

1,050,998.

WITNESSES:

Peter L. Cannon
Henry Merrill

INVENTOR:

Charles Pay.

By C. J. Hannigan,
Attorney

UNITED STATES PATENT OFFICE.

CHARLES PAY, OF PROVIDENCE, RHODE ISLAND.

LIFTING DEVICE FOR DUMPING-WAGONS.

1,050,998.

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To all whom it may concern:

Be it known that I, CHARLES PAY, a citizen of the United States, residing at the city of Providence, in the county of Providence and State of Rhode Island, and whose post-office address is 301-316 South Water street, in said city, have invented certain new and useful Improvements in Lifting Devices for Dumping-Wagons, of which the following is a specification.

This invention relates to structural improvements designed for use on heavy four-wheel carts or trucks; in that class of lifting mechanism wherein telescopically-arranged screw-shafts are employed to tip the cart-body to unload the contents, and the invention represents improvements upon that disclosed in United States Letters Patent, No. 816,035, granted to me March 27, 1906.

The object of my present invention is to provide a universal-joint structure adapted to be secured upon the cart-perches and to act as a support for the hoisting screw-shaft, in order to permit said shaft to swing laterally of the cart and thereby to prevent breakage of said shaft or its support as the cart moves over an uneven road or meets with an obstruction in the latter.

A further object in view is to provide an auxiliary bearing on the cart-front to coact with the pivot center of the swivel yoke connection with the nut, and thereby to form a substantial support for the cart-body when the latter is being elevated to unload.

The invention consists in the special details of construction and combination of parts, as hereinafter described and set forth in the claims.

In the accompanying sheet of drawings, Figure 1 represents a front elevation of a cart or truck showing my improved means applied thereto for supporting the hoisting screw-shaft and the mechanism for operating the same, as when the cart-body is on a level and loaded. Fig. 2 is an enlarged front elevation of my improved universal-joint structure, showing different angle positions its swinging members may assume laterally of the cart. Fig. 3 is a cross-section taken on line $x-x$ of Fig. 2. Fig. 4 is a partial side elevation of the cart or truck in its highest tipped position, showing a sectional view of my improved auxiliary bearing support for the yoke connection carried upon the cart-front. Fig. 5

is a perspective view of my said bearing support and its yoke connection.

Like reference characters indicate like parts.

The first improvement in my present invention is clearly shown in Figs. 2 and 3, which represents the lower support for the hoisting screw-shaft and is constructed as follows:

A rectangular plate $-a-$ is designed to be secured transversely upon the cart-perches $-p-$ and has upwardly-extending perforated ears $-a^1, a^1-$, to receive bolts which act as pivot centers, as $-a^2, a^2-$.

A flat sided rocker member $-b-$ extends longitudinally of the plate $-a-$ and has downwardly-extending perforated ears $-b^1, b^1-$, to receive the pivot centers $-a^2-$ of said plate. The ears $-b^1-$ rest on curved recesses $-a^3-$ formed in the plate $-a-$.

A swinging frame member $-c-$ has a central hub $-c^1-$ which is bored to form a step for the lower portion of the hoisting screw-shaft $-s-$, and this frame member is cored out at each side of said hub $-c^1-$, as at points $-c^2, c^2-$, in order to permit the upper portion of the rocker member $-b-$ to have a sliding movement upon the opposed walls $-c^3, c^3-$ of said frame member, in the manner shown in Fig. 3.

From the hub $-c^1-$, of the frame member $-c-$, project downwardly-extending perforated ears $-c^4, c^4-$, to receive a pivot-bolt which passes transversely through the center of the rocker member $-b-$, as at a point $-a^3-$.

By pivotal arrangement of the members $-b-$ and $-c-$, as shown, a universal joint connection is had to support this part of the operating shaft $-s-$, and permit the latter to swing transverse of the cart.

To increase rigidity in holding the shaft $-s-$ by this construction of universal joint, the pivot center $-a^3-$ is located in alignment to the pivot centers $-a^2-$; the plate $-a-$ being provided with a central opening $-a^4-$ to allow necessary clearance for the swinging movement of the rocker member $-b-$, and at the same time in order to insure a maximum amount of bearing surface being afforded by the walls $-c^3-$ of the frame member $-c-$, the upper part of the rocker member is curved inwardly to clear the bottom of the frame-hub $-c^1-$ and have its outer portions project within said walls $-c^3-$, a sufficient distance to

form the necessary amount of sliding contact desired upon the bearing surfaces of said frame member.

