June 6, 1944. H. W. WALTERS 2,350,654

BUOYANT DEVICE

Filed Feb. 19, 1940

Fig. 1.

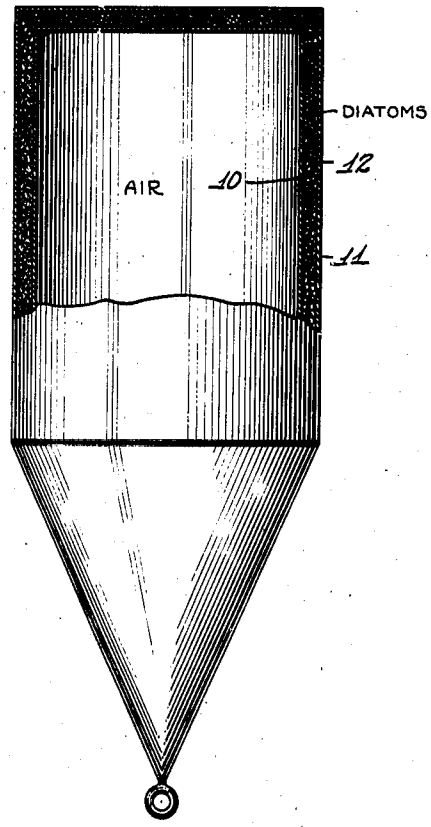


Fig. 2.

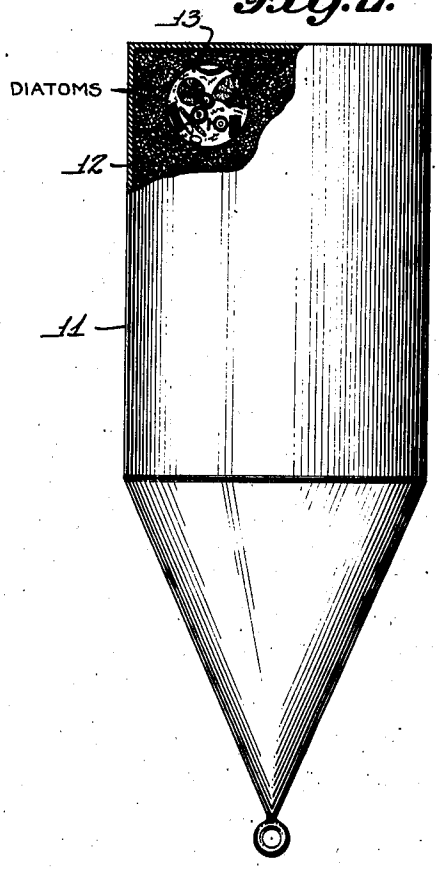
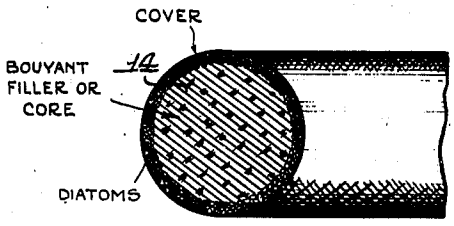


Fig. 3



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BUOYANT DEVICE

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1 Claim. (Cl. 9—17)

This invention relates to the construction of buoyant devices, such for example as buoys, life-preservers, floats and the like, and includes among its objects, to render such devices long-lasting, highly resistant to fire and water and at the same time increase their buoyancy and otherwise improve their general structure and efficiency.

The invention consists broadly in the incorporation of diatoms in a buoyant device in such quantities and arranged in a manner such as will impart or add buoyancy to the device and provide protection against fire and infiltration of water or moisture and an adhesive binder for the diatoms having fireproof and waterproof characteristics.

