Sept. 18, 1951 W. E. BROWN 2,568,316

SWIM GOGGLES

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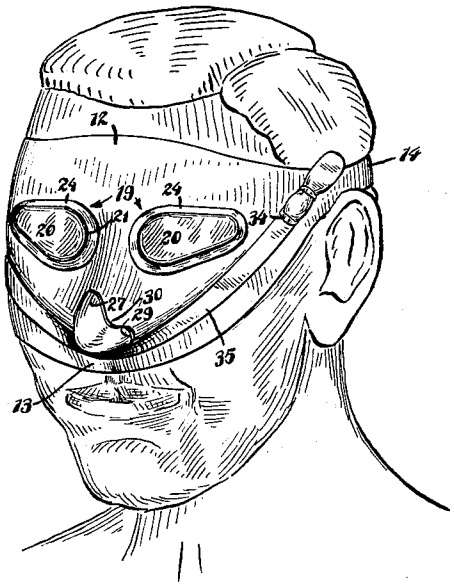


Fig. 1.

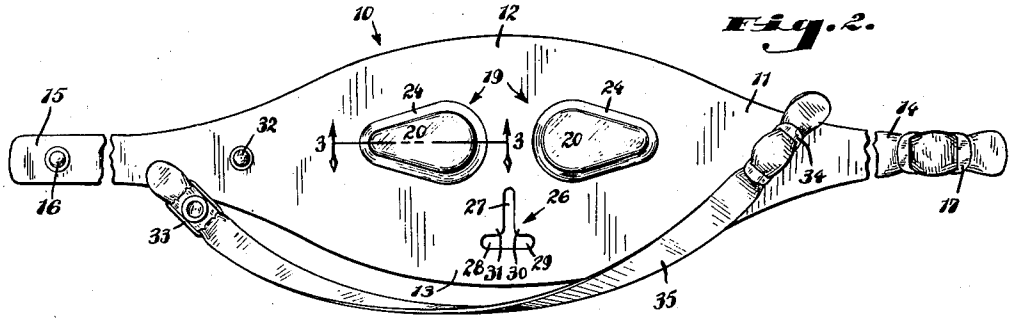


Fig. 2.

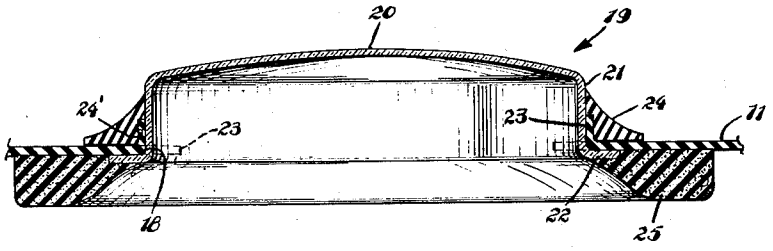


Fig. 3

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SWIM GOGGLES

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7 Claims. (Cl. 2—14)

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The present invention relates to a swimming goggle, and is primarily concerned with the production of an improved device for shielding the wearer's eyes against contact with the water, while the wearer is swimming beneath the surface.

A primary object of the invention is to provide a goggle so constructed as to distribute the pressure of water against the same over a substantial area of the wearer's face, whereby discomfort is reduced to a minimum and leakage of water toward the wearer's eyes is completely prevented. A further object of the invention is to provide a mask, comprising a sheet of highly flexible, somewhat elastic, waterproof material, provided with transparent sections registering with the wearer's eyes, the mask being of such character that it will mold itself to the user's face and head contours and, as the pressure of water upon the mask increases, will adhere more and more intimately to such contours to prevent leakage.

A further object of the invention is to provide an improved association between such a mask and the transparent elements adapted to register with the user's eyes. A further object of the invention is to provide such a mask with an improved opening through which the wearer's nose tip protrudes, whereby the wearer's exhalations are excluded from the interior of the mask, but whereby a completely leak-proof association between the mask and the wearer's nose is provided.

A still further object of the invention is to provide improved cushioning means for sealing the interior surfaces of the transparent elements against fluid flow, while maintaining a high degree of comfort for the wearer. A still further object of the invention is to provide improved sealing means between the mask and the transparent elements. A still further object of the invention is to provide auxiliary means for maintaining an improved leak-proof relation between the mask and that portion of the wearer's face below the nose.

Still further objects of the invention will appear as the description proceeds.

To the accomplishment of the above and related objects, my invention may be embodied in the form illustrated in the accompanying drawings, attention being called to the fact, however, that the drawings are illustrative only, and that change may be made in the specific construction illustrated and described so long as the scope of the appended claims is not violated.

