

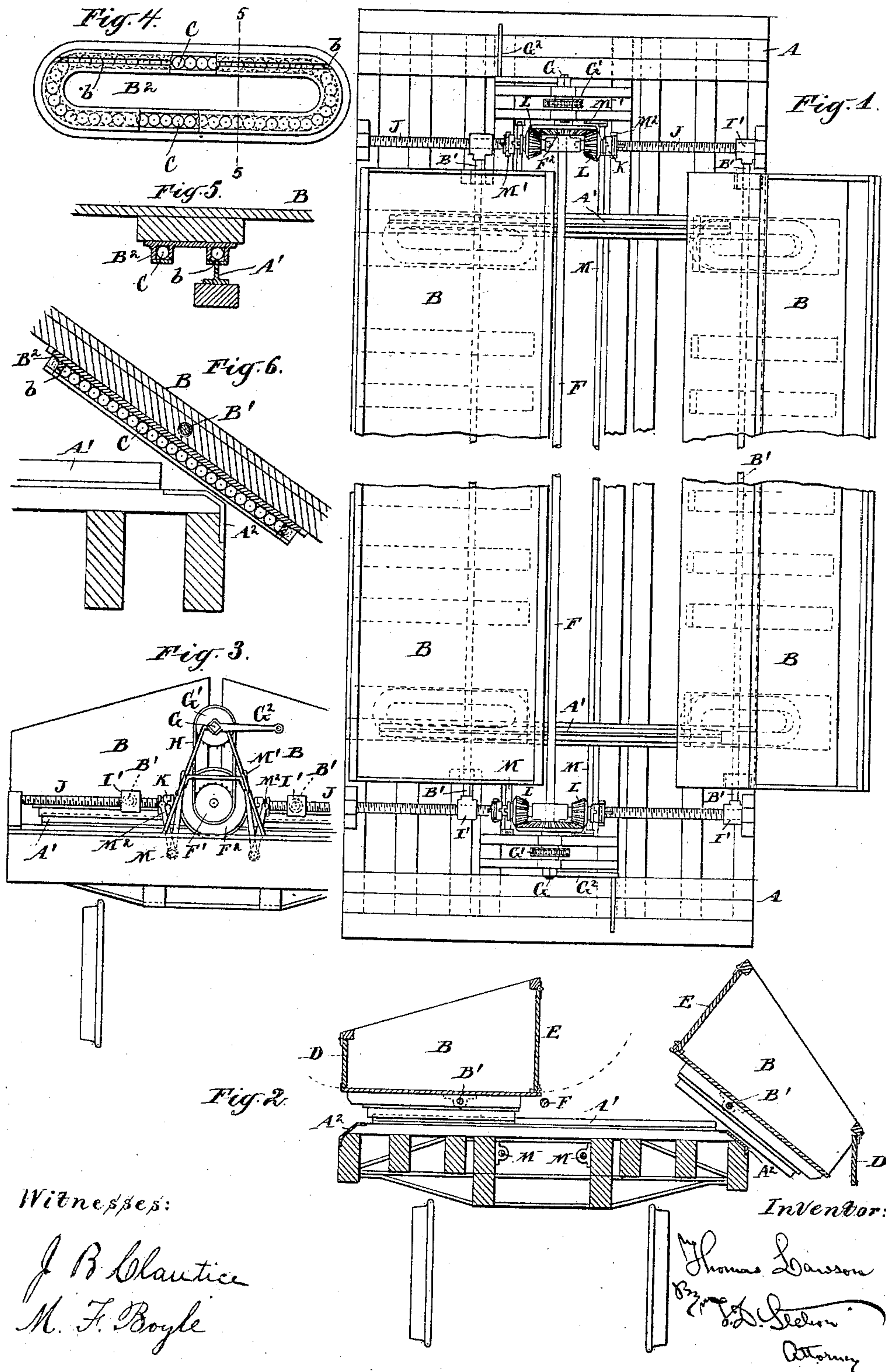
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Patented Sept. 10, 1901.

T. LAWSON.
DUMPING CAR.

(Application filed Oct. 16, 1900.)

(No Model.)



UNITED STATES PATENT OFFICE.

THOMAS LAWSON, OF NEW YORK, N. Y.

