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(54) **Handle for lifting hook**

(57) A combination of a lifting hook (1) for lifting a load, for example a plate-shaped material, and a handle (2) for handling the lifting hook, wherein the lifting hook (1) comprises a lower part (3) which provides a support surface for directly bearing of the load and an upper part (4) provided for connection with bearing means for the

lifting hook, wherein the handle (2) comprises a sleeve (5) in which at least part of the upper part (4) of the lifting hook (1) is received, and wherein a hand grip (6) is mounted on an outer surface of the sleeve (5) for manually handling the handle (2), wherein the handgrip projects from the handle.

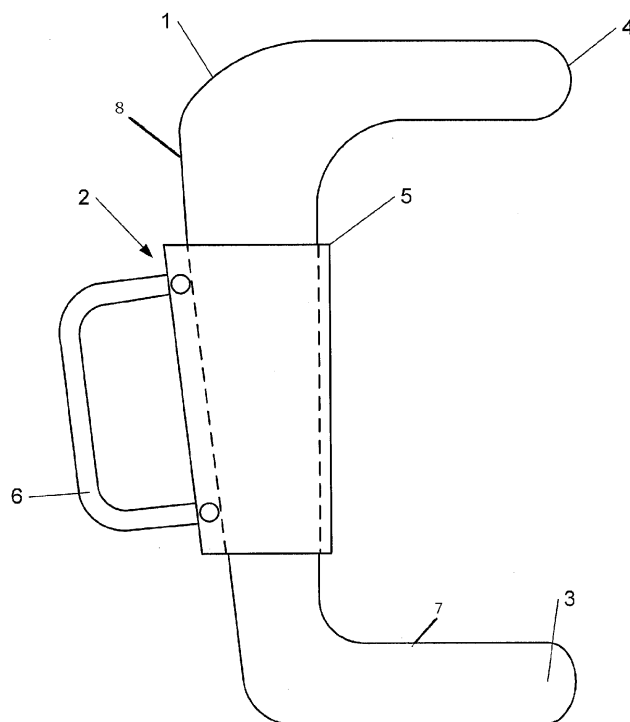


Fig. 1

Description

[0001] This invention relates to a combination of a lifting hook for lifting a load, for example a plate-shaped material and a handle for handling the lifting hook.

[0002] Such combinations are well known in the art. US 5,727,834, for example, describes a lifting hook to which a handle is attached. The lifting hook comprises a top loop and a U shaped lower part which is welded to the top loop. The upper part is provided for attaching the lifting hook to the transport device for example the cable of a crane, a winch or the like. Various kinds of loads may be suspended to the lower U-shaped part by means of ropes or cables. The handle comprises a generally U-shaped strap with a hand grip connected to it. The strap is attached to a pair of bolts each of which engages a sleeve welded on the hand grip. Each bolt has a threaded end receiving a nut thus clamping the strap to the sleeves to hold the hand grip in place on the back of the hook. A spring operated, pivoting latch is mounted on the front of the hook to prevent exit of for example ropes or cables suspended from the hook and a trigger is mounted on the hand grip with means interconnecting the trigger and the latch such that the latch is pulled open by operating the trigger. The strength of the connection between the hand grip and the hook is however limited by the combination of the strap and sleeve. Furthermore, the lifting hook is not directly carrying the load, but the load is rather carried by means of ropes or cables suspended to the lifting hook.

[0003] US 3,782,772 describes a combination of a lifting hook and a handle wherein the lifting hook has a broad flat shank with a lifting eye in its upper end and a lifting surface for suspending cables at its lower end. Projecting from and welded to the back of the of the shank is an elongated handle, which provides leverage for forcing the point of the hook to engage a tensioned binding situated on the top of a bound package and for disengaging the hook from the binding. The lifting surface is hardened and polished to avoid damage to the binding material. A retaining nose projects from the shank into close proximity with the point of the hook, to prevent accidental disengagement of the hook from the binding when lifting tension is relaxed. The handle here is not meant for handling the lifting or controlling the displacement of the hook, but rather for applying thrust to the point of the hook.

