

May 28, 1957

J. L. KLEINMAN

2,793,366

HELMETS

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Fig. 1

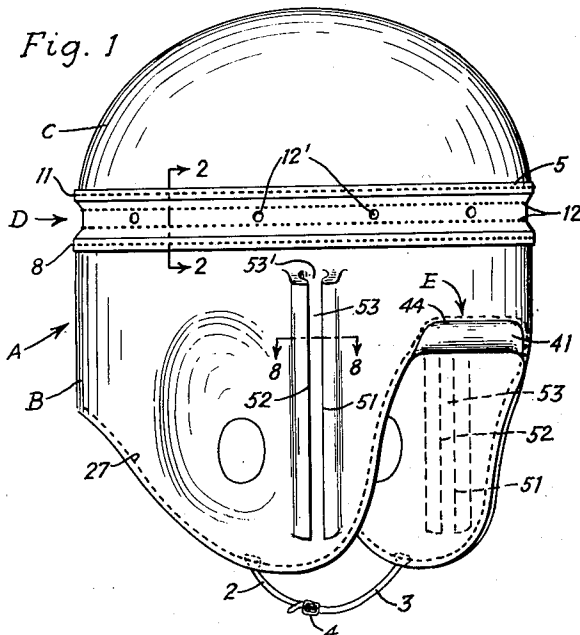


Fig. 2

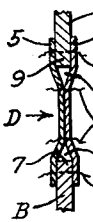


Fig. 3

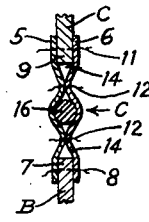


Fig. 8

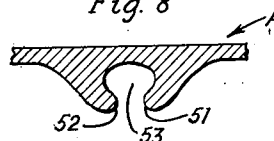


Fig. 9



Fig. 4

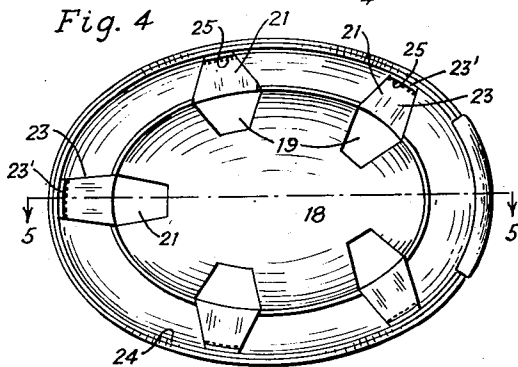


Fig. 6

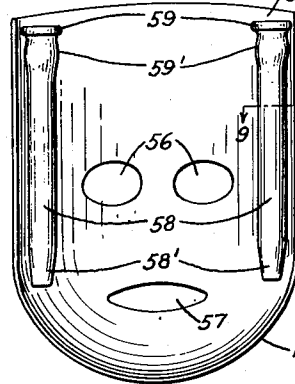


Fig. 7

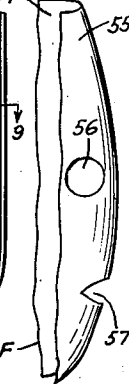


Fig. 5

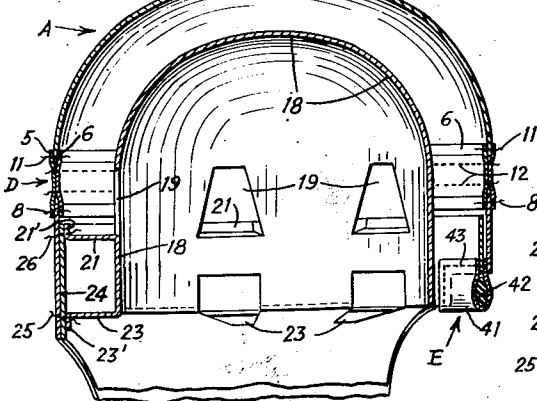
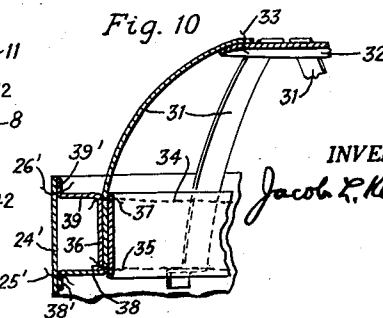


