E. C. HUGG.

DUMPING MECHANISM FOR AUTOTRUCKS.

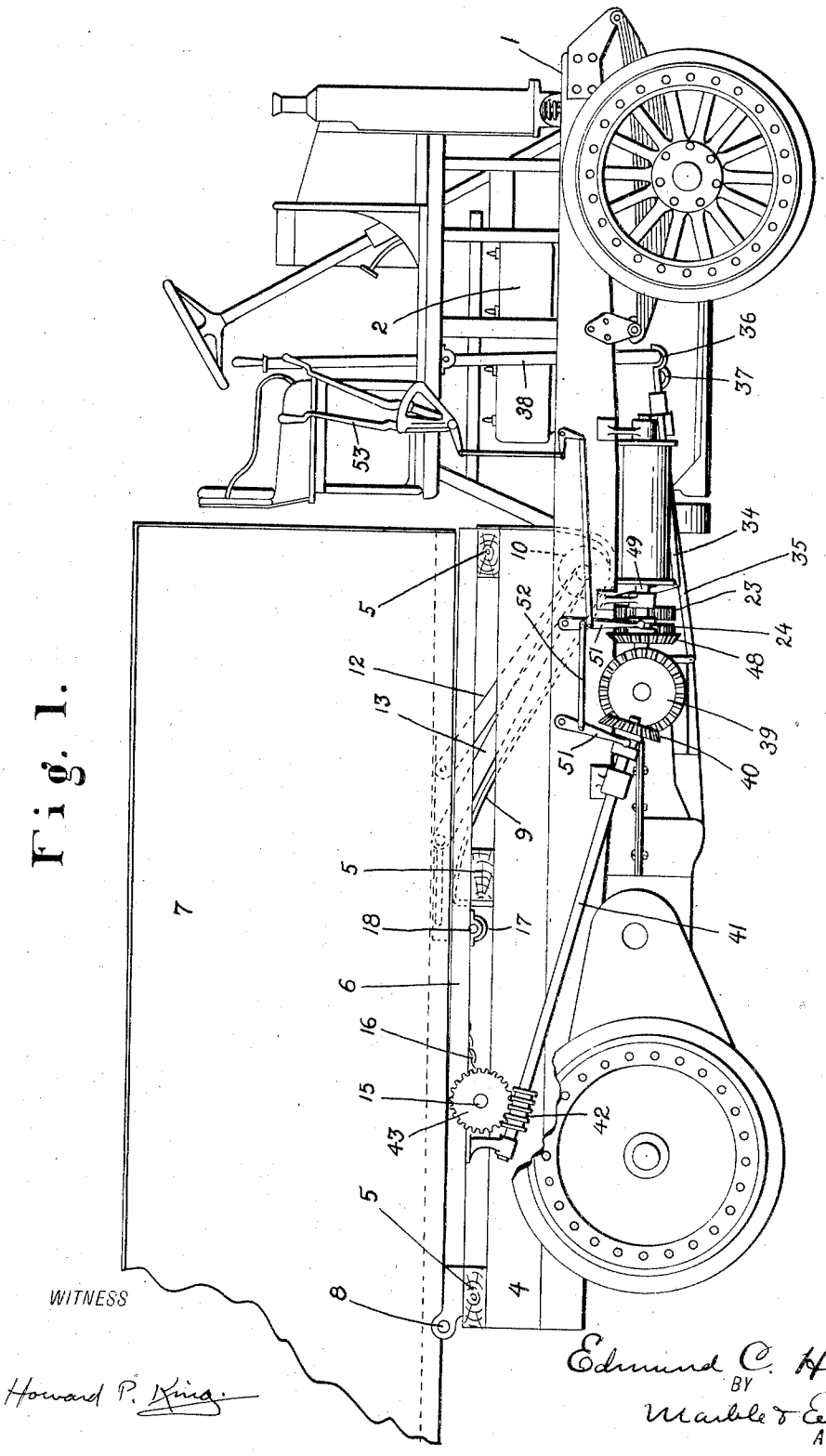
APPLICATION FILED MAR. 7, 1917.

1,334,375.

Patented Mar. 23, 1920.

4 SHEETS—SHEET 1.

Fig. 1.



WITNESS

Howard P. King.

INVENTOR:

Edmund C. Hugg,

BY

Marble & Everett,

ATTORNEYS.

