Oct. 22, 1940. D. EVANGELISTA 2,219,256

DUMP TRUCK

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Fig. 1

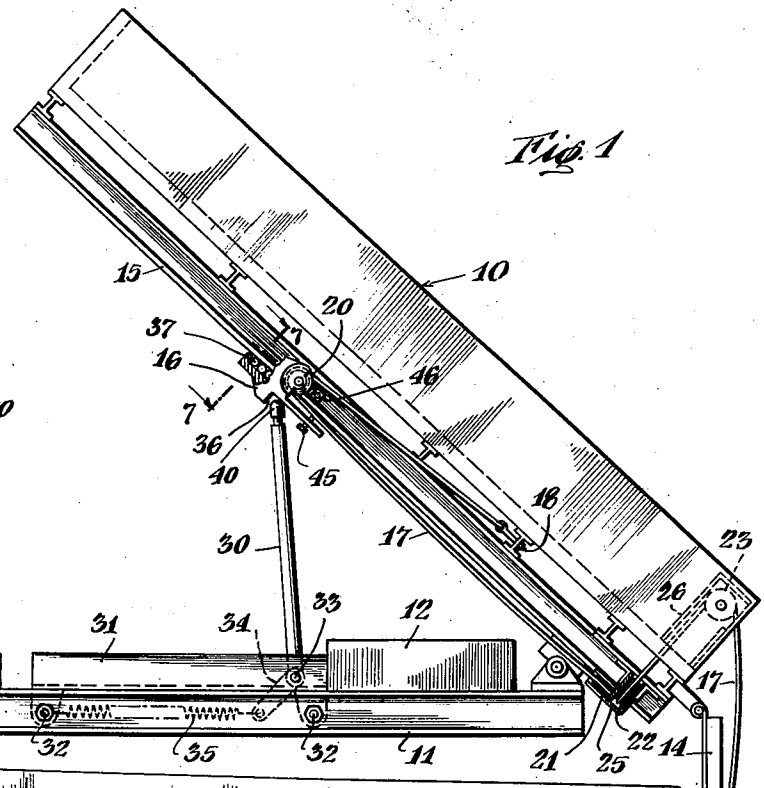


Fig. 7

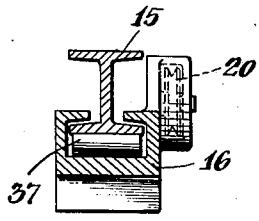


Fig. 2

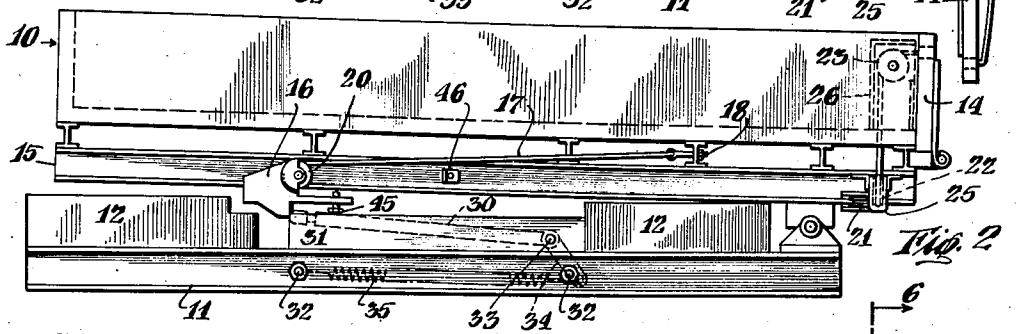
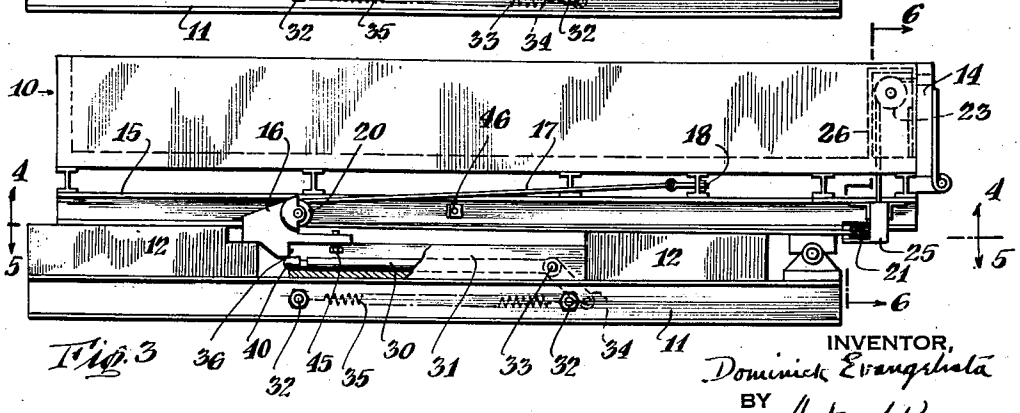


