March 6, 1962 D. G. THOEL 3,023,451

END GATE LATCH AND HINGE

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FIG. 1

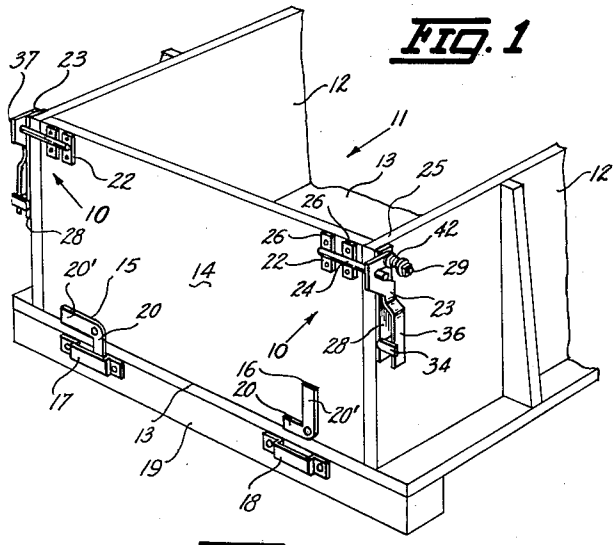


FIG. 2

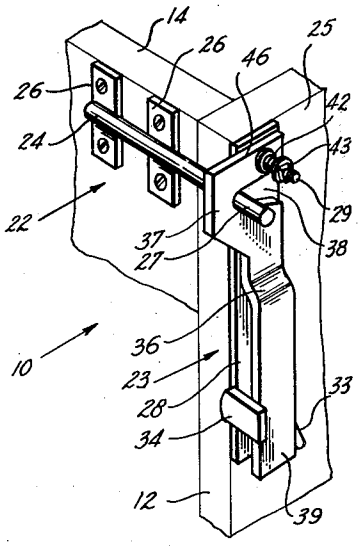


FIG. 4

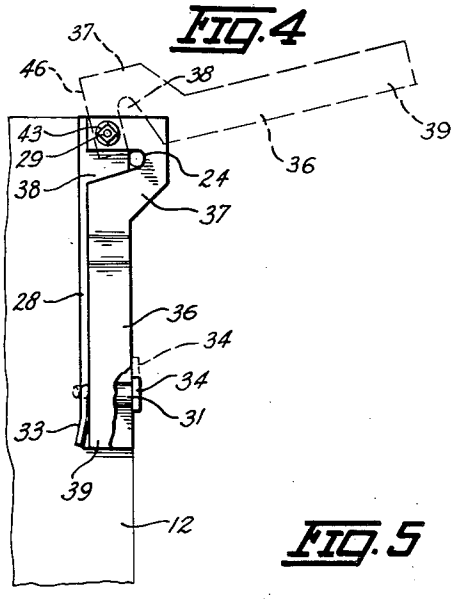


FIG. 3

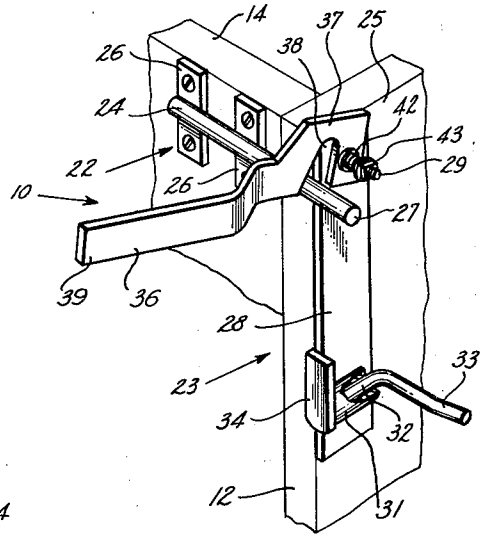
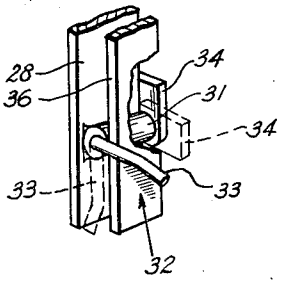


FIG. 5



INVENTOR.
DELMAR G. THOEL
BY
Lowell & Henderson
ATTORNEYS.

United States Patent Office

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END GATE LATCH AND HINGE

Delmar G. Thoel, R.R. 2, Manson, Iowa

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This invention relates to wagon boxes and the like and is particularly directed to a latch assembly for securely holding the end gate of a wagon box in a locked position.

An object of this invention is to provide a latch assembly for locking an end gate to the sidewalls of a wagon box, which permits quick and easy removal of the end gate from its locked position.

Another object of this invention is to provide a latch assembly for the aforementioned purpose which eliminates any binding between the sidewalls and the end gate upon removal thereof.

