Oct. 18, 1932. E. R. BARRETT 1,883,473

ADJUSTABLE TAIL GATE

Filed Dec. 21, 1928 3 Sheets-Sheet 1

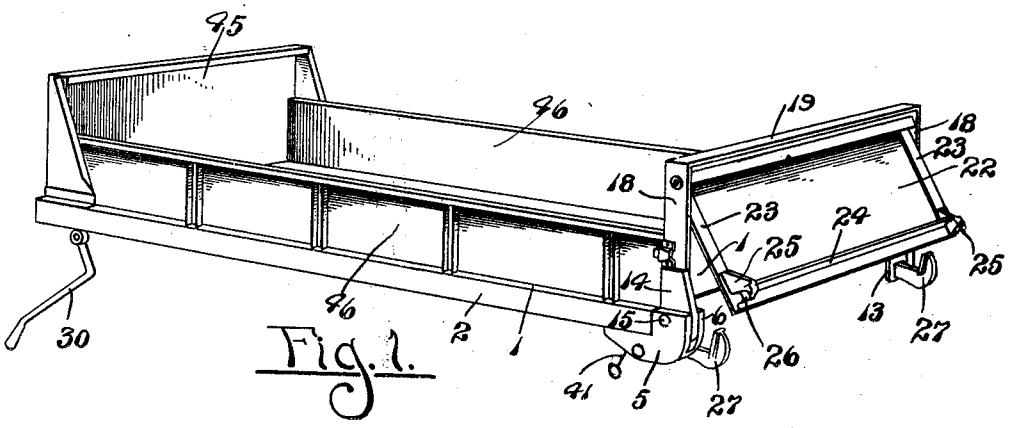

Fig. 1.

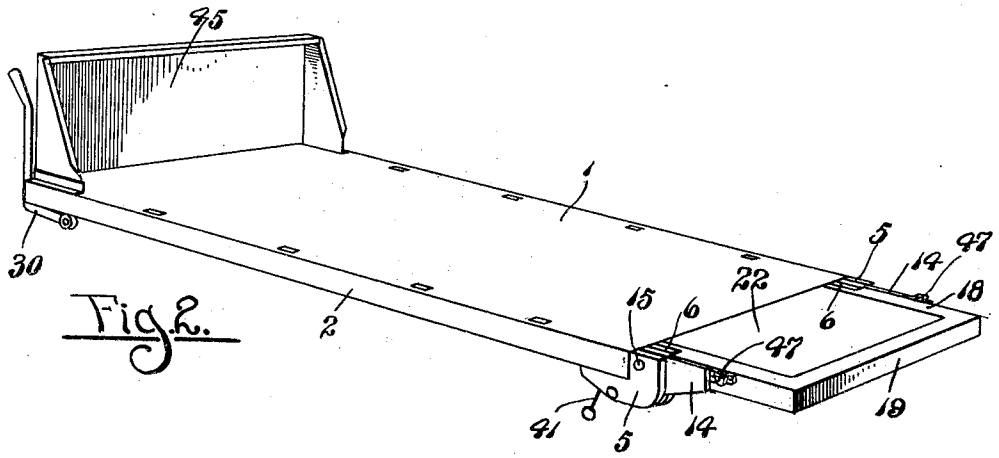

Fig. 2.

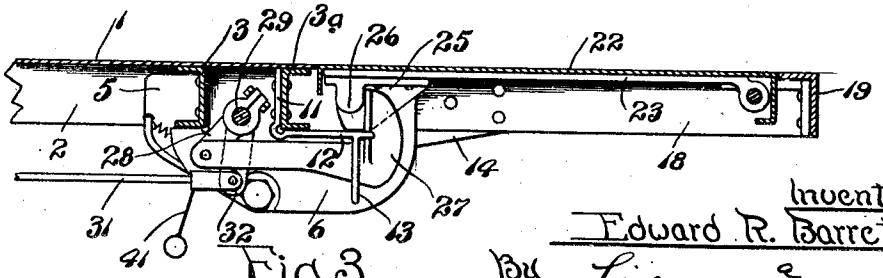

Fig. 3.