Fig. 3



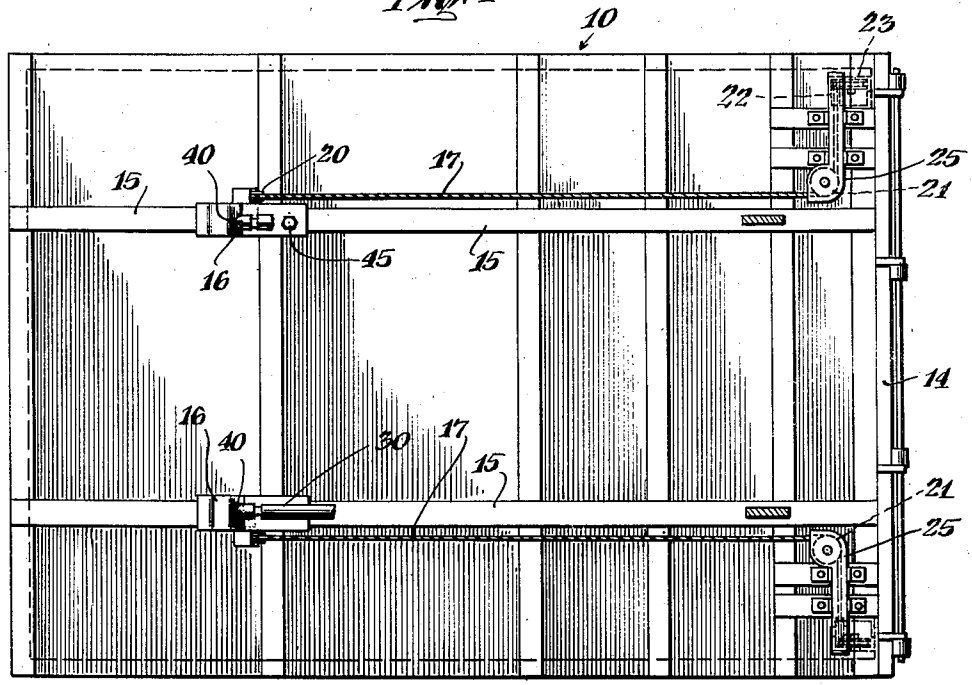
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Fig. 4



