United States Patent [19]

Wallyn

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[54] **LATCH ASSEMBLY**

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[52] **U.S. Cl.**..... **292/103,** 292/204, 292/DIG. 38

[51] **Int. Cl.**..... **E05c 19/10**

[58] **Field of Search**..... 292/103, 114, 67, 292/204, 256.5, DIG. 38, 252, 120, 118

[56] **References Cited**

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[57] **ABSTRACT**

This invention relates to a locking device comprising a latch arm of resilient stretchable material adapted to be pivotally mounted at one end to one element. The latch arm has a handle at its free end and has an enlarged portion positioned inwardly of such handle and formed integrally therewith, the enlarged portion being adapted releasably to engage a retaining portion formed integrally with a retainer bracket secured to another element adjacent the first element, a secure substantially vibration free connection of the two elements being formed when the resilient latch arm is stretched to enable the enlarged portion to engage the retaining portion.

3 Claims, 6 Drawing Figures

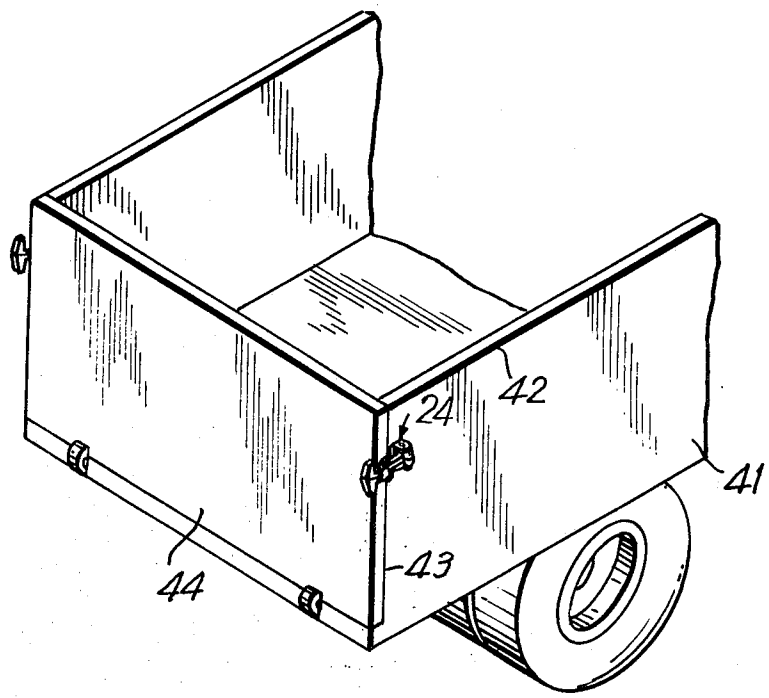


FIG. 1

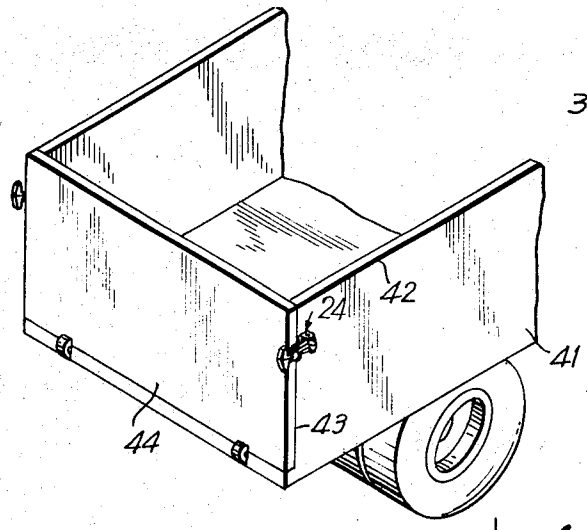


FIG. 4

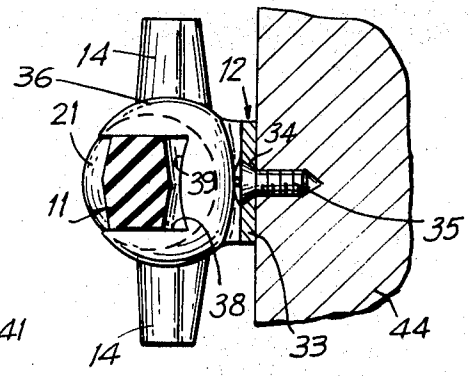


FIG. 2

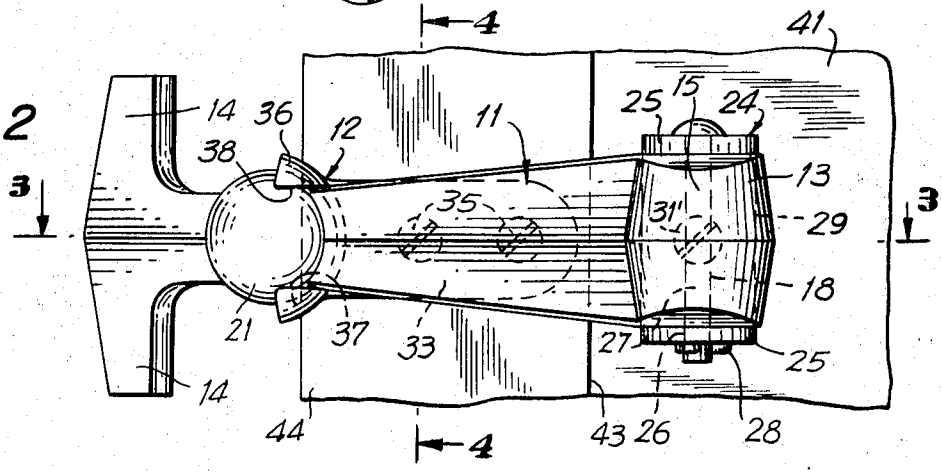


FIG. 3

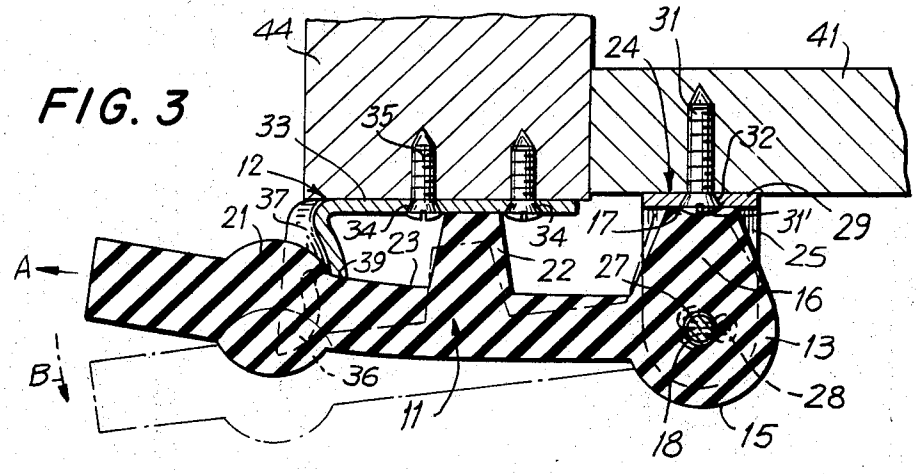


FIG. 5

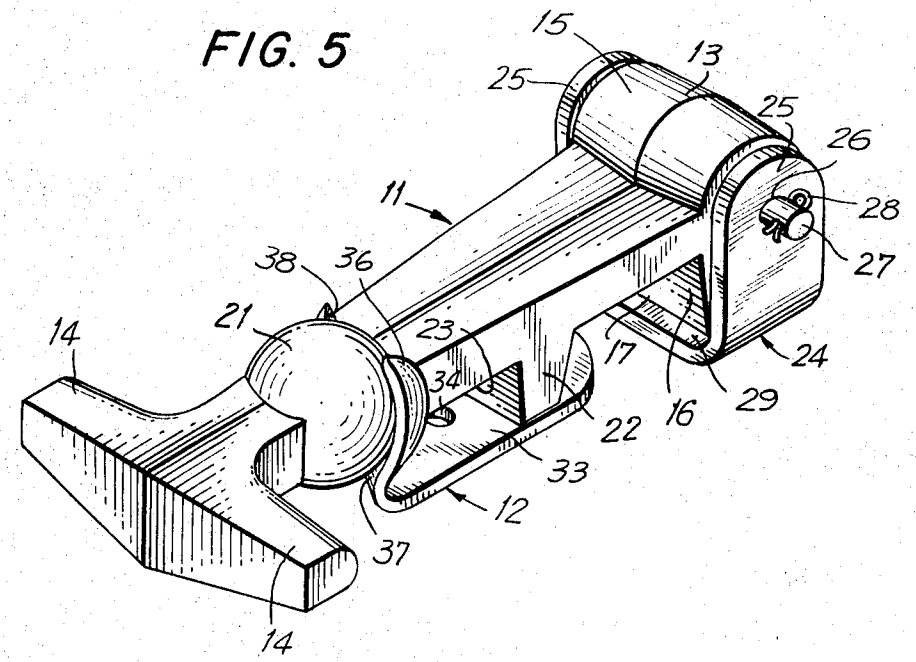
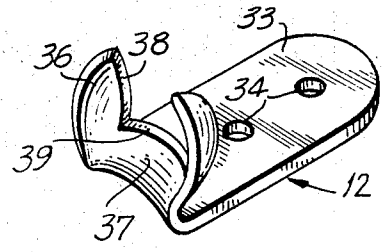