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ADJUSTABLE TAIL GATE

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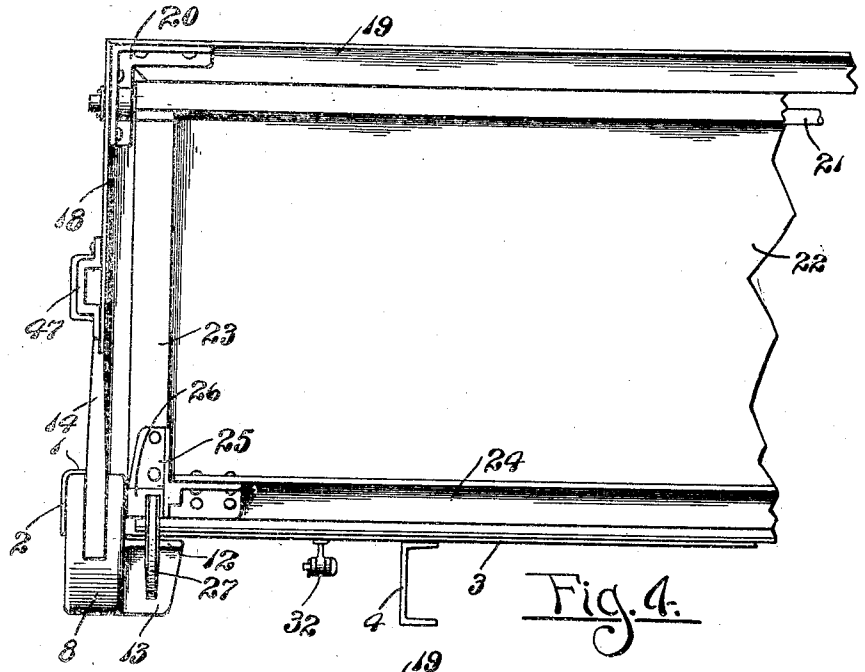

Fig. 4.

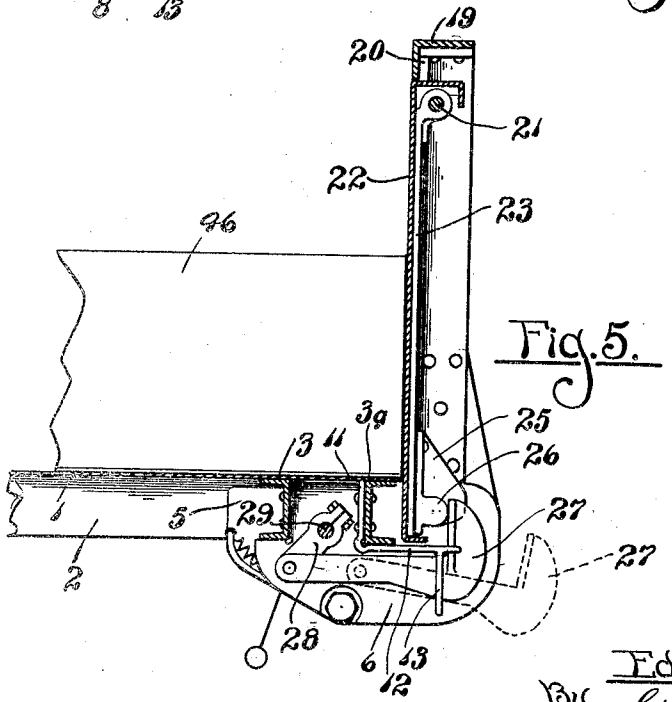

Fig. 5.

