F. MUELLER.

DUMPING MECHANISM FOR MOTOR TRUCKS.

APPLICATION FILED OCT. 16, 1912.

1,191,983.

Patented July 25, 1916.

3 SHEETS—SHEET 1.

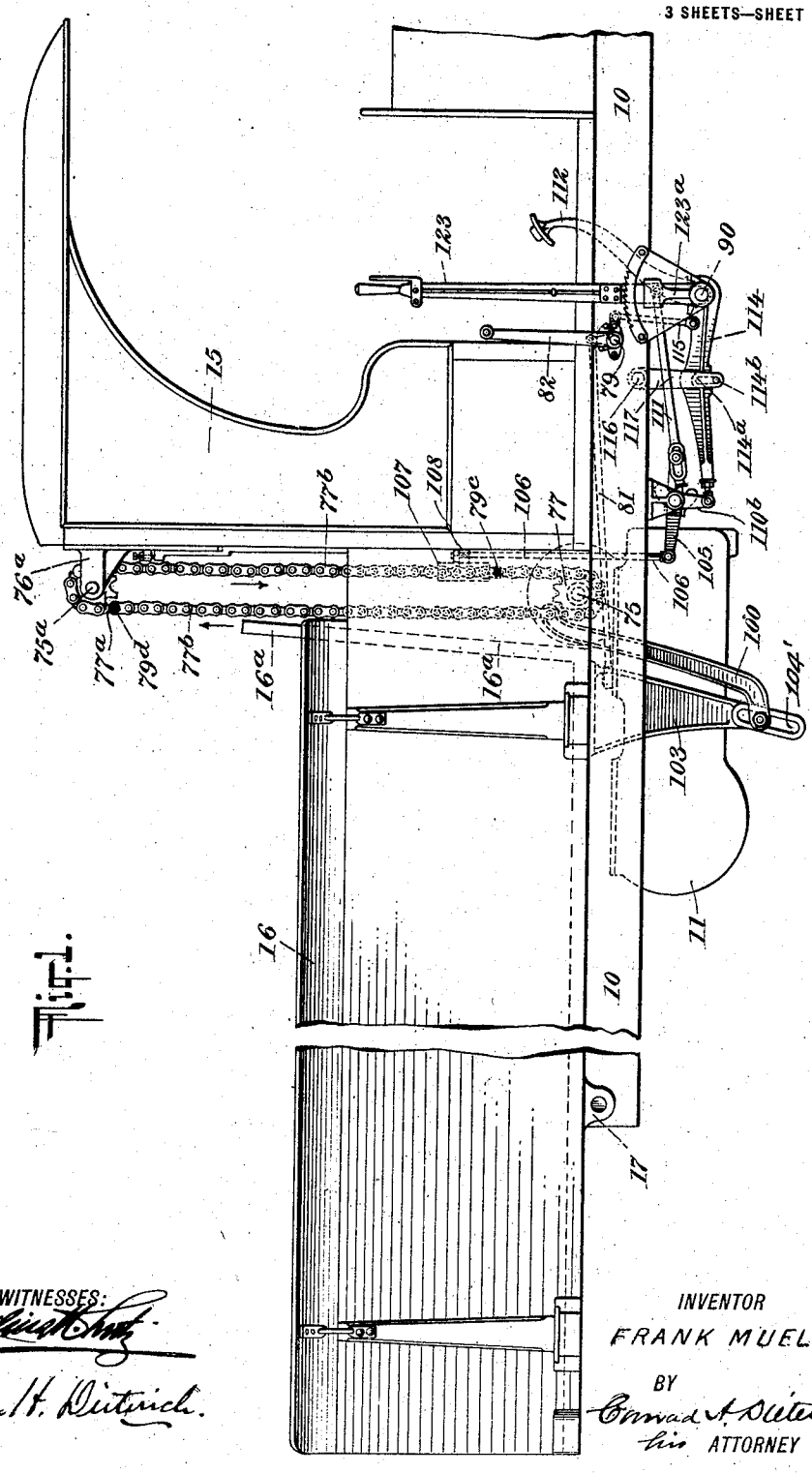


Fig. 1.

