

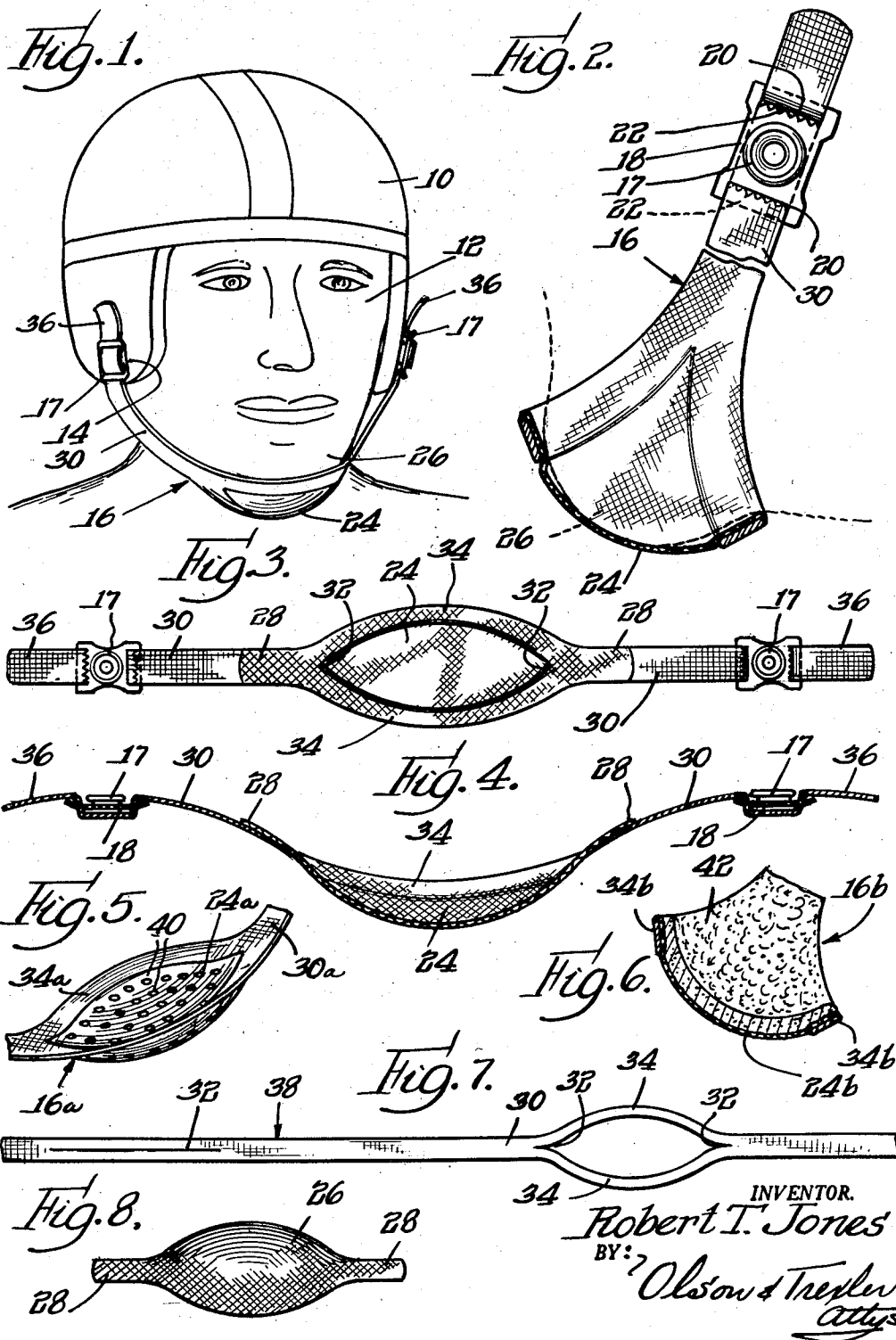
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CHIN STRAP FOR HELMET

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CHIN STRAP FOR HELMET

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This invention is concerned generally with improvements in athletic equipment, and more particularly with a chin strap for football helmets.

At one time football helmets were held on the head of the wearer by means of a narrow strap passing beneath the chin substantially at the junction of the chin and the throat. Such straps proved generally satisfactory in resisting upward forces, but allowed helmets to be knocked from the heads of wearers by forces urging the helmets backwards relative to the heads. In recent years a type of chin strap has become popular which is provided with a cup fitting over the point of the chin of the wearer. Such a chin strap resists both upward and rearward forces, thereby holding the helmet more securely on the player's head, and additionally provides some measure of protection for the point of the chin. This invention is concerned with a chin strap of the latter type, and it is to be understood that this is the type intended hereinafter whenever the term chin strap is used.

Chin straps heretofore have been made of leather. It will be apparent that leather articles are not very washable, and absorb large quantities of perspiration when in contact with the skin of an athlete. Such absorption of perspiration leads to soiling of the chin strap, and further to mildewing thereof and of drying out and cracking. Leather is not particularly resistant to abrasion, it stretches substantially, and colors can be applied generally only to the surface thereof where they become chipped off or discolored. Leather is of nonuniform characteristics, allowing weak spots to be present which lead to early failure. Furthermore, nonuniform thickness and size renders application of slip on buckles or snaps to leather straps difficult. In addition, the leather straps stretch considerably in use, and they are not very comfortable to wear.