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ADJUSTABLE TAIL GATE

Filed Dec. 21, 1928 3 Sheets-Sheet 3

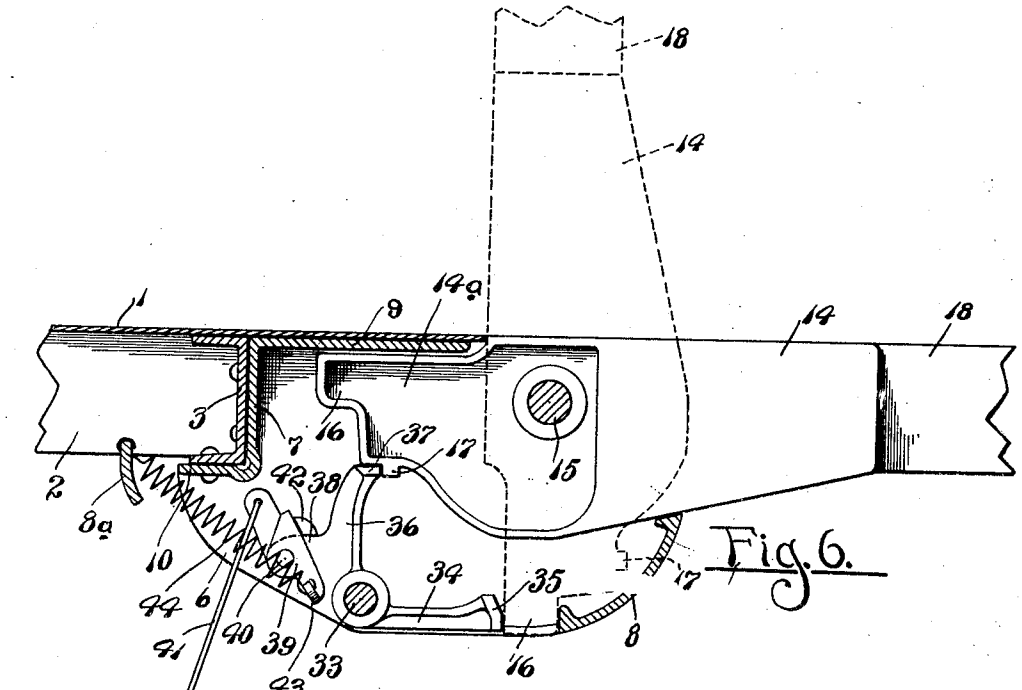

Fig. 6.

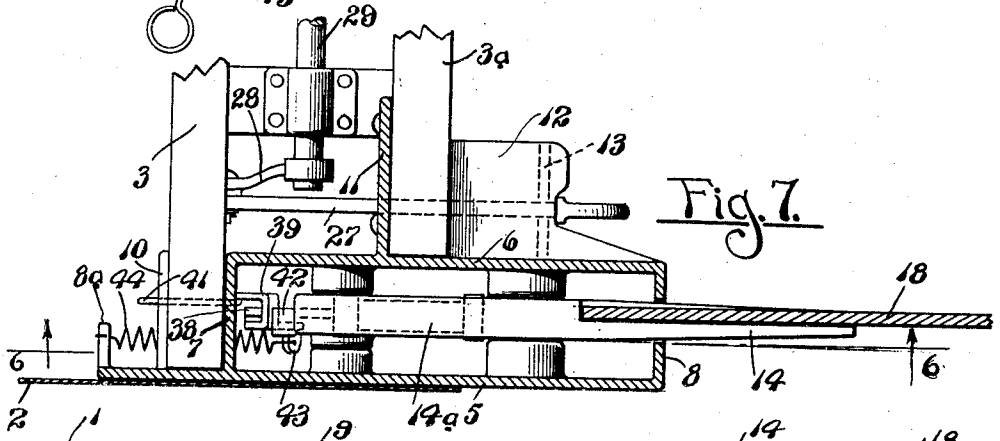

Fig. 7.