A further object of this invention is to provide a latch assembly wherein the use of one or more tools to operate the latch assembly is eliminated.

Yet another object of this invention is to provide a latch assembly of the type and for the purpose hereinbefore mentioned, wherein an end gate for a wagon box which is adapted to be free at its bottom, is supported at its top for pivotal swinging movement by the latch assembly.

Other objects, features and advantages of this invention will become readily apparent by reference to the following description, when taken in conjunction with accompanying drawing, wherein:

FIG. 1 is a fragmentary, perspective view of the rear portion of a wagon box showing a pair of latch assemblies of this invention in assembled relation therewith;

FIG. 2 is an enlarged, fragmentary perspective view of one of the latch assemblies of FIG. 1, and showing the latch assembly in the end gate locking position;

FIG. 3 is a view similar to FIG. 2, but wherein the latch assembly is shown in the end gate released position, and with certain parts broken away for the purpose of clarity;

FIG. 4 is an enlarged, side elevational view of the other latch assembly of FIG. 1, with parts broken away for the purpose of clarity, and showing alternate positions of a latching lever; and

FIG. 5 is an enlarged, fragmentary perspective view of a detail portion of the latch assembly, and showing the portion in alternate positions.

With reference to the drawing, a pair of latch assemblies, indicated generally as 10 in FIG. 1 are shown in assembled relation with a conventional wagon box 11 or the like, the box having sidewalls 12, a bed or bottom 13, and an end gate 14.

The end gate 14 extends between the sidewalls 12 and rests on the bottom 13 of the wagon box. To secure the bottom edge of the end gate to the wagon box, a pair of pivotal catch members 15 and 16 are provided for coaction with a pair of U-shaped brackets 17 and 18, respectively, which are secured to the rear side of an end sill 19 for the wagon box. Each pivot member 15 and 16 is right angular in shape whereby one leg 20 serves as a catch for pivotal movement into and out of locking engagement with a corresponding bracket 17 and 18, while the other leg 20' of a pivot member functions as a manipulating handle. In FIG. 1, the pivot member 15 is shown in an engaged position and the pivot member 16 is shown in a disengaged position relative to a corresponding bracket.

The upper part of the end gate 14 is removably attachable to the sidewalls 12 by means of the latch assemblies 10, each of which comprises generally a catch unit 22 (FIG. 2) and a latching unit 23. The catch unit 22 comprises an elongated catch rod 24 carried on a pair of brackets 26 which are secured to the rear side of the end gate 14 adjacent its upper end. One end 27 of the rod 24 projects laterally outwardly of the gate 14 so as to extend across the rear end of a respective sidewall 12 of the wagon box 11.

The latching unit 23 comprises a relatively flat supporting bracket 28 secured to the upper rear corner 25 of each sidewall 12, and includes a pivot or hinge bolt 29 secured at its top and extended laterally outwardly therefrom. The bolt 29 extends parallel to but is arranged slightly higher and forwardly from the rod 24 (FIG. 4). A short tubular member 31 (FIG. 3), secured adjacent the bottom of the bracket 28, rotatably supports a unitary pivot member 32 which includes an outwardly bent handle 33 at one end and a flat stop 34 at the other end, with the handle 33 and stop 34 being arranged ninety degrees apart relative to the pivot 32.

Pivotally mounted to the bracket 28 at the bolt 29, is an elongated latch lever 36 of an irregular shape, and which includes a hooked end 37 formed with a V-shaped notch or slot 38 (FIG. 4), and a handle end 39 offset laterally from the hooked end 37 to provide for reception of the pivot member 32 between the bracket 28 and the handle 39, when the latch lever 36 and bracket 28 are in longitudinal alignment.

The hooked end 37 of the latching lever 36 is yieldably held against the bracket 28 by a compression spring assembly comprising a coil spring 42 mounted about the pivot 29 and maintained in compression between the end 37 of the lever 36 and a nut assembly 43 on the outer or free end of the hinge or pivot bolt 29. Adjustment of the nut assembly 43 provides for a variation in the pressure of the spring 42 applied against the hooked end 37. Of note, the bolt 29 passes through an opening provided therefor in the hooked end 37 of the lever 36 between the slot 38 and the top 46, and the bolt 29 is located approximately on the longitudinal axis of the main portion of the lever 36.

In the operation of the latch assembly, assuming a latch assembly 10 is holding the end gate 14 in a closed manner (FIG. 1), the latching lever 36 is depending from the pivot bolt 29 in a substantially parallel, side-by-side position with the bracket 28 as best shown in FIGS. 2 and 3. It is noted that the outer end 27 of the catch rod 24 is securely nested in the slot 38 of the latch lever 36, thus preventing the lever 36 from pivotally moving in a clockwise direction from the solid line position of FIG. 4.

