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ARM STIFFENING DEVICE

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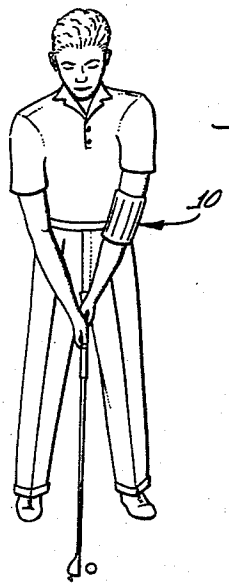

FIG. 1.

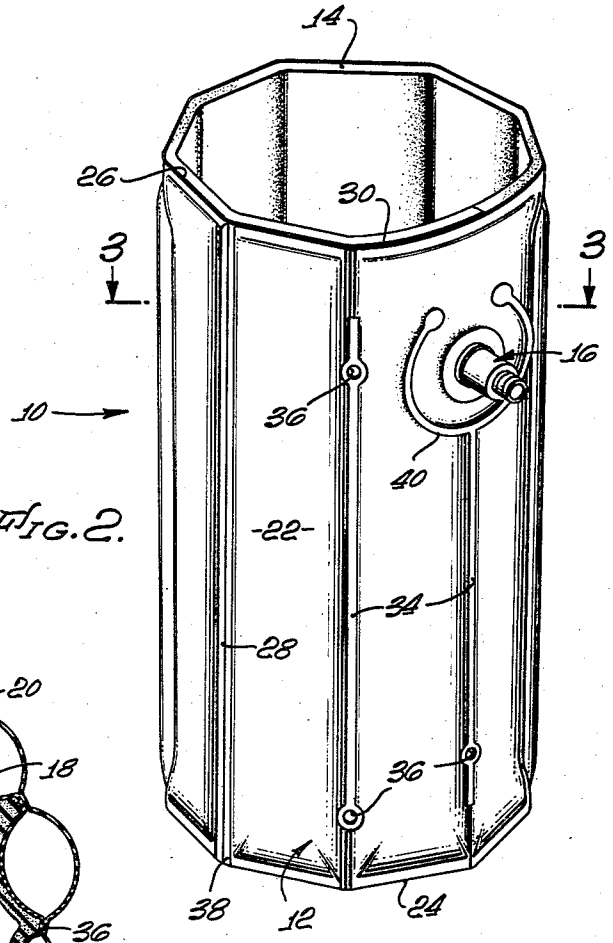

FIG. 2.

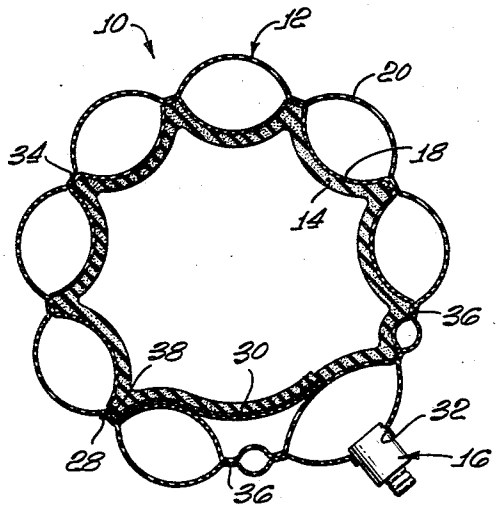

FIG. 3.

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ARM STIFFENING DEVICE

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4 Claims. (Cl. 273—189)

The present invention relates to devices for holding the leading arm of a golfer substantially rigid while the golfer is swinging a golf club, and more particularly to such a device which is easy to put on and take off, comfortable to wear, which may be left in position on the arm for an extended period of time without affecting the golfer's game adversely and which is readily adjustable.

Most prior art devices designed to stiffen the elbow of the leading arm of a golfer as he is swinging a golf club have employed a wrapper of flexible material which is wrapped around the elbow and secured in position by buckles or a slide fastener arrangement. The use of such artificial securing means is uncomfortable and usually at least partially reduces blood circulation on the arm so that such devices could only be worn for short periods of time. In addition, many of the conventional devices employ a stiffening member of solid material such as, for example, an elongated piece of spring steel to limit bending of the arm.

