April 25, 1950 V. H. HURT 2,505,359

BATHING CAP

Filed Aug. 26, 1947

Fig. 1

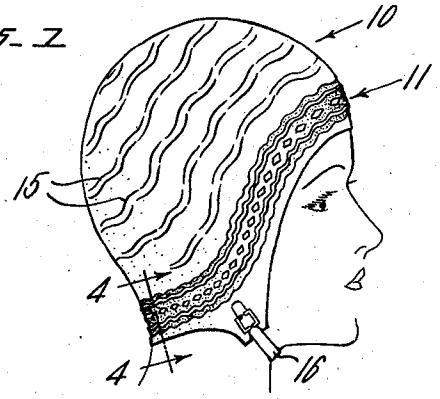


Fig. 2

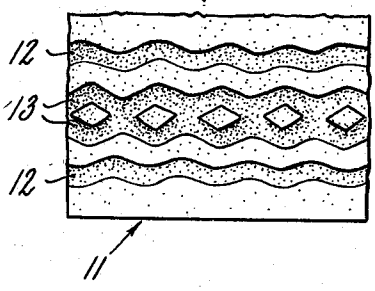


Fig. 3

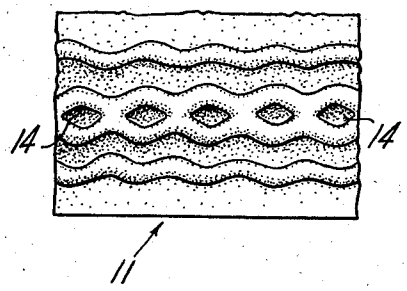


Fig. 4



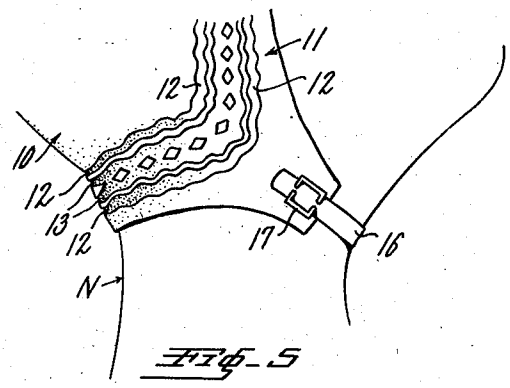


Fig. 5

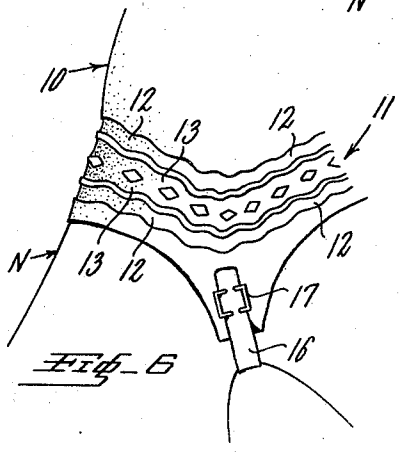


Fig. 6

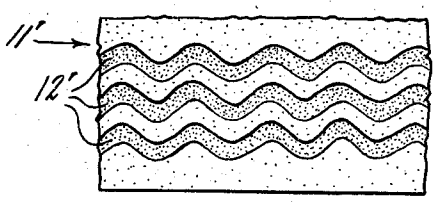


Fig. 7

INVENTOR.
VICTOR H. HURT
BY
Charles C. Willson
ATTORNEY

Patented Apr. 25, 1950

2,505,359

UNITED STATES PATENT OFFICE

2,505,359

BATHING CAP

Victor H. Hurt, Cranston, R. I., assignor to United States Rubber Company, New York, N. Y., a corporation of New Jersey

Application August 26, 1947, Serial No. 770,697

3 Claims. (Cl. 2—68)

1

This invention relates to bathing caps and more particularly to the so-called waterproof type of bathing cap.

Bathing caps as constructed heretofore may be considered as falling within two different classes. The first class consists of caps of waterproof material adapted to enclose the hair and to fit tightly about the head but have no special means near the edge of the cap to provide a water-tight seal between the cap band and head. The second type includes the so-called waterproof type of bathing caps in which ribs, vacuum cups and other means are provided near the edge of the cap to prevent water from entering between the cap band and head. The present invention is directed to this second type of cap.

