

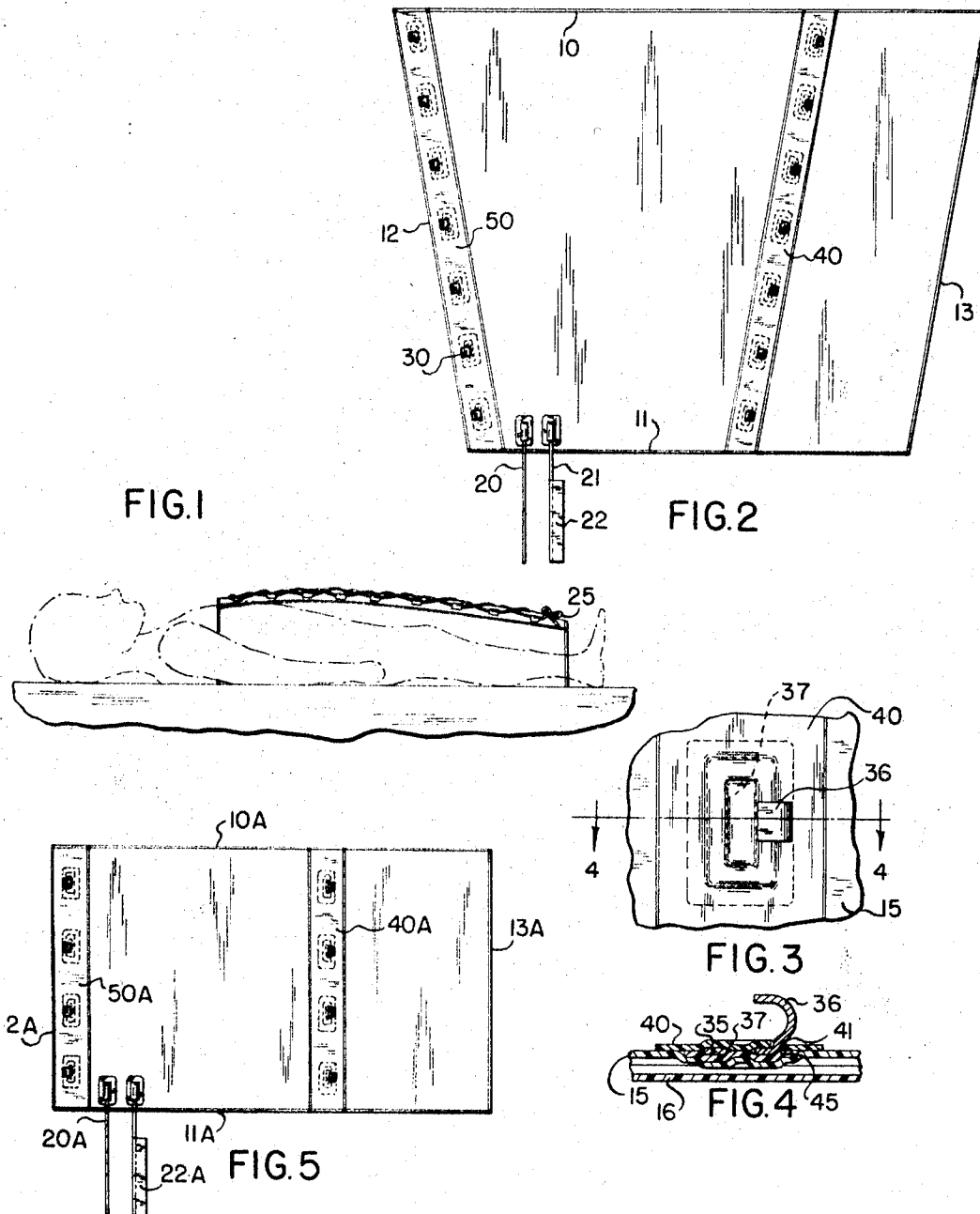
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INFLATABLE SPLINT WITH LACING MEANS

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INFLATABLE SPLINT WITH LACING MEANS

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9 Claims

ABSTRACT OF THE DISCLOSURE

An inflatable splint having a pair of flexible sheets of air tight material sealed together along their edge portions to form an inflatable body. An inflating tube communicates with the inflatable body and at least two rows of lacing clips are provided which extend from one marginal edge to the opposite marginal edge. The splint is wrapped about a body member, laced up, and then inflated to provide support for the body member.