[0004] The inventors have identified a need for a handle which is suitable for handling a lifting hook, in particular a handle which may be used for controlling the movement of the lifting hook, in a system where the lifting hook is directly carrying and supporting the load.

[0005] The present invention seeks to provide such a combination of a lifting hook and a handle.

[0006] Thereto, the present invention provides a combination of a lifting hook for lifting a load, for example a plate-shaped material, and a handle for handling the lifting hook, wherein the lifting hook comprises a lower part

which provides a support surface for directly bearing the load, and an upper part provided for connection with bearing means for bearing the lifting hook, wherein the handle comprises a sleeve in which at least part of the upper part of the lifting hook is received, and wherein a hand grip is mounted on an outer surface of the sleeve for manually handling the handle and wherein the hand grip projects with respect to the sleeve.

[0007] The combination of the lifting hook and handle of the present invention as described above is typically used and suitable for the direct carrying and manipulation of heavy stacks of plate-shaped materials, for example heavy stacks of steel plates. Thereby usually a hook is mounted to each of the four corners of the stack of plates, in a way where the lower part of the hook is received below the stack of plates and the remainder of the hook extends along the upright edge of the stack. Such lifting hooks are difficult to handle because of their intrinsic weight, because of the weight of the load they are supporting and because of the balance that should be kept when a plurality of lifting hooks are mounted to the load to be carried, to avoid moving of the load with respect to the lifting hook.

[0008] Because the handle conceived as a sleeve in which at least part of the upper part of the lifting hook is received, the handle may be mounted to the lifting hook without involving the need to use accessory fixation techniques or tools, for example welding, screwing or bolting. Mounting of the handle to the lifting hook may therefore be done without affecting the mechanical properties of the lifting hook. This is seen as a major improvement, because maneuverability of the hook may be improved at minimum risk to affecting its mechanical properties. Lifting hooks of the nature discussed above, have to fulfill certain mechanical requirements imposed by safety regulations, they are subjected to an approval protocol and tests before being put into use, their mechanical structure and properties may not be altered for safety considerations. The combination of the present invention thus makes it possible to improve the safe maneuverability of the lifting hood without affecting the intrinsic properties and mechanical properties of the hook.

[0009] The presence of the handle facilitates manipulation of the lifting hook and greatly improves safety, in particular in the course of loading a load onto or unloading a load from the lifting hook. The handle, with the sleeve extending over at least part of the upper part of the lifting hook, the inner surface of the sleeve being shaped to fit around at least part of the upper part of the lifting hook, and the hand grip of the handle mounted on the outer surface of the handle to project with respect to the sleeve, is easily operable by hand. The force exerted by the operator on the hand grip may be able to move the lifting hook in a desired direction. With the hand grip of the handle pointing away from the lifting hook, the risk that the hands of the operator get caught between the lifting hook and the load, or between the upper part of the lifting hook and the bearing means during manipulation, is

greatly reduced.

[0010] In use, typically the lifting hook is gripped by an operator and drawn over an edge of the stack of plates in such a way that the stack rests on top of the lower part of the handle, and part of the handle extends along an upper side of the stack. Typically four such hooks are mounted to a stack of steel plates, in particular one to each edge of the stack. The upper part of each lifting hook is suspended to a crane, a winch or the like, by means of bearing means for example cables or ropes. Mounting of a hook to an edge of a plate by direct grasping of the part of the hook that is drawn over the stack of plates, as is done with prior art lifting hooks, involves the risk that the operator's hand or arm may be crushed between the lifting hook and the load it is supporting or between the upper part of the lifting hook and the cables or ropes, causing severe injuries and possibly lasting disabilities. In the combination of the present invention, the presence of the handle which projects from the hook overcomes this problem since it allows the operator to handle the lifting hook, and to minimise the risk to direct contact with the hook and the load it is supporting. Moving of the lifting hook in the desired direction may be achieved by exerting a force on the hand grip of the handle which projects from the sleeve and thus from handle. In particular with the hand grip projecting from the sleeve, away from the load carried by the lifting hook, the risk that the operator's hand gets caught between the lifting hook and the load it is supporting or between the upper part of the lifting hook and the bearing means may seriously be reduced.

