United States Patent

Landow et al.

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[54] **LOCK LATCH ASSEMBLY FOR COUNTERBALANCED CARGO CARRYING VEHICLE DOORS**

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[52] **U.S. Cl.** **70/99**, 292/216, 292/340, 292/DIG. 46

[51] **Int. Cl.**.....**E05b 65/16**, E05c 3/26

[58] **Field of Search** .....292/198, 216, 304, 292/340, DIG. 36, DIG. 46; 70/99

[56] **References Cited**

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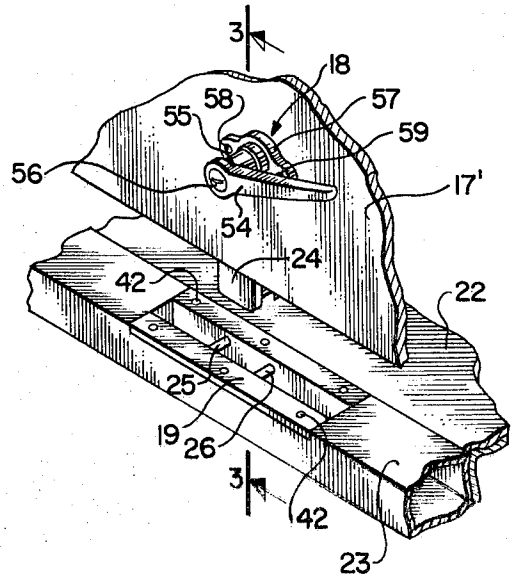
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[57] **ABSTRACT**

A latch lock assembly is provided which is formed of two spaced plates with pivotal levers disposed therebetween and wherein the plates are provided with a depending projection of a width and spacing and depth and extending from the bottom edge of the door which will fit into a keeper having parts shaped to exactly contain the projection on the latch lock assembly when the door bearing the latch lock is lowered to a locking position. A hooked lever lies within the assembly and between the plates and depends into the plate projections for engagement with one of two space rods in the keeper. When this projection lies within the keeper in a locked position it exactly fills the keeper opening so as to retain the door against lateral play, fore and aft movement and vertical movement either down or up and thereby rigidly retains the door in its locked and lowered position. The hook lever that extends into the projection spring biased toward an open position and is lifted and latched by a projection on a bell crank lever as the door is seated with the latch projection in the keeper. A turn handle having a cylinder lock extends through the door and into the latch assembly and has a work arm that engages with the bell crank lever that can be turned when the cylinder lock is opened with a key so as to release the bell crank lever from the hook lever and allow thereby the door to be elevated and the projection out of the keeper.