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FIG. 6


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LATCH ASSEMBLY

As conducive to an understanding of the invention, it is noted that when a locking device is provided of rigid components and a rigid bracket is fixed to one element and a rigid latch arm pivotally mounted at one end to an adjacent element, has its free end engaging the rigid bracket and is secured thereto by a hook, for example, as is commonly used on the pivoted tail gate of a truck, due to the fact that the body of the truck to which the tail gate is pivoted is not rigid and tends to vibrate, there will be play in the latch connection resulting in noise due to the vibration and also raises the possibility that the hook may inadvertently be released.

It is accordingly among the objects of the invention to provide a locking device which has but few relatively inexpensive parts and which may readily be fabricated at low cost and which may readily be mounted to retain the elements, at least one of which is movable with respect to the other, in fixed closed position with a minimum of vibration between the elements and with assurance that the locking device will not open.

According to the invention these objects are accomplished by the arrangement and combination of elements hereinafter described and more particularly recited in the claims.

In the accompanying drawings in which is shown one of various possible embodiments of the several features of the invention;

FIG. 1 is a diagrammatic view of a truck with parts broken away showing the locking device,

FIG. 2 is a greatly enlarged side elevational view of the truck showing the locking device in detail,

FIG. 3 is a longitudinal sectional view taken along line 3—3 of FIG. 2,

FIG. 4 is a transverse sectional view taken along line 4—4 of FIG. 2,

FIG. 5 is a perspective view of the locking assembly, and FIG. 6 is a perspective view of the retaining member.

Referring now to the drawings, the locking device comprises a latch arm 11 and a retainer member 12. The latch arm 11 which is of resilient stretchable material, such as natural or synthetic rubber, is substantially rectangular in cross section and has a transversely extending hub 13 at one end and a handle in the form of oppositely extending transversely aligned wings 14 at its other end. The width of the latch arm 11, apart from the handle 14, is maxiumum at the hub end thereof and the arm is tapered so as to be narrowest adjacent the handle 14.

The hub 13 as shown in FIG. 3, is rounded in cross section on its outer portion as at 15 and the inner portion 16 of the hub is in the form of a trapezoid having its narrow apex 17 extending transversely with respect to the arm 11. As shown in FIG. 3, the hub has a bore 18 extending transversely therethrough, said bore being aligned with a line extending through the middle of the trapezoid 17 and the middle of the rounded portion 15, the latch arm 11 extending at right angles to said line.

The latch arm has a ball conformation 21 integral therewith adjacent the handle 14, said ball conformation being of diameter greater than the thickness and width of the latch arm and protruding beyond said arm.

Extending transversely across the latch arm between the ball conformation and the hub 13 is a pivot member 22 in the form of a trapezoid which extends inwardly from the inner surface 23 of the latch arm 11 and is formed integrally therewith.

As shown in FIG. 3, the height of the trapezoid portion 16 of the hub is slightly greater than that of the pivot member 22.

Associated with the hub 13 is a U-shaped mounting bracket 24, the parallel legs 25 of which have transversely aligned openings 26 to receive a headed pivot pin 27 which extends through the bore 18 in hub 13, the pin 27 being retained in place by cotter pin 28. The base 29 of bracket 24 has a central hole 32 to receive a mounting screw 31. The distance between the axis of pin 27 and the base 29 is substantially the same as the distance between the axis of pivot bore 18 and the apex 17 of trapezoidal portion of the hub for the purpose hereinafter to be described.

The retainer member 12 comprises a substantially L-shaped bracket having a mounting leg 33 with a plurality of spaced openings 34 each adapted to receive a screw 35. Extending at right angles to leg 33 is a cup-shaped retaining leg 36 defining a socket 37 having its concavity facing away from mounting leg 33. The cup-shaped leg 36 has a central rectangular slot 38 extending downwardly from the upper edge thereof, the lower edge 39 of the slot defining an abutment for the latch arm 11 as shown in FIG. 3.

