

No. 823,606.

PATENTED JUNE 19, 1906.

W. O. LONG.  
DUMPING WAGON.  
APPLICATION FILED SEPT. 8, 1905.

2 SHEETS—SHEET 1.

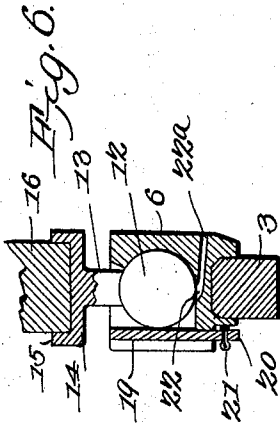


Fig. 1.

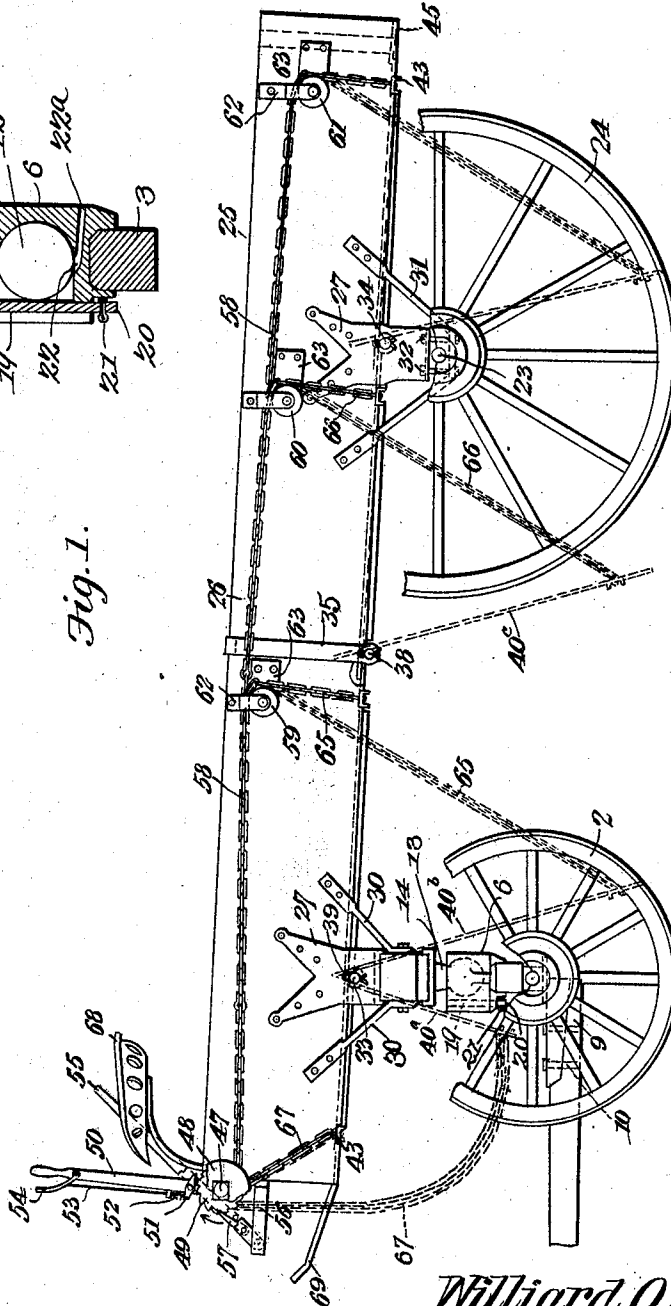
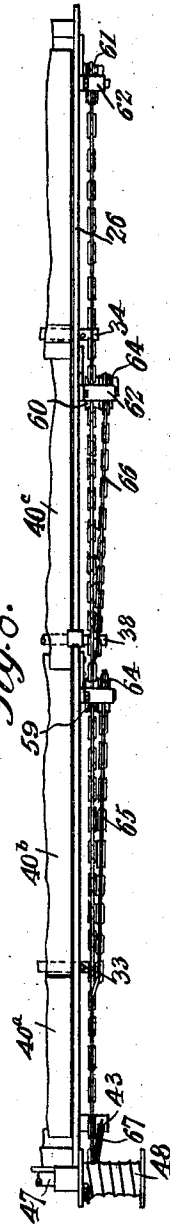


Fig. 8.



