

Oct. 22, 1963

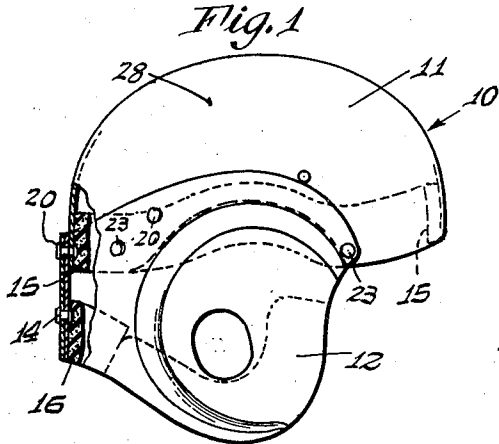
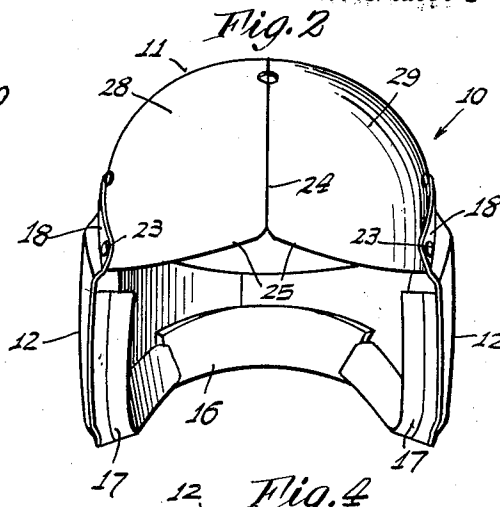
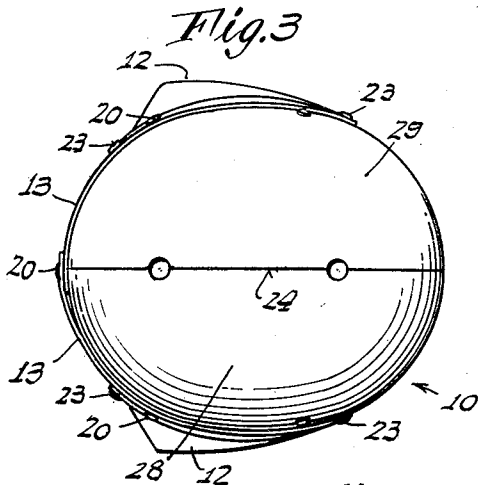
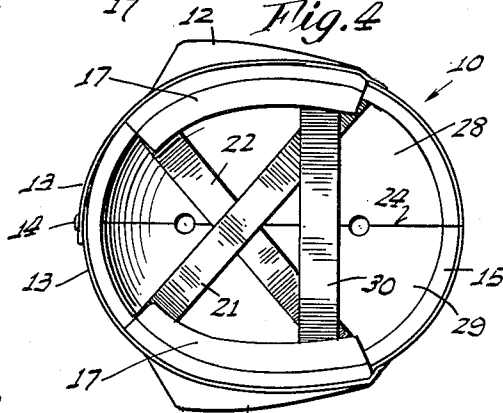
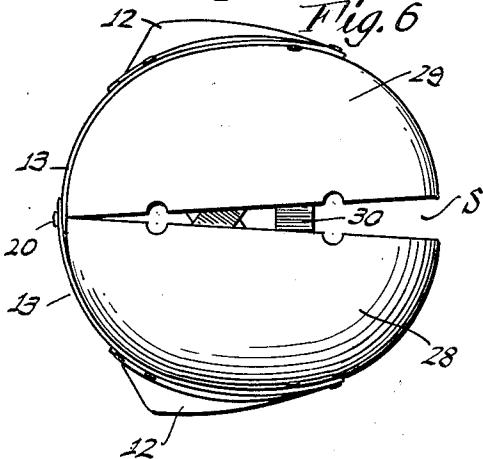
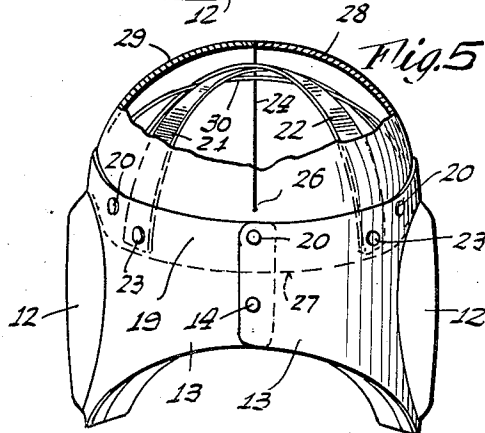
S. M. PESTRONK ETAL

