

[54] TEMPORARY INFLATABLE CAST

[76] Inventor: **Herbert G. Lipson**, 68 Aldrich Rd., Wakefield, Mass. 01880

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Primary Examiner—Lawrence W. Trapp

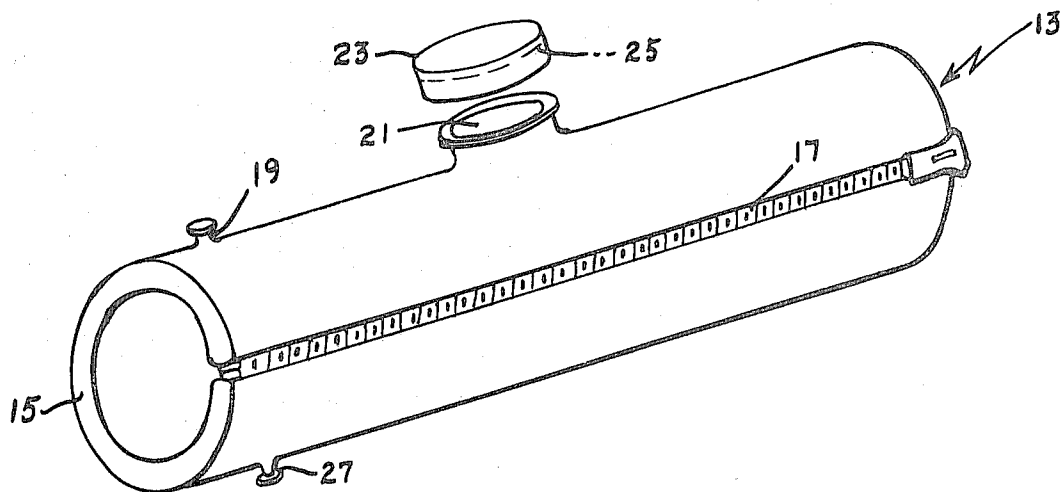
