

- [54] SKIN TRACTION
- [75] Inventor: Frank N. Howard, Medfield, Mass.
- [73] Assignee: The Kendall Company, Boston, Mass.
- [22] Filed: July 20, 1972
- [21] Appl. No.: 273,451

- [52] U.S. Cl. .... 128/84 R, 128/156
- [51] Int. Cl. .... A61f 5/04
- [58] Field of Search ..... 128/84, 156, 87, 85, 75

[56] **References Cited**

**UNITED STATES PATENTS**

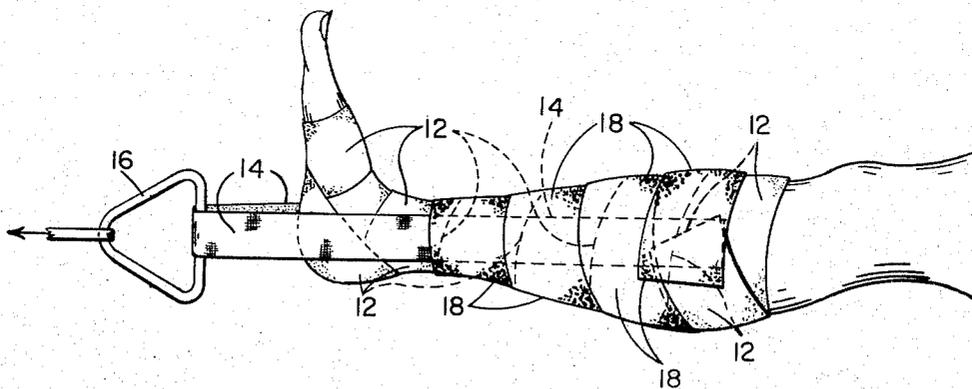
3,039,459	6/1962	Scholl .....	128/84 R
3,245,406	4/1966	Chardack.....	128/156
3,665,918	5/1972	Lindquist et al.....	128/156
3,536,072	10/1970	Quello.....	128/87 R X
3,053,253	9/1962	Liloia et al.....	128/156
2,854,000	9/1958	Anderson.....	128/84 R
1,399,606	12/1921	Ferragamo.....	128/85

Primary Examiner—Richard A. Gaudet  
 Assistant Examiner—J. Yasko

[57] **ABSTRACT**

Method of providing skin traction for leg comprising wrapping under tension directly against the skin a plurality of overlapped wrapped turns of an extensible, elastic, conformable lightly mechanically self-adhering sheet under sufficient tension so that upon completion of the wrappings the underwrapping will be maintained in the desired position without slippage, thereafter applying over the underwrapping, free from contact with the skin, adhesive tape longitudinally along opposite sides of the leg and extending beyond it for a traction connection and finally again wrapping under tension directly over the underwrapping and adhesive tape with a plurality of overlapped wrapped turns of at least one layer of an extensible, elastic, conformable, lightly mechanically self-adhering sheet under sufficient tension so that upon completion of said wrappings the overwrapping will be maintained in the desired position without slippage, the underwrapping and overwrapping functioning to maintain the adhesive tape in position regardless of moisture on the skin, the underwrapping protecting the skin from irritation of the adhesive tape.