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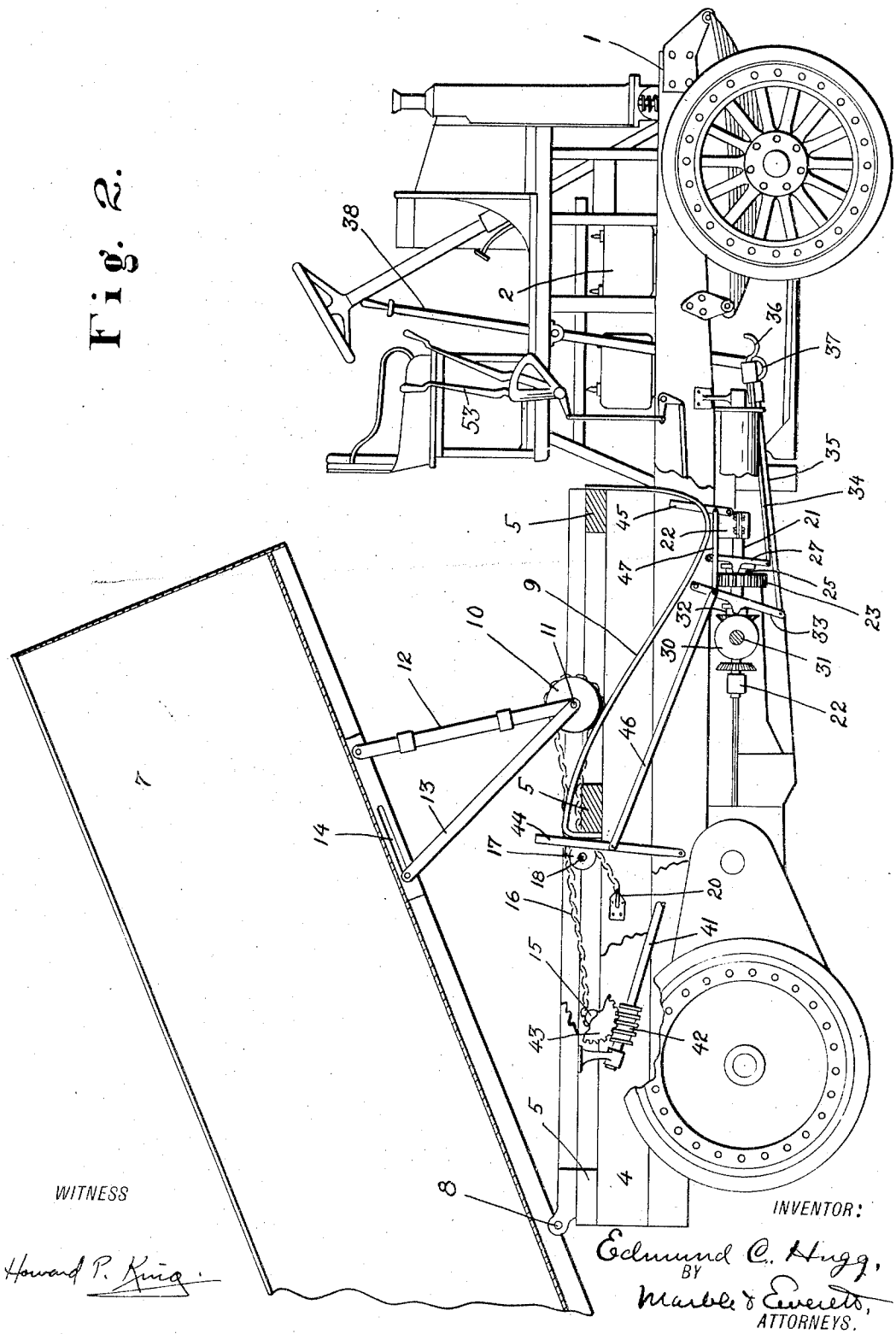
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4 SHEETS—SHEET 2.

Fig. 2.



