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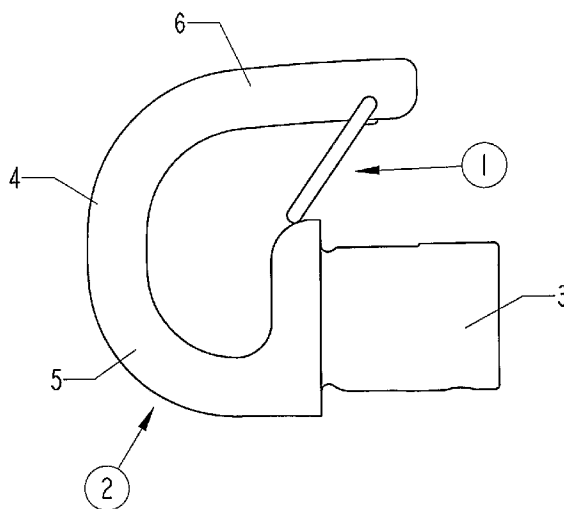
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(54) Title: SAFETY LOCKING DEVICE FOR A LIFTING HOOK



(57) Abstract: A safety locking device (1) for a lifting hook (2) comprising a lifting part (3) and a hook part (4) having a first and a second shank (5, 6) arranged in the same plane, the first shank (5) being attached to the lifting part (3). The safety-locking device (1) is pivotally attached to either of the shanks or the lifting part (3) and comprises a spring means (7) formed integrally with the safety locking device, one end of which is attached to the safety locking device (1) diametrically opposed its fastening point to either shank or the lifting part and the other end is arranged to bear on the opposite shank or the lifting part (3), to which the safety locking device is pivotally attached to automatically bring the safety locking device (1) to bear on the lifting part (3) or the opposite shank so as to prevent unhooking of a hoisting cable or similar means introduced into the hook part.

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SAFETY LOCKING DEVICE FOR A LIFTING HOOK**Field of the invention**

The present invention relates to a safety locking device for a lifting hook according to the preamble of claim 1.

5 Background of the invention

It is known to provide lifting hooks with safety locking devices. However, these safety locking devices comprise several parts, such as locking means and locking springs, for instance, to close the safety locking device against the
10 lifting hook itself. The safety locking device is thereby complicated to manufacture and install at the lifting hook.

Summary of the invention

The object of the invention is to achieve a safety locking device for a lifting hook, which device is easy to
15 manufacture, install and comprises only one component part.

Said object is achieved according to the invention in that the safety locking device for a lifting hook comprises a lifting part and a hook part having a first and a second shank arranged in the same plane, the first shank being joined to
20 the lifting part, the safety locking device being pivotably attached to either of the shanks or the lifting part and comprises a spring means formed integrally with the safety locking device to automatically bring the safety locking device to bear against the lifting part or the opposite shank
25 for preventing unhooking of a hoisting cable or similar means introduced into the hook part, said safety locking device having a general U-shape with two legs, characterized in that the spring means is elongated and fixed at one of its ends to

that part of the U-shaped safety locking device which connects the two legs of the U, and that the other part of the spring means is arranged to bear on either of the shanks or the lifting part of the lifting hook.

5 **Brief description of the drawings**

A non limiting example of the invention will now be described with reference to the accompanying drawings, in which Fig. 1 is a side view of a lifting hook without the safety locking device according to the invention, Fig. 2 is a side view of a
10 lifting hook provided with the safety locking device according to the invention, Fig. 3 is a front view of the safety locking device according the invention, Fig. 4 is a sectional view along the line A-A in Fig. 3, and Fig. 5 is a view from above of the safety locking device in Fig. 3.

15 **Description of preferred embodiments**

Fig. 1 shows a lifting hook 2 without a safety locking device 1 according to the invention. In this figure the preferred location of a hole 10 for pivotable supporting of the safety locking device 1 is shown, which hole 10 will be described
20 below. A protrusion 11 is arranged on the side of a shank 6 facing a lifting part 3 of the lifting hook 2.

Fig. 2 shows the safety locking device 1 for the lifting hook 2, preferably a lifting hook intended for lifting patients within medical services, and comprises a lifting part 3 and a
25 hook part 4, which comprises a first and a second shank 5, 6, the first shank 5 being connected to the lifting part 3, and the second shank 6 extends beyond at least a portion of the lifting part 3, i.e. the second shank 6 is longer than the first shank 5. Preferably the first shank 5 is formed
30 integrally with the lifting part 3. The safety locking device

1 is pivotably attached to one of the shanks 5, 6 of the lifting hook 2 or the lifting part 3.

As seen in Fig. 3 the safety locking device 1 is provided with an elongated spring means 7 which is formed integrally with said safety locking device. The safety locking device 1 has generally U-shape, and one end of the elongated spring means 7 is attached to that part of the U-shaped safety locking device which connects the two legs 8 of the U. The other free end of the spring means is arranged to bear against the shank or the lifting part at which it is pivotably attached, and said end of the spring means 7 is provided with a preferably centrally situated recess 12 adapted to cooperate with the protrusion 11 on the shank 6 for preventing the safety locking device from disengaging in the case of an impact sideways on the safety looking device.