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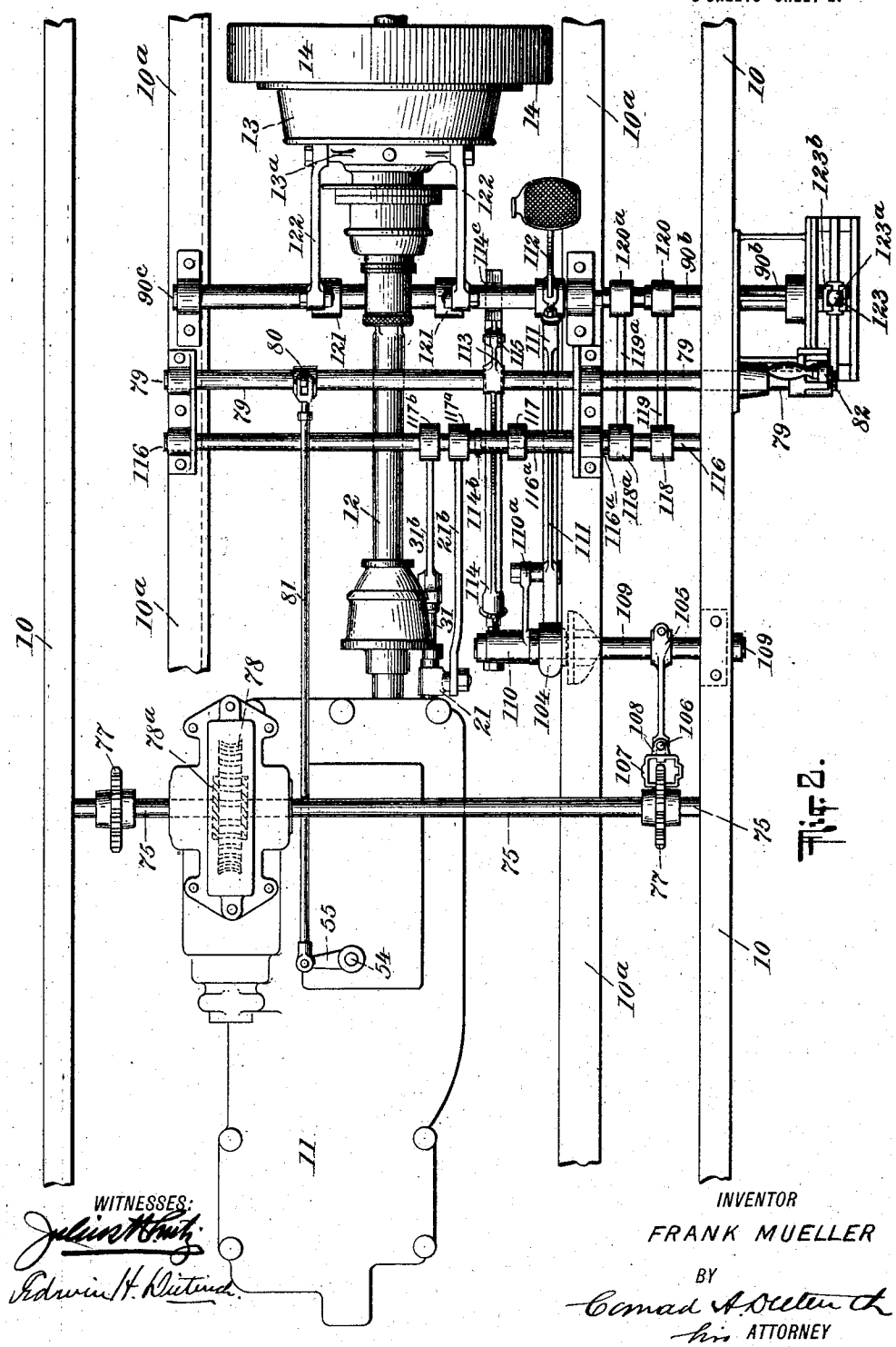


Fig. 2.