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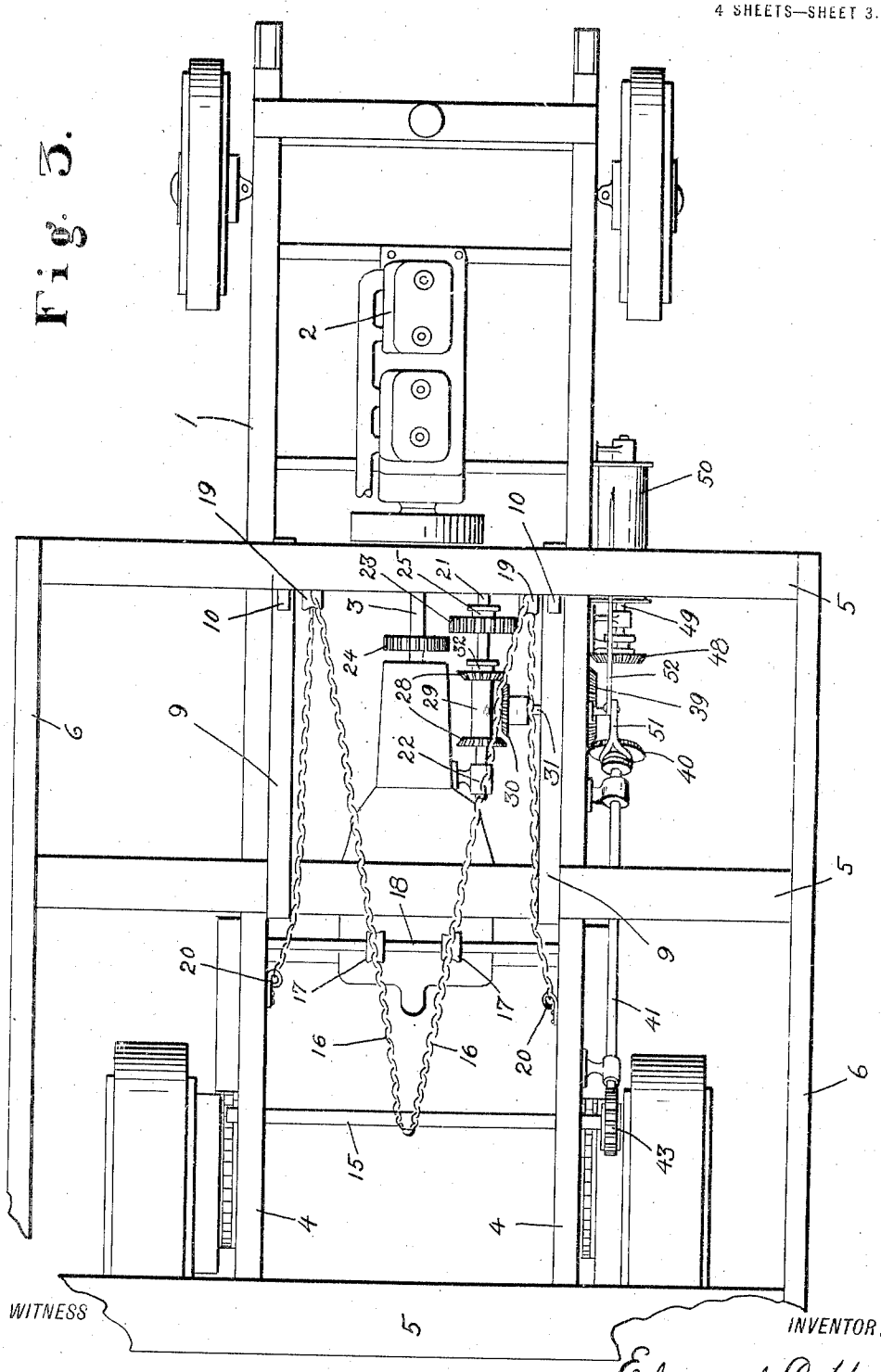
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4 SHEETS—SHEET 3.

Fig. 3.



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Howard P. King.

INVENTOR:

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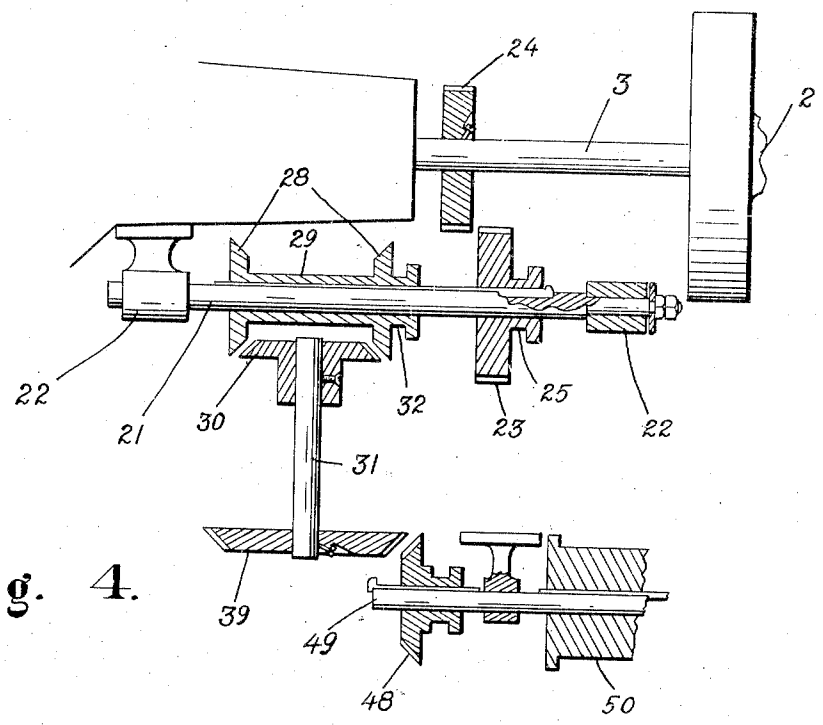