Witnesses  
C. K. Stewart  
Wm. Baggers

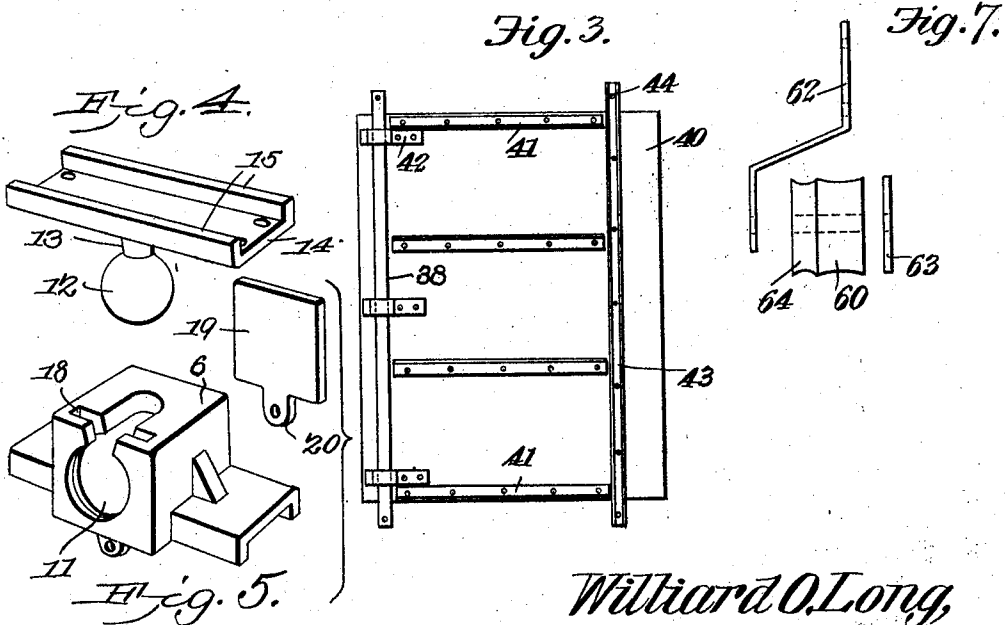
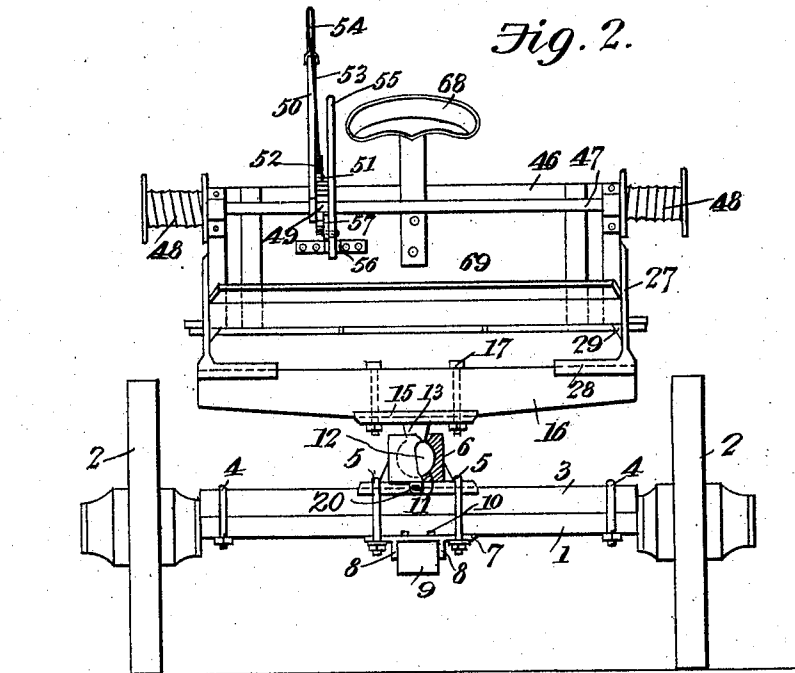
Williard O. Long,  
Inventor.  
by C. A. Snow & Co.  
Attorneys

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Witnesses

E. H. Stewart.

Wm. Bagger.

