

June 17, 1941.

J. F. JELINEK ET AL
 CONVERTIBLE END GATE HINGE

2,246,358

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2 Sheets-Sheet 1

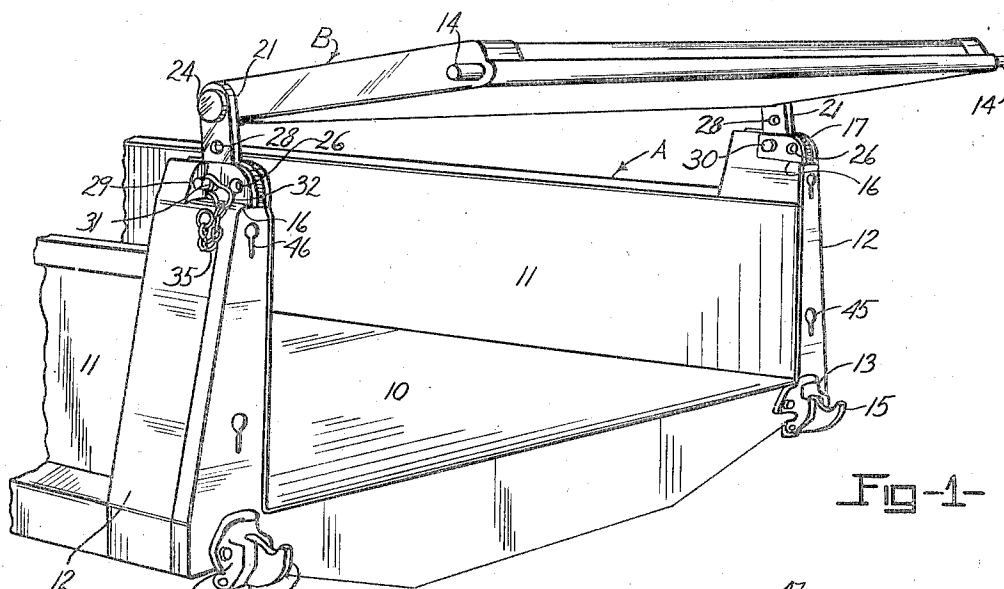


Fig-1-

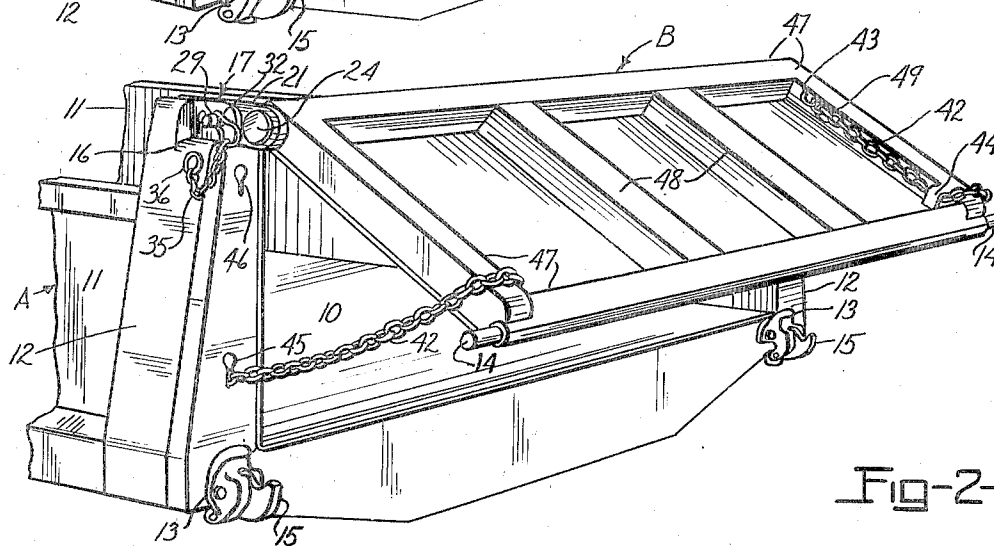


Fig-2-

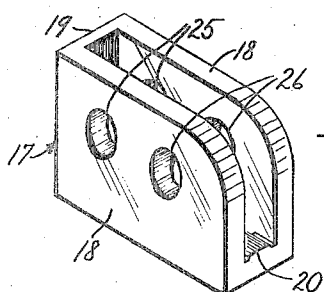


Fig-3-

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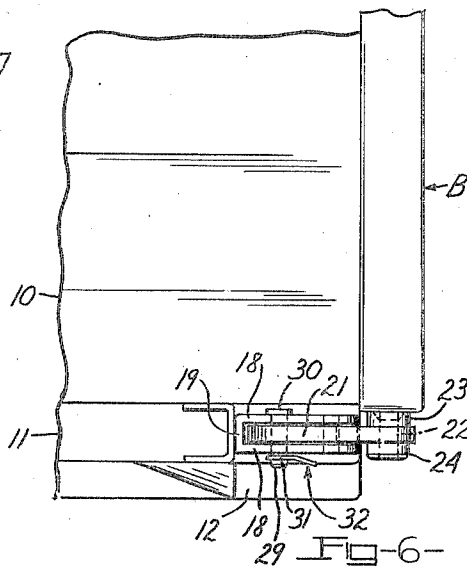
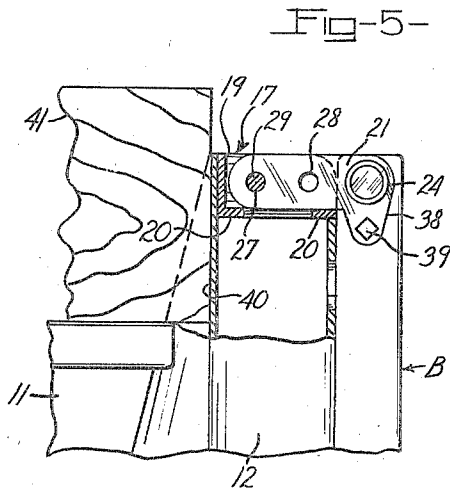
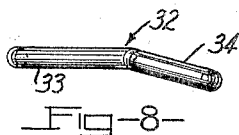
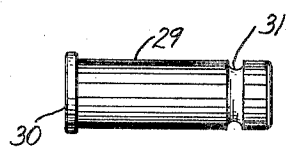
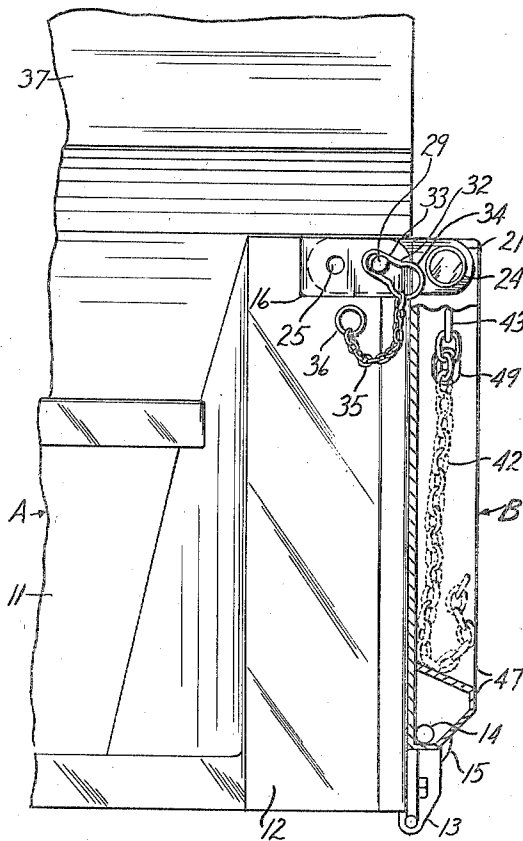
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2 Sheets-Sheet 2



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CONVERTIBLE END GATE HINGE

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10 Claims. (Cl. 16—163)

This invention relates to improvements in tail gate hinges as used for connecting and supporting the tail or rear end gate in a dump truck body.

Such gates are usually arranged to hinge at either lower or upper edges in order to swing downward or upward when released, according to the kind of material being hauled. In dumping material, particularly of a nature in which the component parts are large and have a tendency to cling together, it is desirable that the gate open upwardly and also shift bodily upward from the truck body in order to give the greatest possible dumping opening. Top hinges for this purpose have been used, but they are of such nature that they cannot operate when a top box is used atop the truck body unless the box is shortened to clear at its rear end, and they are further so constructed that they provide an unsightly projection above the corner posts and are exposed to considerable danger of breakage.

