

Sept. 20, 1960

E. H. KOENIG

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SIDE AND REAR DUMPING BODY FOR TRUCKS

Filed Sept. 6, 1956

5 Sheets-Sheet 1

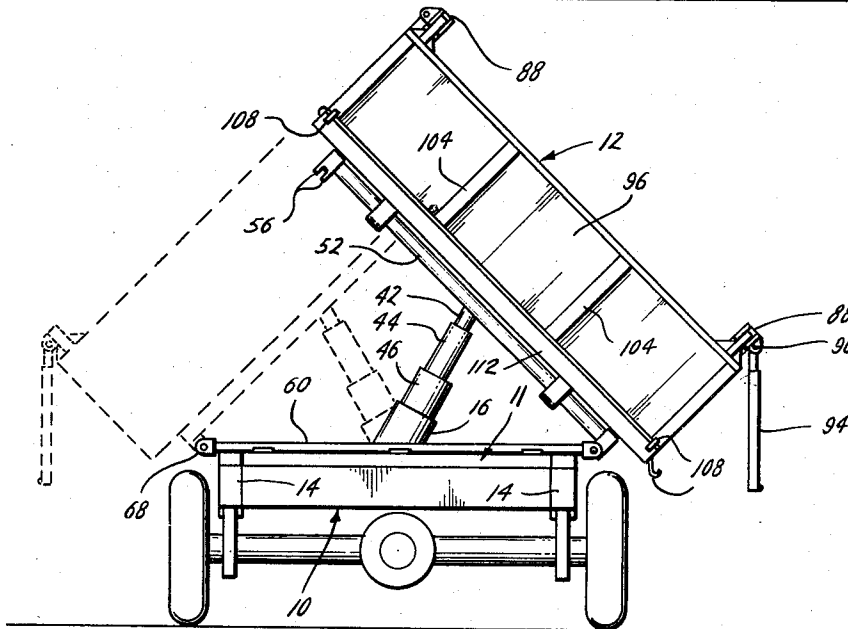
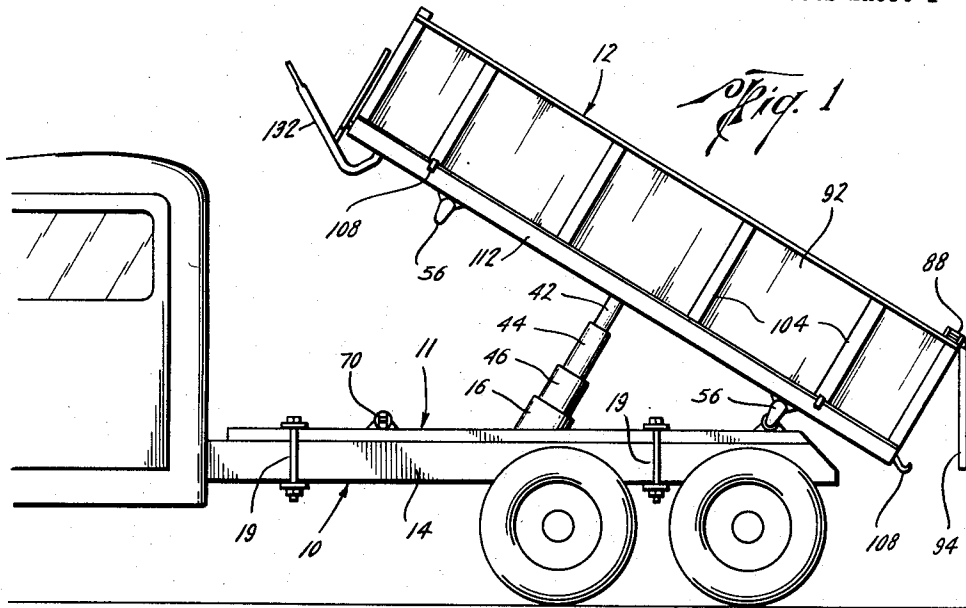