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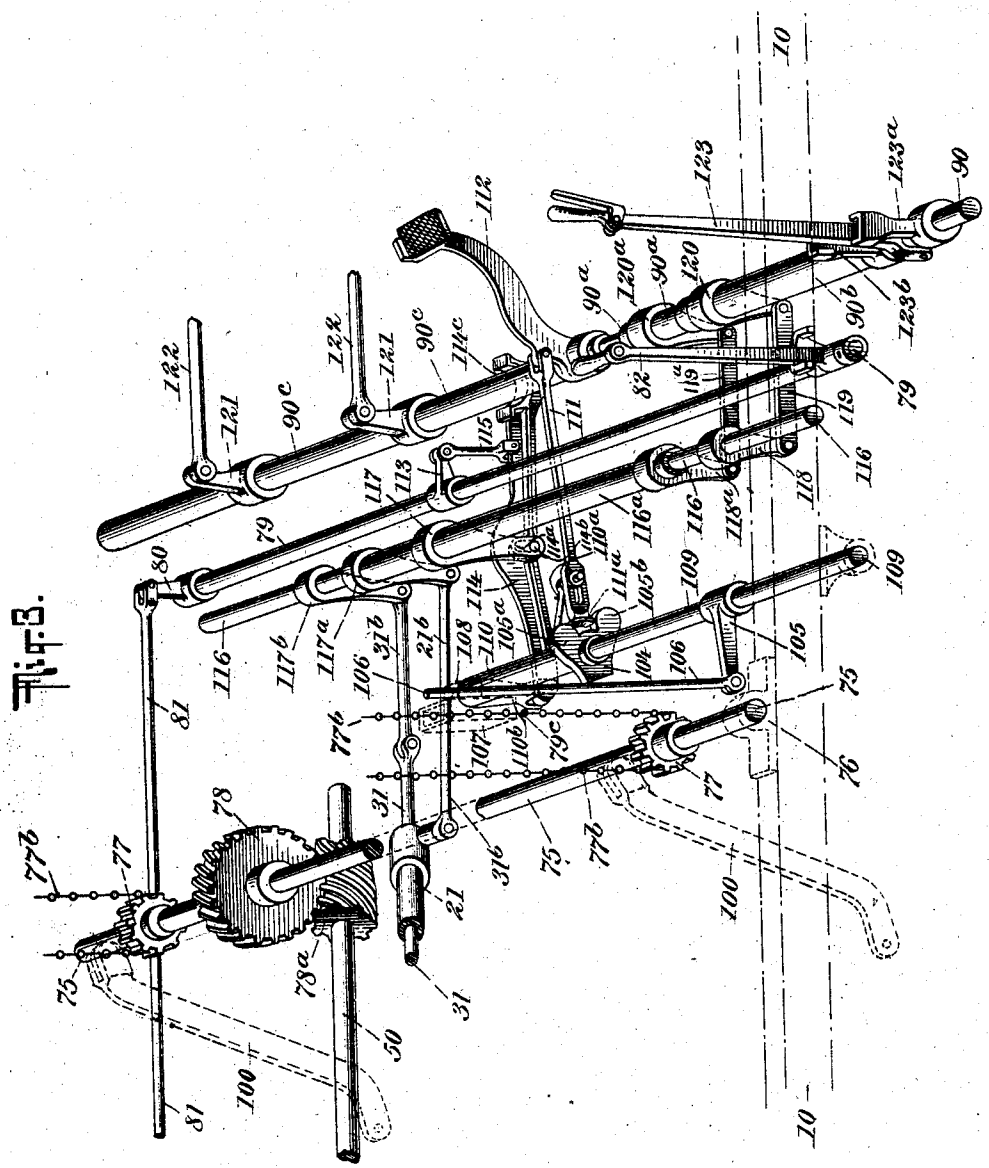


Fig. 3.