Fig. 10



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1

2,793,366

HELMETS

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8 Claims. (Cl. 2—3)

This invention relates to the construction of helmets in general, and more particularly to a type known as football helmets, and is constructed in a manner wherein the helmet is provided with an independent inner net adapted to prevent direct contact between the skull of the helmet and the wearer's head and wherein the crown section is secured to the base unit of the helmet in a manner whereby such crown section is spaced away from the base unit and is provided with means adapted to check the effect of shock caused by a blow upon the crown section thereby minimizing possible injuries to the wearer.

This application is filed as a continuation in part of my co-pending application for helmets S. N. 338,090, filed February 20, 1953.

My novel construction is capable of being utilized in connection with various types of helmets, for example; army helmets, navy helmets, marine helmets, aviation helmets, football helmets, workmen's helmets, miner's helmets and helmets for various other purposes.

In accordance with my invention, I produce a helmet comprising an individual base-unit and an individual crown-section wherein an outer strip and an inner strip of pliable material circle the end portions of the base-unit and of the crown-section and are secured thereto in a manner holding such end portions spaced away from each other, and wherein the inner net comprises an independent unit secured to the base-unit in a manner holding such unit spaced away from the base-unit, thus providing a rebounding and shock absorbing system adapted to check or disrupt the flow, motion or movement, of shock produced by blows against the helmet while in use.

There is, therefore, thus produced, in accordance with my invention, a helmet comprising a base-unit and a crown-section provided with rebounding means adapted to check and absorb the shock of a blow or knock received by such helmet thereby minimizing possible injuries to the wearer.

To illustrate the ordinary commercial utility of my helmet in daily life, a helmet constructed in accordance with my invention, of whatever style or type it may be made, could be utilized to great advantage. For the purpose of explaining my invention the following may be said: It is a well known fact, that the present type of helmets consists of a skull made of hard material, such as fiber, metal, plastic, or Bakelite, and is provided with an inner net adapted to rest upon the wearer's head in a manner holding the upper portion of the skull spaced away from the wearer's head, with the expectations of preventing injuries to the wearer's head when an object strikes against such skull. Such helmet structure has been designed for the purpose of protecting the wearer's head against injuries, but, in reality such helmet structure does not fully accomplish its purpose. Because, the end portions of such net being secured directly to the lower portion of the skull of the helmet, the wearer feels a heavy pull upon his head each time an object strikes against the skull portion of such helmet. The force of such pull effects the wearer's head and neck to a great extent. So that while the extreme upper portion of the wearer's head

2

may, to some extent, be protected against a direct hit or blow, yet, the head as a whole is not at all protected against the effect of such hit or blow, which may prove fatal to the wearer.

5 My structure however completely eliminates such hazardous occurrences; the fact that the end portions of my net structure are not secured directly to the skull or frame of the helmet, but are secured by tensioning means to a rim or ring which in turn is secured to the lower end portion of the helmet, suspends my net structure within the interior of the helmet without being connected directly to such helmet. So that when the crown or skull will be hit or struck by an object the helmet will vibrate upon the tensioning means and absorb or rebound the effect of shock caused by such hit; it will check the travel of such shock, thereby minimizing possible injuries to the wearer.

10 Particularly so would such be the case if the helmet will be made of two sections, namely, a base-unit and a crown-section, in which case the yieldable joint will check the shock before reaching the base-unit. It is quite obvious that the structure of the yieldable joint will positively prevent direct contact between the end portion of the base-unit and the end portion of the crown-section, and will act as vibratory means for the crown-section, deadening the force of shock and discontinuing its travel before reaching the base-unit.

15 The same is true with respect to the novel structure of the front portion of my helmet. For informative purposes the following may be pointed out. To attach a face protector to the present type helmet, one must employ a tradesman who would either sew or rivet the face protector on to the helmet. The same applies to the removal of a face protector from the helmet. The average individual can therefore not, instantly, attach, remove or replace his face protector on to his helmet. Such a matter is of course a great hindrance to the activities of the wearer, quite costly and annoying, and at times even hazardous to the user.