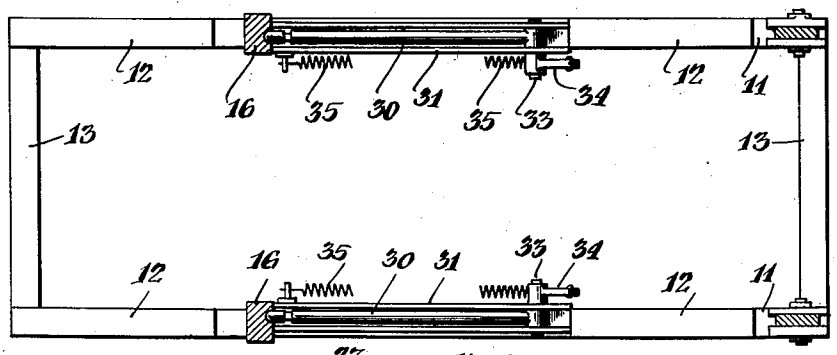


Fig. 5

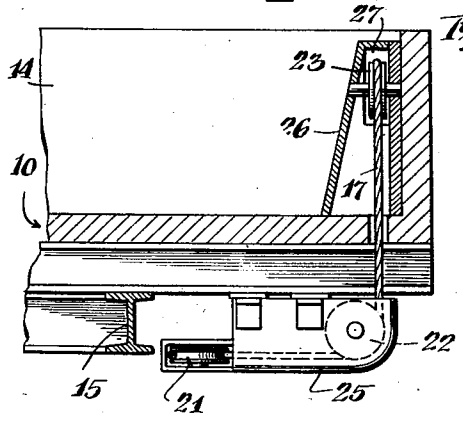


Fig. 6

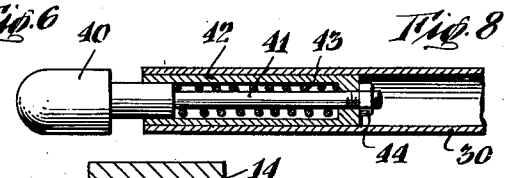


Fig. 8

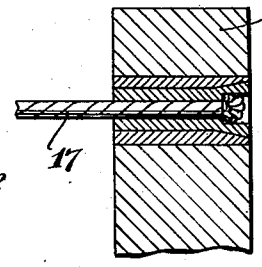


Fig. 9

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Patented Oct. 22, 1940

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UNITED STATES PATENT OFFICE

2,219,256

DUMP TRUCK

Dominick Evangelista, New York, N. Y., assignor to Regent Appliance Corporation, Bronx, N. Y., a corporation of New York

Application August 19, 1939, Serial No. 290,958

5 Claims. (Cl. 298—23)

This invention relates to dump trucks, and more particularly to tilting-body dump trucks equipped with apparatus for automatically opening, closing and locking the tailboards of the tilting bodies, and especially drop tailboards, that is, tailboards which are pivoted at the bottom and which in opening swing outward and downward.

The object of the invention is to provide tilting-body dump trucks with means whereby, when the load-carrying body of the truck has been tilted up to its inclined load-discharging position, the tailboard will have opened to permit the load to be discharged, and whereby, as the body moves down to its normal or load-carrying position, the tailboard will be turned back to closed position and will be securely held in such position until the body is again tilted; and to provide such means which shall be reliable in operation and not liable to get out of order, and which may be applied to the trucks during the building or assembling thereof or afterwards.

To these ends, a truck equipped with apparatus embodying the various features of the invention in the form now considered best has at each side of the underframe of its tilting body, mounted to move lengthwise thereof, a sliding member from which a suitably guided cable extends to the tailboard, and has pivoted at each side of the truck's chassis, at a point spaced a distance forward from the pivotal axis of the body, an operating lever, the free ends of which levers as the body moves downward from its raised, or load-discharging, position to its dropped, or load-carrying, position engage said sliding members to force them forward and thereby to close the tailboard. As the body reaches its dropped position, the sliding members are locked against rearward movement by coacting shoulders on said members and on the chassis, and as these coacting locking shoulders come into engagement the operating levers are disengaged from the sliding members, and spring-pressed engaging members at the ends of the levers which engage the shoulders on the sliding members then move outward a limited distance sufficient to prevent engagement of the levers with the sliding members during the upward tilting movement of the body. The sliding members are thus free to move backward to permit the tailboard to swing outward for discharge of the load.

The operating levers are spring-urged to swing upward so that as the body is tilted upward the levers follow the body, and as the body reaches its extreme up-tilted position the operating members at the end of the levers move in behind the engaging shoulders of the sliding bodies, thereby reestablishing the operating connection between the levers and the sliding members, so that on the downward movement of the body the sliding members are forced forward by the levers for closing the tailboard as above stated.

