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(54) **A floating boom for catching or confining impurities on a water surface.**

(57) In a floating boom comprising a flexible, elongated sheet or curtain forming a skirt (5) and with assembled weight members (7, 8) at the lower edge portion of said skirt, the weight members have complementary, opposite wave surfaces (9, 10) causing, when assembled, a shortening of the lower edge portion of the skirt, thus counteracting the skirt's tendency to move upwardly when in use.

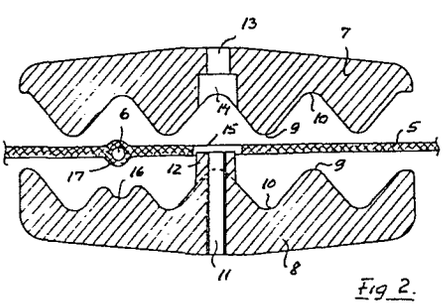

Fig 2.

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A Floating Boom for Catching or Confining Impurities on a Water Surface.

The invention relates to a floating boom for catching or confining impurities, in particular oil spillage, on a water surface, said boom comprising, in a known manner, an elongated, flexible sheet or curtain equipped with buoyancy means, such as inflatable pockets, at the upper edge portion of the curtain when in use, and with pairs of weight members arranged at the bottom edge portion of the curtain and clamped together with the curtain lying therebetween.

When in use, a wall formed of one or more of such floating booms shall be held approximately vertical in the water and shall extend a suitable distance upwards and downwards in relation to the water surface. This can be ensured by mounting the buoyancy means at a certain distance below the upper edge portion so that the curtain forms an upright fin and a depending skirt. The weight members then serve to hold the skirt vertical in the water and, if necessary, the curtain may contain cross braces to ensure that the fin too is held vertical despite the forces tending to overturn it.

When a floating boom of the kind dealt with is towed through the water and forms an approximately U-shaped structure, it has been experienced that the skirt has a marked tendency to work upwards to the water surface at that portion of the boom which extends

transversely to the direction of towage. This tendency is largely due to the fact that the boom is heavily strained longitudinally by the water pressure and is thereby subjected to a lengthening that is larger at the bottom edge portion than at the upper edge portion. This tendency is intensified when the buoyancy means comprise air pockets integrated in the upper portion of the curtain, the inflation of these pockets causing a reduction of the length of the upper edge portion.

To counteract said tendency it is not sufficient to increase the total mass of the weight members, and it has therefore been proposed, see for instance US-PS No. 3,686,870, to arrange special stress relieving ropes extending between the ends of the boom and being further connected with the bottom edge of the boom at intermediate points. Said stress relieving ropes in the form of wires or chains are arranged to carry at least a considerable part of the longitudinal forces to counteract the relative lengthening of the bottom edge. An essential drawback of such stress relieving ropes is, however, that it is difficult to keep them disentangled on laying out and hauling in the floating boom, and they further impede the cleaning of the boom after use.

The present invention provides a substantially simpler solution to the problem concerned, by which stress relieving ropes may become superfluous.

According to this solution the opposite surfaces of the assembled weight members comprise complementary projections and depressions to increase the length of said surfaces in the longitudinal direction of the curtain.

When such weight members are clamped on the bottom portion of the curtain they cause deformation thereof from its plane shape and so shorten it

longitudinally, whereby the relative extension of the skirt has beforehand been compensated for at the lower edge portion. By choosing an appropriate degree of deformation at each pair of weight members and a suitable number of such weight members an optimal shortening may be obtained.

The two associated weight members may be assembled by a single bolt that also passes through an aperture in the curtain. This provides for an easy mounting and dismounting of the weight members according to requirement so that they will not prevent a compact stowing of the boom after use.

The opposite surfaces of the weight members may appropriately be wavy, and if the curtain is of the kind having pockets for transverse, rod-shaped braces as mentioned above, the top of a projection or ridge of one weight member may be provided with a recess to receive the bulge that a brace forms in the curtain. Thus, the weight members can contribute to securing the braces which at the same time can counteract possible tendencies of the weight members for angular displacement in relation to the curtain.

An embodiment of the floating boom according to the invention is illustrated on the drawings, in which

Fig. 1 is a section of the boom in side elevation, and

Fig. 2 is a cross sectional view on a larger scale along the line II-II in Fig. 1, with a pair of weight members ready for assembling.

The floating boom shown in Fig. 1 consists of a sheet or curtain 1 produced with even thickness from elastomeric or plastomeric material and possibly reinforced by a textile material and which at a short distance below its upper edge portion comprises a

series of cavities or pockets 2 with valves 3 through which air may be blown in and let off. The portion of the curtain above the pockets 2 forms an upright fin 4 while the lower portion of the curtain forms a skirt 5. A cross brace 6 with the primary purpose of holding the fin vertically is indicated in the space between the pockets 2.

In the area of the cross brace 6 and close to the bottom edge portion of the curtain a pair of associated weight blocks 7 and 8 are clamped against the skirt 5, said blocks having complementary wavy or undulated opposite surfaces with projections or ridges 9 and depressions or valleys 10. The block 8 has a central threaded hole 11 extending through a non-circular pin 12 on the wavy surface, and the block 7 comprises a corresponding plain hole 13 with a recess 14 corresponding to the pin 12, an aperture 15 for said pin being provided in the skirt 5. When the two blocks are assembled by means of a bolt, not shown, the skirt 5 is forced into the shape determined by the wavy surfaces 9, 10 and is thereby shortened with the purpose specified above.

