

(No Model.)

3 Sheets—Sheet 1.

E. H. PINKHAM.
SANDING DEVICE FOR CARS.

No. 494,080.

Patented Mar. 21, 1893.

Fig. 1.

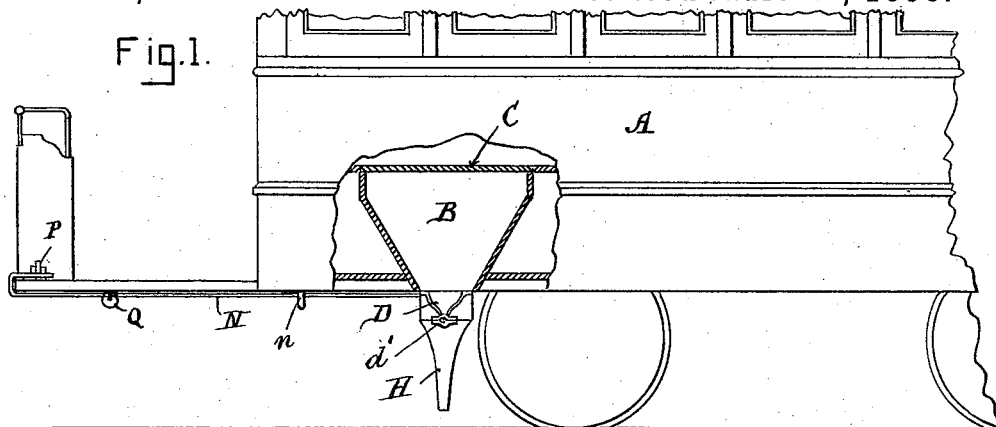


Fig. 2.

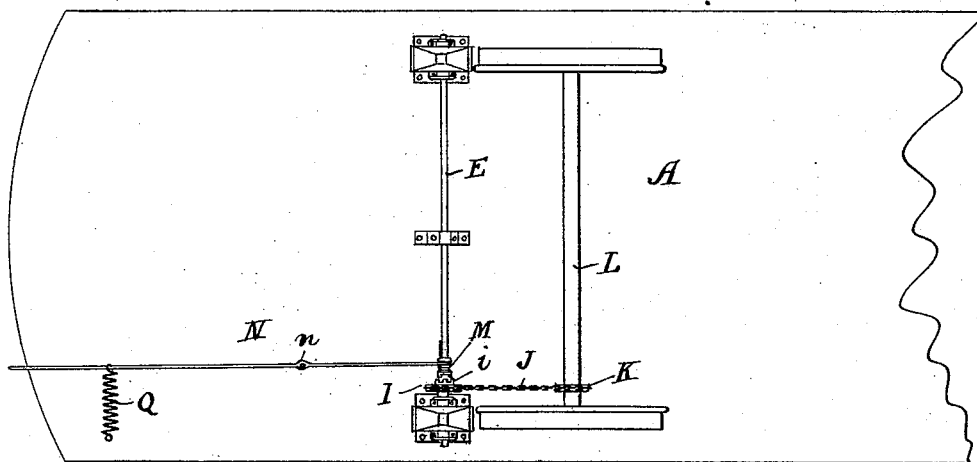
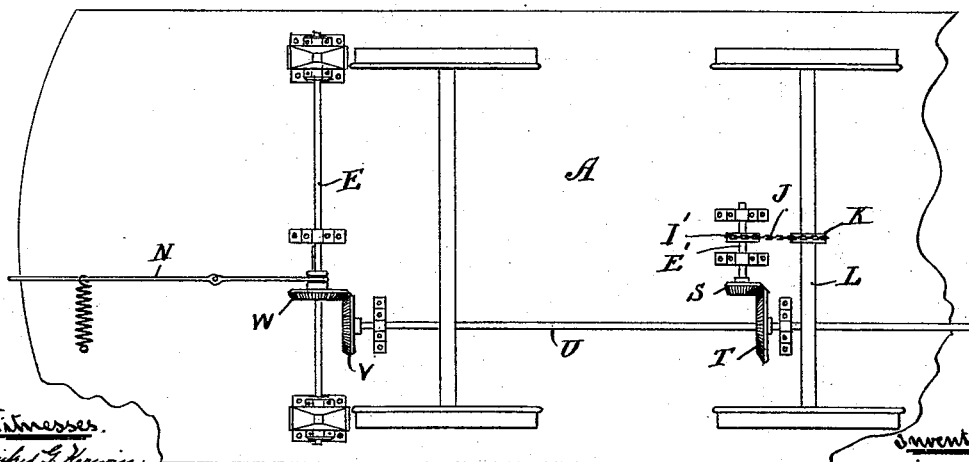


Fig. 3.