Many attempts have been made heretofore to provide the so-called waterproof type of bathing cap which will effectively prevent water from entering the cap when the wearer dives below the surface of the water, but it has been found extremely difficult to devise such a bathing cap which will exclude water and still not embrace the head so tightly as to be uncomfortable if worn for a substantial length of time.

The present invention is extremely well adapted to prevent water from entering between the cap band and head, and at the same time exerts only a soft yielding pressure upon the portions of the head it embraces, so that it is very comfortable to wear.

In order to accomplish these desired results the present cap is provided with one or more inwardly extending, substantially tubular, continuous ribs adapted to encircle the head near the band of the cap where the rib will press yieldingly against the head to block the entrance of water, and a very important feature of these ribs resides in their wavy or serpentine construction whereby they will approach a straight line position as the bathing cap band is stretched. As a result when the cap is worn these ribs will be stretched less by the head than will be the adjacent non-wavy portions of the cap.

Hollow ribs so constructed will at all times exert a soft yielding pressure upon the head. This will enable the ribs to engage snugly but comfortably the raised and also the depressed portions of the head, such for example as the ears and the hollows frequently found at each side of the neck back of the ears, so as to effectively prevent the entrance of water.

The hollow inwardly-extending ribs contemplated by the present invention also perform another important function, in that they provide the cap with an accordion plaited area adapted to open and close in the vicinity of the back of the neck as the wearer's head is bent forward or backward, with the result that such head movement does not displace the edge of the cap where it engages the back of the neck.

2

The above and other features of the invention will be more fully understood from the following description when read in connection with the accompanying drawing, wherein

Fig. 1 shows the head of a woman wearing a cap constructed in accordance with the present invention.

Fig. 2 on a larger scale is a side view of a short length of the band of the cap of Fig. 1 viewed from the outside of the cap.

Fig. 3 is a similar view showing the length of band of Fig. 2 viewed from the inside of the cap.

Fig. 4 is an enlarged sectional view taken on the lines 4—4 of Fig. 1.

Fig. 5 is a view somewhat similar to Fig. 1 showing how the back portion of the bathing cap band is compressed when the head is thrown back.

Fig. 6 is a similar view showing how the back portion of this band is stretched when the head is thrown forward; and

Fig. 7 is a view similar to Fig. 2 showing a modified construction.

The bathing cap shown in the drawing may be considered as having the head enclosing portion 10 and the head embracing elastic band 11. The entire cap may be made of natural or synthetic rubber or other waterproof elastic material. The head portion 10 may be given any desired shape or configuration, as the present invention is concerned only with the construction of the band portion 11 or that portion of the cap that lies near its edge.

The primary feature of the present invention, as above stated, resides in a bathing cap in which the band or portion lying adjacent its edge is provided with one or more specially constructed ribs provided to prevent water from entering between the cap band and head, and at the same time avoid embracing the head so tightly that it will give the wearer a headache if worn for any substantial length of time.

These water excluding ribs are made hollow, and nearly round in cross section when not under tension or pressure, and project inwardly from the plane of the neck band so that they will engage various portions of the head with a soft yielding pressure. The ribs are also given a wavy or serpentine construction as shown in the various views of the drawing so that as the cap band is stretched these ribs will straighten out, with the result that the rubber forming such ribs will be stretched less when the cap is worn than will the adjacent non-wavy portions of the cap. This is important because if the ribs are subjected to less tension than the rest of the cap band they will continue to press against the head with a soft yielding force adapted to exclude water without exerting an uncomfortable pressure upon any portion of the head.

The novel rib construction contemplated by

the present invention may be given various embodiments, one embodiment of the invention being shown in Figs. 1 to 6 inclusive and a different embodiment is shown in Fig. 7. These ribs are formed by a displacing of the sheet rubber stock inwardly so that the walls of the ribs are not thicker than the band adjacent the ribs. In other words these ribs are formed in repoussé or in relief by bodily displacing the sheet material from the plane of the sheet.

