilled individual at home or by a more skilled person in a hospital for various forms of treatment.

The heater includes an elongated nozzle including an inlet end and an outlet end adapted to be inserted within a body cavity. The outlet end of the nozzle is provided with a plurality of outlet openings and enclosed within a fluid impervious bladder. The heater includes outlet passage means opening outwardly through the inlet end of the nozzle and which is operative to drain fluids from within the bladder disposed outwardly of the outlet end of the nozzle. By this construction, any suitable fluid such as heated water may be caused to flow through the nozzle, outwardly of the outlet openings therein and into the expandable bladder disposed about the outlet end of the nozzle before passing through the drain conduit means for discharging adjacent the inlet end of the nozzle. The inlet end of the nozzle may be supplied with water which has been heated to the desired temperature from an elevated water bottle or the like and if proper water temperature and pressure regulating means is present the inlet end of the nozzle may be connected to any suitable domestic water supply system in order to be provided with a constant supply of water at the correct temperature and pressure. On the other hand, other suitable means may be utilized for supplying the heater with a suitable source of liquid heated to the proper temperature.

In addition to the heater being designed primarily for internal use, it is to be noted that it could be used for applying heat or cold to external body areas. If the heater is to be used for external body areas, the elongated nozzle and inflatable bladder portion thereof may be constructed so as to be more in the shape of a pad which may readily perform to the shape of external body areas to be heated or cooled.

The main object of this invention is to provide a heater for applying heat to localized body areas.

Another object of this invention, in accordance with the immediately preceding object is to provide an apparatus which may also be utilized for cooling localized body areas.

Still another object of this invention is to provide a heater for internal use and constructed in a manner whereby it may be readily used by unskilled persons at home as well as by skilled persons in hospitals.

A further object of this invention is to provide a heater

2

in accordance with the preceding objects and whose external inflatable bladder portion may be readily removed and cleaned or replaced, as desired.

A final object of this invention to be specifically enumerated herein is to provide a heater in accordance with the preceding objects which will conform to conventional forms of manufacture, be of simple construction and easy to use so as to provide a device that will be economically feasible, long lasting and relatively troublefree in operation.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

FIGURE 1 is a perspective view of the heater of the instant invention with various parts thereof being broken away and illustrated in vertical section;

FIGURE 2 is an enlarged transverse sectional view taken substantially upon the plane indicated by the section line 2—2 of FIGURE 1;

FIGURE 3 is an enlarged fragmentary vertical sectional view taken substantially upon a plane passing longitudinally through the center of the nozzle and expandable bladder portions of the heater; and

FIGURE 4 is a fragmentary enlarged elevational view of a modified form of flow control for the heater.

Referring now more specifically to the drawings the heater is generally referred to by the reference numeral 10 and includes an elongated nozzle referred to in general by the reference numeral 12. The nozzle 12 is generally cylindrical in configuration and is closed at one end by an end wall 14. The end of the nozzle remote from the end wall 14 includes a diametrically enlarged portion 16 having an outwardly opening circumferentially extending groove 18 formed therein. The diametrically enlarged portion 16 terminates in an inlet neck portion 20 over whose free end the outlet end 22 of an insulative elongated flexible supply conduit 24 is telescoped. The inlet end of the supply conduit 24 is referred to by the reference numeral 26 and extends from and is communicated with the lower outlet neck 28 of an insulative flexible bag-type reservoir generally referred to by the reference numeral 30 which may be removably supported in any suitable elevated position from a hook 32 adjustable vertically along an upright standard 34 of any suitable type.

A balloon-type expandable bladder 36 including a reduced diameter neck portion 38 is provided and has its neck portion 38 removably seatingly secured in the groove 18 by means of an elastic ring 40. The bladder 36 fully encloses the outlet end of the nozzle 12 on the side of the diametrically enlarged portion 16 remote from the inlet neck portion 20 and the nozzle 12 includes a plurality of longitudinally and circumferentially spaced outlet apertures 42 which open outwardly from the interior of the nozzle 12 into the interior of the bladder 36. The bladder 36 is provided with longitudinally extending and circumferentially spaced pleats 44 whereby the expandable bladder 36 may be fully collapsed about the nozzle 12 for insertion into the body cavity 45 which is to be heated or cooled. By folding the pleats 44 in the manner suggested by FIGURE 2 of the drawings the overall diameter of the nozzle with the bladder 36 disposed thereabout may be reduced to a minimum and the nozzle and the bladder may be inserted into the cavity 45. Thereafter, the nozzle 12 may be rotated in the direction indicated by the phantom line arrow in FIGURE 2 of the drawings so as to free the bladder 36 for ready expansion within the cavity 45.