Fig. 2

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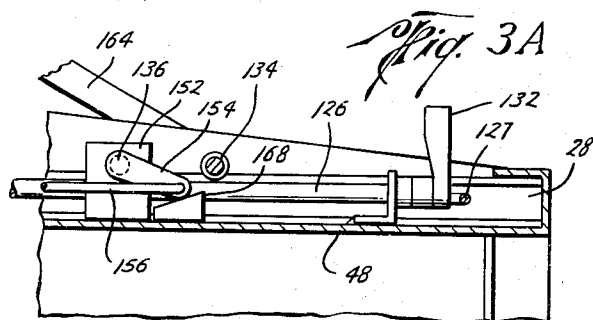
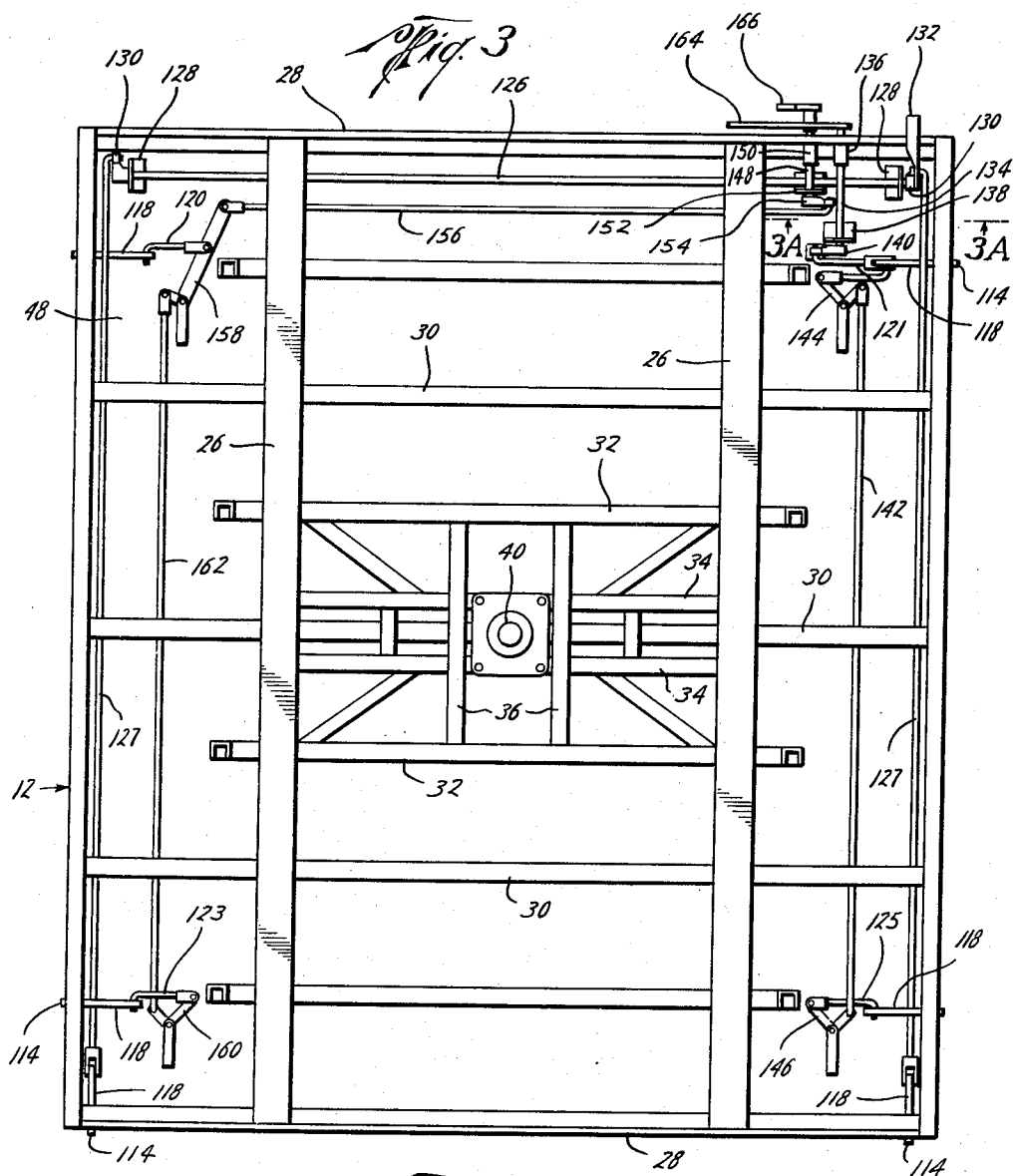
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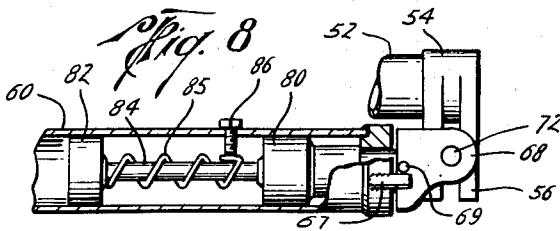
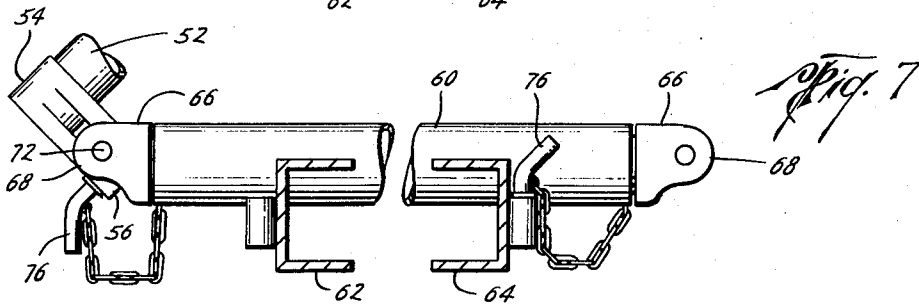
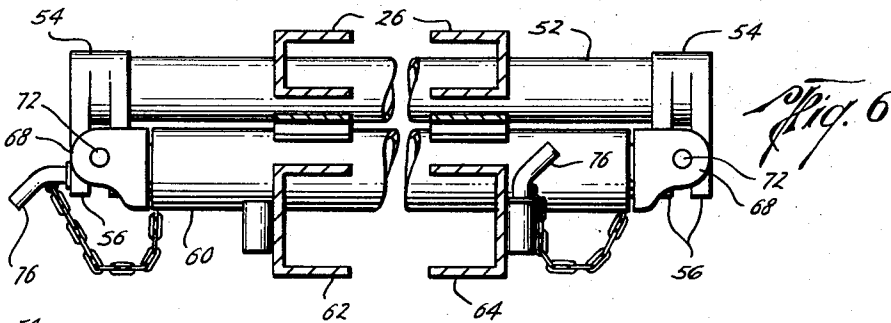
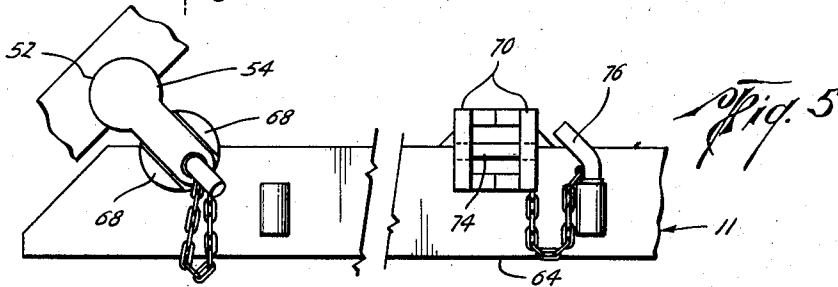
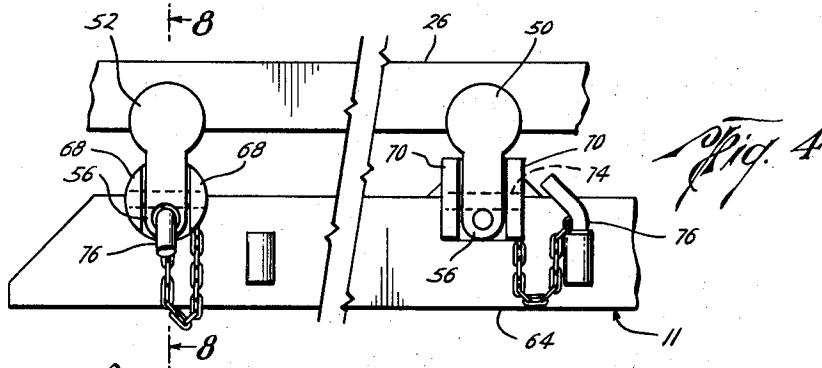
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5 Sheets-Sheet 3



