

G. A. HINRICHER.
DUMPING DEVICE.
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2 SHEETS—SHEET 1.

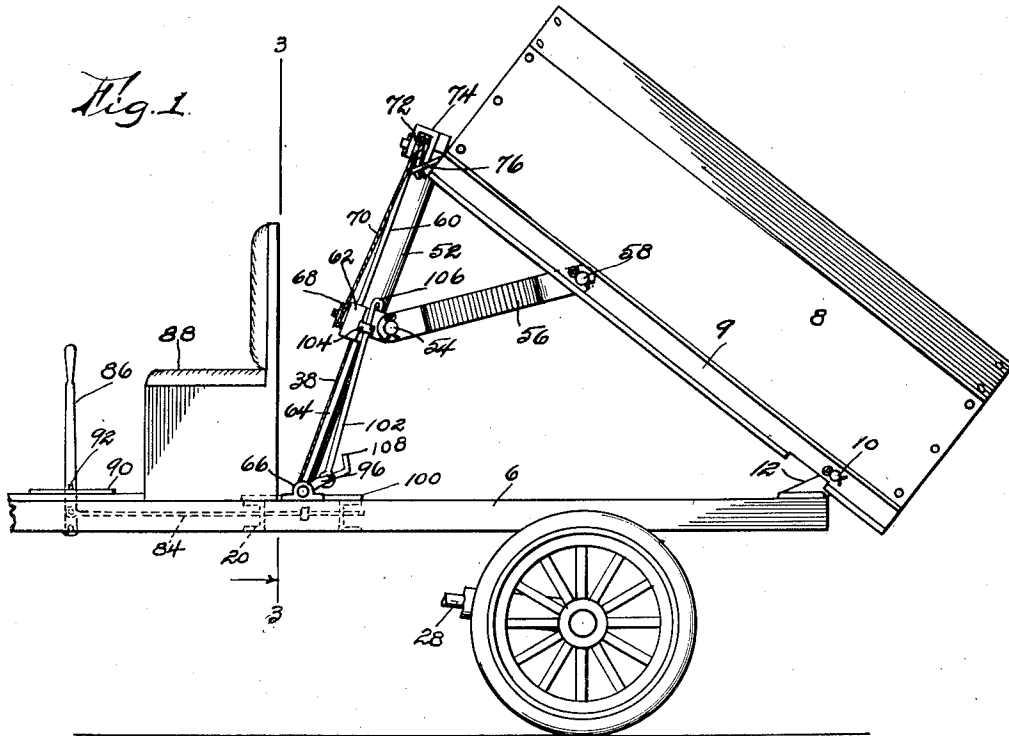
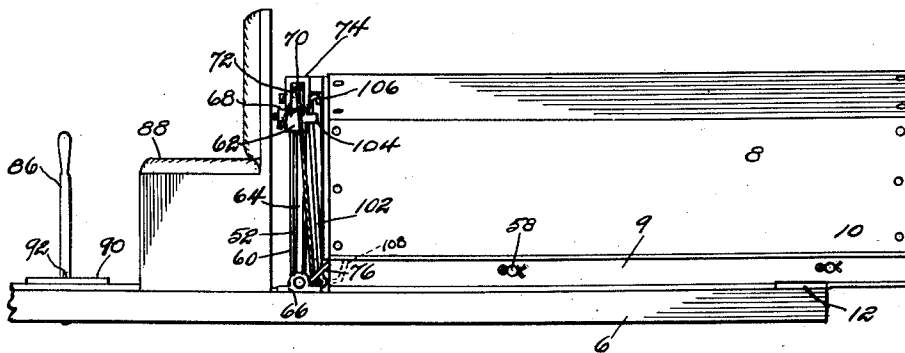


Fig. 2.

Witness:

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2 SHEETS—SHEET 2.



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DUMPING DEVICE.

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To all whom it may concern:

Be it known that I, GERHARD A. HINRICHER, a citizen of the United States, residing at Kansas City, in the county of Jackson, State of Missouri, have invented certain new and useful Improvements in Dumping Devices, of which the following is a complete specification.

The present invention relates to dumping apparatus, and has for its object to provide an improved construction of dumping means for wagons, trucks and the like, and more particularly for the motor-driven type of truck. Accordingly, one of the objects in view is to devise a simple and efficient form of dumping mechanism adapted to be arranged in compact and inconspicuous relation to the forward end of the dumping body and suitably connected for operation from the transmission shaft of the truck.

More specifically, the invention comprises a dumping mechanism which includes a pivotally carried screw driven from the motor transmission and operating in turn to drive a sleeve threadedly engaged by the screw and having a novel arrangement of guiding means for the sleeve and also connections for effecting the necessary tipping action of the dumping body as well as steadying and bracing said body during the movements thereof.

