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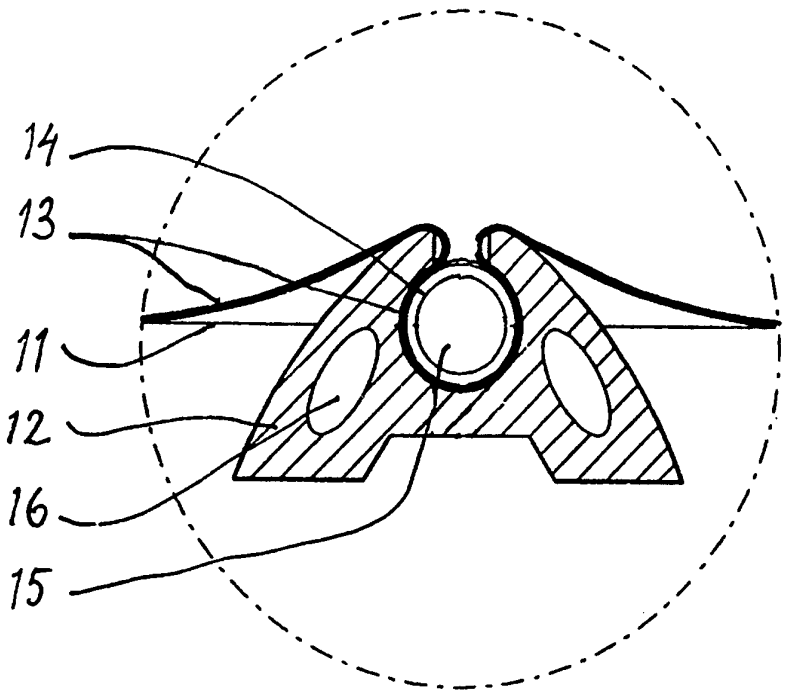
(54) Title: PROFILED SECTION FOR SECURING TARPAULINS AND USE OF THE PROFILED SECTION

(57) Abstract

A profiled section for securing tarpaulins or like covers intended for surface-covering or surface-enclosing purposes. The profiled sections are formed from an elastic material and a channel-like cavity is provided along the upwardly facing part of the section. This cavity is intended to receive and to hold the covering tarpaulin and also an elongated body pressed into the cavity so as to partially embrace the tarpaulin. The upwardly facing part of the profiled section in which the channel-like cavity is formed is narrow whereas the lower part of the section is broad and configured to rest firmly on the stationary surface to be covered or to float while facing downwards and to lie at least partially beneath the liquid surface to be covered. The profiled section can be used in covering a liquid surface, wherein buoyancy sections having the ability to also support the tarpaulin secured in the profiled sections are used, or for irrigation purposes, in which case the tarpaulin is secured with a hose or a pipe which includes openings for communication with the vertically directed openings. The profiled sections can also be used when enclosing contaminating activities and when providing covers for outdoor goods or when packaging transport items.



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PROFILED SECTION FOR SECURING TARPAULINS AND USE OF THE PROFILED SECTION

The present invention relates to tarpaulin securing means, and more specifically to a profiled section for securing tarpaulins or like devices intended for covering or enclosing purposes, wherein the securing means includes a channel-like cavity which is configured to receive and retain the tarpaulin, and an elongated body which is pressed into the channel-like cavity and so as to partially embraces the tarpaulin. The invention also relates to several different uses of the profiled section.

There are several different reasons why it is necessary to cover or screen-off certain areas or surfaces, such as for environmental reasons, for economical reasons or to prevent accidents. Examples in this regard are dams or reservoirs for clean or contaminated water, or possibly other liquids which may need to be covered for some reason or another. One reason may be to prevent water in the dam or reservoir from evaporating. This need is particularly manifest in those regions where water is scarce. Another need is found in preventing the spreading of undesirable substances in the environment by unintentional evaporation or in some other way.

It may also be desirable to cover expanses of liquid in order to prevent animals, and particularly birds, from being injured by the liquid. When wishing to insulate an area against the freezing conditions of a winter climate, it may be necessary to cover the area. It may then be necessary to cover the area in order to separate an insulating layer from the underlying surface. A cover can, of course, also be used to cover the actual insulation, therewith obtaining a simple type of sandwich-insulation which is not affected by the underlying surface and or by rain and snow.

