

May 9, 1933.

C. P. GALANOT

1,907,784

DUMP VEHICLE

Filed Sept. 6, 1930

3 Sheets-Sheet 2

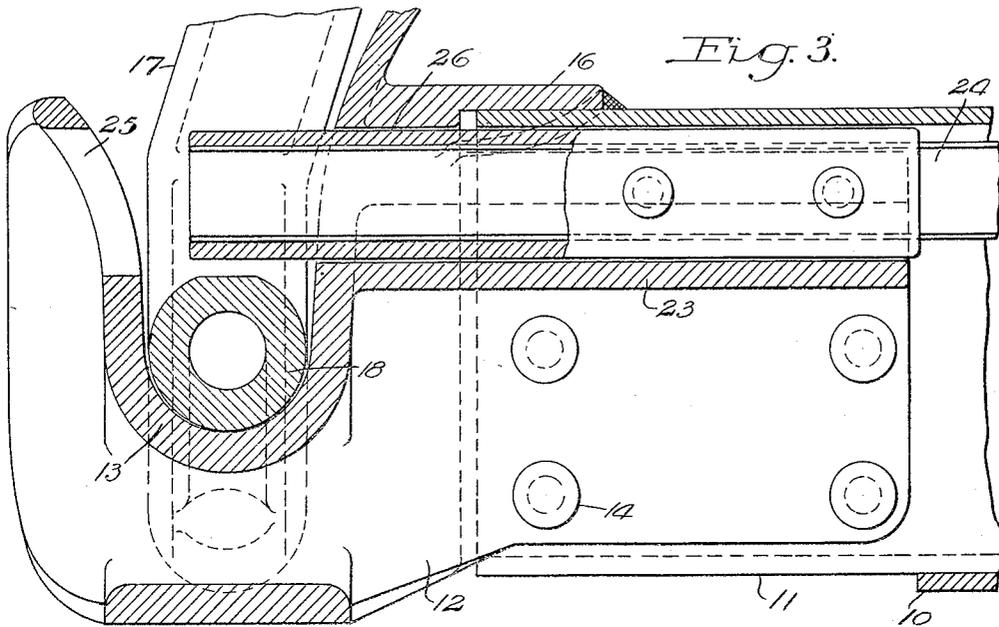


Fig. 3.

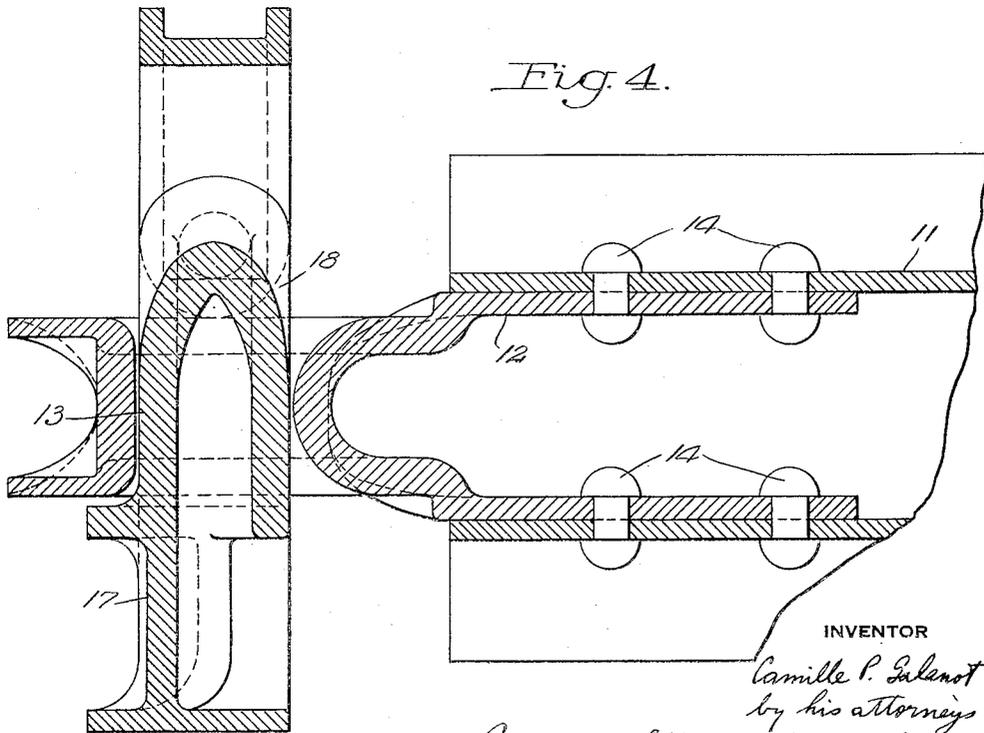


Fig. 4.