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UNITED STATES PATENT OFFICE.

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DUMPING MECHANISM FOR MOTOR-TRUCKS.

1,191,983. Specification of Letters Patent. Patented July 25, 1916.

Application filed October 16, 1912. Serial No. 726,029.

To all whom it may concern:

Be it known that I, FRANK MUELLER, a citizen of the United States, residing at Allentown, Lehigh county, Pennsylvania, have invented certain new and useful Improvements in Dumping Mechanism for Motor-Trucks, of which the following is a full, clear, and exact specification.

This invention relates to motor vehicles of the type which are provided with tilting body portions.

One of the objects of the invention is to provide means for raising and lowering a body portion by means of the motor which operates the vehicle.

Another object is to provide for automatically disconnecting the motor from the body actuating means after the body has been raised the desired distance and as the body returns to its normal position.

Another object is to provide means for positively preventing the body actuating means from being actuated by any of the speed gears of the transmission mechanism except the low speed gear and the reverse gear.

Other objects will in part be obvious and in part be pointed out hereinafter.

In the accompanying drawings showing an illustrative embodiment of the invention and in which the same reference numeral refers to similar parts in the several figures, Figure 1 is a part view and side elevation of the vehicle; Fig. 2 is a plan view, the body and cabin being removed; and Fig. 3 is a perspective view of the operating mechanism.

In the drawings 10, 10 designate the longitudinal frame members and 10^a, 10^a represent the longitudinal subframe members.

11 denotes the transmission casing, which is the same as that described in United States Letters Patent No. 954,531, granted April 12, 1910.

12 is the main shaft connecting the clutch 13 with the transmission, and 14 denotes the fly wheel of the engine having a recessed face to receive the usual cone clutch 13, in which a spring normally holds the movable member in engagement with its coöperating member fixed to or forming part of the fly-wheel. 15 denotes the cabin of the car, 16 the tilting body, and 17 the hinge upon which the body tilts. The body 16 has sides which extend to the forward end of the body to the rear of the cabin 15, and a false front 16^a which terminates a short distance to the rear of the front edge of the side portions of the body in order to provide a transverse space between the front of the body and the rear of the cabin 15.

75 denotes a transverse shaft which is mounted in bearings 76, 76, provided upon the longitudinal frame members 10, 10. Upon the opposite ends of the shaft 75 are fixed sprocket wheels 77, 77, over which pass sprocket chains 77^b, 77^b. Upon the rear wall of the cabin 15 adjacent to its top are provided at each side thereof rearwardly extending brackets 76^a, 76^a, in which is supported a shaft 75^a, having fixed thereon sprocket wheels 77^a, 77^a, over which the sprocket chains 77^b, 77^b also extend. Intermediate the ends of the shaft 75 is a worm gear 78 which meshes with a worm 78^a fixed upon the extra shaft 50. One of the sprocket chains 77^b is provided with oppositely arranged projecting lugs or pins 79^c, 79^d, which are adapted to contact respectively with the lower and upper edges of a box 107 which surrounds said chain 77^b, and which is provided with a projection 108 to which is fixed the upper end of a rod 106. The lower end of the rod 106 is pivotally connected to the rear end of an arm 105, which is fixed upon a short transverse shaft 109. Upon this shaft is fixed a stop 104 comprising a pair of forwardly extending members 105^a, 105^b. Upon the inner end of the shaft 109 is loosely mounted a bell crank lever 110, having a horizontal member 110^a and a depending vertical member 110^b. The forward end of the horizontal member 110^a of the bell crank lever 110 is pivotally secured to the slotted rear end of a link 111, which is provided with a curved face 111^a conformed to the ends of the stops 105^a, 105^b. The forward end of the link 111 is pivotally connected to the rear side of the clutch-operating lever 112.

