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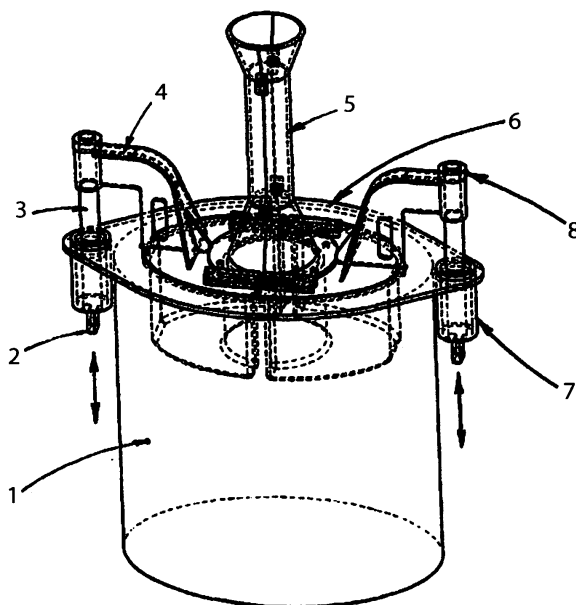
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(54) **Removable system of pressing of the anchor chain within boats chain locker**

(57) A removable system of pressing of the anchor chain within the chain locker (1) of boat and the like, with movable covers and elastic or inflatable cushions. The system consists of a flange or plate (6) to be fixed to an existing or dedicated chain locker (1), two movable half-covers (4) driven by pneumatic, hydraulic or electric cylinders, each bearing a cushion (4d) of pressing on the chain. The latter, made of elastic material or pneumatically inflated, keeps in place the mass of the chain, effectively preventing kinks of the same deriving from ex-

ternal forces such as those ones of pitch acceleration of the boat. The pneumatic driving of the half-covers (4) allows to recover any adjustments in the chain. A guide tube (5) of the chain completes the equipment, which can be disassembled into two halves too, each of which may be connected through slides with the half-covers (4) and operated by an external command. All this can be completely manually dismantled in emergency conditions by means of quick release or equivalent connections between the parts.



**Fig. 1**

## Description

**[0001]** The present invention concerns a removable system of pressing of the anchor chain within chain locker of boats or the like, provided with movable covers and flexible or inflatable cushions.

**[0002]** In particular, this invention relates to a system of retention or holding in position of the mass of the chain, with which the anchor is connected, inside the collection locker, whether existing or built on purpose, integrated into the boat.

**[0003]** The practical need to have the system in question arises in case of fast boats or otherwise subjected to strong pitch accelerations.

**[0004]** Such accelerations, amplified in the leading part of the boat, generate some shakings of the sailor-like or nautical equipment, mainly chains and anchors, which must be prevented with proper retention systems.

**[0005]** Currently it is common practice to equip boats with chain tighteners in order to lock the anchor and piece of chain on deck in position.

**[0006]** Little attention has been paid instead to the retention of chains below the deck bridge which however represents source of inconveniences in case of strong accelerations, such as those ones attemptable in small boats sailing at high speed: the fact is that the chain twines itself with potential consequent impossibility, for example, to weigh anchor.

**[0007]** At present invention applicant's knowledge the only example of attempt to solve such an inconvenient is described in the international patent application having publication number W02006/013436 A1, where the chain is wrapped circumferentially by a lot.

**[0008]** In applicant's opinion, this constructive solution is complex, not easily removable, it cannot effectively prevent the movement of the chain and, moreover, is more difficult to apply on existing boats and more difficult to release in emergency situations.

**[0009]** The present invention aims to overcome the drawbacks of the prior art listed above.

**[0010]** In particular, main purpose of the invention is to provide a removable system of pressing of the anchor chain within boats chain locker which can be used on yet existing and of various shapes chain lockers of anchors.

**[0011]** It is a second purpose of the present invention to develop a removable system of pressing of the anchor chain within boats chain locker which effectively holds the mass of the chain wrapped in the relative locker as it is weighed in position.

**[0012]** It is another purpose of the present invention to devise a removable system of pressing of the anchor chain within boats chain locker which allows an effective recovery of the pressure when the mass of the chain is stabilized.

**[0013]** It is a last but not least purpose of the invention to assure a quick disassembly and access to the chain locker avoiding any objection on safety issues by the control bodies such as the Registers of Shipping.

