

Aug. 16, 1938.

L. J. McMILLIN

2,126,796

SEMITRAILER DUMPING APPARATUS

Filed Dec. 6, 1937

2 Sheets-Sheet 1

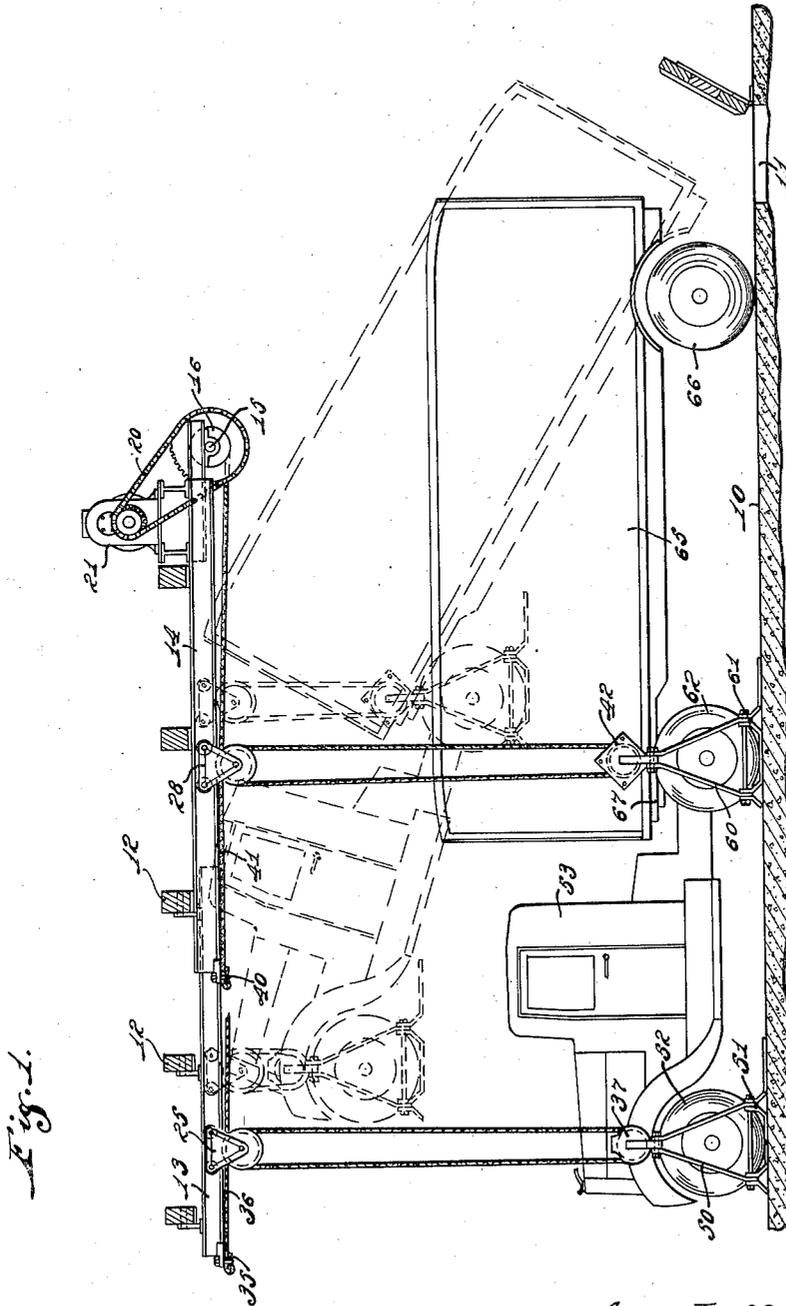


Fig. 1.

INVENTOR.

Louis J. McMillin,

BY

Hood & Starn.

ATTORNEYS.

Aug. 16, 1938.

L. J. McMILLIN

2,126,796

SEMITRAILER DUMPING APPARATUS

Filed Dec. 6, 1937

2 Sheets-Sheet 2

Fig. 2.

