

March 9, 1943.

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2,313,151

LIFE JACKET

Filed June 10, 1942

2 Sheets-Sheet 1

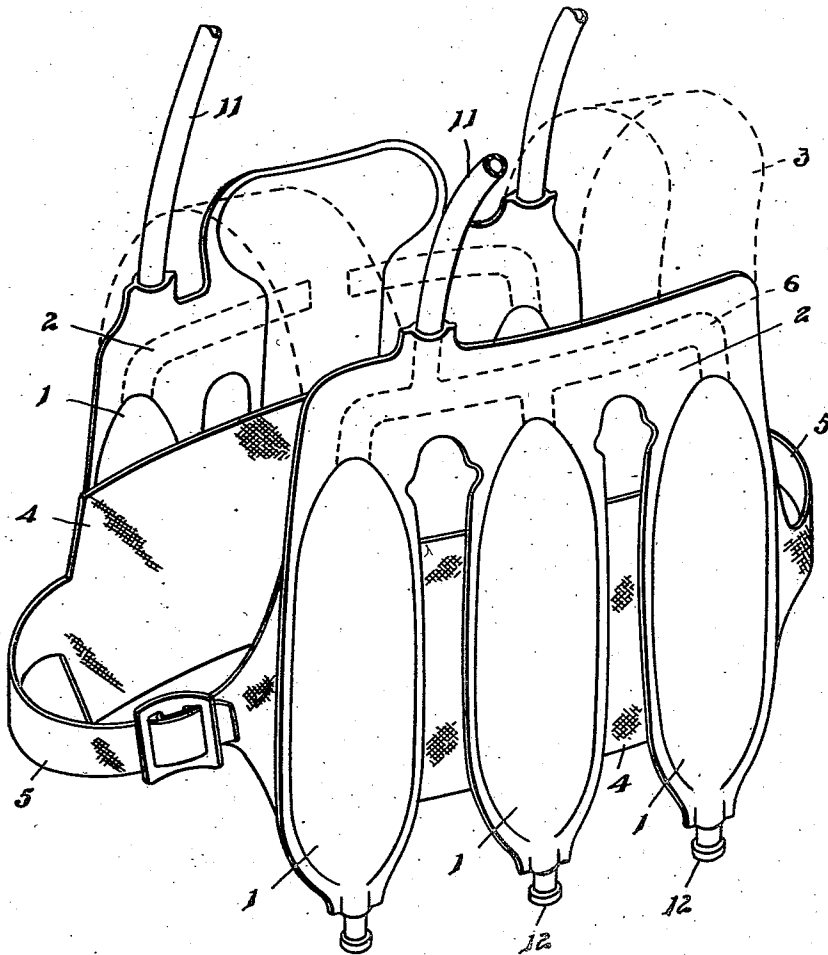


FIG. 1.



FIG. 6.

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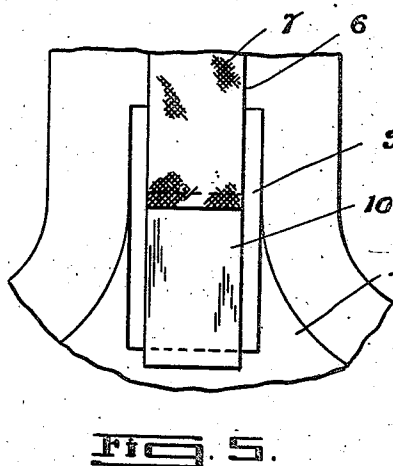
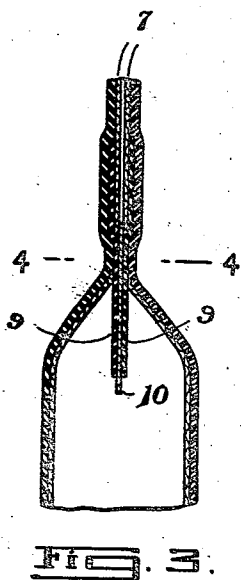
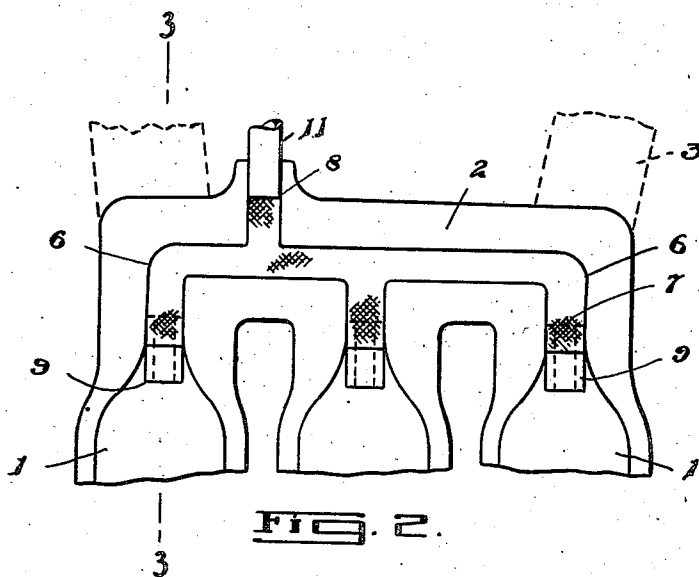
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LIFE JACKET