Our invention provides a convertible type of hinge by which the tail gate may be hinged to swing in usual manner when a top box is used on the truck body and then, by a simple change requiring no tools, arranged to shift upward as it is opened to provide a larger opening when dumping such materials as brush, garbage, and the like. Another object is to provide a hinge structure of this kind in which all parts are disposed below the level of the body corner post and are thus protected and concealed. A further object is to provide an improved end gate construction of this nature having means for receiving and concealing the usual spreader chains when not in use.

These and other more detailed and specific objects will be disclosed in the course of the following specification, reference being had to the accompanying drawings in which—

Fig. 1 is a perspective view of the rear portion of a truck body showing our improved hinge structure supporting the tail gate at a position giving the maximum dumping opening.

Fig. 2 is a similar view but showing the hinge structure arranged for use where a top box is employed on the body and showing the tail gate swung partially open.

Fig. 3 is a perspective view on an enlarged scale of one of the hinge bracket members.

Fig. 4 is an enlarged side elevation of a rear portion of the truck body showing the tail gate in closed position and showing a fragment of a top box arranged on the body.

Fig. 5 is a similar view of an upper rear por-

tion of the body showing a modified hinge structure and a side board on the body, a portion of the corner post being broken away to better disclose the hinge construction.

Fig. 6 is a plan view of a rear corner portion of the truck body and hinge structure.

Fig. 7 is an enlarged elevational view of the locking pin for the hinge.

Fig. 8 is a similar view of the retaining link for the locking pin.

Referring now more particularly and by reference characters to the drawings, a substantially conventional type of truck body is indicated generally at A, and the tail or end gate therefor at B. The body A comprises the bottom or floor 10 and upstanding sides 11, and is open at the rear to permit dumping of material outwardly and rearwardly. The rear opening is normally closed by the tail gate B, which is accordingly of the proper dimension and shape for the purpose.

The sides 11 terminate rearwardly in upstanding corner posts 12 to which the gate B is adapted to be hinged and for this purpose conventional, combination lower hinge and latch units 13 are secured to the rear lower faces of the corner posts. Lower corners of the gate B are then provided with laterally extended hinge studs 14 adapted to pivot in said units 13 when the gate is to be swung downwardly and rearwardly as for instance for shoveling material from the truck body. The units 13, however, include latch members 15 which, when operated by the conventional forwardly located lever (not shown), release the studs 14 allowing the gate to swing free at its lower edge. This is of course the action when the body is tilted rearwardly for dumping and for this purpose the tail gate is arranged also to hinge at its upper edge as will now be described.

The corner posts 12 have their upper ends recessed off at upper rear portions as designated at 16 to receive thereon the hinge mounting or bracket members 17 which are welded in these recesses to lie flush with the top of the posts. The said members 17 are channel shaped and comprise the longitudinally extended and upright sides or plates 18 joined by a forward end or bight 19 and spaced lower webs 20 to define therebetween a channel or grooves as clearly shown. Hinge links or bars 21 are adapted to lie and swing freely in these channels in the members 17, and at one (rear) end these links are pivotally mounted at upper lateral corners of the tail gate B upon short studs 22 (see Fig. 6) extended therefrom. Said studs 22 are extended from end plates 23 secured to the ends of the tail

gate and the links are retained in place by collars 24 secured to the studs.

The sides 13 of the members 17 have longitudinally spaced front and rear openings 25 and 26 transversely axised as shown to register with similarly spaced openings 27 and 28 in the links 21. Locking pins 29 may thus be inserted through either the forward or rear openings to mount the links in the bracket members, and these pins have heads 30 at inner ends and circumferential grooves 31 near their outer ends to receive locking links 32. The links 32 have narrow ends 33 adapted to frictionally engage the grooves 31 and retain the pins in place, the links being of course releasable from the pins by moving them endwise to permit their longer ends 34 to clear. Short tie chains 35 secured at 36 to outer sides of the corner posts are connected as shown to the links 32 to prevent their becoming lost.

In operation the tail gate B may of course be lowered from its hinged connection with the units 13 in usual manner, and the lock pins 29 are removed for this operation so that the links 21 may hang free. When it is desired to hinge the tail gate from the upper edge then the links 21 are placed in the members 17 and the pins 29 are inserted through the rear openings 26 and 28 locking the links against either upward or downward movement in the said members and allowing the gate to swing freely from the pivots 22 as shown in Fig. 2. This operation of the gate permits the mounting of the top box as shown at 37 in Fig. 4 without interference.