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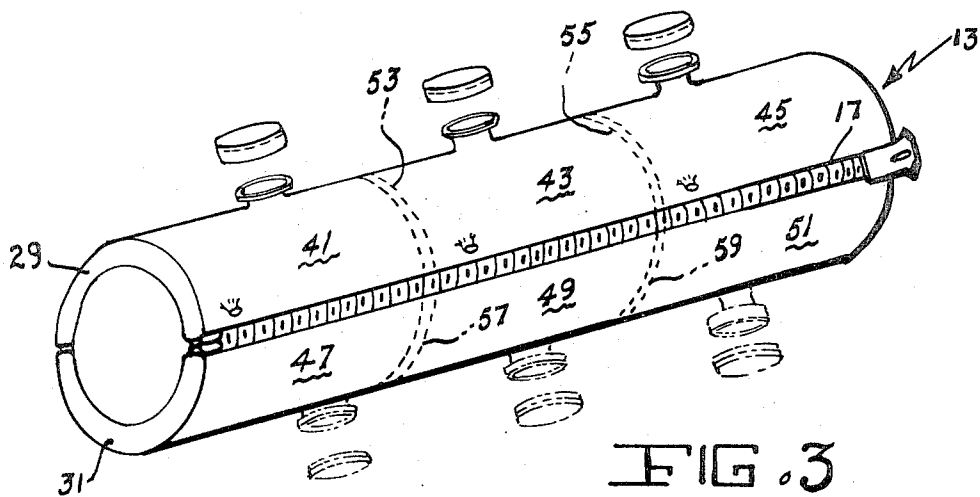
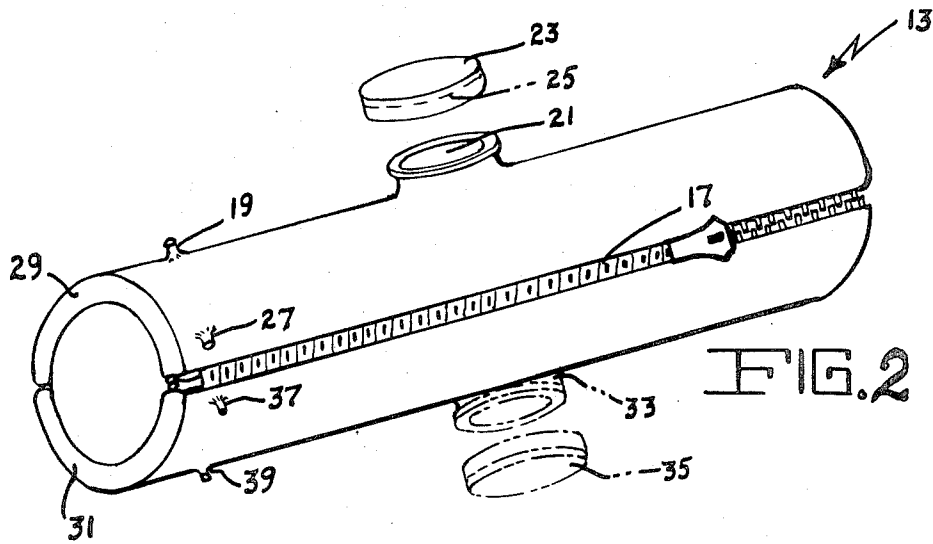
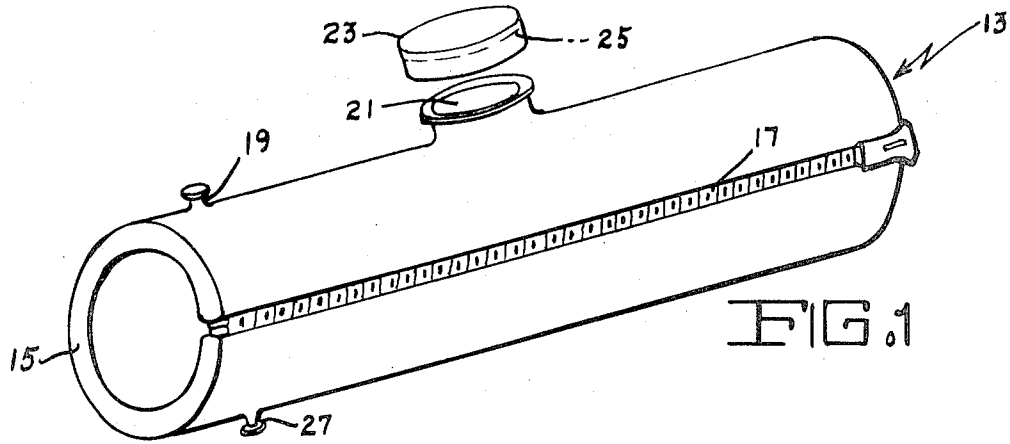
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ABSTRACT

