Jan. 17, 1939. W. C. ANTHONY 2,144,599

DUMPING BODY

Filed March 12, 1938 4 Sheets-Sheet 1

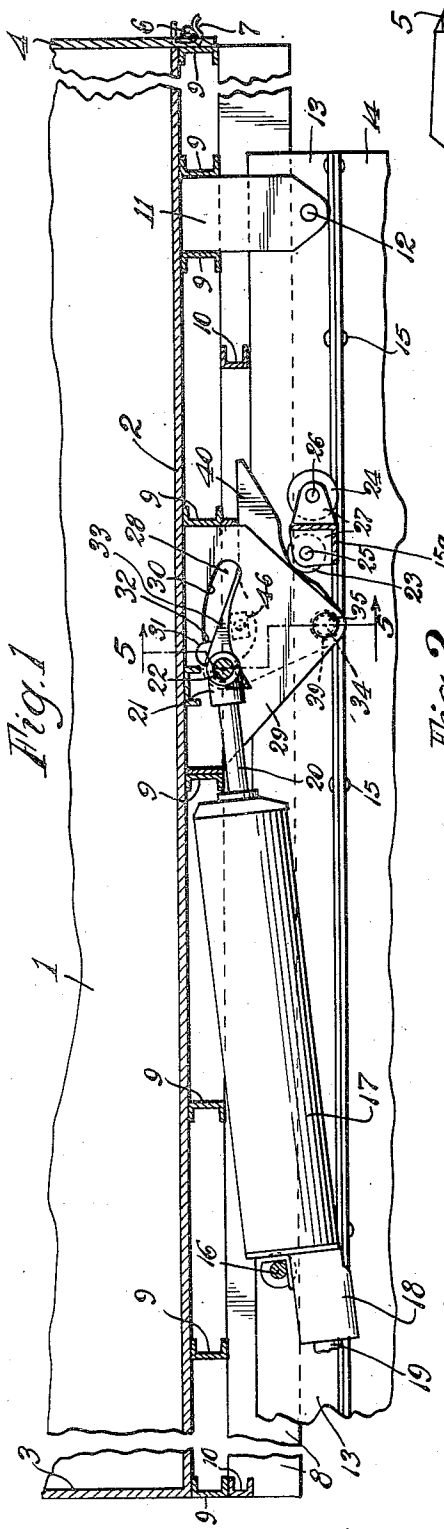


Fig. 1

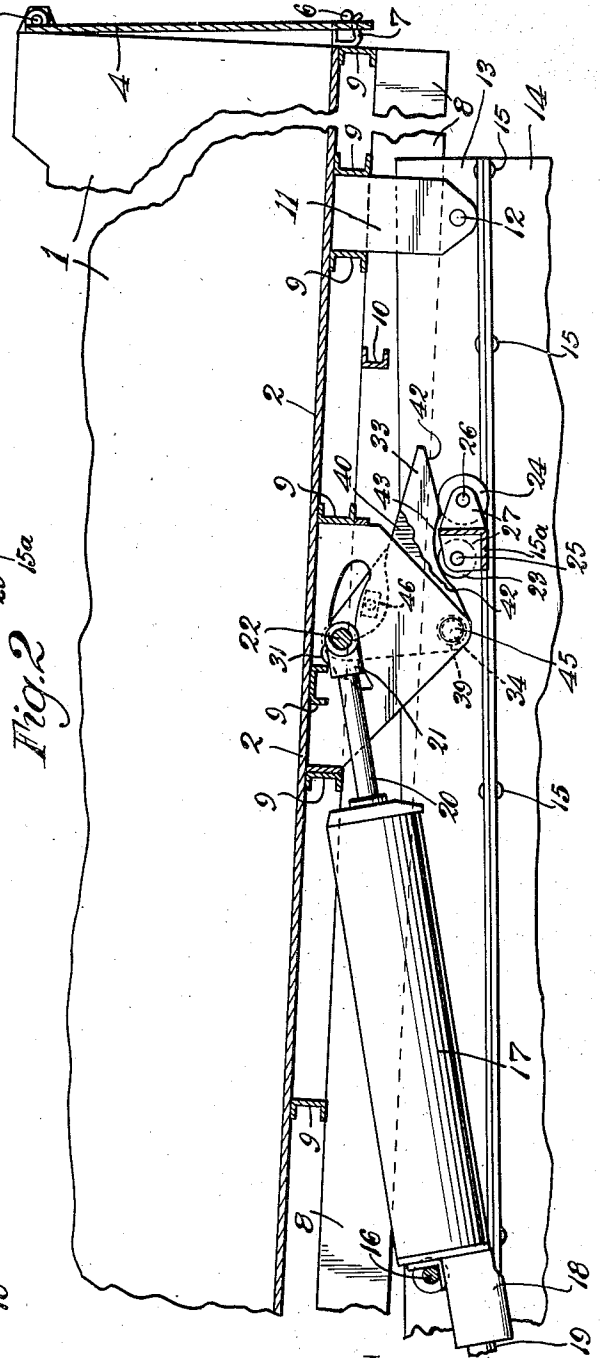


Fig. 2

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DUMPING BODY

