Sept. 23, 1969 J. M. HANNAN 3,467,964

SAFETY HELMET EDGE BEAD

Filed July 22, 1968

FIG. 1

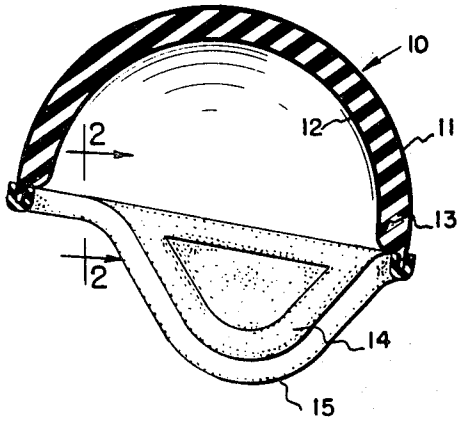


FIG. 2

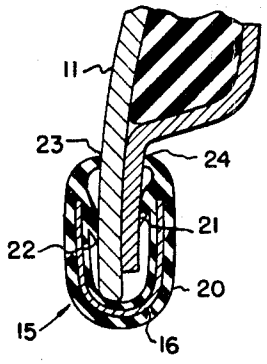
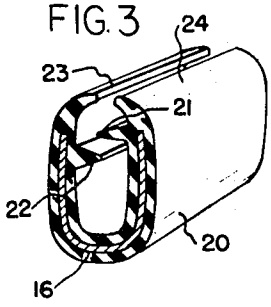


FIG. 3



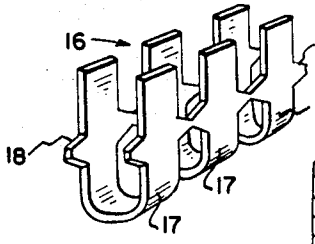


FIG. 4

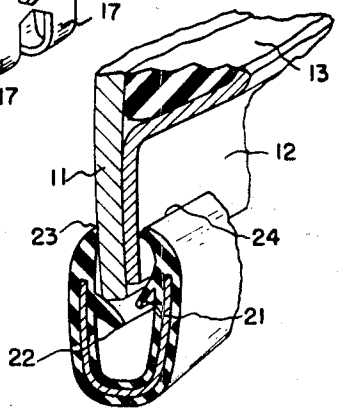


FIG. 6

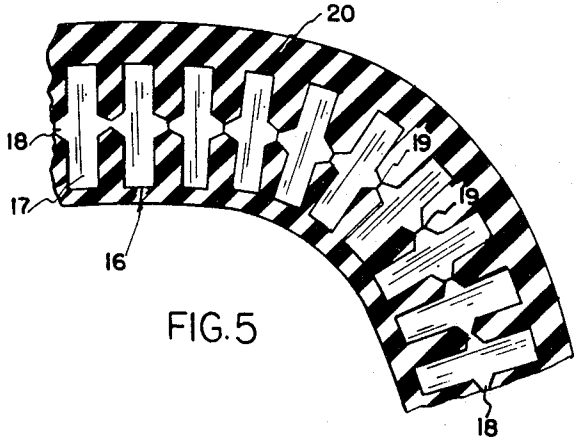


FIG. 5

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SAFETY HELMET EDGE BEAD

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U.S. Cl. 2—3 2 Claims

ABSTRACT OF THE DISCLOSURE

A safety helmet edge bead for trimming and for clamping together the exposed edges of a safety helmet outer shell and inner liner, comprising a resilient, rubber-like channel having a soft, bendable, thin, sheet metal channel completely embedded therein. The metal channel is formed of spaced apart identical U-shaped segments interconnected by bendable and breakable integral narrow tongues so that the bead may be easily bent and curved to conform to the contours of the shell edge and the legs of the bead may be bent together for clamping purposes.

BACKGROUND OF THE INVENTION

Safety helmets of the type shown for example in the patent to Zbikowski, No. 3,116,490, granted Jan. 7, 1964, conventionally comprise a hard outer shell and an inner liner which are clamped together by means of an edge bead which embraces the free lower edges of the shell and liner. Conventionally that bead is made of a rubber-like material usually a suitable plastic, which is rubber-like in characteristic and secured in place adhesively.

The assembly of the parts of such a helmet is time consuming and requires considerable labor because of the need for handling adhesives, permitting time for setting of adhesives, and the like, and in addition the parts are difficult to disassemble for replacement of damaged parts because of the relative permanence of the edge bead securement.

In full coverage helmets, such as of the type illustrated in Marchello, Patent No. 3,213,463, granted Oct. 26, 1965, where the inner liner of the helmet consists of a combination of an inner liner shell and an ear covering liner, usually of a different material, the selection and use of proper adhesives becomes a problem because of the variations of materials being secured together and the labor involved in assemblying the parts is increased.

Hence, it is an object of this invention to provide an edge bead construction which may be simply clamped into position in order to clamp and secure together the adjacent edges of a helmet shell and liner and to completely eliminate the need for adhesives or other mechanical fasteners, relying entirely upon friction.

SUMMARY OF INVENTION

This invention contemplates an edge bead or clamping bead for safety helmets which comprises a U-shaped channel formed of a rubber-like material, having embedded therein a thin, bendable sheet metal channel which is formed in spaced apart segments, interconnected by breakable or bendable bridges or tongues so that the bead may be easily bent and flexed in three dimensions to conform to the helmet contours while at the same time compression of the legs of the bead together bends and holds the channel in place upon the helmet without the need for adhesives.