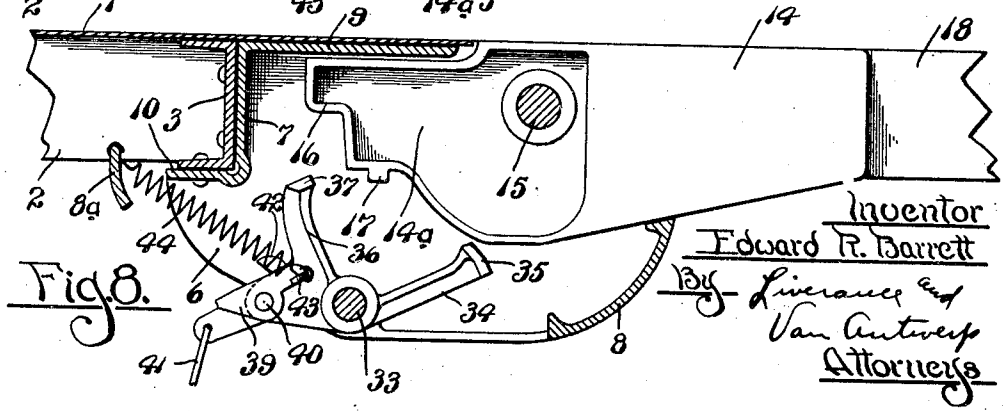

Fig. 8.

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UNITED STATES PATENT OFFICE

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ADJUSTABLE TAIL GATE

Application filed December 21, 1928. Serial No. 327,700.

This invention relates to convertible truck bodies and is particularly concerned with an adjustable tail gate construction which may be used with truck bodies and which may occupy either a vertical or horizontal position. In the vertical position the tail gate construction together with a vertical front to the body and spaced apart side members forms a body capable of carrying loose material which may be readily dumped by unlatching the tail gate proper and elevating the body at the front. In the horizontal position the tail gate construction lies in the same plane with the bottom of the body, its upper side being flush with the upper side of the bottom, whereby the capacity of the body may be increased or articles which do not require sides to hold them in place on the body may be carried, the body being extended in length for greater capacity and such articles, particularly when heavy and cumbersome, readily removed from the body by moving the same rearwardly over the tail gate construction. The sides to the body are detachably connected to the bottom so that they may be removed when desired and replaced by longer sides which can be used when the body is extended.

The present invention consists of many improvements in the type of convertible vehicle body previously patented to me December 12, 1924 and having No. 1,517,697. The present construction is of a simpler, stronger and more durable character, more readily operated for changing from one form of vehicle body to the other, is one which is easily manufactured and installed and has no parts liable to be injured in service, and is combined with the tail gate latches in a novel manner so that the latch will serve its purpose to hold the tail gate closed when said tail gate element is in vertical position and will help to support the tail gate proper against downward movement when it is in horizontal position. All of these additional and novel features of construction will be apparent upon understanding of the invention from the following description taken in connection with the accompanying drawings, in which,

Fig. 1 is a perspective view of the convertible body construction of my invention showing the same with the tail gate in vertical position and with sides applied.

Fig. 2 is a perspective view with the tail gate construction forming an extension to the bottom of the body and with the sides removed.

Fig. 3 is a fragmentary longitudinal vertical section through the rear part of the construction shown in Fig. 2.

Fig. 4 is a fragmentary enlarged rear end elevation of the body with the tail gate closed and latched in its vertical position.

Fig. 5 is a fragmentary transverse vertical section through the construction shown in Fig. 4, the section being taken longitudinally of the body.

Fig. 6 is a fragmentary enlarged vertical section substantially on the plane of line 6—6 of Fig. 7.

Fig. 7 is a fragmentary enlarged plane and horizontal section through the construction at one rear corner of the body, and

Fig. 8 is a view similar to that shown in Fig. 6, illustrating the method of operating the latches which automatically function to secure the tail gate construction in either of the positions to which it may be adjusted.

Like reference characters refer to like parts in the different figures of the drawings.

The body includes a horizontal bottom 1 of metal which at its longitudinal side edges is turned downwardly providing the side flanges 2. The body is supported on a plurality of cross members 3, preferably of channel iron which in turn are permanently secured to longitudinal sills 4 likewise of channel form.

