July 22, 1930. T. J. HOWLAND 1,771,178

BATHING CAP

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Fig. 1.

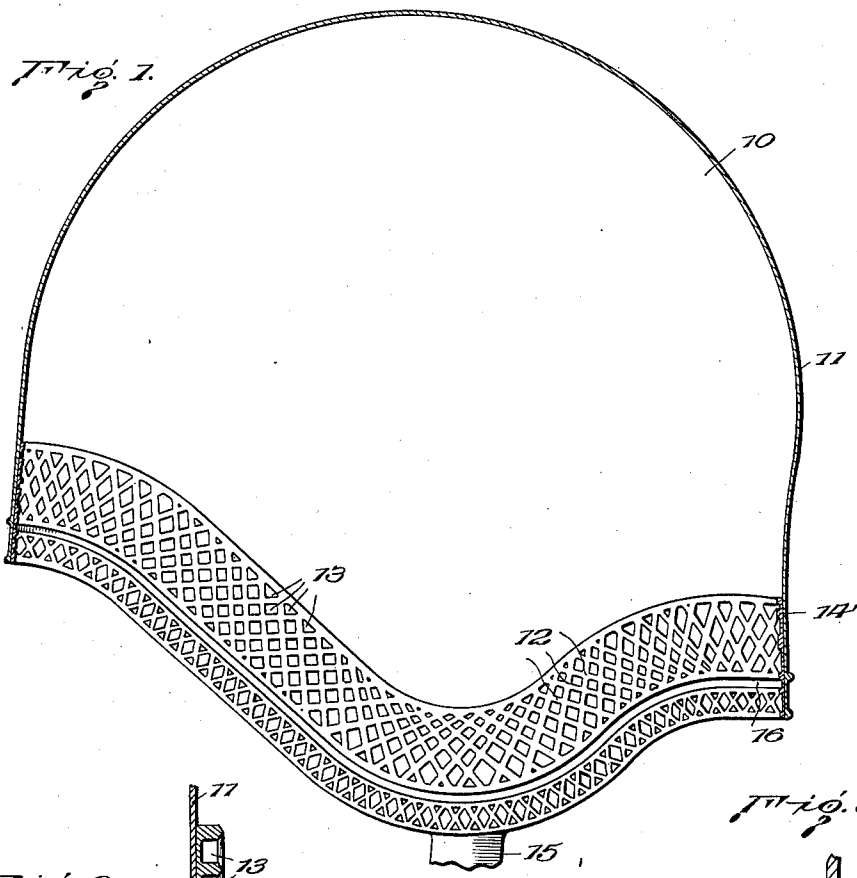


Fig. 6.

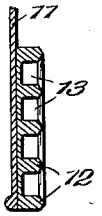


Fig. 7.

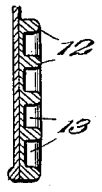


Fig. 8.

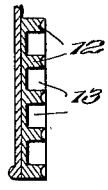


Fig. 3.

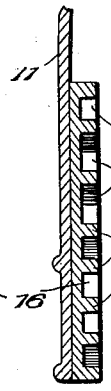
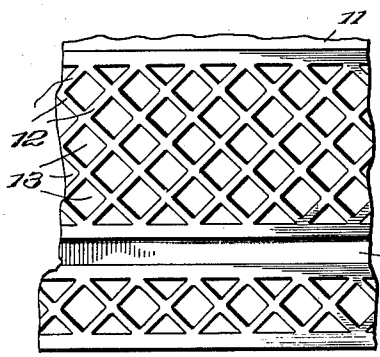


Fig. 4.



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BATHING CAP

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Fig. 2.

