

March 10, 1970

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3,499,441

CLAVICLE BRACE

Filed Sept. 1, 1967

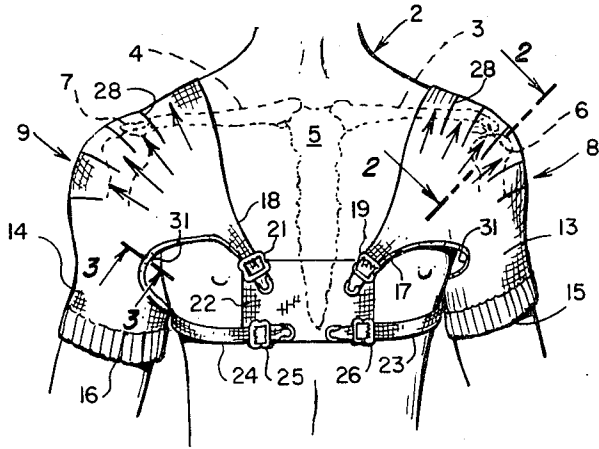


FIG. 1

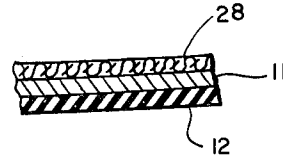


FIG. 2

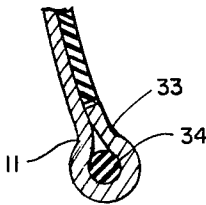


FIG. 3

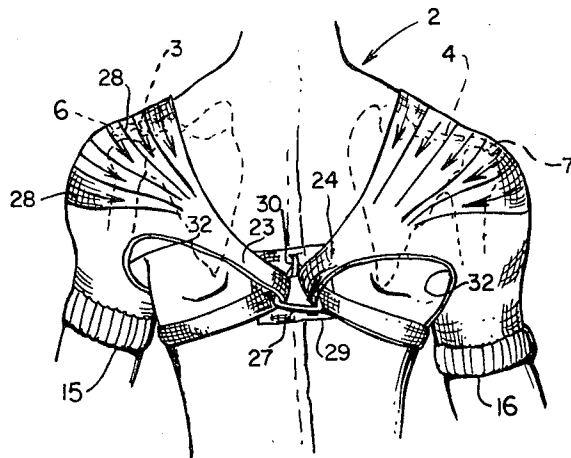


FIG. 4

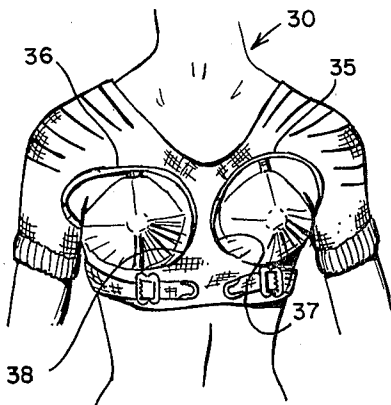


FIG. 6

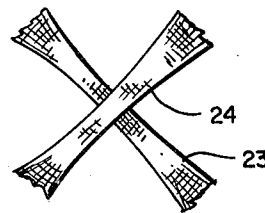


FIG. 5

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**CLAVICLE BRACE**

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Filed Sept. 1, 1967, Ser. No. 665,123

Int. Cl. A61f 5/03, 13/12, 5/02

U.S. Cl. 128—87

10 Claims

**ABSTRACT OF THE DISCLOSURE**

Clavicle brace including shoulder pieces adapted to bear against shoulders of wearer having flexible bands extending from shoulder pieces to front pad member and force applying strap members extending from shoulder pieces oppositely of bands diagonally across portions of back and around sides of wearer and joined to front pad member to apply equally distributed forces backwardly, outwardly and upwardly on shoulders of wearer to relieve forces on clavicle bone. Shoulder pieces having cut-out portions for ventilation of axilla and sleeve-like portions fitting over upper arm of wearer.

This invention relates to body supports and more particularly to clavicle braces suitable for positioning and relieving the usual pressure on the fractured or injured clavicle bones.

The function of the clavicle bones in the human body is to hold the shoulders up and away from the chest. These clavicle bones are joined at one end to the breast bone (sternum) and are joined at the other end to the shoulder blades (scapula). These clavicle bones are thus the only connection between the shoulders and the trunk of the body and therefore are frequently fractured. Displacement of clavicle bone fractures is reduced by pulling shoulders upward, outward and backward and maintaining this position. Suitable support braces for applying upward, outward and backward forces to the shoulders allow fractured fragments to unite and heal by removing pressure and eliminating excess motion.

Braces presently in use for supporting fractured or injured clavicle bones have several disadvantages which include the use of straps which extend under the axilla causing skin irritation and preventing proper body ventilation. Other forms of braces pull the arm down so as to impede cleaning and ventilation thereby producing odor and the like. Frequently these braces are bulky and interfere with usual wearing apparel.

