

TIPPING MECHANISM FOR RAILWAY AND LIKE WAGONS.

Patented Oct. 1, 1918.

2 SHEETS—SHEET 1.

Fig. 1.

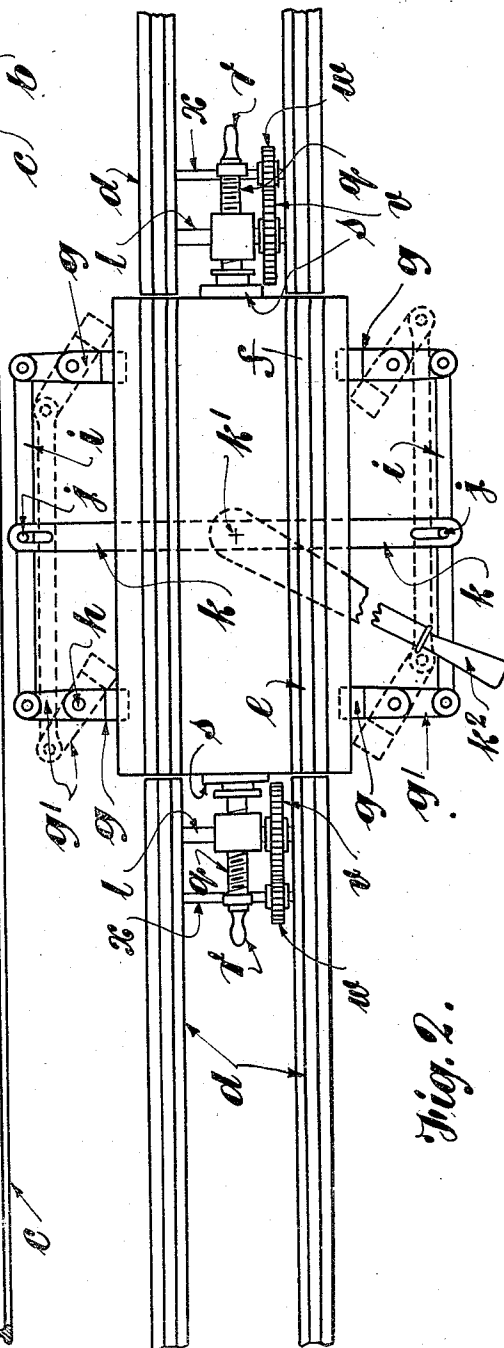


Fig. 2.

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TIPPING MECHANISM FOR RAILWAY AND LIKE WAGONS.

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2 SHEETS—SHEET 2.

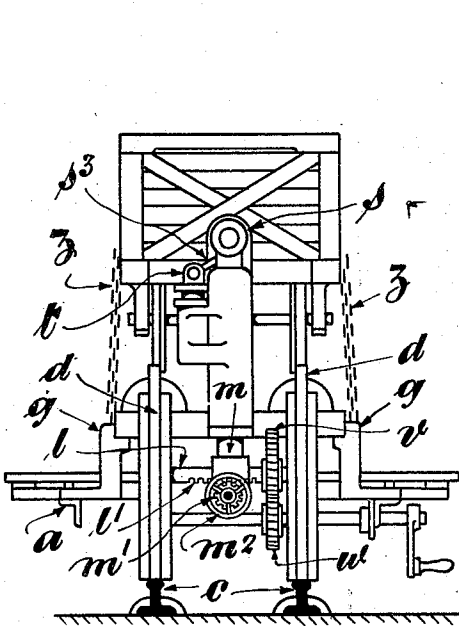


Fig. 3.