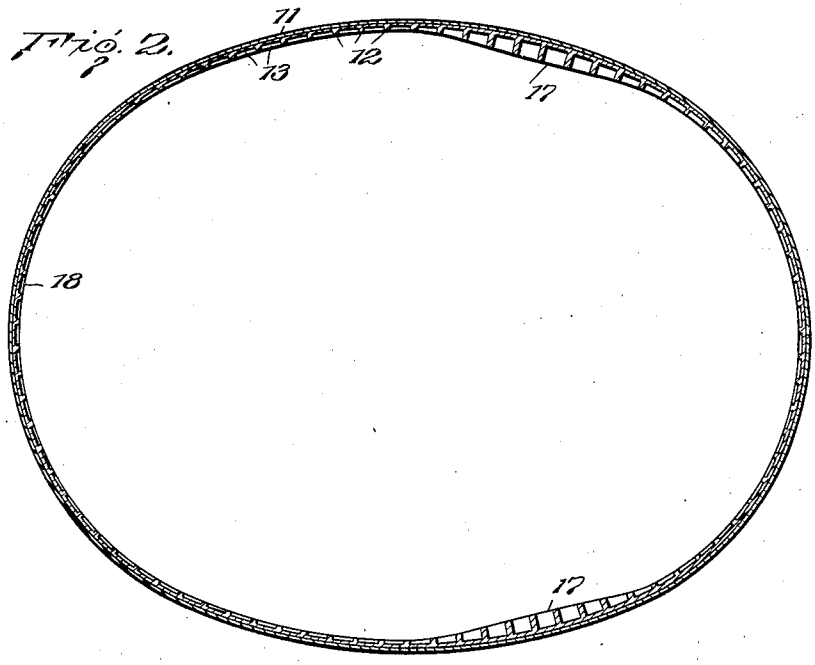


Fig. 11.

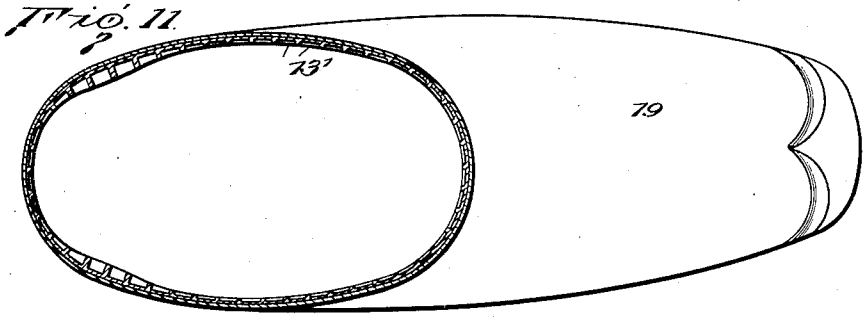
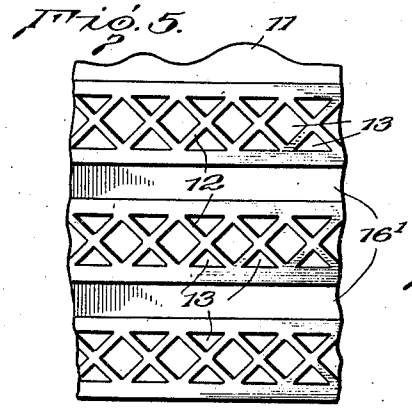


Fig. 5.



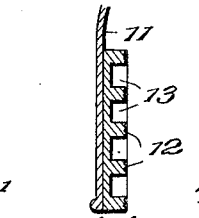
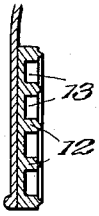


Fig. 9.

Fig. 10.



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Patented July 22, 1930 1,771,178

UNITED STATES PATENT OFFICE

THOMAS J. HOWLAND, OF LONG BRANCH, NEW JERSEY

BATHING CAP

Application filed December 2, 1929. Serial No. 411,104.

This invention relates to bathing caps and provides for a cap which forms a watertight seal along its edge and prevents moisture from penetrating within the interior of the cap.

A great variety of methods have been proposed for rendering bathing caps watertight but none of them have proved very satisfactory as is witnessed by the fact that bathing caps at present on the market usually consist of a simple rubber cap. A simple rubber cap is far from satisfactory and moisture generally seeps in at the edge of the cap rendering the cap totally ineffective for the purpose for which it is used.

The present invention provides a bathing cap which is adapted to form a watertight seal along the edge of the cap. This is accomplished without excessive tightening at the edge portion which would bind the head and cause discomfort to the wearer.