**[0014]** Said purposes are achieved through a removable system of pressing of the anchor chain within boats chain locker as the appended claim 1, to which they refer for the sake of brevity.

**[0015]** Other features of detail of the removable system of pressing of the anchor chain within boats chain locker of the invention are set forth in the corresponding dependent claims.

**[0016]** Advantageously, the removable system of pressing of the anchor chain within boats chain locker of the invention, once dismantled, leaves unchanged the chain locker itself as far as access and inspection are concerned.

**[0017]** Said purposes and advantages will be better known from the description that follows related to a preferred embodiment of the removable system of the invention, given by illustrative and indicative, but not limiting, way in relation to the attached drawings where:

- figure 1 is a simplified perspective view of the removable system of pressing of the anchor chain within boats chain locker of the invention in application conditions;
- figure 2 is a perspective view of a constructive particular of the removable system of pressing of the anchor chain of figure 1.

**[0018]** The removable system of pressing of the anchor chain within boats chain locker, object of the present invention, preferably consists of:

- a support plate 6 shaped according to the shapes of the edge of the chain locker 1 and suitable to be anchored to the latter; it is integral with the guide tubes 7;
- two movable and interconnected half-covers 4 with, pneumatic, hydraulic, electrical or mechanical driving which acts on removable guide rods 3 moving thus the two half-covers 4;
- a guide tube 5, suitable to convey the chain, which can be divided into two halves.

**[0019]** The guide rods 3 define respective longitudinal directions along which the moving upwardly and downwardly of the movable half-covers 4 takes place, in accordance with what the two-way arrows of figure 1 illustrate.

**[0020]** At rest (chain loaded), the system assumes the configuration of the whole table attached in figure 1, in which the plate 4b of the movable half-covers 4 is almost coplanar with the plate 6 of connection with the chain locker 1.

**[0021]** In extra-race upwardly the movable half-covers 4 can come out of the top of the chain locker 1, provided the limit of space on deck of the top of the guide tube 5.

**[0022]** Each half of the guide tube 5 which conveys the chain is fixed to the corresponding movable half-cover 4 by means of threaded wing nuts or quick release inserts,

removable without any tool.

**[0023]** At anchor weighed and chain stowed in the chain locker 1, the external driving determines the slide downwardly, along respective longitudinal directions, of the guide rods or bars 3 and with them of the movable half-covers 4, integral with the latter by means of removable couplings 8.

**[0024]** The cushion made of elastic or inflatable pneumatic material 4d elastically presses against the chain, holding it in place and preventing shakings and kinks of the same.

**[0025]** In this regard, it is noted that in case of pneumatic driving of the moving rods or bars 3, the system can also be kept under pressure by adding further pressure recovery capacity to that one intrinsic of the elastic or inflatable cushion 4d.

**[0026]** As figure 2 shows, the two movable half-covers 4 are interconnected through removable bolt coupling 4c and driven further onto groove of the plate 6 from the back 4e of the half-covers 4 themselves.

**[0027]** In case of necessity and emergency, the system of the invention can be fully and quickly disassembled as follows:

- in block by unlocking the clamps or couplings 8, whether a split pin, ring nut or quick release;
- by disassembling only the guide tube 5 which conveys the chain, made in two halves joined by quick release pins;
- by unlocking for a half the interconnection bolts 4c of the movable half-covers 4, removing the joining connection of the two halves of the guide tube 5 and releasing the half-covers 4 through the blocks or clamps or couplings 8. The slot 4f, clearly visible in figure 2, eases the grip for the manual moving.

**[0028]** By building the removable system of pressing of the invention by:

- carrying out the guide bushings inside the guide tubes 7 made of plastic or in any case insulating material;
- interposing an insulating gasket between the chain locker 1 and the support plate 6;
- packing with plastic material (having also anti-wear function) the guide tube 5,

**[0029]** it is considered that the system itself is insulated from the galvanic point of view from the rest of the boat and, therefore, is suitable to be carried out in many different building materials. The drawing tables attached refer, by illustrative and not limiting way, to a sample of the removable system of pressing of the invention to be produced by light aluminium carpentry.

**[0030]** Furthermore, the removable system of pressing of the invention can be construed with guide semi-tubes connected through linear slides with the support plate 6 and operated in opening.

