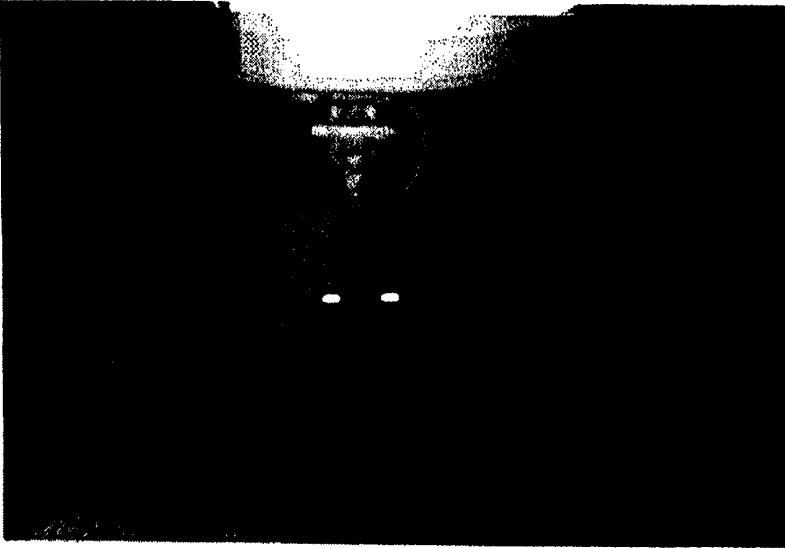




INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<p>(51) International Patent Classification ⁶ : A41D 13/00, B63C 9/087, F16K 7/12</p>	<p>A1</p>	<p>(11) International Publication Number: WO 99/21447</p> <p>(43) International Publication Date: 6 May 1999 (06.05.99)</p>
<p>(21) International Application Number: PCT/DK98/00416</p> <p>(22) International Filing Date: 25 September 1998 (25.09.98)</p> <p>(30) Priority Data: 9700398 U 28 October 1997 (28.10.97) DK</p> <p>(71)(72) Applicants and Inventors: LUND, Mads [DK/DK]; Ringvejen 46 A, DK-7900 Nykøbing Mors (DK). NIELSEN, Peter, A. [DK/DK]; Morsingvej 11, DK-7900 Nykøbing Mors (DK).</p> <p>(74) Agent: PALSTEN, Jørn; Palsten Consult, Sct. Mathiasgade 56, DK-8800 Viborg (DK).</p>		<p>(81) Designated States: AU, CA, JP, NO, US, European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).</p> <p>Published <i>With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments. In English translation (filed in Danish).</i></p>
<p>(54) Title: AIR-ESCAPE VALVE FOR WADERS AND OTHER AIRTIGHT CLOTHING</p>		
		
<p>(57) Abstract</p> <p>This innovation is a valve which can be applied into already existing or built into new manufactured air- and watertight clothing such as waders and other clothing. The valve enables the person wearing waders to let out accumulated air in the event of submerging. Thus the valve enables the unfortunate person to reach the bottom of the sea, alternatively to swim for his rescue and to undress from the waders. The valve is activated by pulling a string attached to the upper part of the boot-section of the waders - one valve in each leg/boot. When activating the valve a rubber membrane is released and a sufficient amount of air is ventilated very fast.</p>		

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Air-escape valve for waders and other airtight clothing

POSSIBLE AREAS FOR USE OF THIS NEW INNOVATION:

The innovation consists of a valve for manual operation securing the ventilation of accumulated air from air- and watertight clothing such as waders and other clothing.

The valve is designed for building into waders, and is constructed with an inner holding-nut and an outer valve-head separated by a rubber-membrane. Activation is carried out by means of a pull-string-arrangement.

The innovation is expected to be applied for the purpose of reducing the very grave risk of life when using longlegged boots, waders or similar rubber/PVC clothing where the hazard is the likelihood of this clothing being filled with air, when a person tips over when standing in the water or if falling into the water.

THE HAZARD OR PROBLEM WHICH THIS INNOVATION SOLVES:

When or if the accident occurs, the waders submerge and the effect of the accumulated air gathered in the waders becomes apparent. This has the consequence that the person's legs and feet are lifted to the water-surface. This again makes it impossible for the person to swim and at worst impossible even to keep the head above the water-surface.