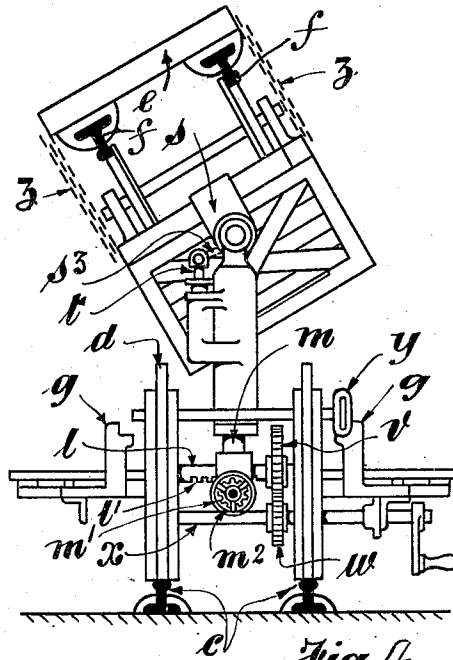


Fig. 4.

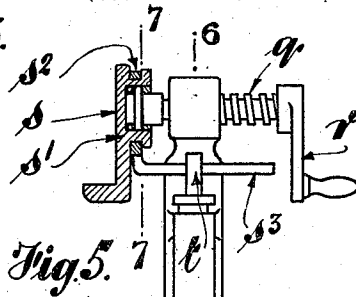


Fig. 5.

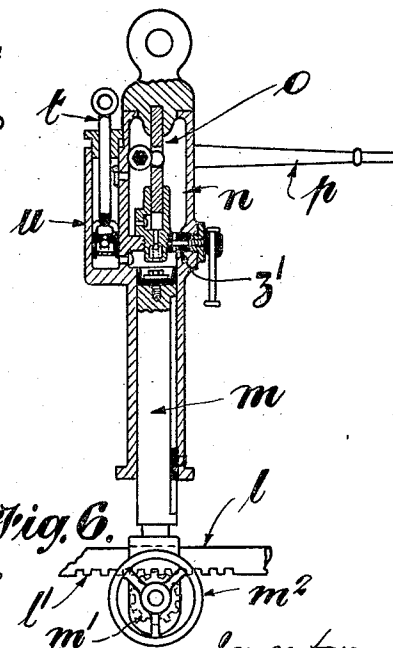


Fig. 6.

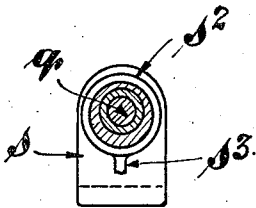
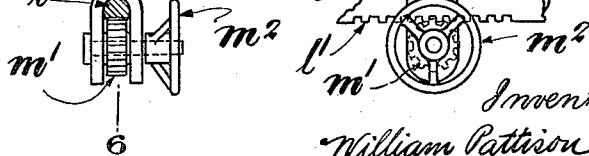


Fig. 7.



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UNITED STATES PATENT OFFICE.

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TIPPING MECHANISM FOR RAILWAY AND LIKE WAGONS.

1,280,531.

Specification of Letters Patent.

Patented Oct. 1, 1918.

Application filed June 11, 1917. Serial No. 174,153.

To all whom it may concern:

Be it known that I, WILLIAM PATTISON, a subject of the King of Great Britain and Ireland, and resident of Widnes, Lancashire, England, have invented certain new and useful Improvements in or Relating to Tipping Mechanism for Railway and like Wagons, of which the following is a specification.

10 This invention relates to tipping mechanism for railway and the like wagons of the kind in which the wagon is tipped bodily, to discharge the contents. The object of the invention is to provide improved means of simplified and efficient design for effecting the tipping of the wagons.

According to the invention, the improved apparatus comprises a platform on to which the wagon can be moved and at the ends of which are pedestals, one or both of which can be moved clear of the track to admit the passage of the wagon. Each pedestal is formed as, or provided with a jack, and the upper ends are provided with gripping means adapted to be advanced toward the wagon end and form centers about which said wagon or wagon and platform can revolve. The jacks are operated by suitable means, such as by screws, or hydraulically, and the rotary movement of the wagon is adapted to actuate the jacking mechanism which in addition to raising the wagon bodily, acts as a brake in order to bring the wagon to rest at the correct position, said wagon afterward being lowered to the correct level.

A practical embodiment of the invention will now be described with reference to the accompanying drawings, in which:

40 Figure 1 is a side elevation of a portable form of the invention, with a wagon in position.

Fig. 2 is a plan view with the wagon removed.