Another object of this invention is to provide an edge bead which is of a rubber-like material with embedded U-shaped metal segments, interconnected to prevent resilient elongation of the channel but bendable or breakable to permit bending of the channel and particularly clamping together of the legs of the channel to mount

the bead frictionally upon and to hold together adjacent edges of helmet shells and liners and the like.

Further objects and advantages of this invention will become apparent upon reading the following description, of which the attached drawings form a part.

DESCRIPTION OF THE DRAWINGS

FIG. 1 is a cross-sectional view of a full coverage type safety helmet.

FIG. 2 is an enlarged cross-sectional view of a portion of the helmet taken in the direction of arrows 2—2 of FIG. 1.

FIG. 3 is an enlarged perspective view of the edge bead herein, and

FIG. 4 is a perspective view of the metal channel embedded within the bead.

FIG. 5 illustrates, in cross-section, a portion of the bead bent into a curve to show the relative positioning of the segments thereof.

FIG. 6 is a fragmentary perspective view, similar to FIG. 2, but showing the bead being applied to the edges of a helmet.

DETAILED DESCRIPTION

FIG. 1 illustrates a cross-sectional view of a typical so-called full-coverage type safety helmet **10** formed of a hard outer shell **11**, an inner liner shell **12** between which is contained an entrgy-absorbing liner **13**. Within the shell are the conventional padded ear cover liners **14**.

The foregoing description is of a conventional helmet and forms no part of this invention. The object of this invention is to provide an edge bead which will trim the raw edges of the shell and also clamp together the adjacent portions of the outer shell, inner liner shell and padded ear cover liner as the case may be. Obviously, in the case of a type helmet which does not cover the ears, and wherein the lower edge of the inner liner shell is coextensive completely with the lower edge of the outer shell, then the bead would clamp only these two lower edges together.

The edge bead **15** includes an inner metal channel strip **16** (see FIG. 4) which is cut into a large number of identical U-shaped segments **17** each connected to the next by means of integral tongues **18** which are narrowed at their middles to form junctions or break points **19**. The tongues are located roughly in the middle of each of the legs of the metal segments and the segments are formed of a relatively soft, bendable sheet metal so that the segments may be bent or broken apart from each other at the junction points **19**.

The entire metal channel strip **16** is embedded within a rubber-like channel strip which may be formed of natural rubber or of any other suitable rubber-like plastic. As shown in FIG. 3, the rubber-like channel includes a pair of inwardly directed flanges, namely, upper flanges **21** and lower flange **22** which are thin and flexible and extend the full length of the channel.

As shown in FIG. 6, the channel is manually pressed upon, to receive, the adjacent lower edges of the shell and liner until the edges are firmly seated within the channel (see FIG. 2) at which time the legs of the channel are squeezed tightly toward each other to compress the flanges against their adjacent wall surfaces and to tightly grip the adjacent shell-liner edges. The metal strip, though easily bendable, upon being compressed, will maintain its position and hold the edge bead in place frictionally. Due to the flanges, the bead mouth defining edges **23** and **24** each form a line contact with the shell-liner, and with a slight bow on each side of the bead beneath such lines, thus increasing the resiliency of the bead so that it better acts as a bumper and shock absorber.

The edge bead may be bent three dimensionally, to follow the contours of the lower edge of the shell, as

illustrated by the portion of the edge bead shown in FIG. 5. As can be seen, the segments can be relatively moveable with the junctures **19**, at the narrow portions of the tongues **18**, either bending or breaking, depending upon the degree of movement between the adjacent segments, to thereby permit the segments to move with the flexible rubber-like channel.

The interconnection between the segments prevent the overall edge bead from resiliently stretching while being applied, a feature found in conventional edge beads and objectionable since thereafter the beads tend to retract in length and leave a gap where their ends are supposed to abut.

Having fully described an operative embodiment of this invention, I now claim:

1. A safety helmet comprising an outer shell and an inner liner having a lower edge in face to face contact with the lower edge of the shell;

an edge bead frictionally clamping and holding the two lower edges together;

said edge bead including a U-shaped metal channel formed of thin, bendable, flat sheet metal cut into the shape of identical U-shaped segments arranged end to end;

each segment being spaced from its next adjacent segment and being integrally connected thereto by a short, narrow, flat tongue portion located at approximately the middle of each of its legs in the plane of its legs, with the middle of each of the tongue portions being narrowed and easily bendable and breakable upon bending the segments transversely and longitudinally, relatively to each other;

the metal channel being completely embedded within the walls of a resilient, flexible, rubber-like channel strip, within which said lower edges are received with the bead being bent to conform to the contours of said lower edges; and

said bead tightly clamping the lower edges together by means of squeezing the opposite legs of the U towards each other.

2. A construction as defined in claim **1**, and including a pair of inwardly extending narrow flanges, located one above the other, formed integral with the inner wall surface of the rubber-like channel and continuously extending the full length thereof;

said flanges being bent towards the bight of the channel pressing against their adjacent shell and liner surfaces;

the free edges of the legs of the rubber-like bead each forming a line contact with its adjacent shell and liner lower edge at a distance spaced slightly above said flanges.

References Cited

UNITED STATES PATENTS

3,116,490 1/1964 Zbikowski ..... 2—3

JAMES R. BOLER, Primary Examiner