No. 803,828. PATENTED NOV. 7, 1905.

W. H. HUMPHREY.

LIFE PRESERVER.

APPLICATION FILED APR. 15, 1905.

Fig. 6.

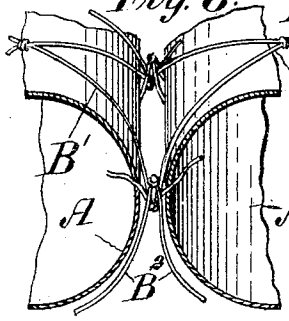


Fig. 7.

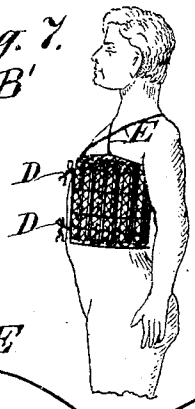


Fig. 5.

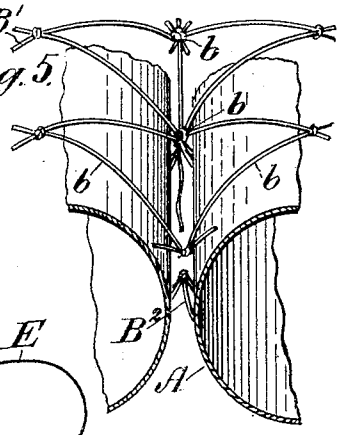


Fig. 1.

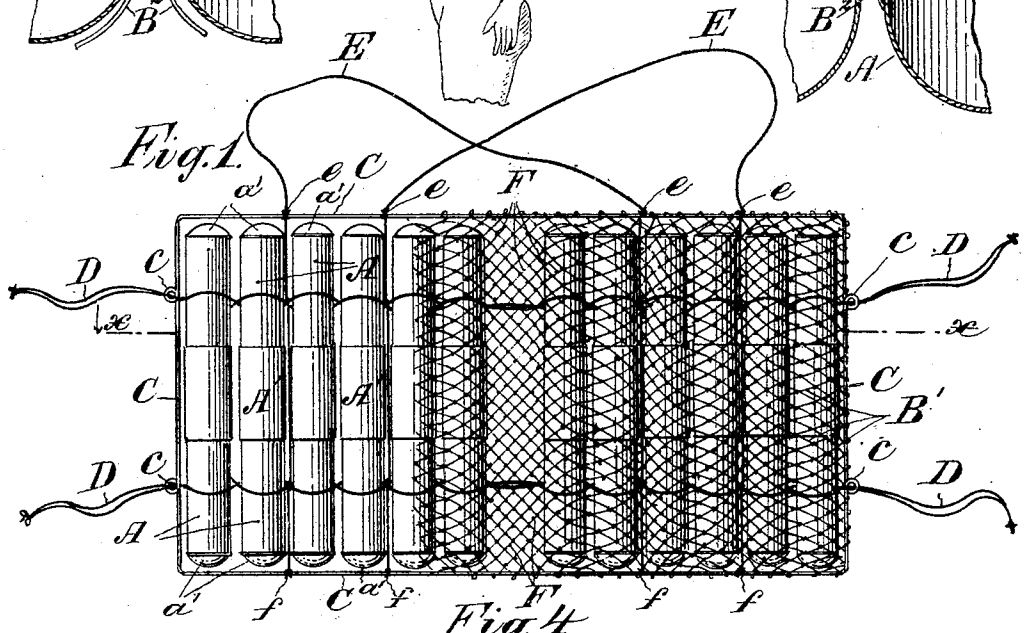


Fig. 4.

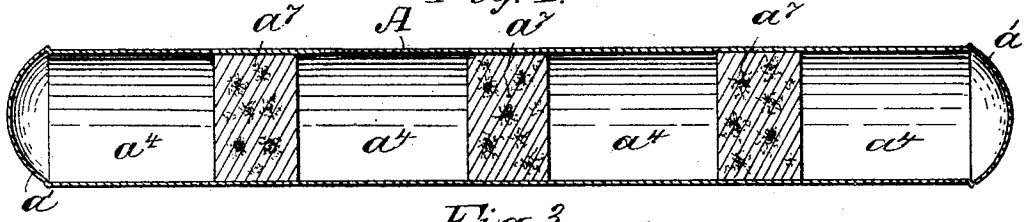


Fig. 3.

