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(54) **DEVICE FOR SEALING JOINTS OF JOINTABLE PARTS OF A WATERBORNE SHIP HULL**

(57) This invention relates to shipbuilding engineering, in particular to mating parts (pontoons) of a waterborne large-capacity structure. Said invention makes it possible to increase the sealing reliability of the field joint of joinable parts of a waterborne ship hull and to reduce the production costs by excluding diving works. The invention is **characterized in that** a sealing device is pro-

vided with a metal container (9) mounted on the joinable part (8) of the ship hull, wherein the vertical wall (12) of the container (9) is embodied in such a way that it is projected outside the edge of the field joint (3) and the strip of an elastic sealing element (7) has a P-shaped cross-section formed by the conjunction of a circular cylinder and a rectangular strap.

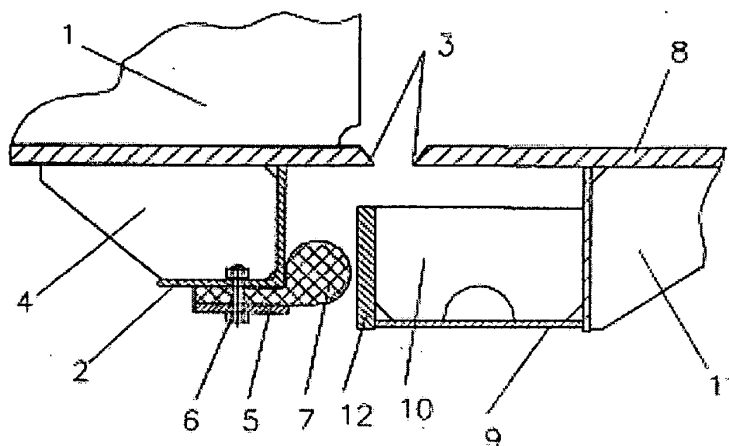


Fig. 1

Description

Field of the Invention

[0001] The invention relates to ship building engineering and can be used for mating parts (pontoons) of a waterborne large-capacity structure.

Background of the Invention

[0002] The device is known to seal joints of joinable parts of a waterborne hull, comprising a composite sealing plate constructed by two rigidly connected details one of which is rigidly attached to one of the hull joinable parts forming a variable cross-section stiffener, with the other being produced of elastic material, see Inventor's Certificate USSR No 1207887, IPC⁷ B63B 9/00, 35/44, 1984.

[0003] The sealing element of this device is made as a plate. When subjected to bending, as the experience shows, plates are separated within the areas where the horizontal sections of the hull joinable parts intersect the vertical or inclined ones producing holes through which the water flows into sealable chambers. Further, in the event of long-run towing a higher probability exists that the plate may be damaged because it protrudes beyond the joint edge.

[0004] Moreover, the device exists to seal the joinable parts of a waterborne hull, comprising angle bars mounted on the hull joinable parts, the strip of an elastic sealing element one end of which attached to the flange of one of said angle bars with the other secured to the hull with the air-filled pipe-shaped sealing element with gaskets one of which is against the flange of the second angle bar with the other meeting the hull, see Inventor's Certificate USSR No 488747, IPC⁷ B63B 9/00, 3/02, 1973.

[0005] Such a device can be installed only in underwater position using divers, with installation of three unfastened elements such as an elastic strip; gasket and pipe seal before air supply to the pipe seal being rather a problematic task.

Disclosure of the Invention

[0006] This invention makes it possible to increase the sealing reliability of the field joint of joinable parts of a waterborne large-capacity structure and to reduce the production costs by excluding diving works.

[0007] It is attained by applying the device for sealing joints of joinable parts of a waterborne hull, comprising an angle bar fitted to one of the hull joinable parts and interacting with the strip of an elastic sealing element; a metal container mounted on the second hull joinable parts, with one of the vertical box wall projecting outside the field joint edge and the strip of the elastic sealing element having a P-shaped cross-section formed by the conjunction of a circular cylinder and rectangular strap, with the sealing element attached to the flange of said angle bar.

Brief Description of the Drawings

[0008]

Fig. 1 shows the components of the device separately attached to the joinable parts of the waterborne hull.

Fig. 2 shows the device in assembly with the joinable parts of the waterborne hull.

Preferred Embodiment of the Invention

[0009] The present device comprises the angle bar (2) attached to the hull part (1), arranged along the edge of the field joint (3) and supported with brackets (4). Connected with straps (5) and bolts (6) to the lower flange of said angle bar (2), the strip of elastic sealing element (7) has a P-shaped cross-section formed by the conjunction of the circular cylinder and rectangular strap, with the cylindrical section of the strip of elastic sealing element (7) being in contact with the vertical flange of angle bar 2.

[0010] Attached to the hull part (8) along the edge of field joint (3), the metal container (9) includes stiffeners 10 supported by brackets 11, with the free vertical wall (12) of the container (9) projecting outside the edge of field joint (3) which protects the strip of sealing element (7) against burning through while the field joint (3) being welded.

[0011] All the components of said device are mounted on building ways (not shown here), whereafter the hull parts (1) and (8) are launched and towed to a mating site.

[0012] The device operates in the following way.

[0013] The hull parts (1) and (8) are drawn together using known appliances such as chain tackles and turnbuckles (not shown here), with the vertical wall (12) of the container (9) contacting the strip of elastic sealing element (7) and keeping the strip cylindrical segment close against the vertical flange of angle bar (3), thus isolating the field joint (3) and chamber of the container (9) from seawater ingress.

