J. W. McDONALD.

DISCHARGING CARS.

No. 181,460. Patented Aug. 22, 1876.

Fig. 1.

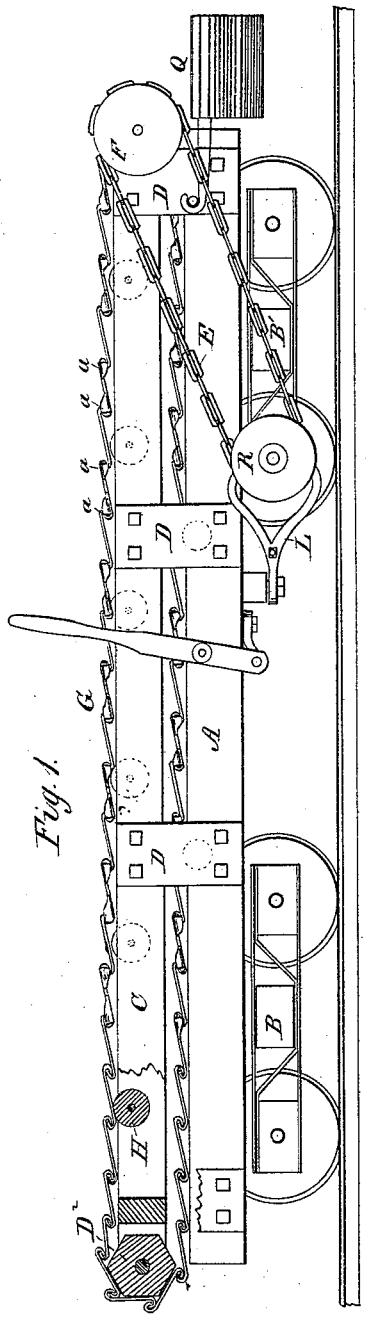


Fig. 3.

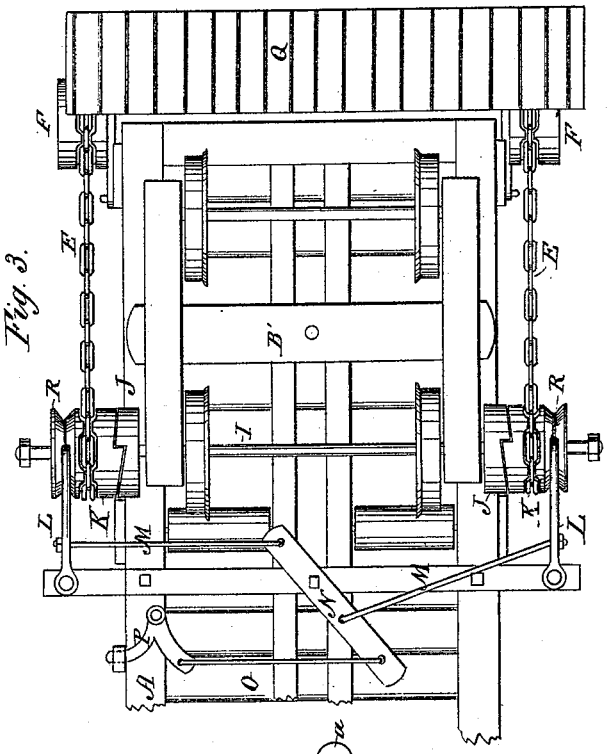
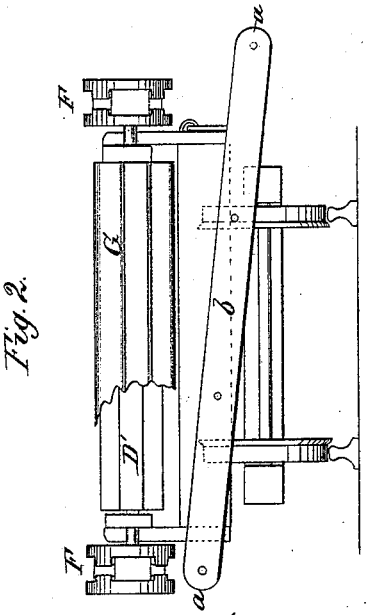


Fig. 2.



WITNESSES:

Solon C. Kemon

Chas. A. Pettit

INVENTOR:

J. W. McDonald

BY Munn & Co

ATTORNEYS.

UNITED STATES PATENT OFFICE.

JAMES W. McDONALD, OF CAMPELLTON, NEW BRUNSWICK, CANADA.

IMPROVEMENT IN DISCHARGING-CARS.

Specification forming part of Letters Patent No. **181,460**, dated August 22, 1876; application filed May 12, 1876.

To all whom it may concern:

Be it known that I, JAMES W. McDONALD, of Campellton, Province of New Brunswick, Dominion of Canada, have invented a new and Improved Self-Discharging Car for Ballasting Railroads; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, forming part of this specification, in which—

Figure 1 is a side elevation with the end in section. Fig. 2 is a vertical end view with a part of the belt broken away. Fig. 3 is an inverted plan view of the operating parts.

This invention relates to a novel construction of cars designed for distributing gravel and broken stone upon railroads for the purpose of ballasting the same while under process of construction. The cars ordinarily used for this purpose are the plain platform-car, and the gravel, &c., has to be shoveled off of the same upon the side, and then shoveled back again upon the track to form the bed.