45 Fig. 3 is an end view of Fig. 1.

Fig. 4 is a view corresponding to Fig. 3, but with the wagon in the act of completing its circular movement.

Fig. 5 is a part sectional view showing the end jacks or supports detached.

Fig. 6 is a cross sectional view on the line 6—6 of Fig. 5.

Fig. 7 is a cross-sectional view on the line 7—7 of Fig. 5.

55 Referring to the drawings a portable carriage is provided with wheels *b* to travel

along a railway track *c*. The carriage has inclined rails *d* leading to a platform *e* upon which are secured rails *f* forming a continuation of, or connecting, the two sets of inclined rails at either end of the carriage *a*. The platform is supported upon four uprights *g* each pivotally connected at *h* to the carriage *a*. Horizontal extensions *g'* of the uprights *g* are connected in pairs on each side of the carriage by links *i*. At the center of each link is a pin *j*, one of which enters a slot formed at one end of a lever *k*, while the other enters a slot formed in the other end of said lever which is pivoted at the center *k'*, to the carriage *a*. A handle *k²* is secured to the lever *k*, or to the axle of the same, by means of which said lever is moved around its pivot, which movement is transmitted to the uprights *g* to swing the same clear of the platform *e*, as shown in dotted lines in Fig. 2.

Means are provided at either end of the carriage *a* to grip and center the wagon and as said means are identical at both ends, the mechanism at one end only will be described. Cross-wise of the carriage *a* is a shaft *l* journaled in brackets, fixed to the framing at either side. The ram *m* of an hydraulic jack is secured to the shaft *l* and rotates therewith. Said ram is located in the pressure cylinder above which is fixed the water reservoir *n* containing the plunger pump *o* worked by the handle *p* in the well known manner. The top of the reservoir is provided with an extension having a transverse screwed hole therethrough to receive a screwed spindle *q* which is rotated by means of the handle *r*. At the opposite end of the spindle *q* a fitting *s* is rotatably mounted which is adapted to engage and grip the end of the wagon, a thrust bearing being provided to insure that the turning movement of the fitting *s*, in operation, is not transmitted to the spindle *q*. Upon the fitting *s* and eccentrically to the spindle, is formed an eccentric *s'* to receive an eccentric strap *s²* the rod *s³* of which connects with, and operates, the plunger *t* of a power pump *u*. The suction valve of the pump *u* communicates with the reservoir *n*, while the delivery valve communicates with the pressure cylinder of the ram *m*.

The ram *m* rotates with the shaft *l* but is capable of axial movement along the same in order that the spindle *q* may be adjusted transversely for a purpose hereinafter ex-

plained. To effect this axial movement the shaft l is formed with a rack l' with which meshes a pinion m' on the ram m said pinion being turned by means of the hand-wheel m^2 . Upon the shaft l is also rigidly secured the pinion v which meshes with a small pinion w fixed to the shaft x . The latter is also mounted in brackets, cross-wise of the shaft, and is provided with a handle located exteriorly of the carriage framing, by means of which the shafts x and l may be rotated in order to raise, or lower, the jack. A strut or the like, may be provided to retain the jack in the raised position, or, as shown in the drawings, a cross bar y may be passed through holes in the framing formed to receive it, just rearwardly of the jack and in contact with the same.

A second jack, similar in all respects to the first is mounted at the opposite end of the carriage and the operation of the device is as follows: The carriage a is moved along the track c , to the place where it is desired to tip the wagons and is then secured in position by wedging or scotching. Assuming the platform e to be in position resting upon the supports g , with the jack at the right hand side raised, and the jack at the left hand side lowered, as shown in dotted lines in Fig. 1.

The wagon is forced up the incline on to the platform and the jack is then raised by turning the handle of the shaft. It is then secured in position by the cross-bar y after which the jack is adjusted transversely by means of the handwheels m until the spindle q lies slightly to one side of a line passing through the center of gravity of the wagon and load in order to insure a preponderance of weight upon that side on which it is desired to tip the wagon. The fitting s is then advanced by rotating the spindle q , until the wagon is firmly gripped and held as shown in Fig. 1. Chains z are then passed over the buffers of the wagon and connect the same securely to the platform.