Willard O. Long,

Inventor.

by *Chas. Snow & Co.*  
Attorneys

# UNITED STATES PATENT OFFICE.

WILLIARD O. LONG, OF MANSFIELD, OHIO.

## DUMPING-WAGON.

No. 823,606.

Specification of Letters Patent.

Patented June 19, 1906.

Application filed September 8, 1905. Serial No. 277,601.

*To all whom it may concern:*

Be it known that I, WILLIARD O. LONG, a citizen of the United States, residing at Mansfield, in the county of Richland and State of Ohio, have invented a new and useful Dumping-Wagon, of which the following is a specification.

This invention relates to dumping-wagons for the transportation of various materials—such as sand, gravel, mud, stones, or, in fact, any material that is to be transported and dumped.

Among the objects of the invention are to simplify and improve the construction and operation of wagons of this class.

Another object is to improve the dumping mechanism, so that the entire load may be dumped simultaneously and while the wagon is moving, this being a consideration of essential importance where the dumping-wagons are following each other in rapid succession, as where construction-work is carried on on a large scale.

A further object of the invention is to improve the construction of the wagon-body, which is made of steel or boiler-plate and which is provided with swinging bottom sections of improved construction.

With these and other ends in view, which will readily appear as the nature of the invention is better understood, the same consists in the improved construction and novel arrangement and combination of parts, which will be hereinafter fully described and particularly pointed out in the claims.

In the accompanying drawings has been illustrated a simple and preferred form of the invention, it being, however, understood that no limitation is necessarily made to the precise structural details therein exhibited, but that changes, alterations, and modifications within the scope of the invention may be made when desired.

In the drawings, Figure 1 is a side elevation of a dumping-wagon constructed in accordance with the principles of the invention. Fig. 2 is a front end view of the same. Fig. 3 is a bottom plan view of one of the bottom sections. Fig. 4 is a perspective detail view of the ball portion of the joint whereby the fore part of the wagon-body is connected with the front axle. Fig. 5 is a perspective detail view of the socket portion of said joint. Fig. 6 is a longitudinal vertical sectional view of a ball-and-socket joint. Fig. 7 is a detail view

showing detached one of the double chain-supporting pulleys and the brackets for the same. Fig. 8 is a detail top plan view of one side of the wagon-box and related parts.

Corresponding parts in the several figures are indicated throughout by similar characters of reference.

The front gear of the wagon includes an axle 1, equipped with low carrying-wheels 2, which, as will be hereinafter seen, are capable of turning under the wagon-body. The axle supports the sand-board 3, which is secured thereon by means of clips 4, and additional clips or clamps 5 5 serve to secure upon the upper side of the sand-board and upon the under side of the axle a pair of brackets or castings 6 and 7, the former of which rests on top of the sand-board and constitutes the socket member of a ball-and-socket joint to be presently described, while the member 7 is provided on its under side with longitudinal parallel flanges 8 8, between which the tongue 9 is secured, as by means of bolts 10, passing through the forwardly-extending flanged portion of the bracket member 7.

The member 6, as above set forth, constitutes the socket member of a ball-and-socket joint, and it is provided with an approximately spherical channel 11 for the reception of a ball 12, which latter has a neck portion 13, whereby it is connected with a plate 14, provided at its front and rear edges with flanges 15, engaging the front and rear sides of the bolster 16, with which the plate 14 is connected, as by means of bolts 17. The socket member 6 is provided near the front end of the channel 11 with vertical grooves 18 for the reception of a plate 19 of heavy boiler iron or steel, which when inserted forms a bearing for the front side of the ball and serves to retain the latter in position. The plate 19 is provided at its lower edge with a lug 20, adapted to extend through the slot in the bottom of the socket member and having a perforation for the reception of a cotter-pin 21, whereby it may be retained in position detachably.