20 But my invention solves completely the above mentioned problem; it eliminates the necessity of employing tradesmen to attach or remove face protectors from the helmet. It permits instant removal or replacement of the face protector even by unskilled persons, thereby enabling the wearer to use his helmet for various desired purposes, with or without the use of the face protector, and without any additional expense or loss of time.

25 The same is also true with respect to my soft-bridge carried by the front portion of my helmet. For the purpose of explaining this portion of my invention the following may be pointed out. It is a well known fact that during the course of play, or other activities, the wearer's helmet is, frequently, moved or shoved swiftly over his face. At which time the front edge portion of such helmet hits against the wearer's nose. Occasionally such swift shoving of the helmet is so forceful that it injures the wearer's nose, often times even fracturing same. It is naturally understood that such matter is quite hazardous, annoying and objectionable to the wearer.

30 But my invention completely eliminates the above-mentioned hazardous and objectionable feature. My soft-bridge carried by the front portion of the frame will cushion the touch of the helmet against the wearer's nose, and will prevent direct contact between the hard front portion of such helmet and the wearer's nose, thereby eliminating or minimizing possible injuries to such wearer. There is, therefore, thus produced, in accordance with my invention, a helmet that is fully shockproof and, therefore, reduces the possibilities of injuries to the wearer to a minimum, it is therefore believed that a helmet constructed in accordance with my invention will provide satisfaction, safety and comfort to the user, and will be-

3

come an indispensable item with the average wearer and thus prove quite valuable commercially.

The variety of possible applications of my novel construction in connection with different types of helmets, as hereinabove indicated, are so prolific that for the purpose of illustrating the invention the specific embodiment of my invention in its application to a helmet exhibiting the greatest difficulties has been selected. Such a helmet is one which necessarily must conform most rigidly to the contours of the head and face of the wearer and one which has the field of greatest possible commercial use. For this purpose I have selected for illustration of my novel construction, a helmet of the type constituting a football helmet, so that the principles of construction may best be illustrated in a head protective structure known as helmets.

The objects of the present invention are attained by a novel construction which will be hereinafter described and illustrated in the drawing in connection with a specific embodiment of the invention.

In the accompanying drawing in which such specific embodiment of my invention is illustrated,

Fig. 1 is a perspective side view of a helmet constructed in accordance with my invention.

Fig. 2 is a cross-sectional view taken along the line 2-2 of Fig. 1.

Fig. 3 is a modified view of Fig. 2.

Fig. 4 is a view as it would appear from the bottom looking at the interior of the helmet.

Fig. 5 is a cross-sectional view taken along the line 5-5 of Fig. 4.

Fig. 6 is a view of the inner structure of my face protector.

Fig. 7 is a fragmentary outer side view of Fig. 6.

Fig. 8 is a cross-sectional view taken along the line 8-8 of Fig. 1.

Fig. 9 is a cross-sectional view taken along the line 9-9 of Fig. 6, and

Fig. 10 is a fragmental view, partly in cross-section, of a modified net structure.

Referring more particularly to the drawing, in which similar reference characters identify similar parts in the several views in my novel helmet.

Arrow A indicates a completely finished helmet, in assembled form, made in accordance with my invention. Such helmet may be made of any desirable material, for example, leather, plastic, metal or a combination of these or of any other suitable material, and may be shaped, pressed, molded, formed or machined into any suitable style, in a manner as may be deemed advisable by those skilled in the art of making such helmets, or as may be required by the commercial demand of the industry.

B indicates the base-unit and C indicates the crown-section, 5 indicates the outer strip and 6 indicates the inner strip. These strips are made of yieldable material and are secured to the upper end portion 7 of the base-unit B by suitable means, for example, stitchings 8 and to the lower end portion 9 of the crown-section C by similar suitable means, for example, stitchings 11.