DUMPING-CAR.

SPECIFICATION forming part of Letters Patent No. 682,329, dated September 10, 1901.

Application filed October 16, 1900. Serial No. 33,192. (No model.)

To all whom it may concern:

Be it known that I, THOMAS LAWSON, a citizen of the United States, residing in the borough of Manhattan, in the city and State of New York, have invented a certain new and useful Improvement in Dumping-Cars, of which the following is a specification.

My improvement applies to that class of dumping-cars which can dump at the sides. I provide means for also dumping a portion at the center and shifting the material to the right and left.

In what I esteem the most complete form of the invention the material to be transported and dumped, which I will for brevity term "earth," is held in two movable bins or carriers of dimensions suitable for occupying each the breadth from the center line to one of the sides of the car. I provide for moving these outward either singly or simultaneously and for inclining each carrier outward after it has been moved into its extreme outboard position. Each carrier has a door on its inner side through which when desired a part of the earth may be discharged at an early stage of the outward movement, such earth falling near the center of the track. Under favorable conditions the quantity thus discharged will be about that required for ballasting that portion. Each carrier may have a door of equal or nearly equal height on the outboard side, which may be opened at any required period relatively to the inclining or tilting action. I provide the car with transverse rails and equip each carrier with a series of balls, serving as antifriction devices, the balls in one portion of their course carrying the load imposed through the carrier and in the return portion of their course running light. I mount and properly guide and retain these series of balls on the under sides of the carriers and provide the car simply with transverse rails, allowing the balls to run thereon during the main part of the loaded portion of their respective courses. The carriers are moved outward and again brought back to place each by means of a shaft extending longitudinally of the car, with a crank-shaft at a high level at each end, provisions for communicating the motion downward therefrom as means for turning it. There are transverse screws corresponding one to each of the transverse ways

and rotated by power from said shaft, so that they are certain to turn alike. The screws carry peculiarly-formed nuts or movable threaded blocks, which carry a bar having cylindrical bearings or trunnions on which the carriers turn in the act of dumping. During most of the several movements the weight is carried on the balls. During the act of dumping it is supported on the trunnions alone.

The following is a description of what I consider the best means of carrying out the invention.

The accompanying drawings form a part of this specification.

Figure 1 is a plan view, and Fig. 2 a cross-section on the line 2 2 in Fig. 1. These figures show the carrier on the right side in the act of dumping, while the carrier on the left side is in the position in which it is usually transported. Fig. 3 is a partial end view with both carriers in the usual position. The succeeding figures show portions on a larger scale. Fig. 4 is a plan view of one of the ways with balls, a portion being broken away. Fig. 5 is a section longitudinal of the car, but transverse of the way, on the line 5 5 in Fig. 4; and Fig. 6 is a section transverse of the car longitudinal of one of the ways.

Similar letters of reference indicate corresponding parts in all the figures where they appear.

A is the deck or top of the car mounted on suitable running-gear, all of which may be of any ordinary or suitable construction, except as hereinafter stated.

B B are two boxes or carriages, which I will term "carriers," adapted to contain the load, arranged to tilt each on a line a little within the center of gravity, so that when each carrier as ordinarily loaded is supported on such axis, to be described below, there will be a tendency to turn outward and dump the contents. Except in the act of dumping I support each carrier in the horizontal position by carrying it on transverse ways equipped each with a series of antifriction-balls C, peculiarly conditioned.

Two transverse rails A' are provided, each extending quite across the car near the front and rear ends, respectively. There are for each transverse rail two ways and series of