Fig. 4.

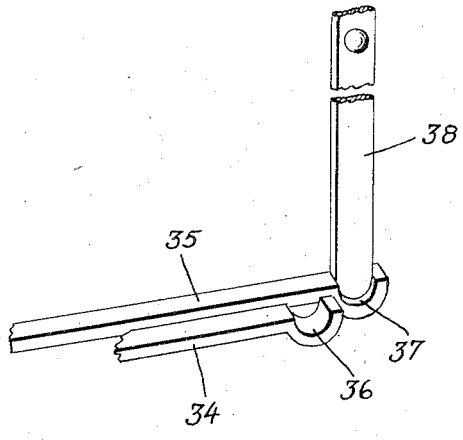


Fig. 5.

WITNESS

Howard P. King.

INVENTOR;

Edmund C. Hugg.

BY

Marble & Everett,

ATTORNEYS.

UNITED STATES PATENT OFFICE.

EDMUND C. HUGG, OF IRVINGTON, NEW JERSEY.

DUMPING MECHANISM FOR AUTOTRUCKS.

1,334,375. Specification of Letters Patent. Patented Mar. 23, 1920.

Application filed March 7, 1917. Serial No. 153,089.

To all whom it may concern:

Be it known that I, EDMUND C. HUGG, a citizen of the United States of America, and a resident of Irvington, in the county of Essex and State of New Jersey, have invented new and useful Improvements in Dumping Mechanism for Autotrucks, of which the following is a specification.

The objects of this invention are to provide an improved engine-operated dumping mechanism for motor vehicles; to securely support the dumping body at any angle to which it is raised; to thus prevent the dumping body falling back in event of engine failure, shifting of gears or the like; to provide means for either elevating or lowering the body as desired by power from the vehicle engine; to automatically disconnect the engine from the elevating and lowering mechanisms as the body reaches its uppermost or lowest position; to confine the body operating mechanisms to the space below the body; to provide for convenient control of the raising and lowering mechanisms; to provide a hoisting drum or windlass; to adapt the drum to be operated and the body not to be operated, and vice versa; to secure simplicity of construction and operation, and to obtain other advantages and results as may be brought out in the following description.

Referring to the accompanying drawings in which like numerals of reference indicate the same parts throughout the several views;

Figure 1 is a side elevation of a motor vehicle embodying my invention, with the body in lowered position;

Fig. 2 is a similar view with parts in section and the body raised;

Fig. 3 is a plan with the body removed;

Fig. 4 is a section taken horizontally through the drive shaft, and

Fig. 5 is a perspective view of a portion of a certain control lever and the links which it shifts.

In the specific embodiment of the invention illustrated in said drawings the reference numeral 1 indicates the chassis of a motor vehicle on which is carried an internal combustion engine 2 from which extends a shaft 3, which, through suitable gearing and clutch (not shown) propels the vehicle when desired. It is to be understood that this shaft is adapted to be rotated by the engine whether or not the vehicle is being driven, and is longitudinally stationary.

Fastened upon the rear or load carrying end of the chassis, are a pair of sills 4, 4, preferably of wood, positioned longitudinally upon the top of the side rails of the chassis, and across these sills extend a plurality of transverse beams or stringers 5, also preferably of wood, projecting beyond the sides of the chassis substantially the width of the body desired. Upon the top of these transverse beams or stringers at the ends thereof are rails 6, 6 extending substantially parallel to the side rails of the chassis and the sills. A suitable body 7 is provided, adapted to rest at its opposite side edges on the rails 6, 6, and shown in the present disclosure as hinged, as at 8, intermediate its ends to the rear end of the rails for dumping purposes.

