

[54] **TRACTION BAND WITH INTEGRAL FASTENERS**

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[58] Field of Search **128/83, 84, 85, 75, DIG. 15, 128/165, 169; 2/DIG. 6, 96**

[56] **References Cited**

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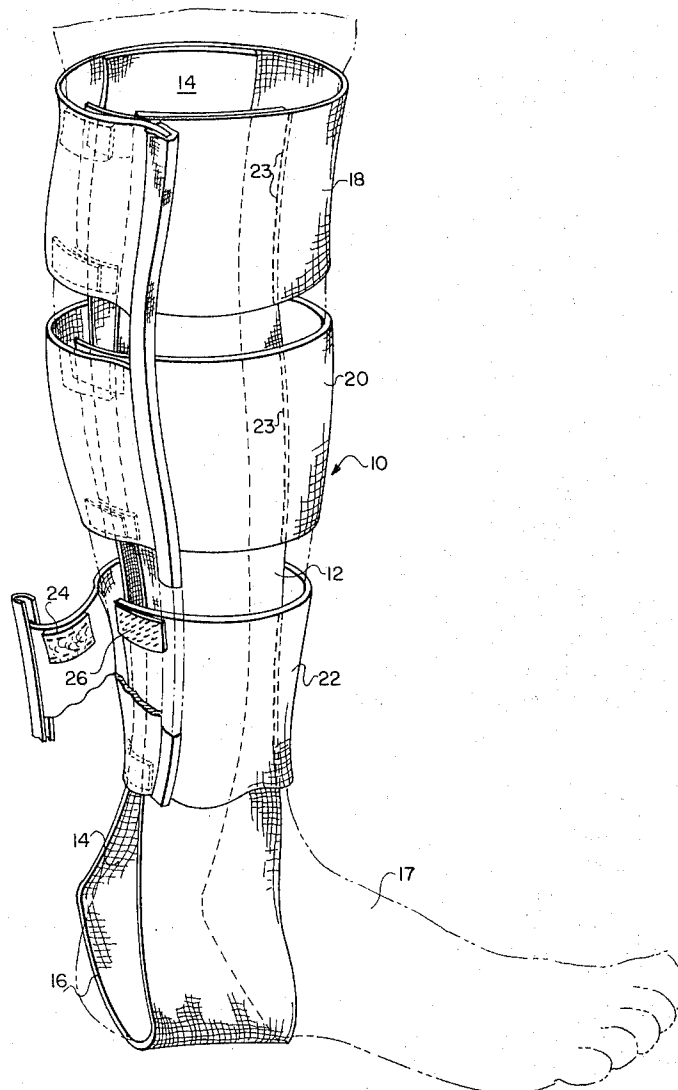
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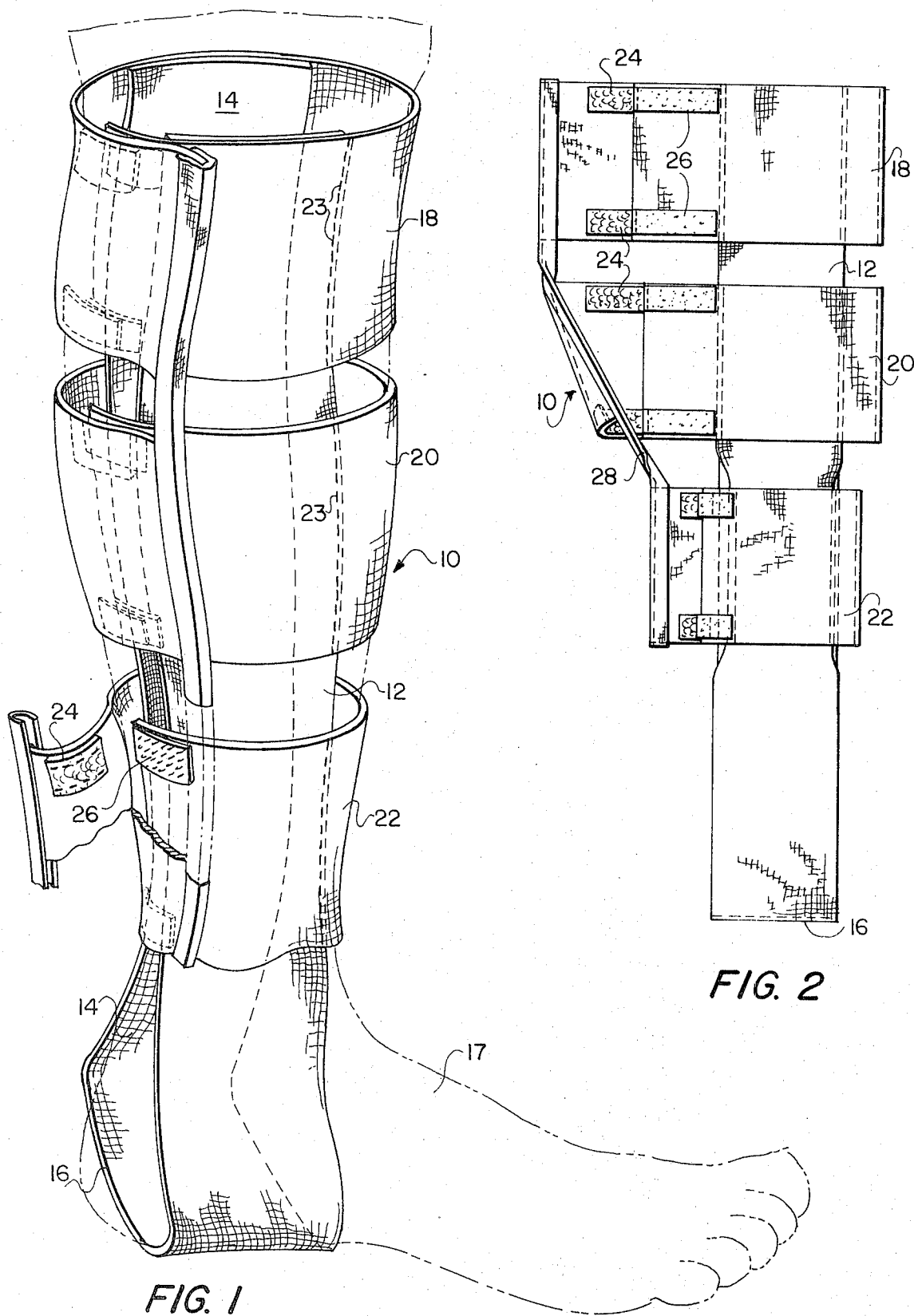
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[57] **ABSTRACT**