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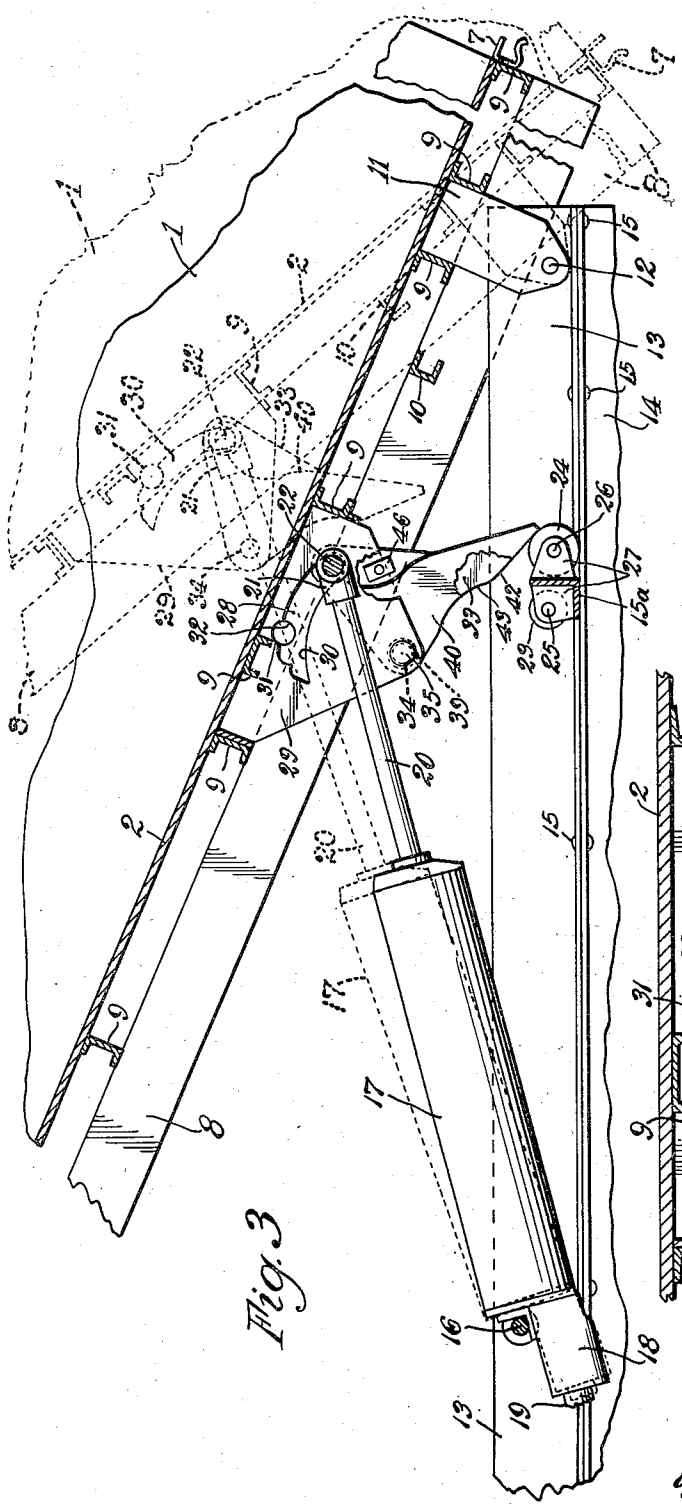


Fig. 3

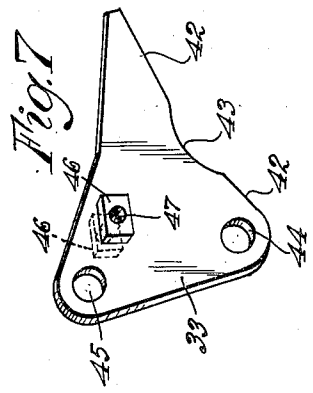


Fig. 7

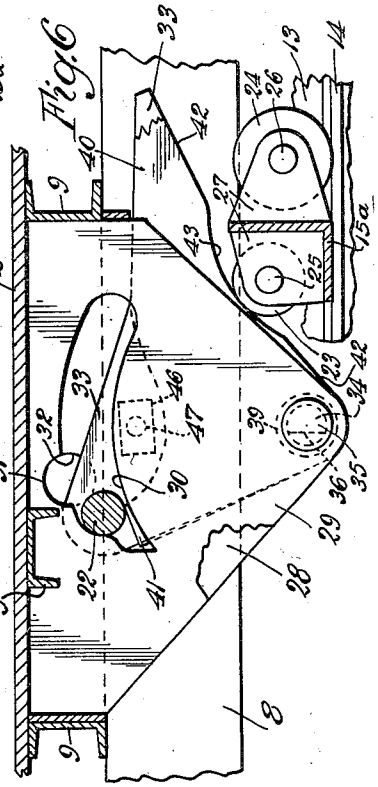


Fig. 6

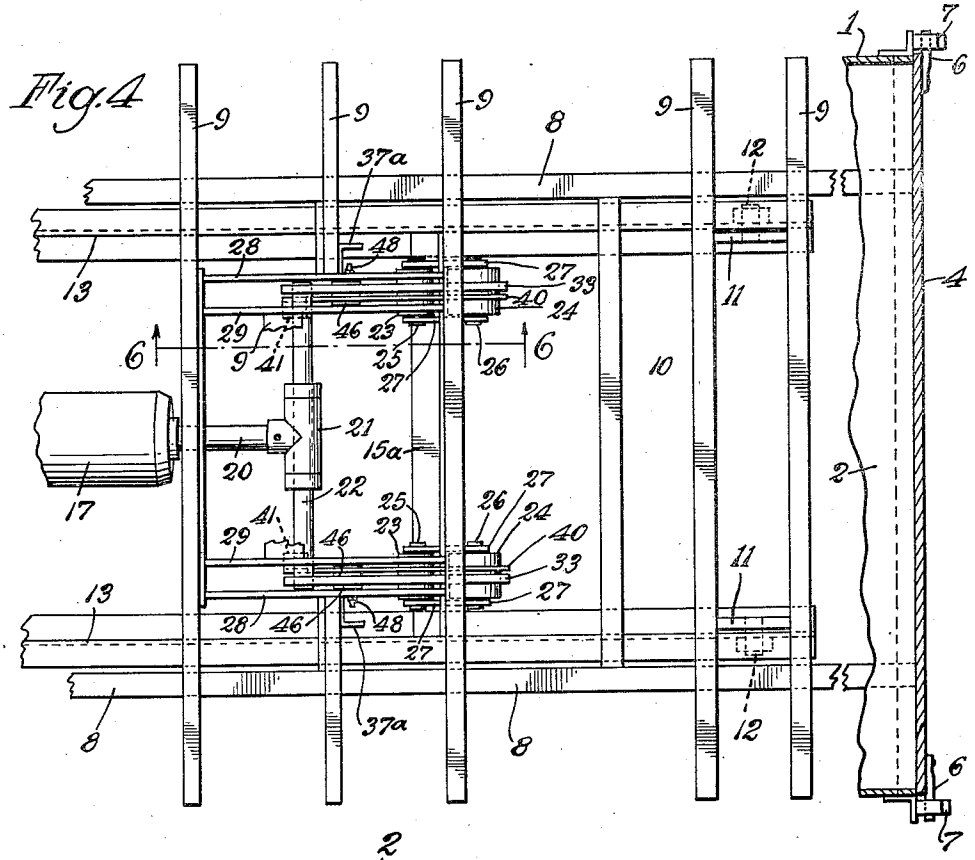
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DUMPING BODY