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Fig. 5

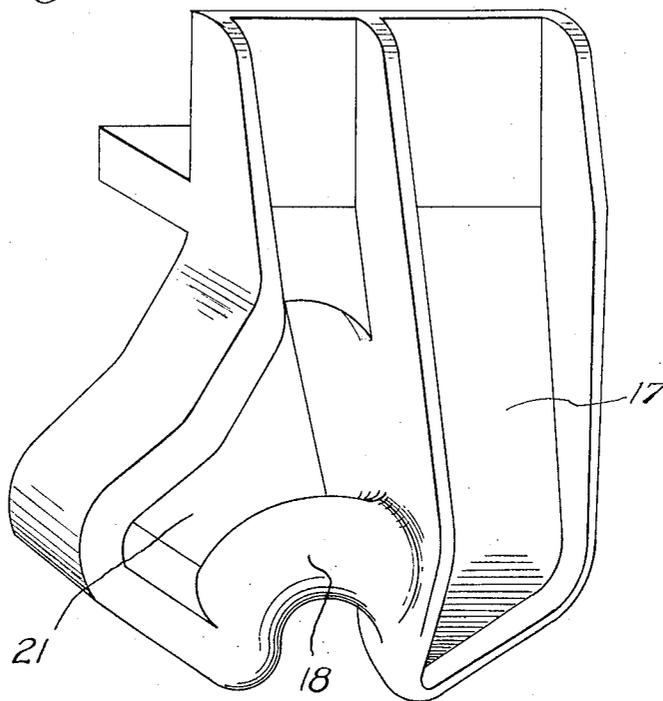
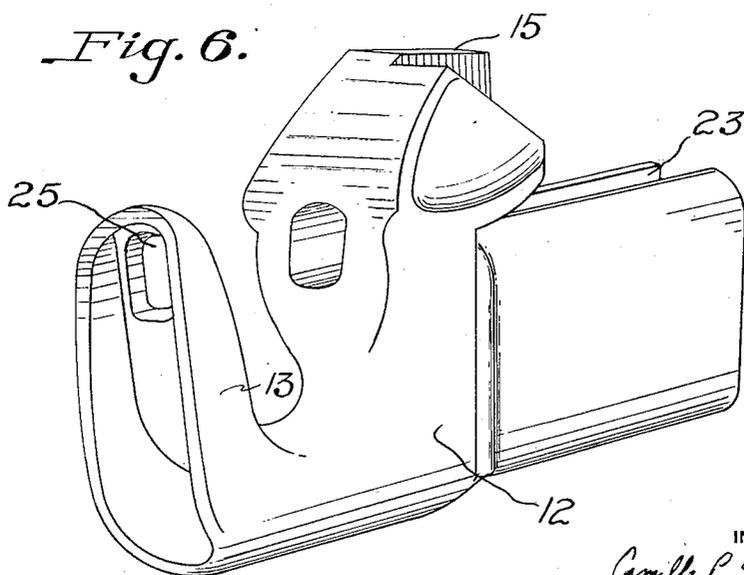


Fig. 6.



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UNITED STATES PATENT OFFICE

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DUMP VEHICLE

Application filed September 6, 1930. Serial No. 480,037.

My invention relates to dumping vehicles and, in particular, to a vehicle which is adapted to dump on either side and to the rear. Specifically, the invention comprises a novel method and means for effecting a tilting movement of a dumping body.