The covering materials used at present, for instance tarpaulins, are anchored in some suitable manner over the surface

areas to be covered. However, it is not possible, or in some cases not expedient, to cover an area with the aid of known techniques. It is difficult to stretch a tarpaulin over a dam or some other liquid reservoir when the coverage afforded is to be totally satisfactory from an environmental and accident aspect. For instance, a tarpaulin or like cover which has been thus anchored can be easily destroyed by the elements, rain and wind, either totally or partially in a short period of time.

There are many other areas in which an effective and environmentally acceptable ground cover is required or desired. An example in this regard is the outdoor storage of goods which require protection against rain, snow and contaminants. Another example is the covering of goods for transportation.

It is also desirable to cover and enclose contaminating activities, although in the majority of cases this cannot be effected in practice for the same practical reasons as those indicated above. Examples of activities of this nature include dust-generating crushing mills, conveyors and loading stations for conveying and loading finely-ground products (flour, cement, minerals, etc.).

It is known to secure tarpaulins and like covers with the aid of elastic channel-forming devices and elongated wedges. For instance, the Swedish Patent Specification SE-B-320838 describes a method of joining sheet foil with the aid of this technique to obtain air-tight foil containers. US-A-4,251,889 describes a similar technique for anchoring tarpaulins and like covers in swimming pool systems in which the ends of the cover are folded around a rod and clamped securely in elastic clips disposed in appropriate positions. US-A-4,790,037 also describes a stationary profiled section for anchoring swimming pool covers, this profiled section being placed around the pool with separate fastener or connector elements. US-A-4,122,637 describes a hose-shaped water-filled profiled

section for anchoring straps which are intended to prevent hay or like agricultural products from being scattered by the wind.

There is at present no commercially available profiled section that is able to fix tarpaulins or like covers to the ground or over liquid surfaces in a simple and effective manner.

One object of the present invention is to enable different foundations and surfaces to be covered satisfactorily from an environmental and protective aspect. Another object of the invention is to show ways in which surfaces that could not earlier be covered easily can be covered in an effective and environmentally friendly manner.

To this end, the invention provides a profiled section by means of which tarpaulins and like covers can be affixed in a manner which eliminates the problems mentioned in the introduction and which are flexible and generally usable both on land and in water. The invention is accordingly characterized by the features set forth in the following Claims.

The inventive profiled section is thus made from an elastic material, preferably rubber. It will be understood, however, that the profiled section can be made of materials other than rubber, for instance from steel, aluminium, plastic materials, etc., without departing from the scope of the invention, provided that the construction is adapted to utilize the elastic properties of the material. That part of the profiled section which faces upwards in use includes a channel-like cavity which extends in the longitudinal direction of the section and which is configured to receive and retain the tarpaulin or like cover and into which an elongated body is pressed so as to almost enclose the tarpaulin. The "elongated body" may have the form of any body that is able to hold and therewith affix the tarpaulin in the profiled section while using the tarpaulin as a cover. The elongated body may have

the form of a rod or a hose, a rope or the like and may be solid or hollow. The elongated body may also be used to anchor the actual profiled section. For instance, the elongated body may have the form of a rope, preferably a nylon rope, which can be tied securely in some suitable way so as to anchor the profiled section to which it is attached.

Although the profiled section may have different cross-sectional shapes within the scope of the invention, the section will chiefly have a relatively large surface which faces downwardly towards or on the surface to be covered. For instance, the profiled section may conveniently have a triangular cross-sectional shape with the base of the triangle facing downwards. The inventive profiled section is then able to rest firmly against the stationary supportive surface covered by the tarpaulin, or may float on liquid with the broader part facing downwards and located at least partially beneath the surface of the liquid to be covered.

When the profiled section is to be used as a buoyant member in covering liquid surfaces, the profiled section is provided appropriately with buoyant elements, for instance in the form of enclosed, elongated, gas-filled spaces, such as air-filled spaces.

Alternatively, the profiled section may be configured with elongated spaces that can be filled with a suitable material capable of functioning as ballast when desiring to increase the weight of the profiled section. For instance, the profiled section can then be filled with water subsequent to being fitted, so as to weigh down the covering without needing to complicate assembly.

The profiled section may also be provided with openings which extend vertically from the channel-like cavity at predetermined distances between the openings and opening out into the downwardly-facing part of the section.