When the platform and wagon are connected together, the supports g are moved from under the former by means of the handle h so that said platform and wagon are suspended upon the spindles q which constitute centers for the same. Immediately the supports g are removed the loaded wagon tips in the required direction due to the position of the centers as before explained. The preponderance of weight on the lower side increases due to the act of emptying, owing to the high side of the wagon gradually being emptied, so that rotary impulse is imparted to said wagon until it reaches the position shown in Fig. 4. At this position the wagon is empty, but the wheels and platform, which are now comparatively heavier, are in the act of descend-

ing on the opposite side of the center of rotation. At this point the eccentric s which has been raising the plunger t during the upward movement of the wagon, begins to force the said plunger downward, thereby forcing water into the pressure chamber. The effect is to raise the spindles q , together with the wagon and platform, while the force expended on the plunger exercises a braking effect upon the rotating body.

Consequently the wagon and platform come gently to rest at a slightly higher level than normal, so that the supports g can be readily moved under said platform. A return valve s' is provided to allow the water to flow back into the reservoir in order to lower the jack and permit the platform to descend on to the supports. One or both of the jacks is, or are, then lowered to permit the removal of the wagon and to allow another one being placed in position.

Instead of the portable carriage a the device may be constructed as a permanent structure and it may also be arranged on the ground level for use with a conveyer belt or the like. In this case the jacks and other working parts would be arranged to descend below the level of the axle of the wagon while placing the same in position.

What I claim is:—

1. Apparatus for tipping railway and like wagons comprising in combination, jacks pivotally mounted at a distance apart approximately equal to the length of a wagon, means on said jacks to grip the wagon and form centers about which said wagon can rotate bodily, means to support said jacks in the operative position, and means to bring said wagon to rest, after one complete revolution, in a higher plane, substantially as described.

2. Apparatus for tipping railway and like wagons comprising adjustably mounted jacks, wagon gripping means rotatably mounted thereon, a platform upon which a wagon can be secured, removable supports for said platform, and braking means reacting against the downward pressure of the load, substantially as described.

3. Apparatus for tipping railway and like wagons comprising in combination, a platform adapted to receive a wagon, a jack mounted at either end of said platform, so as to be capable of being moved below the level of the track or raised to receive the weight of the wagon, transverse spindles at the top of the jacks having gripping means capable of being advanced toward or from the jacks, said gripping means rotating about the spindles as centers, and means to traverse the jacks transversely, substantially as described.

4. Apparatus for tipping railway and like wagons, comprising in combination, a platform adapted to receive a wagon, a hy-

draulic jack mounted at either end of said platform, so as to be capable of being moved below the level of the track or raised to receive the weight of the wagon, transverse
 5 spindles at the top of the jacks having gripping means capable of being advanced toward, or from the jacks, said gripping means rotating about the spindles as centers, and means to traverse the jacks transversely,
 10 substantially as described.

5. Apparatus for tipping railway and like wagons, comprising in combination, a platform adapted to receive a wagon, means to secure said wagon on the platform, a
 15 hydraulic jack mounted at either end of said platform so as to be capable of being moved below the level of the track or raised to receive the weight of the wagon, adjustable wagon gripping and centering means
 20 on said jacks, auxiliary pumps on the jacks, plunger in said pumps and means for trans-

mitting the rotary motion of the wagon to said auxiliary pumps, substantially as described.

6. Apparatus for tipping railway and like
 25 wagons, comprising a portable carriage, a wagon platform, removable supports on the carriage to receive the platform, a hydraulic jack at both ends of said carriage, means to traverse said jacks transversely
 30 of the carriage, means to raise and lower said jacks, wagon gripping means on said jacks, auxiliary pumps for said jacks and means for actuating said pumps by the rotary motion of the wagon, substantially as
 35 described.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

WILLIAM PATTISON.

Witnesses:

GEORGE H. LEWIS,
 WM. G. STORIES.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
 Washington, D. C."