At each rear corner of the bottom of the body a hollow member in the form of an integral casting is located and secured. This member includes spaced apart outer and inner vertical sides 5 and 6 connected adjacent their front ends by a vertical web 7 which is located a short distance back of the front end of the outer side 5, as shown in Fig. 7. The sides 5 and 6 are further connected at the rear and under sides by a cross web 8 and at the upper side by an upper horizontal web 9 over which the rear portion of the bottom 1 extends as best shown in Fig. 6. A hori-

zontal ledge 10 extends forward from the lower edge of the web 7 and lies between the two sides 5 and 6 of the casting and one of the cross channels 3 supporting the bottom of the body is located in front of the web 7 above said ledge 10 and permanently secured thereto, it being apparent that the cross member 3 is thus connected at its opposite ends to the hollow members located one at each rear corner of the bottom of the body.

At the inner side of the inner side 6 of each of said hollow members a vertical flange 11 is integrally cast together with a horizontal flange 12 which joins at its front edge with the lower edge of the flange 11 and from which a vertical part 13 extends downwardly adjacent the rear edge of the flange 12. A cross connecting channel 3*a* lies at each end above the flanges 12 of the two members and against the rear side of the flanges 11 and is permanently secured thereto (see Figs. 5 and 7). In this manner the two rear corner members described are very securely and permanently connected with the body and are supported by the channels 3 and 3*a* as fully shown in Fig. 7.

Each of the hollow members at the rear corners of the body are slotted at their upper rear portions horizontally back of the web 9 and vertically downward for a distance in the cross web 8. An arm 14 extends through said slot and is pivotally mounted between its ends on a suitable stud 15 located between the sides 5 and 6 of the member. Each of the arms 14 is provided with an extension 14*a* located forward of the pivot when the arm is in horizontal position, to pass underneath the web 9, and which is provided with two projecting lugs 16 and 17, (see Figs. 6 and 8) the purpose of which will later appear. To each of the arms 14 a side bar 18 is permanently secured, the outer ends of the bars 18 being connected with a horizontal cross bar 19, suitable brackets 20 being used at the corners in effecting the connection of the bars 18 with the bar 19 (see Fig. 4). This provides a frame for mounting the tail gate for the body.

The tail gate is mounted for rocking movement on a cross shaft 21, the ends of which are received in suitable bearings in the brackets 20. The tail gate consists of a plate 22 of metal, of the form shown in Figs. 3 and 5, reinforced at its side edges by bars 23 and at its bottom edge by an angle bar 24. The tail gate may swing back and forth about the axis of the rod 21 and thus permit discharge of material carried by the body when the same is tilted at its forward end upwardly at an angle to the horizontal.

At each lower corner of the tail gate a bracket 25 is permanently secured of the form shown in Fig. 4 and which includes an integral rearwardly projecting boss 26 the rear sides of which are of curved form with a horizontal axis substantially coincident with the axis of the studs 15 on which the arms 14 are pivotally mounted.

Tail gate latches 27 pass through slots made in the downwardly extending flanges 13 and are connected at their front ends with arms 28 permanently secured to and extending downwardly from a rock shaft 29 which is adapted to be manually operated from the front of the body by a lever 30 connected with the rock shaft through the rod 31 and the arm 32 extending downwardly from the shaft as shown in Fig. 3. This method of operating a rock shaft is old and well known and by moving the lever 30 between its two extreme positions the latches 27 may be moved from operative latching position, as shown in full lines in Fig. 5, to the inoperative releasing position as indicated in dotted lines in Fig. 5.

It is evident that the tail gate frame with the tail gate mounted thereon may be swung through an arc of 90° from vertical to horizontal position. In its vertical position it will be stopped by the lug 16 coming against the front edge of the cross web 8 as shown in Fig. 6, and in its horizontal position the forward extension 14*a* of the arm 14 comes underneath the web 9 while the rear part of the arm bears against the upper edge of the cross web 8. By reason of the curved form of the bosses 26 on brackets 25 the tail gate construction may swing between its two extreme positions with the tail gate latches in latched position, the surfaces of the bosses 26 riding against the front faces of the tail gate latches 27.