THE NEW TECHNIQUE:

The application of this new innovation entails the possibility to ventilate accumulated air from waders and other similar clothing, thus allowing the person to swim and/or to reach the water-bottom. Or when in deep water to undress from the waders.

The valve is activated by pulling the string attached to or built into the upper part of the boot-section of the waders.

HOW THIS TECHNIQUE WORKS:

By activating the pull-string, the rubber-membrane part of the valve opens whereby accumulated air is allowed to escape from the clothing.

ILLUSTRATIONS:

Photograph no. 1 shows the valve (prototype) applied onto a pair of waders as seen from the outer side.

Photograph no. 2 shows the valve as seen from the inner side.

Photograph no. 3 shows the valve when activated (open).

Drawings nos. 1, 2, 3 illustrate various parts and components.

A video has been taken showing actual testing of the waders with built-in valves and the valve-function.

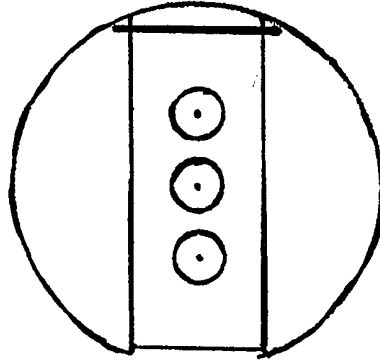
CLAIMS:

A valve with its valve-bearing or valve-housing, a rubber-membrane and a pull-string activator, all comprising new innovation thereby that :

- The valve allows accumulated air to escape
- The valve is designed for applications in air- and watertight materials with thicknesses between 0,01 mm and 200 mm, including materials used for clothing such as waders.
- The valve is activated by manually pulling the spring-pull device.
(Illustration 3)
- The valve-housing is designed with one or more grooves (Illustration 1), and with one or more air-ventilating holes (Illustration 1), and which guide and hold firm the rubber- membrane, thus securing tight closing of the air-ventilating holes.
- The inner nut (Illustration 2) is designed with a rim and a screw thread or with a spring-log, where the rimpart contains one ore more holes for air-intake or air-escape.
- The membrane (Illustration 3) is designed for a rubber type, characterised thereby that it functions as sealing between the outer and inner parts of this innovation and at the same time serves as sealing of the grooves in the valve-housing.
- The specific part of this rubbertype membrane (illustration 3) serving as the sealing for the valve-housing groove(s) is reinforced at the end-piece to enable a stable fixing of the pull-ring-device.

FIG I

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M 18x1,5



FIG 2

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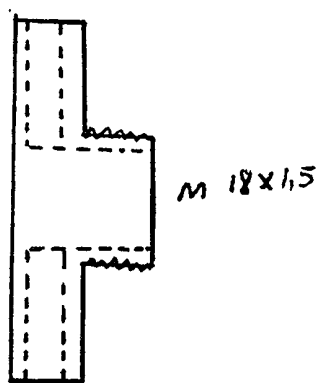
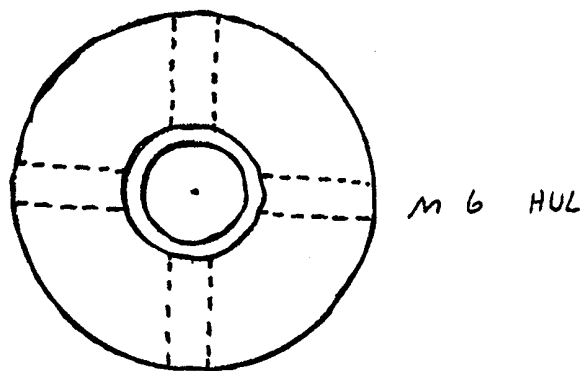