Furthermore, the spring means 7 and the two legs 8 of the U are arranged in the same plane as can be inferred from Figs. 4 and 5. It is obvious for the man skilled in the art that the spring means and the legs of the U can be so arranged that they form an angle, not shown, between themselves to either increase or decrease the spring action of the spring means 7.

The respective legs 8 of the safety locking device are provided with pivot pins 9 facing each other at the end of the shanks of the U opposite the attachment point for the spring means, which pivot pins are adapted to cooperate with diametrically opposed and complementary arranged holes 10 in the second shank 6. The holes 10 are preferably arranged at a suitable distance from the hook part 4, as can be seen in Fig. 1. In an embodiment (not shown) the holes 10 can be arranged in the first shank 5, whereby the length of the respective shanks has to be adapted accordingly.

By choosing material and thickness of material of the spring means 7, and adapt the thickness of the material between the edge of the hole 10 and the edge of the shank 6, faced towards the opposite shank, the degree of spring action of the safety locking device can be adapted according to the requirements.

The safety locking device 1 should be made of a resilient material, preferably a plastic material.

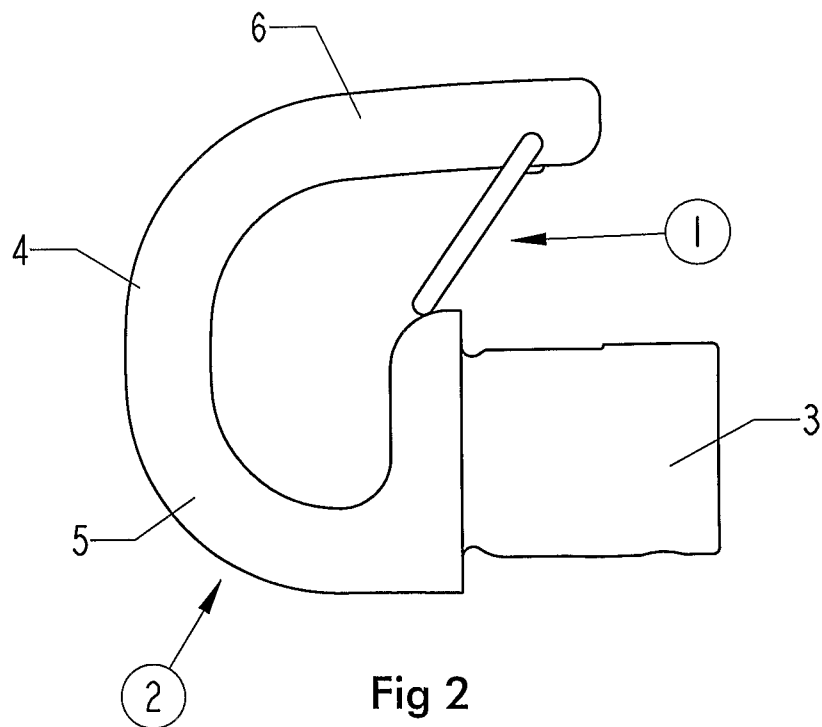
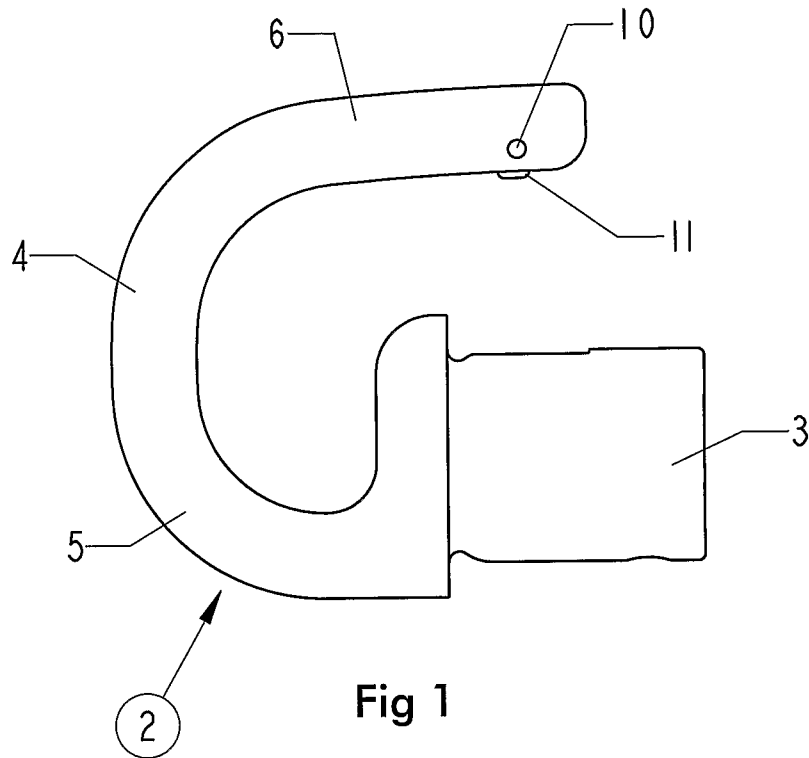
A safety locking device 1 designed according to the above results in that the end of the safety locking device arranged opposite to its fastening end at the shank 6 will automatically be brought to bear against the lifting part 3 or the opposite shank.