[0011] According to a preferred embodiment of the invention, the handle for handling the lifting hook is removably mounted on the lifting hook. The removable mounting of the handle provides the possibility of using the handle not only with new lifting hooks but also with existing lifting hooks, without the need for structural modifications of the existing lifting hooks. The removable mounting permits to combine the handle with a lifting hook only when needed and to remove it when no longer needed or broken. Thus, the number of handles needed for example for a logistics firm may be greatly reduced. Because in practice the dimensions and shape of lifting hooks in logistics and more in particular in shipping are highly standardized, it is expected that the removably mounted handles may be easily combined with the currently existing lifting hooks.

[0012] The upper part of the lifting hook preferably comprises an end part which is conically tapering. The presence of a conically tapering end part permits limiting the movement of the handle over the upper part of the lifting hook within certain limits, so that the risk that a handle would slip off the hook may be limited. A risk to slipping may exist for instance in a case where the upper part of the hook is at a sharp angle with respect to a direction parallel to the direction of the lower part of the lifting hook. The conically tapering end part may even fix the position of the handle.

[0013] According to a preferred embodiment of the invention, the handle may comprise positioning means to fix the position of the handle on the upper part of the lifting hook. The presence of such positioning means assists in minimising the ability of the handle to move over the hook and thereby improves the safety of the lifting hook, in particular in situations where the upper part may be at an angle or parallel to the direction of the lower part of the lifting hook. With such positioning means present, a position may be chosen which on the one hand allows the operator to exert an optimal force on the hand grip and on the other hand permits to reduce the risk to the occurrence of injuries resulting from his hands or arms getting engaged between the lifting hook and the load it is supporting or between the upper part of the lifting hook and the bearing means.

[0014] Preferably the upper part is conically tapering from a top part towards the lower part, and the end part of the upper part is thickened. The presence of a conically tapering upper part either alone or in combination with a thickened end part of the upper part may have the advantage that the possibility of the handle to move over the upper part of the lifting hook is strongly limited, thereby reducing the risk that the handle may slip off the hook. This technical feature may even permit to fix the position of the handle.

[0015] According to a preferred embodiment of the invention, the sleeve comprises a segment which extends in longitudinal direction of the sleeve and is removable from the sleeve, to provide an access opening through which the handle may be moved. Preferably, the segment may be reversibly dismounted and mounted to the sleeve. According to a further preferred embodiment, the sleeve is substantially rectangular, with one of the sides being dismountable or removable. Such a handle may easily be combined with different configurations of the lifting hook, simply by dismounting the dismountable segment or side, placing the sleeve over the lifting hook and mounting and fastening the dismountable segment or side back to the sleeve. Typical lifting hooks used in the shipping of for example stacks of steel plates are substantially rectangular in shape. Therefore the shape of the preferred sleeve matches the shape of the lifting hook. The manufacturing of such a sleeve is considered to be rather simple and may be done by bending a length of plate of a suitable material in a rectangular U-shape, providing a length of material for closing the rectangular U-shape and providing the means for dismountably mounting the closing part onto the rectangular U-shape, for example by drilling holes in both part and connecting the part by means of bolts to form the sleeve. The hand grip could for example be welded on the outer surface of the sleeve in order to form the handle. Other fastening techniques may however be used as well.

[0016] The handle may be made of a wide variety of materials known to the skilled person, but preferably it is made of steel, as steel has the strength and endurance necessary for the use of the handle in manipulating heavy

loads, while at the same time being relatively easy to shape. Steel handles may be used in a wide variety of climatic conditions, without seriously adversely affecting its strength and endurance. With steel here, is meant any kind of steel or steel alloy, found suitable by the skilled person.

[0017] Other details and advantages of the combination of a lifting hook for lifting a load and a handle for handling the lifting hook according to the invention will become apparent from the enclosed figures and description of preferred embodiments of the invention.

Figure 1 shows a view in perspective of the combination of a lifting hook for lifting a load and a handle for handling the lifting hook according to the invention.

Figure 2 shows a view in perspective of a handle for handling a lifting hook to form a combination according to the invention.