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Fig. 4



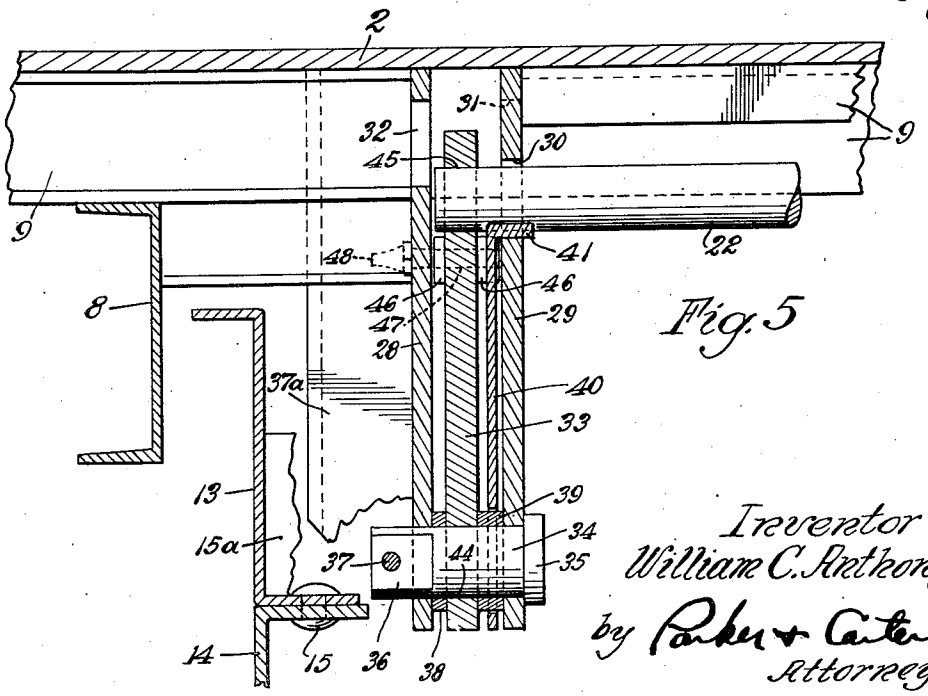


Fig. 5

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DUMPING BODY

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Fig. 8

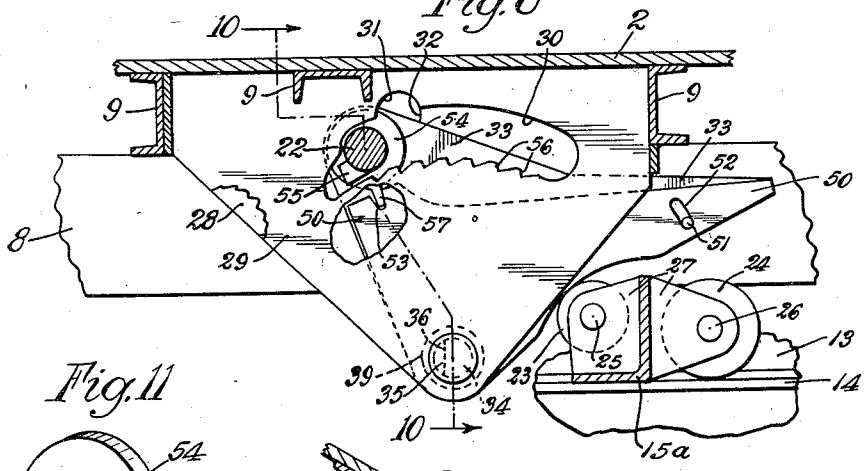


Fig. 11

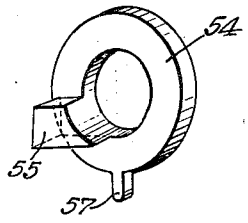


Fig. 9

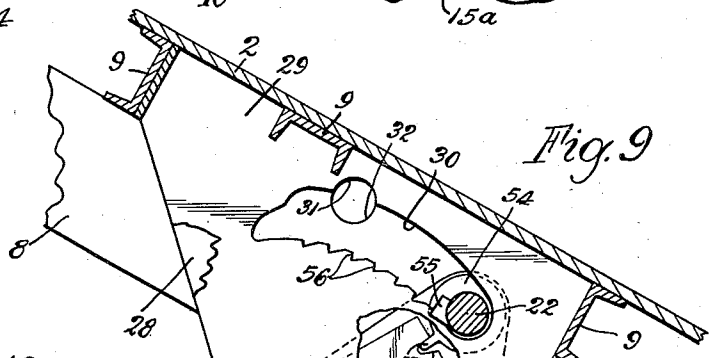
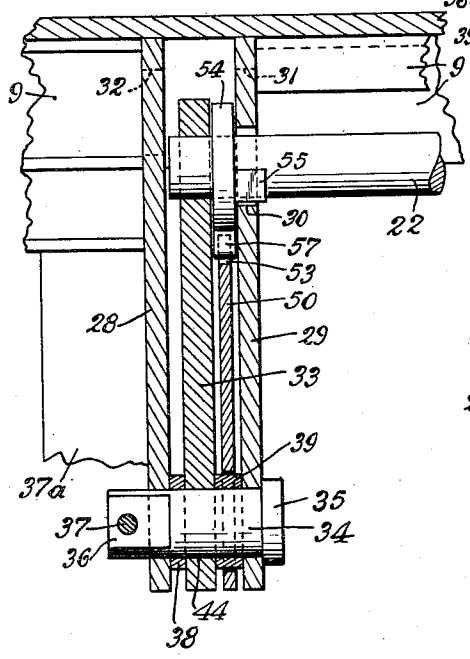
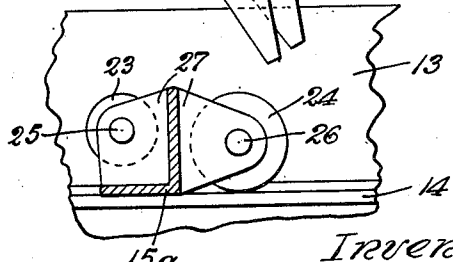