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Fig. 4.

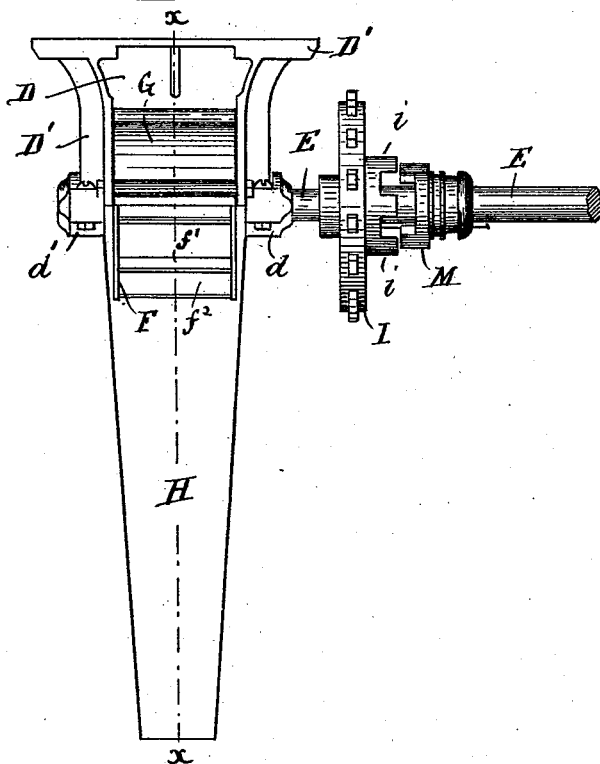


Fig. 5.

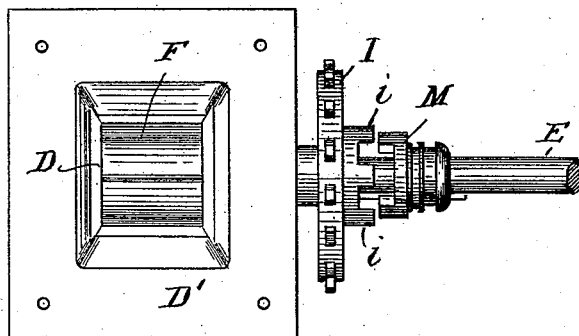


Fig. 8.



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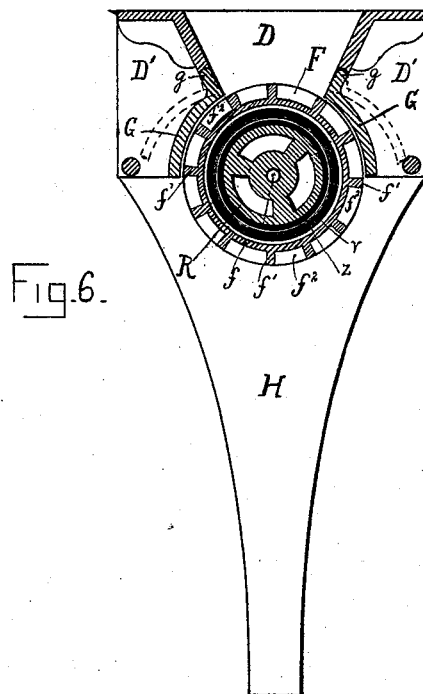


Fig. 6.

