Sept. 27, 1966 R. C. MERRIAM 3,274,612

HELMET FOR WATER SPORTS

Filed May 18, 1965

Fig. 1

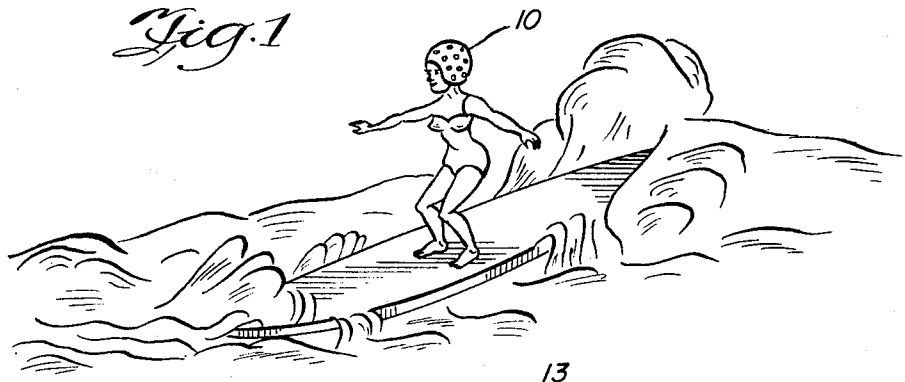


Fig. 2

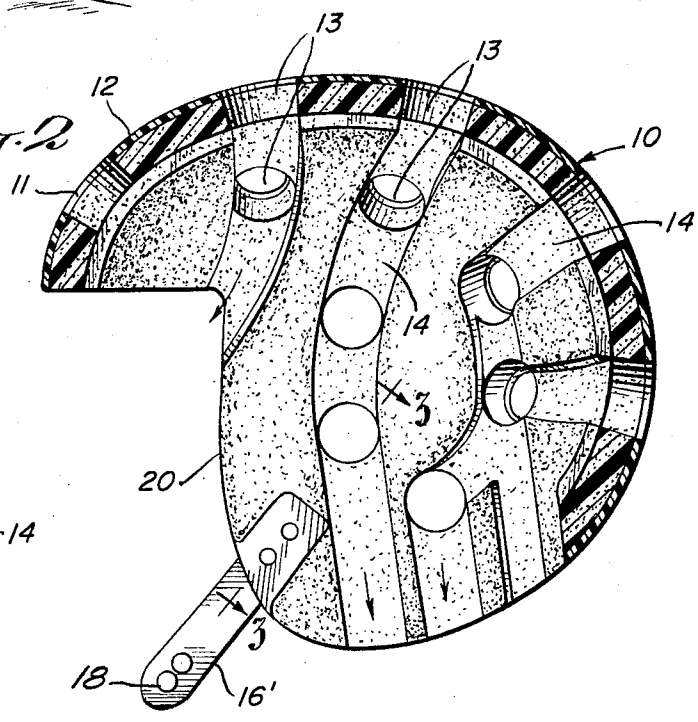


Fig. 3

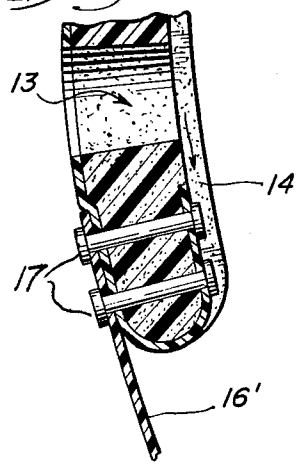
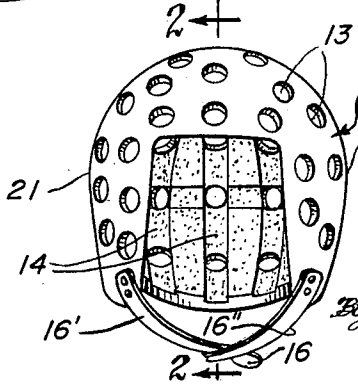


Fig. 4



INVENTOR

Robert C. Merriam

By Merriam, Marshall, Shapiro & Klose

ATTORNEYS

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HELMET FOR WATER SPORTS

Robert C. Merriam, 2222 Alice St., Santa Cruz, Calif.

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4 Claims. (Cl. 2—3)

This is a continuation-in-part application of co-pending application Serial No. 410,113, filed November 10, 1964, now abandoned.

This invention relates to wearing apparel for participants in water sports and more particularly to a safety helmet for surf-boarding, waterskiing and the like.

Surfing entails the riding of a flat, rigid member commonly made of wood, fiberglass or metal, propelled along the water surface by an advancing wave. Due to the great force generated by a wave and the great degree of difficulty encountered in maintaining proper balance, it is common for surfers to be thrown from the board into the water. Because of this common occurrence, surfers and skiers are highly prone to being struck on the head by surfboards, rudders or skegs of surfboards, skis or other objects while they are in the water. Impact may cause serious head injury and, in extreme cases, loss of consciousness endangering the life of the participant.

Although head gear, crash helmets or the like are well known, they are unsatisfactory for participation in water sports because they are either too heavy or too buoyant to be safely and comfortably worn in the water, or they fail to provide means for the escape of water that may become entrapped inside the helmet.

The present invention relates to a safety helmet shaped to conform to the wearer's head and comprises a rigid outer shell and a flexible, shock-absorbing inner liner. It is an important element of this invention that the helmet be provided with a plurality of openings and drain channels to allow water to pass freely from inside the helmet thereby preventing a pressure build-up and the resulting discomfort or injury to the wearer upon impact with a solid object, or submergence.

