W. S. WILKINSON & G. B. UPHAM.

LIFE PRESERVER.

APPLICATION FILED MAY 20, 1905.

960,129.

Patented May 31, 1910.

Fig. 1

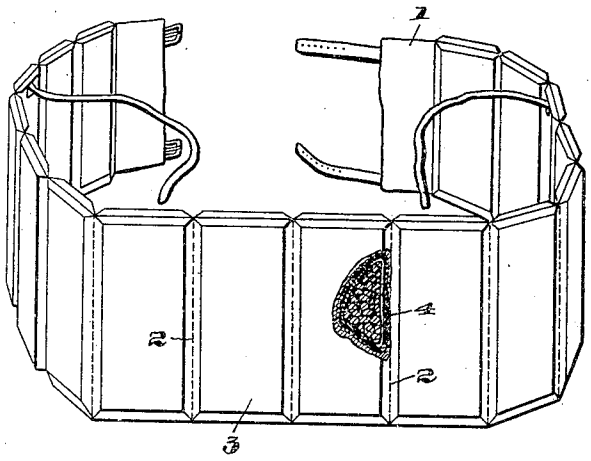
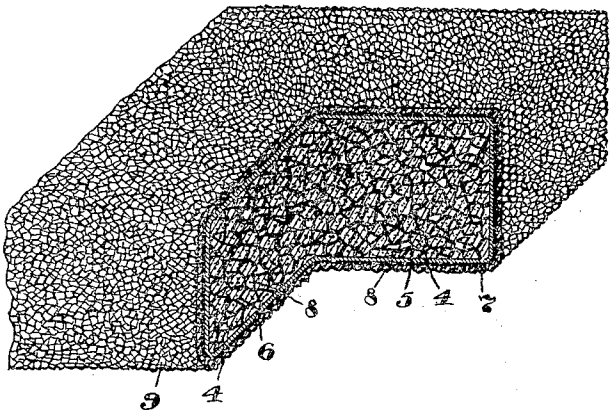


Fig. 2



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LIFE-PRESERVER.

960,129. Specification of Letters Patent. Patented May 31, 1910.

Application filed May 20, 1905. Serial No. 261,470.

To all whom it may concern:

Be it known that we, WALTER S. WILKINSON and GEORGE B. UPHAM, both citizens of the United States, and residing, respectively, at Wytheville, Virginia, and Boston, Massachusetts, have invented an Improvement in Life-Preservers, of which the following description, in connection with the accompanying drawings, is a specification, like numerals on the drawings representing like parts.

This invention relates to the improvement of life preservers and particularly, though not exclusively, to such as are intended for individual use. These usually comprise a suitable covering, such as canvas, and a filling of buoyant material, such as cork and the like. In most life preservers as at present constructed the filling material consists either of solid blocks or of granules or small bodies of some suitable buoyant substance with which the covering, or pockets or separate compartments thereof, are filled, said covering or the apertures of said compartments being then closed by stitching or otherwise.

The use of the free granular filler is open to the serious objection that in the case of rupture of the material of the cover or of the seams thereof, the free granules or particles run out like grain, thereby destroying the buoyant properties of the life preserver in proportion to the amount of filler so dissipated. It is also open to the objection that being unprotected except by the fabric covering, it will, in case of long exposure to moisture of the air or immersion in water, deteriorate, become soggy or water-soaked and thus lose to a great extent its buoyant property. A further objection to the usual construction is the fact that the granules of cork or other filling being more or less free to move, relative to each other, become more or less packed, with a resulting loss of buoyancy even when they are contained in a waterproof pouch or covering.

Our invention aims, among other things, to combine small pieces of light material into a structural, but more or less flexible, block having a very small specific gravity, to preserve the original buoyant quality even when long exposed to moisture or to actual immersion in water and prevent the possibility of the escape of the filler upon rupture of the material or seams of the usual textile covering, also greatly to diminish the deterioration due to time, handling and use.

Our invention consists of an improvement of the life preserver described and claimed in our application, Serial No. 228,665, filed October 17th, 1904, and consists both in a life preserver possessing the advantages above described and in a process for producing the same.

The character and scope of the invention will be clearly apparent from a description of one particular embodiment thereof, such as that illustrated in the accompanying drawings, in which:

Figure 1 shows a life preserver containing our improved filler; and Fig. 2 shows a portion of the filler before inclosing the same in its covering.

In the embodiment of the invention which has been herein selected for the purpose of illustration, the life preserver consists of the covering 1, which is formed of a plurality of plies or sheets of canvas, or other suitable material, stitched together along their edges and provided with transverse lines of stitching, 2, to form separate pockets, 3, within the covering for the reception of the blocks, or members of buoyant material as prepared by our process.