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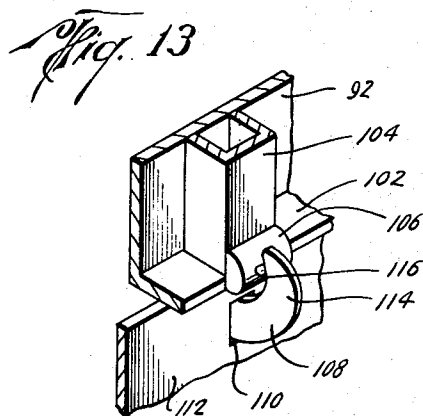
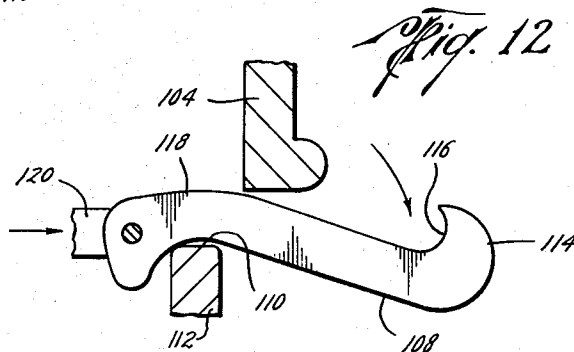
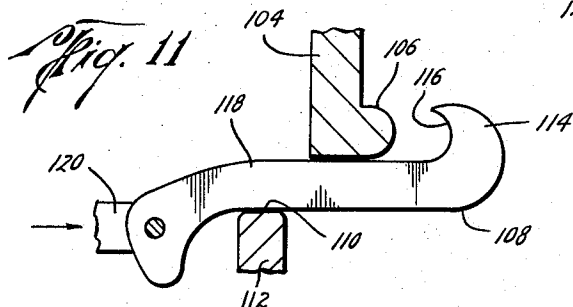
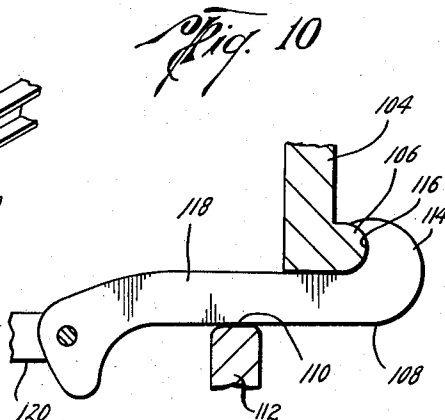
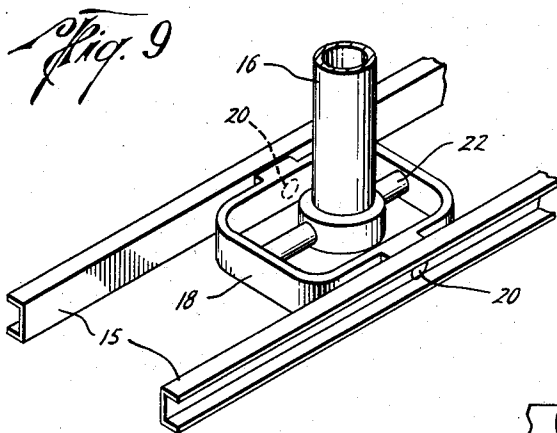
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SIDE AND REAR DUMPING BODY FOR TRUCKS