The nozzle 12 includes an outlet conduit 46 including an inlet end disposed within the nozzle 12 and which

3

opens outwardly through the latter as at 48 into the interior of the bladder 36 disposed exteriorly of the nozzle 12. The outlet end of the conduit 46 opens outwardly through the inlet neck portion 20 of the nozzle 12 as at 50 and is communicated with the inlet end of a transparent flow meter referred to in general by the reference numeral 52. The transparent flow meter 52 includes a transparent tubular body 54 extending between the inlet and outlet ends of the flow meter 52 and which has a flow restricting member 56 disposed therein. The outlet end of the flow meter 52 is communicated with the inlet end of a flexible tube 58 and the outlet end of the tube 58 opens into any suitable reservoir such as a conventional hot water bottle 60 which is supported from a hook 70 on a portion of the standard 34 disposed below the reservoir 30 and the nozzle 12.

If desired, the outlet conduit 46 may be replaced by the outlet conduit 46' illustrated in FIGURE 4 of the drawings including a flexible end portion having a flow adjusting clamp assembly referred to in general by the reference numeral 72 operatively associated therewith. The outlet end of the outlet conduit 46' is connected to the inlet neck portion 74 of a transparent flow chamber mounting body 76 and the outlet neck portion 78 of the body 76 may then be in turn connected to the inlet end of the tube 58.

In operation, the nozzle 12 may be inserted within the cavity 45 in the manner hereinbefore set forth. Then, either heated water or other fluids may be placed within the reservoir 30 and the clamp assembly referred to in general by the reference numeral 80 and operatively associated with the conduit 24 may be adjusted so as to control the flow of fluid from the reservoir to the nozzle. As the fluid passes outwardly of the apertures 42 formed in the nozzle 12, the bladder 36 will be expanded from the collapsed position to the expanded position illustrated in FIGURE 3 of the drawings and therefore substantially all portions of the body cavity contacting the outer surface portions of the bladder 36 will be heated. After the heated water has passed outwardly of the apertures 42 and into the interior of the bladder 36 disposed exteriorly of the nozzle 12, the fluid will pass outwardly from the bladder 36 through the conduit 46 and into the flow meter 52 from where the liquid will subsequently flow into the reservoir 68. If the clamp assembly 72 is utilized, the outflow of fluid from the bladder 36 may also be adjusted thereby enabling the head pressure of the liquid being supplied to the nozzle 12 to control the expansion of the bladder 36.

As previously pointed out, the reservoir 30 can be filled with chilled liquids in lieu of heated liquids and the nozzle and bladder could be constructed so as to have the general shape of a pad suitable for external application. Also, the bladder 36 is readily removable and it may therefore be cleaned or replaced after each usage as desired.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly, all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

4

What is claimed as new is as follows:

1. An apparatus for applying heat to or absorbing heat from localized body areas, said apparatus comprising a closed elongated hollow body of a size and shape adapted to conform generally to the interior of an elongated body cavity to be treated, said body including an inlet neck portion at one end and a plurality of apertures formed therein downstream from said inlet neck portion, a closed elongated flexible fluid inflatable bladder disposed about said body and including a neck at one end encircling and disposed in fluid tight sealed engagement with said body neck portion, said bladder being longitudinally pleated, said apparatus further including liquid outlet means operative to conduct water from the interior of said bladder to the exterior of said apparatus, said liquid outlet means including passage defining means extending at least partially through said body neck portion including an inlet end opening through a wall portion of said hollow body disposed within said bladder adjacent said bladder neck and an outlet end portion opening outwardly of said body exteriorly of said bladder, said bladder, in its inflated operative condition, being generally ovate-oblong in shape and extending longitudinally of said body, said bladder, in its deflated inoperative condition, being of reduced cross-sectional dimension with the pleats thereof folded in the same direction about said body for ease in inserting the apparatus within a body cavity, said pleats being unfoldable after insertion of said apparatus within said body upon slight rotation of said body in the same direction, whereby the bladder may thereafter be inflated without the outer extremities of said pleats shifting relative to the walls of said cavity.

2. The combination of claim 1 wherein said bladder is expandable so as to be adapted to substantially fully conform to the size and shape of the body cavity into which said other end of said body is inserted.

3. The combination of claim 1 including elevatable temperature conditioned liquid supply means communicated with the inlet end of said neck portion.

4. The combination of claim 3 wherein said liquid supply means includes means operative to control the rate of flow of liquid from said supply means into said neck portion of said body.

5. The combination of claim 1 wherein said liquid outlet means includes means operative to control the rate of flow of liquid from said bladder.

6. The combination of claim 5 wherein said liquid outlet means includes reservoir means for receiving and storing the liquid flowing from said bladder.

References Cited

UNITED STATES PATENTS

1,652,954	12/1927	Pierce	128—401
2,026,747	1/1936	Nemzek	128—344
2,168,427	8/1939	McConkey	128—344
2,650,592	9/1953	Borda	128—344 X
3,081,765	3/1963	Kombelien	128—344

ROBERT A. O'LEARY, Primary Examiner

THEOPHIL W. STREULE, Assistant Examiner

U.S. Cl. X.R.

165—46

65