In the preferred form of our invention or that shown in Fig. 2, the buoyants, as we shall hereinafter designate the blocks or members to be inserted in the pockets 3, are composed of irregular shaped pieces or granules 4 of cork, preferably of a size to pass through a mesh one-half an inch square but to rest on a mesh one-quarter of an inch square. Pieces of this size we describe as "comminuted" cork. These pieces after being thoroughly dried to free them from all moisture are immersed in a bath of hot bituminous cement composed preferably of natural asphalt of suitable consistency and melting point, or a natural asphalt fluxed with other and lighter natural asphalt or with some product of petroleum such as is commonly called residuum of petroleum, or with a blown oil flux or pitch made from a heavy petroleum with an asphaltic base. Said bituminous cement may consist entirely of such blown oil flux if

of suitable consistency and melting point, or it may be any bituminous cement which is impervious to moisture, adhesive and non-friable at low and firm at moderately high temperature.

While the cork is being mixed in and with the cement the latter is to be kept at a temperature necessary to maintain decided liquidity; this may be as low as 140° or as high as 400° Fahrenheit, according to the character of the cement used.

After the cork has been thoroughly mixed with the cement it is dipped from it with a wire screen dipper to allow most of the excess of bitumen beyond that necessary to coat the cork to drain away. It is then immediately placed upon a wire screen in an oven heated to from 350° to 400° Fahrenheit and kept there until all the surplus cement is drained off, leaving each piece or granule of cork covered with a thin, hot, adhesive and waterproof film 5 of bituminous cement. These pieces thus coated and while still hot are then lightly deposited in a suitable mold lined with a muslin or cloth bag or receptacle to form an inner covering 6, and when the mold is full a flap of muslin is drawn over the top to complete the inner covering, thus forming a suitably shaped buoyant composed of pieces of cork, each piece rendered waterproof, each piece lightly, firmly, yet in a measure flexibly adhering at some point or place to each adjacent piece of cork, and thus being relatively maintained in a practically permanent position; the outer surfaces of the outer pieces will adhere to the cloth lining of the mold. The film coated pieces should not be packed into the mold with any pressure, but deposited therein as lightly as possible in order that there may be as many and as large air interstices 8 as possible between the irregular shaped film coated and adhering pieces of cork.

When the molded and cloth-covered buoyant thus formed is sufficiently cool to keep its shape it is taken from the mold, the flap sewed or suitably fastened, and the whole is then dipped in hot bituminous cement of the character already described and while the cement coating 7 thus produced is still hot and in a condition to attach by adhesion anything which comes in contact with it, the surface is covered with a coating 9 of small pieces of uncoated comminuted cork or other buoyant material, preferably cork which will pass through a mesh one-sixteenth of an inch square but free from dust. The dipping of the molded and cloth-covered buoyant in the bituminous cement coats it with waterproof yet in a measure flexible covering which will under ordinary handling and usage prevent any water from passing through the covering, while the pieces of uncoated comminuted cork which adhere to this outer covering of the buoyant form a flexible protecting covering which preserves it from injury in ordinary handling and use, add to its buoyancy and prevent it from sticking to the canvas or other suitable material which form the pockets 3. The muslin or cloth cover should be light in weight but preferably sufficiently closely woven to prevent the cement from passing through its interstices and into the air interstices within, in order that the specific gravity of the coated fabric, and consequently that of the life preserver as a whole, may be kept as low as possible.

An excellent bituminous cement may be composed of 50% of refined Bermudez asphalt and 50% of blown oil flux. This bituminous cement has about the same specific gravity as water and is not unduly soft at 100° F. or brittle at 32° F. It will permanently resist all action of moisture or water; it will not deteriorate with time as is the case with india rubber cements. When it is heated to a suitable degree of temperature, say, from 300° to 320° Fahrenheit and the comminuted cork is dipped in it and allowed to drain in the oven as above described, it forms a thin film completely covering the surface of the pieces of cork and rendering them permanently moisture and waterproof. When the film coated pieces are removed from the oven, placed lightly within the fabric lined mold and are there allowed to cool, the pieces adhere lightly yet in a measure flexibly together with ample air spaces between them; the outer surfaces of the outer pieces of cork adhere to the fabric lining of the mold and when the buoyant thus formed is sufficiently cool to be removed from the mold and is dipped in the bituminous cement, the latter forms a water and moisture-proof covering for the buoyant. When covered with the outer coating 9 of comminuted cork and protected by the canvas covering 1 of the pocket, the life preserver may be handled, thrown from place to place, walked upon and actually misused without affecting the waterproof quality of the buoyant which is a structural, in a measure flexible, moisture and waterproof block, its permanent waterproof character being due to the flexibility of the cork, the waterproof and flexible qualities and indestructibility of the bituminous cement, when prepared and used as above described. This buoyant possesses advantages over the usual, but much more expensive natural cork blocks, in that its specific gravity is less than that of a dry natural cork block and very much less than that of a water-soaked natural cork block. It will not absorb water, as natural cork does to a material extent thereby reducing its buoyancy and life preserving quality. In

our buoyant the pieces of cork are rendered absolutely anhydrous by heat before being coated with the waterproof bituminous cement and therefore will not decay.