The invention will be more fully understood when viewed in conjunction with the drawings wherein:

FIGURE 1 is an illustration of a surfer using the subject invention;

FIGURE 2 is a fragmentary view of the subject invention;

FIGURE 3 is a partial fragmentary view taken along lines 3—3 of FIGURE 2; and

FIGURE 4 is a plan view of the subject invention.

Referring to the drawings, the helmet is hereinafter designated by numeral **10**. The helmet **10** comprises a rigid outer shell **11** shaped to generally conform to the curvature of the human head. The helmet **10** is a single unit having lobe portions **20** and **21** covering the ears and sides of the head and is open in the front so as not to obscure the vision of the wearer.

Secured to the inner surface of the rigid outer shell **11** is a thick, flexible, shock-absorbing liner **12**. A plurality of holes **13** are provided throughout the surface of the helmet **10** and extend through both the outer shell **11** and liner **12**. A network of drain channels **14** extends along the inside surface of the liner **12** from the holes **13** to the edge of the helmet. The holes **13** and drain channels **14** facilitate the exodus of water from inside the helmet. Holes **13** are spaced from each other to afford a maximum protective covering for the head of the wearer.

In the preferred embodiment of the present invention, helmet **10** includes a fiberglass outer shell **11** and a liner **12** of partially closed cell foamed material. The outer shell **11** may, however, be of various other materials such as vinyl resin, polystyrene or metal. The surface of

the outer shell **11** is generally hemi-spheroidal, it being important that flat surfaces are avoided so that the full force of an object hitting the helmet **10** will not be absorbed by the helmet **10**. Because the cushioning characteristics of the liner **12** are important, the preferred embodiment of the helmet **10** employs polyurethane as a liner **12**. Vinyl chloride, polyethylene, or styrofoam as well as numerous other materials are suitable for this purpose. The liner **12** is approximately one inch thick and is secured to the outer shell **11** by adhesives or other suitable means. Holes **13** are approximately one inch in diameter, and are spaced approximately two inches apart. If greater cushioning is desired, a thicker liner may be used. However, it is important that the helmet **10** is not excessively buoyant. A helmet that is too buoyant might cause extreme or violent movement of the head while the wearer is in the water, or discomfort while submerged. This problem is overcome by layers of open cellular material within or under the liner **12**, which material will readily absorb water, thereby decreasing the overall buoyancy of the helmet **10**. The density of the helmet **10** should be low enough to enable the helmet to float if it becomes detached from the wearer's head. Drain channels **14** are generally concave having a width at the inner surface of liner **12** approximating the diameter of the openings **13** and a depth of approximately one-half inch. Drain channels **14** extend to the edge of the helmet **10** whereby some of the water that may have been entrapped flows from inside the helmet.

A chin strap **16** is provided to maintain the helmet on the wearer's head and is comprised of two nylon strips **16'**, **16''**. Strip **16'** is secured at one end to lobe portion **20** of the helmet **10** by rivets **17** or other suitable means. Strip **16''** is similarly secured to lobe portion **21** of helmet **10**. The unsecured ends of strips **16'** and **16''** are provided with male and female snaps **18** or other suitable fastening means.

The foregoing preferred embodiment of the present invention is provided for illustrative purposes only, no limitations being intended, it being understood that those skilled in the art will make obvious modifications within the scope and spirit of the present invention.

What is claimed is:

1. A safety helmet for use in water sports comprising:
a protective head-shaped shell;
a flexible liner attached to the inner surface of said shell, said flexible liner and said shell each being provided with a plurality of aligned openings therethrough; and
a network of drain channels extending from said aligned openings along the inside surface of said flexible liner to the edge of said safety helmet thereby permitting the escape of water entrapped inside said helmet.

2. The safety helmet described in claim **1** wherein said liner is a material of predominantly closed cell structure.

3. A safety helmet for use in water sports comprising:
a rigid, protective, head-shaped shell describing a substantially hemi-spheroidal outer surface and having two downwardly extending lobe portions;
a flexible liner of foamed material secured to the inner surface of said shell, said liner and said shell each being provided with a plurality of aligned openings therethrough;
a network of drain channels extending from said aligned openings along the inside surface of said flexible liner to the edge of said safety helmet thereby permitting the escape of water entrapped inside said helmet; and,
chin strap means for securing said helmet on the head of the wearer.

4. A safety helmet for use in water sports comprising:
a rigid, protective, fiberglass, head-shaped shell describing a substantially hemi-spheroidal outer surface and having two downwardly extending lobe portions;
an approximately one inch thick closed cell polyurethane liner adhesively secured to the inner surface of said shell, said liner and said shell each being provided with a plurality of aligned one inch diameter openings therethrough;
a network of drain channels extending from said aligned openings along the inside surface of said flexible liner to the edge of said safety helmet, said drain channels being substantially concave with a width approximately one inch at the surface of the liner and depth approximately one-half inch;
a first thin strip secured at one end to one of said lobe portions of said helmet;

a second thin strip secured at one end to the other lobe portion of said helmet; and,
means for fastening the unsecured end of the first thin strip to the unsecured end of the second thin strip.

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JORDAN FRANKLIN, *Primary Examiner.*

FRANK J. COHEN, *Examiner.*

J. R. BOLER, *Assistant Examiner.*