Extending rearwardly and upward from below the front transverse beam 5 to the next beam toward the rear of the vehicle, are a plurality of tracks 9, 9, preferably one adjacent each side rail of the chassis. Wheels 10, 10, upon an axle 11 extending transversely of the chassis, rest and operate upon these tracks. Suitable props extend from the axle 11 to the body for tilting the body up as the wheels are moved upwardly and rearward on the tracks, these props being shown for illustrative purposes as comprising at each side of the vehicle a member 12 pivoted to the body and telescopically or otherwise extensible, and a member 13 having its end toward the dumping body movable longitudinally of the body by virtue of a slot and pin mounting thereat. By this construction, as the axle 11 is drawn upwardly on the tracks, the telescopic member 12, which is contracted to its shortest length, pushes upon the body to elevate it, the other member 12 merely sliding rearwardly in the slot 14. When the body becomes tilted to a certain degree, the member 13 comes to the end of the slot 14 and thereupon operates to tilt the body as the axle is drawn rearward farther the telescopic member then extending idly.

In order to draw the axle 11 rearwardly and upward as above described, I supply power from the engine by means next to be described. Near the rear end of the chassis is a transverse winch-shaft 15 to a middle part of which is shown secured forwardly

extending chains 16, 16 passing over loose guide pulleys 17, 17 on a rod 18 adjacent the upper ends of the tracks and then over pulleys 19, 19 longitudinally fast upon the axle 11. The chains make substantially a half turn around these pulleys 19 and then extend rearward beyond the rear end of the tracks and are secured as at 20, 20 to the sills or chassis. Rotation of the winch-shaft in one direction will wind up the chains and accordingly pull the axle 11 rearwardly and upward on the tracks, after which rotation of the winch-shaft in the other direction will permit the said axle to return. It is to be noted that the guide pulleys 17, 17 on the rod 18 are slidable on the rod and as the chain wraps around the winch-shaft and extends therefrom nearer and nearer the ends thereof, the guide pulleys move outwardly to correspond and thus avoid any deviation of the chains to one side or the other.

Adjacent and substantially parallel to the engine drive shaft 3 is a counter shaft 21 preferably in a horizontal plane with the drive shaft and carried in suitable bearings 22, 22. Slidably keyed upon this counter shaft 21 is a spur gear 23 adapted to be slid into engagement with or out of engagement from a spur gear 24 fast upon the engine shaft, thereby affording means for rotating the counter shaft or permitting it to remain idle as desired. Preferably a flanged collar 25 is provided in connection with the keyed gear 23 and a lever 27 having a portion projecting between the flange and the gear, is provided for shifting the gear by swinging the lever, see Fig. 2.

Also slidable on the counter shaft are two bevel gears 28, 28 preferably secured in operative relation by an integral sleeve 29, and between and transverse to these bevel gears is another bevel gear 30 on a stud shaft 31 which may be operated by engagement of one or the other of the bevel gears on the counter shaft with the gear on the stud shaft. Obviously the rotation of the stud shaft will be in one direction when one gear 28 of the counter shaft is meshing with the stud shaft gear 30 and in the other direction when the other gear 28 on the counter shaft is in mesh. Fast with respect to the pair of gears on the counter shaft is a flanged collar 32, and between the flange and the adjacent gear projects a portion of a lever 33 by means of which the gears are shifted as the lever is swung, similar to the control for shifting the spur gear 23.

Both the lever 33 for shifting the bevel gears and the lever 27 for shifting the spur gear have links 34, 35 respectively, pivoted thereto preferably at the lower ends of the levers, the links extending forwardly and terminating with depending U-pockets 36, 37 (see Figs. 1, 2 and 5). Preferably these links extend side by side, or substantially so, and are adapted to receive in said U-pockets the lower end of a control lever 38 which may be tilted somewhat laterally to position said lower end in either one of the pockets desired. For convenience I arrange the pockets so they will be adjacent or register when the spur gears are in mesh and the bevel gears are at neutral or all out of mesh, but obviously this might be otherwise if desired. To throw in the gears to operate the stud shaft, the control lever 38 is first swung rearwardly while seated in the pocket 36 of the link 34 which thereby causes the spur gears to mesh and the counter shaft to rotate. The control lever is then tilted laterally to position its lower end in the pocket 37 of the link 35 to the bevel gears. Swinging the lever 38 then causes one bevel gear or the other to mesh with the bevel gear on the stud shaft which is thereby rotated.