FIG 3

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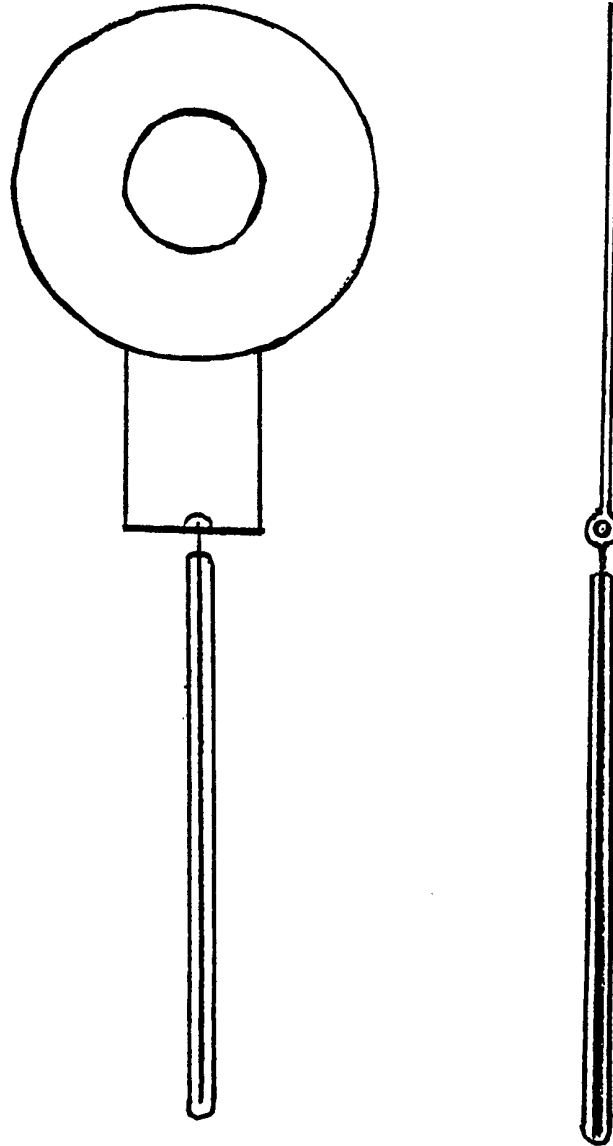


Foto 1

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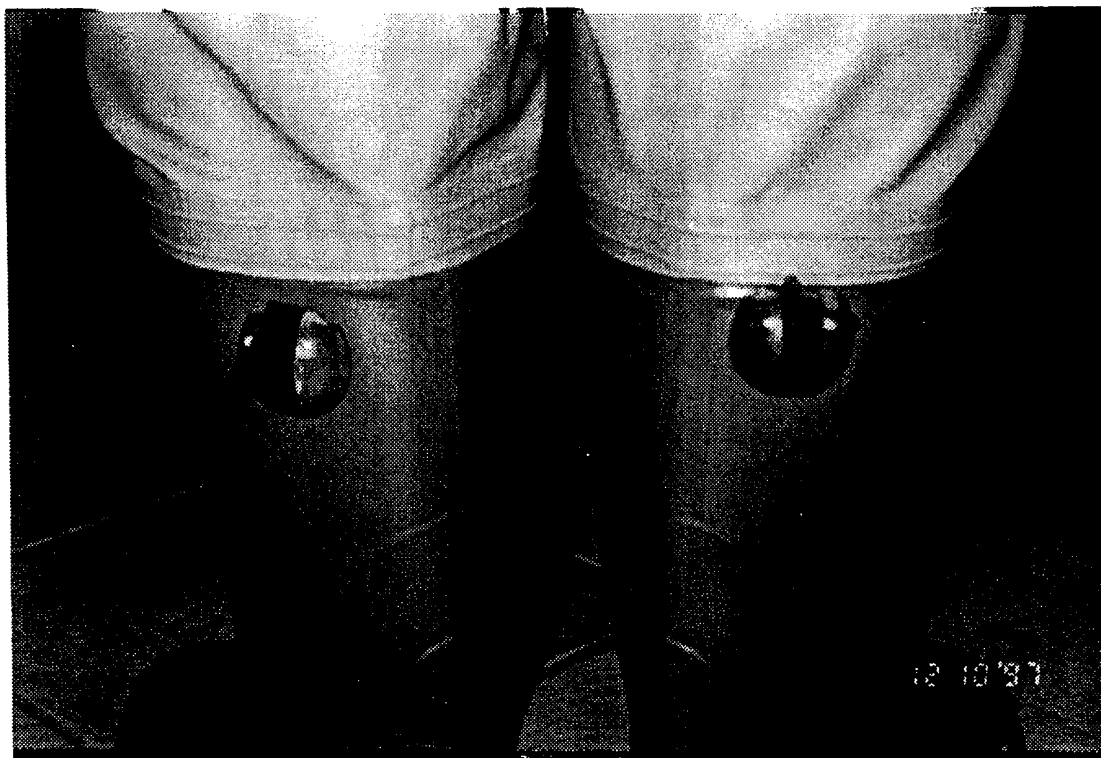