In front of and slightly above the short shaft 109 is mounted a transverse shaft 79, having an operating lever 82 secured to one end thereof and adjacent to its other end is secured an upwardly extending arm 80 connected by the link 81 with the lever 55 secured to the upper projecting end of the vertical shaft 54, which extends through the transmission casing 11.

113 denotes a short forwardly extending

arm fixed upon the shaft 19 intermediate its ends, and having pivotally secured at its outer end the upper end of a link 115, which has its lower end pivotally secured to a locking lever 114 adjacent to the forward end thereof. This locking lever 114 is provided in its upper surface, at its forward end, with a recess 114^c adapted to embrace a sleeve 90^c surrounding the shaft 90 and intermediate its ends. The lever 114 is provided in its under surface with a recess 114^a, which is adapted to engage a projecting pin 114^b arranged upon the lower end of an arm 117. The upper end of the arm 117 is fixed to a sleeve 116^a loosely surrounding the transverse shaft 116. Upon this sleeve is fixed the upper end of a depending arm 117^a the lower end of which is pivotally connected to a link 21^b which is connected to the forward end of the tubular shifting rod 21. Secured to the shaft 116 is the upper end of a depending arm 117^b the lower end of which is pivotally connected to a link 31^b which is connected to the forward end of the solid shifting rod 31 working within the tubular rod 21.

Arranged upon and surrounding the forward end of the shaft 90, between the longitudinal frame member 10 and the longitudinal sub-frame member 10^a, is a sleeve 90^b, upon which is fixed a depending arm 120, which is pivotally connected at its lower end by means of a link 119, to a lower end of an arm 118, which is fixed upon the shaft 116. The link 119 with the arms 118 and 120 serves to connect the sleeve 90^b with the shaft 116, arm 117^b, link 31^b and shifting rod 31, in order to operate the second and high speed gears.

Adjacent to the inner side of the arm 120 is arranged an arm 120^a, which is fixed upon the forward end of the sleeve 90^a, surrounding the shaft 90 and working within the sleeve 90^b. The lower end of the arm 120^a is pivotally connected, by means of a link 119^a, to the lower end of an arm 118^a, fixed upon the forward end of the sleeve 116^a surrounding the shaft 116. The link 119^a and arms 120^a and 118^a serve to connect the sleeve 90^a with the sleeve 116^a, arm 117^a and link 21^b with the tubular shifting rod 21 of the transmission, in order to operate the first speed gear and the reverse gear.

Upon the sleeve 90^c, intermediate the sub-frame members 10^a, 10^a, are fixed two upwardly extending arms 121, 121, the upper ends of which are pivotally secured to the rear ends of links 122, 122, which are connected at their forward ends to the clutch collar 13^a, loosely mounted on the clutch 13. The clutch 13 is operated by means of the clutch pedal 112, fixed upon the forward end of the sleeve 90^c.

The tilting body portion 16 is provided at its sides adjacent to its forward end with depending arms 103, 103, to which links 100, 100 are connected, which links have their other ends connected to the chains 77^b, 77^b.