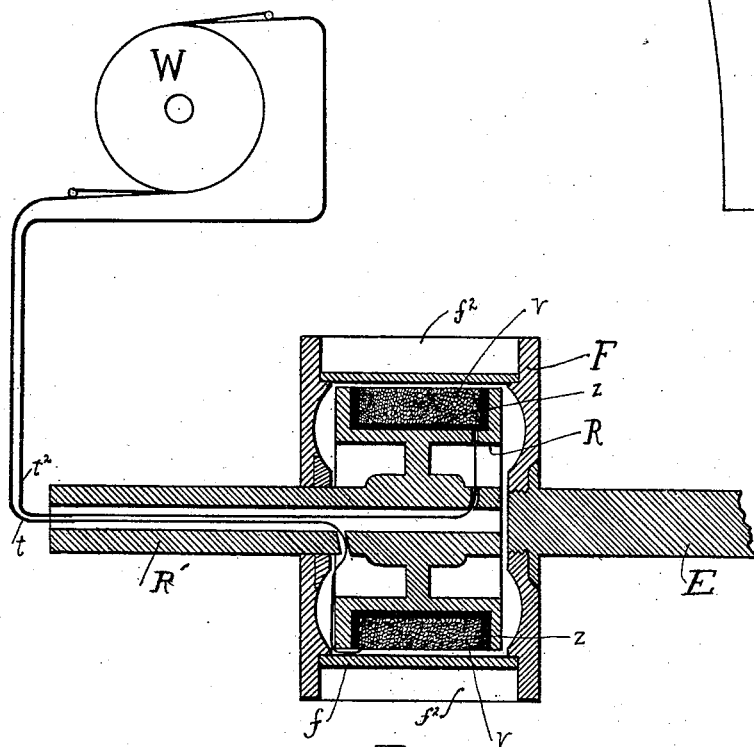


Fig. 7.

WITNESSES

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St. Surfer

INVENTOR

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UNITED STATES PATENT OFFICE.

EDWARD H. PINKHAM, OF HAVERHILL, MASSACHUSETTS.

SANDING DEVICE FOR CARS.

SPECIFICATION forming part of Letters Patent No. 494,080, dated March 21, 1893.

Application filed July 12, 1892. Serial No. 439,769. (No model.)

To all whom it may concern:

Be it known that I, EDWARD H. PINKHAM, a citizen of the United States, residing at Haverhill, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Sand-Depositing Apparatus for Car-Tracks, of which the following, taken in connection with the accompanying drawings, is a specification.

10 The object of my invention is to produce an apparatus to be attached to a horse or electric car whereby sand can be deposited upon the rails so that the wheels will have a great grip upon them to assist the car in ascending steep
15 inclines, or when the rails are rendered slippery by frost or snow.

The invention consists of a box for holding sand arranged under the seat of the car and communicating with a wheel having divisions or compartments upon its periphery to receive the sand from said box, and in means for causing said wheel to rotate to deliver the sand to the rails, and the invention further consists in an electric coil inclosed within said sand
20 delivering wheel to keep the sand in a dry state so that it will not clog or freeze, and also in certain details of construction as herein-after fully described and pointed out in the claims.

30 Referring to the accompanying drawings: Figure 1— is a side view of one end of a horse car with a sand depositing apparatus embodying my invention attached thereto. Fig. 2— is an underside view or a plan of the same. Fig. 3— is a similar view of one end of an electric car carried by two trucks of four wheels and having my invention applied thereto. Fig. 4— is an end view of an apparatus embodying my invention. Fig. 5— is a plan or
40 top view of the same. Fig. 6— is a vertical section taken on line *x, x*, of Fig. 4. Fig. 7— is a section through the said delivery wheel and the electric coil inclosed therein. Fig. 8— is a view of the catch for holding the clutch lever.

A, represents a portion of a horse or electric car mounted upon wheels near the center of the car.

50 B, is a sand box arranged under the seat C, and leading to the sand distributing apparatus which consists of a box or hopper D, formed in one with a suitable frame D', which

at its central lower portion on each side is fitted with bearings *d, d'*. In the inner one *d* is mounted a shaft E, on the end of which is secured a wheel F, disposed below and projecting into the mouth of the hopper sufficiently to close it. Said wheel has a circumferential flange *f*, near its periphery, and partitions *f'*, extending therefrom as shown so that it is divided into a series of compartments *f''*, that pass under the hopper D as the wheel is rotated one or two of said compartments being presented to the mouth of the hopper.

65 On each side of the wheels are flaps G, that are fulcrumed at their upper ends *g* (see Fig. 6) to the frame D', so that by their own weight they keep in contact with the rim of the wheel F; the object of these flaps is to act as guards to retain the sand in the compartment *f''* as it is being delivered to the chute H, and by reason of their being hinged at their upper ends they are free to be pressed outward, should any large stones be in the sand and
70 passed out by the wheel F, thereby preventing all liability of damage to the apparatus.

The chute H, incloses the ends of the frame D', and terminates a short distance above the level of the rails as shown in Fig. 1.

80 The shaft E, preferably extends across the car so as to operate a sand delivering apparatus in front of each wheel and has loosely mounted thereon a sprocket wheel I, driven by a chain J, from sprocket wheel K, secured to the wheel axle L, the side of the sprocket wheel I, is formed with studs or projections *i*.