The elongated spaces in the profiled section can be caused to communicate with the vertically directed openings, so as to enable water or other liquid to be distributed by delivering the liquid or water through the elongated spaces and from there to the supportive surface located beneath the cover through the openings.

When the profiled sections are used to provide a covering, the sections are placed beneath a tarpaulin or like cover at predetermined distances apart, whereafter the tarpaulin is affixed with the aid of a rope or some other elongated body which is clamped firmly in the channel-like cavity in the section while securing the tarpaulin. When joining tarpaulins side-by-side, the edges of two mutually adjacent tarpaulins are affixed in a corresponding manner.

When covering liquid surfaces, there may be used buoyant profiled sections whose buoyancy is sufficient to also carry the tarpaulin affixed thereto. The tarpaulin is affixed with the aid of a hose, rope or like device, which may also be used to anchor the profiled sections over the surface to be covered. In the case of irrigation systems, the tarpaulin may be affixed with the aid of a hose or a tubular member which is provided with drop-dispensing means, so-called drippers, that are intended to be received in the vertically directed openings. Alternatively, there can be used hoses or pipes which enable liquid to pass through the vertical openings and down to the underlying surface in some other way, and profiled sections in which the elongated spaces communicate with the vertical openings can be used in the aforedescribed manner. As before indicated, the inventive profiled section may also be used advantageously in conjunction with enclosing contaminating activities, and for protecting goods that are stored outdoors, or for packaging transport goods.

The invention will now be described in more detail with reference to the accompanying drawings, in which Figure 1

illustrates application of the invention in covering dams or reservoirs; **Figure 1A** an enlarged view of one detail shown in Figure 1; **Figure 2** shows the invention applied in an irrigating system; and **Figure 2A** is an enlarged view of one detail shown in Figure 2.

Figure 1 illustrates a dam 10 and a liquid surface 11. Floating on the surface 11 in the dam 10 are a number of inventive profiled sections 12, which are placed in mutually spaced relationship. The profiled sections 12 carry a tarpaulin 13 which floats on the surface 11 between the sections 12. As shown in more detail in Figure 1A, the tarpaulin 13 is affixed to each profile 12 by means of an elongated body 14 which is pressed into an elongated cavity 15 so as to practically fully embrace the tarpaulin 13 in the cavity 15. Each profiled element 12 includes a buoyant element 16, which in the illustrated case is an air-filled elongated space in the actual profiled section. In the illustrated case, the elongated body 14 is preferably a nylon rope or the like, which can be used to anchor the profiled sections and the tarpaulin affixed thereto in some appropriate way in the surroundings.

Figure 2 illustrates an irrigation system 20, which is particularly suitable for use in climates where water is scarce and water evaporation is a serious problem. The illustrated system 20 is comprised of a tarpaulin or like cover 21 which is stretched on hoops 22 placed over a row of crops 23. The tarpaulin 21 is affixed in profiled sections 24 between the rows 23 in the same way as that described with reference to Figure 1. The elongated body 25 used to secure the tarpaulin has the form of a hose or a pipe provided with drippers 26 which are received in vertical openings 27 in the profiled sections 24, as shown in Figure 2A. When the invention is applied in conjunction with land irrigation, small quantities of water are delivered generally continuously through the "pipe system" formed by the elongated bodies 25 used to secure the tarpaulin 21. These "drippers" can be

readily supervised and exchanged when becoming clogged, without needing to remove the tarpaulin 21.

CLAIMS

1. A profiled section for securing tarpaulins or like covers for a surface-covering or surface-enclosing purposes, said profiled section including a channel-like cavity which is configured to receive and retain the covering tarpaulin and an elongated body pressed into the cavity so as to partially embrace the tarpaulin, **characterized** in that the profiled section is formed in an elastic material having a narrow upper part which includes the channel-like cavity, and a broad bottom part which is configured to rest firmly on the stationary surface to be covered, or to float with said broad part facing downwardly and located at least partially beneath the liquid surface to be covered.

2. A profiled section according to Claim 1, **characterized** in that the section includes buoyancy elements, preferably in the form of elongated, gas-filled spaces.

3. A profiled section according to Claim 2, **characterized** in that the section includes elongated spaces which are intended to be filled with ballast material.

4. A profiled section according to Claims 1-3, **characterized** in that the channel-like cavity has provided therein vertically directed openings which are spaced at predetermined distances apart and which open into the downwardly facing part of the profiled sections, said openings being intended for distributing water or some other liquid to the covered surface.