[0018] Referring to the drawings, wherein like reference numerals designate corresponding structure throughout the views, and referring to Figure 1, there is shown a first embodiment of the combination of a lifting hook 1 and a handle 2.

[0019] Figure 1 shows a preferred embodiment of the combination of a lifting hook 1 for lifting a load, for example a plate-shaped material and a handle 2 for handling the lifting hook. Figure 2 shows an embodiment of the handle 2, the lifting hook 1 not being shown.

[0020] The lifting hook shown in figure 1 comprises a lower part 3, which provides and/or may function as a support surface for the handle 2. The lower part 3 thus permits a direct carrying of the load by the lifting hook. The lifting hook further comprises an upper part 4 which permits connection of the handle to load bearing means, for example a cable, a rope or a chain which in turn is suspended to a crane or winch or similar.

[0021] The lifting hook 1 may be made from any material found suitable by the skilled person for use in the shipment of heavy loads, for example a steel alloy. The material is preferably chosen such that it complies with the safety regulations that regulate transport tools in the shipment industry. The lifting hook 1 will usually be made from a rod of solid material, but any other type of material considered suitable by the skilled person may be used as well.

[0022] The lifting hook 1 is usually provided as an object that is made in one piece, having a lower part 3 and an upper part 4, which are connected to each other by an intermediate part 8. The upper part 4 and the lower part 3 could run substantially parallel or could extend with respect to each other at an angle. Usually, the lifting hook, including the lower part 3, the upper part 4 and the intermediate part 8 are made in one part. The lifting hook may however be made of a plurality of separate parts which are connected to each other for example by welding, provided legislation permits so.

[0023] The load of plate-shaped material is carried and supported by the lower part 3 of the lifting hook 1, the shape of which is usually such that it allows an easy support and easy carrying of the plate-shaped material. For example the load carrying part of the lower part 3 may have a flat, rectangular support surface 7. The upper part 4 is provided for connection with load bearing means, for example a cable or rope. The upper part 4 of the lifting hook 1 comes in several variations, for example the end part of the upper part 4 may be conically tapering, in particular the upper part 4 may be conically tapering from a top part towards the lower part 3 or the reverse, where the end part of the upper part 4 may be thickened. An upper part 4 presenting such shapes is capable of minimising the risk that the handle 2 may slip off the hook or it may function to fix the position of the handle on the lifting hook. However other forms of the upper part 4 may be suitably used as well. Upper part 4 is connected to lower part 3 by an intermediate part 8.

[0024] The handle 2 will usually comprise a sleeve 5 in which at least part of the upper part 4 of the lifting hook 1 is received. The handle may be made from any material found suitable by the skilled person, but preferably, the handle 2 is made from steel or a steel alloy, known to perform well in heavy duty applications. The handle may take any shape, but preferably the handle is shaped to fit to the shape of the lifting hook. Often the handle will have a rectangular shape in order to match the shape of the lifting hooks, which often have a rectangular shape as well, and in order to simplify the production process.

[0025] The sleeve 5 of the handle of this invention may be in one piece. Preferably however it is made in at least two parts which are connected to each other, to permit easy mounting and dismounting of the handle from the lifting hook. Thereby, the parts may be removably connectible to permit a repeated mounting and dismounting of the handle to the lifting hook. In a preferred embodiment, shown in the Figures 1 and 2, the sleeve is tubular and comprises a segment 9 which extends in longitudinal direction of the sleeve and which is removable from the sleeve. By removing the longitudinal segment 9, an access opening is created through which the handle may be moved. Preferably, the segment 9 may be reversibly dismounted and mounted to the sleeve 10 to permit re-use of the handle. The handle shown in figure 2 has a substantially rectangular shape, with one of the sides being dismountably mounted. As shown in the Figures, holes are drilled in the top part of the rectangular U-shaped part and matching holes are drilled in the dismountably mounted side, the sleeve 5 here being formed by mounting the two parts together and connecting them by means of bolts. Holes may be drilled at different heights of the U-shaped part in order to receive lifting hooks of different thickness and shape. However any other way of connecting the removable segment 9 to the remainder of the sleeve 10 may be used as well.