This invention relates to splints and particularly such as are used for first aid or emergency use on patients either inside or outside of a hospital. Moreover, it relates to an inflatable pressure splint or suit which may be quickly applied at the site of an accident.

The splint of the present invention is of the type known as a G suit, which is adapted to be wrapped around a portion of a patient's body and then laced to form an envelope, after which it is inflated to a pressure which is adequate for accomplishing the intended purpose. Thus, the splint may be inflated by mouth, in emergency situations that are accompanied by shock, bleeding or a fall in blood pressure from any cause. Blood transfusions or blood pressure raising drugs are commonly used in such situations but the rate of action and the inherent control of procedures make them unsatisfactory for use in an emergency.

An object of the present invention is to provide an inflatable body of elastomeric material which can be quickly wrapped around any portion of the body of the patient and then quickly laced together and inflated immediately to a desired pressure. Air is introduced into the inflatable body from any pressure source, which may include the mouth, but in the hospital the suit may be inflated by a stream of air from a constant pressure source.

A signal splint or G suit embodying the present invention may be readily applied to a patient at the scene of an accident, or during surgery, and it may be quickly laced and inflated from any available source of air under pressure. In surgery, the suit permits safe control of blood pressure. Additionally, as a precautionary measure the suit may be applied to a patient prior to surgery but not inflated until the need arises.

In the drawings, FIG. 1 is a view illustrating my invention as applied to a patient in prone position upon a table.

FIG. 2 is a top plan view of one form of the splint.

FIG. 3 is a top plan view of an enlarged scale of a portion of the splint adjacent one of the lacing clips.

FIG. 4 is a vertical section taken on a plane indicated by the line 4—4 in FIG. 3; and

FIG. 5 is a top plan view of a modified shape of the splint.

In the forms shown, the body portion of the splint comprises two sheets of air tight flexible fabric, as for example vinyl plastic, which have the same shape and which are laid one upon the other and sealed together around the peripheral portions to form an inflatable body. The sheeting material is sufficiently heavy for the intended purpose and is capable of being sealed by the

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application of heat and pressure by means of an appropriate die.

In FIG. 2 the sheets are shown as being trapezoidal in shape and as being sealed together along the edges 10, 11, 12 and 13. The top sheet is designed in FIG. 4 at 15 and the bottom sheet at 16. When the sheets are sealed together they form an inflatable body into which air may be introduced through a conduit 20 from any source of air supply. Additionally, in FIG. 2 there is shown a second conduit 21 which is in communication with the inflatable body and which has a suitable pressure control valve 22 for maintaining a uniform pressure within the inflated body, whenever the conduit 20 is connected to a source of constant supply of pressurized air.

The inflatable body is adapted to be wrapped around a patient as shown in FIG. 1 and then laced in such position by means of a cord 25 which engages lacing hooks 30. The body is then inflated after the lacing operation has been completed.

Each lacing hook is so formed that it may be readily anchored to the splint and yet may be readily available for lacing it quickly and effectively. In the preferred form, each clip has a base portion 35 which is shown as being flat and rectangular in form and as having a hook portion 36 extending upwardly from the mid-portion of the base and from one side thereof. Each base portion has a hollow central portion 37 through which the clip may be more firmly anchored to the body.