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5 Sheets-Sheet 4



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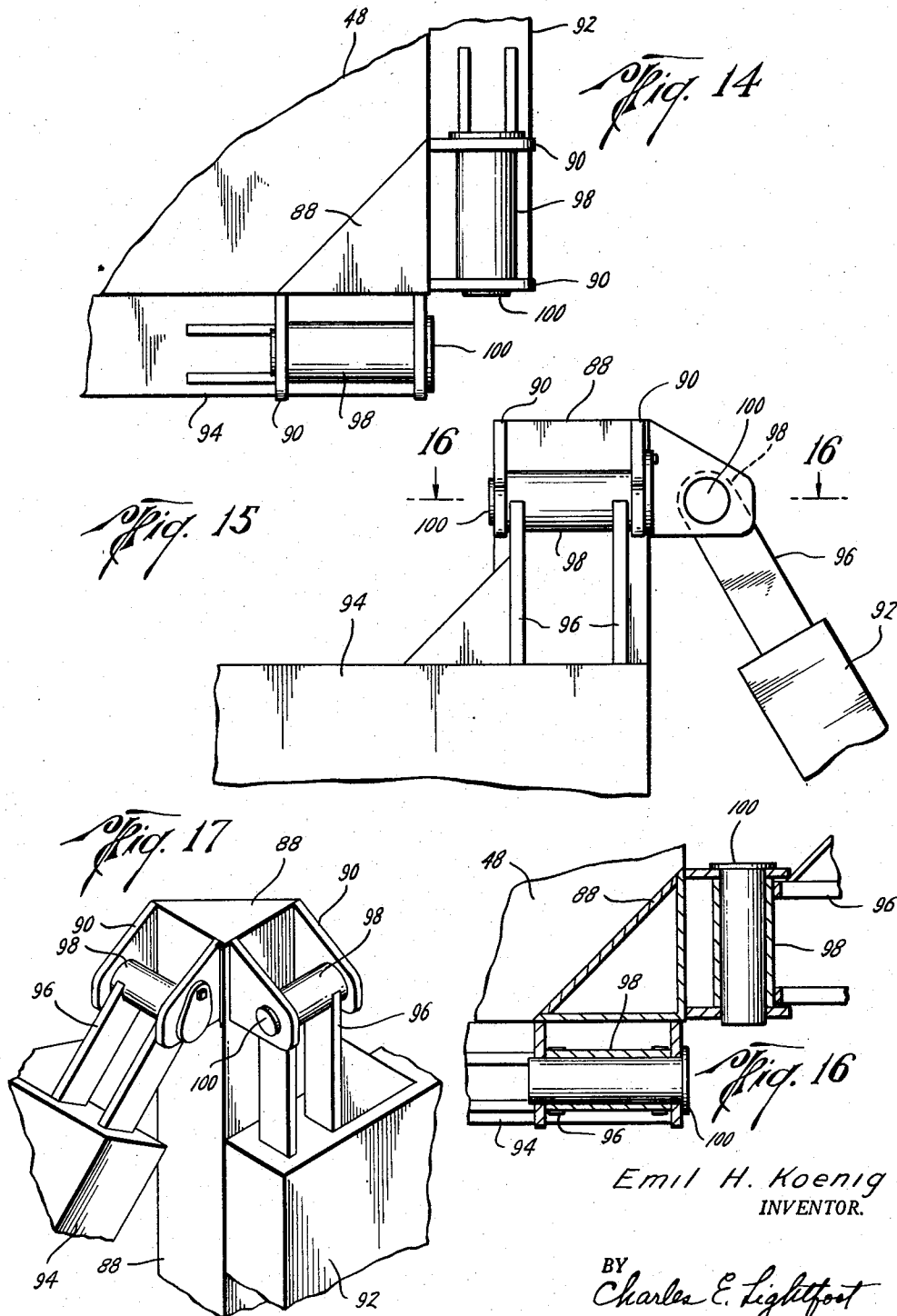
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SIDE AND REAR DUMPING BODY FOR TRUCKS