The operation of the device is as follows; it being assumed that the parts are in their neutral or normal positions and the car at rest. It merely becomes necessary to push the upper end of the lever 82 forwardly and downwardly, thereby covering the upper end of the supplemental lever 123^b, and the slot in the segmental plate within which it works in order to control the second and high speeds. This will prevent the transmission lever 123 engaging the said supplemental lever and will lock the same against accidental connection therewith. By lowering the lever 82, the link 81 is drawn forward and the lever 55 of the transmission mechanism moved in the same direction, thereby partially rotating the vertical shaft 54 in the transmission casing 11, and placing in commission the hoisting mechanism comprising the extra shaft 50, worm 78^a, worm gear 78, shaft 75, and the chain operated mechanism which is arranged upon the rear of the cabin 15. The means whereby the extra shaft 50 is placed in commission is fully explained in my co-pending application, Serial Number 726,028, filed October 16, 1912. With the same operation of the lever 82, the link 115 is forced downwardly which causes the recessed forward end of the locking lever 114 to be released from the sleeve 90^c surrounding the shaft 90, and at the same time causes the recess 114^a to engage the projecting pin 114^b, arranged upon the depending lever 117, and to hold the parts to the neutral position. This serves to connect the link 21^b with the lever 114, by means of the pin 114^b, whereupon the parts move jointly. In order now to elevate the forward end of the vehicle body 16 it becomes necessary to apply the power, which may be done by moving the transmission lever 123 outwardly and causing the same to lock with the supplemental lever 123^a on the outer end of the shaft 90, thereby operating the first speed of the transmission, this being effected through the medium of the arm 120^a, on the sleeve 90^a, link 119^a, arm 118^a on the sleeve 116^a, and thereby partially rotating said sleeve 116^a, arms 117, 117^a, link 21^b, and the tubular shifting rod 21, which is thereby forced rearwardly or inwardly into the casing and the first speed clutch thrown into operation. As the recess 114^a of the locking lever 114 is in engagement with the pin 114^b, the said locking lever is moved bodily to the rear and thereby causes the vertical member 110^b of the bell crank lever 110 to be forced rearwardly and the horizontal member 110^a to be forced downwardly, and the latter will shift the slotted end of the link 111 downwardly to its lowermost position so that its

curved end 111ª shall be opposite to and be engaged by the stop 105ᵇ, which is fixed upon the shaft 109. As soon as this has been done, power will be transmitted from the transmission mechanism to the extra shaft or hoisting shaft 50, to the worm 78ª, worm gear 78, and rotate the shaft 75 with the sprocket gears 77 thereon, and these in turn will rotate the chains 77ᵇ, 77ᵇ in the direction of the arrow. As soon as the forward end of the body has been raised to its uppermost position, the stop 79ᵈ will contact with the upper edge of the box 107 and cause said box to descend, and in so doing depress the lever 105 and partly rotate the shaft 109. This will cause the stop 105ᵇ to engage the curved end 111ª upon the inner end of the arm 111, force the same forwardly together with the clutch pedal 112, and thereby disconnect the clutch from the fly wheel of the engine and arrest further moving of the body and the dumping mechanism.

To restore the body 16 to its horizontal position, it merely becomes necessary to force the transmission lever 123 in the opposite direction, thereby partially rotating the sleeve 90ª, the arm 120ª, link 119ª, arm 118ª, sleeve 116ª, arm 117ª, link 21ᵇ and tubular shifting rod 21, and in turn drawing the shifting rod outwardly or forwardly and causing the reverse speed clutch to be thrown into operative position. At the same time, the locking lever 114 will be moved bodily forward and will cause the end of the vertical bell crank member 110ᵇ to be moved forward and the horizontal member 110ª to be moved upward and thereby raise the inner end of the lever 111 into position opposite to the stop 105ª, whereby the reverse movement is communicated to the gear on the extra shaft 50, worm 78ª, worm gear 78 and shaft 75, thus causing the chains 77ᵇ, 77ᵇ to travel in the reverse direction from that first described. As the chain travels in this direction, the stop 79ᶜ will engage with the under side of the box 107 and move the same upward a short distance, thereby raising the rod 106, arm 105, and shifting the stop 105ª into engagement with the inner curved end 111ª of the link 111, forcing the same forwardly together with the clutch pedal 112 thereto attached, whereby the clutch 113 is again disconnected from the engine. To provide for any undue strain on the parts of the chain, the arm 103 is provided with a slot 104′ at its lower end, in which the lower end of the link 100 is accorded a slight play, in order to insure and permit of the proper seating of the body 16 upon the truck frame. When the body of the vehicle is duly seated upon the truck frame, the transmission lever 123 must be restored to its neutral position, and the lever 82 restored to its neutral position, in order to disengage the hoisting mechanism. Upon raising the lever 82 to its neutral position, the arm 113 will be partly rotated, and this in turn will raise the link 115 and cause the recess 114ᶜ in the forward end of the locking lever 114 to reëngage with the sleeve 90ᶜ, and the recess 114ª in said locking lever to be disengaged from the pin 114ᵇ. At the same time, the bell crank lever 110 will be adjusted to its neutral position and permit the curved inner end 111ª of the link 111 to reciprocate between the stops 105ª, 105ᵇ, as shown, and permit the transmission lever 123 to be used to operate the car in connection with the three forward speeds and the reverse, in the usual manner.