[0026] A hand grip 6 is mounted on an outer surface of the sleeve 5, which permits manual handling the han-

dle 2. The hand grip 6 may be mounted to the sleeve 5 using different techniques known to the skilled person, depending on the kind of materials used. Preferably, the hand grip 6 is welded on the sleeve 5 of the handle 2. The hand grip 6 allows the operator to manually handle the handle 2 and in this way move the lifting hook 1. The hand grip 6 and sleeve 5 may be made of different materials, but preferably they are made of the same material.

[0027] The dimensions of the sleeve 2 of the handle may vary within some ranges, but are preferably such that the possibility for the handle to move within the sleeve is limited, for safety reasons. The inner surface of the sleeve 5 preferably extends adjacent to the outer surface of the lifting hook 1. To provide optimum fit, the sleeve preferably has a shape which is similar to that of the intermediate part 8 of the lifting hook.

[0028] In practical use, the handle 2 for handling a lifting hook 1 shown in Figure 2 may be combined with a lifting hook in the following way. The handle 2 comprises a sleeve 5 and a hand grip 6 mounted on the outer surface of the sleeve 5. The sleeve 5 comprises a dismountable top side and a U-shaped part 10. Matching holes are present in the dismountable top side and the U-shaped part 10 and bolts connect both parts via the matching holes. The dismountable top side of the sleeve 5 comprising the hand grip 6 is dismounted by loosening the bolts, used for mounting the top side of the sleeve on the U-shaped part 10. Thereafter, the U-shaped part 10 is positioned to cover at least part of the upper part 4 of the lifting hook 1 and the dismountable segment or side 9 of the sleeve 5 is placed on U-shaped part 10 so as to enclose at least part of the upper part 4 of the lifting hook 1 such that the holes present in the U-shaped part 10 match the holes present in the dismountable top side. The dismountable side or segment 9 is mounted on the U-shaped part 10 by fastening the bolts. The operator may then safely move the lifting hook 1 by grasping the hand grip 6 of the handle 2 and exerting a force on the hand grip 6 to move the lifting hook 1.

ized in that the handle (2) is removably mounted on the lifting hook (1).

3. The combination according to claim 1 or 2, **characterized in that** the upper part (4) of the lifting hook (1) comprises an end part which is conically tapering.
4. The combination according to claim 1, **characterized in that** the handle (2) comprises means to fix the position of the handle (2) on the upper part (4) of the lifting hook (1).
5. The combination according to claim 3 or 4, **characterized in that** the upper part (4) is conically tapering from a top part towards the lower part (3), and **in that** the end part of the upper part (4) is thickened.
6. The combination according to any one of the preceding claims, wherein the sleeve (5) comprises a segment (9) which extends in longitudinal direction of the sleeve (5) and is removably mounted to the sleeve, to provide an access opening for receiving at least part of an intermediate part (8) of the handle connecting the upper part (4) and lower part (3) of the handle (1).
7. The combination of any one of claims 1-6, **characterized in that** the sleeve (5) is substantially rectangular, with one of the sides (9) being removably mountable.
8. The combination according to any one of the preceding claims, **characterized in that** the hand grip (6) is welded on the handle (2).
9. The combination according to any one of the preceding claims, **characterized in that** the handle (2) is made of steel.

Claims

1. A combination of a lifting hook (1) for lifting a load, for example a plate-shaped material, and a handle (2) for handling the lifting hook, wherein the lifting hook (1) comprises a lower part (3) which provides a support surface for directly bearing of the load and an upper part (4) provided for connection with bearing means for the lifting hook, wherein the handle (2) comprises a sleeve (5) in which at least part of the upper part (4) of the lifting hook (1) is received, and wherein a hand grip (6) is mounted on an outer surface of the sleeve (5) for manually handling the handle (2), **wherein the handgrip projects from the handle.**