Briefly stated a clavicle brace embodying features of the present invention applies upward, outward and backward forces to the shoulders of the wearer and maintains this position to allow fractured clavicle bone fragments to unite with a minimum of body discomfort and interference with the usual body apparel.

Accordingly, it is an object of this invention to provide a simple and durable clavicle brace suitable for use by men, women and children, which does not interfere with their usual wearing apparel.

Another object of this invention is to provide a clavicle brace which will apply substantially equal pressures and upward, outward and backward forces on the shoulders and leaves the axilla of the wearer open for cleaning and ventilation so as to prevent body odor and skin irritation.

It is still a further object of this invention to provide a clavicle brace which eliminates belts or straps extending through the axilla so that there is no pressure or pulling forces applied through the axilla.

It is still a further object of this invention to provide a novel clavicle brace which may be easily adjusted for

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various sizes and shapes of persons and which may be easily applied and removed.

Further objects, advantages and capabilities of the present invention will become apparent from the following description taken in conjunction with the drawings in which:

FIG. 1 is a front elevation view of a clavicle brace disposed on a male body with the direction of forces applied to the shoulders by the brace indicated by arrows;

FIG. 2 is a sectional view taken along lines 2—2 of FIG. 1 showing the construction of the shoulder pieces;

FIG. 3 is a section view taken along lines 3—3 of FIG. 1 showing the resilient edges of the shoulder pieces;

FIG. 4 is a rear elevation view of the brace shown in FIG. 1;

FIG. 5 is a fragmentary view of an alternative arrangement for the straps which cross at the back of the wearer; and

FIG. 6 is a front elevation view of a clavicle brace embodying features of the present invention disposed on a female body.

Referring now to the drawings, the shoulder and chest portion of a male body 2 is shown in FIGS. 1 and 4 for purposes of description which includes left and right side clavicle bones 3 and 4 joined at their inner ends to the breast bone 5 and their outer ends to left and right side shoulder blades or scapula 6 and 7, respectively.

As shown in FIGS. 1—4 the clavicle brace disposed on the body 2 comprises left and right side shoulder pieces 8 and 9 preferably formed of a canvas layer of material 11 such as that used in preparing orthopedic appliances which is lined with a layer of soft, resilient material 12 such as foam rubber (FIG. 2) throughout all body contact surfaces and pressure points to prevent any localized pressure on the shoulders. These shoulder pieces are of sufficient width to extend substantially above and substantially below the shoulders and preferably include lower left and right side sleeve portions 13 and 14 which fit around the upper arm of the wearer with knit-like cuffs 15 and 16 for holding the shoulder pieces in position on the body.

Forward portions of the left and right side shoulder pieces are narrowed and left and right side bands 17 and 18 are interconnected at one end to the narrowed forward portions of associated shoulder pieces and are detachably joined thereto as by buckles 19 and 21 attached to the upper corners of a front pad member 22 through which the free end of the associated band extends. The pad member 22 is generally oblong in shaping for the male and when disposed on the chest of the wearer and of a dimension which leaves the breast area of the body open. This pad member is also preferably lined with a soft resilient material such as foam rubber or soft cotton for contacting the body surface. Bands 17 and 18 are flexible or elastic and preferably of ribbed type construction so as to permit expansion and contraction of the chest of the wearer during breathing with the belt and buckle connection permitting length adjustment to accommodate persons having chests of different sizes.

Rear portions of the shoulder pieces are narrowed and left and right side straps 23 and 24 are interconnected at one end to the narrowed rear portions of associated shoulder pieces and extend diagonally across a portion of the back and around the rib cage substantially below and in spaced relation with the axilla on each side of the wearer. Side straps 23 and 24 are detachably joined to the pad member 22 as by buckles 25 and 26 attached to the lower corner portions thereof. To apply the required outwardly, upwardly and rearwardly directed forces to the shoulder pieces these straps may extend through an intermediate member 27 which may be triangular as shown

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or circular or oblong. As shown the triangular shaped member is mounted at its apex on a pad member 29 engaging the body surface with a strap 30. The side straps 23 and 24 overlap one of the legs of the triangular member and return along the same side of the body as shown in FIG. 3 or in the alternative they may cross at the center of the back and return along the opposite side of the body as shown in FIG. 4.