The strips 5 and 6 are joined to each other longitudinally by suitable means, for example, two rows of stitchings 12, separated from each other in a manner providing a substantial centrally located circumferential partition (for example as indicated by arrow D) forming two individual spaced apart air chambers 14 and 15, so that the end portions 7 and 9 may each be positioned in a separate completely-closed air chamber and thus be, positively, prevented or stopped from touching each other during the movement of the crown-section. Furthermore, the partition may be provided with air openings 12' or the portions of the strips 5 and 6, between the stitchings 12 which form the partition as indicated by arrow D; may if so desired be separated from each other

4

as shown at arrow C, Fig. 3, and a member 16, made of suitable material, may be positioned within such spaced section and hold these portions of the strips 5 and 6 in a spaced yieldable position, thereby facilitating the cushioning movements of the crown-section when being struck by an object.

Although I show the circumferential cushioning means being formed by the strips 5 and 6, yet, it is naturally understood that various other suitable means may be utilized in order to achieve the same or similar function, the disclosures herein are for illustrative purposes only and not for limitations.

In addition to the above explanation with respect to net-structures for helmets, the following may be herein added. Due to the fact that ordinary nets are attached to the helmets only by their end portions, free and uncontrollable swaying or side movements of such helmet when struck by an object is permitted. Such movements of the helmet while upon the wearer's head may cause injuries to his ear or head during the course of play, naturally such occurrence is objectionable from every point of view.

It can therefore be readily seen that my net structure which is secured to the lower end portion of the helmet by extensions and to an upper portion of such helmet by flap portions, located directly above the extensions, controls the movement of the helmet when upon the wearer's head, and limits to a great extent swaying of such helmet. Furthermore, I make my net structure in the form, or shape, of a cap 18 adapted to embrace the wearer's head. This cap 18 is provided with air openings 19. The cut-out portions of such air openings 19 form flap sections 21. The bottom portion or lower part of such cap 18 forms a hat-band 22. The cut-out portions of such hat-band 22 form extensions 23. The end portions 23' of these extensions 23 are secured to the lower end portion of a rim or frame 24 by any suitable means, for example, stitchings formed by the threads 25, and the end portions 21' of the flap sections 21 are secured to the upper end portion of the rim 24 (directly above the extensions 23) by similar suitable means, for example, stitchings formed by the threads 26. These stitchings 25 and 26 are made before the rim 24 is placed into the interior of the helmet arrow A. When the cap 18 is thus secured to the rim 24; such rim is then placed within the interior of the helmet arrow A and is secured to the lower end portion of the helmet by any suitable means, for example, stitchings 27 (or rivets not shown). This rim 24 is made of a suitable material, for example, fiber-board or the like, and fits snugly within the base-section B, and may be secured to the helmet at various other points if so desired. It will be seen that when the rim or ring 24 is properly secured in desired position to the helmet the cap 18 will then be suspended within the interior of the helmet and be tensioned by the elements 21 and 23; so that when placed upon the wearer's head the cap 18 will embrace the head and hold the helmet suspended upon the tensioning elements 21 and 23 and thus in a spaced away position from the wearer's head.

The tensioning elements 21 and 23 being located directly above each other and spaced apart a considerable distance from each other will, naturally, hold and control the motion of such helmet, and greatly limit the swaying or side movements of the helmet when upon the wearer's head, thereby greatly minimizing injury possibilities to such wearer.

The foregoing is naturally for illustrative purposes only. Various suggestions, modifications or changes in form of structure, may be resorted to without departing from the spirit of this invention. For example, my net structure may comprise a plurality of strings or tapes 31 secured to an element 32 by suitable means, for example, stitchings formed by threads 33. The end portions of these

5

tapes 31 are each secured to the lower end portion of a hat-band 34 by stitchings 35. Each of these tapes 31 is provided with an auxiliary member 36 secured into position by the same stitchings 35. Each of the tapes 31 and its respective auxiliary member 36 are also secured by stitchings 37 to the upper end portion of the hat-band 34. The loose lower portions of the tapes 31 form extensions 38 and the loose upper portions of the auxiliary member 36 form flap-sections 39. The end portions 38' of these extensions 38 are secured to the lower end portion of the rim 24' by stitchings formed by the threads 25' and the end portions 39' of the flaps 39 are secured to the upper end portion of the rim or ring 24' by stitchings 26' (in the same manner as are the extensions 23 and the flap sections 21 to the rim 24 in Fig. 5). Such rim or ring 24' is then placed into the interior of the helmet and secured thereto in desired position by the stitchings 27 (see Fig. 1). This type of net structure will then function in the same manner as hereinabove described with respect to the net structure illustrated in Fig. 5.