Accordingly, it is an object of this invention to provide a chin strap which overcomes the difficulties set forth above.

It is a further object of invention to provide an improved method of making chin straps for football helmets and the like.

Yet another object of this invention is to provide a chin strap for football helmets and the like, and also a method of making the same, which are more economical than those heretofore known in the art.

Other and further objects and advantages of this invention will be apparent from the following description when taken in connection with the accompanying drawings wherein:

Fig. 1 is a perspective view of a chin strap as constructed in accordance with the principles of my invention shown as it is used;

Fig. 2 is a side view partially in section of the chin strap;

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Fig. 3 is a plan view thereof;

Fig. 4 is a side sectional view thereof;

Fig. 5 is a fragmentary perspective view illustrating a modification of the chin strap cup;

Fig. 6 is a cross sectional view through the cup showing another modification;

Fig. 7 is a plan view illustrating one of the steps in the process of manufacturing the chin strap; and

Fig. 8 is another plan view illustrating a step in the fabrication of the chin strap.

In accordance with the principles of this invention it is proposed to provide a chin strap for football helmets and the like made of cloth fabric and webbing impregnated with vinyl plastic. The chin strap so produced is washable. It is abrasion resistant and mildew resistant. It is of uniform thickness and size, and will not stretch substantially. Any color imaginable can be utilized, and the colors go all the way through, thereby leading to substantially everlasting colors, and the same glossy finish is produced as is found on modern helmets. The chin strap is strong, durable and comfortable and will not dry out or crack after wetting.

Referring now in greater particularity to the drawing, and first to Fig. 1, there will be seen a football helmet 10 as worn by a player 12. The helmet may be of any standard construction and includes male snap fasteners adjacent the lower corners of the ear covering portions as at 14. A chin strap designated, generally, by the numeral 16 is detachably secured to the male snap fasteners on the helmet by means of buckles or female snap fasteners 17.

The helmet and snaps thereon may be of any conventional construction, and such helmets at the present time generally are made of a rather hard and tough plastic material, although many helmets still are made of leather. The buckles or female snap fasteners 17 are of conventional construction including a plate portion 18 having slots 20 near the opposite ends thereof. The ends of the strap 16 as may be seen in Fig. 2 fit through the slots 20, and the slots are provided on an appropriate edge with teeth 22 to resist retraction of the strap from the buckles or fasteners.

The chin strap 16 includes a central cup 24 which is formed as a cup or pocket to fit over the chin 26 of the player, and which in outline is generally oblong or elliptical, having longitudinally extending tabs 28 on the opposite ends thereof. The cup 24 preferably is made of heavy cloth and is stretched to shape by the application of heat preferably accompanied by steam, in a die.

The cup also preferably is impregnated with a vinyl plastic as hereinafter will be brought out fully. The chin strap 16 also includes a web 30. The web is longitudinally split at the center thereof as is indicated at 32 to run along the opposite longitudinal edges of the cup 24 as at 34. The web 30 is made of heavy cloth webbing and is impregnated with the same vinyl plastic as the cup. This vinyl plastic serves also to hold the cup in place in the web. It also serves to prevent splitting of the tape beyond the slit at 32, and prevents the cut ends of the threads of the web from ravelling. The extreme ends 36 of the web extend through the buckles or female snap fasteners 17 as previously has been indicated.

Further reference to the structure of the chin strap will be made during and after a discussion of the process of manufacturing the strap. First, the web 30 is woven as a continuous strip, such strip being indicated at 38 in Fig. 7. This strip 38 is impregnated with a vinyl plastic of the type known as a plastisol. The vinyl impregnation

then is partially cured or polymerized. The strip 38 is fed along a predetermined path during such impregnation and partial curing, and then is split as at 32. The partially cured vinyl plastic material prevents further splitting and precludes ravelling. The cup then is formed as in Fig. 8, preferably by the application of steam or of water and heat in a mold, and the cup preferably is formed as one of a series in a strip of fabric material. The cup then is impregnated with the same vinyl plastic material, either from one, or from both sides, and this vinyl plastic material is partially cured. At this time the cup is still preferably one of the series. The cup then is cut to the configuration specifically illustrated in Fig. 8 and is inserted in the split 32 in the tape, the split by this time having been separated to form the two spaced apart web portions 34. The partially cured vinyl impregnation of the web and of the cup causes them to stick together, and the cups are trimmed to their final outside shape in a die and are simultaneously bonded to the web by the application of heat, preferably accompanied by pressure, to complete curing or polymerization of the vinyl plastic material. A double die then cuts the web midway between successive splits or slits 32 to form the trailing end of one chin strap and the leading end of the next chin strap. The cured or completely polymerized vinyl plastic bonds the cup 24 permanently and firmly to the web 30. The buckle or female snap fasteners then are applied by hand as will be understood.