Fig. 10





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UNITED STATES PATENT OFFICE

2,144,599

DUMPING BODY

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Application March 12, 1938, Serial No. 195,426

24 Claims. (Cl. 298—22)

This invention relates to a dumping receptacle and in the particular form shown herewith it is primarily adapted to use in connection with a dumping body of the type frequently intended for mounting upon a vehicle such as a truck. It is, however, not limited to this purpose and may be used in connection with a stationary or other receptacle which may carry a load on or in it and which may be dumped.

One particular object of the invention is to provide a device of the sort generally indicated operated for dumping by hydraulic mechanism and so arranged as to permit low hydraulic pressures with efficient dumping.

Another object is to provide in connection with such a dumping receptacle a dumping mechanism so arranged that a relatively large degree of travel of the hydraulic or other actuating means takes place with each increment of tipping movement.

Another object is to provide a dumping device of the sort indicated so arranged that primarily during the initial dumping stages a relatively large degree of travel of the hydraulic or other actuating means takes place for each increment of dumping movement, and so arranged that during a later stage of the dumping a lesser degree of movement takes place for each increment of tipping.

Another object is to provide in connection with a device of the sort indicated automatic means to prevent over-tipping, so that the load and body cannot "run away" from the power means at any stage of dumping.

Other objects will appear from time to time in the course of the specification and claims.

The invention is illustrated more or less diagrammatically in the accompanying drawings, wherein:

Figure 1 is a longitudinal vertical section illustrating the receptacle and tipping mechanisms in the initial or untipped position;

Figure 2 is a similar view illustrating the body after a certain amount of tip has occurred and when a shift in the leverage is about to take place;

Figure 3 is a view generally similar to Figures 1 and 2, but illustrating a still further degree of tip;

Figure 4 is a plan view of the frame and tipping mechanism with the body removed and with the portion of the body shown in section and broken away;

Figure 5 is a vertical sectional detail on an enlarged scale, taken on line 5—5 of Figure 1;

Figure 6 is a longitudinal vertical detail taken at line 6—6 of Figure 4;

Figure 7 is a perspective view of one form of the fulcrum or tipping cam lever.

Figure 8 is similar to Figure 6, illustrating a modification;

Figure 9 shows the form of Figure 8 tipped.

Figure 10 is a section taken at line 10—10 of Figure 8.

Figure 11 is a perspective of the locking pawl.

Like parts are indicated by like symbols throughout the specification and drawings.

1 indicates a dumping body or receptacle having a floor or bottom 2, a front wall 3 and a rear closure or tail gate 4 which may be pivoted as at 5 and be provided with a closure or locking means 6 arranged to be engaged in catches 7.

Particular details of the body construction and of the end closure, if any is used, form no essential part of the present invention and are not illustrated in detail. The body, if desired, may have a body frame comprising one or more longitudinal members 8 and a plurality of cross members 9. As shown, the cross members 9 rest upon the tops of the longitudinal members 8 and the floor 2 of the body rests upon the cross members. Additional cross members 10 may be positioned between the longitudinal members 8. Other body frame arrangements might be made without departing from the spirit of the invention.

At some suitable point, and preferably adjacent the rear of the frame, the body is provided with downwardly depending members 11 which are pivoted as at 12 upon a subframe 13, which is itself mounted upon the chassis frame members 14, if the device is mounted upon a vehicle such as a truck. Or if it is not mounted on a movable means, the frame members 13 are mounted upon some foundation which is the equivalent of the chassis frame members 14. As shown in detail in Figure 5, the said longitudinal frame members of the subframe 13 may be mounted upon the chassis frame members 14 and secured thereto by rivets 15 or otherwise.

It will be seen from the above that the dumping body assembly comprises a subframe formed of the members 13 and such cross members 15a as may be necessary, and that the body is formed of the tilting frame construction comprising the members 8, 9 and 10, pivotally supported upon the side frame members 13 of the subframe.

Mounted upon the subframe members 13 by any suitable means, for example by a cross shaft

16 is a hydraulic hoist assembly including a cylinder 17, a pump assembly 18 which may be driven by a shaft 19 secured to any suitable power source. The cylinder 17 encloses a piston not shown but from which a piston rod 20 extends outwardly. The piston rod 20 is secured to a cross head 21, which carries a shaft 22.

Mounted on each side of the subframe, for example upon the cross member 15a of the subframe members 13, is a pair of rollers 23, 24. The roller 23 is preferably larger than the roller 24, although this arrangement is not essential. The rollers are journaled respectively in suitable shafts 25, 26 carried in bracket members 27, which are secured to the subframe in any suitable manner. In the particular form here shown, they may conveniently be welded or riveted to the lower flange of the longitudinal members 13.

Extending downwardly from the tipping frame are two pairs of lever supporting members 28, 29. In each pair, the member 28 is toward the outer side of the assembly. The member 29 is provided with an arcuate slot 30 which has a semi-circular enlargement 31. Each outer member 28 is provided with a perforation 32 which is partially in line with the arcuate slot 30 of its companion member 29. The enlargement 31 and the perforation 32 may be used to assist in assembly and disassembly of the parts. The shaft 22 may be initially inserted from the outside through one of the perforations 32 and through the corresponding enlargement 31.