A further object is to provide an improved arrangement of driving connections between the motor transmission and the lifting screw, and also a simple form of disengaging means for interrupting the drive to the screw at the end of the dumping operation. Minor objects will appear in the course of the detailed description.

With these general objects in view, the invention will now be described with reference to the accompanying drawings illustrating one form of construction which I have provided for embodying the proposed improvements, after which the features therein deemed to be novel will be set forth and defined in the appended claims.

In the drawings—

Figure 1 is a side elevation of the rear portion of a truck provided with a dumping apparatus constructed in accordance with the present invention and showing the dumping body in raised or tipped position;

Fig. 2 is a similar view showing a portion of the truck frame and the dumping device in lowered position;

Fig. 3 is a front elevation of the dumping mechanism in the same position as illustrated in Fig. 1, the view being partly in section along the line 3—3 of Fig. 1;

Fig. 4 is a sectional plan view, on an enlarged scale, showing the drive to the dumping mechanism and the disengaging means forming a part of said drive;

Fig. 5 is a section taken on the line 5—5 of Fig. 4;

Fig. 6 is an enlarged sectional detail view of the screw device for elevating the dumping mechanism;

Fig. 7 is a transverse section taken on the line 7—7 of Fig. 6; and

Fig. 8 is an enlarged sectional detail view of one of the gear supporting elements.

Referring to the drawings in detail, the invention is illustrated therein in relation to a truck frame 6 of the motor-driven type, on which is mounted a dumping body 8 provided with bottom side rails 9 pivotally connected near their rear ends, as at 10, to brackets 12 at the rear end of the truck frame.

The dumping device or means for tipping the dumping body 8 about its pivotal mounting in the brackets 12 comprises the following mechanism. A shaft 14 is journaled in bearings 16 formed on a bearing frame 18 which is mounted between a pair of transverse channel members 20 carried by the truck frame at the forward end of the dumping body 8. The shaft 14 is provided with a sprocket wheel 22 at either of its ends, adapted to be driven by a chain 24 from a sprocket wheel 26 which is provided on the transmission shaft 28 of the truck (the position of the sprocket wheel 26 varying somewhat with the style of truck). The shaft 14 is provided intermediate its bearings 16 with a pair of loosely journaled bevel gears 30 meshing on opposite sides of a corresponding bevel gear 32, the inner end of which is formed with a bevel pinion 34 meshing with a bevel gear wheel 36 which is secured to the lower end of a screw 38. The gear 32 is journaled on a short rocking shaft 40 mounted in bearings 42 provided on the frame 18, between which bearings 42 the shaft 40 is provided with a bearing block 44 for the lower smooth end portion of the screw 38, the latter being retained in place by a collar 46 and pin 48 (see Fig. 6).

The screw 38 operates in conjunction with the threaded portion 50 provided on the

lower end of a sleeve 52 (Fig. 6) which forms a housing for said screw when the dumping body 8 is in lowered position. The lower threaded portion 50 of the sleeve 52 is also provided with a rearwardly projecting lug 53 having a pin 54 for pivotal connection to the forward ends of a pair of brace or stay bars 56 which extend in rearwardly diverging relation and have their rear ends pivotally connected by pins 58 to the side rails 9 of the dumping body. The front face of the sleeve 52 is formed with laterally projecting flange portions 60 operating slidably in a channel block 62 which is supported by a pair of upwardly converging rods 64, the lower ends of which are pivotally mounted in brackets 66 on the truck frame 6 at opposite sides thereof. The block 62 carries a sheave 68 for accommodating a cable 70 which is trained over similar sheaves 72 journaled in the opposite ends of a cross arm 74 carried by the upper end of the sleeve 52, the ends of said cable being secured to fixed arms 76 depending from the forward end of the dumping body 8.

Intermediate the gears 30 is provided a clutch element 80 keyed on the shaft 14 and slidable thereon in either direction for engagement with clutch teeth 81 formed on the inner face of each of said gears 30. For shifting said clutch element 80 the same is provided with a yoke 82 carried by a sliding rod 84 having its forward end connected to a shifting lever 86 positioned in front of the driver's seat 88, said lever operating within a slotted floor plate 90 and provided with a lug 82 for engaging a notch 94 in said plate 90 to hold the lever normally vertical with the clutch element 80 in neutral position. The yoke 82 is also engaged by the forked end of a rocker arm 96 (see Figs. 3 and 5), fulcrumed in a bracket 98 which is carried by a plate 100 mounted on the transverse members 20, the other end of said arm 96 being pivotally connected to a rod 102 operating slidably through an eye 104 provided on the block 62. The upper end of the rod 102 is provided with a terminal finger 106 adapted to be engaged by the upper face of the lug 53 on the sleeve 52 as the latter reaches the upper limit of its movement, thereby lifting the rod and rocking the arm 96 to shift the clutch to neutral position.