A traction band is held in place by integrally attached elastic bands spaced from each other for wrapping around the patient's limb, and readily detachable fasteners preferably of the hook and loop type for securing the elastic bands in position around the limb.

2 Claims, 2 Drawing Figures





TRACTION BAND WITH INTEGRAL FASTENERS

BACKGROUND OF THE INVENTION

The present invention relates to a traction band or strip which is capable of being attached to the limb of a patient so that traction applying means may be attached thereto to apply tension after the limb has been set.

Heretofore, devices for attachment to a tensioning apparatus were customarily attached to the patient's fractured limb using ordinary surgical adhesive tape. This approach is undesirable because of the painful consequences which frequently result, for example, due to allergic reactions by the patient or due to the removal of the upper layer of skin on removing the tape after a long duration of use. This approach is also disadvantageous since it does not permit ventilation of the wrapped portion of the limb, and the adhesive tape does not provide cushioning for the comfort of the patient.

Other approaches have utilized traction bands which have been provided with a spongy material for improving the patient's comfort and with means for adhesively securing the traction band to the limb. The use of an ace bandage wrapped around a traction band having a layer of adhesive of the pressure sensitive type on its inner surface for attachment to the limb has also been proposed in the prior art.

In general, these approaches have been subject to one or more drawbacks such as still adhesively securing the traction band directly to the patient's skin, using a system which is uncomfortable and provides poor ventilation or which is difficult to apply and adjust. In addition, such prior art systems included components which were not durable or washable and comprised several separate parts.

SUMMARY OF THE INVENTION

It is a principal object of the present invention to provide an improved traction band of a durable one-piece construction. Another principal object of the invention is to provide a traction band which may be readily applied and removed from the limb without causing discomfort to the patient.

Briefly, a presently preferred embodiment of the invention comprises a multi-ply fabric tension band which may be secured on opposite sides of the limb, especially a leg, with a loop formed at the distal end of the limb for attachment of a conventional tensioning system via a spreader bar. Integral with the longitudinally extending tension band are a plurality of transversely extending elastic securing bands which are permanently attached to the two halves of the traction band to keep these strips in proper alignment when in use. The elastic bands, after being wrapped around the limb, are secured in place by detachable fasteners, preferably by interengagement of hook and loop type fabric fasteners. To facilitate removal of the device, it is presently preferred that a longitudinally extending opening strip or cord interconnect the elastic bands. In this way, a pull on the upper elastic band to open it also detaches the fastening elements of the remaining elastic bands at the same time.

This one-piece construction traction band is made of material which allows ventilation therethrough. In addition, the material is durable and washable.

The above and other objects, features, and advantages of the invention will become more apparent as this description proceeds when considered in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is essentially a perspective view of a presently preferred embodiment of a tension band of the invention shown in position on the foot of a patient with a portion of one elastic band broken away for the sake of clarity.

FIG. 2 is a side view of the tension band of FIG. 1 folded flat.