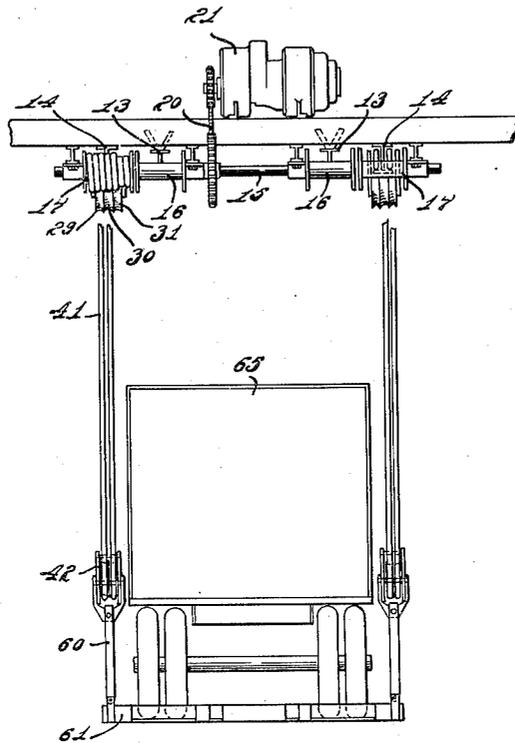
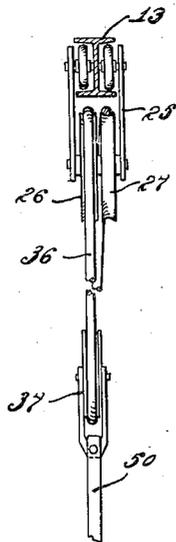


Fig. 3.



INVENTOR.
Louis J. McMillin,
BY
Hood & Hahn.
ATTORNEYS.

UNITED STATES PATENT OFFICE

2,126,796

SEMITRAILER DUMPING APPARATUS

Louis J. McMillin, Indianapolis, Ind.

Application December 6, 1937, Serial No. 178,247

3 Claims. (Cl. 214—46.5)

The object of my invention is to provide a simple efficient mechanism by means of which flowable loads of semi-trailer trucks may be readily gravity dumped without liability of injury to the truck structure, more especially the connection between the power unit and the trailer unit, the construction being such that the dumping operation may be accomplished within the reasonable height limit for dumps for this purpose.

The apparatus is of such character that portions of it may be utilized for accomplishing the dumping of the loads of ordinary trucks and wagons.

The accompanying drawings illustrate my invention diagrammatically.

Fig. 1 is a fragmentary vertical section of a building and a side elevation of my mechanism installed therein, showing a semi-trailer truck in association therewith;

Fig. 2 is a similar section of an elevation in a plane at right angles to the plane of Fig. 1; and

Fig. 3 is a fragmentary detail of the front wheel hoisting tackle.

In the drawings 10 indicates the floor of the building provided with a trap door 11 into which the dumping is to be accomplished, and 12, 12 indicate supporting timbers above floor 10.

Suspended from the timbers 12 are two pairs of parallel trolley tracks (conveniently I-beams) 13, 13 and 14, 14, and at the rear end of these tracks is a drum shaft 15 provided with a pair of winding drums 16, 16 aligned with tracks 13 and a pair of winding drums 17, 17 aligned with tracks 14. In view of the structural details to which attention will be called, these drums may be of uniform diameters, although the drum of one pair may be of a different diameter from the drum of the other pair if so desired, depending somewhat on the vertical distance between floor 10 and the I-beams.

Shaft 15, with its drums, is rotated in either direction by means of a power train 20 and power unit 21 provided with suitable controls.

Slidably mounted on each track 13 is a trolley 25 provided with two sheaves 26, 27 and slidably mounted upon each track 14 is a trolley 28 provided with sheaves 29, 30, and 31.

Anchored at 35, at the forward end of each track 13, is a cable 36 passing rearwardly and downwardly over sheave 26 thence downwardly to and under a single pulley sheave block 37, thence upwardly and over a sheave 27 and thence rearwardly to the aligned winding drum 16.

Anchored at 40, at the forward end of each

track 14, is a cable 41 passing thence rearwardly and downwardly over sheave 29, thence to and under one of the sheaves of a double pulley block 42, thence upwardly and rearwardly over sheave 30, thence downwardly and under the other sheave of block 42, thence upwardly and rearwardly over sheave 31, and thence rearwardly to the aligned winding drum 17. From each block 37 is suspended a yoke or bridle 50, one at each side of the vehicle runway and suspended from the two yokes is a cradle 51 adapted to receive the forward wheels 52 of the power unit 53 of the semi-trailer structure, the cradle 51 being of such character as to hold the wheels 52 against rotative movement relative to the cradle.

Suspended from each block 42 is a yoke or bridle 60, like yoke 50, and the two yokes 60 support a cradle 61, like cradle 51, and adapted to receive the rear wheels 62 of the power unit 53.

The truck of the semi-trailer type comprises the power unit 53, and a trailer unit 65 provided with traction wheels 66 at its rear end and provided at its front end with half of a flexible coupling 67, the other half of which is carried by the rear end of the power unit 53. This coupling 67 permits a considerable degree of flexibility between the power unit and the trailer unit in a substantially horizontal plane and also a degree of flexibility between the power unit and the trailer unit in a longitudinal vertical plane and, in some structures at least, a degree of flexibility between the power unit and the trailer unit in a transverse vertical plane. The two parts of this coupling 67 are generally readily separable so that the power unit may be detached from and attached to any one of a fleet of trailer units and there is a wide variety of such couplings and the details thereof form no part of my present invention.