Pivoted adjacent its lower corner and adjacent the lower portion of each of the pair of members 28, 29 is a fulcrum lever 33. Each of these levers is pivoted upon a pin 34 which extends through suitable perforations in the members 28 and 29. The pin may be provided with a head 35, may be flattened at 36 and secured against turning by a pin 37 which is secured in one of the angle members 37a. The details of this construction are shown in Figure 5 in particular. The cross member 15a, however, is broken away to avoid confusing showing of the construction just mentioned. A spacer 38 may be positioned between the member 33 and the member 28, and a second spacer 39 may be positioned between the member 33 and the member 29. A locking lever 40, which in its lower outline conforms to the lower outline of the member 33, is rotatably mounted upon the spacer 39. It is provided adjacent its upper end or edge with a laterally projecting flange 41 which projects into the arcuate slot 30.

The fulcrum lever 33 is shown generally in the drawings and in detail in Figure 7. As there shown, it comprises a member which for convenience may be considered generally triangular, although it might be of another shape. These fulcrum members 33 are provided each with a lower face having two relatively straight portions 42 between which lies a curved portion 43. At a position adjacent its lower corner, each member 33 is perforated as at 44 and it is through this perforation 44 that pin 34 is positioned. At a point spaced away from perforation 44, each member 33 is perforated as at 45 to receive an end of the cross shaft 22. Each of the members 33 may be provided on each of its sides with a hollow spacing block or member 46 secured to it in any desired manner, for example by welding or riveting the member 33 may be perforated as at 47, to provide communication through the hollow spaces 46 through which lubricant may be applied. An oiling cup or other suitable oiler 48 may be positioned in or adjacent each of the pairs of spacers 46 to lubricate them and the parts which they contact.

Figures 8 to 11 inclusive illustrate a modified form of the locking means adapted to prevent the body from "running away" during tipping. This form of locking construction may be substituted for that shown in the earlier figures and the locking lever and associated parts shown in Figures 8 to 11 inclusive would be used instead of the locking lever or cam 40 illustrated in the earlier figures.

As shown, the locking assembly in the modified form comprises a locking lever 50, which, as in the case of the lever 40, is pivoted about the pin 34 and on the spacer 39 and which is also provided with a lower edge which corresponds in shape to the shape of the lower edge of the fulcrum lever member 33. A pin or projection 51 is positioned in or formed in the member 33 and projects through or extends into an arcuate 52 formed in the member 50. The member 50 is provided in its upper surface preferably adjacent one corner with a notch 53. 54 is a generally annular pawl carrier positioned for free rotation upon the shaft 22. It is provided with an outwardly projecting pawl 55 which projects into the slot 30 formed in the member 29. This slot in the modified form of Figures 8, 9 and 10 is notched or provided with pitch as at 56. The pawl carrier is partially rotated about its axis by means of a lug 57 which projects within the notch 53 of the locking lever 50.

The use and operation of the invention are as follows:

With the parts in position shown in Figure 1, the receptacle or body 1 is in position for receiving a load. If it be assumed that a load has been placed in the body and it is desired to dump the body, the following operation takes place: Pressure is forced into the cylinder 17, the piston rod 20 is forced outwardly carrying with it the crosshead 22. Since the crosshead 22 engages at each end, one of the fulcrum members 33 as the head is moved from the position of Figure 1 to the position of Figure 2 and subsequently to the position of Figure 3, the fulcrum members 33 are tilted in the fulcrum points or rollers and thus the lever action of the fulcrum members is effective to increase the tipping action of the vehicle.

At a certain stage in the tipping operation the fulcrum members 33 leave the fulcrum rollers and thereafter the fulcrum members do not carry out any lever action, and the movement of the body is continued to the dotted line position of Figure 3. It is obvious, therefore, that the members 33, during the earily stages of the operation of tilting, act as levers, and also act as links to provide a swinging connection of the crosshead to the receptacle 1 and the frame 8. After the members 33 move out of contact with the fulcrum rollers, there is no further lever action, and the parts 33 act merely as links to provide a movable connection between the crosshead 22 and the body which is being tipped.

In the reverse direction the body moves largely by gravity and its return to its original position is accomplished mainly by allowing the pressure fluid to escape from the cylinder 17 at a controlled rate of speed, the weight of the body and associated parts causing it to return to the initial position of Figure 1. If desired, the cylinder and piston mechanism may be so arranged that pressure can be put on either side of the

piston so that the body may be brought down from the tipped position positively as well as by gravity.

A detail of the mechanism, which may be used, if desired, is embodied in the provision of two fulcrum rollers for each fulcrum member **33**. A roller **23** is provided and it is contacted by the fulcrum member during the initial stages of tipping. A second roller **24** is provided and it is contacted by the member **33** during the later stage of dumping. As shown in Figure 1, **33** is in contact with the roller **23**. As shown in Figure 2, **33** has contacted roller **24** and is about to break contact with roller **23**, and as shown in Figure 3, the fulcrum member **33** is about to break contact with the roller **24**. The provision of two such fulcrum rollers provides a variation in the lever relationship.

A further feature which is shown herewith and which may be used, if desired, lies in the provision of a lock which prevents the body from "overrunning" or tipping too far. After a certain amount of dump movement has been accomplished, there is sometimes a tendency of the body and load to tip to the rear and to "overrun" in that direction. Two alternate means are shown for avoiding this. The locking means of Figures 6 and 7 operates frictionally, and the locking means of Figures 8 to 11, inclusive, operates positively. In each case, the effect of the locking means, whether frictionally or positively operated, is to lock the body and the crosshead **22** together so that the crosshead, the piston rod and the cylinder assembly can act as a brake to prevent overrunning.

It will be noticed in Figure 6 that the locking member **40** has a flange **41**. Upon too rapid tipping of the body, the member **40** may rotate downwardly in a clockwise direction and will force the flange **40** under or against the crosshead **22**.

The modified form of locking device shown in Figures 8 to 11, inclusive, substitutes a positive action. **50** is the locking lever and so long as the locking lever and the fulcrum lever are both in contact with one of the fulcrum rollers, no locking occurs. When, however, the two levers are lifted out of contact with the fulcrum roller, the locking lever **50** falls or swings lower than the fulcrum lever **33** as shown in Figure 9. When this occurs, the projection **57** of the locking ring **54** is rotated so as to throw out the locking pawl **55** into engagement with one of the notches **56** in the frame member **29**, and thus the crosshead **22** is locked to the member **29**.