In this manner, the straps when secured tightly on the pad member serve to apply pulling forces back and slightly upwardly, outwardly on the shoulders of the wearer to relieve the normal forces applied to the clavicle bone and eliminate excess body motion. The direction of these pulling forces as applied to the shoulders are indicated by arrows in FIGS. 1 and 2 and extend from the upper connection on the pad member rearwardly over the shoulders and back diagonally across the shoulders and thereby maintain the clavicle bones in a proper position for healing when fractured. Rib-like reinforcing portions 28 are preferably provided on each of the shoulder pieces which extend over the shoulders in spaced relation and extend at each end toward the associated straps and bands along these lines of force to direct the pulling forces in an essentially equal distribution over the shoulders.

Each of the shoulder pieces is provided with forward and rearward cut-out portions 31 and 32 adjoining the axilla which provide for axilla ventilation of the wearer. The edges of the shoulder pieces which form these cut-out portions are preferably resilient as by folding the edge 33 of the canvas material folder over an elastic band 34 as is shown in FIG. 3 so that the shoulder pieces are held firmly on the body adjoining and spaced from the axilla.

For use by the female body 30 as illustrated in FIG. 6 a clavicle brace similar to that above shown and described is provided with extended cut-out portions 35 and 36 of the shoulder pieces disposed forwardly of the body and the pad member being provided with cut-out portions 37 and 38 along its sides to accommodate and leave open the breast portion of the body and not interfere with the usual apparel associated therewith. The upper corners of the pad member are shown disposed inwardly of the lower corners thereof. While a belt and buckle connection between the forward bands and the upper corners of the front pad member has not been shown in the female brace of FIG. 6, this may be done in this arrangement in the manner as shown in FIG. 1 to provide adjustment for chests of various sizes.

While the present invention has been described with reference to particular brace structure, there is no intent to limit the spirit and scope of the precise details except as defined in the appended claims.

**I claim:**

1. A clavicle brace comprising left and right side shoulder pieces adapted to bear against the shoulders of a wearer, said shoulder pieces being of sufficient width to extend substantially above and substantially below the shoulders, left and right side elastic bands interconnected at one end of the left and right side the front end portions of said shoulder pieces, a front pad member detachably joining the other ends of said bands in spaced relation forwardly of the wearer, left and right side straps interconnected between rearward portions of associated left and right side shoulder pieces and in spaced relation to a lower portion of said pad member and adapted to extend diagonally across a portion of the back and around the rib cage and in spaced relation and below with the axilla on each side of the wearer for applying forces along said shoulder pieces so as to draw the shoulders of the wearer backwardly, outwardly and upwardly, each said shoulder piece having spaced cut-out portions for providing axilla ventilation for the wearer.

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2. A clavicle brace as set forth in claim 1 wherein said shoulder pieces include sleeve-like portions for fitting around upper arm of the wearer.

3. A clavicle brace as set forth in claim 1 wherein said bands are detachably joined to the pad member by a belt and buckle connection for adjustment to selected band lengths to accommodate bodies of various sizes.

4. A clavicle brace as set forth in claim 1 wherein said straps are detachably joined to the pad member by a belt and buckle connection for adjustment to selected strap lengths to accommodate bodies of various sizes.

5. A clavicle brace as set forth in claim 1 wherein said shoulder pieces include a soft cushion-like material formed on its body contacting undersurface portions.

6. A clavicle brace as set forth in claim 1 wherein said shoulder pieces include a resilient edge defining said cut-out portions.

7. A clavicle brace as set forth in claim 1 wherein said straps extend diagonally across the back of the wearer and fold over a portion of a common intermediate member and around the rib cage on the same side of the body.

8. A clavicle brace as set forth in claim 1 wherein said straps extend diagonally across the back and around the rib cage on the opposite side of the body.

9. A clavicle brace comprising left and right side shoulder pieces formed of a canvas-like material having a soft body contacting undersurface adapted to bear against the shoulder of a wearer, said shoulder pieces being of sufficient width to extend substantially above the shoulders and having sleeve-like portions for fitting around upper arm of the wearer in a snug relationship substantially below the shoulders, left and right side elastic bands interconnected at one end of the left and right side of the front end portions of said shoulder pieces, a generally oblong shaped front pad member, means for connecting a free end of each band of adjoining upper corners of said pad member at selected points along said bands to accommodate bodies of various sizes, left and right side straps interconnected between rearward portions of associated left and right side shoulder pieces means for connecting the free end of each strap at adjoining lower corners of said pad member at selected points along said straps to accommodate bodies of various sizes, said straps adapted to extend diagonally across a portion of the back and around the rib cage and in spaced relation and below with the axilla on each side of the wearer for applying forces along said shoulder pieces so as to draw the shoulders of the wearer backwardly, outwardly and upwardly, each said shoulder piece having resilient edged portions defining spaced cut-out portions for providing axilla ventilation for the wearer.

10. A clavicle brace as set forth in claim 9 wherein said connecting means includes a buckle mounted at each corner of the pad member through which associated end portions of said straps and bands extend.

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U.S. Cl. X.R.

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