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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

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LIFE JACKET

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In Canada May 7, 1942

7 Claims. (Cl. 9—20)

The principal objects of the invention are to provide a pneumatic life jacket having a plurality of inflatable chambers which may be inflated from a single entrance tube but in which the deflation of one or more chambers will not affect the others thereby providing a jacket which though partly injured will still retain material efficiency in supporting a person in the water.

A further important object is to provide a very light weight jacket which will when deflated fold or roll up into very small space and which when inflated will be quite flexible and not cumbersome to wear so that a person wearing same will not be unduly hampered in moving about and using the arms in swimming or climbing into boats or rafts.

A still further object is to provide an inflatable jacket in which the means for sealing the chambers will operate automatically and in which such sealing means will retain their operable feature throughout the life of the jacket.

The principal features of the invention consist in fabricating a jacket from two sheets of rubber material having inflatable chambers arranged therebetween and an open channel connecting several chambers and leading to a common inlet, the entrance point of the channel with each of the chambers having an automatically sealable valve arranged therein through which air will flow freely to the chamber and the pressure of air in the chamber will automatically prevent the escape of air back to the entrance channel.

A further feature of the invention consists in the provision of manually operable escape valves in each chamber adapted to permit of the deflation of the chambers separately.

A still further feature consists in arranging the several individual air chambers in partially separated form so that they may take form when inflated without undue restriction and said separated chamber portions are connected together by a fastening belt or straps to be secured about the body of the wearer.

In the accompanying drawings Figure 1 is a perspective view of my improved jacket shown inflated as when in service use.

Figure 2 is a plan view of a portion of the jacket illustrating the arrangement of the inflatable chamber, the connecting air channels and the automatic valves at the entrance of the chambers.

Figure 3 is an enlarged and exaggerated sectional view through a portion of the jacket taken on the line 3—3 of Figure 2 and showing the walls of the inflatable chamber portion expanded as when inflated.

Figure 4 is an enlarged and exaggerated cross sectional view taken on the line 4—4 of Figure 3.

Figure 5 is a plan view of the portion of the jacket illustrated in Figure 4 with the top layer

of fabric removed and showing the manner of fabricating the structure, and

Figure 6 is a transverse cross-section taken through one on the pockets.

Like jackets for use by persons on ship board or planes where there is a liability of accident, causing them to be thrown into the water, have been made of fabric stuffed with kapok and other light materials but these have many objectionable features. Long immersion in the water often causes them to become waterlogged and they are very bulky and cumbersome to wear.

Other forms of jackets have been proposed using air as the floating medium but such structures are subject to deflation through injury and become useless. Some pneumatic jackets have been provided with separate air chambers but they are difficult to inflate rapidly and often the valve mechanisms become corroded or fail to operate.

The present invention has been devised to avoid the many objectionable features hitherto encountered and it consists in making a jacket of a plurality of separate pockets 1 which are arranged in groups connected together at one end by a cross connecting band 2. The connecting bands of the back and front groups of pockets may be connected by shoulder straps 3 as shown in dotted lines in Figure 1. Broad inner straps or bands 4 are secured to the back or inner sides of the several pockets of each group along a narrow longitudinal central area and to the ends of these bands are connected suitable adjustable straps 5 for securing the jacket around the body. The portions of the bands 4 connecting the pockets 1 may be made an integral part of said pockets by cutting an opening in the back wall of the pockets into which the band is fitted and vulcanized.

In the structure shown the group of pockets and the upper connecting band 2 are formed by placing two sheets of rubberized fabric or rubber together face to face with paper sheets separating portions of the meeting surfaces where the pockets are to be formed. Cushions and various inflatable articles have been made in this manner but in the present invention the several chambers are connected by a channel 6 which is formed by placing a double strip 7 of thin fabric between the outer rubber sheets. Each part of the double strip of fabric will adhere to the adjacent overlaid rubber surface but the two layers of strip fabric will not adhere together consequently they will form an open channel between the outer sheets.

The channel formed by the double strip of fabric extends to the entrance of each of the chambers and at least at one point, indicated at 8, the doubled strip extends to the exterior of the connecting belt.