A plurality of cups or air pockets are provided around the inside edge of the cap. These are formed by ribs projecting from the cap toward the inside and adapted to contact with the head of the wearer of the cap. The hollows or cups between the ribs tend to increase the effectiveness of the seal due to the suction effect of these cups which act as vacuum cups.

The ribs which are in close engagement with the skin along the edge of the cap present a series of sealing surfaces separated by air pockets. The ingress of water or moisture is prevented therefore by a series of effective barriers.

The elasticity of the material composing the cap may be taken advantage of to press the ribs into close engagement with the skin and, if desired, a chin band may be used.

A bathing cap having a series of sealing surfaces separated by air pockets extending around the inside of the edge is disclosed in my prior Patent No. 1,746,477, granted Feb. 11, 1930.

The present invention differs from my aforesaid application in that the cups or air pockets are formed in a plurality of groups or rows spaced with respect to one another, whereby a channel or channels will be formed between the respective groups. I have now found that a somewhat more effective seal can be made if the cups or air pockets are thus arranged, as the channel or channels between the respective groups form a trap for any water which might find its way pass the lower series of cups or air pockets.

As the contour of one's head is quite irregular, I have found it desirable to vary the depth of the cups or air pockets at different places along the edge of the cap in order to form the most effective water seal commensurate with the comfort of the wearer. As one's forehead is substantially regular, an ordinary bathing cap will make a substantially watertight seal at this point without the use of the vacuum cups or air pockets. The cups or pockets may, therefore, be quite shallow or even non-existent at this point of the cap. On the other hand, that portion of the head beneath the ears, that is, where the rear portion of the jaw joins the head, is quite irregular and the cups or air pockets should be deepest at these points. Other portions of the head vary in regularity of contour between these extremes and the depths of the cups or pockets will, of course, vary accordingly.

For an example of a bathing cap embodying my invention reference is made to the accompanying drawing in which

Figure 1 is a vertical sectional view through the bathing cap;

Fig. 2 is a cross section taken through the rim of the cap;

Fig. 3 is an enlarged cross sectional view through the rim of the cap;

Fig. 4 is a face view of a portion of the inside of the rim of the cap;

Fig. 5 is a view similar to Fig. 4 but showing a modification;

Figs. 6 to 10 are views of further modifications, and

Fig. 11 is a cross sectional view through the edge of a bathing shoe showing a series of vacuum cups or pockets of varying depth arranged therealong.

The bathing cap 10 comprises a main portion 11 of elastic material. This main por-

tion is shaped to fit the general contour of the head.

Along the inside edge of this main portion 11 is attached a band comprising a series of crossed ribs 12 forming hollows or cups 13 therebetween. In Fig. 4 a section of this band of crossed ribs is illustrated.

The hollows or cups 13 are shown as diamond shaped and while this particular form has been found effective, other forms can be used with good results, e. g., the hollows or cups 13 may be round or square, or oval shaped etc.

The elasticity of the material composing the main portion 11 of the cap will tend to press the crossed ribs 12 into close engagement with the skin and the cups 13 by their suction effect will tend to maintain this engagement.

The ribs 12 should have sufficient rigidity so that when stretched they will not upset and destroy the vacuum effect of the cups. The rigidity of the ribs 12 depends on the material of which they are formed, their width and the depth of the cups. The ribs are more effective as sealing surfaces if they are narrow as shown in Fig. 4, but the invention is not limited to this form and the width of the ribs 12 need not be uniform.

As shown in the drawings the band of crossed ribs 12 consists of a separate strip 14 attached to the edge of the main portion 11 in some convenient manner, but it is evident that the crossed ribs 12 might be formed directly in the main portion 11.

The suction effect of the cups 13 tends to maintain the engagement of the edge of the cap with the skin and will prevent the cap from being pulled off the head thus eliminating the necessity of a chin band. A chin band 15, however, may be attached to the outer edge of the main portion 11 to increase the pressure along the edge of the cap.