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5 Sheets-Sheet 5



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SIDE AND REAR DUMPING BODY FOR TRUCKS

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3 Claims. (Cl. 296—28)

This invention relates to dump trucks and more particularly to a dump truck having a body and means for mounting the same to permit dumping of the body to either side or to the rear of the vehicle.

The invention has for an important object the provision of a dumping body and means for mounting the same on a vehicle and including means for tilting the body and which may be selectively operated to tilt the body to either side or to the rear of the vehicle as may be desired.

Another object of the invention is to provide a dump truck having a tiltable body and means for hingedly connecting the body to the truck in a manner to permit the body to be tilted to either side or to the rear.

A further object of the invention is the provision of a dumping body for trucks having side and rear doors hingedly connected to the body along their upper edges for outward swinging movement and including door latching mechanism which may be selectively operated to permit either of the side doors or the rear door to be opened whereby the contents of the body may be dumped to one side or to the rear of the truck.

Another object of the invention is to provide a dumping body for trucks including body tilting mechanism which is hydraulically operated and which is centrally located for operation to tilt the body to either side or to the rear of the truck.

A further object of the invention is the provision in a dumping body for trucks having outwardly swinging top-hinged side and rear doors, of means for latching the doors in closed positions and which may be quickly and easily operated to unlatch either of the side doors or the rear door for the purpose of dumping the contents of the body to either side or to the rear of the truck.

Another object of the invention is to provide a dumping body having top-hinged outwardly swinging doors and including corner posts of improved construction which are designed for increased strength and which do not interfere with the free movement of the material as it is dumped from the body.

A further object of the invention is the provision of a dumping body of the type referred to having releasable hinged connecting means whereby the body is securely connected to the truck and which may be quickly and easily released or reconnected to facilitate dumping of the body to either side or to the rear of the truck.

The above and other important objects and advantages of the invention may best be understood from the following detailed description, constituting a specification of the same, when considered in conjunction with the annexed drawings, wherein—

Figure 1 is a side elevational view illustrating the invention and showing the dumping body in an elevated position and tilted for dumping to the rear of the truck;

Figure 2 is a rear elevational view of the invention showing the body in an elevated position and tilted for dumping to one side of the truck;

Figure 3 is a bottom plan view of the dumping body

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of the invention on a somewhat enlarged scale and removed from the truck, showing details of structure of the frame of the body and the door latching and releasing mechanism of the same;

Figure 3A is a fragmentary cross-sectional view taken along the line 3A—3A of Figure 3, looking in the direction indicated by the arrows and showing details of construction and manner of operation of the latch actuating mechanism;

Figure 4 is a fragmentary side elevational view, on an enlarged scale showing details of construction of the mechanism by which the dumping body of the invention is hingedly connected to the subframe of the vehicle, the parts being shown in condition to permit tilting of the body rearwardly for rear dumping;

Figure 5 is a view similar to that of Figure 4, showing the body in rearwardly tilted, dumping position;