**[0031]** The slides will be arranged on the plate 6 adjacent and parallel to the bolts 4c of interconnection of the movable half-covers 4 and they will allow an inspection of the chain inside the tube 5 by means of controlled opening driving, without disassembling the same.

**[0032]** By virtue of the foregoing, it is understood, therefore, that the removable system of pressing of the anchor chain within boats chain locker, object of the invention, achieves the purposes and reaches the advantages previously mentioned.

**[0033]** In terms of execution, changes could be made to the removable system of pressing of the anchor chain of the invention consisting, for example, in elastically yielding means different from those ones described above with reference to the attached drawings.

**[0034]** It is, finally, clear that many other variations can be made to the removable system of pressing of the anchor chain in question, without for this reason going out of the novelty principles inherent to the inventive idea, as it is clear that, in the practical implementation of the invention, materials, shapes and sizes of the illustrated details can be any, depending on the needs, and may be replaced with others technically equivalent.

**[0035]** Where the construction features and techniques mentioned in the subsequent claims are followed by signs or reference numbers, these reference signs have been introduced with the sole objective of increasing the intelligibility of the claims themselves and, as a consequence, they have no limiting effect on the interpretation of each element identified, purely by way of example, by such reference signs.

## Claims

1. Removable system of pressing of the anchor chain within chain locker (1) of boats **characterized in that** it consists of two sliding half-covers (4) connected each other, moved by driving means and pressing on said anchor chain through elastically yielding means (4d), and is provided with a guide tube (5) removable and separable into two halves, suitable to convey said chain.
2. System as claim 1) **characterized in that** said driving means include any of the actuators selected from the group consisting of pneumatic cylinders, hydraulic cylinders, electric motors, relays or mechanical systems.
3. System as claim 1) **characterized in that** said elastically yielding means (4d) include an elastic cushion.
4. System as claim 1) **characterized in that** said elastically yielding means (4d) include a pneumatically inflated cushion.
5. System as any of the previous claims **characterized**

**in that** said guide tube (5) suitable to convey said chain is composed of two halves joined together by means of quick release pins, each of said halves being fixed to one of said half-covers (4) through threaded wing nuts or quick release inserts.

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6. System as any of the previous claims **characterized in that** it comprises a pair of guide and moving rods or bars (3), operatively connected with said driving means which make them sliding upwardly or downwardly and integral with said movable half-covers (4) through removable couplings or blocks (8). 10
7. System as any of the previous claims **characterized in that** it includes a support plate (6) integral with guide tubes (7) and shaped according to the shapes of the edge of said chain locker (1) to which is suitable to be anchored. 15
8. System as claim 7) **characterized in that** it comprises an insulating gasket suitable to be interposed between said support plate (6) and said chain locker (1). 20
9. System as any of the claims 7) or 8) **characterized in that** said guide tubes (7) are equipped inside with guide bushings made of plastic or insulating material. 25
10. System as any of the previous claims **characterized in that** said half-covers (4) are interconnected each other through removable bolt couplings (4c). 30
11. System as any of the claims from 7) to 10) **characterized in that** said half-covers (4) are driven further by the back (4e) of said half-covers (4) within a pair of grooves made in said support plate (6). 35
12. System as claim 7) **characterized in that** said guide tube (5) consists of two guide semi-tubes connected with said support plate (6) through linear slides suitable to be operated in opening by said driving means. 40
13. System as claim 12) **characterized in that** said linear slides are positioned adjacent and parallel to said removable bolt couplings (4c) which interconnect said half-covers (4). 45