When the reverse movement or lowering movement occurs, the locking relationship continues until the locking lever **50** has contacted the fulcrum roller **24**. When that occurs, it is raised with relationship to the fulcrum lever **33** and in that movement the face **53** acting upon the projection **57** rotates the locking ring in a clockwise direction and thus lifts the pawl **55** out of the notch **56**.

Although the locking effect is shown as having occurred only when the crosshead **22** has moved to the end of the slot **30**, it can occur at any other time when too rapid or uncontrolled tipping might occur.

I claim:

1. In a tilting device, a base, a load carrying member tiltably mounted on said base, a driving member tiltably mounted on said base and adapted to exert a driving effect upon said load carrying member to tilt the same, an actuating connection between said driving member and said load carrying member including a lever movably mounted on said load carrying member and adapted to be opposed to said base at a point remote from the tiltable connection between the load carrying member and base, and a plurality of separate fulcrum members mounted on said base and adapted successively to engage said lever in the course of the exertion of said driving effect upon said load carrying member, said fulcrum members being located at different distances from said driving member whereby, as the work supporting member is tilted to dump, the closest fulcrum member is initially operative against said lever, and the more remote fulcrum member thereafter becomes operative.

2. In a tilting device, a base, a load carrying member, tiltably mounted on said base, a driving member tiltably mounted on said base and adapted to exert a driving effect upon said load carrying member to tilt the same, said driving member including a piston and a cylinder and means for imparting relative movement thereto, an actuating connection between said driving member and said load carrying member, including a lever movably mounted on said load carrying member and adapted to be opposed to said base at a point remote from the tiltable connection between the load carrying member and base, and a plurality of separate fulcrum members mounted on said base and adapted successively to engage said lever in the course of the exertion of said driving effect upon said load carrying member, said fulcrum members being located at different distances from said driving member whereby, as the work supporting member is tilted to dump, the closest fulcrum member is initially operative against said lever, and the more remote fulcrum member thereafter becomes operative.

3. In a tilting device, a base, a load carrying member tiltably mounted on said base, a driving member tiltably mounted on said base and adapted to exert a driving effect upon said load carrying member to tilt the same, an actuating connection between said driving member and said load carrying member, including a lever supported upon said load carrying member and adapted to be opposed to said base at a point remote from the tiltable connection between the load carrying member and base, and a plurality of separate fulcrum members mounted on said base and adapted successively to engage said lever in the course of the exertion of said driving effect upon said load carrying member, said fulcrum members being located at different distances from said driving member whereby, as the work supporting member is tilted to dump, the closest fulcrum member is initially operative against said lever, and the more remote fulcrum member thereafter becomes operative.

4. In a tilting device, a base, a load carrying member tiltably mounted on said base, a driving member tiltably mounted on said base and adapted to exert a driving effect upon said load carrying member to tilt the same, an actuating connection between said driving member and said load carrying member, including a lever supported upon said load carrying member and adapted to be opposed to said base at a point remote from the tiltable connection between the load carrying member and base, a combined lever supporting and guiding means secured to said load carrying member and furnishing a pivotal support for

said lever, and a plurality of separate fulcrum members mounted on said base and adapted successively to engage said lever in the course of the exertion of said driving effect upon said load carrying member, said fulcrum members being located at different distances from said driving member whereby, as the work supporting member is tilted to dump, the closest fulcrum member is initially operative against said lever, and the more remote fulcrum member thereafter becomes operative.

5. In a tilting device, a base, a load carrying member tiltably mounted on said base, a driving member tiltably mounted on said base and adapted to exert a driving effect upon said load carrying member to tilt the same, an actuating connection between said driving member and said load carrying member, including a lever pivotally supported upon said load carrying member and adapted to be opposed to said base at a point remote from the tiltable connection between the load carrying member and base, a combined lever supporting and guiding means secured to said load carrying member and furnishing a pivotal support for said lever, said driving member being connected to said lever at a point intermediate that at which the lever is supported, and a plurality of separate fulcrum members mounted on said base and adapted successively to engage said lever in the course of the exertion of said driving effect upon said load carrying member, said fulcrum members being located at different distances from said driving member whereby, as the work supporting member is tilted to dump, the closest fulcrum member is initially operative against said lever, and the more remote fulcrum member thereafter becomes operative.

6. In combination in a tipping assembly a base, a load carrying member mounted on said base for movement with relation thereto and means for tilting said load carrying member with respect to said base, said means including a lever, movably supported from said load carrying member, a power means connected to said lever, a pair of longitudinally aligned fulcrum rollers positioned upon said base in position to be contacted by said lever, said lever as it is tilted contacting successively each roller, the lever being tilted with respect to the load carrying member during the initial stages of tipping and means on said body effective thereafter to hold said lever, against movement with relation to said load carrying member.

7. In combination in a tipping assembly, a base, a load carrying member mounted on said base for movement with relation thereto and means for tilting said load carrying member with respect to said base, said means including a plurality of levers, each movably supported from said load carrying member, a power means connected to each of said levers, a pair of longitudinally aligned fulcrum rollers positioned upon said base in position to be contacted by one of said levers, each lever as it is tilted contacting successively each roller of its pair, the lever being tilted with respect to the load carrying member during the initial stages of tipping and means on said body effective thereafter to hold said lever, against movement with relation to said carrying member.

8. In combination in a tipping assembly, a base, a load carrying member mounted on said base for movement with relation thereto and means for tilting said load carrying member with respect to said base, said means including a lever pivotally supported from said load carrying member, a power means connected to said lever at a point separated from its pivot, a pair of longitudinally aligned fulcrum rollers positioned upon said base in position to be contacted by said lever, said lever as it is tilted contacting successively each roller, the lever being tilted with respect to the load carrying member during the initial stages of tipping and means on said body effective thereafter to hold said lever, against movement with relation to said load carrying member.