Figure 6 is a fragmentary rear end elevational view, on an enlarged scale, showing the arrangement of the mechanism by which the dumping body is hingedly secured to a subframe, which in turn is adapted to be attached to the vehicle frame, the parts being shown in condition for the tilting of the body to the left side of the vehicle for dumping;

Figure 7 is a view similar to that of Figure 6, showing the body in left side dumping position;

Figure 8 is a fragmentary cross-sectional view, taken along the line 8—8 of Figure 4, looking in the direction indicated by the arrows;

Figure 9 is a fragmentary perspective view, on a somewhat enlarged scale, showing details of structure of the mounting of the central, hydraulically operated mechanism by which tilting of the body of the invention is accomplished;

Figure 10 is a fragmentary detail view, partly in cross-section showing one of the door latching elements of the invention and illustrating the manner in which the same engages a door to latch the same in closed position;

Figure 11 is a view similar to that of Figure 10 showing the latching element in an intermediate position of its operation;

Figure 12 is a view similar to that of Figure 10 showing the latching element in door releasing position;

Figure 13 is a fragmentary perspective view, on an enlarged scale, showing details of structure of a door of the body and one of the latching elements of the door latching mechanism in latching engagement with the door;

Figure 14 is a fragmentary top plan view, on an enlarged scale of a corner post of the body of the invention showing the manner in which the side and rear doors are connected thereto;

Figure 15 is a fragmentary end elevational view of the corner post and door hanging structure as illustrated in Figure 14;

Figure 16 is a cross-sectional view, taken along the line 16—16 of Figure 15, looking in the direction indicated by the arrows; and,

Figure 17 is a fragmentary perspective view of the door hanging structure illustrated in Figures 14, 15 and 16.

Referring now to the drawings in greater detail the invention is illustrated in connection with its use with a vehicle of conventional design, such as a truck having a frame of usual construction, indicated generally at 10 to which a subframe 11 is attached and upon which subframe the dumping body of the invention, indicated generally at 12 is mounted for tilting to the rear or to either side for dumping. The frame 10 of the truck, as seen in Figure 9, includes longitudinal frame elements 14, 14. The subframe 11 includes lateral subframe elements 15, 15 between which a cylinder 16 of the hydraulic mechanism

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by which the body is tilted is mounted at its lower end for universal tilting movement, as by means of a pivotally mounted frame 18 of generally rectangular configuration which is pivotally secured to the elements 16 by means of pivot pins 20, and to which the lower end of the cylinder is pivotally secured by a laterally extending shaft 22.

The body 12 is preferably of rectangular configuration having an underframe which includes longitudinal frame members 26 and cross members 28 and 30. The underframe structure also includes centrally located cross braces 32 and 34 and longitudinal braces 36 between which a central bearing plate 40 is positioned upon which the upper end of the uppermost piston 42 of the hydraulic tilting mechanism bears. The hydraulic tilting mechanism includes a number of telescopically arranged pistons 42, 44 and 46 which operate with the cylinder 16 to exert an upward force on the bearing plate 40 to tilt the body. The body has a floor or bottom 48 of sheet metal supported on the underframe and which is bent downwardly at the opposite sides of the body over the ends of the cross members 28 and 30 and rebent inwardly beneath the cross members as shown in Figure 3A.

The body 12 is supported on front and rear cross-bearers 50 and 52, respectively, which are preferably of tubular construction and which may be secured to the longitudinal underframe members 26 in any desired manner, as by welding. The cross-bearers 50 and 52 are formed with end caps 54 having spaced apart, downwardly extending, perforated lugs 56, for a purpose to be made apparent hereinafter.

The subframe 11 is also provided with a rear tubular cross-bearer 60 positioned beneath the cross-bearer 52 of the body and secured to longitudinal subframe elements, such as those indicated at 62 and 64, of the subframe in any suitable manner, as by welding. The cross-bearer 60 has end extensions 66 which are supported for axial rotation on the cross-bearer and which are provided with spaced apart perforated lugs 68, between which the downwardly extending lugs 56 of the rear cross-bearer 52 may be positioned. Pairs of spaced apart, laterally extending, perforated lugs 70 are also secured to the subframe beneath the front cross-bearer 50 in position to receive between them the downwardly extending lugs 56 of the front cross-bearer.

