

March 8, 1949.

J. J. PODELL

2,463,641

BUOYANT BELT WITH WEARING APPAREL

Filed Nov. 1, 1945

2 Sheets-Sheet 1

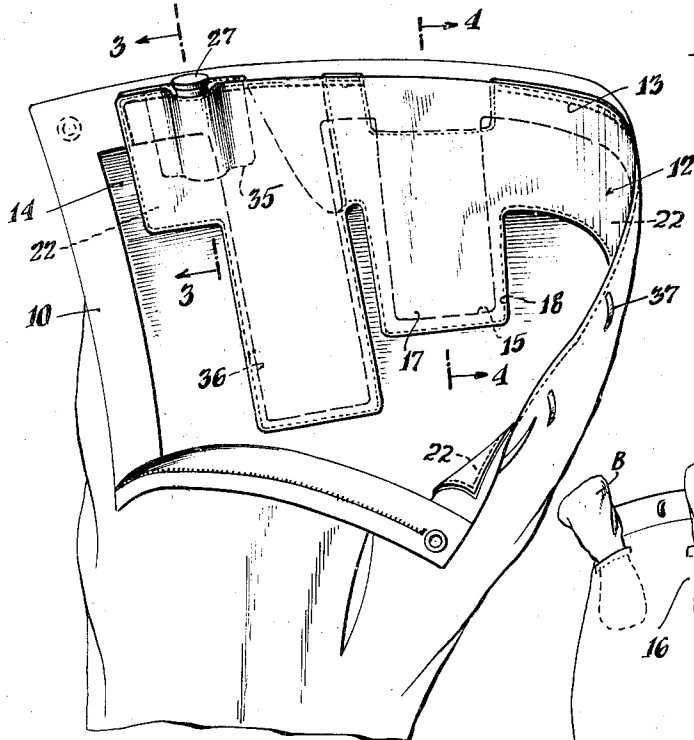


Fig. 1

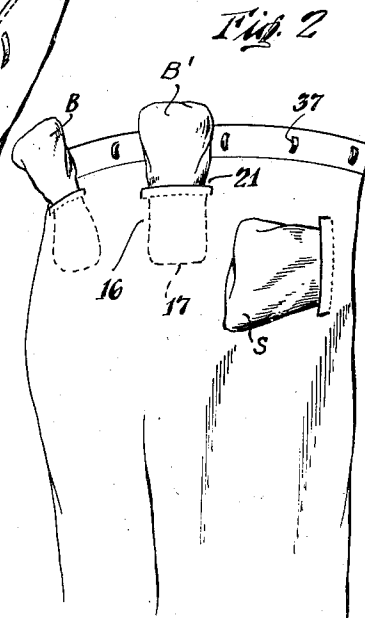


Fig. 2

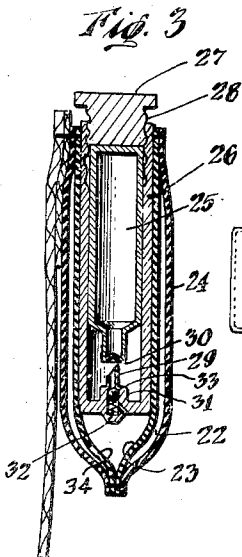


Fig. 3

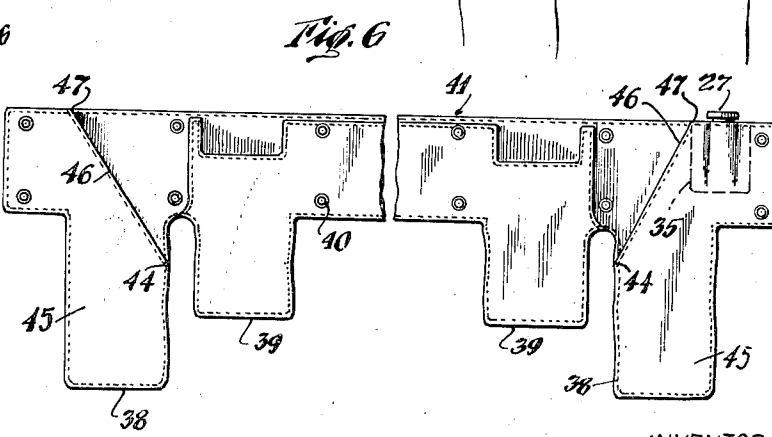


Fig. 6

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2 Sheets-Sheet 2

Fig. 4

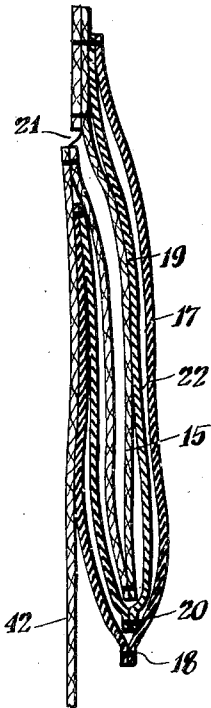


Fig. 5

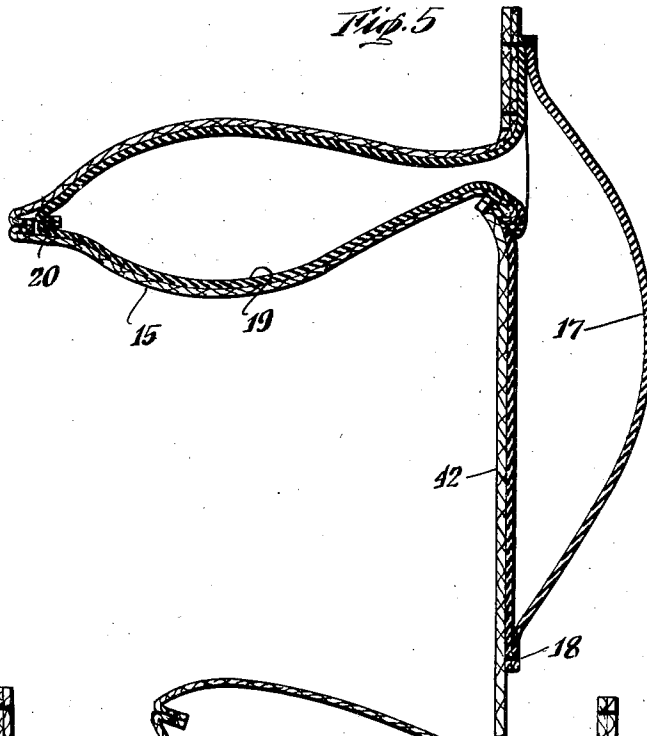


Fig. 7

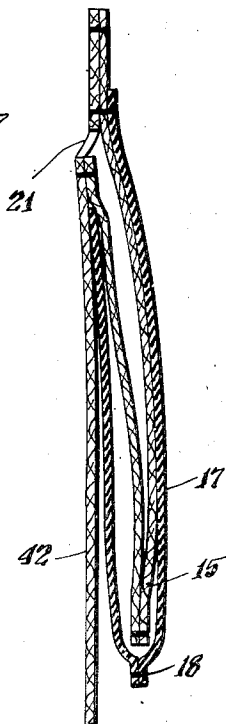
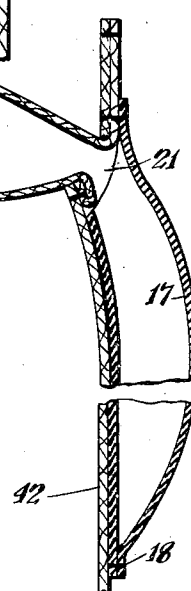


Fig. 8



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2,463,641

BUOYANT BELT WITH WEARING APPAREL

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Application November 1, 1945, Serial No. 625,995

16 Claims. (Cl. 9—20)

1

This invention relates to wearing apparel or garments suitable to serve as life preservers to save people from drowning and is herein disclosed in some detail as embodied in a simple inconspicuous lightweight modification of an ordinary garment such as trousers.

Life preservers used at sea and on boats generally comprise a large angular ring made of cork or a similar material or a vest having a series of cork or other buoyant portions. Such devices are cumbersome and are stored as conspicuously as possible so that passengers may obtain them in case of emergency.

In the Navy when ships are traveling through submarine infested water, the sailors are usually required to carry with them a life preserver on penalty of being court martialed if found without it. In spite of these rigid penalties, it is difficult to get the seamen to wear either a life preserver vest or to carry with them the usual life preserver.