3 Claims, 7 Drawing Figures



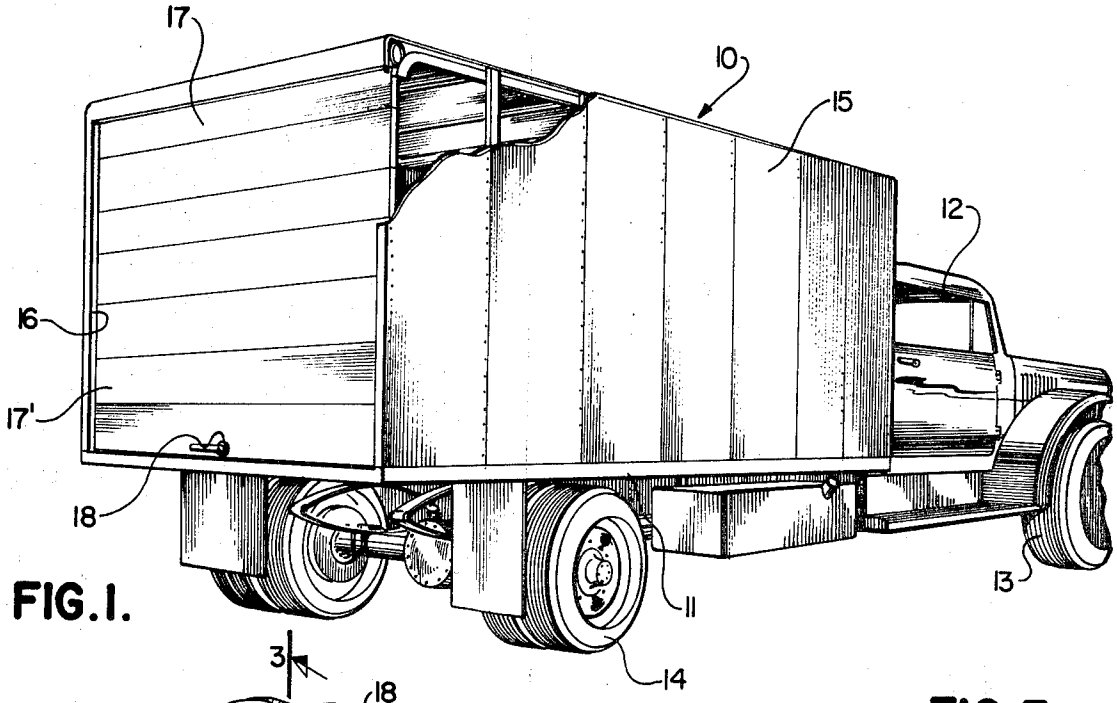


FIG. 1.

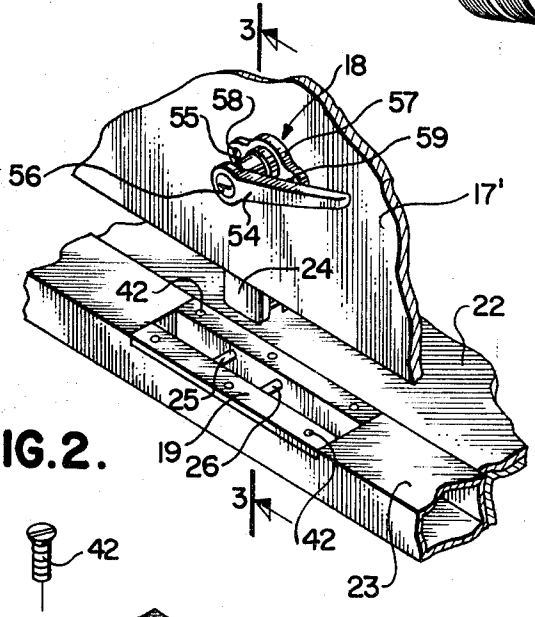


FIG. 2.

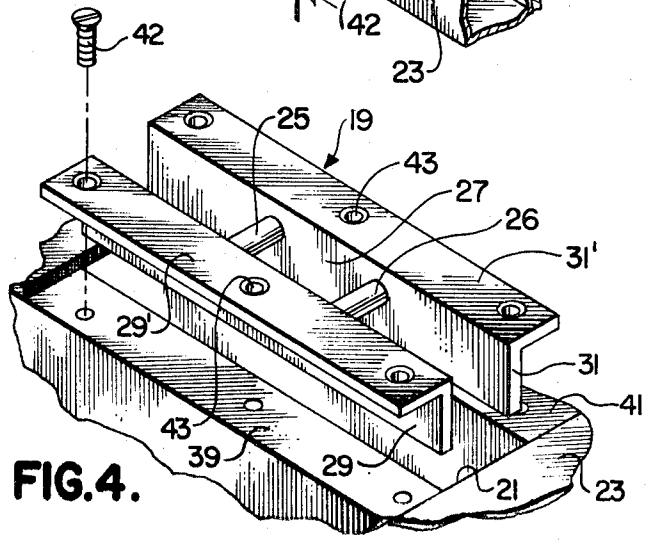
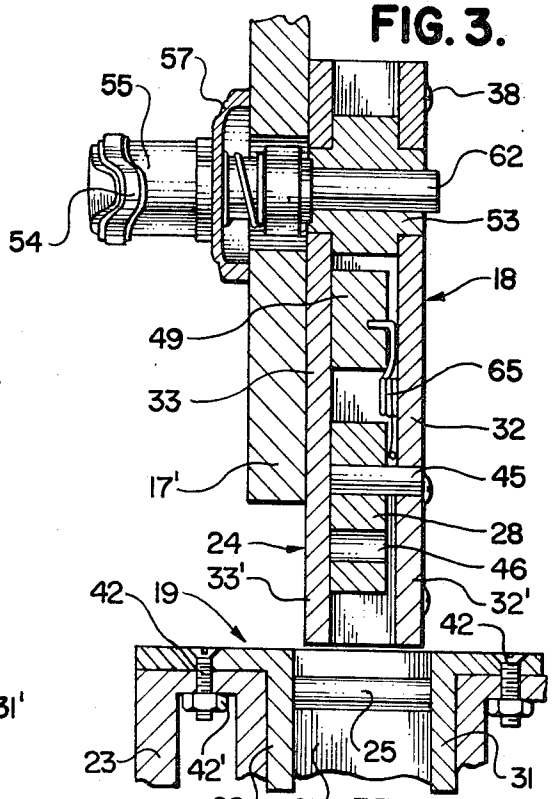


FIG. 4.