The clutch 13 may be thrown out of operation by means of the pedal 112, when the transmission is operating independently of the dumping mechanism in the ordinary course of the running of the vehicle. When the dumping mechanism is thrown into operation, the clutch may be thrown out of engagement with the fly wheel of the engine by means of the chain 77ᵇ, box 107, rod 106, lever 105, and the stops 105ª, 105ᵇ, engaging the inner end of the link 111, which is pivotally secured at its forward end to said clutch pedal 112.

If it is desired to stop the elevating or lowering of the car body at any point intermediate the extreme of its upper and lower limits, it merely becomes necessary to depress the pedal lever 112 and throw the clutch 13 out of operation.

Having described the invention in connection with the illustrative embodiment thereof, to the details of which disclosure the invention is not, of course, to be limited, what is claimed as new and what is desired to be secured by Letters Patent, is set forth in the appended claims.

1. In a motor vehicle or the like, the combination with the engine, the transmission mechanism, the clutch and the clutch lever operatively connected to the clutch, of a tiltingly mounted body, means for tilting said body, normally inoperative means for transmitting power from the transmission mechanism to said body tilting means, means for rendering said normally inoperative means effective to transmit power from the transmission mechanism to said body tilting means, and means controlled by said body tilting means to move the clutch lever to render the clutch inoperative when the body has reached the predetermined limit of its movement in either direction, substantially as specified.

2. In a motor vehicle or the like, in combination, a frame, an engine, a transmission mechanism, a clutch for connecting said engine and transmission mechanism, means for actuating said clutch, a body tiltingly mounted upon said frame, normally inoperative means for tilting said body, means

for operatively connecting said transmission mechanism with said body tilting means, a bodily-movable locking member, means for shifting said locking member into position to hold said clutch in position to connect said engine with said means for tilting said body, and means actuated by said body tilting means for tripping said locking member whereby to release said clutch when said body portion has reached a predetermined limit of its movement in either direction, substantially as specified.

3. In a motor vehicle or the like, in combination, a frame, an engine, a transmission mechanism, a clutch for operatively connecting said engine and transmission mechanism, means for shifting said clutch, a body tiltingly mounted upon said frame, normally inoperative means for tilting said body, a locking member controlling said clutch, normally inoperative means for connecting said transmission mechanism with said body tilting means, a lever for actuating said connecting means and for shifting said locking member to maintain said clutch in operative position, and means actuated by said body tilting means for tripping said locking member to release said clutch when said body has reached a predetermined position in the course of its movement in either direction substantially as specified.

4. In a motor vehicle, or the like, in combination, a frame, a body tiltingly mounted thereon, means for tilting said body, an engine, a transmission mechanism, a clutch for operatively connecting said engine and transmission mechanism, a lever for actuating said clutch, a bodily-movable pivoted locking member for controlling said clutch, a link connecting said locking member with the lever for actuating said clutch, normally inoperative means for transmitting power from said transmission mechanism to said body-tilting means, a lever for rendering said normally inoperative means effective and for shifting said locking member into position to maintain said clutch in operative position, and means carried by a traveling portion of said body-tilting means for releasing said clutch when said body has about reached a predetermined position in the course of its movement in either direction, substantially as specified.