While we have here described a particular embodiment of our invention, it is to be understood that the invention may be variously embodied and altered in details without departing from the spirit and scope of the invention.

Claims.

1. As an article of manufacture, a filler for life preservers comprising blocks composed of granules or small bodies of buoyant material, a waterproof fabric covering therefor, and an outer covering of buoyant material.

2. As an article of manufacture, a filler for life preservers comprising a block composed of granules or small bodies of buoyant material coated by thin films of bituminous cement, a fabric covering for said block coated exteriorly with said cement, and an outer covering of comminuted buoyant material.

3. As an article of manufacture, a filler for life preservers comprising blocks composed of granules or small bodies of buoyant material, a coating therefor of cementitious material, and an outer covering of buoyant material.

4. As an article of manufacture, a life preserver comprising a plurality of buoyants composed of small buoyant waterproof units, means for attaching each of said units to the adjacent units to form a structural block, a waterproof covering for said structural block, and a protecting coating composed of buoyant material for said waterproof covering.

5. As an article of manufacture, a life preserver comprising a plurality of buoyants composed of small buoyant waterproof units, means for attaching each of said units to the adjacent units to form a structural block, a waterproof covering for said structural block, and an exteriorly non-adhesive protecting coating composed of buoyant material for said waterproof covering.

6. As an article of manufacture, a life preserver comprising irregular pieces of waterproofed cork, means for attaching each of said pieces to the adjacent pieces to form a structural block, a waterproof covering for said structural block, and a protecting coating composed of buoyant material for said waterproof covering.

7. As an article of manufacture, a life preserver comprising a plurality of buoyants composed of irregular pieces of cork, a coating of waterproof bituminous cement for each of said pieces, means for attaching each of said pieces to the adjacent pieces, leaving air interstices between said coated pieces, the whole forming a structural block and a waterproof covering composed of textile fabric treated with bituminous cement for said block.

8. As an article of manufacture, a life preserver comprising a plurality of buoyants composed of irregular pieces of cork, a coating of waterproof bituminous cement for each of said pieces, means for attaching each of said pieces to the adjacent pieces, leaving air interstices between said coated pieces, the whole forming a structural block, a waterproof covering composed of textile fabric treated with bituminous cement for said block, and an exteriorly non-adhesive protecting coating of comminuted cork for said waterproof covering.

9. As an article of manufacture, a life preserver comprising a plurality of buoyants composed of irregular pieces, a cementitious waterproof material covering each of said pieces and attaching it to the adjacent pieces, a waterproof covering for said attached pieces, and an outer coating of buoyant material.

10. As an article of manufacture, a life preserver comprising a plurality of buoyants composed of irregular pieces, a cementitious waterproof material covering each of said pieces and attaching it to the adjacent pieces, a waterproof covering for said attached pieces, and an outer coating of exteriorly non-adhesive buoyant material.

11. As an article of manufacture a life preserver comprising a textile member provided with one or more pockets and fillers for said pockets, each filler consisting of a body of buoyant material having a coating of waterproof bituminous cement and an outer coating of non-adhesive material adapted to prevent said bituminous coating from adhering to the walls of said pockets.

12. As an article of manufacture a filler for life preservers comprising a body of buoyant material, a waterproof coating for said body, and an outer coating of buoyant non-adhesive material.

13. As an article of manufacture a filler for life preservers comprising a body of buoyant material, a waterproof coating for said body and an outer coating of comminuted non-adhesive material.

14. A buoyant for use in life preservers and the like comprising a flexible, block-like material of small specific gravity, composed of irregular shaped pieces of dried, comminuted cork, having a film-like coating of natural asphalt, said pieces flexibly adhering to each other but having air interstices between them.

15. As an article of manufacture, a life preserver comprising irregular pieces of waterproofed cork, a bituminous cement

constituting means for attaching each of said pieces to adjacent pieces to form a block, a waterproof coating for such structural block and a projecting coating composed of buoyant material for said waterproof coating.

16. As an article of manufacture, a life preserver comprising a textile member provided with a plurality of pockets and fillers for said pockets, each filler consisting of a body of buoyant material having a coating of waterproof bituminous matter rendered non-adhesive to prevent adherence thereof to the walls of the pockets.

17. As an article of manufacture, a life preserver comprising a textile member and a filler consisting of a body of buoyant material having a coating of bituminous matter rendered non-adhesive to prevent adherence thereof to the textile member.

In testimony whereof, we have signed our names to this specification, in the presence of the subscribing witnesses.

WALTER S. WILKINSON.
GEORGE B. UPHAM.

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