FIG. 3.



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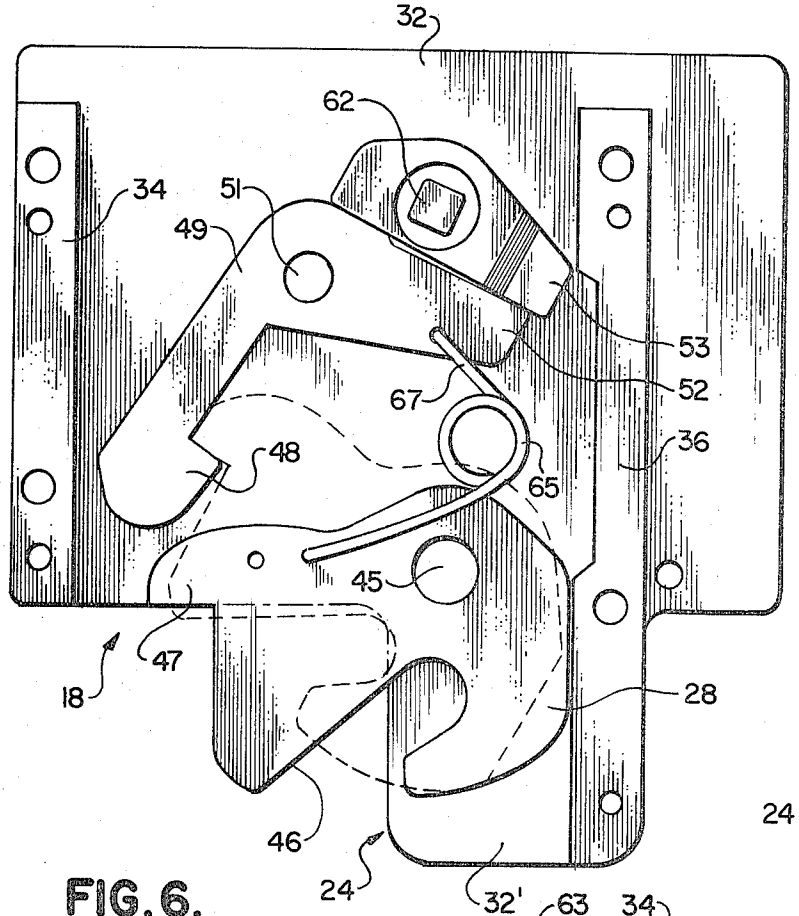


FIG. 6.

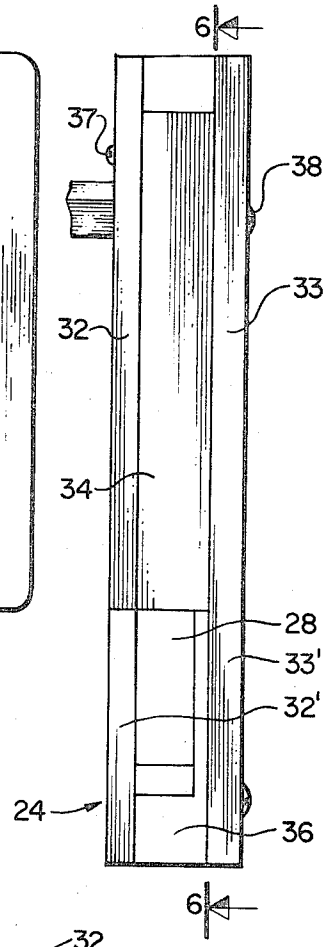


FIG. 5.