balls, one under each carrier, independent of each other. As each rail A' extends continuously across the car, either carrier may in the absence of the other travel inward somewhat across the center line. This property is useful in balancing the load under various conditions—as, for example, when in the act of loading or unloading the cars have to be moved with only one carrier loaded. The several ways and the corresponding series of balls, four in all, are counterparts, and a description of one way and its series of balls under a carrier will suffice for those under the same carrier near the other end and also for the corresponding pair of ways under the other carrier. For each way the proper number of balls are provided to form two parallel lines extending transversely nearly the full breadth of the carrier, with the proper number of balls added to join the ends of these and constitute each a continuous series. It will be seen that nearly half of the balls in each series lie in a straight line adapted to follow each other on the corresponding rail A' and carry the load and that the other balls in that series are merely traversing idly. The housing B², in which these balls are carried, may be made of cast-iron or other suitable material and has a continuous passage a little larger than the balls arranged to allow the balls to move loaded through one of the straight portions and freely and lightly back through the adjacent parallel passage. The under side of the loaded portion has a smooth continuous slot *b* along its length wide enough to receive the rail A', but not wide enough to allow the balls to fall out; but the under side of the other straight portion and of the curved ends may be tightly closed. It is important that portions of the curved passages near the loaded line of balls be sunk a little, so as to carry the balls unloaded in the act of moving fully into line for receiving the load and moving out of the line again. It will be obvious that the slot *b* not only extends so far as the straight portion of the series of balls on the loaded side extends, but is also continued out in a straight line quite through the housing at each end of the latter.

The inner side of each carrier is formed by a door E, hinged at the upper edge, with proper securing means. In ballasting the road after the carriers have been moved out a little these doors E E are liberated, and a considerable portion of the contents is thus dumped in the center of the track. Then the carriers are moved out farther, and the outer doors D being liberated they are tilted and dumped, discharging the remainder of their loads under those conditions on the respective sides of the track. All the ballast is thus placed very nearly where it is wanted and will require very little labor in subsequent shoveling. For other work than ballasting these inner doors E may be kept tightly closed through the whole cycle of operations.

The mechanism for inducing the required

movements of the carriers outward and inward may be varied.

F is a shaft extending longitudinally of the car, mounted in fixed bearings thereon. This shaft may be turned by workmen operating a crank G² on the shaft G, the latter shaft carrying a sprocket-wheel G', which connects by a pitch-chain H (see Fig. 3) with the sprocket-wheel F', fixed on the shaft F and giving motion thereto in one direction or the other, according as the cranks are turned. F² F² are bevel-wheels fixed on the shaft F.

B' is a bar extending longitudinally of the car through the base of each carrier and adapted to serve at certain periods as the axis before referred to on which the carrier may tilt in dumping. Each end is thickened, as indicated by I, and the block thus formed is screw-threaded, forming a nut which matches each on a corresponding screw to be presently described. Such screws, properly lubricated, being turned simultaneously in one direction or the other move this bar, and consequently the carrier mounted thereon, outward or inward. The bearings of each carrier on its bar B' are made near each end, and the bar is made properly stout and cylindrical at those portions to allow the carrier to turn thereon.

J J are coarsely-threaded screws mounted in fixed bearings on the car. On each screw is feathered a coupling-piece K, with provisions on each side of the car by a long shaft M, operated by a hand-lever M' and carrying clutch-arms M², for shifting the clutch-piece K endwise on the screw. This operation is effected simultaneously on the screw for that side at each end of the car.

L is a bevel gear-wheel turning loosely on a screw and geared with the adjacent gear-wheel F².

Whenever the operator turns the hand-lever M', it clutches or unclutches both the screws on the corresponding side of the car. Fig. 3 shows both levers M' drawn inward toward the center line of the car, thus holding both clutches engaged. If the cranks are turned while the clutches are thus conditioned, both carriers, the one on the right side and the one on the left, are moved outward simultaneously and equally and reach their dumping-points and are allowed to tilt simultaneously. The plan view in Fig. 1 shows the clutch-lever on the right side inclined inward, so that its clutch is engaged, holding the carrier on the right side subject to the action of the cranks, while the clutch-lever on the left side remains upright, holding its clutch out of connection, so that the screws and the carrier on the left side of the car remain motionless. The antifriction-ways formed by the housings B² and the series of balls C support the carriers during the main portion of their respective outward and inward movements. The dumping of each occurs whenever it is carried to the extreme outboard position. At that point the outer side of the carrier loses its support on the

ways and depends alone on the bar B'. The connection B³ of the carrier to the bar is adapted to allow it to tilt. The edge of the car at the points where the carrier will strike at the termination of its tilting motion is defended by a stout bevel-knee A², of metal. (See Fig. 6.) When the dumping is complete, turning the screws in the opposite direction compels the inward movement of the bar I and the carrier is again restored to a level position and then again to its inward position on the car, which it retains until it has been again loaded and is again required to dump.