Foto 2

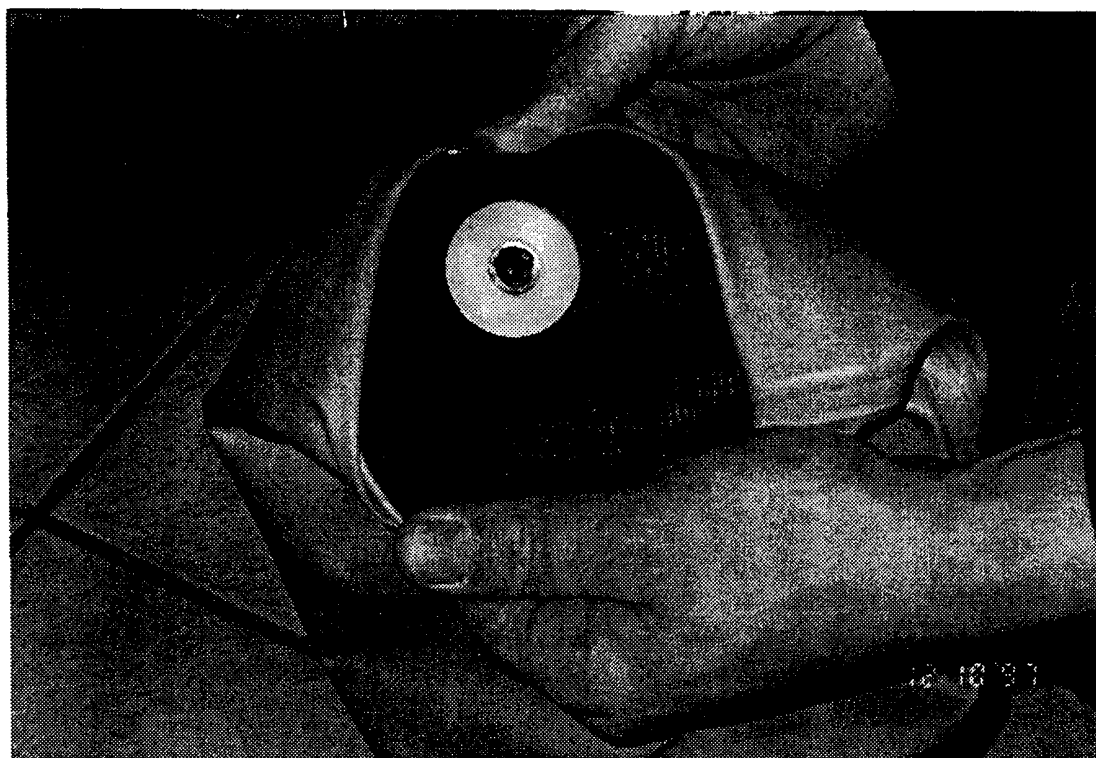
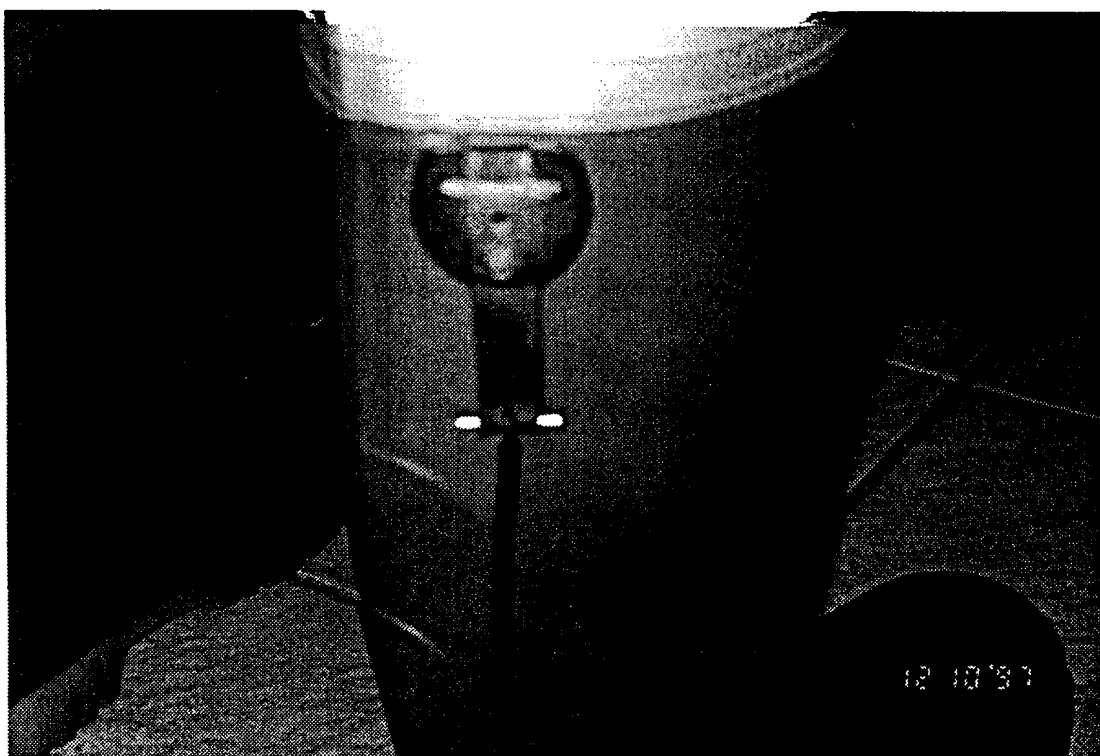