The invention has been made especially with the idea of its application to 4-wheeled automobile trucks, but is obviously equally applicable to other 4-wheeled trucks or to 2-wheeled or other trucks or carts having tilting load-discharging bodies, and the word "truck" as used in the claims is to be understood as including all such trucks, carts and wagons to which the invention is adaptable.

A full understanding of the invention can best be given by a detailed description of an approved embodiment thereof as applied to a truck of conventional form having its tilting body pivoted at its rear end to the rear end of the truck chassis, and such a description will now be given in connection with the accompanying drawings showing such an embodiment of the invention. In said drawings:

Fig. 1 is a side view of a truck body having a drop tailboard and a portion of a truck chassis equipped with tailboard operating apparatus according to the invention, the body being in its up-tilted load-discharging position;

Fig. 2 is a side view of such parts with the body moved down nearly to its normal, or load-carrying, position;

Fig. 3 is a similar view showing the body in its load-carrying position;

Fig. 4 is a plan view of the underside of the body looking upward from the plane of line 4—4 of Fig. 3;

Fig. 5 is a sectional plan view looking downward from the plane of line 5—5 of Fig. 3;

Fig. 6 is a detail sectional view taken on line 6—6 of Fig. 3 but on a larger scale;

Fig. 7 is a detail sectional view taken on line 7—7 of Fig. 1 but on a larger scale;

Fig. 8 is a detail view partly in section and on an enlarged scale of the end of one of the operating levers showing its spring-pressed operating member; and

Fig. 9 is an enlarged sectional view showing the anchorage of one of the operating cables in the tailboard.

Referring to the drawings, the tilting body 10 of the truck is pivotally connected near its rear end to the rear end of the truck chassis of which two side rails 11, wood sills 12 on the rails 11 on which the body rests when in its down, or load-

carrying, position, and front and rear cross-connecting pieces 13 are shown. Such trucks are commonly provided at the front end with hoisting means for raising the front end of the body to its up-tilted position shown in Fig. 1, and the truck of the drawings may be considered as provided with such hoisting means, which is not necessary to be shown.

The body 10 has at its rear end a drop tailboard 14 pivoted along its bottom edge to the rear edge of the bottom of the body, and as shown the body has the usual under frame including two longitudinally extending side rails 15 formed of I-beams, and on the bottom flange of each of these side rails is mounted a sliding member 16. For each of these sliding members an operating cable 17 has one end anchored to the under frame of the body as shown at 18 and extends thence forward and about a sheave 20 carried by the sliding member 16, thence rearward to a sheave 21, thence outward to a sheave 22, thence upward through the bottom of the body to a sheave 23 near the top and close to the rear end of the body, and after turning about this sheave 23 the end of the cable is connected to the tailboard at a point near the end of the board and close to its upper edge as by anchoring means such as shown in Fig. 9.

The mountings for the sheaves 20, 21, 22 and 23 have, as shown, suitable guides to prevent the cable from riding out of the sheave grooves. The sheaves 21 and 22 in the construction shown are mounted in casings 25 bolted or otherwise secured to the body frame adjacent the rear end thereof, and the sheaves 23 are each mounted in a box or casing 26 secured against the side wall of the body adjacent the rear end, the casings being open at the bottom or having a suitable opening for the vertical run of the cable and each having a vertically elongated opening 27 in its rear wall through which the cable extends to the tailboard.

For moving the sliding members 16 forward as the body is swung downward, two operating levers 30, one for each sliding member, are pivotally mounted on the chassis rails 11 and extend forwardly and are spring-urged to swing upward. As shown, a portion of each of the sills 12 is cut away and in the spaces thus provided channel castings 31 are seated on the rails 11 secured by bolts 32, and the levers 30 have their pivot ends secured in the channels of the castings 31 fast on stub shafts 33 journalled in the side flanges of the castings. Each of the stub shafts has on its inner end inside the casing a short arm 34 to which one end of a coil spring 35 is connected. By the tension of the springs 35 the operating levers are thus urged upward. The pivotal axes of the operating levers are spaced forward from the pivotal axis of the body so that when the body is swung downward from its load-discharging position as shown in Fig. 1 with the free ends of the levers in engagement with shoulders 36 of the sliding members 16, the levers as they are turned downward force the sliding members forward.