3,107,356

HEADGEAR

Filed Aug. 31, 1960

2 Sheets-Sheet 1



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Fig. 7

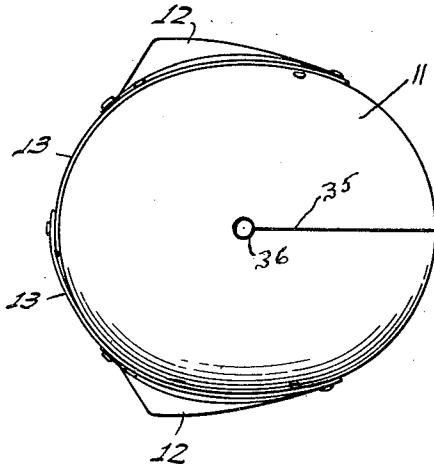
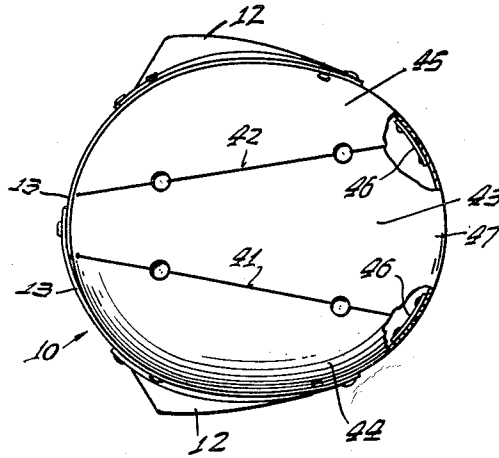


Fig. 8



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3,107,356
HEADGEAR

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6 Claims. (Cl. 2—3)

This invention relates to headgear, and more particularly to protective headgear worn by people engaged in dangerous occupations or sports. Such headgear, or helmets, are usually formed of a hard, substantially inflexible material, such as any one of the well known fiber or plastic-base materials, molded into a predetermined head size and basic shape, i.e., narrow, oval, or substantially round.

Because of its inflexibility, a single such helmet is limited to comfortable use by one person or but a very few of any group of people. To compensate for this, linings which are soft and thick so as to be highly compressible have been used in the helmets; or interchangeable linings have been provided. Alternatively, rigidity has been sacrificed to provide some flexibility. In any event, no satisfactory construction or arrangement has been advanced heretofore to provide a single helmet adapted to fit comfortably on a great variety of different head sizes and shapes.

It is an object of the present invention, therefore, to obviate the foregoing disadvantages and provide a headgear or helmet constructed to adapt itself to many different head sizes and shapes.

Another object of the invention is to provide a headgear of such character without sacrificing its rigidity or other protective features.

It is also an object of the invention to apply it to existing forms of headgear so as to avoid a material change in the method, means or cost of manufacturing the headgear.

That the present invention attains these and other objects will be apparent to those skilled in the art from the disclosure which follows.

In its broad aspects, the present invention contemplates a headgear having a crown portion which is hard and substantially inflexible, but which is expansible from a predetermined size and shape through any number of larger sizes within the limits of its expansibility, its expansion adapting it to a variety of different head shapes.

More specifically, the invention provides a headgear having a crown formed of hard, substantially inflexible material shaped to cover the top and that area of the head extending above the fore and aft line of the eyes and ears of the wearer, the crown being severed along a median line from its front edge rearward to a point near its rear edge, and the two portions formed by the severance being connected by expansion means, such as a strip of elastic rubber under slight tension normally to hold the crown in its smallest size yet permitting a relative separation movement of the severed crown portions to any size within the limit of maximum expansion.

In the accompanying drawings, the invention has been shown merely by way of example and in preferred form, and obviously many variations and modifications thereof may be made which will still be comprised within its spirit. It is to be understood, therefore, that the invention is not limited to any particular form or embodiment, or mode of application, except insofar as such limitations are set forth in the appended claims.

Referring to the drawings:

FIG. 1 is a side elevation of the headgear of the present invention, partly broken away to show the construction;

FIG. 2 is a front elevation of said headgear;

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FIG. 3 is a top plan view of said headgear;

FIG. 4 is a bottom plan view of said headgear;

FIG. 5 is a rear elevation of said headgear, partly broken away to show the construction;

FIG. 6 is a top plan view, showing said headgear in expanded condition;

FIG. 7 is a top plan view, showing a modification of the invention; and

FIG. 8 is a top plan view, showing another modification of the invention.