In emergencies at sea there is a scramble for life preservers resulting in many persons not obtaining them. Further, persons traveling around in the water or taking boat trips would feel much safer if they had constantly at hand a life preserver which could be readily inflated.

The present invention aims to provide a life preserver element as a part of an article of clothing so that it could be worn normally without discomfort or inconvenience and would be constantly at hand for quick inflation in case of an emergency or in case the wearer fell overboard. The simplicity of the construction permits it to be embodied as a part of wearing apparel at a low cost.

One object of the invention is to provide a life preserver which will be effective and safe and will use standard devices and standard materials as far as possible.

Another object of the invention is to utilize an ordinary garment structure to a large extent so that the life preserver is inconspicuous and natural to wear. It is herein disclosed in a form which may be regarded as a substitute lining for a standard garment such as trousers.

Another object is to provide a structure within which will not interfere with the fit of the garment and to provide a structure which may be useful for other purposes than as a life preserver.

Thus, it is an object of the invention to provide a garment which has a double structure; viz., one which may be both a life preserver and a garment suitable for wear when traveling, and it may even serve to provide to some extent as a

2

rainproof pocket for holding safely papers likely to be injured by wetting.

In the form disclosed in some detail, double wall pockets are provided so that the pockets may be utilized as pockets normally, but may be inflated to give double the buoyancy of a mere single pocket.

Other and further objects of the invention will be obvious upon an understanding of the illustrative embodiment about to be described, or will be indicated in the appended claims, and various advantages not referred to herein will occur to one skilled in the art upon employment of the invention in practice.

A preferred embodiment of the invention has been chosen for purposes of illustration and description and is shown in the accompanying drawings, forming a part of the specification, wherein:

Fig. 1 is a fragmentary view of a pair of trousers embodying one form of the present invention;

Fig. 2 is a diagrammatic view of some pockets when inflated for use in saving life;

Fig. 3 is a section on the broken line 3—3 of Fig. 1 on an enlarged scale;

Fig. 4 is a fragmentary diagrammatic section on the broken line 4—4 of Fig. 1;

Fig. 5 shows diagrammatically in section a pocket similar to Fig. 4 but inflated;

Fig. 6 is a view of an alternative form, showing a separately attachable belt as viewed from the opposite side from the view of Fig. 1;

Fig. 7 is a diagrammatic sectional view of another alternative form, shown in a back pocket; and

Fig. 8 is a diagrammatic sectional view of the pocket of Fig. 7 inflated.

In the preferred embodiment of the invention illustrated in Fig. 1, a pair of trousers is shown having a fly opening 10 adapted to be closed by an ordinary type of zipper and having a belt 12 stitched by seams 13 to the interior face 14 of the trousers. In that figure a back pocket 15 forming a receptacle of the usual shape inside one of the hips 16 of the trousers includes (in Fig. 4) an outer layer, cover or face 17 stitched around the outer edge at 18 to join an inner layer, cover or face 19 with its two layers stitched together by a seam 20, so that when gas is introduced between the two layers, covers or faces the inner one 19 is blown out through the usual pocket opening 21 forming a float of substantial size.

To introduce the gas the space between the

inner pocket-like layer 19 and the outer pocket-like layer 17 is connected to a passageway 22 between the inner layer 19 and the outer layer 17 of the belt 12. The passageway 22 preferably extends all the way around the belt 12 and is adapted to conduct gas to all the pockets to be described below, including the pockets 15. The gas is shown as coming from a cartridge or container 25 which is shown as lying within a rigid shell 26 and adapted to be forced down by turning a milled plug 27 threaded at 28 into the shell 26. When the milled plug 27 is turned, it forces the cartridge 25 down on a sharp point 29 facing the easily punctured head 30 of the cartridge so as to release any contained gas.

In the form shown the cartridge need not necessarily contain compressed gas but may serve as a reservoir for material for producing the gas. To enable any such types of cartridges to be used, the mounting 31 on which the point 29 is held is shown as provided with a hollow passage 32 containing a spring-controlled check valve 33 adapted to allow gas to pass from the cartridge through an opening 34 in the wall portion 23 adjacent the cartridge and into the passage 22 of the belt intermediate the wall portions 23 and 24 adjacent the cartridge; the check valve 33 serves to block the return of gas into the cartridge shell 26. To enable the plug 27 to be turned down with considerable force, the shell 26 is shown (see Fig. 1) with wings 35 lying within the belt to prevent the shell 26 from turning when the plug 27 is turned.