The length of the levers 30 and the spacing of their pivotal axes from the pivotal axis of the body is such that the forward movement thus given to the sliding members 16 during the downward movement of the body from its load-discharging position is sufficient to take up the slack in the cables 17 and to swing the tailboard from its open position shown in Fig. 1 to its completely closed position as shown in Fig. 3. In order to reduce the friction of the sliding members against the rails 15 under the upward and forward thrust of the levers 30, the sliding members are provided with anti-friction rollers 37 housed between the bottom of the members and the bottom of the rails.

Each of the operating levers has at its free end a spring-pressed engaging member 40 which has a limited movement endwise of the lever. As shown, each engaging member 40 has a rounded end and is carried by a rod 41 mounted to slide in a tubular plug 42 set in the end of the lever, the lever being formed of a piece of tubing. The rod 41 is pressed outward by a coil spring 43 set between the inner end of the plug 42 and a shoulder on the rod. The inner end of the rod extends through the end of the plug, and outward movement of the rod and member 40 is limited by means of a nut 44 on the threaded end of the rod. By adjustment of this nut the outward position of the engaging member is determined. Inward movement of the engaging member is limited by its engagement with the end of the lever.

When the truck body is moving downward, the resistance of the sliding members 16 causes the engaging members 40 to be pressed back against their springs 43, as shown in Fig. 2. After the slides 16, by the downward movement of the body, have been moved forward by the levers 30 to the position shown in Fig. 2 and thereby closed the tailboard, tripping members 45 carried by rearwardly extending parts of the slides 16 engage the levers and as the body completes its downward movement force the levers further downward and cause the engaging members 40 to move down relatively to the shoulders 36 of the slides sufficiently so that as the body reaches its extreme downward position the rounded ends of the engaging members 40 have been moved so far with relation to the shoulders 36 that cam action resulting from engagement of the rounded end of the engaging members with the edge of the shoulders forces the engaging members further downward and to the relative position shown in Fig. 3 in which the engaging member is disengaged from the shoulder of the slide.

Before such disengagement of the levers from the slides, however, the shoulders 36 of the slides have moved down past the forward ends of the channel members 31, which are positioned so as to serve as shoulders to coact with the slide shoulders to lock and hold the slide against rearward movement so long as the body is in its down, or load-carrying, position. Fig. 3 shows the position of the operating parts of the invention when the body is in load-carrying position resting on the sills 12, the tailboard being then closed and being held closed by the slides in locking engagement with the channel members 31. The tripping devices 45 are made adjustable by being formed as shown by screws threaded into the rearward extensions of the slides 16.

When the forward end of the body is raised, the slides 16 are released by movement of their shoulders 36 out of engagement with the ends of the members 31, and as the engaging members of the operating levers are then not in operative engagement with the slide shoulders the slides are free to move rearward to permit the tailboard, under pressure of the load in the body or by gravity, to swing outward and downward to the position shown in Fig. 1. Rearward movement of the slides is limited by stops 46 which are positioned far enough toward the rear end of the body so that the cables 17 will be slack when

the tailboard has swung down to the open position shown in Fig. 1. As the body moves upward, the operating levers are caused by the tension of springs 35 to turn upward so that their free ends follow the slides 16, but out of operating engagement therewith, until, when the body has reached its extreme up-tilted position, the engaging members 40 of the levers will have moved in behind the shoulders 36 of the slides, as shown in Fig. 1. Then, when the body is lowered, the engaging members 40 are first pressed back to their innermost position by the shoulders 36, and thereafter as the downward movement of the body continues the slides are moved forward by the levers to close the tailboard as before described.