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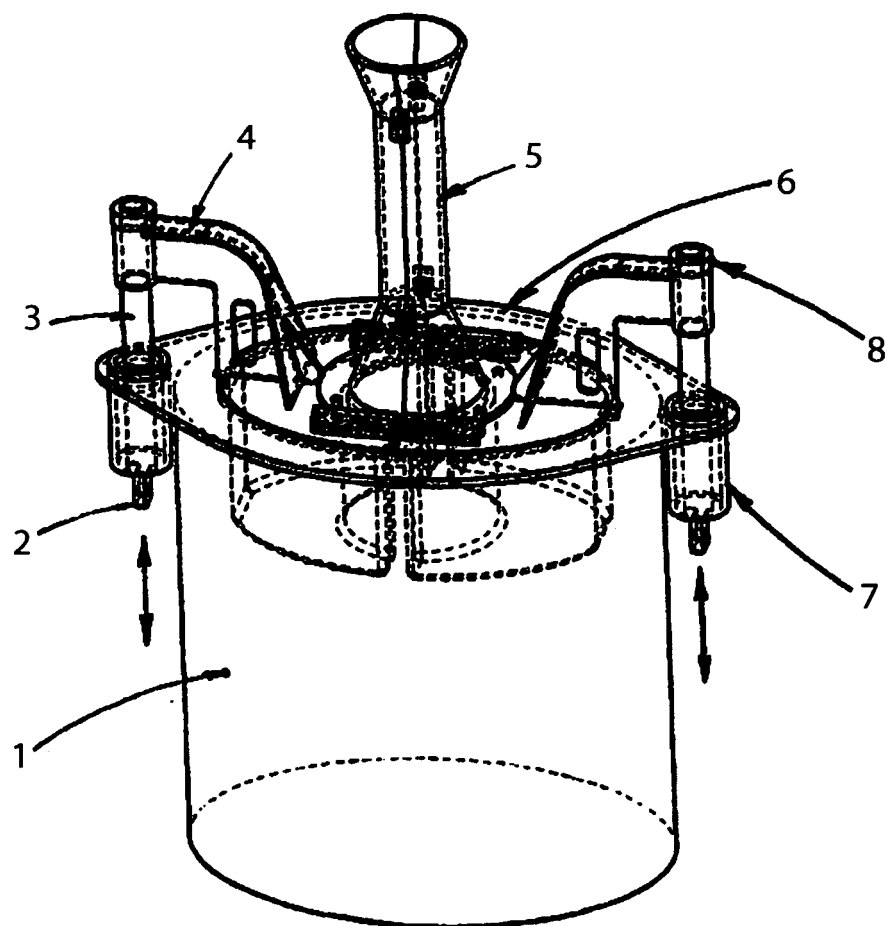


Fig. 1

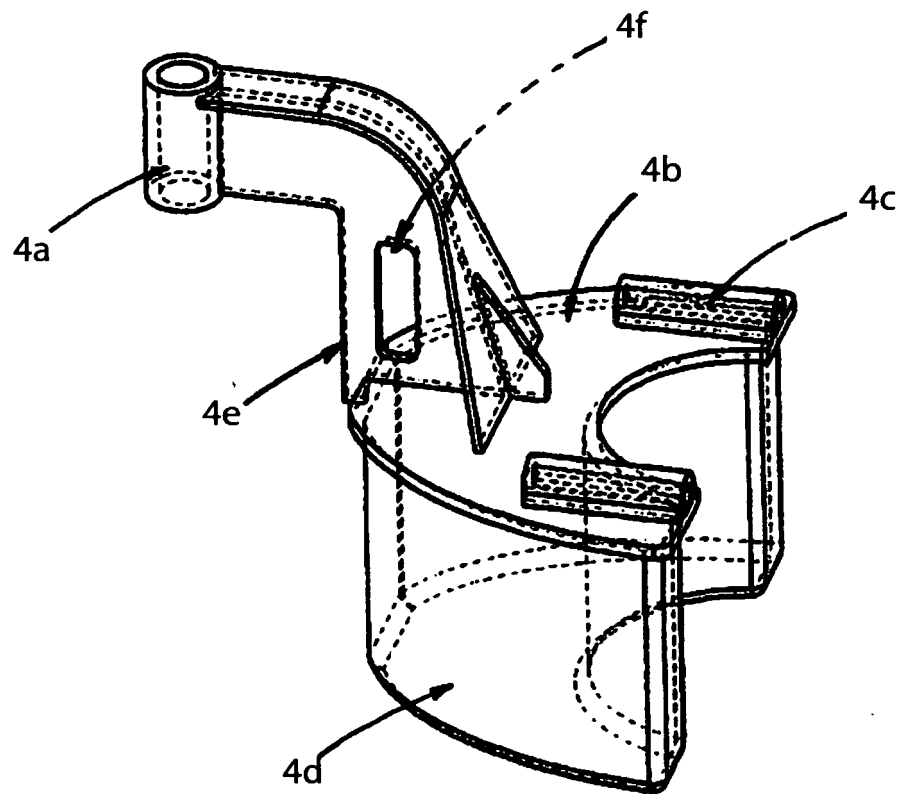


Fig. 2

**REFERENCES CITED IN THE DESCRIPTION**

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**Patent documents cited in the description**

- WO 2006013436 A1 [0007]