By this arrangement the front and rear cross-bearers 50 and 52 may be pivotally connected to the lugs 68 and 70 by pivot pins 72 and 74 extending through the lugs 68 and 70. At the same time the front and rear cross-bearers are releasably connected to the lugs 68 and 70 by removable pins 76, inserted through the perforations of the lugs 68 and 70 beneath the pivot pins 72 and 74. It will be apparent that by removing the pins 76 at either side of the body the body may be tilted to the other side, and by removing the pins 76, connecting the forward cross-bearer 50 to the lugs 70, the body may be tilted rearwardly. Each of the end extensions 66, as shown in Figure 8 is attached to spaced bearing blocks 80 and 82 movably positioned within the cross-bearer 60 on a stem 84, which is surrounded by a coil spring 85 attached at one end to the stem and whose other end is connected to the cross-bearer 60, as by means of a screw 86.

The cross-bearer 60 may be provided with external stop lugs, such as the lug 67, positioned to be engaged by pins, such as the pins 69 on the extensions 66 to limit the rotational movement imparted to the extensions by the springs 85.

By this arrangement the extensions 66 may be rotated in the cross-bearer 60, but will always be rotated by the spring 85 to a position to receive the lugs 56 between the lugs 68 when the body is lowered from a tilting position to either side of the truck, so that the body may be readily returned to its horizontal position after unloading and the pins 76 reinserted.

The subframe 11 may be positioned on the truck frame 10 with the longitudinal subframe elements 62 and 64 rest-

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ing upon the longitudinal truck frame elements 14, 14 and secured in place in any suitable manner, as by means of bolts 19, 19, or otherwise, whereby the subframe and body assembly is designed to be easily applied to any desired type of truck.

As best seen in Figures 14 and 17, the body 12 has corner posts 88 at each corner, which are of tubular construction, triangular in cross-section, and which are provided at their upper ends, with outwardly extending pairs of spaced, perforated lugs 90. Side doors 92 and a rear door 94 are provided on the body, each of which doors has upwardly extending pairs of spaced lugs 96 at the top which are positioned to extend between the top pairs of lugs 90. At their upper ends each pair of the lugs 90 carries a tubular bearing 98 which fits between a pair of the lugs 90 and is pivotally attached thereto by a pin 100 extending through the perforations of the lugs 90, whereby the doors are pivotally hung from their upper edges for swinging movement to open and closed positions. By the provision of the tubular corner posts 88 of triangular shape in cross-section, no corners or pockets are formed within the body in which material could become lodged, thus providing a body which may be completely emptied by tilting and which is easily cleaned when necessary.

Each of the doors 92 and 94 is preferably of sheet metal construction having an outturned lower edge flange 102, as best seen in Figure 13, which is reenforced by external, spaced apart, vertical, inwardly opening channels 104. Rounded, hook-engaging lugs, or protrusions 106 are provided on the flanges 102 at the lower ends of certain of the channels 102, in position to be engaged by hook-shaped door latching elements, such as those indicated at 108 by which the doors are releasably held in closed positions.

The door latching elements 108 are slidably extended through openings, such as that shown at 110 in a skirt portion 112 extending about the body below the floor 48, and are of elongated hook shape. Each of the elements 108 has a bill portion 114 at its outer end formed with a bight 116 shaped to fit the curvature of the lugs 106 of the doors, whereby the elements will be securely engaged with the lugs to hold the doors in closed positions, as best seen in Figures 10 and 13. The shanks 118 of the elements 108 are somewhat curved at their inner ends and are perforated for pivotal connection to actuating links, such as those indicated at 120, 121, 123, 125, and 127, whereby the elements ride on the bottom edges of the openings 110 so that the bills 114 of the elements will move outwardly and downwardly away from the doors to clear the lower edges of the doors when the elements are moved to releasing positions. By this arrangement the latching elements will be clear of the doors when the doors are opened and closed and the bill portions of the elements will be moved upwardly and inwardly to engage the doors to securely hold the door closed when the elements move to latching positions.

The latch operating mechanism of the invention is best shown in Figures 3 and 3A of the drawings and comprises an operating shaft 126 extending transversely of the body near the front end thereof and mounted for axial rotation in suitable bearings, such as those indicated at 128 which shaft is connected by cranks 130 to the forward ends of the actuating links 127 of the latching elements of the rear door 94, in a manner to move the latching elements to releasing or latching positions by rotation of the shaft 126. An operating shaft 134 is rotatably mounted in bearings 136 and 138 and is connected to the actuating links 121 and 125 through a crank 140, and a connecting link 142 which actuates the links 121 and 125 through bell cranks 144 and 146, to operate the latching elements of the door at the right hand side of Figure 3.

Similarly, an operating shaft 148 is rotatably mounted in bearings 150 and 152, and is connected through a crank 154, a link 156, and a bell crank 158, to link

120, the bell crank 158 being also connected by a link 162 to a bell crank 160 which is in turn connected to the link 123, whereby the latching elements of the door at the left side of Figure 3 may be moved to releasing or latching positions. The shaft 134 has an operating lever 164 and the shaft 148 is likewise provided with an operating lever 166. An operating lever 132 is also provided on the shaft 126, by which the same may be rotated.