These net structures may be made of any suitable material, and may comprise, in part or in whole, rubberized material so as to be stretchable and fit snugly upon the wearer's head. Suitable adjusting means may be utilized to adjust the net structure to fit the wearer's head.

The front portion of the rim 24 (or 24') may be provided with a cut-out section adapted to hold a soft-bridge portion for example as indicated by arrow E. This soft-bridge comprises a cover 41 provided with a suitable filler 42 and is of substantial width; this soft-bridge portion is positioned within the said cut-out section having its end portions covering part of both sides, or faces, of such cut-out section and is secured thereto by stitchings 43. The front portion of the helmet is likewise provided with a similar cut-out section having an upper front edge portion adapted to fit directly above the padded soft-bridge arrow E as shown at 44. So that in the event the helmet is shoved downwardly above the wearer's face, it will be the soft-bridge portion arrow E that will engage softly the wearer's nose, the hard front edge portion of the helmet will have no effect upon the wearer's nose; thus cushioning the point of contact therebetween thereby preventing injuries to the wearer's nose.

The size, shape, or form of structure of my soft-bridge is naturally optional with the manufacturer. As a matter of fact, my soft-bridge can be made of various suitable materials, for example, pliable or elastic materials, with or without the filler 42, and can be utilized in connection with various types of helmets; it can be secured directly to the helmet if so desired. My soft-bridge is not merely a covered edge structure; it is a soft element bridging the cut-out or spaced front section of the helmet and is located in a position above the wearer's nose, it extends downwardly to a sufficient extent to form a soft front cushioning element as clearly illustrated in Figs. 1 and 5. Naturally these disclosures are for illustrative purposes only and not for limitation purposes.

To facilitate swift and instant removal of the face protector or guard from the helmet, or swift replacement of such guard upon the helmet, I provide each side-front portions of my helmet with a set of extensions 51 and 52. Each of these two sets of extensions constitute a longitudinal slitted channel 53. The interior of each of such slitted channels is shaped cross-sectionally in a round or oblong manner. My face protector or guard F having an inner face 54 and an outer face 55 is provided with eye openings 56 and with a mouth opening 57. The inner face 54 is provided with a pair of longitudinal extensions 58 each having a tapered end portion 58', a head section 59 and an enlarged portion 59'. These extensions 58 are each shaped cross-sectionally in a manner adapted to fit slidably within the slitted channel 53, so that

6

when it is required to attach the guard F on to the helmet, the wearer places the tapered end portions 58' into the openings 53' and moves, slidably, the extensions 58 downwardly within the slitted channel 53, until each of the enlarged portions 59' engages, frictionally, the inner wall of its respective channel and the head section 59 reaches the top portion of such channel, thereby holding the guard F secured, frictionally, in desired position upon the helmet. A swift pull upwardly will remove the extensions 58 from their respective slitted channels 53 thus removing the guard from the helmet.

I desire to point out, that, the disclosures herein are all for illustrative purposes only and not for limitation purposes.

It will thus be seen that when my helmet is placed upon the wearer's head, and the straps 2 and 3 interlocked with each other by means of the buckle 4, the cap or net structure will then embrace the wearer's head, and the elements 21 and 22 (or 38 and 39) will hold the helmet, tensionally, suspended and spaced away from such wearer's head, thereby rebounding or disrupting the vibration of a shock, and when such helmet will be shoved over the wearer's face my soft-bridge will prevent, or greatly minimize, possible injuries to the wearer's nose. When desired, a swift movement of the wearer's hand can easily and instantly attach the guard or face protector on to the helmet, or remove same from the helmet.

I desire it to be understood, that various forms, shapes, or styles of structure may be resorted to for the purpose of obtaining the desired results, and that I have same in mind, and that various materials may be utilized to obtain desired results as taught by the herein disclosures.