M, is a gland which has corresponding projections and which is free to slide on the shaft but is held by a feather from rotating independently thereof. This gland is operated by a clutch lever N, fulcrumed at *n*, to the bottom of the car, the outer end of this lever is bent over so that its end is above the platform of the car as will be seen in Fig. 1, and is operated by the foot of the driver; a small catch P, (shown detached in Fig. 8) holding it in place but as soon as released the lever is drawn over by a spring Q, so as to throw the clutch out of gear thereby stopping the supply of sand.

To keep the sand in a dry state so that it will not clog or freeze, I inclose within the sand delivering wheel an electric coil (see

Figs. 6 and 7) consisting of a spool R, formed in one with a short hollow shaft R', that passes through and is held in the bearing d' of the frame D'. This spool is wound with German silver wire or any other suitable electrical resisting material that will readily heat by a current passed therethrough. One end of said material is connected by a wire, t², which passes through the hollow shaft, R', from the line wires of the motor, w, and the opposite end is connected by a wire, t, with the opposite pole of the motor. These wires are insulated outside of the shaft, R'. The coil, v, is surrounded or separated from the spool, R, by suitable insulating material, z. The current passing through this resistance coil heats the same, and heat radiating therefrom dries the sand in the hopper in a manner which will be readily understood by all conversant with such matters without a more explicit description.

When the said distributing apparatus is applied to a horse car, the electricity for supplying the coil may be taken from a storage battery, or it might be heated in any suitable manner.

I prefer to have a sand distributing apparatus in front of the wheels on each side of the car as before described, so as to sand both rails, but in some cases it may only be desired to sand one rail in which case the shaft E would be short and not extend across the car.

When used in connection with an electric car carried by two trucks of four wheels each, I prefer to drive the sand delivering wheels as shown in Fig. 3, in which a sprocket wheel K, is mounted upon one of the wheel axles, and by a chain J, transmits motion to a sprocket wheel I', on a counter shaft E', on the end of which is secured a bevel wheel S, in gear with another bevel wheel T, on a shaft U, that extends nearly the whole length of the car; on each end of this shaft is secured a bevel wheel V, and upon each shaft E, is mounted a bevel wheel W, that is held by a feather so as to slide thereon, said wheel being thrown in or out of gear with the wheel V, by the lever N, as before described with reference to the clutch. It will be seen that in this case the shaft U, rotates when the car is in motion, but the shaft E, only when the bevel wheels W, V, are in gear. It will furthermore be seen that the rotation of the wheel, F, the speed of which may be regulated, discharges sand therefrom intermittently, each chamber, f², holding a determined quantity of sand. The wheel being disposed below the hopper discharges laterally under the wall thereof into the chute obviating the objections attendant upon the use of a curved bottom to the hopper and journaling the wheel

therein which produces great friction between the sand in the wheel chambers and hopper walls. The car passing rapidly over the rails this method of discharging sand serves to deposit it in small piles on the track which is preferable to an equal or continuous distribution of the sand on the rail as it supplies a quicker and more effective traction for the wheels.

What I claim is—

1. In a sand distributing apparatus the combination of a hopper on the car-body with a wheel having annular flanges on its periphery connected by transverse partitions forming radial compartments, said wheel being journaled below and closing the mouth of said hopper; drive mechanism for the wheel; a chute for receiving sand from the wheel and delivering it onto the car-track, said drive mechanism and wheel being arranged to deliver intermittently a determined quantity of sand to the chute, substantially as described.

2. In combination with a sand depositing apparatus for car tracks having a wheel with circumferential compartments, hinged flaps on each side of said wheel to hold the sand in said compartments as it is passed from the hopper to the chute but free to yield to allow the passage of large stones as set forth.

3. In combination a car having a sand box B, arranged under the seat, the hopper D, and flaps G, the wheel F, having circumferential compartments f², shaft E for carrying said wheel, sprocket wheel I, loosely mounted upon said shaft and driven from a sprocket wheel K, on the wheel axle, a clutch and lever for causing said shaft E, to rotate when desired as set forth.

4. In a sand depositing apparatus the combination of a hopper on the car-body; a chute; a hollow wheel for conveying sand from the hopper to said chute; an electrical heater disposed within said wheel, and electrical conducting wires connecting the heater with a source of electricity whereby the sand in said hopper may be heated, substantially as described.

5. In a sand depositing apparatus the combination of the hopper and sand box with the hollow wheel, F, fitted to rotate in the mouth of said hopper; the spool, R, within said wheel wound to form a resistance coil and conducting wires connecting said coil with a source of electricity.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 16th day of June, A. D. 1892.

EDWARD H. PINKHAM.

Witnesses:

CHAS. STEERE,
EDWIN PLANTA.