In some instances it may be desirable to provide for ventilation of the cup 24. In this instance, as is shown at 24a in Fig. 5, the cup may be perforated, having a plurality of holes or apertures 40 provided therein. Some degree of ventilation also could be provided by omitting the vinyl impregnation of the cup except along the edges thereof where it is bonded to the split sections 34 of the web. This modification is not specifically illustrated due to the impossibility of indicating the presence or absence of the impregnating material in the cup.

Another expedient which might be adopted to provide some ventilation, and which is of considerable value from a comfort standpoint is illustrated in Fig. 6. In this embodiment of the invention, like parts being identified by similar numerals with the addition of the suffix b, the construction heretofore shown and described remains identical, but a lining or padding material 42 is provided on the inner surface of the cup. This lining or padding material can comprise a fleecy material made of synthetic fibers which do not absorb and hold moisture, or it can be made of foam rubber, or other suitable material glued or cemented, or otherwise suitably secured to the inner surface of the cup. This lining also might include flocking material blown against the inner surface of the cup before the final curing or polymerizing of the vinyl plastic, or it might be flocking otherwise held in place. It will be understood that it is preferred that the lining material might be replaceable, and to this end the lining material 42 preferably would be secured by releasable means such as a stripable cement such as rubber cement or by a cement which readily could be softened by a solvent, or by some other satisfactory releasable means.

It will be apparent that the chin strap heretofore shown and described and the process of making the same present many advantages over the prior art.

The chin strap is completely washable without damage. It is abrasion resistant, and it is mildew resistant. It is stronger and more durable than any previous chin straps with which I am familiar, and it will not dry out or crack after wetting. Since it is readily formed to shape and does not change in dimensions with age and use, it is more comfortable to start with and remains more comfortable throughout its service life than prior chin straps with which I am familiar. Unlike leather, the material is of uniform thickness and size, and therefore is adapted for handling by automatic machines and methods, and

the buckles or fasteners are more readily applied. The chin strap will not stretch appreciably, and this prevents loosening of the helmet, and obviates the necessity of adjusting the buckles or fasteners on the strap from time to time. The chin strap readily can be made in any imaginable color, and the colors are incorporated in the vinyl plastic material and therefore extend entirely through the chin strap. Accordingly, the colors do not change with time or become worn away. Also, the appearance of the chin strap is similar to the glossy finish now popular in football helmets. From the advantages listed heretofore, it will be understood that the chin strap also is stronger and more durable than prior chin straps in general.

As heretofore has been noted that the process is adapted for carrying out by automatic means, and therefore is quite economical, in addition to being economical of materials.

Various changes in structure and in steps of the method will no doubt occur to those skilled in the art, and will be understood as forming a part of my invention insofar as they fall within the spirit and scope of the appended claims.

The invention is claimed as follows:

1. The process of manufacturing a chin strap for use with a football helmet or the like, which comprises providing an elongated woven flexible web slit longitudinally to provide divided sections of the web intermediate its ends, impregnating said web with a heat-curable resinous substance, forming a cup-shaped member of a flexible fabric to accommodate the chin of a wearer, impregnating at least the peripheral section of said cup shaped member with a heat-curable resinous substance, partially curing the plastic material of said web and of said cup, inserting said cup between the divided sections of said web with its peripheral section in overlapping face-to-face contact with the divided sections of the web and with the undivided sections thereof immediately adjacent the divided sections, and heating the thus formed assemblage to complete the curing of the resinous substance to form a flexible cured composition and to bond said cup and web together.

2. The process of manufacturing a chin strap for use with a football helmet or the like, which comprises providing an elongated web of woven cloth, impregnating said web with a vinyl plastisol, partially curing said plastisol, slitting said web intermediate the ends thereof substantially along the center line thereof, shaping a cloth cup to accommodate the chin of a wearer, impregnating said cloth cup at least along the edges thereof with a vinyl plastisol, partially curing the vinyl plastisol of said cup, inserting said cup in the slit of said web with the partially cured plastisol of said web and of said cup in contact, and completing curing of the plastisol of said web and of said cup to bond said web and said cup together.

3. In a completely washable, flexible, substantially unstretchable, perspiration- and mildew-resistant chin strap for a helmet, the combination including: an elongated flexible woven web of suitable dimensions slit approximately along its longitudinal axis for a suitable distance intermediate its ends, the sections of the web separated by the slit being spaced from one another to define a roughly oval opening through the web; a roughly oval cup-shaped member of woven flexible material located in the oval opening having its peripheral section overlapping and in flat face-to-face contact with the spaced sections of the web and with the unslit sections thereof immediately adjacent the spaced sections; and a heat-cured flexible resinous composition covering and permeating the elongated web and at least the peripheral section of the cup-shaped member and binding them together throughout the region of overlap.

4. A chin strap as claimed in claim 3 wherein the

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resinous composition covers and permeates the entire cup-shaped member.

5. A chin strap as claimed in claim 3 wherein the heat-cured resinous composition is a heat-cured vinyl plastisol.

6. A chin strap as claimed in claim 3 wherein the cup-shaped member is provided with a ventilating perforation.

7. A chin strap as claimed in claim 3 wherein a lining of padding material is secured to the concave surface of the cup-shaped member.

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