

Description

[0001] The present invention concerns a fastener for securing fold-down side and end panels, preferably on trailers, and including a base plate disposed on the fold-down panels and having a handle pivoting about a journal, the handle including a locking hook intended for reception in an eyelet disposed on an adjacent panel, and further including locking means that in their locked position prevent the handle/fastener from being opened, and which in their unlocked position allow the handle/fastener to be opened.

[0002] Such a fastener is known from EP-B-0 409 075, where the locking means are constituted by a resilient bracket-shaped locking element disposed on the handle, the locking element serving as a latch bolt which in its locked position is spring-loaded towards the locking hook, and where it in its unlocked position is retained by means of retainer part on the handle or on the base plate. The base plate includes further tooth means that, when the handle is turned to its open position, automatically releases the locking mechanism from the holding position and allows the locking means to return to the locked position.

[0003] The said locking mechanism is very often used in connection with fold-down side and end panels on trailers etc, where the fold-down panels serve to provide a reliable side limitation of the platform, so that articles placed on the platform do not fall off while driving.

[0004] In most countries, in connection with fold-down side parts/panels, there is a requirement that the vehicle, which is provided with a platform and fold-up and fold-down side limitations, is to be provided with a double locking mechanism for securing the side parts in an unfolded or folded-up position. This means that, besides a fastener featuring abutting end edges being arrested to each other, there is also a requirement that the fastener is safeguarded against unauthorised opening, and that said unfolded or folded-up side parts are thereby released, e.g. during transport. The above prior art fastener includes just such a double safety arrangement by means of a spring-loaded bracket which is fastened in the grip part of the handle, and which in its locked position is in contact with the locking hook, so that above the abutment of the locking mechanism with the inner side of the locking hook there is room for a locking eyelet which constitutes the second half of the fastener. Opening of the fastener is effected by gripping about the grip part of the pivoting handle, after which a double locking device/the locking bracket is pulled with the thumb or index finger back to neutral position, after which there the handle is turned, whereby the locking hook is pivoted out of the engagement with the eyelet on the adjacent side part. The said locking mechanism is widely used but requires that the person with the task of opening the double safety fastener has full mobility, particularly in the finger used for releasing the locking bracket. Since it may not be expected always that the user of a trailer or

similar, which includes fold-up and fold-down side limitations with double safety fasteners, there is thus need for a fastener which is readily operated - opened/closed - by a disabled person, e.g. a person missing one or more joints on the thumb or index finger, respectively, on the hand typically used in connection with opening and closing the fastener for fold-up side parts on trailers etc.

[0005] This purpose is achieved with a fastener of the kind specified in the introduction, which is characterised in that the handle is further suspended on the journal so that it may perform a displacement along the longitudinal axis of the journal away from and towards the base plate, that the base plate includes at least one first projection or indentation that interacts with at least one other projection or indentation on the side of the handle facing the base plate, so that the mutually facing surfaces of the projection or indentation are resiliently pressed against each other by a spring element, and that on the mutually facing surfaces of the first and second projection or indentation there are mutually interacting locking means that in mutual engagement prevent relative rotational movement between the first and the second projection or indentation, and which in their unlocked position allow relative rotational movement between the first and the second projection or indentation. Hereby is achieved a fastener which, firstly, may be operated single-handed, and which does not require action from neither thumb nor index finger in connection with opening thereof, as the said interacting locking means may be brought out of engagement with each other by an outwards pull in the handle succeeded by a turning of the handle about the centre axis of the journal.

[0006] With the intention of ensuring a well-defined position in which the fastener is double safe with 100% certainty, the interacting locking means are disposed on the mutually facing surfaces by the first and the second projection or indentation, respectively, so that they may only assume their locked position when the locked position on the handle is accommodated in the eyelet on the adjacent panel. Hereby is avoided that the locking means are activated in other positions than the position in which the locking hook is accommodated in the eyelet on the adjacent or abutting panel.

[0007] In a first preferred embodiment of the fastener, the interacting locking means may be constituted by a pin projecting from the face of the first annular projection for interactive reception in a corresponding cutout in the surface in the second annular projection on the rotatably suspended handle, and where the cutout is pressed down over the pin by lateral displacement in the longitudinal axis of the journal and provided by the spring element. The lateral displacement of the handle activating the double safety arrangement is only possible after performing a turning of the handle until the said pin and cutout are disposed opposite each other, in which position the locking hook is disposed in receiving position in the eyelet on the bordering panel part. In a relatively simple way there is hereby indicated an efficient double

safety fastener.

[0008] In claim 4 is specified a further preferred embodiment of the fastener according to the invention, where the pin is projecting from the second annular projection, and where cutout interacting with the pin is established in the surface of the first annular part.

