

**No. 677,833.**

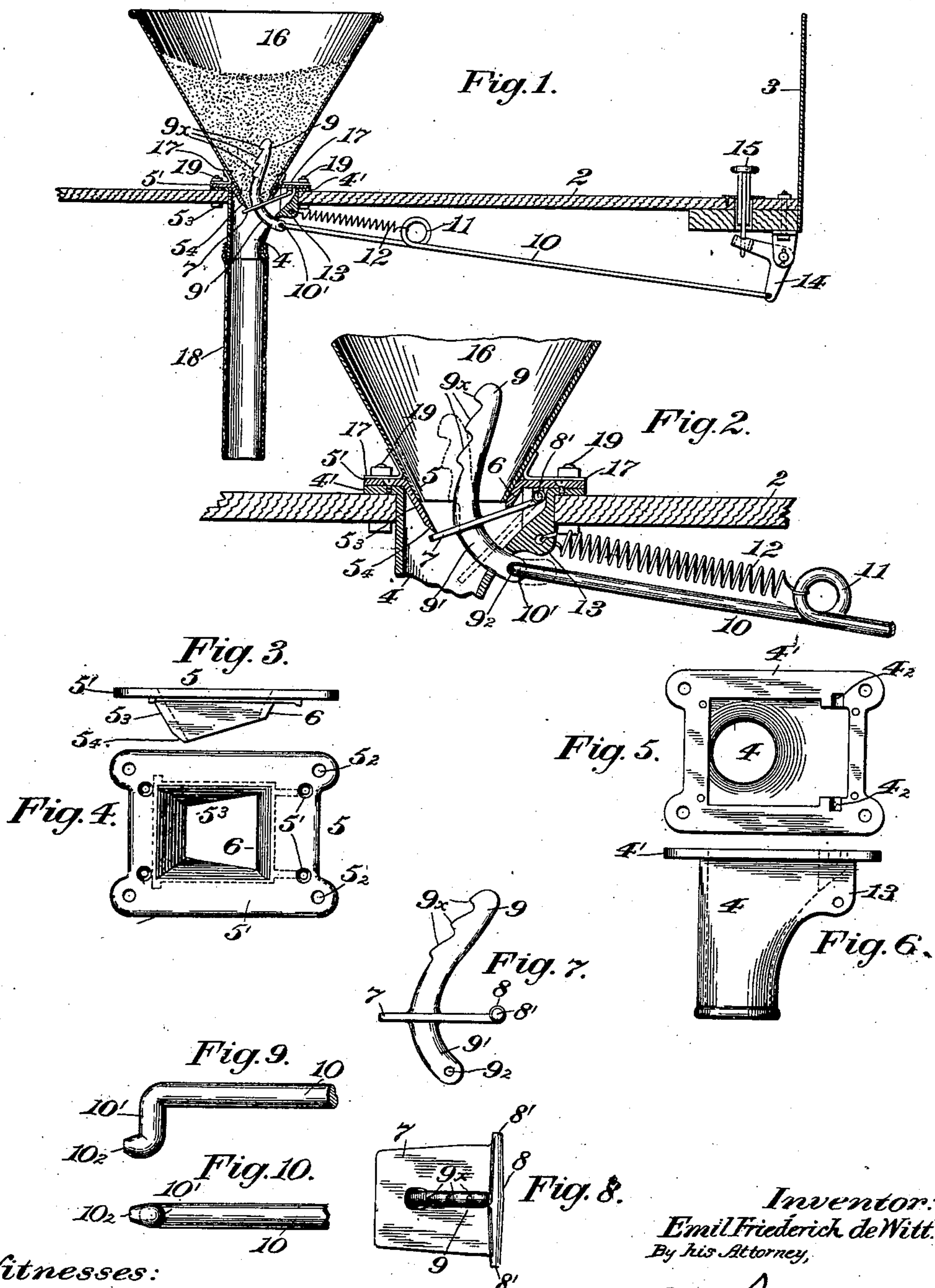
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E. F. DE WITT.

DEVICE FOR APPLYING SAND TO RAILWAY RAILS.

(Application filed Dec. 30, 1899.)

(No Model.)



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# UNITED STATES PATENT OFFICE.

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## DEVICE FOR APPLYING SAND TO RAILWAY-RAILS.

SPECIFICATION forming part of Letters Patent No. 677,833, dated July 2, 1901.

Application filed December 30, 1899. Serial No. 742,110. (No model.)

To all whom it may concern:

Be it known that I, EMIL FRIEDERICH DE WITT, a citizen of the United States, residing in Lansingburg, in the county of Rensselaer and State of New York, have invented certain new and useful Improvements in Devices for Applying Sand to Railway-Rails, of which the following is a specification.