The operation of the tailboard operating apparatus will be understood from the foregoing description, but may be stated briefly as follows: When a load is to be dumped from the truck body, the tailboard being closed and the parts in the position shown by Fig. 3, the body is raised to its tilted dumping position shown by Fig. 1. During this upward movement of the body, the slides 16 are free to more rearward, permitting the tailboard to swing outward and downward. Then, the load having been discharged, as the body is lowered the slides 16 are forced forward by the operating levers 30 and the tailboard is thereby drawn upward and to its closed position by the cables 17, and as the body reaches its down, or load-carrying, position, the tailboard having been closed, the operating levers are disengaged from the slides 16 and the slides are locked by engagement of their shoulders with the shoulders formed by the ends of the channel members 31 to hold the tailboard closed until the front end of the body is again raised.

What is claimed is:

1. In a dump truck having a tilting body and a tailboard at the rear end of the body pivotally mounted to swing outward and downward, tailboard operating means comprising a sliding member mounted to slide on the body and operatively connected with the tailboard by tension means, and an operating lever pivotally mounted on the truck chassis in position for its free end to engage said sliding member, whereby by the weight of the body when it moves from load-discharging position to load-carrying position said sliding member is moved by said lever to close the tailboard.

2. In a dump truck having a tilting body and a tailboard at the rear end of the body pivotally mounted to swing outward and downward, tailboard operating means comprising a sliding member mounted to slide on the body, a cable connection between said member and the tailboard, and an operating lever pivotally mounted on the truck chassis forward of the pivotal axis of the tilting body and in position for its free end to engage a shoulder on the sliding member during movement of the body from load-discharging position to load-carrying position to move said sliding member to close the tailboard.

3. In a dump truck having a tilting body and a tailboard at the rear end of the body pivotally mounted to swing outward and downward, tailboard operating means comprising a sliding member mounted on the body and operatively connected to the tailboard, an operating lever pivotally mounted on the truck chassis forward of the pivotal axis of the tilting body and in position for its free end to engage a shoulder on the sliding member during movement of the body from load-discharging position to load-carrying position to move said sliding member to close the tailboard, means for locking the sliding member to hold the tailboard in closed position when the body is in load-carrying position, and means for disengaging said lever from the shoulder of the sliding member as the body reaches its load-carrying position.

4. In a dump truck having a tilting body and a tailboard at the rear end of the body pivotally mounted to swing outward and downward, tailboard operating means comprising a sliding member mounted on the body and operatively connected to the tailboard, an operating lever pivotally mounted on the truck chassis forward of the pivotal axis of the body and in position for its free end to engage the sliding member during movement of the body from load-discharging position to load-carrying position to move the sliding member forward to close the tailboard, the engagement of said lever with the sliding member being by means of a spring-pressed engaging member mounted at the free end of the lever for engaging a shoulder on the sliding member, means for locking the sliding member to hold the tailboard in closed position when the body is in load-carrying position, means for moving the free end of the lever away from the body as the body approaches its load-carrying position to disengage said engaging member from the sliding member leaving the sliding member when released from the locking means on upward movement of the body free to move backward to permit the tailboard to open, and means urging the lever to swing upward to follow the sliding member as the body is tilted upward and to move its engaging member into position to engage the shoulder of the sliding member on downward movement of the body.

5. In a dump truck having a tilting body which has two spaced longitudinal under rails and a tailboard at the rear end of the body pivotally mounted to swing outward and downward, tailboard operating means comprising two sliding members mounted on the rails of the body, a cable connecting each of said sliding members to the tailboard, each of said cables having one end connected to the body to the rear of the sliding member and extending thence forward and about a sheave on the sliding member, thence rearward to a horizontal sheave and thence outward to a vertical sheave, a mounting for said last two sheaves secured to the under side of the body, the cable extending thence upward to a sheave mounted near the top of the body at an outer rear corner thereof and thence outward with its outer end secured to the tailboard at a point near the end of the board and close to its upper edge, a housing for said last mentioned sheave secured within the body against the side wall thereof adjacent its rear end, and means controlled by the tilting movement of the body to move said sliding members to close the tailboard as the body moves down from load-discharging position to load-carrying position.

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