To maintain this side-by-side locking position of the lever 36 relative to the bracket 28, and to prevent the end gate 14 via the catch rod 24 from forcing the lever 36 counterclockwise or to the dotted line position of FIG. 4, the coil spring assembly is appropriately adjusted. As a safety means to aid the spring 42, the pivot member 32 is turned to the position best illustrated in FIG. 2. Thus the handpiece is moved to a depending position so that the stop piece 34 extends across or in the path of movement of the handle end 39 of the lever 36. This of course prevents the lever 36 from pivoting rearwardly, or clockwise as viewed in FIG. 2, or counterclockwise as viewed in FIG. 4.

It is of interest that when both latch assemblies 10 are in their latched or end gate holding positions of FIGS. 1 and 2, should the pivot members 15 and 16 be disengaged so that the bottom of the end gate is free to move, the end gate is pivotally swingable either way on the catch rods 24. This arrangement is particularly advantageous for unloading purposes where objects of less height than the end gate are being carried in the wagon box 11.

To provide for a removal of the end gate 14 from the

remainder of the wagon box **11**, the handpiece **33** of the pivot member **32** is merely turned upwardly approximately ninety degrees (FIGS. 3 and 5), so as to turn the stop piece **34** accordingly to an upstanding position (FIGS. 3 and 5). The stop piece **34** is thereby removed from the path of the locking lever **36**, and by manually grasping the handle **39**, the lever **36** can then be pivoted upwardly (FIGS. 3 and 4) against the compression of the coil spring **42**, until the catch rod **24** is completely released of the hooked end **37** and free of the slot **38**. The end gate **14** can then be pulled away, assuming the pivot members **15** and **16** are disengaged.

In summary, it can readily be appreciated that this invention discloses a latch assembly of a simple, economical structure which permits an easy locking and a bind-free removal of an end gate without the use of tools.

Although a preferred embodiment of this invention has been disclosed herein, it is to be remembered that various modifications and alternate constructions may be made thereto within the full scope of the invention as defined in the appended claims.

I claim:

1. A latch assembly for the end gate of a wagon box having a pair of sidewalls and a bottom wall, said latch assembly comprising, catch means mounted adjacent the upper end of said gate and including a rod a portion of which is extended laterally beyond one of said sidewalls, a substantially flat bracket plate mounted on a sidewall adjacent said rod portion, a lock lever pivotally mounted to said bracket plate and having a slot formed therein intermediate the ends thereof, said slot adapted to receive said rod portion when said lock lever is in a side-by-side position with said bracket plate, said rod being rotatable relative to said lock lever while received in said slot whereby said end gate is swingably supported on said lock lever for movement of its bottom end toward and away from said bottom wall, means pivotally mounted on said bracket plate and manually movable about an axis normal to the pivotal axis of said lock lever to a position for maintaining said lock lever in said side-by-side position, and means for detachably connecting the bottom end of said end gate with said wagon box.

2. A latch assembly for the end gate of a wagon box having a pair of side walls between which the end gate is disposed, a rod mounted on the end gate adjacent an upper corner thereof and extended past the end of a side wall and laterally beyond the side wall, a substantially flat bracket plate mounted on a side wall, a substantially flat lock lever pivotally mounted to said bracket plate and

having a slot formed therein adapted to receive the extended portion of said rod upon movement of said lock lever to a side-by-side position with said bracket plate, said rod being rotatable within said slot whereby said end gate is swingably supported on said lock lever for movement of its bottom end, means for locking said lock lever in said side-by-side position comprising a tubular member secured to said bracket plate, the axis of said tubular member extended normal to the pivotal axis of said lock lever, and a pivotal member rotatably mounted in said tubular member, said pivotal member having a pair of angularly extended ends external said tubular member, and one end of which is adapted to be moved by actuation of the other end thereof into or out of the path of said lock lever.

3. A latch assembly for the end gate of a wagon box having a pair of side walls between which the end gate is disposed, a horizontally disposed rod mounted on the end gate at an upper corner thereof and extended laterally past the end of the side wall and beyond the side wall, a lock lever pivotally connected to the side wall for movement adjacent to and parallel with the side surface of the side wall, said lock lever having a slot formed therein adapted to receive the extended portion of said rod upon movement of said lock lever to a side-by-side position with the side wall, said rod being rotatable within said slot whereby said end gate is swingably supported on said lock lever for movement of its bottom end, means for locking said lock lever in said side-by-side position comprising a tubular member secured to said bracket plate, the axis of said tubular member extended normal to the pivotal axis of said lock lever, and a pivotal member rotatably mounted in said tubular member, said pivotal member having a pair of angularly extended ends external said tubular member, and one end of which is adapted to be moved by actuation of the other end thereof into or out of the path of said lock lever.

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