The invention may be used under various conditions. For ballasting a track with broken stone or gravel it may be managed so that the central dumping through the doors E will suffice to treat the portion of the track between the rails, while the dumping each side will make it easy to smooth down the irregularities and completely ballast the sides of the road. Under widely-diverse conditions my cars may dump the earth repeatedly in the same places for filling sunk lots or what is sometimes termed "making land" in water. The earth is dumped always clear of the track, and if too much is accumulated at the small distance at which it is landed by my mechanism a few laborers with shovels can throw it farther during the absence of the train, and soon the track will be moved again and brought to the edge of the land and the operations repeated. Under these latter conditions or when for any reason the conditions are not favorable for dumping on both sides my cars may be worked with only one of the carriers filled. Ordinarily the work can be so conducted that both carriers can be utilized, dumping from each side either continuously or at earlier or later periods alternately, and the work can thus be conducted with the increased economy due to that fact.

Modifications may be made without departing from the principle or sacrificing the advantages of the invention.

If power from an engine and boiler carried on the same car or another or from the locomotive is available, the shaft F may be rotated thereby and the cranks G' may be omitted, or if retained, as I prefer, they will turn idly except in cases where the greater and cheaper power is not available.

The balls may be varied in size, making corresponding changes in the housings.

I can use any ordinary or suitable provisions for holding the doors D and E in their closed positions, it being only necessary that they be capable of being liberated by a simple blow.

Parts of the invention can be used without the whole. I can use the carriers and their antifriction-ways with other mechanism than that shown for inducing and reversing the required outward and inward and tilting

movements. For very long cars and carriers I can have one or more intermediate rails A', with the beveled guards or knees A² and the housings B² and balls C; but I esteem two preferable for all ordinary conditions.

I claim as my invention—

1. The combination with a railroad-car of two carriers with provisions for moving each independently outward and inward, endless series of ball-bearings under each, and provisions for allowing each carrier to tilt and dump at the outward extremity of its motion, all substantially as herein specified.

2. The combination with a railroad-car of two carriers with provisions for moving each independently outward and inward, continuous series of ball-bearings under each with housings for the balls arranged in the bases of the carriers and rails in the car-body received in the openings in such housing, all arranged to serve substantially as herein specified.

3. The combination with a railroad-car of two carriers with provisions for moving each independently outward and inward, an operating-shaft F extending longitudinally of the car near the floor, a crank-shaft G at a higher level, with mechanical connection H for communicating motion, clutch connection for communicating motion from such shaft for operating either or both at will, a door on the outer side and a door on the inner side of each carrier hinged at its upper edge, with provisions for controlling the same, all substantially as herein specified.

4. The combination with a railroad-car of two carriers with provisions for moving each independently outward and inward, continuous series of ball-bearings under such carriers, trunnions B² thereon, and provisions for supporting such trunnions in the act of dumping, all arranged for joint operation substantially as herein specified.

5. The combination with a railroad-car of two carriers moving outward and inward on suitable supports, trunnions on the carriers, transverse screws J supported in bearings on the car with provisions for turning them, clutches for engaging and disengaging them at will, and threaded blocks I traversed by said screws and performing the double function of moving the carriers outward and inward by the action of the screws and also of supporting the carriers independently of the main supports at and near the position for dumping, all arranged for joint operation substantially as herein specified.

6. The combination with a railroad-car of two carriers with provisions for moving each independently outward and inward, series of ball-bearings under each, tilting bearings on the carriers, transverse screws J supported in bearings on the car, a longitudinal shaft with provisions for turning it in one direction and the opposite as required, gearing communicating motion from such shaft to the

corresponding two screws so that they shall
turn simultaneously and equally when re-
quired, and threaded blocks moved by such
screws and traversing with said carriers ar-
5 ranged to support the tilting bearings of the
latter in the act of dumping, and clutches for
disconnecting either carrier at will, all sub-
stantially as herein specified.

In testimony that I claim the invention
above set forth I affix my signature in pres- 10
ence of two witnesses.

THOS. LAWSON.

Witnesses:

J. B. CLAUTICE,
M. F. BOYLE.