To mount the locking device in the illustrative embodiment shown, the U-shaped bracket 24 is secured by screw 31 to the side wall 41 of a truck chassis near the upper edge 42 of the rear end thereof. The bracket 24 is positioned so that the base 29 thereof extends vertically as shown in FIG. 2. Thereupon, the hub 13 of latch arm 11 is positioned between the legs 25 of the bracket and pivotally mounted by means of pivot pin 27 which is secured in place by cotter pin 28.

The retainer member 12 is secured to the tailgate 44 of the truck by screws 35 so that the longitudinally aligned openings 34 in the mounting leg 33 through which screws 35 extend, are longitudinally aligned as shown in FIG. 2, with the screw 31 securing the bracket 24 to the side wall 41. The retainer member 12 is positioned so that the concavity of the cup-shaped socket 37 extends outwardly with respect to bracket 24 with the ball conformation 21 positioned in socket 37 so that the latch arm 11 extends through notch 38 as shown in FIGS. 2 and 3 and with the portion of the latch arm between the ball conformation 21 and hub 13 being stretched so that it is under tenson.

With the latch arm 11 in locked position, as above described, the pivot member 22 will be pressed against the leg 33 of retainer member 12 as shown in FIG. 3, and the apex 17 of the trapezoidal portion 16 of hub 13 will press against the protruding head 31′ of screw 31 to retain said hub in position.

To open the latch member, it is merely necessary to pull on the handle 14 to stretch the latch arm 11 slightly so that the ball 21 is moved longitudinally away from socket 37 in the direction indicated by the arrow marked A in FIG. 3 and then pivot the latch arm in a counterclockwise direction as shown at B in FIG. 3.

With the construction above described, by reason of the fact that the latch arm 11, when in locked position is under tension, the tailgate 44 will be dependably retained against the end of the track body with a minimum of vibration possible. Furthermore, by reason of the ball conformation 21, the latch arm will dependably remain in locked position.

Opening of the locking device is facilitated by the pivot member **22.** Thus, when the handle is pulled to move the ball conformation away from socket **37,** even if the ball **21** is not moved entirely clear of the socket, the portion of the latch arm **11** between pivot **22** and handle **14** will permit ready movement of the ball **21** out of socket **37.**

I claim:

1. A locking device comprising a latch arm of resilient stretchable material having a hub at one end and a handle at its other end, a substantially U-shaped mounting bracket having a base and a pair of spaced parallel legs each with a hole therethrough, said holes being transversely aligned, said hub having a transverse bore therethrough, a pin extending through said bore and said holes pivotally to mount the hub end of said latch arm to said mounting bracket, a retainer member having a retaining portion, locking means formed integrally with said latch arm, releasably to engage said retaining portion, said hub having a radially projecting portion formed integrally therewith extending at right angles to the latch arm and of length such as to resiliently engage said base when said locking means engages said retaining portion.

2. A locking device comprising a latch arm of resilient stretchable material having a hub at one end and a handle at its other end, a substantially U-shaped mounting bracket having a base and a pair of spaced parallel legs each with a hole therethrough, said holes being transversely aligned, said hub having a transverse bore therethrough, a pin extending through said bore and said holes pivotally to mount the hub end of said latch arm to said mounting bracket, a retainer member having a retaining portion, locking means formed integrally with said latch arm, releasably to engage said retaining portion, said hub having a radially extending portion trapezoidal in cross section extending at right angles to the latch arm and of length substantially equal to the distance between the axis of the bore and said hub and the adjacent surface of said base.

3. A locking device comprising a latch arm of resilient stretchable material having a hub at one end and a handle at its other end, a mounting bracket, means pivotally mounting the hub end of said latch arm to said mounting bracket an L-shaped retainer bracket having a mounting leg, means to mount said mounting leg to extend at right angles to the pivotal mount of said hub, said bracket having a retaining leg extending at right angles to said mounting leg, said retaining leg being conformed to define a socket and having a central rectangular slot extending downwardly from its upper edge through the central part of said socket, the lower edge of said slot defining an abutment, locking means comprising a ball conformation formed integrally with said latch arm adjacent the handle and adapted to be accommodated in said socket releasably to engage the latter, with the latch arm resting on said abutment defined by the lower edge of said slot, said latch arm having a pivot member formed integral therewith and extending outwardly from the inner surface thereof at right angles thereto, between the hub and the ball conformation, the free end of said pivot member engaging the mounting leg of said retainer bracket when the latch arm is in locked position.

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