5. The use of the profiled section according to Claims 1-4 for covering a liquid surface, using buoyant profiled sections having the ability to also support the tarpaulin secured to the sections.

6. The use of the profiled section according to Claims 1-4

wherein the tarpaulin is secured with the aid of a hose, rope or like member which may also be used to anchor the profiled section across the surface to be covered.

7. The use of the profiled section according to Claim 4 for irrigation purposes, wherein the tarpaulin is secured with the aid of a hose or a pipe which includes openings for communication with the vertically directed openings.

8. The use of the profiled section according to Claims 1-4 for enclosing contaminating activities, such as dust-generating crushers, conveyors and loading stations for finely-ground products.

9, The use of the profiled section according to Claims 1-4 for protecting goods stored outdoors or for transportation packaging purposes.

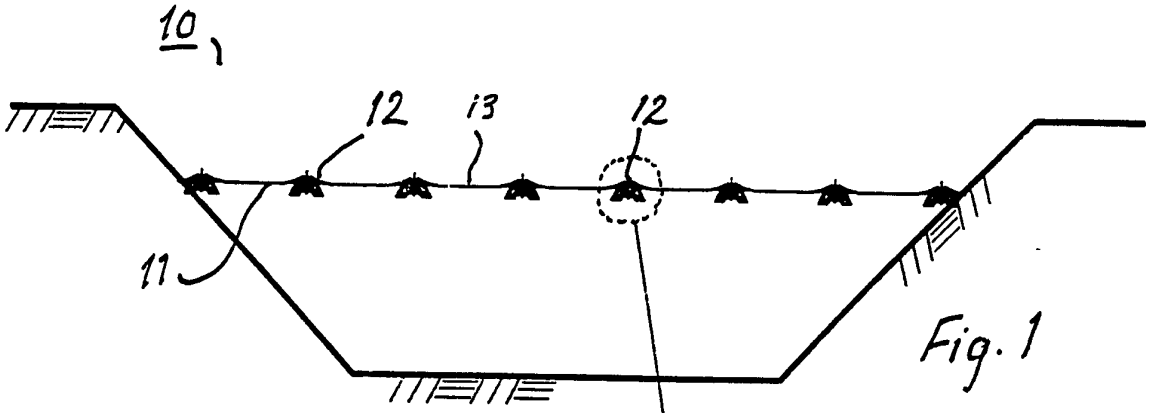

Fig. 1

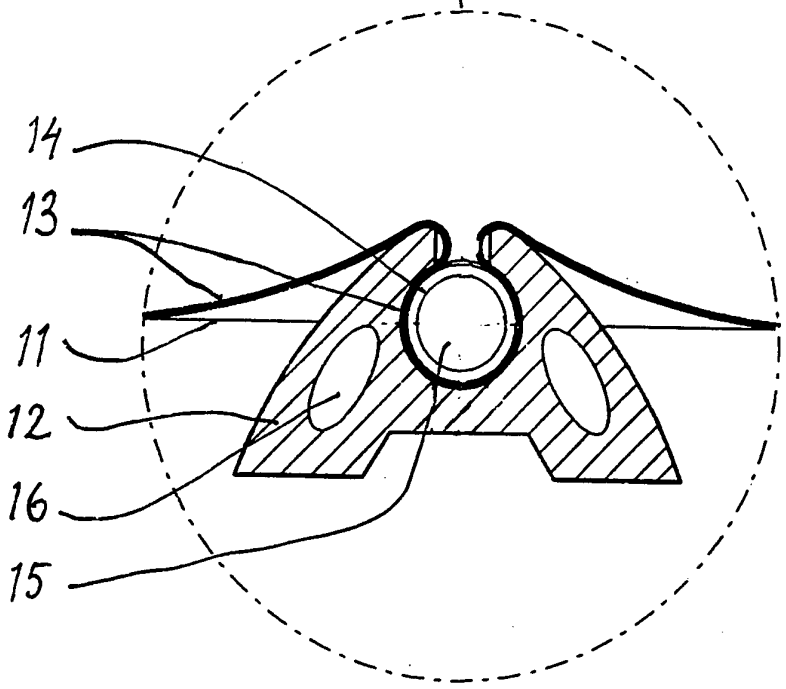

Fig. 1A

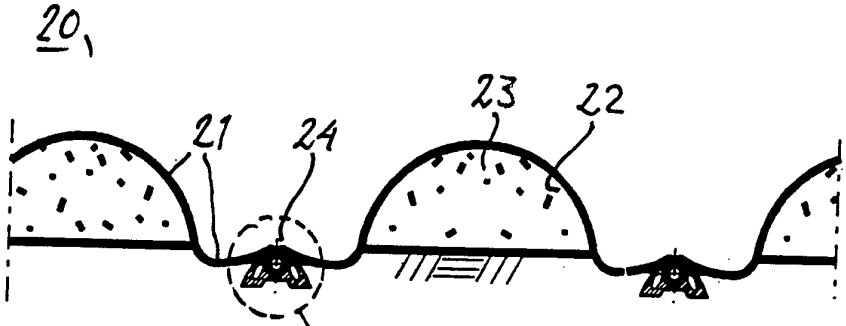

Fig.2

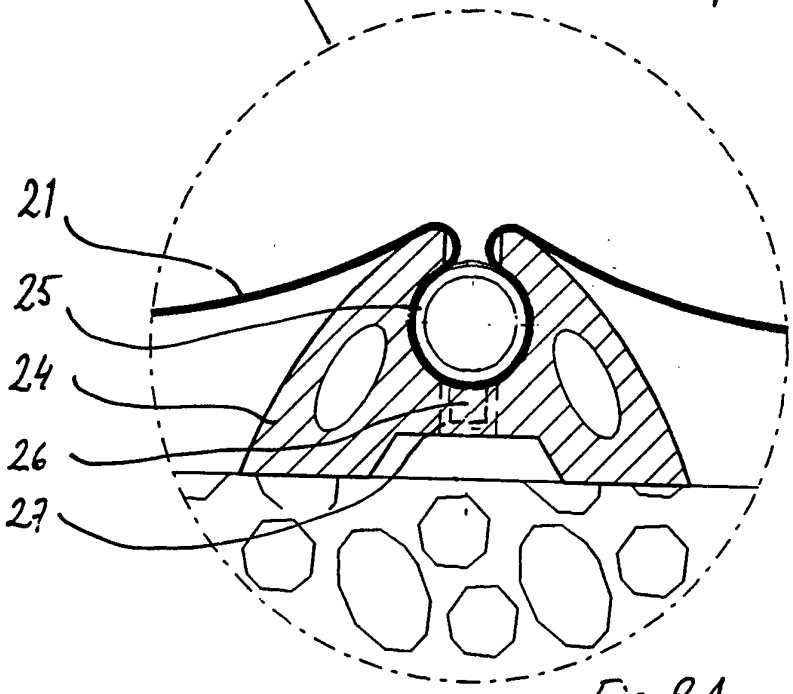

Fig.2A

INTERNATIONAL SEARCH REPORT

International application No.
PCT/SE 94/00641

A. CLASSIFICATION OF SUBJECT MATTER