Fig. 1 is a view showing my improved swimming goggle in use;

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Fig. 2 is a front elevation of the goggle; and

Fig. 3 is an enlarged section taken substantially on the line 3—3 of Fig. 2.

Referring more particularly to the drawings, it will be seen that the mask, indicated generally by the reference numeral 10, comprises a sheet 11 of waterproof, flexible, somewhat elastic material such as a thin rubber or synthetic rubber composition. I presently believe that the best material to use is a synthetic latex neoprene. The mask is vertically widened at its central portion to provide a portion 12 which extends well up onto the brow of a wearer, and a portion 13 which overlies the upper lip of the wearer. At its opposite ends, the sheet 11 is narrowed to provide straps 14 and 15 adapted to meet and overlap at the back of the user's head. A fastening element which, in the illustrated embodiment of the invention comprises the male unit 16 of a snap fastener, is mounted upon the strap portion 15 near one end thereof, and a fastening element 17, which, in the illustrated embodiment of the invention, embodies the female unit of a snap fastener (not shown) is longitudinally adjustably mounted upon the strap portion 14. It will be obvious that the element 17 may be adjusted along the length of the strap portion 14 to produce a proper degree of tightness upon almost any head when the elements 16 and 17 are associated.

The sheet 11 is formed, at suitable locations, with two openings 18 therethrough adapted, when the goggle is in place on a user's head, to register with the user's eyes. Two boxed eye pieces or lenses, indicated generally by the reference numeral 19, are provided for respective reception in the openings 18. Each such eye piece comprises, in the illustrated embodiment of the invention, a front panel 20 having a perimetral wall 21 located in substantial perpendicularity to the general plane of the panel 20, and terminating in a perimetrally extending flange 22 located in a plane substantially parallel to the general plane of the panel 20. In the preferred embodiment of the invention, the eye pieces are formed of cellulose acetate, molded to shape; but it will be apparent that other materials, capable of being properly shaped, and of suitable pressure-resistant and shatterproof characteristics, may be used. In fact, it is not essential that the various parts of the eye pieces shall be integral, though advantages resultant from the illustrated embodiment of the eye pieces render that specific structure preferable to all others, in my present opinion.

The perimetral extent of the wall 21 is some-

what greater than the undistorted perimetral dimension of the opening 18 with which it is to be associated; and, as a consequence, when the eye piece 19 is forced through an opening 18 with which it is to be associated, from the inner surface of the sheet 11 toward and beyond the outer surface thereof, a perimetral flap 23 of sheet material is forced to move from the position illustrated in dotted lines in Fig. 3 to the position illustrated in solid lines therein. In this position, the flap 23 intimately hugs the outer surface of a substantial area of the wall 21 of the eye piece 19, thereby providing an effectively waterproof joint between the eye piece and the sheet 11.

At a suitable point, for registration with the nose tip of a user, the sheet 11 is formed with a further opening indicated generally by the reference numeral 26. The particular shape of the opening 26 is quite important, as will appear from the following description.

The opening 26 is substantially in the shape of an inverted T, comprising a vertical slot 27 forming the stem of the T and transverse branches 28 and 29 at the lower end of the stem. The slot and branches thus define substantially triangular or L-shaped flaps 30 and 31 which are free at their lower interior corners. When the sheet 11 is applied to a user's face, the tip of the user's nose will turn the flaps 30 and 31 outwardly, as the nose tip protrudes through the opening 26; and the flexible flaps 30 and 31 will intimately seat themselves upon the sides of the wearer's nose, molding themselves to the particular shape of the nose of the wearer, the vertical edges of said flaps straddling the bridge of the nose, and the lower horizontal edges of said flaps lying intimately in contact with the wearer's nose immediately above the outer edges of the nostrils, all as illustrated in Fig. 1. This construction permits the nostrils to be located entirely outside the sheet 11, so that the wearer may breathe freely without exhaling at all into the interior of the goggle.

I have found that a mask or goggle constructed in accordance with the above description is reasonably effective and satisfactory in use; but certain refinements will improve the effectiveness of the goggle if cost is not important and the goggle is to be used in substantial water depths or for long periods of exacting work.

A slip ring 24 may be sleeved over the perimetral wall 21 of each eye piece 19 to embrace, and secure in intimate contact with said wall, the flap 23. The ring 24 may be made of any suitable material; but I prefer to make it of a rubber or synthetic rubber composition, so that it may have substantial elastic characteristics to exert a positive inward pressure against the flap 23. When the ring 24 is made of elastic material, its undistorted inner perimetral dimention will be substantially less than the exterior perimetral dimension of the wall 21. Of course, if the ring 24 is made of non-elastic material, then its inner perimetral dimension will conform closely to the exterior perimetral dimension of the eye piece 19 with which it is to be associated, and it may be formed with a socket 24' for the accommodation of the flap 23.