In actual practice, the diatoms or diatomaceous material may be used as a coating or shell for the buoyant device, or it may be used as a filler or as a packing between inner and outer shells of the device. In the drawing I have illustrated three types of buoyant devices constructed in accordance with the invention, and therein:

Fig. 1 is a view in sectional elevation of a buoy of the air-core type having a wall consisting of an inner liner and outer shell in spaced-apart relation with the space therebetween filled or packed with diatoms;

Fig. 2 is a similar view of a buoy having a diatom filler and an outer retaining shell that portion of the view which is shown in section including a microscopically enlarged area to more clearly show the molecular structure of the filler; and

Fig. 3 is a cross sectional view of a life-preserver having a filler of ground cork or analogous material and an outer protective coating or shell of diatoms.

With reference to the drawing, Fig. 1 represents a hollow metallic buoy formed of inner and outer metallic shells 10 and 11 respectively, with a buoyant filling 12 therebetween of diatoms or diatomaceous material compacted to maintain the space filled at all times and to provide increased buoyancy for the float. This type of float is hollow, the cavity of which is defined by the inner shell 10.

In Fig. 2 is illustrated a float of similar external configuration, but of somewhat different interior construction. This float consists of an outer shell 11 identical with the outer shell of the float of Fig. 1. This outer shell 11 is compactly filled with diatoms or diatomaceous material 12, the shell is shown broken away at its upper corner to disclose its interior, in which corner is also a microscopic enlargement 13 of the diatoms or diatomaceous material. With the structure of Fig. 2 a buoy is provided susceptible of withstanding being battered about by the waves or by impact with hard objects.

In lieu of the buoys of Figs. 1 and 2 a buoy of a different construction may be provided as, for example, that disclosed in Fig. 3 wherein a core 14 of a buoyant material such as ground cork and the like is provided with an exterior layer of diatoms or diatomaceous material intimately bonded together, and also bonded to the core by waterproof and fireproof adhesive.

Where the diatoms are used as a filler, as in Figs. 1 and 2, a binder may or may not be used. However, where the diatoms or diatomaceous material is used as an outer coating or shell without a retaining jacket, an adhesive or binder is necessary. It is desirable to use an adhesive or binder having fire and waterproof characteristics, such as sodium silicate, sodium silicate compounds and the like alone or in connection with material such as spun glass, or mineral wool. Certain plastics may be found suitable, such as those developed at rayon and pulp mills and which are not only fire and waterproof but are non-corrosive, of high tensile strength and in certain instances are more or less transparent.

Where the outer shell or coating of the device is comprised of diatoms, the thickness of said coating or shell should be proportional to the thickness or size of the device as a whole. In other words, the shell or coating should be of such cross sectional thickness as will impart to the device the desired degree of buoyancy while at the same time providing a fire and waterproof protective covering.

The type of material herein contemplated is more appropriately termed diatoms than diatomaceous material, since the diatoms are preferably substantially intact or in their original state rather than ground or pulverized, note Fig. 2. When the diatoms are packed or bound together, they form a relatively light body which is highly buoyant and the buoyancy of which is permanent. Furthermore, diatoms are not affected by fire, water or the passage of time. However, the size of the diatomaceous particles and the degree to which they are compressed may vary in accordance with the size, shape and type of buoy, life-preserver, float or other buoyant device in which they may be used. Also, they may be used in combination with other materials, such as spun glass, mineral wool and the like in varying sizes and proportions.

In the construction of life-preservers, buoys, floats and the like, a filler of cork, balsa or other suitable material may be used with an outer layer or shell of diatoms, note Fig. 3. A final retaining cover may be provided such as a metal shell of stainless steel or other suitable alloy, or a covering of plastic, mineral wool cloth or the like, or the diatoms may be bound together with a suitable adhesive and the retaining cover omitted.

It will thus be understood that the diatoms could be used in a state other than herein specifically disclosed, the essential feature of the invention consisting in the use of diatoms in the construction of buoyant devices. Accordingly, certain changes and deviations in the use and application of the material are contemplated within the spirit or scope of the invention as defined by the appended claim.

What is claimed is:

A life preserver comprising a buoyant core, an outer layer of diatoms or diatomaceous material covering said core, and a binder having waterproof and fireproof characteristics adhesively binding the diatomaceous material and securing the same to said core.

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