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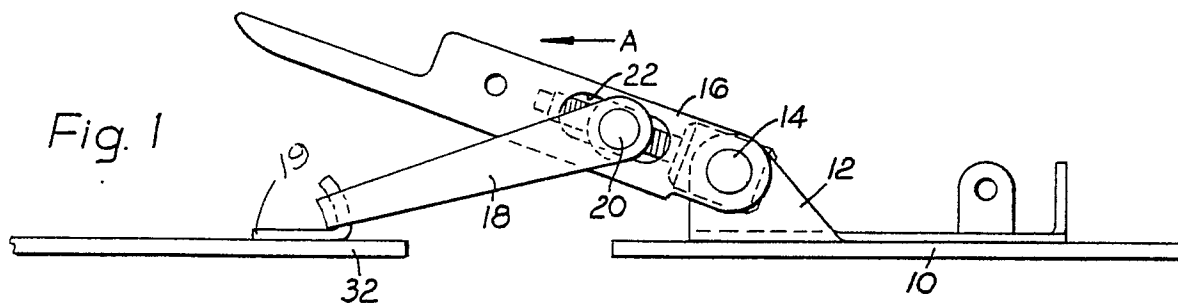
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Fastener.

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An adjustable toggle fastener has pivot pins 14, 20 (Fig.1) connected by a screw 24, 20 so that their spacing can be varied. Screw 24 has its head trapped in a cup 28 which is carried on one of the pins. This avoids having to pivot the screw to the pin.



EP 0 232 585 A2

FASTENER

This invention relates to toggle fasteners of the kind comprising a first part namely a fixing means having a first pivot for a toggle link which carries a second pivot for a hasp which is engageable with the second part which is a keeper. The toggle link can be swung about the first pivot to displace the second pivot from one side to the other of the first pivot and so draw the keeper towards the fixing means. When the fixing means is mounted for example on a container, and the keeper on the lid of the container, the fastener can be used to draw the lid firmly onto the container and hold it closed. The toggle link may have a slight "over-centre" action to hold the lid in the closed position.

It is known to make one of the pivots slidably adjustable in position relative to the other, by means of slots and a screw engaged between the pivots. Prior Patent GB 1221664 is an example of such construction. The screw is made axially captive to one of the pivots by a rivetting or peening operation on the end of the screw. Difficulties have been encountered with fasteners of this kind, especially when using stainless steel as the material, because of a poor malleability of the material which makes the peening operation difficult or at least leads to the risk of cracking and possible failure.

It is apparent that in the closed position of the fastener there is little or no load on the rivetted end and it has been thought that the riveting merely had to be sufficient to secure the screw against inadvertent loss. However the inventor of the present application has discovered, after exhaustive tests, that failures arise because it is possible to apply unexpectedly high loads in the opposite direction which do act on the rivet and apply shear stress to the rivetted head. This can be done by varying the intended procedure, which is primarily one of closing the lid and then using the fastener only for the very final part of the closing movement, by engaging the hasp with the keeper when the hasp and the toggle link extend more or less co-linearly in the same direction, instead of extending in opposite directions as they do in the closed position of the fastener. Now that this has been pointed out, it will be appreciated that in such position the rivet is indeed subject to shear stress on its head. The invention aims to solve the problem caused by this stress.

In accordance with the invention, a toggle fastener of the kind comprising fixing means having a first pivot for a toggle link which carries a second pivot for a hasp engageable with a keeper, in which the link can be swung about the first pivot to displace the second pivot from one side to the other of the first pivot, and so draw the keeper

towards the fixing means, and in which one of the pivots is slidably adjustable in position by means of slots and a screw engaged between the pivots, is characterised in that the screw is made axially fast and rotatably free relative to one pivot by the provision of a cup journaled on said one pivot, the head of the screw being trapped in the cup and the shank of the screw extending through a hole in the base of the cup to engage with the other of the pivots.

It will be appreciated that the cup can be provided on either of the pivots, according to the design.

The screw may be a conventional and standard cheese-head screw, preferably modified by the provision of a screwdriver slot in the extreme free end of the shank, because the screw head itself may be inaccessible for adjustment when located in the cup, and with the actual pivot pin extending across the head and obscuring the same, although at the same time making the screw axially captive in the cup.

The head can provide a substantial area to resist shear, and in any event can be formed by turning a blank or by forging or cold heading prior to assembly, and thus offer far more material to resist shear than could possibly be furnished by any rivetting operation unless an unusually malleable material were used, and malleable materials are unsatisfactory because they are likely to have low tensile strength.

Preferably the screw has a plain non-threaded shank portion where it passes through the base of the cup.

The invention is now more particularly described with reference to the accompanying drawings wherein:

Figure 1 is a view showing a fastener in a position of use attached to a container and lid, for example;

Figure 2 is a plan view of the fastener per se as seen in Figure 1; and

Figure 3 is a fragmentary enlarged scale and part sectional plan view of the same.

Referring to the drawings, fixing means comprise a plate provided with upstanding lugs 12 and is shown in Figure 1 as being attached to part of a container, for example the body of the container indicated by the reference numeral 10. A pin 14 forms a first pivot and is journaled in the lugs 12 and also at one end of toggle link 16. A second pivot pin 20 is parallel to the pin 14 and journals a

hasp loop 18. In Figure 1 the hasp loop is shown engaged with a keeper 19 attached to the other part of the container, for example the lid of the same, as indicated by the reference numeral 32.

Pin 20 is adjustable towards and away from pin 14. To this end, and in this embodiment, the toggle link 16 is made of channel shape and its side flanges are formed with the elongated slots 22 in which the pin 20 slides.

Two pins are connected generally by a screw having a shank 24 screwthreadedly engaged with one of the pins and made axially fast but rotationally free relative to the other of the pins. In accordance with the invention, the screw has a head 26 engaged in a cup 28 which is journalled on one of the pins 14, the screw threaded shank extending through a hole in the base of the cup.

It will be noted that the pin 20, which is screwthreadedly engaged with the screw shank 24, has an enlarged diameter central portion to enable the screw to extend diametrically therethrough and to be provided with the required screw threads. The pin 14 does not need to be so enlarged, because it passes through diametrically aligned holes in the skirt of the cup 28 and is not pierced by the screw.

The screw is shown with a slot 30 for a screwdriver at the free end of the shank, but alternatively a square end could be provided for spanner or key operation to turn the screw and hence adjust the position of the pivots.

Claims

1. A toggle fastener of the kind comprising fixing means (12) having a first pivot (14) for a toggle link (16) which carries a second pivot (20) for a hasp (18) engageable with a keeper (19) in which the link (16) can be swung about the first pivot (14) to displace the second pivot (20) from one side to the other of the first pivot (14) and so draw the keeper towards the fixing means, and in which one of the pivots is slidably adjustable in position by means of slots (22) and a screw (24) engaged between the pivots, characterised in that the screw is made axially fast and rotatably free relative to one of the pivots by the provision of a cup (28) journalled on said one pivot, the head of the screw (26) being trapped in the cup and the shank (24) of the screw extending through a hole in the base of the cup.

2. A fastener as claimed in Claim 1 wherein the screw has a cheese head (26).

3. A fastener as claimed in Claim 1 or Claim 2 wherein the screw has a plain non-threaded shank portion where it passes through the base of the cup.