IPC6: E04H 4/10, A01G 13/02, A01G 25/02 // A01F 25/13, B60P 7/04
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC6: A01G, A01F, B60P, E04H

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

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C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	SE, B, 320838 (SILO-VAC HOLDINGS (U.K) LTD.), 16 February 1970 (16.02.70), page 3, line 10, figures 1-4	1,6,8,9
Y	--	2-5
Y	US, A, 4251889 (L. LÖF), 24 February 1981 (24.02.81), column 1, line 60 - line 62, figures 2-3, abstract	2,5
	--	
Y	US, A, 4122637 (G.V. RUNGE ET AL), 31 October 1978 (31.10.78), column 2, line 28 - line 54, figures 1-4	3
	--	

[X] Further documents are listed in the continuation of Box C. [X] See patent family annex.

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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US, A, 4790037 (D. PHILIPS), 13 December 1988 (13.12.88), column 4, line 12 - line 18, figure 5 --	4
A	DE, A, 1911189 (CONTINENTAL GUMMI-WERKE AG), 17 Sept 1970 (17.09.70), figure 1 --	7

INTERNATIONAL SEARCH REPORT
Information on patent family members

27/08/94

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
SE-B- 320838	16/02/70	NONE	
US-A- 4251889	24/02/81	NONE	
US-A- 4122637	31/10/78	NONE	
US-A- 4790037	13/12/88	NONE	
DE-A- 1911189	17/09/70	NONE	