In the form shown both back pockets 15 serve as inflatable double pockets or floats and also the two side pockets 36 may serve as floats. In order to enable these pockets to thus serve as floats, they are made of gas-tight, water-proof material or fabric, and the seams are made water-proof as by coating with a rubber cement.

When the double pocket is inflated by gas, the gas pressure forces the inner fabric layer 19 out of the pocket opening 21 as diagrammatically shown in Fig. 5, forming a float of substantial size as it pushes the pocket 15 out of the pocket opening 21, and the outer fabric layer 17 also expands as far as allowed by the trouser fabric 42.

Since the pockets are gas-tight, it is possible to use the widely available cartridges of carbon dioxide as a source of gas. The water-proof and gas-proof pocket material prevents the carbon dioxide from going into solution in the surrounding water. Where the shell 26 is adapted to hold such cartridges, it is possible to obtain and replace the cartridges easily at intervals when one is suspected of having leaked some of its contents. The gas content of a cartridge must be such as to fully inflate but not wreck the inflated pockets.

In the form shown, the trousers include outside straps 37 to accommodate the usual trousers belt which may be loosened when it is desired to inflate the pockets and thus facilitate their inflation through the openings 21. As pointed out hereinabove, the pockets also expand their outer layers 17 within the trousers when gas is introduced, and this buoyant effect may be enhanced by loosening the belt which may extend through the straps 37.

Not only are the pockets made of water-proof and gas-proof material and their seams water-proof, but the belt is also made of water-proof and gas-proof material of the same or heavier material than the water-proof pockets, and its seams are similarly made gas-proof and water-proof.

The perspective view of Fig. 2 illustrates a pair

of trousers with a side pocket S and back pockets B and B' inflated as they are when adapted to be used in life saving.

In the form of the invention shown in Fig. 6, the belt 41 is adapted to be sold independently of trousers and is provided with enlarged double fabric front pockets 38 and enlarged double fabric rear pockets 39 so that the pockets 38 and 39 may be slipped up over the usual trouser pockets as the belt is slipped into place and held by snap fasteners 40 at suitable intervals on the belt.

To enable the belt 41 to be pulled up into place at the top of the trousers, the front double fabric pockets 38 of the belt separate into a front double fabric and a back double fabric at the point 44 where they would meet the bottom of the trouser pocket opening. Then the edge of the outer double fabric 45 rises diagonally along the seam line 46 to the point 47 at the end of the top seam which holds the usual trousers pocket to the trouser fabric.

In Figs. 7 and 8, the water-proof fabric layer 19 itself forms the pocket of the trousers. Its outer layer 17 remains within the trousers when gas is introduced while the pocket fabric layer 19 blows out as diagrammatically shown at Fig. 8 to form the inflated float.

It is possible to use a carbon dioxide cartridge 25 because the fabric layers 17 and 19 and the belt fabric are water-proof so that the carbon dioxide gas will not be absorbed by the surrounding water when used for inflating. It is even possible to have in the container 20 some calcium carbide and provide water in the outer jacket 27 so that when the milled head 25 is turned it breaks the head 30 and enables the water to enter the container 20 and react and produce the gas acetylene.

Where this procedure is followed, it is usually preferable to provide the check valve 33 in the lower end 31 of the container so that acetylene produced may escape through the passage 32 and opening 34 into the belt passage, but be blocked by the valve 33 against flowing back.

Although only two pockets have been described above, which may be regarded as right-hand pockets 15 and 38, identical left-hand pockets will usually be provided at the other side of the trousers and connected to the same conduit in the belt and provided with identical double fabric structures so that when the life preserver is fully inflated the wearer will have the benefit of the inflation of four double pockets or in effect inflation of eight pockets.

The fabric layers 17 and 19 and the belt fabric may take many forms and will often be made of fine woven fabric rubber-covered or covered with some synthetic resin to make them gas-proof and water-proof. The seams, shown only diagrammatically, are usually coated with cement or other adhesive or water-tight joint covering so as to make the requisite water-tight and gas-tight floats out of the pockets.

As various changes may be made in the form, construction and arrangement of the parts herein without departing from the spirit and scope of the invention and without sacrificing any of its advantages, it is to be understood that all matter herein is to be interpreted as illustrative and not in a limiting sense.