In FIGS. 1 to 6, there is shown a headgear or helmet 10 comprising a crown 11 to which are attached cupped ear coverings 12 having rearwardly extending straps 13 which overlap and are fastened together and to the crown 11, as by rivets 14, to form a protective covering for the base of the skull. As best shown in FIGS. 1, 4 and 5, the interior of the headgear 10 has a thick strip of lining 15, made of foam rubber or other soft, highly compressible material arranged all along the area bordering its free edge; and a similar strip of lining 16 is arranged along the area bordering the free edges of the straps 13 at the back of the headgear. Along the front and lower edges of the ear coverings 12, a similar lining strip 17 is arranged in a double layer (see FIG. 2).

The ear coverings 12 are formed with upstanding flanges 18 which merge into the straps 13, thus forming a collar 19 within which the lower edge of the crown 11 is adapted to nest. The collar 19 thus provided extends continuously from the temple area at one side of the crown rearwardly and around to the corresponding temple area on the opposite side of the crown. Hence, the crown 11, ear coverings 12, and straps 13 are in position to be fastened together by rivets 20.

Turning again to the interior of the headgear 10, and referring to FIGS. 4 and 5, it will be seen that a pair of straps 21 and 22, arcuate in shape, extend upward in crossed relation from the lower edge of the crown 11, being fastened thereto by rivets 23 extending through the ends of the straps, the crown and the collar 19. The straps 21 and 22 extend each from an anchor point or rivet 23 at one side of the rear of the crown 11 to an anchor point or rivet 23 at the opposite side of the front of the crown 11; and they are made from a fiber or plastic material which is flexible but preferably not elastic, although some elasticity is not objectionable. The straps 21 and 22 constitute the headgear support which rests upon the head of the wearer and affords an over-all resiliency to absorb shocks resulting from an object striking the crown 11.

As thus far described, the headgear 10 shown in the drawings is a preferred form of that type of headgear used by baseball players when at bat and in danger of being hit in the head by an uncontrolled pitched ball. It should be pointed out now that a headgear of this type lacks the versatility of being worn by all or a majority of the players, since it necessarily conforms to a given size and shape of head, except as the lining strips 15, 16 and 17 may offer some flexibility of use. Thus, two competing teams would require several of the headgear of different sizes and shapes. Among the local "midget" or "small fry" leagues where the use of a helmet is usually mandatory, the cost of outfitting the teams is a serious handicap. In the professional leagues, and in other hazardous occupational areas, the cost can be borne but it is expensive.

As already stated, the present invention obviates the objectionable feature of "made to size and shape" headgear and provides the same type of headgear, which gives the same amount of protection, at substantially the same cost per unit, but whereby one unit serves in place of several units as made heretofore.

Referring again to FIGS. 1 to 6, according to the pres-

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ent invention the crown 11 of the headgear is severed, or formed severed, as at 24, through and from the free front edge 25 thereof rearward substantially along the median of the crown 11 to a point 26 (FIG. 5) near the rear edge 27 of the crown. This severance substantially divides the crown 11 into two segments 28 and 29 hinged at point 26 for lateral movement relatively to one another and carrying the ear coverings 12 with them, the collar 19 serving as a yielding support on which the segments 28 and 29 are mounted. The segments 28 and 29 are normally held together by expansion means, shown in the form of a strip of elastic rubber 30 anchored to each segment 28 and 29 of the crown 11 in the temple area thereof and extending upward and across the crown below the flexible straps 21 and 22. The elastic strip 30 is anchored under slight tension to hold the segments 28 and 29 contiguously to comprise a headgear of the smallest predetermined size, yet the strip 30 will yield or stretch to permit the segments 28 and 29 to separate as at S (see FIG. 6) to any extent within the maximum limit of its stretchability. In practice, of course, this limit would be determined by the pressure exerted on the sides of the wearer's head and the extent of separation which the crown 11 material will withstand at point 26.

A modification of the invention is shown in FIG. 7, wherein the crown 11 is severed along the line 35 from the free front edge rearward only as far as the top center 36 of the crown. This provides for separation of the crown and, hence expansibility, but to a more limited extent than in the case of the preferred embodiment shown in FIGS. 1 to 6.

Another modification of the invention is shown in FIG. 8, wherein the crown 11 of the headgear 10 is severed twice along the lines 41 and 42, on opposite sides of the median of the crown. This form of severance divides the crown into three parts comprising a stationary center segment 43 and lateral segments 44 and 45 movable sidewise relatively to the center segment 43, the lateral segments being connected to the center segment by strips of elastic rubber 46 under slight tension and stretchable to permit the said relative movement. This form of headgear offers an advantage over those shown in FIGS. 1 to 7 in that while the separation S of the preferred embodiment would not be large enough to lessen the protective efficiency of the headgear for all practical purposes, in the embodiment shown in FIG. 8 the same amount of expansion of the headgear can be obtained with one-half the amount of separation at each severance line 41 and 42; and the front 47 of the center segment 43 remains unseparated to provide full protection in that area.