In the preferred arrangement, the clips are anchored to the body by means of a strip 40 of material, such as vinyl plastic, which has spaced slits 41 therein through which the hook portion 36 of each clip may project. A back-up strip 45 of material, such as vinyl plastic, having a generally rectangular shape may then be placed in back of the strip 40 and sealed thereto along all marginal edges and in the space delineated by the hollow portion 37 of the clip. Thus, the clip will be firmly anchored against movement and be capable of resisting the strains incident to the lacing operation.

In the form of FIG. 1, one lacing strip 40 is positioned on a line substantially parallel to the edge 13, whereas the other lacing strip 50 is positioned along the edge 12. Thus, when the suit is wrapped around a patient the clips will be sufficiently close together to enable the lacing operation to be readily accomplished.

In FIG. 5, I have shown a modified form in which the sheets are rectangular in form and are sealed together along the edges 10a, 11a, 12a and 13a respectively. In this form, the strip 40a is disposed intermediate the sides 12a and 13a and is parallel to the strip 50a. The lacing clips are attached in the same manner as previously described and the inflating tube 20a and regulating valve 22a are the same construction as that shown and described in connection with the illustration of FIG. 2.

The terms and expressions which have been used are used as terms of description and not of limitation and there is no intention in the use of such terms and expressions of excluding any equivalents of any of the features shown or described, or portions thereof, and it is recognized that various modifications are possible within the scope of the invention claimed.

I claim:

1. An inflatable splint comprising a pair of sheets of flexible and air tight fabric sealed together along the edge portions thereof to form an inflatable body, an inflating tube disposed in communication with the interior of the body and projecting therefrom, at least two laterally spaced rows of lacing clips extending from one marginal edge to the opposite marginal edge of said sheets, each of said clips including a base portion and a hook-shaped portion, at least one strip for each row of clips sealed to only one of said sheets, said strip

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being sealed around the periphery of said base portion wherein each base portion is disposed in its entirety between said strip and the contiguous sheet, and said hook-shaped portion projects outwardly from said strip.

2. An inflatable splint according to claim 1, including a backing strip, said backing strip being sealed to said first mentioned strip around the periphery of said base portion of said clip, and said first mentioned strip being sealed to the outer face of one of said sheets.

3. An inflatable splint according to claim 1, wherein the base portion of the clip has a hollow central portion and wherein the strip is sealed to the contiguous sheet through the hollow portion of the clip.

4. An inflatable splint according to claim 1, wherein a regulating valve is in communication with the interior of the inflatable body and wherein the valve operates to maintain a uniform pressure within the body whenever the means for inflating the body is connected to a constant source of fluid pressure supply.

5. An inflatable splint according to claim 2, wherein said backing strip is disposed between said first mentioned strip and said contiguous sheet, and said base portion is disposed in its entirety between said strip and said backing strip.

6. An inflatable splint according to claim 2, wherein said base portion includes a hollow portion therein, and said strip is sealed to said backing strip and to said contiguous sheet through the hollow portion of said clip.

7. An inflatable splint according to claim 1, wherein each strip includes slits corresponding to the lacing clips, and wherein said hook-shaped portions extend through said slits.

8. An inflatable splint according to claim 1, wherein said base portion of said clip is flat and generally polygonal in configuration.

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9. An inflatable splint comprising, a pair of sheets of flexible and air-tight fabric sealed together along the edge portions thereof to form an inflatable body, an inflating tube disposed in communication with the interior of the body and projecting therefrom, at least two laterally spaced rows of lacing clips extending from one marginal edge to the opposite marginal edge of said sheets, each of said clips including a base portion and a hook-shaped portion, at least one strip for each row of clips sealed to only one of said sheets, a backing strip being sealed to said first mentioned strip around the periphery of said base portion of said clip, said first mentioned strip being sealed to the outer face of said one sheet, including one strip disposed along a marginal portion of said body and another strip disposed near the mid-portion of said body, said backing strip disposed between said first mentioned strip and said contiguous sheet and wherein said base portion is disposed in its entirety between said strip and said backing strip, and said hook-shaped portion projects outwardly from said strip and said backing strip.

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