Foto 3



INTERNATIONAL SEARCH REPORT

International application No.

PCT/DK 98/00416

A. CLASSIFICATION OF SUBJECT MATTER				
<p>IPC6: A41D 13/00, B63C 9/087, F16K 7/12 According to International Patent Classification (IPC) or to both national classification and IPC</p>				
B. FIELDS SEARCHED				
Minimum documentation searched (classification system followed by classification symbols)				
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Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)				
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Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.		
Y	GB 557220 A (ZBIGNIEW SIEDLECKI ET AL), 10 November 1943 (10.11.43), page 8, line 27 - line 70, figures 11,12 --	1		
Y	GB 2167530 A (BTR PLC (UNITED KINGDOM)), 29 May 1986 (29.05.86), page 1, line 5 - line 78, figures 1-5, abstract --	1		
Y	GB 2267550 A (MULTIFABS LIMITED), 8 December 1993 (08.12.93) --	1		
Y	US 4762145 A (F. STRADELLA), 9 August 1988 (09.08.88), figures 1-3 --	1		
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C. <input checked="" type="checkbox"/> See patent family annex.				
<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;"> * Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document but published on or after the international filing date "I" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed </td> <td style="width: 50%; border: none;"> "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family </td> </tr> </table>			* Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document but published on or after the international filing date "I" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family
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International application No.

PCT/DK 98/00416

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	GB 946747 A (DUNLOP RUBBER COMPANY LIMITED), 15 January 1964 (15.01.64), page 1, line 22 - line 78; page 2, line 9 - line 30, figures 1-4 --	1
Y	US 5184796 A (H.C. MAHER), 9 February 1993 (09.02.93), column 3, line 24 - line 32, figures 1-4 --	1
A	GB 2236659 A (AIR SAFETY PRODUCTS LTD), 17 April 1991 (17.04.91), page 4, line 9 - line 14; page 5, line 10 - line 19, figure 1, abstract -- -----	1

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Information on patent family members

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
GB 557220 A	10/11/43	NONE	
GB 2167530 A	29/05/86	NONE	
GB 2267550 A	08/12/93	NONE	
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