[0009] With the intention of ensuring a suitable operation of the fastener according to the present invention, it is furthermore realised that the pin and the cutout may advantageously be disposed in the part of the annular parts being closest to the grip part on the handle. Hereby is achieved that the fastener in a relatively simple way may be released from its locked position, gripping about the grip part on the pivoting handle and actuating it with a pull in parallel with the centre axis of the pin, whereby the cutout is released from the pin, after which it is possible to perform turning of the handle so that the hook is pulled out from the eyelet on the adjacent panel. Hereby is indicated a double fastener that may be operated by person without mobility in thumb and index finger, as opening of the double safety fastener may be performed by very simple movements that do not require co-operation of the said fingers, however, without compromising the safety requirements that the fastener of the kind indicated are to meet.

[0010] The invention is explained in more detail in the following with reference to the drawing, where:

- Fig. 1 is an exploded perspective view of a double safety fastener according to the invention;
- Fig. 2 is a perspective view of the fastener handle;
- Fig. 3 is a perspective view of the base plate belonging to the fastener;
- Fig. 4 is a formalised perspective view of a second embodiment of the fastener in closed position mounted on the corner of fold-down sides;
- Fig. 5 shows the second embodiment of the fastener during release from the locking means constituting the double safety arrangement; and
- Fig. 6 shows a perspective view of the second embodiment of the fastener where the locking hook is released from the locking eyelet.

[0011] In Fig. 1 is shown an exploded perspective view of an embodiment of a double safety fastener 2 according to the invention, preferably for securing fold-down side and end panels 4, 6 preferably on trailers. It appears that the fastener includes a base plate 8 which is intended for fastening on the outer side of the said fold-down side and end panels 4, 6, cf. Fig. 4. The base plate 8 includes a through-going hole 9 for accommodating and fastening a journal 10 which is first passed through a hole 11 in a pivotably suspended handle 12 that includes a locking hook 14 intended for accommodating in an eyelet 16 disposed on an adjacent panel 6, cf. Fig. 4. The journal 10 has a head 13, and between the head of the journal and side of the handle 12 there is fitted a resilient member 26, which in the shown em-

bodiment is constituted by a helical spring. The base plate includes a first annular projection 18 which has a lateral surface 22 facing the handle and further including a projecting pin 28, cf. also Fig. 3. The handle 12 includes a second annular projection 20 interacting with the first annular projection 18. The second annular projection 20 has an interacting side face 24 facing the surface 22 of the first annular projection, and the second annular projection has furthermore a cutout 30 as it clearly appears from Fig. 2.

[0012] In Fig. 4 is shown schematically how a second embodiment of the fastener with double safety arrangement is mounted on a fold-down side panel 4, 6 with the base plate including the handle and the gripping hook 14 engaging the eyelet 16 which is mounted on an adjacent panel 6. As it appears, the mutually facing side faces 22, 24 on the first projection 18 and the second projection 24, respectively, are pressed against each other, as the head 13 of the journal 10 presses the spring 26 against handle 12, so that the previously mentioned surfaces 22, 24 are pressed against each other, and so that the pin 28 on the surface 22 on the annular projection on the base plate 8 is accommodated in the cutout 30 in the surface 24 on the second projection 20 on the handle 12. Hereby the fastener is closed and locked in its closed position, as it appears from Fig. 4.

[0013] Opening the fastener is effected by gripping the grip part 34 of the handle 12 and pulling it away from the front side of the panel 4 in parallel with the centre axis 32 of the journal. The pin 28 is hereby released from the cutout 30, and the movement is enabled by compressing the spring 26. After releasing the pin 28 from the cutout 30, the handle 12 is turned so that the hook 14 is moved out of engagement in the eyelet 16 on the adjacent panel 6, whereafter the panel is released for folding down.

[0014] As it appears from the illustrations 4, 5 and 6, by a relatively simple movement it is thus possible to perform release of the double safety fastener without having to use fingers for withdrawing spring-loaded pawls etc. The operating handle according to the invention is thus very friendly to the disabled.

Claims

1. Fastener (2) for securing fold-down side and end panels (4, 6), preferably on trailers, and including a base plate (8) disposed on the fold-down panels (4, 6) and having a handle (12) pivoting about a journal (10), the handle including a locking hook (14) intended for reception in an eyelet (16) disposed on an adjacent panel (6), and further including locking means that in their locked position prevent the handle/fastener from being opened, and which in their unlocked position allow the handle/fastener to be opened, **characterised in that** the handle (12) is further suspended on the journal (10) so that it may

perform a displacement along the longitudinal axis (32) of the journal away from and towards the base plate (8), that the base plate (8) includes at least one first projection (18) or indentation that interacts with at least one other projection (20) or indentation on the side of the handle (12) facing the base plate, so that the mutually facing surfaces (22, 24) of the projection (18, 20) or indentation are resiliently pressed against each other by a spring element (26), and that on the mutually facing surfaces (22, 24) of the first and second projection or indentation there are mutually interacting locking means (28, 30) that in mutual engagement prevent relative rotational movement between the first and the second projection (18, 20) or indentation, and which in their unlocked position allow relative rotational movement between the first and the second projection (18, 20) or indentation.

preferably disposed in the part of the annular projection (19, 20) which is closest to the grip part (34) of the handle (12).