9. In combination in a tipping assembly, a base, a load carrying member mounted on said base for movement with relation thereto and means for tilting said load carrying member with respect to said base, said means including a plurality of levers, pivotally supported from said load carrying member, a power means connected to each of said levers at a point separated from its pivot, a pair of longitudinally aligned fulcrum rollers positioned upon said base in position to be contacted by one of said levers, each lever as it is tilted contacting successively each roller of its pair, the lever being tilted with respect to the load carrying member during the initial stages of tipping and means on said body effective thereafter to hold said lever, against movement with relation to said load carrying member.

10. In a tilting device, a base, a load carrying member tiltably mounted on said base, a driving member tiltably mounted on said base and adapted to exert a driving effect upon said load carrying member to tilt the same, an actuating connection between said driving member and said load carrying member including a lever adapted to be opposed to said base at a point remote from the tiltable connection between the load carrying member and base, and a plurality of separate fulcrum members mounted on said base and adapted successively to engage said lever in the course of the exertion of said driving effect upon said load carrying member, said fulcrum members being located at different distances from said driving member whereby, as the work supporting member is tilted to dump, the closest fulcrum member is initially operative against said lever, and the more remote fulcrum member thereafter becomes operative, and a locking means to lock said load carrying member to said tilting means including a second lever supported co-axially with said first lever and adapted to move with said first lever, and means associated with the said second lever effective upon the "over running" load carrying member to lock said load carrying member to said driving member.

11. In a tilting device, a base, a load carrying member tiltably mounted on said base, a driving member tiltably mounted on said base and adapted to exert a driving effect upon said load carrying member to tilt the same, an actuating connection between said driving member and said load carrying member, including a lever movably supported upon said load carrying member and adapted to be opposed to said base at a point remote from the tiltable connection between the load carrying member and base, a combined lever supporting and guiding means secured to said load carrying member and furnishing a pivotal support for said lever, said driving member being connected to said lever at a point intermediate that at which the lever is supported, and a plurality of separate fulcrum members mounted on said base and adapted successively to engage said lever in the course of the exertion of said driving effect upon said load carrying member, said ful-

crum members being located at different distances from said driving member whereby, as the work supporting member is tilted to dump, the closest fulcrum member is initially operative against said lever, and the more remote fulcrum member thereafter becomes operative, and a locking means to lock said load carrying member to said tilting means including a second lever supported co-axially with said first lever and adapted to move with said first lever, and means associated with the said second lever effective upon the over "running" load carrying member to lock said load carrying member to said driving member.

12. In combination in a tipping assembly, a base, a load carrying member mounted on said base for movement with relation thereto and means for tilting said load carrying member with respect to said base, said means including a plurality of levers, pivotally supported from load carrying member, a power means connected to each of said levers at a point separated from its pivot, a pair of longitudinally aligned fulcrum rollers positioned upon said base in position to be contacted by one of said levers, each lever as it is tilted contacting successively each roller of its pair, the lever being tilted with respect to the load carrying member during the initial stages of tipping, and being thereafter held against movement with relation to said load carrying member, and a locking means to lock said load carrying member to said tilting means including a second lever supported co-axially with said first lever and adapted to move with said first lever, and means associated with the said second lever effective upon the over "running" load carrying member to lock said load carrying member to said driving member.

13. In a tilting device, a base, a load carrying member tiltably mounted on said base, a driving member tiltably mounted on said base and adapted to exert a driving effect upon said load carrying member to tilt the same, an actuating connection between said driving member and said load carrying member, including a lever movably supported upon said load carrying member and adapted to be opposed to said base at a point remote from the tiltable connection between the load carrying member and base, a combined lever supporting and guiding means secured to said load carrying member and furnishing a pivotal support for said lever, said driving member being connected to said lever at a point intermediate that at which the lever is supported, and a plurality of separate fulcrum members mounted on said base and adapted successively to engage said lever in the course of the exertion of said driving effect upon said load carrying member, said fulcrum members being located at different distances from said driving member whereby, as the work supporting member is tilted to dump, the closest fulcrum member is initially operative against said lever, and the more remote fulcrum member thereafter becomes operative, and a locking means to lock said load carrying member to said tilting means including a second lever supported co-axially with said first lever and adapted to move with said first lever, and means associated with the said second lever effective upon the over "running" load carrying member to lock said load carrying member to said driving member, said locking means including a part mounted to move on said load carrying member defining an arcuate slot and a plurality of teeth, and a second locking part associated with said second lever having a pawl mounted adjacent said teeth and provided with a member engaging said second lever, said second lever adapted in the event of over "running" of the load carrying member to actuate said second locking member to bring the pawl into engagement with one of said teeth.

14. In combination in a tipping assembly, a base, a load carrying member mounted on said base for movement with relation thereto and means for tilting said load carrying member with respect to said base, said means including a plurality of levers, pivotally supported from load carrying member, a power means connected to each of said levers at a point separated from its pivot, a pair of longitudinally aligned fulcrum rollers positioned upon said base in position to be contacted by one of said levers, each lever as it is tilted contacting successively each roller of its pair, the lever being tilted with respect to the load carrying member during the initial stages of tipping, and being thereafter held against movement with relation to said load carrying member, and a locking means to lock said loading carrying member to said tilting means including a second lever supported co-axially with said first lever and adapted to move with said first lever, and means associated with the said second lever effective upon the over "running" load carrying member to lock said load carrying member to said driving member.

15. In combination in a dumping body assembly, a main frame, a dumping body pivoted thereon for tilting movement with relation thereto, a hydraulic power assembly tiltably mounted on said frame and means for causing said hydraulic assembly to tilt the body with respect to the supporting frame, said means including lever supports mounted on said body, a lever pivoted on said lever support, a connection from the hydraulic power source to said lever at a point spaced from its pivot, a pair of fulcrum rollers positioned on said frame and aligned one behind the other with respect to the pivot point of said body, said levers having faces adapted to contact said rollers, each lever contacting the two rollers of one pair successively during the initial stages of the tilting movement and being left out of contact with the second roller in a later stage of the tilting movement.