An inflatable cast for application over the injured limb of the wearer including a hollow, elongated, flexible member shaped to enclose the injured limb. After the limb is in position a releasable securing means along the longitudinal edges is closed and the cast is inflated by filling with air. A sealable opening is provided in the cast for introduction of a cooling medium prior to inflation when desired.

5 Claims, 3 Drawing Figures





TEMPORARY INFLATABLE CAST

BACKGROUND OF THE INVENTION

The present invention relates to a temporary inflatable cast and, more particularly, the invention is concerned with providing an elongated annular inflatable cast suitable for application over the injured limb of the wearer. A sealable opening is provided in the cast for introduction of a cooling medium which comes in contact with the injured limb through a thin layer of plastic.

Heretofore, it has been the usual practice to apply a temporary inflatable cast to an injured limb before a doctor can be obtained. This procedure operates to prevent further injury to the limb and can be accomplished by one having ordinary first aid training. The temporary cast is usually applied by inserting the limb into the cast, closing a zipper or similar closure means along one side, and inflating the cast by blowing air into a valve until it fits tightly around the limb. At the hospital or other suitable location the temporary cast is removed and a more permanent type of cast such as plaster is applied to the injured limb. An attempt is usually made to keep the injured limb cool while the temporary cast is in place so that swelling can be prevented or kept to a minimum. It can be seen that with presently available inflatable casts any cooling of the limb must be accomplished through a thick insulating layer of air through which there is essentially no conduction of heat. Although the cast holds the limb in position, swelling will generally occur because there is no practical way to cool the limb during the period that the patient is awaiting treatment by the doctor. Thus, it would be most desirable to provide a means for preventing swelling of the injured limb during the time the temporary cast is in position by applying a cooling medium to the injured limb without any air insulation and thereby obtain the full benefit of the cooling effect.

SUMMARY OF THE INVENTION

The present invention is concerned with providing an improved temporary inflatable cast which is preferably constructed of two elongated sections and which includes at least one enlarged sealable opening through which ice, ice water or other cooling medium may be inserted to come in close contact with the injured limb and thereby prevent swelling by effectively cooling the critical area.

Accordingly, it is an object of the present invention to provide a hollow elongated flexible cast shaped to enclose the injured limb of a wearer including means for introducing a refrigerating medium into the cast for the purpose of cooling the injured limb.

Another object of the invention is to provide a temporary inflatable cast wherein a separate drain means is provided for evacuating spent cooling medium which was originally inserted to prevent swelling of the injured limb.

Still another object of the invention is to provide an inflatable cast wherein the hollow elongated flexible member shaped to enclose the injured limb is divided into two longitudinal compartments each having its own separate inflating means.

A further object of the invention is to provide an inflatable cast wherein each of two longitudinal compartments is provided with a sealable opening for introduc-

ing a refrigerant thereinto such that either one or both compartments can be separately cooled.

A still further object of the invention is to provide a temporary inflatable cast wherein each of the longitudinal compartments is itself divided into a series of compartments along its length and includes a sealable opening for introducing a refrigerant medium thereinto so that only selected areas of the injured limb can be cooled.

These and other objects, features, and advantages will become more apparent after considering the following detailed description taken in conjunction with the annexed drawings and appended claims.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a view in perspective of a temporary inflatable cast according to the invention showing the sealable opening for filling with ice or refrigerating medium;

FIG. 2 is a view in perspective of another embodiment of the invention wherein the inflatable cast is divided into two longitudinal compartments; and

FIG. 3 is a view in perspective of a third embodiment of the invention wherein each of the longitudinal compartments is itself divided into a series of compartments along its length.

DESCRIPTION OF PREFERRED EMBODIMENTS

Referring now to the drawings, the hereinafter disclosed improved temporary inflatable cast is designated generally by the reference numeral 13 and includes an elongated flexible member 15 fabricated of a rubberized fabric or plastic material. As shown in FIG. 1, the sleeve portion 15 is provided with a zipper closure 17 running along complementary longitudinal edges so that the member 15 is formed when the zipper 17 is closed. The member 15 is configured to enclose the injured limb of the wearer and includes an air inlet 19 for inflating the member 15 to form the temporary cast after it has been applied to the injured limb. A suitable plug or closure is positioned in or around the inlet 19 to prevent air pressure from escaping from the member 15 which would cause the cast to lose its effectiveness.

In the temporary inflatable cast according to the invention a sealable opening 21 is formed in the member 15 to allow the introduction of a refrigerant medium for cooling the injured limb. A tight fitting plastic cap 23 with an internal gasket 25 fits over the opening 21 to prevent escape of the refrigerant medium which may be, for example, crushed ice, cold water or a combination thereof. A sealable outlet 27 is provided for evacuating the spent cooling medium from the member 15 so that more ice can be introduced. It can be seen that the cooling medium is separated from the injured limb by only a thin layer of plastic or rubberized fabric thereby producing a very efficient cooling system. In prior art temporary inflatable casts the refrigerant was applied to the outer surface of the cast and any cooling of the injured area of the limb had to be done through a thick layer of air which acted as an insulating medium. Thus, very little if any cooling was possible and general swelling along with the accompanying complications occurred during the period immediately after the injury when the temporary cast was in position.