In the embodiment shown in Figs. 1 to 6 the band portion 11 of the cap is provided with two inwardly-projecting hollow, wavy ribs 12 that are spaced a substantial distance apart, and between these spaced ribs are provided the more shallow wavy ribs 13 which together form between them the small diamond shape vacuum cups 14. In the construction shown the ribs 12 and 13 are given a relative sharp design at the outside of the cap and a more rounded contour at the inside of the cap as will be apparent by examining Figs. 2 and 3. The manner in which the ribs 12 firmly engage the neck N and other portions of the head will be apparent from Fig. 4 which view also shows how the shallow ribs 13 engage the neck and how the cups 14 provide a slight vacuum adjacent the neck. It will be understood that the ribs 12 and 13 project inwardly from the plane of the band 11 further than shown in Fig. 4 when they are free from tension and pressure. If desired the height of the ribs may be increased in the vicinity of the ears.

It will be apparent from Fig. 4 and the other views that the ribs 12 and 13 give this portion of the cap an accordion plaited construction, which acts in a very satisfactory manner to accommodate the movement at the back of the neck N of the wearer as shown in Figs. 5 and 6, wherein it will be seen that when the head is thrown back as in Fig. 5 these ribs are pressed together, and when the head is thrown forward as in Fig. 6 these ribs are extended in a lateral direction. As a result of this construction the edge of the cap where it engages the neck N is not disturbed as the head is moved, and the water is therefore less likely to enter around the neck of the wearer than would be the case if this edge was shifted by the head movement.

From the artistic standpoint it is considered desirable to decorate the head portion 10 of the cap with an ornamental design 15 which as shown simulates the rib motif. The cap is shown as provided with the usual chin strap 16 having an adjustable element 17 at each end thereof of usual construction and adapted to engage a fastener, not shown, on the cap proper.

In the modified construction of Fig. 7 there is shown the cap band 11' and this band is provided with three inwardly-extending, wavy continuous ribs 12' formed in repoussé.

A bathing cap construction in accordance with the present invention may be manufactured by methods which have been employed heretofore to provide the band portion of a bathing cap with ribs or the like. One good practical method that may be employed to produce the cap of the present invention is shown described and claimed in my prior Patent Number 2,354,916 for Method and apparatus for embossing plastic sheet material. In employing the method of such prior patent the unvulcanized rubber sheet which is

to form the cap is placed over a hollow form such as described in the patent and having cut or otherwise imparted to its surface the design of the ribs that are to be imparted to the cap of the present invention. Then a vacuum should be maintained within the interior of such form while the cap is being subjected to the vulcanizing temperature, to thereby impart to the cap the ribs indicated by the numerals 12, 13, the vacuum cups 14 and the ornamental design 15.

The wavy ribs above described serve a further purpose, in that when the bathing cap is worn and the band is maintained in a stretched condition about the head, the outer marginal portion of the cap which lies between the edge of the cap and the first rib 12 will be under greater tension than the ribs, since as above stated the tension on the band will straighten the ribs out before stretching them appreciably. The effect of this is to cause the stretching force to fall largely on this outer marginal portion of the band and this is just what is desired to form a water-tight seal at the edge of the cap. Furthermore, the yielding action of the ribs enables them to receive the ears without causing the edge of the cap to gap away from the head adjacent to the ears.

The bathing cap of the present invention has been found in actual use to provide an effective water-tight seal between the cap band and head without exerting an uncomfortable severe pressure about the head.

Having thus described my invention, what I claim and desire to protect by Letters Patent is:

1. A waterproof bathing cap comprising a head enclosing portion and a head embracing elastic band, said band being of substantially uniform gage throughout its area and having a rounded, hollow, inwardly projecting rib of repoussé form, that will flatten readily under pressure and remain in soft yielding contact with the head when the cap is worn.

2. A waterproof bathing cap comprising a head enclosing portion and a head embracing elastic band, said band being of substantially uniform gage throughout its area and having a rounded, hollow, inwardly projecting, wavy, continuous rib of repoussé form, that will flatten readily under pressure and remain in soft yielding contact with the head when the cap is worn and the wavy rib will straighten out as the band is stretched.

3. An elastic waterproof bathing cap having a smooth unembossed marginal edge portion and provided near such edge portion with a water-excluding, embossed, rounded, hollow, inwardly projecting rib of repoussé form, that will flatten readily under pressure and remain in soft yielding contact with the differently curved portions of the head as the cap is worn.

VICTOR H. HURT.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
637,136	Lemmermann	Nov. 14, 1899
1,746,427	Howland	Feb. 11, 1930
2,119,498	Spanel	May 31, 1938
2,353,403	Howland	July 11, 1944