5. In a motor vehicle or the like, in combination, a frame, an engine, a transmission mechanism, a clutch for operatively connecting said engine and transmission mechanism, a body tiltingly mounted upon said frame, means for tilting said body, a bodily-movable locking member, means for normally maintaining said locking member in neutral position to permit of the free operation of said clutch, means releasing the means for maintaining said locking member in its neutral position, and means for shifting said clutch to its operative position and said locking member into position to hold said clutch locked to its operative position, and means for releasing said locking member whereby to actuate said clutch to disconnect said engine when said body has reached a predetermined limit of its movement in either direction, substantially as specified.

6. In a motor vehicle or the like, in combination, a frame, a body tiltingly mounted thereon, means for tilting said body, an engine, transmission mechanism, a clutch interposed between the engine and the transmission mechanism, a clutch lever for actuating said clutch, a link connected to said clutch lever, a movable stop, a lever having one end pivotally supported on the frame and its other end pivotally connected to and in sliding engagement with said link for holding said link in position to permit of the ordinary operation of said clutch lever, means for actuating said pivotally supported lever to shift said link into operative relation with said movable stop, and means controlled by said body tilting means to move said stop to actuate said clutch lever to render the clutch inoperative when said body has reached a predetermined position in the course of its movement in either direction, substantially as specified.

7. In a motor vehicle or the like, in combination, a frame, a body tiltingly mounted thereon, an engine, a clutch, transmission mechanism, a shaft mounted upon said frame, normally inoperative means for transmitting power from the transmission mechanism to said shaft, sprocket wheels fixed upon said shaft, a second shaft, a sleeve thereon operatively connected to the clutch, a clutch operating lever fixed to said sleeve, transmission controlling means arranged upon said second shaft, a third shaft, a bell crank lever loosely supported thereon, a locking lever pivotally secured at one end to said bell crank lever and provided at its other end with a recess adapted to engage said sleeve, said locking lever being provided with a second recess intermediate its ends, a stop secured to said third shaft and having a plurality of separated projections, a link having one end pivotally connected to said clutch operating lever and its other end pivotally secured to and in sliding engagement with the free arm of the bell crank lever on said third shaft, a fourth shaft arranged intermediate said second and third shafts, a sleeve upon said fourth shaft, means connecting said fourth shaft and the sleeve thereon severally with the shifting mechanism of said transmission mechanism and with said transmission controlling means arranged upon said second shaft, an arm on said sleeve, means at the free end of said arm adapted for engagement with the sec-

ond recess in said locking lever, a fifth shaft arranged intermediate said second and fourth shafts, a lever for actuating said fifth shaft, a pair of arms fixed upon said fifth shaft, a link connecting one of said arms with said locking lever adjacent to its free end, and means connected with the other of said pair of arms for rendering said normally inoperative means effective to transmit power from the transmission mechanism to said first shaft, a sixth shaft mounted upon the vehicle above said frame, sprocket wheels on said sixth shaft, chains extending over said sprocket wheels and over the sprocket wheels of said first shaft, a plurality of links secured to said chains and to said body, stops on one of said chains, a member embracing said one chain and adapted to be engaged by said stops, and means connecting said third shaft with said member, substantially as specified.

8. In a motor vehicle or the like, in combination, a frame, an engine, transmission mechanism, a clutch interposed between the engine and the transmission mechanism, a body tiltingly mounted on the frame, means for tilting the body, means for operatively connecting the tilting means to the transmission mechanism, and automatically operated means to render the clutch inoperative when the body has been tilted a predetermined amount and when the body returns to its normal position, substantially as specified.

9. In motor vehicles and the like in combination, a frame, a body portion tiltingly mounted thereon, transmission mechanism, means normally disconnected from said transmission mechanism for tilting said body portion means for connecting said tilting means with said transmission mechanism whereby the former will be actuated by the latter to tilt said body portion, a lever for actuating said connecting means, and a transmission lever for controlling the speed gears in said transmission mechanism, said first-mentioned lever in its operative position locking said transmission lever from controlling all speed gears except the low speed gear and the reverse gear, substantially as specified.

Signed at the city of New York, in the county and State of New York, this ninth day of August, nineteen hundred and twelve.

FRANK MUELLER.

Witnesses:
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