The stud shaft 31 is shown projecting beyond the chassis, and it carries at said projecting end a bevel gear 39 adapted to mesh with a bevel gear 40 on a transmission shaft 41 at the side of the chassis extending rearwardly upward to the winch shaft 15. For driving the winch shaft from the transmission shaft I prefer to employ a worm 42 on the transmission shaft and a worm wheel 43 on the winch shaft. By this construction the winch shaft may be turned any desired amount to partially raise or lower the body, but will not permit the body to drop when the gears are shifted out of mesh.

For the purpose of automatically discontinuing rotation of the winch-shaft when the body has arrived at its upper or lower positions, I provide arms 44, 45 in the path of movement of the axle 11 at its uppermost and lowest positions respectively, see Fig. 2. As shown, these arms are adapted to be engaged by the pulleys 19, although this might be otherwise if desired. The arms 44, 45 are connected by links 46, 47 respectively to the lever 33 whereby swinging the arms will swing the lever and shift the bevel gears. The parts are furthermore arranged so swinging the upper arm 44 rearward will throw out of mesh the bevel gear which causes the body to be raised, and swinging the lower arm forward will throw the other or lowering bevel gear out of mesh. Consequently raising the body to uppermost position thereby swinging the upper arm rearward will stop rotation of the winch shaft and lowering the body to its lowermost position will swing the lower arm forward and stop rotation of the winch shaft.

On the outside of the chassis, adjacent and adapted to mesh with the bevel gear on the outer end of the stud shaft, is another bevel gear 48 splined upon a drum shaft 49 which carries a drum or windlass 50 non-rotatable thereon. With these bevel gears

in mesh, the windlass will be rotated from the stud shaft and may be used for drawing upon a rope wound around it for hoisting or any other purpose.

Obviously it is not desirable when the windlass is being used to operate the body 7, and to this end the bevel gear on the end of the inclined transmission shaft 41 is splined thereon and movable toward and away from the bevel gear on the stud shaft. Accordingly these gears may be thrown out of mesh when it is desired to operate the windlass only. Similarly, it is preferable to spline the bevel gear on the drum shaft so it may be moved into or out of engagement with the bevel gear on the stud shaft. Furthermore, each of the movable bevel gears is provided with a lever 51 by means of which said gear may be shifted, and preferably a link 52 connects the levers to swing them at the same time for throwing one gear out of mesh as the other is thrown into mesh. This link is preferably connected to a control lever 53 convenient to the operator.

It is to be noted by my improved construction that the various devices for elevating the body are all substantially below the bottom of the body, which is an important advantage thereby permitting the ready interchange of bodies in case some other than a dumping body should be desired temporarily.

Obviously various modifications and changes may be made in the manufacture of my improved body dumping mechanism for auto trucks without departing from the spirit and scope of the invention and I do not wish to be understood as limiting myself except as required by the following claims when construed in the light of the prior art.

Having thus described the invention, what I claim is,

1. The combination with a motor chassis having hingedly mounted thereon a body to be dumped, tracks mounted on said chassis, props for said body adapted to run on said tracks, and a drive mechanism for moving said props along said tracks including a power shaft, of a counter shaft, an operative connection between said power shaft and counter shaft, an operative connection between the counter shaft and the said props, a trip lever mounted at one end of the said tracks and adapted to be engaged by said props, and an operative connection between the trip lever and the counter shaft for automatically disconnecting the counter shaft from the prop operating mechanism.

2. The combination with a motor chassis having hingedly mounted thereon a body to be dumped, tracks mounted on said chassis, props for said body adapted to run on said tracks, and a reversible drive mechanism for moving said props along said tracks including a power shaft, of a counter shaft, an operative connection between said power shaft and counter shaft, an operative connection between the counter shaft and the said props, an operating lever for connecting and disconnecting the said prop operating mechanism and the counter shaft, a trip lever mounted at each end of the said tracks and adapted to be engaged by the said props, and an operative connection between the trip levers and the said operating lever for disconnecting the counter shaft and prop operating mechanism when the body reaches the limit of its movement in either direction.

3. The combination with a motor chassis having hingedly mounted thereon a body to be dumped, tracks mounted on said chassis, and props for said body adapted to run on said tracks, of a reversible drive mechanism for moving said props along said tracks, a lever for starting and stopping said drive mechanism, a trip lever pivotally mounted upon said chassis at each end of said tracks and adapted to be engaged by said props, and means for connecting each of said trip levers to the said drive mechanism lever to stop the drive mechanism when the body reaches the limit of its movement in either direction.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

EDMUND C. HUGG.

Witnesses:
HOWARD P. KING,
MILDRED E. BROOKS.