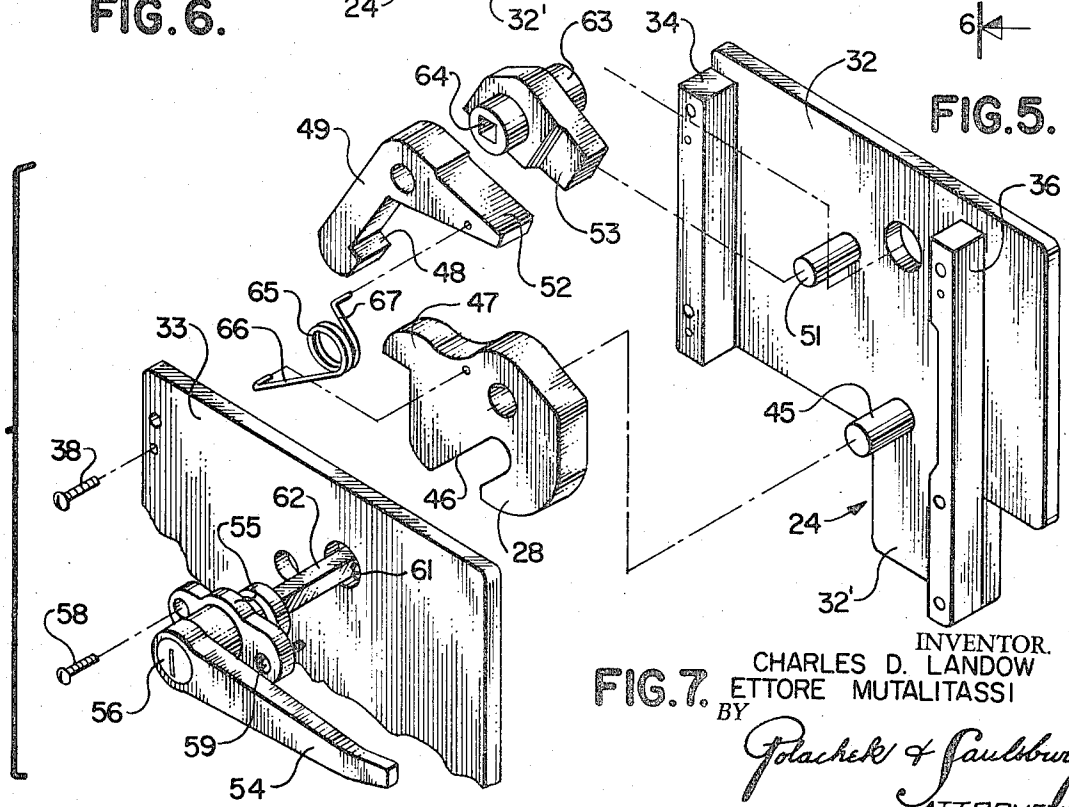


FIG. 7.

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LOCK LATCH ASSEMBLY FOR COUNTERBALANCED CARGO CARRYING VEHICLE DOORS

This invention relates to a latch lock assembly for counterbalanced doors for cargo carrying vehicle bodies and the like door arrangements.

It is an object of the present invention to provide a latch lock assembly for a counterbalanced door of a vehicle body that is biased by spring to be lifted wherein there is provided in the latch assembly a projection which will be fitted closely into a keeper opening or slot and wherein the hook lever will engage a rod at the side of the keeper slot so that this projection will serve to hold against horizontal displacement and lateral play as well as vertical movement to keep the door from vibration and noise.

It is another object of the present invention to provide a door latch assembly including a handle lever having a cylindrical lock which upon being unlocked will provide for the turning of a work arm against a latch lever which normally holds a hook lever in latch position against the action of a spring.

It is another object of the invention to provide a lock latch assembly that is easy to assemble upon a door and which can be concealed on the inner side thereof and such that access to the latch assembly or to the keeper can not be readily effected from the outer side of the door.

Other objects of the invention are to provide a latch lock assembly for counterbalanced doors for cargo carrying vehicle bodies, having the above objects in mind, which is of simple construction, inexpensive to manufacture, has a minimum number of parts, easy to install upon the door, durable, of pleasing appearance, effective and efficient in use.

For a better understanding of the invention, reference may be had to the following detailed description taken in connection with the accompanying drawings, in which:

FIG. 1 is a perspective view of a cargo carrying vehicle having a counterbalanced rear door gate employing the lock latch assembly embodying the features of the present invention.

FIG. 2 is an enlarged fragmentary collective front perspective view of the fragment of the door bearing the lock latch assembly and looking in top perspective upon the lock latch keeper member installed in the rear edge of the vehicle body floor, the door being lifted just above the keeper.

FIG. 3 is an enlarged vertical sectional view of the lock latch assembly and of the keeper as viewed on line 3—3 of FIG. 2.

FIG. 4 is an enlarged collective and perspective view of the keeper slightly removed from its opening in the vehicle floor.