Claims

1. Safety locking device (1) for a lifting hook (2) comprising a lifting part (3) and a hook part (4) having a first and a second shank (5, 6) arranged in the same plane, the first shank (5) being attached to the lifting part (3), the safety locking device (1) being pivotably attached to either of the shanks or the lifting part (3) and comprises a spring means (7) formed integrally with the safety locking device and arranged to automatically bring the safety locking device (1) to bear on the lifting part (3) or the opposite shank for preventing unhooking of a hoisting cable or similar means introduced into the hook part, said safety locking device having a general U-shape with two legs (8), **characterized in** that the spring means is elongated and attached at one of its ends to that part of the U-shaped safety locking device which connects the two legs (8) of the U, and that the other part of the spring means (7) is arranged to bear on either of the shanks (5, 6) or the lifting part (3) of the lifting hook (2) to which shank or part the safety locking device (1) is pivotably attached.
2. Safety locking device according to claim 1, **characterized in** that the spring means (7) and the two legs (8) of the U are arranged in the same plane.
3. Safety locking device according to claim 1, **characterized in** that the spring means (7) and the two legs (8) of the U are so arranged that they form an angle between themselves for either increase or decrease the spring action of the spring means (7).

4. Safety locking device according to any of claims 1-3,
characterized in that the respective legs (8) of
the safety locking device (1) are provided with
diametrically opposed pivot pins (9) adapted to cooperate
5 with complementary recesses arranged in the second shank
(6).
5. Safety locking device according to any of claims 1-4,
characterized in that the second shank (6) of the
lifting hook (2) extends past the lifting part (3).
- 10 6. Safety locking device according to any of claims 1-5,
characterized in that the shank (5, 6) to which the
safety locking device is attached is provided with a
protrusion (11), and that the free end of spring means (7)
is provided with a recess (12) adapted to cooperate with
15 the protrusion (11).

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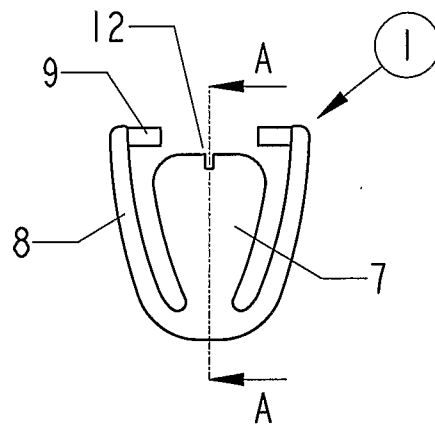


Fig 3

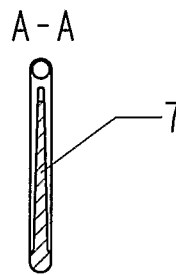


Fig 4

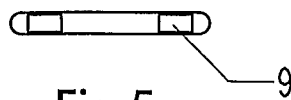


Fig 5

INTERNATIONAL SEARCH REPORT

International application No.

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A. CLASSIFICATION OF SUBJECT MATTER

IPC: see extra sheet

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)

IPC: B66C, F16B

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

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-INTERNAL, WPI DATA, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	GB 1368427 A (SIEBE GORMAN & COMPANY LIMITED), 25 Sept 1974 (25.09.1974), figures 1-4, whole document --	1-6
E	JP 2006153159 A (MARUZEN SEISAKUSHO:KK:), 15 June 2006 (15.06.2006), figures 1-6, abstract --	1-6
A	SE 50291 A (W. FORSBERG), 9 April 1921 (09.04.1921) --	1-6

☒ Further documents are listed in the continuation of Box C.☒ See patent family annex.

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Date of the actual completion of the international search

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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.
A	DE 668343 A (FIRMA PETER SCHÖTTLER IN VOGELSANG, WESTF.), 10 November 1938 (10.11.1938), figures 1-3, whole document --	1-6
A	FR 741573 A (M. KARL LEH RESIDANT DANS LE TERRITOIRE DU BASSIN DE LA SARRE), 14 February 1933 (14.02.1933), figures 1-3 -- -----	1-6

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Information on patent family members

31/07/2007

International application No.

PCT/SE2007/000379

GB	1368427	A	25/09/1974	NONE
JP	2006153159	A	15/06/2006	NONE
SE	50291	A	09/04/1921	NONE
DE	668343	A	10/11/1938	NONE
FR	741573	A	14/02/1933	NONE