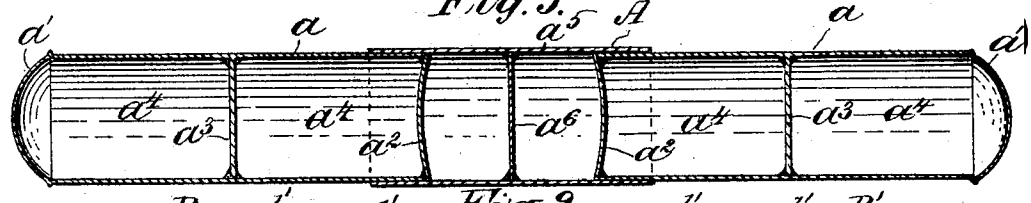


Fig. 2.



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UNITED STATES PATENT OFFICE.

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LIFE-PRESERVER.

No. 803,828. Specification of Letters Patent. Patented Nov. 7, 1905.

Application filed April 15, 1905. Serial No. 255,839.

To all whom it may concern:

Be it known that I, WILLIAM H. HUMPHREY, a citizen of the United States, residing in the borough of Brooklyn, city of New York, county of Kings, and State of New York, have invented certain new and useful Improvements in Life-Preservers, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact specification.

This invention has relation to that variety of life-preservers which are primarily intended to be applied upon the person of the user, the principal object of said invention being to provide or produce a light, strong, reliable, and durable preserver whereof the buoyancy is amply sufficient and which is easy, convenient, and comfortable to apply and use.

Subordinate objects are to make the preserver of simple, cheap, and easy construction that will not be liable to get out of order or become damaged either when in use or when stored for prospective use.

To accomplish the foregoing objects and to secure other and further advantages in the matters of construction, operation, and application, my improvements involve certain new and useful peculiarities of construction and relative arrangements or combinations of parts, all as will be herein described and then pointed out in the claims.

In the accompanying drawings, forming a part of this specification, Figure 1 is a side elevation showing one form of life-preserver constructed in accordance with my invention, the body netting or fabric being omitted from a portion to illustrate the manner of mounting, arranging, and securing the buoyant members which enter into the construction of the completed article; Fig. 2, a horizontal section taken in the plane $x\ x$ of Fig. 1, showing the manner of uniting the tubular members by a body-netting to form the completed life-preserver; Fig. 3, a longitudinal axial section, on a scale enlarged beyond the previous figures, of one of the tubular members with the interior partitions constructed of metal; Fig. 4, a similar longitudinal axial section of a slightly-modified form of the tubular member with the partitions constructed from cork or other appropriate light buoyant material; Fig. 5, a fragmentary view of a piece of the body-netting, showing the two plies thereof united at the proper points to form pockets for receiving the tubular supporting members by knotting them together with a separate thread or rd; Fig. 6, a similar fragmentary view of a piece of the body-netting, showing the plies thereof united at the proper points by interlocking the loops of one ply with the loops of the other in the process of manufacture; and Fig. 7 a sketch, showing the preferred manner of applying the improved life-preserver in practical use.

In all the figures like letters of reference wherever they occur indicate corresponding parts.

The buoyant effect of the improved life-preserver is secured by a number of members of general cylindrical or tubular form, the same being hermetically sealed and preferably japanned or otherwise supplied with an effective protecting-coating to preserve their walls against injurious effects of water or air and to render the parts more durable. In the drawings these tubular members are represented at A A, and they may be of any desired number, according to the size of the life-preserver to be made. They are preferably though not necessarily constructed of thin sheet metal of sufficient strength and are closed at their ends by caps, which are preferably rounded to prevent formation of abrupt angles and to contribute strength. As these tubular elements are of considerable length compared with their diameter, they are provided at different points throughout their interiors with partitions, by means of which they are braced and strengthened and at the same time divided up into compartments having no communication the one with the other, whereby the danger of the whole tubular member being rendered useless, should it be accidently punctured at any point, is obviated. In their construction these tubular members may be either built up from a number of sections or be made continuous throughout. In Fig. 3 of the drawings I have shown them as composed of two similar sections or parts $a\ a$, which in addition to having rounded outer ends a' and concave inner ends a^2 are provided with one or more metallic partitions a^3, secured at the proper point or points within each, whereby to divide the said section into two or more compartments a^4, with the partition or partitions so secured in place as to preclude the passage of water from one compartment to another. The securement of these metallic partitions within the section may be accomplished in various ways. I prefer, however, to secure them therein either by soldering or brazing, as thereby not only is a water-tight joint formed between them and the interior

