

[54] CLAVICLE BRACE

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[51] Int. Cl. A61f 5/04

[58] Field of Search 128/87, DIG. 19

[56] References Cited

UNITED STATES PATENTS

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Primary Examiner—Richard A. Gaudet

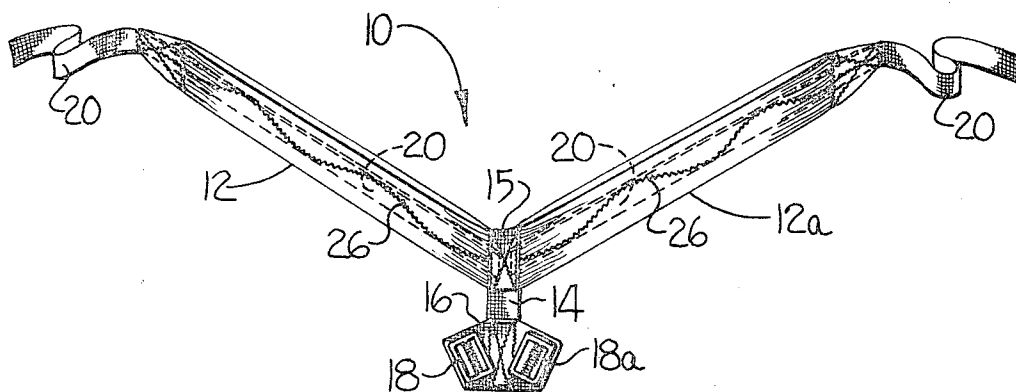
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[57] ABSTRACT

A clavicle brace for supporting the shoulder region of the body in a fixed position without biting into the body of the wearer. The brace comprises a back strap and a pair of upwardly extending shoulder straps connected at the upper end of the back strap. The shoulder straps include a contoured, non-biting, porous core of a resilient foam material which distributes the forces from the shoulder straps over a broad area of contact. Since the core is porous, ventilation to the surface of the skin beneath the straps is permitted.