1 Claim, 3 Drawing Figures



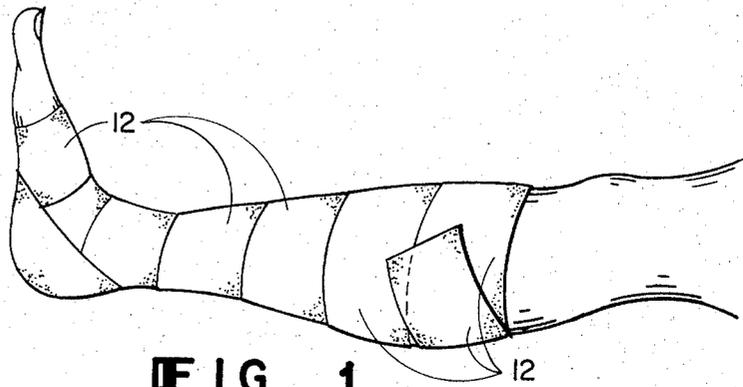


FIG. 1

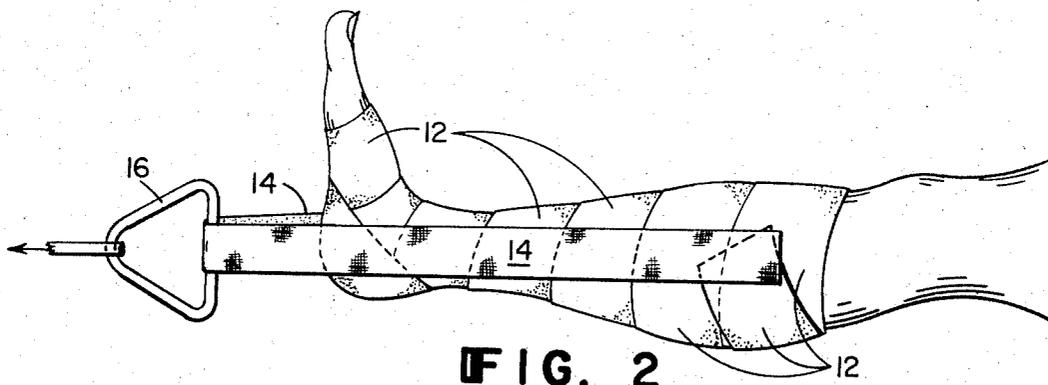


FIG. 2

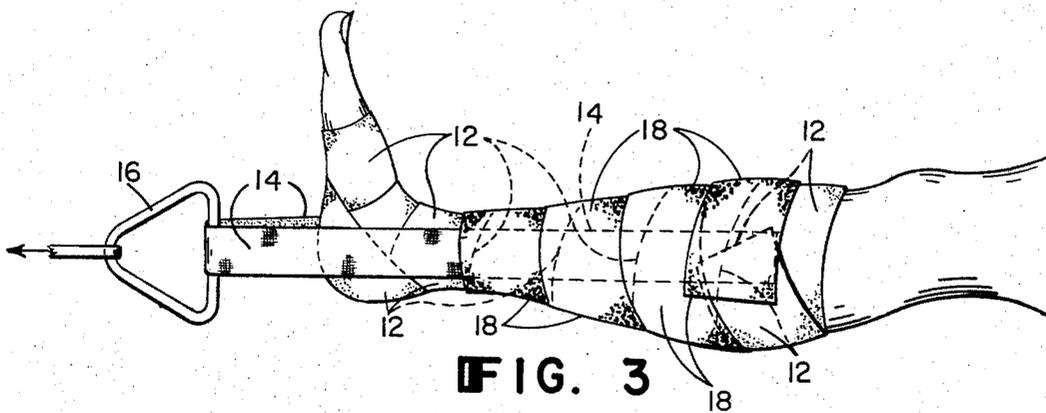


FIG. 3

## SKIN TRACTION

This invention relates to a method of providing skin traction for an extremity of the human body while protecting the skin from irritation.

The problem of providing skin traction for human limbs is a serious one, in that there is a high premium on providing, over a matter of days or even weeks, positive skin traction which will, at the same time, be as comfortable and non-irritating to the skin as possible.

Heretofore, conventional adhesive tape was applied directly to the skin longitudinally along opposite sides of the extremity and looped around the end thereof out of contact therewith to provide a traction connection beyond the end of the extremity. However, prior to the application of the adhesive tape, the area to be covered thereby was usually first shaved, but even if this was done, subsequent removal of the adhesive tape was frequently painful, especially if it had been in place for an extended period of time.

Accordingly, it is a major object of the present invention to provide a novel method of providing skin traction for an extremity of the human body which is not only easy to apply without the necessity of shaving, but also provides the necessary positive skin traction and which will, at the same time, be comfortable and non-irritating to the skin and not painful to remove.

This and still further objects of the invention are accomplished by providing a novel method of providing skin traction for an extremity of the human body and for protecting the skin from irritation which comprises the steps of: wrapping under tension directly against the skin of said portion with a plurality of overlapped wrapped turns of at least one layer of an extensible, elastic, conformable lightly mechanically self-adhering sheet, preferably relatively thin of between about 0.02 and 0.10 inch thick, under sufficient tension so that upon completion of said wrappings the underwrapping will be maintained in the desired position without slippage on said portion, thereafter applying over said underwrapping free from contact with the skin, adhesive tape, preferably of the type having adhesive on both of its sides, longitudinally along opposite sides of said extremity and extending beyond the end thereof out of contact therewith for a traction connection and finally wrapping under tension directly over said underwrapping and said adhesive tape with a plurality of overlapped wrapped turns of at least one layer of an extensible, elastic, conformable, lightly mechanically self-adhering sheet, preferably relatively thin of between about 0.02 and 0.10 inch thick, under sufficient tension so that upon completion of said wrappings the overwrapping will be maintained in the desired position without slippage on said extremity, said underwrapping and overwrapping functioning to maintain said adhesive tape in substantially its original position regardless of moisture on the skin and said underwrapping protecting the skin from irritation of the adhesive tape.