Having thus described my invention, I claim:
1. A life belt adapted to be adjusted to a garment at about waist height, including a gasproof outer wall forming a center passage and with an exit passage through the gasproof outer wall, a receptacle pocket normally depending from said

5

gasproof outer wall including an inner gasproof wall, a separate outer gasproof wall for the pocket united to the inner wall along its edges so that the space between forms an expansible chamber, said pocket chamber being in communication with said center passage through an open conduit.

2. A life belt adapted to be adjusted to a garment at about waist height, including a gasproof outer wall forming a center passage and with an exit passage through the wall, a receptacle pocket extending laterally from said gasproof outer wall including an inner gasproof wall, a separate outer gasproof wall for the pocket united to the inner wall along its edges so that the space between forms an expansible chamber, said pocket being joined with the gasproof outer wall in the vicinity of said exit passage and being in communication with said center passage through an open conduit, and a check valve opening into the passage for inflating the pocket.

3. A life belt adapted to be adjusted to a garment at about waist height, including a gasproof outer wall with a center passage therein and an exit passage through the wall, a receptacle pocket carried by and extending outwardly from said gasproof outer wall including an inner gasproof wall, a separate outer gasproof wall for the pocket united to the inner wall along its edges so that the space between forms an expansible chamber, means joining said packet with the gasproof outer wall adjacent the exit passage and forming an open conduit connecting the pocket chamber with the center passage, and a gas-container compartment having a separate passage through which inflating gas may be admitted.

4. A life belt adapted to be adjusted to a garment at about waist height, including a gasproof outer wall with a center passage therethrough and an exit passage through the wall, a pair of enlarged receptacle pockets carried by said gasproof outer wall each including an inner gasproof wall, a separate outer gasproof wall for each pocket united to the inner wall along its edges so that the space between forms an expansible chamber, and joining means adjacent the exit passage connecting the pockets with the gasproof outer wall forming open conduits connecting each pocket chamber with the center passage.

5. A life belt adapted to be adjusted to a garment at about waist height, including a gasproof outer wall forming a center passage and with an exit passage through the wall, a volume-increasing receptacle pocket extending outwardly from said gasproof outer wall including an inner gasproof wall, a separate outer gasproof wall for the pocket united to the inner wall along its edges so that the space between forms an expansible chamber, means adjacent the exit passage connecting the pocket walls with said gasproof outer wall and forming an open conduit connecting the pocket chamber with the center passage, a gas-container compartment having a separate passage through which inflating gas may be admitted, and a normally closed rigid container adapted to hold inflating gas under pressure but connected to feed gas through said separate passage when released.

6. A life belt adapted to be adjusted to a garment at about waist height, including a gasproof outer wall with a center passage therein and an exit passage through the wall, a receptacle pocket connected with and providing a volume-enlargement of said gasproof outer wall including an inner gasproof wall, a separate outer gasproof

6

wall for the pocket united to the inner wall along its edges so that the space between forms an expansible chamber, means adjacent said exit passage joining the pocket with the gasproof outer wall and forming an open conduit connecting the pocket chamber with the center passage, a gas-container compartment with a separate passage through which inflating gas may be admitted, and a normally closed rigid container in said compartment having a breakable closure to hold inflating gas under pressure but connected to feed gas through said separate passage when released.

7. A life belt adapted to be adjusted to a garment at about waist height including receptacle pockets having openings to receive inserted articles, gasproof inner walls for said pockets to hold the articles, gasproof outer walls for said pockets united to the inner walls along the junction with the belt and cooperable with said inner walls to form a chamber, so that when the chamber between the walls is inflated the inner walls may inflate out through the pocket opening while the outer walls remain in position, and gasproof walls forming a substantially tubular passage as part of said belt and including openings communicating with the pocket chambers so that inflating the belt also inflates the pocket chambers.

8. A life belt adapted to be adjusted to a garment at about waist height including receptacle pockets having openings to receive inserted articles, gasproof inner walls for said pockets to hold the articles, gasproof outer walls for said pockets united to the inner walls along the junction with the belt and forming an inflatable chamber with said inner walls, so that when the chamber between the walls is inflated the inner walls may inflate out through the pocket opening while the outer walls remain in position, a gasproof wall forming a gas-conducting passage as part of said belt and including openings in communication with the pocket chambers so that inflating the belt also inflates the pocket chambers, and a check valve opening into the gas-conducting passage for inflating the pockets.