[0014] The P-shaped cross-section of the strip of elastic sealing element (7) provides the reliable and uniform strip attachment to the joinable parts of the waterborne hull both within the horizontal segments and areas where the horizontal segments intersect the inclined and vertical segments.

[0015] The reliable fixing of the strip 7 also provides its retention in the event of long-run towing.

[0016] After tying and fixing the joinable hull parts the water is pumped out from the chamber of said container (9), whereupon the field joint (3) welded.

Industrial Applications

[0017] The present device for sealing the joints of joinable parts of waterborne hulls enables to increase the sealing reliability of the field joint and reduce the produc-

tion costs by excluding diving works.

Claims

1. A device for sealing joints of joinable parts of a waterborne ship hull, comprising an angle bar fitted to one of the hull joinable parts and interacting with the strip of an elastic sealing element, **characterized in that** a metal container is mounted on another joinable part of the waterborne hull, wherein one vertical wall of said container is embodied in such a way that it is projected outside the edge of the field joint and the strip of the elastic sealing element has a P-shaped cross section formed by the conjunction of a circular cylinder and rectangular strap, with the strip of the sealing element attached to the flange of said angle bar.

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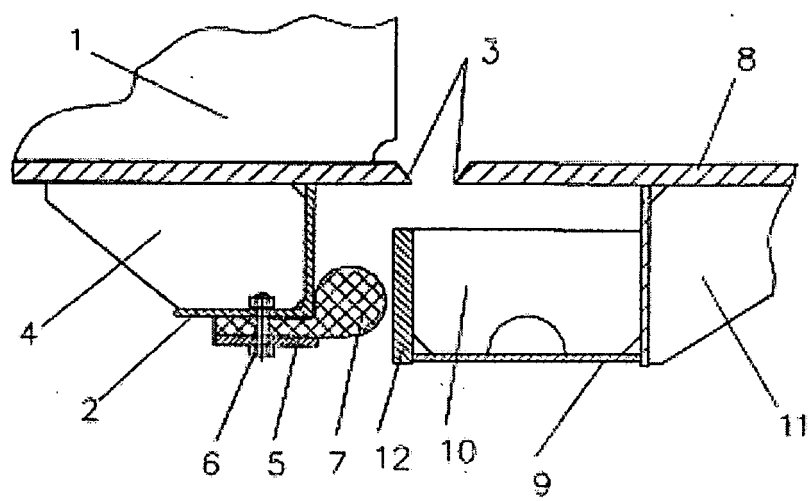


Fig. 1

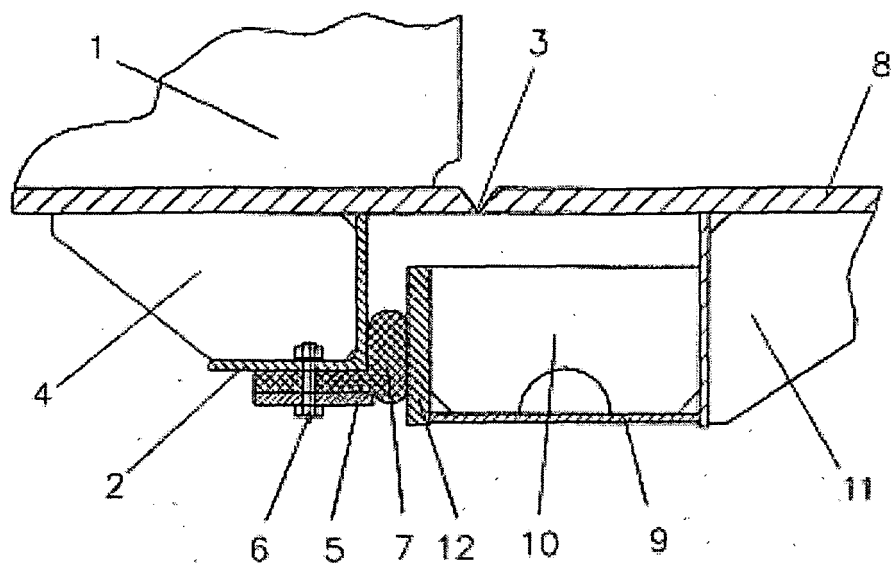


Fig. 2

INTERNATIONAL SEARCH REPORT

International application No.
PCT/UA 2006/000070

A. CLASSIFICATION OF SUBJECT MATTER		B63B 9/00 (2006.01) B63B 3/02 (2006.01)
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)		
B63B 9/00, B63B 3/00, B63B 3/02		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)		
Esp@cenet, RUPAT		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	SU 488747 A1 (V.I. MEZHENNYI et al.) 25.10.1975, drawings, description, cited in the description	1
A	SU 439434 A1 (I.B. DOBRZHINETS et al.) 25.04.1975, figure 1-2, the description	1
A	JP 9277090 A (NIPPON STEEL CORP et al.) 28.10.1997, the abstract, figure 1, 7	1
☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.		
* 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 application or patent but published on or after the international filing date "L" 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		
Date of the actual completion of the international search		Date of mailing of the international search report
26 February 2007 (26.02.2007)		15 March 2007 (15.03.2007)
Name and mailing address of the ISA/ RU		Authorized officer
Facsimile No.		Telephone No.

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- SU 1207887 [0002]
- SU 488747 [0004]