At the point of entrance of the channel to

each of the pockets there is placed a valve formed of two strips 9 of thin rubber which are separated from end to end for a portion of their width by a thin strip of paper 10 thus forming a flat rubber tube, the inward end of which extends into the chamber or pocket and it is also separated from the walls of the pocket. The outward end of each valve extends over the channel formed by the double fabric strips and the outer surface adheres to the fabric and to the overlying outer rubber fabric.

The whole structure is formed flat and is suitably vulcanized.

An inflating tube 11 is vulcanized into the open outer end of the inflation channel described and suitable manually operable deflation valves 12 are vulcanized into the ends of the inflation chambers remote from the automatic valves described.

When air is blown into the inflation channel through the tube 11 the pressure separates the fabric walls and flows in to the flat rubber valves. The pressure separates the central channel formed between the two strips of rubber and the thin paper separator will be dislodged, thus forming an open channel therethrough through which the air flows into the inflation chambers and the side walls, separated by the paper therebetween, expand. As the air flows into these chambers it flows around the free inner ends of the flat rubber valves and immediately upon the cessation of the inward flow of air the internal pressure in the chamber automatically closes the valve and the air blown in is retained in the inflated chamber or pocket.

It will be readily seen that air will flow to all the pockets connected to the common inlet but no air will flow back and the air will be retained in the several pockets independent one of the other, consequently injury to any one or more pockets will not prevent the others from holding air securely.

The manual valves are provided to enable the pockets being deflated.

A jacket formed as described may be made in various shapes or patterns and any desired number of inflation chambers may be provided. Further, one or more inflation tubes may be provided. It is preferable to have separate inflation tubes leading to the front and back groups of chambers but it will be understood that the inflation channel described may be carried through one or both of the shoulder straps if desired.

A jacket such as described may be rolled or folded into very small compass and may be carried very conveniently and when required may be placed in position and then by the simple act of blowing through the inflation tubes it may be inflated in a very brief space of time. When inflated it fits snugly by means of the holding straps and will not hamper the wearer in any activity such as swimming or rowing or climbing, and its buoyancy will support the wearer indefinitely in the water.

Further, it will be understood that the jacket when deflated is quite flat and of extremely light weight so that it can be worn with comfort under outer clothing if desired so that airmen, sailors, workmen and others may wear the jacket constantly and when a life jacket is needed it is merely necessary to put the inflation tube in the mouth and inflate the pockets.

The jacket is preferably made of a rubberized strong textile fabric which, though light in weight, is very strong and durable.

The pockets may be formed of any desired shape but it is preferable that the centre pocket of the back group be formed substantially T-shaped as shown so as to form a head rest for a person resting on the back in the water.

What I claim as my invention is:

1. A life jacket formed of two sheets of rubber material secured together face to face with portions unsecured forming inflatable chambers and other portions unsecured forming an open channel connecting several chambers, and automatically closing valves arranged in said channel at the point of entrance to each of said chambers.

2. A jacket as claimed in claim 1 in which the channel connecting several chambers is formed of a double strip of unsealable fabric placed between the sealable rubber sheets.

3. A jacket as claimed in claim 1 in which a pair of overlying narrow strips of unsealable fabric shaped with branch portions to extend from a common portion to said chambers are placed between the sealable rubber sheets and form the open channel to conduct air to said chambers.

4. A jacket as claimed in claim 1 in which the valves are each formed of a pair of thin rubber strips secured together with an unsecured strip extending from end to end therebetween forming an air passage, one end of each of said valves being secured in the entrance of the channel to the inflatable chamber and the other end of said valve extending freely into the chamber.

5. A life jacket formed of two similarly shaped sheets of rubber material secured together face to face forming a band with individual extensions, each of said extensions having unsecured portions forming separate inflatable chambers, an unsecured channel formed between the portions of said band having branches extending into each of said chambers and having a branch leading outwardly, and an inflation tube secured in the latter branch of said channel.

6. A jacket as claimed in claim 5 having a band of rubber material secured to said individual extensions and forming a belt to hold them in place.

7. A method of making a life jacket consisting in cutting two sheets of rubber material to overlie each other, placing on one sheet separating sheets of unsealable material to form inflatable chambers when the second sheet of rubber material is superposed thereon, placing a pair of overlying strips of unsealable fabric on said rubber sheet to connect with several of said inflatable chamber areas, placing a pair of thin flat rubber strips together with a centre longitudinal strip of unsealable material and placing such pair of rubber strips between the terminal ends of the unsealable paired strips with the other ends extending into the area covered by the unsealable member placed to form the inflation chamber, placing the second sealable sheet over the first sheet, and vulcanizing the whole of the sealable contacting areas together in the one operation.

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