The frame member —*c*— is provided with four box journal bearings at one end thereof, as at points —*c*⁵, *c*⁶—, to carry a compound gearing arrangement —*d*, *d*—, and a support —*e*— is secured to this box portion of said member to receive a motor (not shown,) for driving the motor-shaft —*f*—, which actuates said gearing arrangement to transmit power to a large bevel gear —*g*— fast on the screw-shaft —*s*—.

The screw-shaft —*s*— is prevented from displacement on the member —*c*— by means of an angle arm —*h*—, which is secured at the other end of said member and has a bored hub —*h*¹— to receive said shaft and bear against the gear —*g*— which drives the latter.

My next improvement is confined to the upper support for the hoisting screw-shaft's nut connection with the cart-front. Centrally of the cart-front —*i*— is secured a vertical plate —*j*— which has a fixed bolt that acts as a pivot center, as —*k*—, to receive a swivel yoke —*l*—, and said plate has an integral curved ledge or sector portion projecting above the pivot center —*k*— to form an auxiliary bearing, as —*j*¹—.

The nut —*m*—, which moves on the telescopic screw-shaft —*s*¹—, is pivotally mounted upon the free ends of the yoke member —*l*—, as at points —*m*¹, *m*²—, and said member swivels on the bolt —*k*— and has an upwardly-extending integral toe —*l*¹— to swing in contact upon the sector bearing —*j*¹—.

The members —*l*— and —*m*—, which form a universal joint for the upper shaft —*s*¹—, provide a close connection between the latter and the cart-front, and by means of the supplemental bearing —*j*¹— a durable support is maintained to overcome the load during the lifting operation, in case of breakage of the pivot-bolt —*k*—.

By this description it is seen that I provide important improvements in devices of this character, inasmuch as the lifting shafts are enabled to withstand the hard usage and excessive jolts which they are liable to receive from time to time without bending or breakage; their supports are very durable and readily accommodate themselves to swing the lifting shafts to the various degrees of angle positions, and form structures that will endure for a long period. These improvements, as above described, are essentially designed for use in my manufac-

ture of lifting mechanism for application to heavy tipping vehicles.

What I claim and desire to secure by Letters Patent, is:—

1. In a tipping-truck having a relatively short hoisting screw-shaft, a plate secured upon the cart-front and having a fixed pivot-bolt and also a supplemental sector bearing above the latter; a nut on said shaft; a yoke connection from the bolt of said plate to said nut, said yoke having an integral toe to swing laterally of the cart-body and keep in contact with the bearing of said plate.

2. In a tipping-truck having a relatively short hoisting screw-shaft, a support carried upon the cart-perches, comprising a fixed base plate; a flat faced rocker member pivoted on said plate to swing longitudinally of the cart; a frame member pivoted on said rocker member to swing laterally of the cart, and said frame member having a stepped hub to receive said shaft and also cored out portions providing opposed flat bearing faces for sliding upon the side faces of said rocker member.

3. In a tipping-truck having telescopic screw-shafts and a nut upon one of said shafts, the combination with a plate secured upon the cart-front and having a pivot bearing; a swivel member upon the bearing of said plate and embracing the shaft-nut, a supplemental bearing means to coast with the pivot-bearing of said plate in resisting the downward thrust of the cart-body during operation of tipping the same.

4. In a tipping-truck having telescopic screw-shafts, wherein the upper shaft engages a nut carried by the truck front and the lower shaft has a gear fast on the latter, the combination therewith, of a pivotally mounted rocker member arranged to swing longitudinally of the truck, said member having opposed flat sides which form bearing surfaces; a saddle member pivotally mounted on the said rocker member so as to swing laterally of the truck, said member designed to support the lower screw-shaft and having opposed walls in sliding contact upon the bearing surfaces of the said rocker member, a gearing arrangement carried by the said saddle member to transmit power to drive the gear of the lower screw-shaft, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES PAY.

Witnesses:

PETER C. CANNON,
C. T. HANNIGAN.