A latch for each of the arms 14 is mounted in each of said hollow corner members on a cross stud or shaft 33 below and in front of the pivot stud 15 for the arm. This latching device includes a rearwardly extending arm 34 terminating at its free end in a head 35 and a vertically extending arm 36 having a head 37 at its free end and from which an ear 38 extends forward. The latch is mounted for free rocking movement on the stud 33.

An operating lever 39 is pivotally mounted between its ends on a pivot 40 on said ear 38. This operating lever is in the form of a stamping made in U-shape to embrace the ear 38 and at its forward end is equipped with a wire or rod 41 which extends downwardly and terminates in a finger receiving loop as shown. The lever 39 is limited in its movements by engaging against the sides of a lug 42 cast integral with and projecting to one side of the ear 38. That is, the lever 39 when moved to one position, as shown in Fig. 6, engages against one side of the lug 42 and when moved to another position, as shown in Fig. 8, engages at another point against the other side of said lug. An ear 43 projects laterally from the rear end of the lever 39 to which one end of a coiled tension spring 44 is connected, the op-

posite end being connected to a laterally extending projection 8a formed at the front end of the side 5 of the corner casting.

When the arm 14 is in horizontal position as shown in Fig. 6, the head 37 of the arm 36 of the latching member bears against the lug 17 on the arm 14 and is drawn thereagainst by the spring 44 which, tending to turn lever 39 in a clockwise direction, presses the same against the lug 42 and thereby tends to turn the latching member in a clockwise direction. The arm 14 is accordingly held securely against any tendency to jump upward should the vehicle carrying the body be passing over rough roads and is firmly latched against undesired movement.

To release the arm 14 a downward pull is made upon the operating wire or rod 41 which turns the lever 39 to the position shown in Fig. 8, the line of force of spring 44 passing from below to above the pivotal axis of the pivot 40 whereby there is a tendency of the spring to turn lever 39 in a counter-clockwise direction bringing the same against the opposite side of the lug 42 and tilting the latching member to the position shown in Fig. 8. This releases the arm 14 so that it may be turned to its upper vertical position. Accordingly, should the tail gate construction be in the horizontal position shown in Fig. 2, the operating rods 41 at the two sides of the body are pulled downwardly releasing the latches, whereupon the tail gate construction may be turned to upper vertical position. As the tail gate construction is turned to the vertical position the end of lug 16 rides against the upper side of the arm 34, forcing said arm 34 to a position below the lower side of the corner casting in which it is mounted, riding over the head 35; and as soon as lug 16 passes by said head the spring 44 tends to return the latching member to the position shown in Fig. 6 and bring the outer side of the head 35 against the front side of said lug 16 as shown in the dotted line position in Fig. 6. The tail gate construction is thereupon held securely in its vertical position against any tendency to drop to the horizontal. To release the latches for turning the tail gate construction to horizontal position the operating rods 41 are pushed upwardly, it being understood that the latch levers are then rotated downwardly in a clockwise direction relative to the showing of Fig. 6, until the heads 35 on the arms 34 permit the lugs 16 to pass over the same. These lugs 16 now cam past the other arms 36. Next, the springs 44, being positioned as shown in Fig. 6, cause the heads 37 to engage lugs 17 thus locking the tail gate in its lower position.

It is evident accordingly, that there has been provided an improved, easily operated, durable and efficient construction for converting a vehicle body into the two forms described and one in which the latches for holding the arms 14 in either position are very simply operated by pulling downwardly on the rods 41 for one unlatching movement and pushing upwardly on the same for the other unlatching movement. The sides 46 for the body are equipped with side stakes received at their lower ends in sockets in the bottom 1 and, together with the front 45 of the body, complete the body in its short form. When the tail gate construction occupies the horizontal position shown in Fig. 2 other long sides may be used if desired, and sockets 47 are applied to the sides of the tail gate construction to receive the end stakes of the body sides.