In the dumping of large materials it is, as heretofore stated, of advantage to have the greatest possible dumping opening, and for this purpose the lock pins 29 may be removed from the rear openings 26 and 28 and moved to the forward openings 25 and 27, whereupon the links 21 may swing bodily upward at their rear ends as the gate opens, as clearly seen in Fig. 1. The opening is thus increased by the amount of this upward extension of the links, across the entire width of the body, and is obviously of substantial benefit in operation.

The links 21 may thus be either locked in place (pins in rear openings) by contact with the mounting members 17, or may be left free at their rear ends (pins in forward openings) to support the gate without downward displacement, but allow it to shift bodily upward when opened in the dumping operation. In the closed position of the tail gate, in either position of the pins, the links are received and enclosed below the level of the upper end of the corner posts 17 and are thus protected from breakage by the shovel usually employed in filling the truck.

The convertible feature of the hinge is of further advantage since the top box 37 may, as shown, extend clear to the rear end of the truck body and, since the box is usually employed only when handling light and bulky materials such as coal, the arrangement shown in Fig. 2 with the gate swinging from the rigidly supported links will then provide an entirely adequate dumping opening for such materials. On the other hand, the arrangement of free links as shown in Fig. 1 will of course not operate effectively with the overhanging box in place, but this action is not usually needed at such times as stated.

As shown in Fig. 5, the links 21 may, if desired, be provided at rear ends with extended apertured lugs 38 which may be secured by screws 39 or similar fasteners to the ends of the tail

gate B. In this manner the links may be rigidly mounted with respect to the gate, and the locking pins 29 are of course then placed through the forward openings 25 and 27 to provide an opening action similar to that in Fig. 1. Also as shown in this view the corner posts 12 are, as usual, provided with forwardly and upwardly opening pockets or recesses, one of which is shown at 40. The conventional side boards, one of which is shown at 41, may be arranged in these pockets to slightly increase the capacity of the body, and the hinge mechanism will of course work in either manner described where such boards are used, as will be apparent.

When the tail gate is opened as shown in Fig. 2, spreader chains 42 are usually employed at each end to limit the movement. These chains are connected at one end to staples 43 on the ends of the gate, and when in use are trained downwardly within clips 44 near the lower edge of the gate, and are then turned forwardly and hooked at their ends in openings 45 formed in rear faces of the corner posts 12. Likewise when the gate is opened in a downward direction the chains 42 are hooked at their ends in other openings 46 near upper ends of the corner posts, and the chains of course limit the opening movement in either direction. However, when the gate is closed the chains are not in use, and they have hitherto been allowed to dangle free, causing an undue noise and wear. In accordance with our invention the tail gate is formed with the reinforcing, hollow, rearwardly projecting marginal portions 47 and center portions 48, and the end portions are provided with openings 49 adjacent the staples 43 to which the chains are connected. It is thus possible, as shown in Fig. 4, to insert the loose ends of the chains through these openings and tuck the entire length of the chains within the hollow ends of the gate to prevent this noise and wear.

It is understood that suitable modifications may be made in the structure as disclosed, provided such modifications come within the spirit and scope of the appended claims. Having now therefore fully illustrated and described our invention, what we claim to be new and desire to protect by Letters Patent is:

1. A hinge for connecting the upper corner of a tail gate to the rear corner of a truck body, comprising a bracket member secured to the body, the said member including spaced upstanding side portions defining a longitudinal rearwardly and upwardly opening space therebetween and having front and rear transverse apertures, a link pivotally connected at one end to the tail gate and extending therefrom forwardly between the said side portions, means supporting the link against downward movement with respect to the bracket member, the said link having apertures spaced apart to register with the apertures in the side portions, and a locking pin adapted for insertion in either the front or rear apertures in the side portions and in the link to thereby selectively pivotally or rigidly support the link in the bracket member.

2. A hinge for connecting the upper corner of a tail gate to the rear corner of a truck body, comprising a bracket member secured to the body, the said member including spaced upstanding side portions defining a longitudinal rearwardly and upwardly opening space therebetween and having front and rear transverse apertures, a link pivotally connected at one end to the tail gate and extending therefrom forwardly

between the said side portions, the said link having apertures spaced apart to register with the apertures in the said side portions, a locking pin for removable insertion in either the front or rear apertures in the sides and link, and means on the bracket member extending between the side portions thereof for preventing downward movement of the front and rear ends of the link.