The operation of the apparatus will be readily understood from the foregoing in the light of the accompanying drawings. The tipping of the dumping body is accomplished by operation of the drive from the shaft 28, the power therefrom being transmitted through the chain 24 and shafts 14 and 40 to the screw 38, the clutch element 80 being thrown into gear with the appropriate bevel gear 30 by means of the hand lever 86. Rotation of the screw 38 of course elevates the sleeve 52, and since the block

62 is substantially fixed as regards any movement axially of the screw, the distance between the sheave 68 and the sheaves 72 gradually increases, with the result that the cable 70 is drawn around the sheaves 72, thereby further tipping the dumping body. Thus, by the combined thrust of the screw 38 and the lifting action of the cable 70, the forward end of the dumping body not only moves with the sleeve 52 throughout the length of said screw, but also moves through a distance equal to the length of said sleeve in addition to the length of the screw, as is clearly illustrated in Figs. 1 and 3. The use of the sheave 68 equalizes the action of the cable, maintaining the same pull at both sides of the dumping body. The pivoted bars 56 permit the tipping motion of the dumping body and also operate to brace and steady the same at opposite sides of the mechanism. When the tipping operation has been carried out substantially the full length of the screw, the finger portion 106 of the rod 102 engages the lug 53 and thereby rocks the arm 96 to throw the clutch element 80 into neutral position, and thus automatically disconnecting the drive,—this action also operating to swing the lever 86 back to vertical position with its lug 92 in engagement with the notch 94 and so latching the parts in this relation. The clutch element is then again automatically disengaged and thrown into neutral position by the engagement of the bottom of the dumping body 8 with a projection 108 extending upward from the rocker arm 96, the lowering of said dumping body serving to depress said projection and rock said arm, thus automatically disconnecting the drive and leaving the lever 86 latched again in vertical position.

After the load has been dumped in the manner above described, it is only necessary to swing the hand lever in the opposite direction to engage the clutch element with the other gear 30 for reversing the screw's rotation, thereby effecting reverse movement of the various parts of the mechanism and returning the same to initial position.

The device is simple and efficient in its operation and the parts comprising the dumping mechanism are of neat appearance and compactly arranged to occupy relatively small space. While I have illustrated one practical form of construction for embodying the improvements, I desire to reserve the right to make such formal changes or modifications as may fairly fall within the scope of the appended claims.

What I claim is:

1. A dumping apparatus comprising a supporting frame, a dumping body pivotally carried by said frame, a lifting mechanism comprising a screw pivotally supported by said frame and a sleeve provided with

a threaded portion engaged by said screw, a guide element swinging in substantially fixed axial relation to said screw and slid-
ingly engaging said sleeve, a cable having
5 its ends connected to said dumping body, sheaves carried by said guide element and the upper end of said sleeve in engagement with said cable, and means for rotating said screw.

10 2. A dumping apparatus comprising a supporting frame, a dumping body pivotally carried by said frame, a lifting mechanism comprising a screw pivotally supported by said frame and a sleeve provided with
15 a threaded portion engaged by said screw, pivotal members connecting the lower end of said sleeve with the opposite sides of said dumping body, a sheave mounted in substantially fixed relation as regards movement axially of said screw, sheaves carried
20 by the upper end of said sleeve, means for rotating said screw and thereby producing a separating movement of said sheaves, and a cable actuated by said separating movement of the sheaves to exert a tipping action on the dumping body.

3. A dumping apparatus comprising a supporting frame, a dumping body pivotally carried by said frame, a lifting mechanism comprising a screw pivotally supported by said frame and a sleeve provided with
30 a threaded portion engaged by said screw,

a guide element slidably engaging said sleeve and having pivoted supporting members permitting swinging of said element in
35 company with said sleeve while maintaining said element in substantially fixed axial relation to said screw, a cable having its ends connected to said dumping body, sheaves carried by said guide element and
40 the upper end of said sleeve in engagement with said cable, and means for rotating said screw.

4. A dumping apparatus comprising a supporting frame, a dumping body pivotally carried by said frame, a lifting mechanism comprising a screw pivotally supported by said frame and a sleeve having a threaded portion engaged by said screw, said sleeve being also formed with laterally
45 projecting flange portions extending longitudinally of the sleeve, a guide element pivotally mounted and swinging in substantially fixed axial relation to said screw, said guide element having guide channels slid-
50 ingly engaging the flange portions of said sleeve, a cable having its ends connected to said dumping body, sheaves carried by said guide element and the upper end of said sleeve in engagement with said cable, and
60 means for rotating said screw.

In witness whereof I hereto affix my signature.

G. A. HINRICHER.