From the above it will be seen that I have invented and perfected a helmet structure of a new and unique design, containing features which are novel, useful and practical, and provide a maximum degree of safety to the user and is therefore of commercial value, and although I have shown certain preferred forms or illustrations in order to explain and describe the novelty of my invention, yet, by showing such structure, I do not, by any means, limit myself to these structures, nor to the terms used in describing same, as they are for illustrative purposes only. Various suggestions and changes of structure may be resorted to, and I desire it to be understood that I have same in mind when showing and describing this invention, and seek protection by Letters Patent. And, although I have mentioned in describing this invention of what material certain parts may be made, how they may be formed, shaped or styled and how they may be assembled, yet I desire it to be understood that this structure, or parts thereof, may be made of any suitable material, and shaped, formed, styled or arranged in any desirable manner, and assembled in any convenient way so that the parts may be easily taken apart, removed, cleaned, replaced and reassembled, and that various changes in detail may be resorted to without departing from the spirit of this invention.

I claim:

1. A helmet comprising a separate base-unit and a separately formed crown-section and a pliable connecting element and a net structure and a soft-bridge portion, said base-unit and said crown-section and the said pliable element made of impermeable material, said base-unit adapted to encompass the lower sides and back portion of the wearer's head and having an open front portion for receiving the wearer's face and having an upper edge portion, said crown-section having a lower edge portion, said edge portions facing each other, said element having two upper wall sections and two lower wall portions, the edge portions of said upper wall sections secured to the inner and outer faces of said crown-section in a manner incasing the said lower edge portion, the edge portions of said lower wall sections secured to the inner and outer faces of said base-unit in a manner incasing the said upper edge portion, said wall portions holding said edge

portions spaced away from each other; the said element having a longitudinal tubular center portion, said connecting element circling the said helmet at a horizontal plane with respect to the height of such helmet having the said tubular center portion forming a circumferential air chamber between the said edge portions, said net positioned within said crown-section and having its lower portion secured to said base-unit in a manner whereby the said crown-section is spaced away from the said net when such net is placed upon the wearer's head, said open front portion having an upper section forming a forehead covering, said forehead covering having a lower front edge portion, said soft-bridge secured to the said front edge portion and extending downwardly therefrom forming a continuation of said forehead covering, said soft-bridge portion adapted to cushion the touch of the said forehead covering upon the wearer's nose, the said net structure adapted to hold said base-unit in position about the wearer's head while said air chamber in combination with the said upper and lower wall portions of the said pliable element form resilient means for rebounding the movements of the said crown-section, and means for holding said helmet in desired position about the wearer's head.

2. A structure as defined in claim 1, wherein the said pliable connecting element comprises two strip portions secured to each other by two spaced apart rows of stitchings for holding the said edge portions spaced apart from each other at a suitable distance.

3. A structure as defined in claim 1, wherein the said pliable connecting element comprises two strip portions secured to each other by two spaced rows of stitchings and the center sections of such two strip portions being separated from each other forming a tubular opening between said two spaced rows of stitchings and a yieldable element positioned within such tubular opening to hold said center sections in desired spaced position thereby increasing the resiliency of such pliable connecting element.

4. A structure as defined in claim 1, wherein the said net structure comprises a hat-band and two spaced apart rows of elements one located above the other and extending outwardly for being connected to the said base-unit to hold said helmet in an evenly spaced position with respect to the wearer's head.

5. A structure as defined in claim 4, including a rim

and wherein the said two spaced rows of outwardly extending elements are secured to said rim and wherein such rim is secured to the said base-unit.

6. A helmet comprising a frame structure and an inner net-structure and a hat-band, said hat-band being of substantial width cross-sectionally, the lower portion of said net-structure secured to said hat-band, said hat-band having two axially spaced rows of outwardly extending elements; said rows spaced away from each other at a substantial distance, the lower row of said elements secured to the lower portion of the said frame structure and the upper row of said elements secured to the inner face of said frame structure at a substantial distance above the said lower row of elements thus holding the said helmet in an evenly spaced position with respect to the wearer's head when worn by such wearer, and means for securing such helmet in desired position about the wearer's head.

7. A structure as defined in claim 6, including a rim of substantial width cross-sectionally and wherein the said two spaced rows of outwardly extending elements are secured to the said rim at a substantial distance between the lower and upper rows of such elements and wherein such rim is secured to the said frame structure.

8. A structure as defined in claim 7, wherein said rim is secured to the said frame structure by means of stitchings.

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