The invention described has proved particularly practical and serviceable. The invention is defined in the appended claims and is to be considered comprehensive of all forms of structure coming within their scope.

I claim:

1. A vehicle body including, a bottom, and an end gate construction pivotally mounted thereon to move from a position in which it constitutes a closure for the end of the body to another position in which it forms an extension to said bottom, latching means automatically engageable with said construction to hold the same in either of said positions, and manually operable means connected with said latching means for releasing the same by moving said means in one direction when the tail gate construction is in the first position and in an opposite direction when the tail gate construction is in the other position.

2. A vehicle body comprising, a bottom and a tail gate construction pivotally mounted thereon at the rear end thereof for movement between two extreme positions, in one of which it constitutes a closure for the rear end of the body and in the other of which it forms an extension for said bottom, pivotally mounted latching means mounted at a side of the body and including two arms positioned at an angle to each other, one of said arms automatically engaging the tail gate construction in one position and the other engaging the same in the other position to thereby hold the tail gate construction in either position to which it may be moved, and manually operable means for releasing said latching means.

3. A vehicle body including a bottom and a tail gate construction pivotally mounted with respect thereto for movement between two extreme positions, in one of which it constitutes a closure for the end of the body and in the other of which it forms an extension to said bottom, said tail gate construction at each side thereof including an arm pivotally mounted between its ends, a latching device pivotally mounted adjacent the free end of each arm and including two arms

located at an angle with respect to each other, one of said arms of the latching device engaging the free end of its associated arm of the tail gate construction when said construction is in one of said positions, and the other arm of the latch engaging the free end of said arm of the tail gate construction when it is in the other position to thereby latch the tail gate construction in either of the positions to which it is moved.

4. A vehicle body comprising, a bottom, a hollow casting secured at each rear corner of the body, each of said castings being slotted at its rear upper corner, an arm extending through the slot in each casting and pivotally mounted between its ends to turn about a horizontal axis, an end gate construction connected to and extending between said arms, stop means limiting the pivotal movement of the arms and the attached end gate construction between two positions in one of which the end gate construction forms a closure for the end of the body and in the other of which it forms an extension for the bottom of the body, a bell crank lever pivotally mounted between the sides of each casting and having two arms located substantially at right angles to each other, one engaging against the free end of the adjacent tail gate arm when the tail gate construction is in horizontal position and the other engaging therewith when the tail gate construction is in vertical position, whereby said tail gate construction is held in either position to which it may be moved.

5. A construction containing the elements in combination defined in claim 4, said vertical arm of the latching device having a forwardly projected ear, a lever pivotally mounted between its ends on said ear, a laterally projecting lug on said ear above said lever, a tension spring connected at one end to one end of the lever and at its opposite end connected with the body, the line of force of said spring crossing the pivotal axis of said lever when it is turned from one position to another about its pivot and said lever engaging against opposite sides of said lug when turned from one position to another, and means connected to the opposite end of the lever for manually turning the same to either position.

6. A vehicle body comprising, a bottom and a tail gate construction pivotally mounted thereon for movement between two extreme positions in one of which it constitutes a closure for the end of the body and in the other of which it constitutes a continuation for said bottom, said tail gate construction at each side including an arm pivotally mounted between its ends on the body and having a free end portion, a manually releasable latching device mounted at each side of the body to automatically engage with the free end portions of the arms of said end gate construction and hold said construction in either extreme position to which it may be moved, manually operable means mounted on each latching device and movable between two positions, and spring means connected with said manually operable means to act on said latching means when in either of said positions to thereby hold the latching means in latching position.