Another embodiment of the invention is shown in FIG. 2 wherein the comparable member 15 of FIG. 1 is divided into two longitudinal hollow compartments

29 and 31. An opening 21 in communication with the compartment 29 is provided in the outer surface thereof for the introduction of refrigerant thereinto. A cap 23 with the gasket 25 is also provided to seal the compartment 29 after the refrigerant has been introduced. The seal is both air tight and liquid tight so that when the compartment 29 is pressurized by blowing air into the inlet 19, none of the air escapes. The drain means 27 is provided in the compartment 29 to evacuate the spent cooling medium. Shown in phantom in FIG. 2 is a second opening 33 which communicates with the interior of the compartment 31. A cap 35 is provided for sealing the opening 33. An air inlet 37 and a drain outlet 39 is provided on the outer wall of the compartment 31 and serve the same purposes as the elements 18 and 27, respectively, in the compartment 29. The inclusion of the opening 33 in the compartment 31 with its associated elements would be at the discretion of the designer and would depend upon the cooling requirements of the particular cast.

A third embodiment of the invention shown in FIG. 3 includes a temporary inflatable cast 13 having a member of compartments along its length. As shown, there are three separate compartments 41, 43 and 45 in the upper compartment 29 and three corresponding separate compartments 47, 49 and 51 in the lower compartment 31. The smaller compartments are formed by positioning the separators 53, 55, 57 and 59 inside the larger longitudinal compartments 29 and 31. Separate openings are provided for each of the compartments so that any one or all of them can be filled with refrigerant. Also, separate inlets are provided in each of the compartments so that the cast can be inflated and drains are provided for draining each compartment. The embodiment of FIG. 3 is particularly useful when it is necessary to cool selected areas of the injured limb. Also, this ice and/or melted ice mixture will not shift excessively within the cast during movement and possibly cause pressure variations and corresponding pain to the injured limb.

Although the invention has been illustrated in terms of preferred embodiments thereof, the invention is not limited to these embodiments or to the preferred configurations mentioned.

It will be apparent to those skilled in the art, for example, that my invention can be practiced by locating

the air inlet for inflating the cast in the cap 23 and thereby eliminate the need for attaching the inlet to the body of the member of compartment. Also, it should be understood that various changes, alterations, modifications and substitutions, particularly with respect to the construction details can be made in the arrangement of the several elements without departing from the true spirit and scope of the appended claims.

Having thus described my invention, what I claim and desire to secure by Letters Patent of the United States is:

1. An inflatable cast for positioning over the injured limb of a wearer comprising,
 - a hollow, elongated, flexible member shaped to enclose the limb of a wearer when wrapped therearound,
 - said elongated member being divided into two longitudinal semi-circular compartments for retaining a cooling medium therein,
 - separate drain means in each of the compartments in said member for evacuating spent cooling medium therefrom,
 - means for releasably securing the longitudinal edges of said member,
 - means attached to said member for inflating each compartment in said member, and
 - separate means for providing a sealable opening in each of the compartment in said member for introducing a cooling medium thereinto such that the cooling medium comes in close contact with the injured limb.
2. The inflatable cast defined in claim 1 including separate inflating means for each of said longitudinal hollow compartments.
3. The inflatable cast defined in claim 2 wherein said means for providing a sealable opening connects with only one compartment in said elongated member.
4. The inflatable cast defined in claim 2 wherein said means for providing a sealable opening connects with both compartments in said elongated member.
5. The inflatable cast defined in claim 1 wherein at least one of said compartments is itself divided into a series of compartments along its length and including a sealable opening for each of said series of compartments.

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