As shown in Figure 3A the crank 154 on shaft 136 is in a past-center or over-center position when the latching elements 120 and 123 are in latching positions, so that the latching elements are held against accidental releasing due to vibration, jarring, or the like. In order to prevent the crank from reverse rotation to a position in which the latching elements 120 and 123 would be partially released, a stop block 168 is provided against which the crank bears and which limits the past-center or over-center latching movement of the crank. The cranks 140 and 130 may be similarly arranged for past-center latching movement and may also be provided with similar stop means for limiting such movement.

Hydraulic pumping mechanism of suitable type, not shown, is provided for supplying fluid, such as oil, under pressure to the cylinder 16, through suitable passages, not shown, in the frame 18 and shaft 22, whereby the telescoping pistons 42, 44 and 46 may be extended to tilt the body 12 to dump the contents therefrom. Such pumping mechanism may be connected to be operated by the engine of the vehicle in any conventional manner, or otherwise, so that the body may be returned to its horizontal position by gravity.

In making use of the invention, constructed as described above, should it be desired to dump the body to the rear, as shown in Figure 1, the pins 76 are removed from the lugs 70 at the forward end of the body, and the lever 132 is actuated to move the rear door retainer elements 114 to releasing positions, whereupon fluid under pressure may be introduced into the cylinder 16 to tilt the body to the rear as seen in Figure 1. The rear door 94 will then swing open to permit the body to be dumped. As soon as the body has been emptied, the pressure of fluid in cylinder 16 may be relieved to permit the body to return by gravity to horizontal position and the pins 76 may then be reinserted through lugs 70 to secure the body.

Should it be desired to dump the body to one side, the pins 76 are removed from the lugs 70 and from lugs 68 of the extension 66 on the opposite side of the body and the lever 164 or 166 actuated to release the side door retainer elements 118 at the side upon which dumping is to take place, whereupon the body will be tilted to the one side by introduction of pressure fluid into the cylinder 16, the body pivoting about the pins 72 and 74 on said one side during such dumping.

It will thus be seen that the invention provides a side and rear dumping body for trucks which is of rugged construction and which may be conveniently operated to dump the load in any desired direction with a minimum expenditure of time and labor.

The invention has been disclosed herein in connection with a certain specific embodiment of the same, but it will be understood that this is intended by way of illustration only, and that numerous changes can be made in the structure and arrangement of the various parts, without departing from the spirit of the invention or the scope of the appended claims.

Having thus clearly shown and described the invention, what is claimed as new and desired to secure by Letters Patent is:

1. In a dumping body for trucks an underframe of generally rectangular shape adapted to be hingedly mounted on the frame of a truck for tilting movement relative thereto, upright, tubular corner posts of triangular shape in horizontal cross-section rigidly attached at their lower ends to the underframe and extending upwardly above the underframe at each corner thereof, each of said posts having two external vertical faces forming a corner of the body and a third vertical face extending diagonally between said two faces and spaced inwardly from the corner, doors forming sides of said body and whose upper edge portions are hingedly connected along horizontal axes to the upper ends of said posts for swinging movement, said doors having inside faces positioned for engagement with said external faces when the doors are closed.

2. In a dumping body for trucks an underframe of generally rectangular shape adapted to be hingedly mounted on the frame of a truck for tilting movement relative thereto, upright, tubular corner posts of triangular shape in horizontal cross-section rigidly attached at their lower ends to the underframe and extending upwardly above the underframe at each corner thereof, each of said posts having two external vertical faces forming a corner of the body and a third vertical face extending diagonally between said two faces and spaced inwardly from the corner and side and end doors hingedly connected to the upper end portions of said posts for swinging movement about horizontal axes and having inside faces positioned for engagement with said external faces when said doors are closed.

3. In a dumping body for trucks, an underframe of generally rectangular shape, a floor attached to, covering, and having downwardly extending marginal portions forming a skirt extending along the sides and ends of the underframe, upright, tubular corner posts of triangular shape in cross-section rigidly attached at their lower ends to the underframe and extending upwardly at right angles to said floor at each corner of the body, each of said posts having two external vertical faces forming a corner of the body and a third vertical face extending diagonally between said two faces and spaced inwardly from the corner, doors hingedly connected to the upper ends of the corner posts for vertical swinging movement about horizontal axes and, forming sides of said body, said doors having inside faces positioned for engagement with the external faces of said posts and said skirt when the doors are closed.

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