4 Claims, 4 Drawing Figures



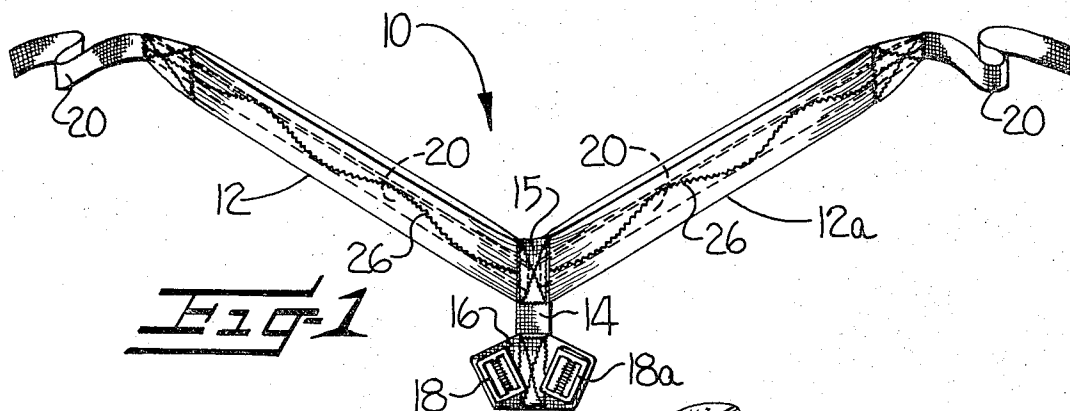


Fig-1

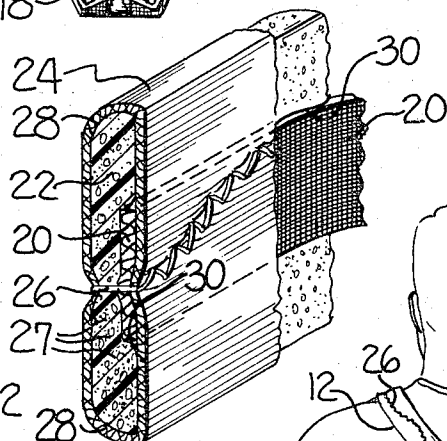


Fig-2

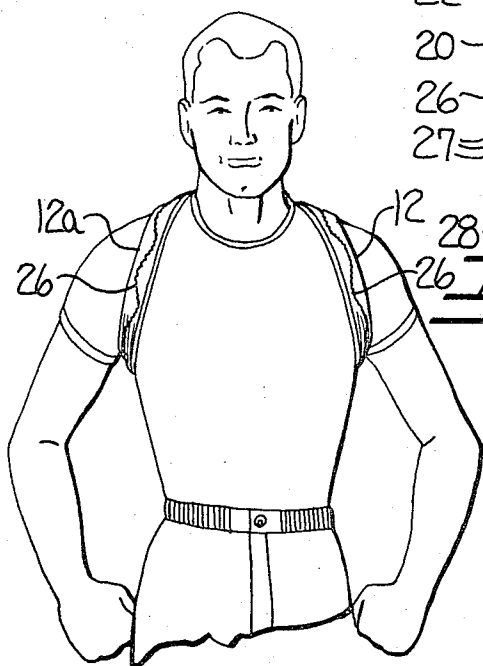


Fig-3

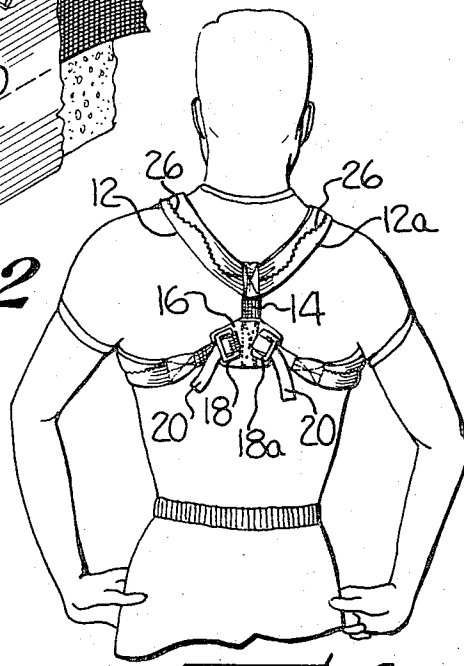


Fig-4

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CLAVICLE BRACE

The present invention relates to a novel clavicle splint of the type used to brace the shoulder region of the body following the fracture of the clavicle bone.

Numerous clavicle splints are known in the art, and typically they comprise a pair of shoulder straps with one extending over each shoulder, under the axilla, and to a connector positioned in the middle of the back. While such a design serves well in bracing the upper body, it is unsatisfactory in that the right angled edges of the straps tend to bite into the body particularly along the axillae of the wearer. Not only does this cause considerable discomfort to the wearer during the required long periods of use, but also binding of the straps may tend to impinge the brachial artery, or the radial, ulna, and median nerves.

It is accordingly an object of the present invention to provide a clavicle splint which is capable of providing adequate body support and which will not tend to bite into the body of the wearer. It is also an object of this invention to provide a clavicle splint which may be worn for an extended period of time without undue discomfort to the wearer.

It is a further object of this invention to provide a clavicle splint which is substantially porous to thereby permit ventilation to the surface of the skin and escape of body heat and perspiration from beneath the straps of the splint.

These and other objects and advantages of the present invention are achieved in the embodiment illustrated herein by the provision of a clavicle splint which comprises a vertically extending back strap and a pair of shoulder straps connected at the upper end of the back strap to form a Y-shaped connection. Each shoulder strap comprises a porous core of resilient foam material, a reinforcing tape extending along one side of the core, and a porous fabric outer covering. A pair of connectors are mounted at the lower end of the back strap for connection with the free ends of the shoulder straps. The core is substantially D-shaped in cross section with the leading longitudinal edges along the side immediately adjacent the body of the wearer being contoured to present a rounded, non-biting, engaging surface.

Some of the objects and advantages of the invention having been stated, others will appear as the description proceeds, when taken in connection with the accompanying drawings, in which;

FIG. 1 is a plan view of the clavicle splint of the present invention;

FIG. 2 is a sectional view of one of the shoulder straps of the above clavicle splint;

FIG. 3 is a front elevational view illustrating the manner in which the clavicle splint is positioned on the body of a wearer; and

FIG. 4 is a rear elevational view illustrating the clavicle splint positioned on the body of a wearer.

Referring to the drawings, a clavicle splint embodying the teachings of the present invention is generally indicated by the numeral 10. The splint comprises a pair of shoulder straps 12 and 12a, and a relatively short back strap 14. The back strap 14 extends in a generally vertical direction and the two shoulder straps are attached, as by stitching, at the upper end of the back strap to form a Y-shaped connection at 15. More particularly, the shoulder straps are upwardly disposed

from the connection at 15 at an acute equal angle to either side of the vertical. The lower end of the back strap 14 includes a terminal portion 16 which mounts a pair of conventional buckles 18 and 18a. It will be appreciated that conventional Velcro fasteners could be substituted for the buckles 18 and 18a if desired.