According to present practices in the dumping vehicle art, three-way dumping is effected by supporting the dumping body at four points, for example, adjacent the corners. Arrangements are made for receiving the corner supports, which generally take the form of hinge pins, into associated cups or sockets. By locking any two adjacent pins to their sockets, it is possible to tilt the body about an axis passing through said pins, the remaining pins being free to rise from their sockets as the body is tilted. The hinge pins now in use include knuckles and pivot pins, both of which must be machined. This type of hinge has proved to have certain objectionable features, one of which is that after a certain amount of wear, the body, when tilted, tends to swing off of the pins toward the low side. This results in the failure of the pins on the high side to reenter their cups or sockets. If the body is lowered without properly seating the hinge pins, it is obvious that on dumping toward the other side, the body will be thrown off the vehicle chassis.

To eliminate these and other disadvantages characteristic of present practice, I have invented a hinge comprising two one-piece castings, one secured to the dumping body and one to the vehicle frame, so as to constitute a rigid hinge which permits dumping the body toward the side or to the rear. The lower hinge member has the form of a hook or toroidal bearing extending from the vehicle chassis. The upper hinge member is a casting secured to the dumping body and has a downwardly projecting yoke or ring portion resting on and extending around the hook or toroidal bearing. The two members have bearing surfaces correspondingly

shaped substantially toroidal so as to permit the upper hinge member to rotate upon the lower in two planes normal to each other.

The invention eliminates all lost motion between the body and its supports, since the upper hinge member is rigidly secured to the body. There is no difficulty experienced in maintaining the hinge members in proper alinement, as the body is being lowered. It will thus be practically impossible to throw the body off the chassis, because of failure of the hinge members to cooperate properly as the body is lowered. The invention also reduces the cost of manufacture since all machine work is eliminated and only the two one-piece castings are necessary to constitute the hinge.

I also make provision whereby the weight of the body is taken off the bearing members as the body is lowered. A strong support is thus afforded for the body and the bearing surfaces are relieved of the weight of the body, which would cause excess wear thereof. Another advantage of the invention is that it makes it possible to space the hinges further apart than is possible with the present type. As a result, it is possible to employ a longer stroke of the hoist mechanism and to move the latter nearer to the front of the body toward the ideal position, namely, the center of the body.

For a complete understanding of the invention, reference should be made to the accompanying drawings illustrating a present preferred embodiment thereof. The drawings are intended merely as illustrations of one embodiment and not as limitations on the scope of the invention, since the latter may be practiced in forms other than that shown, without departing from the scope of my broader claims.

In the drawings,

Figure 1 is an elevation of the hinge, looking thereon from one side of the truck to which it is applied,

Figure 2 is a view taken at right angles to Figure 1 showing a portion of the body in section,

Figure 3 is a sectional view to enlarged scale at the plane of the line III—III of Figure 1, and

Figure 4 is a sectional view to enlarged scale at the plane of the line IV—IV of Figure 2.

Figures 5 and 6 are perspective views of the two castings constituting the hinge.

Referring in detail to the drawings, the invention is adapted for use in connection with a vehicle such as a motor truck, having a chassis illustrated in part at 10. Upon the chassis, I mount front and rear cross members, of which the rear cross member is shown at 11. To each end of the cross members, I secure a lower hinge member 12 having a bearing or hook portion 13 by means of rivets 14. The bearing surface of the hook portion is in the form of an anchor ring or toroid and is rounded in two directions. A shoulder 15 is formed integral with the casting 12, for a purpose which will be described hereinafter. The casting 12 also has a cap 16 shaped to conform to the upper surface of the cross member 11 and resting thereon.

Cooperating with the lower hinge member 12 is a downwardly projecting upper hinge member 17 which has a yoke or ring portion 18 of toroidal shape, resting on and extending partly around the hook 13 of the lower member 12. The castings 12 and 17 are ribbed and flanged for additional strength and rigidity. The upper hinge member 17 directly supports the vehicle body which has side Z-bars 19 at its bottom which are riveted to the hinge member 17 by the rivets 20. The casting 17 is provided with an opening 21 for a purpose to be described later.

The casting 17 has a flat surface 22 adjacent the upper end thereof for cooperation with the shoulder 15 on the lower casting 12. Thus, when the body carried on the Z-bars 19 is fully lowered, as shown in Figure 2, the weight of the body is transmitted from the surface 22 to the shoulder 15 and thence to the cross member 11 and the vehicle chassis.