The operation is as follows:

Cradles 51 and 61 being lowered to the floor, the semi-trailer truck is driven into position, as shown in Fig. 1, with its rear end in position for dumping the contents of the trailer unit through the trap 11 and with the front and rear wheels 52 and 62 of the power unit respectively in the cradles 51 and 61. Thereupon, power being applied to shaft 15 in the proper direction, the drum ends of the cables 36, and 41 are drawn rearwardly until the front end of the trailer unit 65 has been elevated enough to cause dumping of the load, the maximum requisite angle of inclination generally being about thirty degrees. The amount of flexibility of joint 67 in the longi-

itudinally vertical plane is generally not sufficient to permit lifting of the power unit without inclination of the power unit but is sufficient to permit a considerably smaller angle of inclination than the angle of inclination of the trailer body. If the power unit 53 were elevated to the same angle of inclination as the elevation of the trailer unit, requisite head room would be considerably in excess of that ordinarily available, and I have taken advantage of the flexibility, in the longitudinal vertical plane, of the coupling 67 to so design and proportion my apparatus that, while at all times the weight of the power unit and the weight of the forward end of the trailer unit will be properly supported in the cradles 51 and 61, the variation in elevated inclination of the power unit and the trailer unit may be accomplished without possibility of placing any unusual stress upon the coupling 67 and I have found that the desirable relationship may be attained with two-run front wheel lifting tackle, three-run rear wheel lifting tackle, and proper lifting drum diameters.

During the lifting operation, and owing to the longitudinal flexibility of the trolleys 25 and 28, the truck structure pivots about the axle structure of the trailer, the trolley structures automatically adjust themselves to the position of the load and move toward the rear, to the position indicated by the dotted lines, during the lifting operation.

It will be readily understood that in order to dump an ordinary truck or wagon, the front wheels thereof will be placed in cradle 61.

I claim as my invention:

1. In combination with a vehicle driveway having a dumping receptacle therein, of vehicle dumping means comprising two trolley structures and track means therefor arranged longitudinally of a vehicle driveway such that said trolley structure may independently shift, longitudinally of the driveway, in variable specified relationship with the driveway, hoisting means carried by each of said trolley structures, and means for simultaneously differentially manipulating said hoisting means, one at a faster rate than the other, the trolley structures being locatable on the track means in advance of the dumping receptacle a distance sufficient to accommodate a trailer structure between the trolley structures and the receptacle with its rear end resting upon the driveway adjacent the receptacle during hoisting operation.

2. In combination with a vehicle driveway having a dumping receptacle therein, of vehicle dumping means comprising two overhead track structures arranged longitudinally of a vehicle driveway, two sheave carrying trolley structures one mounted on each of said tracks in spaced relation longitudinally of the driveway, two sheave carrying blocks one for each trolley structure, two hoisting cables each anchored at one end upon a stationary anchorage and passing thence to and around the sheaves of one trolley structure and to and around the sheaves of one of the blocks and again to and around its trolley sheaves, two winding drums to each of which one of the said cables is attached, and means by which said winding drums may be simultaneously actuated, the trolley structures being locatable on the track structures in advance of the dumping receptacle a distance sufficient to accommodate a trailer structure between the trolley structures and the receptacle with its rear end resting upon the driveway adjacent the receptacle during hoisting operation.

3. In combination with a vehicle driveway having a dumping receptacle therein, of vehicle dumping means comprising two overhead track structures arranged longitudinally of a vehicle driveway, two sheave carrying trolley structures one mounted on each of said tracks in spaced relation longitudinally of the driveway, two sheave carrying blocks one for each trolley structure, two hoisting cables each anchored at one end upon a stationary anchorage and passing thence to and around the sheaves of one trolley structure and to and around the sheaves of one of the blocks and again to and around its trolley sheaves, two winding drums to each of which, one of the said cables is attached, and means by which said winding drums may be simultaneously actuated, the sheaves and associated block of one trolley structure and the cable relationship therewith being of such character that the hoisting rate thereof will be greater than the hoisting rate of the other trolley and block structure, the trolley structures being locatable on the track structures in advance of the dumping receptacle a distance sufficient to accommodate a trailer structure between the trolley structures and the receptacle with its rear end resting upon the driveway adjacent the receptacle during hoisting operation.

LOUIS J. McMILLIN.