FIG. 5 is a side elevational view of the lock-latch assembly removed from the door.

FIG. 6 is a vertical view of the lock-latch assembly, looking in plan into the casing thereof and with one casing plate removed, this view being taken on line 6—6 of FIG. 5.

FIG. 7 is an exploded perspective view of the parts of the lock-latch assembly removed from the door, without the showing of the keeper.

Referring now to the figures, 10 represents a cargo carrying vehicle having a bottom supporting frame chassis 11 with a front cab 12 and with front and rear supporting wheels 13 and 14. Upon this chassis 11 is a closed cargo body 15 to which access is had through a rear opening 16 which may be closed by a counterbalanced door 17 that is pulled downwardly to close the rear opening 16 and which will be latched automatically with the door being lowered or pulled down so as to effect the automatic latching of the lock latch assembly 18 with a keeper 19 mounted in an opening 21 at the rear of vehicle floor 22 and in a transverse hollow end sill member 23. When the door iss pulled down projection 24 of the lock latch assembly enters the keeper 19 between transversely spaced rods 25 and 26. The projection 24 depends from the underside of the lower edge of the door 17 and is of a width suitable to be tightly kept in space 27 between the rods 25 and 26 and with the latch lock assembly 18 being rigidly mounted within the door 17, side play of the door laterally within the opening 16 of the vehicle body is prevented. With a hook latch element extending into the projection 24 and adapted to engage rod 25 to hold the door against upward movement, such latch being indicated at 28 and interlocking with the rod 23, it will be seen that the latch lock assembly 18 rigidly secured to the door 17 is further held against upward direction, the projection 24 thereby being held against lateral movement and also against upward displacement. It will also be apparent that the latch lock projection 24 extending below the lower edge of the door 17 is further held solidly against a fore and aft direction as between plates 29 and 31 of the latch lock keeper 19 lying within the rear rail 23 of the vehicle floor 22. The only further direction in which this locking can be effected and to prevent any vibration or movement of the door 17 relative to its engagement with the vehicle floor is with the lower edge of the door 17 lying flush against the rear rail 23. It will thus be seen that the latch lock assembly through its depending solid projection 24 and with its hook latch 28 that the lower edge of the door 17 is positively locked in all directions, six directions in fact, and resembling the locking of a cube-shaped shell.

The latch lock assembly 18 comprising two side mounting plates 32 and 33 held in spaced relationship from one another by downwardly depending short and long spacing members 34 and 36, the spacing member 36 depending into the projection 24 and serving as a portion thereof as can be best seen in FIGS. 5 and 6. The plate 32 having an integral depending projection 32' and the plate 33 having a similar dimension projection 33', the widths of these projections being as explained above being such as to be guided and tight fitted into space 27 of the lock latch keeper 19 and such as to prevent lateral play of the lock down door 17. These plates 32 and 33 are held in rigid assembly with the spacing members 34 and 36 and all with one another to provide for a rigid casing assembly, housing the lock parts to be presently described, by fastening screws or by rivets as indicated at 37 and 38. The latch lock assembly 18 is similarly secured as by welding or by any other suitable manner to bottom transversely extending plate piece 17' with the centering projection of the lock assembly depending from the lower edge

thereof as best seen in FIG. 3. The keeper 19 is held in place by flanges 29' and 31' which are seated respectively in depressions 39 and 41 in the top of the transverse rear rail 23 by a plurality of fastening screws 42 adapted to enter holes 43 in the depressed bottoms of the depressions 39 and 41 of the rail 23 and held in place respectively by nuts 42'.

The hook latch lever 28 is pivoted upon a pin 45 carried between the plates 32 and 33 and has an inclined hook slot 46 for receiving the rod 25 and a latch lug portion 47 providing a shoulder for receiving a bell crank latch projection 48 of a bell crank lever 49 pivoted on a pin 51 between the plates 32 and 33 and having a laterally extending work arm 52 with which cylinder lock handle lever 53 engages at the top thereof and operated by a lock handle 54 within stud axle 55 of which is a cylinder lock 56 that can engage with a fixed body 57 that is held against rotation on the face of the door part 17' by laterally spaced fastening screws 58 and 59. This handle lever 54 extends through a hole 61 in plate 33 of the lock latch unit and its square section shank 62 extends into a bushing 63 having square openings 64 of the work arm 52 so that the handle 54 can turn the work arm 52 to release the latch parts when the key within the key tumbler 56 has unlocked the handle 54 from the fixed body 57 on the bottom door part 17'.