The object of my invention is to dispense with this labor by providing a car which is self-discharging, and so arranged as to distribute its load uniformly and evenly upon the track. To this end I have constructed a car with a supplemental frame carrying polygonal rollers at the ends, around which passes a continuous endless belt of sheet or plate iron which forms the upper surface of the car. This belt is provided with a detachable connection with the running-gear of the car, by means of which the belt is set in motion at the proper time, and the supported load is evenly distributed at the end, a second endless belt being arranged at the end transversely to the car and inclined to the earth so as to receive the gravel and stone and carry it from its own gravity to one side of the track, whenever it is desired to fill in the road-bed upon the side, for straightening the track, or for other purposes.

In the drawing, A represents the body of the car, and B B′ the trucks of the same, which, in general construction, do not differ materially from those ordinarily employed. Upon the upper part of the body of the car, however, I construct a supplemental frame, C, which is of about the same length and width as the car itself, and is attached to the car-frame by means of the supporting-plates D, which latter are strongly made of metal, and are screwed or bolted to both the car-frame and supplemental frame. In the ends of the supplemental frame C are journaled the polygonal rollers D^1 D^2, of which D^1 is provided with end pulleys F, notched so as to receive the links of chains E that drive the same. Around the polygonal rollers passes from end to end of the car an endless revolving belt, G, which forms the upper surface of the car and carries the load, the said belt being supported and guided in its passage by friction-rollers H, arranged in the supplemental frame transversely to the car, and a sufficient distance apart to support the load without damage to the belt. The said belt consists of thin plates of iron about an eighth of an inch thick, arranged transversely to the car, and having their adjacent edges bent around so as to hook into each other, every alternate one of of said plates being provided with extensions of metal *a a*, of which one is turned up and the other down, so as to extend over the joint of the two plates, and prevent them from slipping laterally from their position in the belt. To operate the belt, whenever a car-load is to discharged, one of the axles I of one of the trucks is extended so as to project upon both sides beyond the edges of the car, and is provided upon each side with a rigidly-attached clutch, J. Sliding loosely upon the ends of this lengthened axle are arranged pulleys K K, which are connected by chains E, with the pulleys F of the polygonal rollers carrying the belt. These loose pulleys are provided each with a grooved pulley, R, and a clutch that corresponds to the clutches J upon the axle, and are arranged to engage with the same by the movement of the tongs L, which grasp grooved pulleys R, and are moved laterally with the pulleys through the connecting-rods M, and the lever N, pivoted beneath the car, the same being operated through the connecting-rod O, and lever P, by a hand-lever. By the hand-lever upon the side of the car is arranged a platform for the operator to stand upon, so that whenever the car is in the proper position he may connect the coupling, and thus compel the belt to move and the car

to automatically discharge itself from its own momentum.

The relative proportion between the car-wheels and the belt-pulleys may be arranged according to circumstances, but generally it will be about as one to three, so that the car will have to pass about three times its length before it discharges all of its load, and the layer of gravel, stone, or earth upon the track will consequently be one-third the thickness of the load on the car.

This construction of car, it will be seen, dispenses with all the labor of handling the material forming the road-bed, and automatically distributes it the proper thickness.

When a train of these cars are to be unloaded the belt of the first one is set in motion until the load is discharged, and as soon as the belt-driving mechanism is disconnected the coupling of the belt-driving mechanism of the second car is effected, and so on until the whole train has been discharged of its load.

In order to throw a quantity of the gravel, rock, or earth upon the side of the track for the purpose of filling out the road-bed for straightening the track, or for any other purpose, a second belt, Q, is arranged detachably at the end of the car, transversely to the main belt, and receives the contents of the car upon its upper edge, to transfer it to the side of the track. Said belt is constructed of sheets or plates of iron, like the first mentioned, and is arranged to pass around rollers *a* in a frame, *b*, which is fastened by hooks, or other suitable means, to the car-frame, the said belt and frame being inclined, so that as the load is discharged upon the same it causes the belt to revolve from the gravity of the material, but the said belt may be driven by a gearing connected with any of the operating parts of the car.

In distributing the load, a large portion of the momentum of the car will be utilized, and the resistance which the devices afford will operate in the nature of a brake, but brakes of the ordinary construction may be applied to the car and operated in connection therewith, if found desirable.

Having thus described my invention, what I claim as new is—

1. The combination, with a car having a raised supplemental frame, C, carrying polygonal end rollers, of an endless belt, G, composed of jointed plates of metal, as and for the purpose described.

2. The endless belt G, forming the top of the car, and consisting of hook-jointed metal plates having bent-end extension *a*, as described, in combination with the snpplemental frame C, the car-frame A, the supports D, the polygonal rollers D^1 D^1, and the friction rollers H, substantially as and for the purpose described.

3. The combination, with the endless belt G, and the polygonal rollers D^1 D^2, of the car axle I, extended beyond the sides of the car and connected with one of the polygonal rollers by suitable mechanism, substantially as described.

4. The combination, with the belt G, and the polygonal roller D^1, carrying pulleys F, of the chains E, sliding pulleys K, having a clutch, and the lengthened axle I, having a rigid and firmly-attached clutch, J, as and for the purpose described.

5. The combination of belt G, polygonal roller D^1, having pulley F, chains E, sliding pulleys K, having grooved pulley R and a clutch, lengthened axle I, having clutch J, the tongs L, pivoted at one end and grasping grooved pulley R at the other, the connecting-rods M, lever N, pivoted to the bottom of the car, and a hand-lever connection for the same, as and for the purpose described.

6. The combination, with the car having endless belt G, of a second endless belt, Q, arranged at the end of the car transversely to the same, and adapted to receive the discharge from the first belt and carry it to one side, substantially as described.

JAMES WILLIAM McDONALD.

Witnesses:
JAMES DRAKE,
EDWARD McNEILL.