Attempts have also been made to employ elastic sheaths to cover the elbow of the leading arm. For such a device to provide sufficient stiffening action it was necessary that the device be quite form fitting thereby limiting the number of people who could wear a particular size to a very small group.

The discomforts associated with wearing such conventional devices limited the use thereof to practice sessions. In view of these and other disadvantages found in the conventional devices, it is an object of our present invention to provide an arm stiffening device for golfers which may be readily fitted over the elbow of the leading arm and which may be readily adjusted to provide any desired degree of stiffness to the arm.

It is a further object of our invention to provide such a device which is simple of construction, readily adjustable to fit a wide variety of arm sizes and which is comfortable to the wearer over an extended period of time.

A more particular object of our invention is to provide such a device which may be frictionally secured to the arm of the wearer without the necessity of using buckles, straps, or slide fasteners.

Other objects and advantages of the present invention will, it is believed, be readily apparent to those skilled in the art from the following detailed description of a preferred embodiment thereof when taken in connection with the accompanying drawings in which

Fig. 1 is an elevation view of a golfer in the act of swinging a golf club with our present invention operatively disposed about his left or leading arm to hold this arm substantially straight during the swing.

Fig. 2 is a perspective view of our device.

Fig. 3 is a sectional view taken substantially along the line 3—3 of Fig. 2.

Referring now to the drawings, an arm stiffening device in accordance with the present invention is indicated generally at 10. The device includes an elongated tubular inflatable sheath 12, a liner element 14 and a valve element 16.

The sheath 12 includes an inner layer 18 and an outer layer 20 preferably formed from an air impervious flexible, substantially inelastic material such as, for example, polyethylene or polystyrene plastic. The layers 18 and 20 are, as will be more fully explained below, sealed to provide a substantially air tight sheath. In addition, portions of the respective layers are sealed to one another to form ribs 22 paralleling the central axis of the sheath.

In forming the sheath, the layers 18 and 20 are cut to the desired size and laid flat upon one another. The ends 24 and 26 and edges 28 and 30 are then heat-sealed together in a manner well known in the art. The outer sheath 20 is provided with an opening 32 which receives the valve 16. The flat layers as sealed at their respective ends and sides may be inflated to form a pillow-like structure.

If these layers were then formed into a sheath, an arm supporting device could be formed. We have found, however, that substantially improved results are obtained by providing a plurality of longitudinally extending stiffening ribs 22. Accordingly, the flat layers are sealed together by webs 34 extending longitudinally with respect to the central axis of the resulting sheath and perpendicularly to the ends 24 and 26 thereof. The webs are formed by the conventional heat-sealing process and as best shown in Fig. 2, do not extend the entire length of the resulting sheath but rather terminate short of either end 24 and 26 to provide an air passage space between the ends of the respective ribs 22.

In order to increase the comfort to the wearer, we have provided the sheath with a plurality of air passages or holes 36 adjacent the ends of each web 34.

To form the arm stiffening device the edges 28 and 30 of the sheath are then overlapped, as best shown in Fig. 3, to provide a device of the desired diameter. The edge 28 is then sealed as at 38 to the overlapped portion of the edge 30.

To the inner surface of the layer 18 there is then secured the liner element 14. This liner element may be formed from any suitable cushioning material such as, for example, sponge rubber. The thickness of the liner element 14 will be determined by the size of the sheath desired and the amount of cushioning necessary. The liner element is provided with a plurality of openings, not shown, to correspond with the air passages 36 to allow free passage of air into the inner surface. Of course, if the cushioning material is sufficiently thin or porous, these inner openings would not be necessary.

The webs 34 are inflated by means of a conventional closable valve 16. The valve 16 may be replaced by an air inlet tube and stopper arrangement, or by any self-operating valve member. We prefer to use, however, the push-pull type valve so that air may be admitted to the area between the layers by pulling the valve element out and forcing air into the ribs and the valve is then closed by depressing the movable element. Such valves are conventional and are well known in the art. The valve may be preferably positioned near one end 24 of the sheath and the layers 18 and 20 sealed together through an arc of approximately 270° to 300° around the base of the valve as shown at 40.