In the bottom of the socket is formed an aperture 22 for the escape of foul oil and the like, said aperture communicating with a channel 22<sup>a</sup>, through which the foul oil, wearings, and the like may escape over the rear edge of the axle. By this ball-and-socket joint it will be seen that the axle is connected with the bolster in such a manner as to be ca-

pable of turning freely in relation thereto in either a horizontal or a vertical plane, so that rough places may be traversed without materially disturbing the horizontal position of the wagon-body. It will also be seen that the tongue is set low, thereby facilitating the draft, and that hounds and other incumbrances are entirely dispensed with. The rear gear of the wagon includes the rear axle 23, having carrying-wheels 24.

The wagon bed or body 25 is constructed of steel plate or other suitable material or combination of materials to insure both lightness and durability. Exteriorly upon the side members 26 of said wagon-body are bolted brackets 27, consisting of castings that are strongly and durably made for the purpose of supporting the wagon-body upon the front and rear axles. The brackets 27 are provided at their lower ends with flanged supporting-plates 28, adapted to rest, respectively, upon the bolster 16 and upon the rear axle 23. Said brackets are also provided upon their inner sides with ribs 29, whereby the under edges of the sides of the wagon-body are firmly supported. The sides of the wagon-body are connected with the front bolster by means of braces 30, and each side of the wagon-body is connected securely with the rear axle by means of a yoke or brace 31, extending under the axle and the extremities of which are securely bolted to the sides of the wagon-body, said yoke being additionally connected with the flanged bottom plates 28 of the rear braces 27 by means of bolts 32. It will be seen that the foregoing construction is one of great simplicity and at the same time of great strength and durability and that by said construction the wagon-body is rigidly connected with the front and rear members of the running-gear. It will be furthermore observed by reference to Fig. 1 of the drawings that the front gear is set well back and the rear gear is set well forward under the wagon-body, thus assisting in balancing the load in a manner which is well known to contribute greatly toward lightness of draft. The wagon-bed has been shown as inclining in a downward and rearward direction, but this is non-essential, except in so far as it contributes toward the convenient loading of the wagon.

The wagon bed or body is provided with bearings for a plurality of transverse shafts, preferably three in number, as best seen in Fig. 1. Two of these shafts—namely, the front shaft 33 and the rear shaft 34—have their bearings in the brackets 27, which, as stated, are massive castings of iron. It will here be particularly noted that the brackets 27, constructed and arranged as herein described, are a very important and essential feature of the improved dumping-wagon structure, said brackets affording supporting means for the side members of the wagon-

box, which are usually constructed of sheet metal, and said brackets also forming bearings for the ends of the shafts upon which, as will be presently described, the trap-doors which constitute the bottom of the wagon-box are hingedly supported. The intermediate shaft is mainly supported in a pair of bracket-straps 35, the upper extremities of which are hooked over the upper edges of the side members of the body, while the lower ends of said straps are provided with apertures forming bearings for the intermediate shaft 38. The several shafts are secured in their bearings by means of steel-spring cotter-pins 39 of suitable size and strength to not merely assist in retaining the shafts in their bearings, but also to prevent the side members of the wagon-body from expanding outwardly under the weight of the load placed therein.

The bottom of the wagon bed or body is composed of a plurality of trap-doors of the preferred construction illustrated in Fig. 3 of the drawings, by reference to which it will be seen that each of said trap-doors is composed of a sheet of steel or boiler plate, as 40, of suitable dimensions, the same being provided with a plurality of angle-irons, as 41, disposed longitudinally upon its under side and riveted or otherwise suitably secured thereto. Near one end the door-plate is provided with a plurality of boxes 42, engaging the supporting-shaft, which in Fig. 3 is designated 38. Near its opposite end the door-plate has a transverse channel-bar 43, the ends of which project beyond the side edges of the door-plate and are provided with apertures 44 for convenient connection with the links of the lifting-chains, whereby the several doors are manipulated.