As shown on the left in Fig. 2 the wave top or ridge at the cross brace 6 may have a recess 16 to receive the bulge or thickening 17 caused by the pocket in which the brace is inserted.

PATENT CLAIMS

1. A floating boom for catching or confining impurities on a water surface, comprising an elongated, flexible sheet or curtain (1) equipped with buoyancy means, such as inflatable pockets (2), at the upper edge portion of the curtain when in use, and with pairs of weight members (7, 8) arranged at the bottom edge portion of the curtain and clamped together with the curtain lying therebetween, characterised in that the opposite surfaces of the assembled weight members (7, 8) comprise complementary projections (9) and depressions (10) to increase the length of said surfaces in the longitudinal direction of the curtain.

2. A floating boom according to claim 1, characterised in that the opposite surfaces (9,10) of the weight members (7,8) are wavy.

3. A floating boom according to claim 1 or 2 in which the curtain comprises pockets for transverse, rod-shaped braces (6), characterised in that the top (9) of a projection or ridge of one weight member (8) is provided with a recess (16) to receive the bulge (17) that a brace forms in the curtain.

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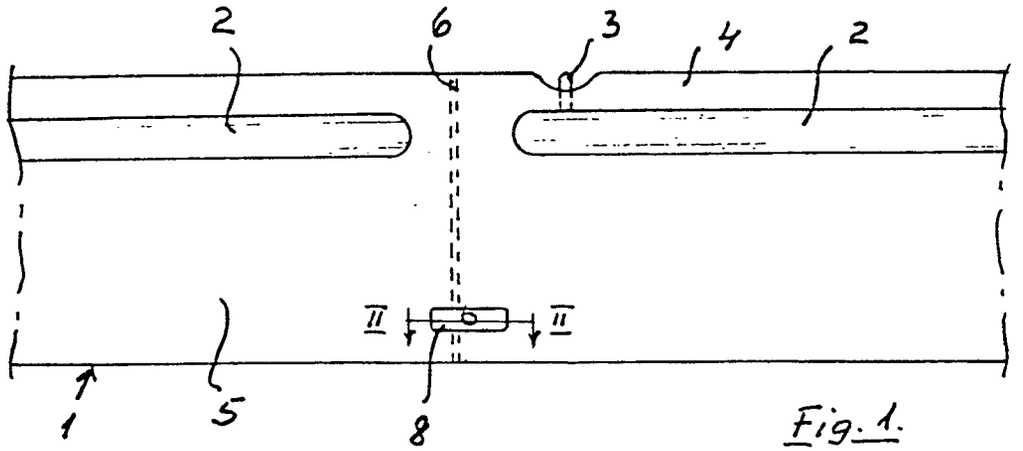

Fig. 1.

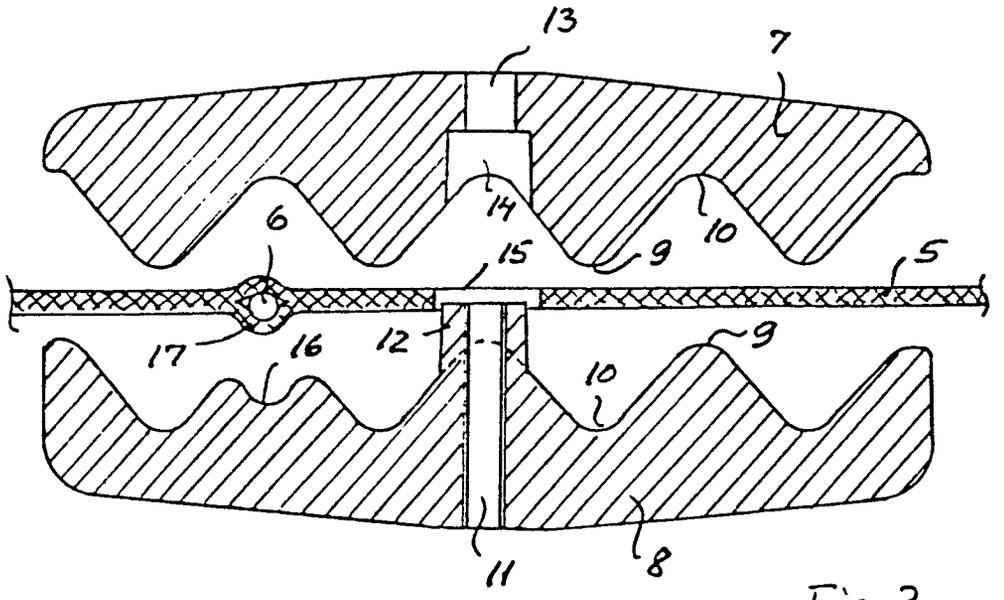

Fig. 2.

European Patent Office

EUROPEAN SEARCH REPORT

0037684
Application number
EP 81 30 1308

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim
	US - A - 4 030 304 (WEST) * Column 4, lines 10-68; column 5, lines 1-37; figures 3,5 *	1
D	US - A - 3 686 870 (BLOMBERG) * Column 3, lines 20-40; figure 5 *	1

CLASSIFICATION OF THE APPLICATION (Int. Cl.³)

E 02 B 15/04

TECHNICAL FIELDS SEARCHED (Int. Cl.³)

E 02 B

CATEGORY OF CITED DOCUMENTS

X: particularly relevant
A: technological background
O: non-written disclosure
P: intermediate document
T: theory or principle underlying the invention
E: conflicting application
D: document cited in the application
L: citation for other reasons

&: member of the same patent family, corresponding document

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	08-07-1981	HANNAART

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