2. The combination according to claim 1, **character-**

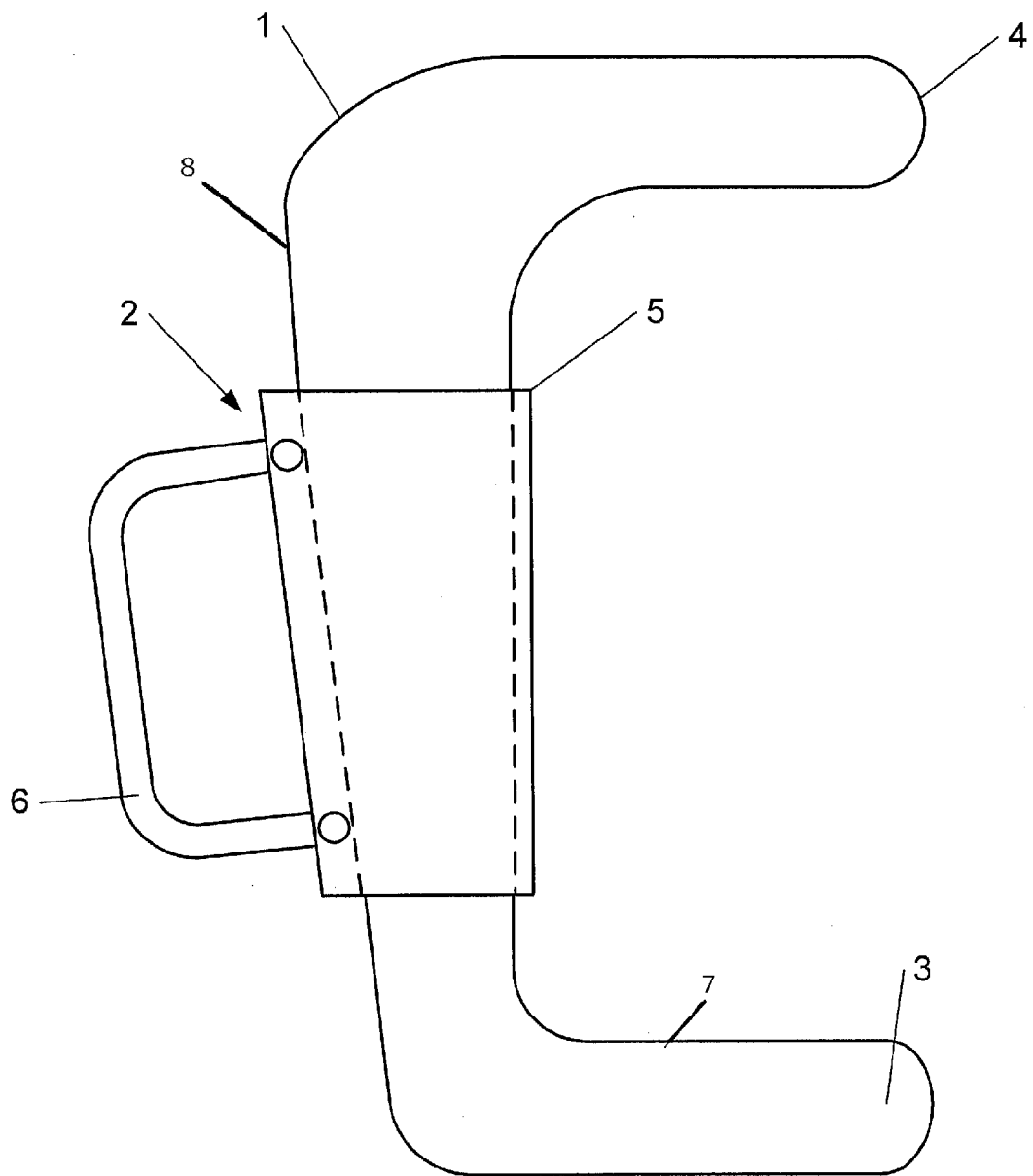
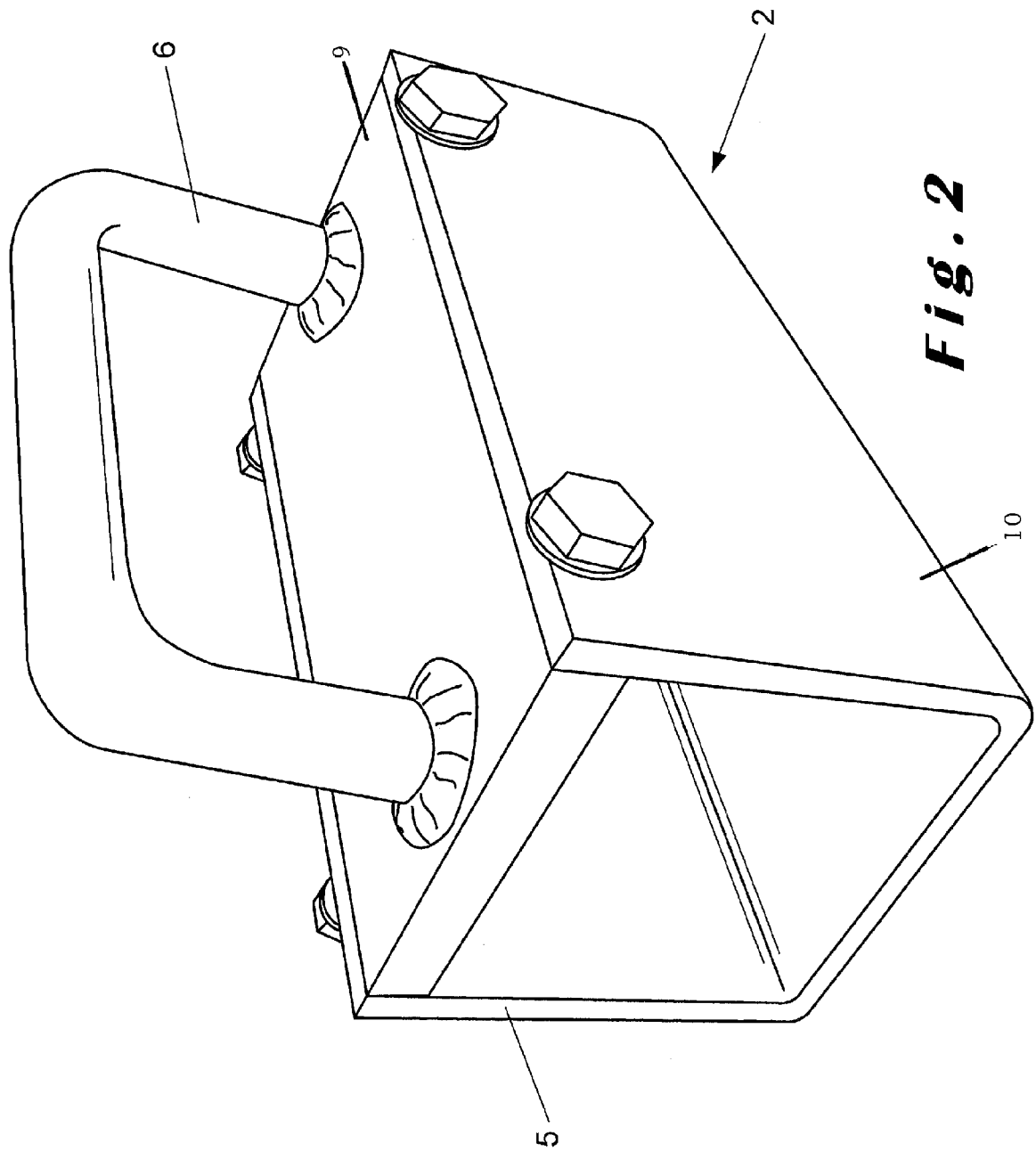


Fig. 1





EUROPEAN SEARCH REPORT

Application Number
EP 12 18 6325

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 2004/217610 A1 (HOLLMAN BERT D [US] ET AL) 4 November 2004 (2004-11-04) * the whole document *	1,2,4,7-9	INV. B66C1/22
A,D	US 5 727 834 A (WESELOWSKI JAMES [CA]) 17 March 1998 (1998-03-17) * the whole document *	1,2,8	
			TECHNICAL FIELDS SEARCHED (IPC)
			B66C
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 1 March 2013	Examiner Verheul, Omiros
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 12 18 6325

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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01-03-2013

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2004217610	A1	04-11-2004	NONE
US 5727834	A	17-03-1998	NONE

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

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