7. A vehicle body comprising, a bottom, a tail gate construction pivotally mounted at an end of the bottom to turn from a substantially vertical to a substantially horizontal position, and latching means to retain said tail gate construction in either of said positions comprising, a movable detent engageable with said tail gate construction in either of said positions, manually operable means for releasing said detent from said tail gate construction in either of said positions, and means for retaining said detent in said released positions in which position it will automatically engage said tail gate construction when the tail gate is moved to the opposite of said positions.

8. A vehicle body comprising a bottom, a tail gate construction pivotally mounted at an end of the bottom to turn from a substantially vertical to a substantially horizontal position, a detent pivotally mounted on a fixed portion of said body and engageable at its respective ends with said tail gate construction to retain said tail gate in either of its two positions, one of said ends engaging the tail gate in one position and the opposite of said ends engaging the tail gate in the other position, and manually operable means for disengaging either of said ends of the detent from the tail gate whereby the opposite end of the detent will be engaged by the tail gate when the tail gate is moved to the opposite position.

9. A vehicle body comprising a bottom, a tail gate construction pivotally mounted at an end of the bottom to turn from a substantially vertical to a substantially horizontal position, a detent pivotally mounted on a fixed portion of said body and engageable at its respective ends with said tail gate construction to retain said tail gate in either of its two positions, one of said ends engaging the tail gate in one position and the opposite of said ends engaging the tail gate in the other position, manually operable means to disengage either end of the detent from the tail gate and means for retaining either end of the detent in disengaged position when so manually moved whereby the opposite end of the detent will engage the tail gate when the tail gate is moved to opposite position.

10. A vehicle body comprising a bottom, a frame pivotally mounted adjacent said bottom whereby it may oscillate about a definite fixed axis, an end gate pivotally suspended to said frame from its upper end, said frame and end gate being adapted to assume either

a vertical position or an angular position by movement of the frame on its pivots, end gate latches pivoted on the bottom, and means near the lower edge of the end gate engaged by said latches, said latches and means being shaped to permit pivotal movement of said frame from vertical to angular position with said latches and means in latching engagement.

11. A vehicle body comprising, a bottom, a hollow slotted casting secured at each rear corner of said bottom, an arm extending into each casting and pivotally mounted therein between its ends to turn about a horizontal axis, an end gate construction connected with and lying between the outer ends of said arms and movable between two positions in one of which it constitutes a closure for the end of the body and in the other of which it forms an extension for said bottom, latching means movably mounted in each of said castings adapted to engage with the inwardly extending portions of said arms to hold the end gate construction in either of the positions to which it is moved, said latching means comprising two arms located at an angle to each other and movable together, one of said arms engaging against the underside of its associated end gate arm when the end gate forms a continuation of the body and the other of said arms of the latch engaging with the tail gate arm in front thereof when the tail gate constitutes a closure for the end of said body.

12. A vehicle body comprising, a bottom, a hollow casting secured at each rear corner of the body, said castings being slotted at their rear upper corners, an arm extending through the slot into each of said castings and pivotally mounted between its ends in said casting to turn about a horizontal axis, an end gate construction secured to and extending between said arms and movable between substantially vertical and substantially horizontal positions, a latching device carried by each casting to automatically engage with the inner end of each arm in either of the positions to which moved and hold the same in said positions, manually operable releasing means mounted on each latching device for releasing the same from said arms, stop means comprising a web extending from each of said castings into the paths of the respective arms to the rear of their respective pivot points whereby excessive downward movement thereof is prevented and means integrally formed with and extending inwardly from said hollow castings into the paths of movement of said arms to prevent excessive upward movement thereof.

13. In a vehicle body having a bottom, a frame pivotally mounted adjacent said bottom, and a gate pivotally connected to the frame at its upper portion, said frame being adapted to assume either a vertical position or a horizontal position by movement of the frame on its pivots, the combination of, latches, and lugs near the lower end of said gate engageable with said latches, said lugs having surfaces substantially concentric with the axes of the pivots of the frame whereby the latches and lugs may remain in latching engagement while the frame is turned on said pivots.

In testimony whereof I affix my signature.

EDWARD R. BARRETT.