With the handle 54 being made free, the arm 53 can be turned clockwise as viewed in FIGS. 6 and 7, so as to depress the arm 52 of the bell crank lever 49 and unseat the projection 48 from the shoulder portion 47 of the hook latch 28 so that the hook latch 28 is released from the bell crank 49 and the hook latch 28 will release from its slot 46 the rod 25 of the keeper 19.

A coil spring 65 extends between the latch lever 28 to its connection of its arm 66 therewith and the work arm 52 of the bell crank lever 49 through its connection of its arm 67 therewith. This spring 65 normally biases the hook lever 28 in its unlatched position, but upon the engagement of the hook lever 28 with the rod 25 as the door and the latch assembly is moved downwardly the hook lever 28 is pivoted in a clockwise direction as viewed in FIG. 6, so that engagement is made of its shoulder portion 47 with the projection 48 of the bell crank lever 49, which cannot turn because of the engagement of the handle work arm 53 with the work arm 52 at the top thereof and with the cylinder lock 56 within the handle 58 being in a locked position. The hook latch 28 would have been rotated between a full lined position as shown in FIG. 6 to a dotted line position shown therein and will remain in hook engagement with the keeper rod 25 until a key is used to release the cylinder lock 56 of the handle 54 and to allow the work arm 53 on the square axle 62 to turn the bell crank lever 49 for release of its projection 48 from the shoulder 47 on the hook lever 28.

It should be apparent that the latch lock assembly 18 when mounted on the door 17 so that its extension 24 lies therebelow serves as a means particularly through the extension 24 of guiding the door to its lowered position and such that it can be held when once latched over a rod member 25 against lateral play, against upward pull upon its hook latch 28, against fore and aft displacement by virtue of the spacing of the plates 32 and 33 so as to fill the space 27 in the keeper solidly, so that the door 17 when latched in the rear rail 23 is held through its lock latch against movement in three directions. The hook latch 28 when rotated to its locking position measures the distance between the center of the axis of the rod 25 and the underface of the door edge so that there cannot possibly be any downward play of the door toward the keeper or any upward play of the door from the keeper rod 25. This gives the latch lock assembly a further use and advantage over an ordinary hook latch for merely engaging a keeper rod. With this construction flush engagement of the projection 24 is had from six directions with respect to the keeper 19.

While various changes may be made in the detailed construction it shall be understood that such changes shall be within the spirit and scope of the present invention, as defined by the appended claims.

What is claimed is:

1. A lock latch for counterbalanced cargo carrying vehicle doors comprising a lock latch lever assembly adapted to be fixedly secured to the bottom run of a door, a lock handle connected to the assembly for effecting the release of the assembly, said lock latch assembly including spaced plates with projections depending from the lower edge of the door, a hook latch lever pivoted between the plates and extending downwardly between the depending projections thereof, and a keeper assembly comprising side members spaced from one another and spacing rod members lying between the spaced side members, said spacing rod members and side members providing a space for confining the lock latch assembly projection in width, depth and height and said hook latch lever adapted to engage one of the spacing members and when in engaged position said projection up to the bottom edge of the door is fully confined within the space provided in the keeper member so as to prevent horizontal and vertical movement in all six planes as taken through the faces of a cube.

2. A lock latch for counterbalanced cargo carrying vehicle doors, as defined in claim 1, and said lock latch assembly secured to the door further including a bell crank lever having a shoulder projection and said hook latch lever having a shoulder portion engageable by the shoulder projection of the bell crank lever, spring biasing means extending between the two levers to normally urge the hook latch lever to a released position, and said handle having a work arm and engageable with an arm of the bell crank lever for effecting when turned release of the hook latch lever from the bell crank lever against the action of the spring and said handle having a cylinder lock for normally in the lock position prohibiting a turning movement of the handle and its work arm relative to the door and the lock latch assembly.

3. A lock latch for counterbalanced cargo carrying vehicle doors, as defined in claim 2 and said keeper assembly comprising angle section plates having depending sides forming said side members, said spacing members being round rods spaced apart the transverse width of the latch lock projection, said hook latch lever having an inclined slot for receiving the rod and said angle section members having flanges adapted to be seated in recesses in transversely extending rear edge rail of the vehicle floor and bolt and nut means for securing the keeper assembly to the rear floor rail.

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