The several trap-doors, which in Fig. 1 of the drawings have been specially designated 40<sup>a</sup>, 40<sup>b</sup>, 40<sup>c</sup>, and 40<sup>d</sup>, running from the front to the rear end, are supported hingedly upon the several shafts 33, 38, and 34 in the manner indicated, by reference to which it will be seen that the two front doors are supported upon the front shaft 33, while the two rear doors are supported upon shafts 38 and 34, respectively, all of said doors, except the front one, having their free ends extended rearwardly so as to swing in a forward and downward direction. The front door 40<sup>a</sup> differs from the remainder of the doors in that it is much shorter and that the hinges are set at the extreme rear end of the door, which when folded will be overlapped by the portion of the door 40<sup>b</sup> which extends above or in front of the hinges. The free edges of each of the doors 40<sup>b</sup> and 40<sup>c</sup> when closed are overlapped by the hingedly-supported ends of the doors in rear thereof, and the free ends of the doors 40<sup>a</sup> and 40<sup>d</sup> when closed may fold against or abut upon transverse connecting members, as 45, at the ends of the wagon-

body, which latter is also provided with end-gates, the front one of which appears in Fig. 2, where it is designated 46.

Upon the front end of the wagon-body is journaled a transverse shaft 47, provided at the ends thereof with spirally-grooved winding-drums 48. Said shaft also carries a ratchet-wheel 49, which is fixed upon the shaft, and adjacent to one side of said ratchet-wheel is fulcrumed a hand-lever 50, carrying a pivoted pawl 51, which is normally held out of engagement with the ratchet-wheel by the action of the spring 52, coiled upon a rod 53, which is slidably connected with the hand-lever, said rod being operable by a handpiece 54, whereby it may be manipulated to force the pawl 51 into engagement with the ratchet-wheel against the tension of the spring. A hand-lever 55, which is fulcrumed upon a bracket 56, has a dog 57 normally engaging the teeth of the ratchet-wheel 49 to prevent the latter and the shaft upon which it is mounted from rotating.

Connected with each of the winding-drums is a chain 58, which is guided in a rearward direction over pulleys 59, 60, and 61, which are supported adjacent to the sides of the wagon-body by means of bracket members 62 and washer-plates 63. The pulleys 59 and 60, the latter of which is shown in detail in Fig. 7 of the drawings, may be described as double pulleys—that is to say, that each of said pulleys is provided with an auxiliary guide-groove 64. The pulley 61 is an ordinary single guide-pulley. The rear ends of the chains 58 are connected with the projecting ends of the channel-bar 43 of the rear trap-door 40<sup>a</sup>. Suitably connected with each of the main chains 58 are a pair of auxiliary chains 65 and 66, which are guided over the auxiliary grooves of the pulleys 59 and 60 and connected with the ends of the channel-bars at the free ends of the doors 40<sup>b</sup> and 40<sup>c</sup>. Additional auxiliary chains, as 67, which are connected with the channel-bar 43 at the free end of the front trap-door 40<sup>a</sup>, are adapted to wind, together with the main chains 58, upon the winding-drums 48. Said chains 67 are obviously to be of approximately the same length as the chains 65 and 66 in order that the several trap-doors may be operated simultaneously. Hence when the trap-doors are open the chains 67 will show some slack, as indicated by the dotted lines in Fig. 1 of the drawings.

A seat 68 and a foot-rest 69 for the driver or operator are suitably supported upon the front end of the wagon-body. Extension-tops may be provided, when desired, for the purpose of increasing the holding capacity of the wagon-box.

From the foregoing description, taken in connection with the drawings hereto annexed, the operation and advantages of this invention will be readily understood by