Each of the shoulder straps 12 and 12a comprises a fabric tape 20, a core broadly indicated at 22, and a porous fabric cover 24. These components may be secured together in any suitable manner, such as by the illustrated sinusoidal stitching 26. As will be apparent from FIG. 1, the tape 20 extends longitudinally somewhat beyond the ends of the core and fabric cover, and the cover surrounds both the core and the tape for the longitudinal length of the core.

The fabric tape 20 is conventional and may consist of any suitable non-resilient fabric, such as woven cotton tape. Similarly, the material of the outer cover 24 may consist of any conformable and porous fabric, such as a knit cotton sleeve.

The core 22 is preferably formed from discrete particles 27 of resilient polyurethane foam material bonded together with a suitable binder. The material has a density of about 6 pounds per cubic foot and thus is sufficiently stiff or rigid to provide a firm base of support for the tape 20. In addition, the foam material is porous to permit ventilation therethrough to the surface of the skin. A material of this type is further described in my previous U.S. Pat. No. 3,374,785, the disclosure of which is expressly incorporated herein by reference.

In the illustrated embodiment, the core 22 is generally D-shaped in cross section and it extends longitudinally along the tape 20 a distance sufficient to overlie the shoulders and pass through the axillae of the wearer. The lateral dimension of the core is greater than that of the tape 20 such that the core extends beyond the longitudinal side edges of the tape to present a broad area of contact toward the body of the wearer. The forward or inner longitudinal edges of the core 22 are contoured or rounded as shown at 28 to present a conforming, non-biting surface toward the body of the wearer. Also, the outer surface of the core preferably includes a longitudinally extending channel 30 which is configured to receive the tape 20 and thereby retain the tape centered along the outer surface of the core, and also to present a neat appearance.

In use, the back strap 14 is initially positioned between the shoulder blades on the back of the wearer, and the two shoulder straps 12 and 12a are drawn over the shoulders, under the axillae, and to the terminal portion 16 of the back strap. The remote free ends of the shoulder straps 12 and 12a, which consist of that portion of the tape 20 extending beyond the core 22, are connected to the buckles 18 and 18a to complete the assembly of the device.

It will be appreciated that the core 22 will provide a broad area of contact between the tape 20 and body of the wearer and thus will contribute to the comfort of the wearer. Also, the contoured forward edges 28 of the core serve to present a conforming, non-biting surface, rather than a right angled edge, toward the skin. Thus the tendency of conventional rectangular straps to bite into the body of the wearer, particularly along the axillae, is alleviated. Since the core 22 is porous, it permits ventilation to the surface of the skin and

thereby contributes to the wearer's comfort by cooling the skin area covered by the straps and by permitting the escape of perspiration and body heat.

In the drawings and specification, there has been set forth a preferred embodiment of the invention, and although specific terms are employed, they are used in a generic and descriptive sense only and not for purposes of limitation.

What is claimed is:

1. A clavicle splint for bracing the shoulder region of the body without biting into the body of the wearer and thereby causing discomfort to the wearer and without tending to impinge the brachial artery or the radial, ulna, and median nerves, said splint comprising, a relatively short vertically extending back strap, a pair of shoulder straps connected at the upper end of said back strap and extending upwardly from said back strap at an acute equal angle to either side of the vertical, said shoulder straps each comprising a porous core of resilient foam material having a density of about 6 pounds per cubic foot and extending for a distance sufficient to overlies the shoulders and pass through the axillae of the wearer, said core being D-shaped in cross section to present rounded inner longitudinal edges in contact with the body of the wearer to provide increased comfort and to reduce the tendency of the shoulder straps to bite into the body of the wearer

and to impinge the brachial artery and the radial, ulna, and median nerves, a tape secured to the outer surface of said core and extending longitudinally throughout the full length thereof and beyond said core to reach the lower end of said back strap when said shoulder straps are positioned over the shoulders and through the axillae, said core having a lateral dimension greater than that of said tape wherein said core presents a broad area of contact toward the body of a wearer, and an outer porous fabric cover surrounding said core and tape along the longitudinal length of said core, and

attachment means at the lower end of said back strap for securing said tapes to said back strap.

2. The clavicle splint as defined in claim 1 wherein said core includes a longitudinally extending channel in the outer surface of said core, said channel being configured to receive said tape to thereby retain the same centered along said outer surface.

3. A clavicle splint as defined in claim 2 wherein said tape and said outer cover are secured to said core by stitching.

4. The clavicle splint as defined in claim 3 wherein said foam material comprises discrete particles of resilient polyurethane foam bonded together.

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