Referring again to the lower casting 12, and particularly to Figure 3, this member has a sleeve 23 for receiving a locking bar 24. The bar 24 is adapted to pass through the opening 21 in the upper casting 17 and through a corresponding opening 25 near the end of the hook portion 13 of the casting 12. A sleeve 26 is riveted to the rod 24 for entering the openings 21 and 25. Suitable operating means (not shown) is provided for the locking bar 24, preferably of the type described in my copending application, Serial No. 257,707, filed February 28, 1928, for hoist mechanism.

When it is desired to dump the truck body toward the rear, the hinges at both ends of

the rear cross member 11 are locked by the bar 24, which is of such length that it overlies the yokes 18 of the castings 17 at opposite sides of the body. When the body is raised by any suitable hoist mechanism, the corresponding hinges at the front of the vehicle being free to rise, the body will be tilted about an axis passing through the center of the toroidal portion 13 of the casting 12. The yokes 18 of the front hinges, which are identical with the rear hinges, rise from their toroidal bearings as the body is tilted. The opening 21 in the casting 17 permits the latter to rotate, although the locking bar passes therethrough. The body may be lowered in the same manner, whereupon the yokes of the front hinges reengage their toroidal bearings and the body is supported by the engagement of the surfaces 15 and 22. The tilted position of the member 17 is shown in chain lines in Figure 1.

When it is desired to dump the truck toward the side, the locking bar 24 and its counterpart in the front cross member are shifted toward the side to which the body is to be dumped. The hinges on that side of the body are thus locked while those on the opposite side are freed. Application of hoisting force now causes the body to tilt about an axis passing through the center of the yoke portion 18, as shown in Figure 3. The yoke portions on the opposite side of the body rise from their toroidal bearings, as previously described in the rear dumping operation. When the dumping has been completed and the body is again lowered, the yoke portions 18 enter their toroidal bearings and the weight of the body is again evenly distributed on the ends of the cross members. The side dumping position of the member 17 is shown in chain lines in Figure 2.

It will be obvious from the foregoing description that the invention provides a strong and rigid hinge consisting of but two parts, which are so designed as to permit rotation of the upper hinge member in the lower member in two planes which are at right angles. Since the body is at all times supported on at least two of the castings 17, there will be no side slippage of the body when tilted. As the body is lowered, each of the yokes 18 on the high side will be guided directly into their toroidal bearings. Accidental throwing off of the body, due to a failure of the hinges to engage properly, is thus avoided and safety of operation of the vehicle is much increased. In addition, the weight of the body is transmitted directly to the vehicle frame at all times, except when dumping, in which case the body is supported by the hinge members and their cooperating bearing surfaces. Since the castings comprising the hinge are unitary, they may be produced at comparatively low cost and the fact that they require no machining, eliminates an additional item

of expense encountered in the manufacture of present types of hinges.

Although I have described and illustrated but a single present preferred embodiment of the invention, I do not intend to be limited to the specific details of the structure shown, since the invention may be embodied in other forms and any changes in the embodiment illustrated may be made within the spirit of the invention and are not to be considered as departures from the scope of the appended claims.

I claim:

1. A hinge for a tilting vehicle body including a frame and a transverse supporting member thereon, comprising a casting secured to said transverse member, having an outwardly projecting, upstanding, open-top, hook portion thereon, and a casting secured to said body having an open-bottom yoke portion projecting downwardly and outwardly, resting on and partially encircling said hook portion, and adapted to be supported in said hook portion for rotation in the plane of said transverse member and in a plane perpendicular thereto.

2. A hinge for a tilting vehicle body supported on a frame, comprising a member on said frame having an outwardly projecting, upstanding, open-top, hook portion thereon, and a member on said body having an open-bottom, yoke portion projecting downwardly and outwardly of the body, resting on and partially encircling said hook portion and adapted to be supported in said hook portion for rotation thereon in two perpendicular planes.

In testimony whereof I have hereunto set my hand.

CAMILLE P. GALANOT.