2. Fastener (2) according to claim 1, **characterised in that** the interacting locking means (28, 30) are disposed on the mutually facing surfaces (22, 24) by the first and the second projection (18, 20) or indentation, respectively, so that they may only assume their locked position when the locking hook (14) on the handle (12) are accommodated in the eyelet (16) on an adjacent panel (6).
3. Fastener according to claim 1 or 2, **characterised in that** the interacting locking means (28, 30) are constituted by a pin (28) projecting from the face (22) of the first annular projection (18) for interactive reception in a corresponding cutout (30) in the surface (24) in the second annular projection (20) on the rotatably suspended handle (12), and where the cutout (30) is pressed down over the pin (28) by lateral displacement in the longitudinal axis (32) of the journal provided by the spring element (26), and which is enabled by turning the handle (12) until the pin (28) and the cutout (30) are disposed opposite each other.
4. Fastener according to claim 1 or 2, **characterised in that** the interacting locking means (28, 30) are constituted by a pin (28) projecting from the face (24) of the second annular projection (20) for interactive reception in a corresponding cutout (30) in the surface (22) in the first annular projection (18) on the rotatably suspended handle (12), and where the cutout (30) is pressed down over the pin (28) by lateral displacement in the longitudinal axis (32) of the journal provided by the spring element (26), and which is enabled by turning the handle (12) until the pin (28) and the cutout (30) are disposed opposite each other.
5. Fastener according to any of claims 1 - 3, **characterised in that** the pin (28) and the cutout (30) are

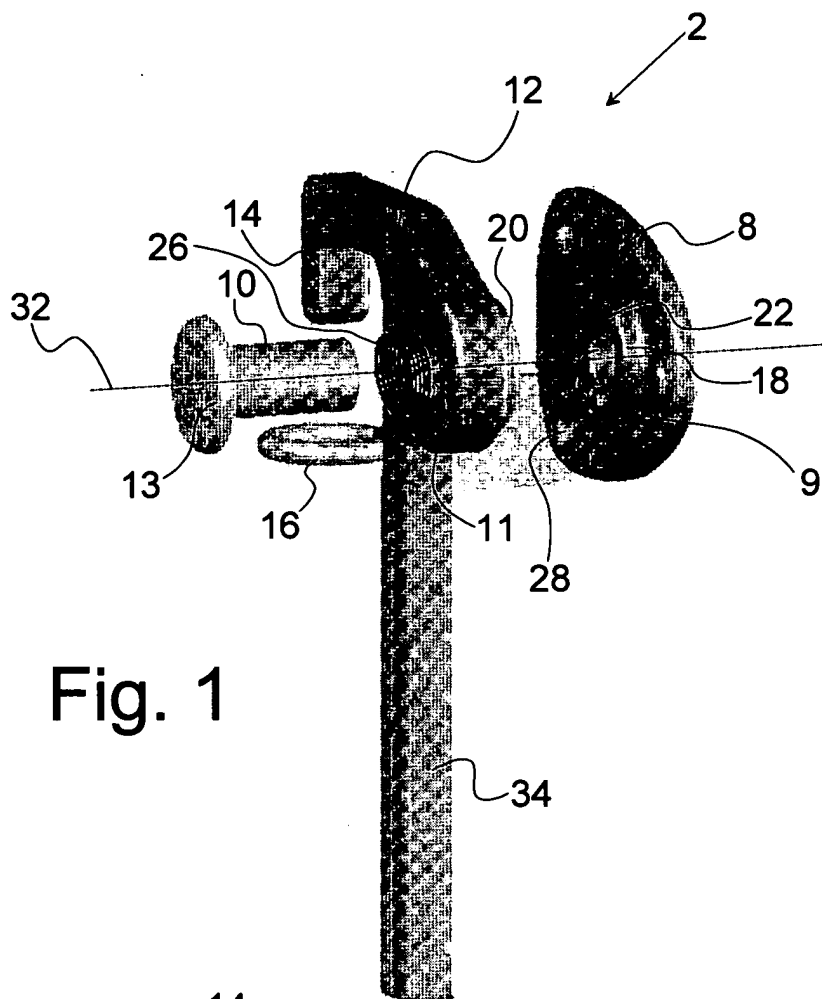


Fig. 1

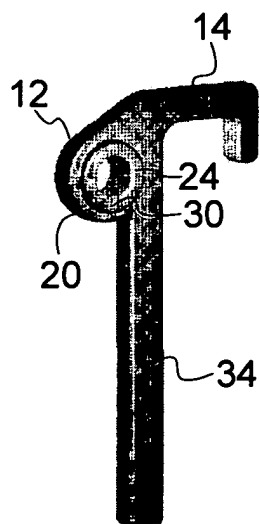


Fig. 2

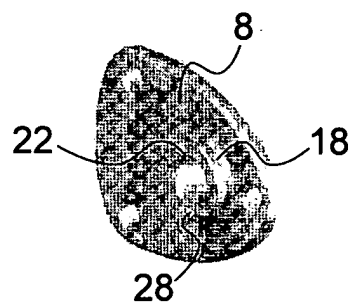


Fig. 3