DETAILED DESCRIPTION OF THE INVENTION

Referring now to the drawings wherein like reference numerals refer to like and corresponding parts in the several views, reference numeral 10 generally designates the integral tension band and fastener apparatus of the invention. The traction band itself is comprised of a three-ply soft, flexible, non-adhesive cotton flannel strip having longitudinally extending portions 12 and 14 connected to each other at their lower by a loop 16 which is disposed beneath the heel of the foot 17 of the patient.

Three transversely extending elastic bands 18, 20 and 22 are integrally connected to the opposite edges of traction band portions 12 and 14 of the traction band by longitudinal rows of stitching 23. These elastic bands are preferably made of the same type material utilized in making elastic bandages and are utilized to secure the traction band to the limb. As shown in the drawings, the lengths of the elastic bands 18, 20 and 22 progressively decrease towards the loop 16. Thus, when the tension band is applied to the leg of the patient the longer upper elastic band 18 is wrapped around a thicker part of the limb than the middle elastic band 20, and the lower, smallest elastic band 22 is intended to be fastened around the ankle of the patient with the loop 16 being beneath the heel of the foot for attachment to a spreader bar. The spreader bar may be connected to any conventional traction system including a series of weights and pulleys (not shown).

Attached to the inside surface of the left end of the elastic bands 18, 20 and 22 are fasteners 24 which are intended to be detachably connected to complementary fasteners 26 on the outside of the other ends of the elastic bands. The complementary fasteners 24 and 26 preferably consist of strips of loop type fasteners cooperating with strips of hook type fasteners respectively. Material used in making such fasteners is commercially available under the Trademark Velcro. Typical fasteners of this type are disclosed in de Mestral, U.S. Pat. No. 2,717,437.

In use, the patient's foot is placed in the loop 16 and the longitudinally extending portions 12 and 14 of the traction band are positioned along opposite sides of the patient's leg to protect the nerves in the leg. The elasticity of bands 18, 20 and 22 permits the proper positioning of portions 12 and 14. It should be observed that the distance between portions 12 and 14 progressively increases in an upward direction to compensate for the increasing circumference of the leg in an upward direction. With the tensioning band in proper position, elastic bands 18, 20 and 22 are now stretched about the leg and the bands are fastened in position by interengaging the respective fasteners 24 and 26. These

elastic bands are stretchable not only to facilitate putting on the device but also for the comfort of the patient and so that circulation in the limb is not adversely affected. In the absence of such stretch, a tight binding about the leg could cause swelling and potentially severe complications.

A thin cotton fabric rib 28 is sewn to the left ends of elastic bands 18, 20 and 22 adjacent the fasteners 24. If one of the ends of the elastic bands, for example, the end of the larger, upper elastic band 18 is pulled to detach the fasteners 24, 26 of this band; the rib 28 acts in the nature of a rip-cord to simultaneously detach the fasteners of elastic bands 20 and 22. In this way, the patient is able to open all of the fasteners even though the patient may only be able to conveniently reach the end of the upper elastic band 18. This quick release feature is especially advantageous in the event of an emergency, for example, should it be necessary to evacuate the patient. Because of the rib 28 the patient is able to quickly disconnect himself from the tensioning system even without the services of an attendant.

While a presently preferred embodiment of the invention has been shown and described with particularity, various changes and modifications may suggest themselves to those of ordinary skill in the art upon being apprised of the present invention. It is intended to encompass all such changes and modifications as fall within the scope and spirit of the appended claims.

I claim:

1. Apparatus for use in placing a limb in traction comprising a traction band having a central loop and having a pair of longitudinally extending soft, flexible, portions intended to be positioned along opposite sides of the limb, a plurality of transversely extending securing bands of a length to extend around the limb integrally connected to each of said longitudinally extend-

ing portions of said traction band, cooperating fastener means located adjacent the ends of each transversely extending securing band and detachably engageable with each other upon the respective securing band being fastened around the limb, said securing bands being spaced from each other longitudinally along said longitudinally extending portions, and further comprising rip cord means connected to ends of said securing bands adjacent the fasteners at one end thereof to enable each of said securing bands to be opened by pulling on said rip cord means.

2. Apparatus for use in placing a limb in traction comprising a traction band having a central loop portion and having a pair of longitudinally extending soft, flexible portions intended to be positioned along opposite sides of the limb, said traction band being comprised of a multiple ply fabric material, a plurality of transversely extending securing bands made of elastic material and of a length to extend around the limb, said securing bands being sewn to said longitudinally extending portions of said traction band at spaced points along said securing bands to provide intermediate portions of said securing bands disposed between and connecting said longitudinally extending portions of said traction band to each other, the opposite ends of said securing bands extending beyond the respective longitudinally extending portions of said traction band, said securing bands being of progressively decreasing length in a direction towards the loop portion of said traction band, and cooperating hook and loop type fasteners located adjacent the ends of each securing band on opposite sides thereof and detachably engageable with each other upon the respective securing band being fastened around the limb.

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