The materials from which the sheath or liner may be made may be varied over a wide range. We prefer, however, both for ease of manufacture and for general comfort of the wearer to form the sheath from plastic layers which may be readily heat-sealed together. The device that we have described is a straight sheath, having the same diameter at each end. If desired, the sheath may be tapered to more exactly conform to the general contour of the arm. Thus the diameter at one end will be

greater than the diameter at the other. In forming a tapered sheath, the individual layers instead of being square or rectangular would be generally trapezoidal so as to result in a taper of predetermined degree.

Finally, as previously stated, the precise type of valve or air passage sealing means may, to a large measure, be determined by manufacturing requirements. It is only necessary that the user be able to introduce air into the webs and to seal off the inner area between the layers from the outside atmosphere.

The device thus described is imminently suitable as an arm stiffening device, the inflated webs acting as stiffeners to constantly remind the golfer to keep his left arm straight.

In the use of a device thus described, a right handed golfer pulls the deflated device over his left arm and positions it intermediate the wrist and shoulder so that the midpoint of the device is slightly above the elbow. The valve is positioned so as to lie on top of the man's arm muscle or preferably turned inwardly toward the body. By raising the arm across the body the valve can be placed in the golfer's mouth, the sheath inflated and the valve closed readily and conveniently. Naturally, the greater the pressure, the more firmly the arm will be held.

Because of the ready inflatability of the device, the golfer may deflate it when he desires flexibility in his left arm as, for example, when putting. Then, by merely raising his left arm across his mouth, he can reinflate the device to the desired degree to prevent the arm from flexing or bending.

While the device described is principally employed as a reminder or aid to golfers, we believe that the same principle can be utilized in the forming of temporary splints to prevent flexing of broken and otherwise injured limbs. For example, by increasing the length of the device and the amount of taper, the upper or lower leg, knee or entire arm can be temporarily immobilized by a device having the same general structural elements.

Accordingly, it is to be understood that we do not wish to be limited to the precise details of structure above set forth, but our invention is of the full scope of the appended claims.

We claim:

1. An arm stiffening device adapted to be worn by a golfer on his leading arm comprising: an elongated tubular sheath having an inner layer and an outer layer, said inner and outer layers being formed from an air impervious, flexible, substantially inelastic material; a plurality of longitudinally extending reinforcing ribs formed by sealing selected portions of said inner and outer layers to one another; and inflating means carried by said sheath for selectively inflating said ribs.

2. An arm stiffening device adapted to be worn by a golfer on his leading arm comprising: an elongated tubular sheath having an inner layer and an outer layer, said inner and outer layers being formed from an air impervious, flexible, substantially inelastic material; means sealing the ends and edges of said inner and outer layers to one another to form an inflatable air space therebetween; means sealing selected portions of said inner and outer layers to one another to divide said air space into a plurality of longitudinally extending reinforcing ribs; and valve means carried by said sheath for selectively inflating said ribs.

3. An arm stiffening device adapted to be worn by a golfer on his leading arm comprising: an elongated tubular sheath having an inner layer and an outer layer, said inner and outer layers being formed from an air impervious, flexible, substantially inelastic material; means sealing the ends and edges of said inner and outer layers to one another to form an inflatable air space therebetween; means sealing selected portions of said inner and outer layers to one another to divide said air space into a plurality of longitudinally extending reinforcing ribs; valve means carried by said sheath for selectively inflating said ribs; and a cushioning liner element secured to said inner layer.

4. An arm stiffening device adapted to be worn on a golfer's leading arm comprising: a tapered, elongated, tubular, inflatable sheath having an inner layer and an outer layer, said inner and outer layers being formed from an air impervious, flexible, substantially inelastic material, said inner and outer layers being sealed to one another at their respective ends and edges to form an air space therebetween; a plurality of uniformly spaced, laterally displaced webs formed by sealing selected portions of said inner and outer layers to one another, said webs dividing said air space into a plurality of longitudinally extending inflatable reinforcing ribs; a plurality of air passages carried by said sheath adjacent said webs; said outer layer being provided with an opening adjacent one end of said sheath; a valve element carried within said opening for selectively inflating said ribs; and a liner element secured to said inner layer, said liner element being formed from a porous cushioning material.

References Cited in the file of this patent

UNITED STATES PATENTS

2,414,051	Mallory	Jan. 7, 1947
2,468,580	Weis et al.	Apr. 26, 1949
2,531,074	Miller	Nov. 21, 1950