of the section, but the section itself thereby greatly strengthened. As thus constructed, these two sectional parts a are or may be connected the one with the other by any appropriate means. In the preferred form of my construction, however, this connection is made by a metallic sleeve a^5, the same being supplied with an interior metallic partition a^6, similar in construction and arrangement to those at a^3 and being fitted to receive the ends of the parts a, which may be forced into place and the joints between them made water-tight in any suitable way—as, for instance, by soldering or otherwise. In Fig. 4, on the other hand, I have shown the bodies of these tubular members A as constructed integral throughout, with rounded outer ends a and interior partitions of cork a^7 or other similar light material, that are disposed at equal distances apart and from the ends, as shown. These partitions a^7 as thus constructed of cork or other equivalent material are made to fit the interior of the tubular members quite closely and are forced into place the one after the other, being coated with paraffin or with other similar substances which will not deteriorate or be affected by moisture. After having been thus forced into place these partitions may also receive a further coat of paraffin or other protecting or adhesive substance, whereby to more thoroughly close the joints between them and the interior of the members, and thereby render the passage of water through them at those points impossible. In thus forcing these partitions a^7 into place the air is or may be compressed between them, and they, as well as the compressed air, serve to assist in preventing damage to the exterior of the member by which the usefulness of the latter might be impaired. With the tubular member constructed in either of the ways described a puncture at any one point will be the only damage that will be sustained, since the admission of the water therethrough will enter but a single compartment a^4 and not be able to reach any of the others. Moreover, with either of these constructions a tubular member is produced which while strong and durable is at the same time extremely buoyant and may be either used alone in the complete preserver, or both may be used together, as may be desired. For uniting a number of these tubular members to form a life-preserver various means may be adopted. I prefer, however, to employ a body B, formed from netting of the proper strength and flexibility for the purpose and to use two plies B′ and B² thereof, which are united either by knotting them together at the proper points by a separate thread or cord or by interlooping the loops of one ply at the proper points with the loops of the other in the process of manufacture, as may be preferred. When the first of these forms is adopted, two plies of netting of the requisite length and breadth to form the body B of a complete preserver are superposed the one upon the other and the two then united by parallel rows of knots b, extending transversely across the plies at the proper distances apart to form pockets b' for reception of the tubular members A, formed from separate threads or cords, as shown in Fig. 5. On the other hand, when the other of the forms is availed of, the plies, which will also be of the proper length and breadth to the body of a preserver, will in the process of manufacture be united together at the proper points to make the pockets by interlocking the loops of one ply with the loops of the other, as shown in Fig. 6, and when thus united the two plies are practically made integral or as one single article. I prefer, however, to employ this last-mentioned form of construction; but in whichever way the plies of the netting may be united the tubular members A in the completed preserver are arranged side by side in the pockets b', with their sides completely enveloped and covered by the plies thereof. The number of the tubular members that may be thus united will depend upon the size of the preserver to be produced. In the drawings, however, I have shown twelve as thus united, but this is merely illustrative and a greater or lesser number may be employed, as may be required. With the tubular members A thus arranged in the pockets b' they are held therein and the edges and ends of the body B strengthened by a marginal cord C, which after the plies B′ and B² are brought together at top and bottom over the ends of the members is passed through the loops at their edges and ends, and thereby not only binds these plies together over the ends of such members and holds the latter in place, but imparts the requisite strength to the edges and ends of the body to make it withstand the strain to which it may be subjected as well. As thus arranged the marginal cord C is provided at appropriate points at each end of the preserver with loops or eyes c, through which pass cords D, by which the securement of the preserver around the body of the user may be effected, and in order to avail of these cords as a strengthener to the preserver and at the same time as an aid in holding the tubular members in place each of these cords is provided with two strands, which are interwoven with the members and are or may be knotted together between them at the point where these strands cross each other, if desired. While the preserver is thus provided with means by which it may be secured around the body of the user, it is also provided with means by which it may be supported in part from his shoulders. These means consist of the cords E, which may be either single or double and which extend downward at their ends across the preserver and are secured not only to the marginal cord C at the edges of the preserver, but also to

the cords D by knotting them to such cords or otherwise.