16. In combination in a dumping body assembly, a main frame, a dumping body pivoted thereon for tilting movement with relation thereto, a hydraulic power assembly tiltably mounted on said frame and means for causing said hydraulic assembly to tlit the body with respect to the supporting frame, said means including pairs of lever supports mounted on said body, a lever pivoted between each pair of lever supports, a connection from the hydraulic power source to each of said levers at a point spaced from its pivot, a pair of fulcrum rollers positioned on said frame and aligned one behind the other with respect to the pivot point of said body, said levers having faces adapted to contact said rollers, each lever contacting the two rollers of one pair successively during the initial stages of the tilting movement and being left out of contact with the second roller in a later stage of the tilting movement.

17. In combination in a material handling apparatus, a base, a load carrying member movably mounted on said base by means of hinges, a power means adapted to cause said material supporting

member to tilt with relation to said base, said power means including a hydraulic moving mechanism pivoted upon said base, a plurality of pairs of lever suporting members secured to said material member and a plurality of levers, mounted for movement one between each of said supporting members, said hydraulic power means being secured to said levers at a point separated from their points of support upon said supporting members, a plurality of pairs of fulcrum rollers supported from said base, each of said levers being provided with a roller contacting face, the rollers of each pair being positioned to be contacted successively by said levers, each of said levers contacting successively the fulcrum rollers of each pair during an early portion of the tilting movement and being held out of contact with body of said rollers during a portion of latter said tilting movement.

18. In combination in a material handling apparatus, a base, a load carrying member movably mounted on said base by means of hinges, a power means adapted to cause said material supporting member to tilt with relation to said base, said power means including a hydraulic moving mechanism pivoted upon said base, a plurality of pairs of lever supporting members secured to said material member and a plurality of levers, mounted for movement one between each of said supporting members, said hydraulic power means being secured to said levers at a point separated from their points of support upon said supporting members, a plurality of pairs of fulcrum rollers supported from said base, each of said levers being provided with a roller contacting face, the rollers of each pair being positioned to be contacted successively by said levers and a stop for each of said levers effective to limit its tilting movement with respect to its support, each of said lever contacting successively the fulcrum rollers of each pair during an early portion of the tilting movement and being held out of contact with both of said rollers during a portion of latter said tilting movement.

19. In combination in a material handling apparatus, a base, a load carrying member movably mounted on said base by means of hinges, a power means adapted to cause said material supporting member to tilt with relation to said base, said power means including a hydraulic moving mechanism pivoted upon said base, a plurality of pairs of lever supporting members secured to said material member and depending downwardly therefrom, and a plurality of levers, mounted for movement one between each of said supporting members, said hydraulic power means being secured to said levers at a point separated from their points of support upon said supporting members, a plurality of pairs of fulcrum rollers supported from said base, each of said levers being provided with a roller contacting face, the rollers of each pair being positioned to be contacted successively by said levers and a stop for each of said levers effective to limit its tilting movement with respect to its support, each of said levers contacting successively the fulcrum rollers of each pair during an early portion of the tilting movement and being held out of contact with both of said rollers during a portion of latter said tilting movement.

20. In combination in a dumping body, a support, a load carrying member movably mounted thereon, means for tipping the load carrying member with respect to the support, a fulcrum member on said support, said tipping means including a lever movably mounted on said load carrying member and adapted to bear upon said fulcrum and means for locking said lever against movement with respect to said load carrying member, said locking means including a part movably mounted upon said load carrying member and adapted to bear upon said fulcrum, said locking means remaining inactive while in contact with said fulcrum and adapted to move to the locked position when out of contact with said fulcrum.

21. In combination, a support, a body pivotally mounted thereon, means for tipping the body with respect to the support, said means including a lever pivotally supported from the body, a fulcrum part on the support positioned to be contacted by the said lever, and means for locking the lever and body against relative movement, said locking means comprising a part movably supported on the body and adapted to contact the fulcrum part, and, when in contact therewith, to hold the lever and body in unlocked relation free for relative movement, said locking means adapted when moved out of contact with the fulcrum part to lock the lever and body together against relative movement.

22. In combination, a support, a body pivotally mounted thereon, means for tipping the body with respect to the support, said means including a lever pivotally supported from the body, a plurality of fulcrum parts on the support positioned to be contacted successively by the said lever, and means for locking the lever and body against relative movement, said locking means comprising a part movably supported on the body and adapted to contact the fulcrum parts, and, when in contact therewith, to hold the lever and body in unlocked relation free for relative movement, said locking means adapted when moved out of contact with the fulcrum parts to lock the lever and body together against relative movement.

23. In a tilting device, a base, a load carrying member tiltably mounted on said base, a driving member tiltably mounted on said base and adapted to exert a driving effect upon said load carrying member to tilt the same, an actuating connection between said driving member and said load carrying member including a lever movably mounted on said load carrying member and adapted to be opposed to said base at a point remote from the tiltable connection between the load carrying member and base, and a plurality of separate fulcrum members mounted on said base and adapted successively to engage said lever in the course of the exertion of said driving effect upon said load carrying member, said fulcrum members being located at different distances from said driving member whereby, as the work supporting member is tilted to dump, the closest fulcrum member is initially operative against said lever, and the more remote fulcrum member thereafter becomes operative, and locking means associated with the said lever to lock the same against relative movement with respect to said load carrying member, said locking means including an actuating part adapted to contact said fulcrum members and shaped and supported to cause locking when out of contact with one of said fulcrum members.

24. In combination in a dumping body, a support and body mounted thereon for movement with respect thereto, means for moving the body,

including a lever movably supported on the body, and means for moving said lever with relation to the body, and a lever carrying means mounted on said body and comprising a support for said lever, a slot in said lever carrying means, notches in one face of said slot, a member carried by said lever lying within said slot, a dog on said member, and a locking means carried by said lever carrying means, a connection between said locking means and said dog, said locking means adapted in one relative position with respect to said lever to move said dog into engagement with said notches and in another relative position to move it out of engagement therewith.

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