Additionally, I may provide a softly distortable cushioning ring 25 for the interior of the mask in association with each eye piece 19. I prefer to form such a ring 25 from sponge rubber, or foamed latex, or similar material, to provide a maximum of comfort for the wearer. Obviously,

such a ring 25 will overlie the flange 22, will be suitably secured to said flange and to the sheet 11 by any suitable adhesive, and will improve the seal between the wall and the adjacent surface of the wearer's face.

In some instances, it may be desirable to provide auxiliary means for pressing the lower edge of the sheet 11 against the wearer's face. For that purpose, I may install upon the sheet 11, at points oppositely spaced beyond the openings 18, suitable fastening devices for attaching a tensioning strap to the sheet. Thus, I have shown the male element 32 of a snap fastener so associated with the sheet 11; and mating fastening devices 33 and 34 may be provided for association with the devices 32. Preferably, each of said devices 33 and 34 will be longitudinally adjustably mounted upon a strap 35 of any suitable material which may or may not be elastic. When desired, the elements 33 and 34, having been previously adjusted to proper positions on the strap 35, will be connected to the elements 32, and the strap 35 will then be positioned, as illustrated in Fig. 1, to extend beneath the user's nose to pull the sheet 11 tightly against the user's face in the manner illustrated. If it is found to be desirable or necessary, the strap 35 may alternatively be stretched across the portion 12 of the sheet 11; or, as a further alternative, the elements 33 and 34 may be mounted upon a two-strap unit, providing one element to be positioned in the manner illustrated in Fig. 1 and another to extend across the portion 12 of the sheet.

While, as has been indicated, the goggle of the present invention is primarily intended for use by swimmers, it will be readily apparent that it may also be used for protecting the eyes of the wearer against dust, smoke, gas, or any other medium which might be irritating to the eyes.

I claim as my invention:

1. A swimming goggle comprising a sheet of waterproof, flexible material of substantial elasticity contoured to cover the face of a user from a level above the eyes to a level below the nose, said sheet being provided with openings adapted to register with the user's eyes, a closure element for each of said openings, each such element comprising a transparent panel having a perimetral dimension substantially greater than the undistorted perimetral dimension of its associated opening, a perimetral wall substantially perpendicular to said panel projectible through such opening, and a perimetrally-extending flange substantially parallel with said panel, each such element being received in its associated opening with its flange in intimate contact with one surface of said sheet and its panel projected beyond the opposite surface of said sheet, and said sheet further being provided with an opening permitting the projection therethrough of a substantial portion of the user's nose, said last-named opening being laterally defined by allochirally related, flexible flaps, which, when the goggle is donned by a user, will be turned out of the general plane of the sheet to lie in intimate contact with the sides of the user's nose.

2. A swimming goggle comprising a sheet of waterproof, flexible material of substantial elasticity contoured to cover the face of a user from a level above the eyes to a level below the nose, and transparent means carried by said sheet for registry with the eyes of a user, said sheet being provided with an opening therein substantially in the form of an inverted T for the projection

therethrough of a substantial portion of the tip of the user's nose, said opening defining two oppositely-arranged, substantially L-shaped flaps which, when the goggle is donned by a user, will be turned out of the general plane of the sheet to lie in intimate contact with the sides of the user's nose closely above the lateral edges of the nostrils thereof.

3. The goggle of claim 2 including a strap secured at its opposite ends to said sheet at points laterally beyond said respective transparent means and tightly engaging said sheet immediately below the user's nose.

4. The goggle of claim 2 including a fastening device secured to said sheet at each of two points oppositely laterally beyond said transparent means, two fastening devices engageable, at times, with said first-named fastening devices, and strap means adjustably associated with said two last-named fastening devices and extending across said sheet between said two points.

5. The goggle of claim 1 in which the portion of said sheet defining the margin of each opening is flexed outwardly out of the general plane of said sheet to lie in intimate contact with the perimetral wall of the associated closure element, and a ring-like element sleeved upon the

perimetral wall of each such closure element in closely-embracing relation with said outwardly-flexed portion of said sheet.

6. The goggle of claim 5 in which each such ring-like element is formed of elastic, waterproof material and has an undistorted inner perimetral dimension less than the perimetral dimension of the perimetral wall of the closure element with which it is associated.

7. The goggle of claim 1 including a ring-like pad of softly-flexible material secured to said sheet in masking relation to the perimetral flange of each closure element.

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