Other objects, features and advantages will appear from the following description of a preferred embodiment of the invention, together with the drawings, wherein:

FIGS. 1, 2 and 3, respectively, illustrate successive steps in the practice of the method of the invention.

Referring to the drawings, in the preferred form of practicing the invention there is employed a sheet 12

of an open-celled reticulated polymeric material, such as polyurethane foam. the sheet is preferably between 0.02 and 0.10 inch thick and is in the form of a web, having a mechanically self-adhering pitted surface, wound into a roll. The web is wrapped under tension about a limb, such as a leg as illustrated in FIG. 1, directly against the skin to which skin traction is to be applied, starting, for example, near the toe with a sufficient overlap so that the mechanically self-adhering characteristic of the pitted surface of the foam sheet will operate to maintain the sheet under tension on the leg even though wrapping tension is momentarily released. After wrapping the area to be utilized, the free end of the sheet is easily torn to provide the desired length and self-adhered to an underlying portion thereof to maintain its wrapped tension, leaving the applicator's hands free to pick up a roll of adhesive tape for the next step.

Such a sheet of urethane foam, being soft, highly conformable, elastic and extensible, as well as tearable, is an ideal underwrap to achieve the objects set forth above. Particularly important are its self-adhering and adhesive-impenetrable characteristics, the former making possible a highly-effective, tight underwrap, and the latter making possible its painless removal, even without the necessity of preliminary shaving.

After the underwrapping is completed, adhesive tape 14, preferably of the type which has an adhesive mass on both sides thereof, is applied longitudinally along opposite sides of the leg and looped around the end thereof out of contact therewith, the tape being passed through a connector 16 to provide a traction connection as shown in FIG. 2. The adhesive tape 14 should not be allowed directly to contact the skin of the leg.

Finally, as shown in FIG. 3, the underwrapping 12 and the adhesive tape 14 are overwrapped along the leg in order to cover at least a major portion of the adhesive tape with another sheet 18 and in a manner similarly to that of underwrapping 12, under sufficient tension so that upon completion, the overwrapping and the adhesive tape will be maintained in the desired position without slippage, the combination of the double adhesive mass tape and the overwrapping accomplishing this function in a unique manner (expand) throughout the length of time during which skin traction is to be applied.

The flexible, elastic polymeric cellular material used for the sheets 12 and 18 may comprise any one of a number of open-celled foams. One type of cellular polymeric material preferred is a polyurethane foam material. The nature of such polyurethane foam material is a somewhat irregular lattice of cells. Each cell is a three-dimensional network of interconnected strands which form junctions between the faces or walls of the cells of the foam body. Most so-called "open-celled" polyurethane foams possess thin membrane-like sheets of material across at least certain or some of the cell faces. Other cell faces are open by virtue of the membranous material at the face having been broken during the foaming operation.

A reticulated structure formed from a conventional open-celled foam which has been subjected to an after-treatment which removes the membranous material from substantially all of the faces of the cell, leaving only the integrally interconnected strands, is also a suitable structure for the sheets 12 and 18.

Removal of the bandage is accomplished conventionally, but painlessly without the removal of skin or hair, since the foam urethane sheet 12 adheres to itself but lightly and not at all to skin and hair, and being impenetrable to the adhesive mass on the adhesive tape 14, is not adhered to the directly underlying skin and hair thereby, since the adhesive mass does not touch the skin.

What is claimed is:

1. The method of providing skin traction for an extremity of the human body and for protecting the skin from irritation which comprises the steps of:

wrapping under tension directly against the skin of said portion with a plurality of overlapped wrapped turns of at least one layer of an extensible, elastic, conformable lightly mechanically self-adhering sheet between about 0.02 and 0.10 inch thick free from adhesive under sufficient tension so that upon completion of said wrappings the underwrapping will be maintained in the desired position without slippage on said portion, thereafter applying over said underwrapping free

from contact with the skin, adhesive tape longitudinally along opposite sides of said extremity and extending beyond the end thereof out of contact therewith for a traction connection said adhesive tape having adhesive on both sides thereof for adherence both to said underwrapping and to an overwrapping and

finally wrapping under tension directly over said underwrapping and said adhesive tape with a plurality of overlapped wrapped turns of at least one layer of an extensible, elastic, conformable, lightly mechanically self-adhering sheet between about 0.02 and 0.10 inch thick under sufficient tension so that upon completion of said wrappings the overwrapping will be maintained in the desired position without slippage on said extremity,

said underwrapping and overwrapping functioning to maintain said adhesive tape in substantially its original position regardless of moisture on the skin and said underwrapping protecting the skin from irritation of the adhesive tape.

\* \* \* \* \*

25

30

35

40

45

50

55

60

65