3. A hinge for connecting a tail gate to a truck body, comprising a link pivotally connected to the gate and extending forwardly therefrom, means on the body for supporting the link against downward movement relative to the body, the said link having spaced apertures forwardly of its pivotal connection with the gate, and means for selective engagement with the said apertures for mounting the link rigidly or pivotally with respect to the body.

4. A hinge device for connecting a tail gate to a truck body, comprising a link pivotally connected at one end to the gate and extending forwardly therefrom, a bracket member secured to the truck body and having means for receiving a forward end portion of the link means rigid with respect to the body engaging the underside of that portion of the link within the bracket member to thereby support the link against downward movement with respect to said body, the said bracket member and link having forwardly and rearwardly spaced registering apertures, and a pin for selective insertion in the said apertures to pivotally mount the link for upward swinging movement at its forward end or rigidly mount the link and restrain the same against such movement.

5. A gate hinge for use on a dump truck having a tail gate and a side member forming a part of the truck body, comprising a bracket member secured to a rear corner portion of the side member and recessed downwardly therein to lie flush with the upper surface of the side member, a link pivotally connected at one end to the gate and extending forwardly therefrom alongside the bracket member, means for pivotally mounting the link to the bracket member, means also for rigidly mounting the link with respect to the bracket member, the said link being adapted to lie flush with the upper edge of the bracket member when rigidly mounted thereto.

6. A gate hinge for a truck body having a tail gate, comprising a substantially U-shaped bracket secured to the body and including spaced, longitudinally extending side portions defining a channel opening upwardly and rearwardly, a link pivotally connected at one end to the gate and extending forwardly therefrom into said channel and supported by the bracket against downward displacement, and means for pivotally or rigidly mounting the link at its forward end portion in the channel, the said sides of the bracket member engaging the sides of the link to brace the same against transverse movements.

7. A hinge for connecting a tail gate to a truck body, comprising a link pivotally connected at a rear end to the tail gate and extending forwardly therefrom, a rigid member on the body engaging the lower edge and at least one side of the forward portion of the link, means engage-

able with a forward end of the link and supporting the link for upward swinging movement with respect to the body, and means selectively engageable with the link for restraining the same against said upward swinging movement.

8. A hinge mounting for the tail gate of a truck body comprising a pair of parallel links pivotally connected at rear ends to the upper corners of the gate and extending forwardly therefrom for normal resting positions upon adjacent side walls of the truck body, said construction permitting the gate to swing on an axis extending through said pivot connections without moving the links from their normal resting position, means for pivotally connecting the forward ends of the links to the truck body whereby the gate and links may swing on an axis that is spaced forwardly from said first mentioned axis, and means effective to lock the links in their aforesaid resting positions upon the side walls to thereby prevent the swinging movements of the links with respect to the truck body without interfering with the swinging movement of the gate on the first mentioned axis.

9. A hinge mounting for the tail gate of a truck body comprising a pair of parallel links pivotally connected at rear ends to the upper corners of the gate and extending forwardly therefrom for normal resting positions upon adjacent side walls of the truck body, said construction permitting the gate to swing on an axis extending through said pivot connections without moving the links from their normal resting position, means for pivotally connecting the forward ends of the links to the truck body whereby the gate and links may swing on an axis that is spaced forwardly from said first mentioned axis, means effective to lock the links in their aforesaid resting positions upon the side walls to thereby prevent the swinging movements of the links with respect to the truck body while permitting the swinging movement of the gate on the first mentioned axis, and means for selectively locking the gate against swinging movements on the said first mentioned axis and with respect to the links while said links are free to swing about the aforesaid forwardly located axis on the truck body.

10. A hinge mounting for the tail gate of a truck body comprising a pair of parallel links pivotally connected at rear ends to the upper corners of the gate, brackets mounted on the truck body and having means for engaging lower edge portions of the links, the said links extending forwardly from the gate for normal resting positions in the brackets and supporting the gate for swinging movement about said rear end pivotal connections with the links, means for pivotally connecting forward ends of the links to the brackets to permit swinging movements of the links in vertical planes with respect to the brackets, means effective to lock the links against the aforesaid upward swinging movements with respect to the bracket, and means effective to lock said rear end connections between the links and gate against pivotal action when said links are pivotally connected to the brackets.

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