As already stated, many modifications and variations of the invention may be made without departing from its spirit or coming within the scope of the appended claims. The preferred embodiment and the two modifications thereof which have been shown and described herein are practical and economical headgear. Of course, more elaborate and costly variations could be made. For example, an arrangement could be provided wherein the rear half of the crown is a solid shell and the forward half of the crown from the region of the ears could be formed of a plurality of separate sections pivoted at their rear ends to the shell portion and held against lateral movement by expansible means located at or near the front or forehead area. Furthermore, the headgear could comprise a stiff arched support extending from one side to the other in the region of the ear pieces; with a plurality of protective sections pivoted to the support and extending forward therefrom. Such arrangement, and others similar thereto, are considered to be within the broad scope of the invention.

Having thus described our invention, what we claim is:

1. A rigid protective helmet constructed and arranged to fit a variety of different head shapes and sizes comprising:

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- (a) an integrally formed rigid, hard top dome shaped crown for covering and protecting the entire top portion of a human head above the fore and aft line of the eyes and ears,
- (b) an ear covering connected to each side of said crown to protect the ears and temples,
- (c) each of said ear coverings have an integrally formed rearwardly extending band portion to form a protective covering for the base of the skull,
- (d) said rearwardly extending band portions having their free ends overlapping at the rear of said crown,
- (e) fastening means for connecting the overlapping ends of said band portion and said ear coverings to the lower edge of said dome crown,
- (f) said crown being severed over a substantial portion of a meridian line extending over the top of said crown to divide said crown into a plurality of integrally connected segments whereby said segments can be laterally displaced to enlarge the size of said crown,
- (g) and an elastic strap anchored to each of said segments and extending transversely of said meridian line to hold said segments of said crown contiguously to its smallest predetermined size.

2. A rigid protection helmet constructed and arranged to fit a variety of different head shapes and sizes comprising:

- (a) an integrally formed rigid, hard top dome shaped crown for covering and protecting the entire top portion of a human head above the fore and aft line of the eyes and ears,
- (b) an ear covering connected to each side of said crown to protect the ears and temples,
- (c) each of said ear coverings having an integrally formed rearwardly extending band portion to form a protective covering for the base of the skull,
- (d) said rearwardly extending band portions having their free ends overlapping at the rear of said crown,
- (e) said ear coverings and connected band portions having an upstanding flange forming a collar for receiving the lower edge of crown portion in nesting relationships therewith,
- (f) fastening means for connecting the overlapping ends of said band portions and the respective flanges of said ear coverings and their connected band portions to said dome crown,
- (g) said crown being severed over a substantial portion of a meridian line extending fore and aft over the top thereof to divide said crown into a plurality of segments integrally connected together whereby said segments can be laterally displaced to enlarge its size of said crown,
- (h) and an elastic strap anchored by said fastening means to each of said segments and extending transversely of said meridian line to hold said segments of said crown contiguously to its smallest predetermined size.

3. The invention as defined in claim 2 and including:

- (a) a pair of flexible non-elastic straps anchored to opposite side of said helmet, and said pair of straps crossing diagonally on its inside of said dome crown.

4. The invention as defined in claim 3 wherein:

- (a) said meridian line extends between the front of said crown and the top center of the crown.

5. The invention as defined in claim 1 and wherein:

- (a) said crown is severed along a pair of meridian lines, each of said meridian lines being disposed on opposite sides of medial line of said crown.

6. A rigid protective helmet constructed and arranged to fit a variety of different head shapes and sizes comprising:

- (a) an integrally formed rigid hard top dome shaped crown for covering and protecting the entire top portion of a human head above the fore and aft line of the eyes and ears,

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- (b) an ear covering connected to each side of said crown to protect the ears and temples,
- (c) each of said ear coverings having an integrally formed rearwardly extending band portion to form a protective covering for the base of the skull, 5
- (d) said rearwardly extending band portions having their free ends overlapping at the rear of said crown,
- (e) said ear coverings and connected band portions having an upstanding flange forming a collar for receiving the lower edge of crown portion in nesting relationships therewith, 10
- (f) fastening means for connecting the overlapping ends of said band portions and the respective flanges of said ear coverings and their connected band portions to said dome crown, 15
- (g) said crown being severed over a substantial portion of a meridian line extending fore and aft over the top thereof from the front of the crown to a point near the rear edge of the crown to divide said crown into a plurality of segments integrally connected to- 20

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- gether whereby said segments can be laterally displaced to enlarge the size of said crown,
- (h) said severed meridian line coinciding with a meridian line extending from the front of said crown to a point rearwardly therefrom,
- (i) and an elastic strap anchored by said fastening means to each of said segments and extending transversely of said meridian line to hold said segments of said crown contiguously to its smallest predetermined size.

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