With the tubular members arranged side by side in the pockets in close relationship to one another throughout substantially the entire length of the preserver I find it desirable to omit one at the center or other convenient point in the series—as shown, for instance, at F—whereby to permit of the folding of one part of the preserver over upon the other to economize room and at the same time permit of the storage of the preserver in the minimum space.

With the tubular member C arranged and protected from the action of the air and moisture as above described the netting composing the body of the preserver may be also protected by appropriate preservatives whereby to render it impervious to and unaffected by the same or other elements.

The preserver being constructed as above described is applied to the user when desired by passing it around his body beneath his arms and securing it in that relationship by the cords D, which may be tied or otherwise secured together at their ends, with the cords E carried over his shoulders, whereby to support a portion of the weight of the preserver therefrom, as shown in Fig. 7.

Owing to the fact that the body of the preserver is constructed from netting, it is sufficiently flexible or of a yielding nature to permit the tubular members inclosed thereby to move endwise relatively to each other to a sufficient extent to enable the preserver as a whole to fit the conformation of the body under the arms and otherwise. In other words, the described construction permits a sufficient edgewise yielding of the preserver by the relatively endwise movement of individual tubular members to accommodate itself comfortably to the body, particularly under the arms.

Although in the foregoing I have described the best means contemplated by me for carrying my invention into practice, I wish it distinctly understood that I do not limit myself strictly thereto, as it is obvious that modification in its details may be made without departing from the spirit of the invention.

Having now described my invention, I claim and desire to secure by Letters Patent of the United States—

1. In a life-preserver, the combination with a series of closed metallic tubular members, of a netting body for holding the various members in place, the length of said tubular members being substantially equal to the space between the upper and lower edges of said body, and cords or straps for securing the preserver upon the person, the netting being of a yielding nature to permit the tubular members to move endwise relatively to each other, substantially as set forth.

2. In a life-preserver, the combination with a series of tubular buoyant members and a netting body serving to hold the series of buoyant members in place, of a marginal cord disposed around said body and interlooped with the loops around the edges and ends thereof, and the body cords or straps supported by said marginal cord, the length of said tubular members being substantially equal to the space between the upper and lower edges of said body, the netting being of a yielding nature to permit the tubular members to move endwise relatively to each other, substantially as and for the purposes set forth.

3. In a tubular member for a life-preserver, the combination with individually air-tight end sections of the tubular members, of an intermediate sleeve for uniting them and the whole hermetically sealed, substantially as shown and described.

4. In a life-preserver, the combination with a body composed of netting and provided with a series of pockets, and a marginal cord disposed around said body and interlooping with the loops around the edges and ends thereof, of a series of sheet-metal tubular members each hermetically sealed and arranged in said pockets, the length of said tubular members being substantially equal to the space between the upper and lower edges of said body, and body and shoulder cords arranged to secure the preserver to the body of the user and support it from his shoulder, the netting being of a yielding nature to permit the tubular members to move endwise relatively to each other, substantially as described.

5. The herein-described life-preserver, comprising a series of metallic tubular members hermetically sealed and protected as set forth, a uniting body for holding the series of members in place formed from netting and provided with pockets for reception of such members, the length of said tubular members being substantially equal to the space between the upper and lower edges of said body, and means for applying and securing the preserver to and upon the person of the user, the netting being of a yielding nature to permit the tubular members to move endwise relatively to each other, substantially as set forth.

In testimony whereof I have hereunto set my hand this 1st day of April, 1905.

WILLIAM H. HUMPHREY.

Witnesses:
WM. H. APPLETON,
R. F. SWEENY.