those skilled in the art to which it appertains. The wagon-box and all its related parts are made of metal, preferably steel and cast-iron, in such a manner that great strength and durability, as well as lightness, will be insured. The wheels may be made entirely of metal, if desired. It will be seen that the wagon-bed sets low upon the running-gear and that the latter is connected directly with and by the wagon-box, so that the draft will be entirely exercised upon the knuckle-joint which connects the front axle with the bolster. The front wheels will turn under the wagon-bed, thus greatly facilitating turning. When the trap-doors, which constitute the bottom of the wagon-box, are closed or folded together, they are overlapped at the meeting ends, thus forming close joints, enabling material such as fine dry sand or liquid mud to be transported with little or no danger of leakage. In order to dump the contents of the wagon-box, the hand-lever 55 is manipulated to throw the dog 57 out of engagement with the ratchet-wheel 49. The several bottom sections are thus simultaneously released, permitting the entire contents of the wagon-box to be dumped simultaneously and while the vehicle is in motion. Being thus dumped, the material will be instantly and automatically spread or leveled out instead of being dumped in a ridge, as is always the case where the trap-doors are longitudinally disposed, and thus dispensing with the services of at least one man for the purpose of scattering or leveling the dumped material. Another advantage is that no matter how rapidly the train or dumping-wagons usually employed may follow one another, there need be no delay whatever on account of dumping, but the wagons may follow each other in the most rapid succession and each load may be deposited precisely in the desired place. Only one of the trap-doors—namely, the front one—swings in a downward and rearward direction, and guides the material supported thereby in front of the front axle; but said door being comparatively very short will under no circumstances interfere with the progress of the vehicle. Said front door and the one adjacent thereto are hingedly supported upon the same shaft, and the material supported by said front doors will thus be shed in front and in rear of the front axle, which latter, together with the ball-and-socket joint supported therein, will thus be fully protected from the dumped material. Attention is directed to the fact that the shaft 34, supported in the rear brackets 27, is set to the rear of the center of said brackets, thus enabling the rear trap-door to be dumped without interfering with the rear axle.

All of the trap-doors, except the front one, will slide freely over the dumped material

until they are restored to their normal closed position, which is done by manipulating the lever 50 and the handle member 54 to throw the spring-actuated pawl 51 in engagement 5 with the ratchet-wheel 49 and then rotating the shaft 47 in the proper direction to wind the chains upon the drums 48, the shaft being secured against reverse motion by placing the dog 57 of the hand-lever 55 in engagement 10 with the said ratchet-wheel.

The improved dumping-wagon of this invention will thus be found decidedly useful and serviceable for the transportation and dumping of excavated material, building 15 materials, or, in fact, any material or product that may be dumped. The construction is simple and comparatively inexpensive, and the operation is so easy and simple that it may well be performed by a boy.

20 Having thus described the invention, what is claimed is—

1. In a dumping-wagon, a wagon-body having a bottom composed of a plurality of trap-doors, and brackets secured upon the 25 side members of said body and provided with body-supporting cleats.

2. In a dumping-wagon, a wagon-body having a bottom composed of a plurality of trap-doors, brackets secured upon the side 30 members of said body and having body-engaging cleats, and running-gear including supporting means for said brackets.

3. In a dumping-wagon, a wagon-body having a bottom composed of a plurality of 35 trap-doors, brackets secured upon the side members of the body and provided with body-engaging cleats, running-gear including supporting means for the brackets, and means rigidly connecting the body with the 40 bracket-supporting means.

4. Front and rear running-gear including a front bolster and a rear axle, a wagon-body,

brackets connected with the body and having body-engaging cleats, means for rigidly 45 connecting said brackets with the front bolster and the rear axle, and trap-door-carrying shafts having bearings in said brackets.

5. In a dumping-wagon, a wagon-body having supporting-brackets, and trap-door-carrying shafts journaled in said brackets. 50

6. In a dumping-wagon, a wagon-body, supporting-brackets connected with the side members of said body, and shafts journaled in said brackets and having keys to prevent 55 the spreading of the brackets and side members.

7. In a dumping-wagon, a wagon-body, supporting-brackets connected with the side members of said body and having body-engaging cleats, and shafts journaled in said 60 brackets and having keys to prevent the spreading of the brackets and side members.

8. In a dumping-wagon, a wagon-body, supporting-brackets secured to the side 65 members of the body and having body-engaging cleats, shafts journaled in said brackets, keys extending through the projecting ends of the shafts, and trap-doors hingedly supported upon the latter.

9. A wagon-body having a transverse 70 shaft and a trap-door having hinge members engaging said shaft and provided near its free end with a channel-bar having projecting ends, in combination with hoisting-chains connected with the projecting ends of 75 the channel-bars.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

WILLIARD O. LONG.

Witnesses:

ELMER E. DAUGHERTY,  
HOWARD MILLER.