As shown in the drawings, particularly Figs. 1 and 4, the cups 13 are arranged in two groups which are spaced with respect to each other so that a horizontal channel 16 is formed between the respective groups. This channel 16 forms a trap for any water which might find its way pass the lower group of cups and further ensures a watertight seal between the rim of the cap and the head of the wearer under the most trying conditions. For example, it has been found that a cap having the rows of cups or air pockets separated by one or more channels 16 will be effectively sealed against the entrance of water when falling upon the face, racing, diving and buffeting waves. The lower line of cups or pockets acts as a defense to break the force of the blow while the second or succeeding rows simply have to take care of a dead body of water.

In Fig. 5 the cups or air pockets 13 are divided into three groups instead of two, and a pair of channels 16′ thereby formed.

Inasmuch as the contour of one's head is more or less irregular, the vacuum cups or pockets 13 are made of varying depth and are so arranged that the deepest ones will fit into the more prominent indentations of the head. For instance, the head has a substantial indentation on each side just below the ears where the rear portion of the jaw joins the head. The cap at the places which overlie these portions of the head, indicated at 17 in the drawings, is, therefore, provided with cups or pockets 13 which are deeper than those at 18 which overlie the forehead where a watertight seal may be made with very shallow cups or pockets. Likewise, the cups opposite the portions of the head just forward and backward of the ears should be of substantial depth but need not be as deep as those opposite the indentations beneath the ears. At the rear of the cap, where it overlies the nape of the neck, the cups should be deeper than those which overlie the forehead, but need not be as deep as the cups on the side of the cap where it overlies those portions of the head adjacent the ears.

In Figs. 6 to 10 inclusive I have shown various modifications of the ribs in which the inner edge is formed with a reduced contact surface. Reducing the surface of contact between the rib and the body of the wearer further localizes the pressure and gives a more effective seal.

In Fig. 11 I have shown a bathing shoe 19 having a band of vacuum cups or pockets 13′ of varying depth applied to the inside of the upper edge thereof, and in which the cups or pockets which overlie those portions of the foot in the region of the ankle are considerably deeper than those at the front and back of the upper edge. This effectively keeps not only water, but also sand, gravel, mud, etc., from getting into the shoe.

I claim:

1. A bathing cap adapted to be used upon the head of the wearer comprising a main body portion of elastic material having at least a portion of its edge provided with a row of cups or air pockets, a second row of cups or air pockets inwardly spaced from said first-mentioned row, and with said first-mentioned row, forming a groove to trap any substances which should penetrate the outer row of cups.

2. An article of bathing apparel comprising a substantially watertight pocket of flexible material having at least a portion of its edge provided with cups or air pockets formed by ribs projecting from the edge portion of the pocket toward the inside and adapted to contact with the body of the wearer, the ribs defining said cups or air pockets being of varying depths to present a contour at their projecting edge substantially conforming to

the contour of the portion of the body with which they contact.

3. An article of bathing apparel comprising a main portion of elastic material having at least a portion of its edge provided with cups or air pockets formed by ribs projecting from the edge portion of the pocket toward the inside and adapted to contact with the body of the wearer, the ribs defining said cups or air pockets being of varying depth to present a contour at their projecting edge substantially conforming to the contour of the portion of the body with which they contact.

4. A bathing cap adapted to be used upon the head of the wearer comprising a main body portion of elastic material having at least a portion of its edge provided with a row of cups or air pockets, a second row of cups or air pockets inwardly spaced from said first mentioned row, and with said first mentioned row, forming a groove to trap any substance which would penetrate the outer row of cups, the portion of the material defining the cups or air pockets which contact with the head of the wearer being of reduced area.

5. An article of bathing apparel comprising a substantially water tight pocket of flexible material having at least a portion of its edge provided with cups or air pockets formed by ribs projecting from the edge portion of the pocket toward the inside and adapted to contact with the body of the wearer, the ribs defining said cups or air pockets being of varying depth to present a contour at their projecting edge substantially conforming to the contour of the portion of the body with which they contact, said ribs having the portions which contact with the body of reduced area.

In testimony whereof I affix my signature.

THOMAS J. HOWLAND.