9. A life belt adapted to be adjusted to a garment at about waist height including receptacle pockets having openings to receive inserted articles, gasproof inner walls for said pockets to hold the articles, gasproof outer walls for said pockets united to the inner walls along the junction with the belt and forming an inflatable chamber with the inner walls, so that when the chamber between the walls is inflated the inner walls may inflate out through the pocket opening while the outer walls remain in position, a gasproof wall forming a gas-conducting passage as part of said belt and including openings in communication with the pocket chambers so that inflating the gas-conducting passage portion of the belt also serves to inflate the pocket chambers, and a compartment adapted to contain a gas cartridge having a separate passage through which inflating gas may be admitted to said gas-conducting passage.

10. A life belt adapted to be adjusted to a garment at about waist height including receptacle pockets having openings to receive inserted articles, gasproof inner walls for said pockets to hold the articles, gasproof outer walls for said pockets united to the inner walls along the junction with the belt and cooperating with said inner walls to form a chamber, so that when the chamber between the walls is inflated the inner walls may inflate out through the pocket opening while the outer walls remain in position, a gas proof wall

forming a gas-conducting passage as part of said belt and including openings into the pocket chambers so that inflating the belt also inflates the pocket chambers, a compartment for holding a rigid gas container having a separate passage through which inflating gas may be admitted to said pocket chambers via said gas-conducting passage, and a normally closed rigid container adapted to hold inflating gas under pressure but connected to feed gas through said separate passage when released.

11. A life belt adapted to be adjusted to a garment at about waist height including receptacle pockets having openings to receive inserted articles, gasproof inner walls for said pockets to hold the articles, gasproof outer walls for said pockets united to the inner walls along the junction with the belt and cooperable with the inner walls to form a chamber, so that when the chamber between the walls is inflated the inner walls may inflate out through the pocket opening while the outer walls remain substantially in position, a gasproof wall connecting said receptacle pockets together forming a gas-conveying passage as part of said belt and including openings communicating with the pocket chambers so that inflating the belt also inflates the pocket chambers, a compartment adapted to receive a rigid gas container having a separate passage through which inflating gas may be admitted to said gas-conveying passage, and a normally closed rigid container having a breakable closure to hold inflating gas under pressure but connected to feed gas through said separate passage when released.

12. A pair of trousers having a cloth outer face, an inner belt within the outer face around the waist, pockets carried by the belt to be within the trousers and having gasproof inner bodies, spaced outer gasproof bodies for the pockets forming with the inner bodies inflatable chambers in communication with the interior of the belt, and means for inflating the chambers through the belt.

13. A pair of trousers having a cloth outer face, an inner belt within the outer face around the waist and including a gasproof passage, pockets carried by the belt to be within the trousers and having gasproof inner bodies, spaced outer gasproof bodies for the pockets forming with the inner bodies inflatable chambers in communication with the interior of the belt, and means for

inflating the chamber through the passage in the belt.

14. A pair of trousers having a cloth outer face, an inner belt normally disposed within the outer face and including a gasproof passage, pockets opening through the cloth and having gasproof bodies forming an inner lining, gasproof outer bodies for the pockets normally enveloping said inner lining and forming with the inner lining inflatable chambers connected to the gasproof passage, and a connection whereby the gasproof passage may be inflated.

15. A pair of trousers having a cloth outer face, an inner belt within the outer face and including a gasproof passage, pockets opening through the cloth and having gasproof bodies forming an inner lining, gasproof outer bodies for the pockets normally encasing said inner lining and forming with the inner lining inflatable chambers connected to the gasproof passage, a connection whereby the gasproof passage may be inflated to inflate said pockets and project said inner lining out of said outer gasproof bodies, and a source of gas adapted to deliver gas under pressure to said connection.

16. A pair of trousers having a cloth outer face, an inner belt within the outer face and including a gasproof passage, pockets opening through the cloth and having gasproof bodies forming an inner lining adapted to project outside the openings by inflation, gasproof outer bodies for the pockets normally fitting around said inner lining in collapsed and flattened relationship and forming with the inner lining inflatable chambers connected to the gasproof passage, and a connection whereby the gasproof passage may be inflated.

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