This invention relates to an improvement in appliances for delivering sand to streets or pavements or to the rails of street or other railways when such rails are in a slippery condition from any cause; and one object of the invention is the provision of means directly under the control of the driver, motor-man, or engineer whereby sand may be delivered to said streets, pavements, or rails in any desired quantity and its emission from the sand box or hopper nicely regulated.

A further object of the invention is the provision of improved means for disintegrating the sand in case it should become packed from the accumulation of moisture or the jarring of the vehicle.

A further object of the invention is to provide an improved device for securing the sand box or hopper *in situ* and for holding the valve and disintegrating device in proper position.

A further object of the invention is the provision of means located on and adjacent to the opening leading from the sand box or hopper which will prevent stones or other foreign bodies from clogging said exit-opening, and thereby preventing the free flow of the sand or other material to be applied to the rails.

In the accompanying drawings, Figure 1 is a sectional detail of part of a car or other vehicle-body with my improvements applied thereto, the valve being closed, and the disintegrating device in its inoperative position. Fig. 2 is a section, on an enlarged scale, corresponding to Fig. 1, showing by dotted lines the valve open and the disintegrating device in a position different from that represented in Fig. 1. Fig. 3 is a side elevation of a chute secured to the floor of a car immediately under the exit-opening of the hopper. Fig. 4 is a plan view of the same. Figs. 5 and 6 are respectively plan and side views of the discharge-chute, to

which the usual flexible or other tube leading to the rails is applied. Fig. 7 is a side elevation of a combined valve and disintegrating device, and Fig. 8 a plan view of the same. Figs. 9 and 10 are respectively side and top views of the end of the pull-rod, showing the means by which it may be connected to a stem projecting from the valve-plate.

Like characters of reference designate like parts in all the figures of the drawings.

Referring to the accompanying drawings, the numeral 2 designates the floor of a car or other vehicle, and 3 either one end or the dashboard of the same. This floor is perforated in the desired number of places to receive the discharge-chutes 4 in communication with the sand boxes or hoppers herein-after described, but one of said devices being shown. Each of these discharge-openings is provided with an enlarged flanged portion 4', which is perforated to receive the usual bolts for securing the various parts in position, and the flanged portion thereof is provided with recesses 4<sup>2</sup> to receive the ends of the pintle of a valve hereinafter described.

Located above the discharge-chute is a peculiarly-constructed hopper 5, which is flanged and perforated at 5' and 5<sup>2</sup>, respectively, to be secured in place upon the flanged portion of the discharge-chute by the bolts passing therethrough. This hopper 5 is provided with a forward wall 5<sup>3</sup>, having a sharp or beveled lower edge 5<sup>4</sup> for accomplishing a purpose hereinafter set forth, and with an opposing wall 6 of less height than the wall just mentioned.

The numeral 7 designates a valve or valve-plate, preferably formed as a single casting, having at its rear end a cross-bar 8, with a pintle 8' at each end. Projecting from the top surface of this valve or valve-plate is what I term a "disintegrating" or "stirring" device 9, and also projecting from the lower portion of said valve-plate is a stem 9', which is suitably perforated at 9<sup>2</sup> to receive the end of a rod for actuating said devices.

The numeral 10 designates an actuating-rod having a crank end 10' with a projecting portion 10<sup>2</sup>, which is adapted to enter the opening 9<sup>2</sup> in the stem 9' and to be retained therein. This actuating-rod 10 is equipped



with an eye or other projection 11, adapted to receive one end of a spring 12, the other end of which is connected to an ear 13, projecting from the discharge-chute 4.

5 At the end remote from the sand-delivering device the actuating-rod 10 is connected to an angle-lever 14, suitably pivoted on the under side of the car-body, and this angle-lever may be operated by the usual foot-  
10 pedal 15 or any other well-known device under the control of the motorman or engineer.

Located above and intermediate the chute 5 is a sand box or hopper 16, which is provided with perforated flanges or projections  
15 17, the latter resting upon the flanges of the intermediate chute 5, and all of the chutes and the sand box or hopper are secured in position on the floor of the car-body or in any other location desired by the same set of  
20 bolts which pass through the aligned perforations in said parts when assembled.

The numeral 18 designates the usual flexible tube or other device which is secured to the delivery end of the discharge-chute 4  
25 and which is located adjacent to the wheel in order that the sand or other material may be applied to the rail at the desired point in advance thereof.

In assembling the parts of my invention  
30 the discharge-chute 4 is placed within the opening in the car-floor with its perforated flanged portion 4' resting on said floor. The valve-plate carrying the disintegrating or stirring device 9 is then placed in position,  
35 the pintles thereof being located in the recesses 4<sup>2</sup> of the flange 4' of the discharge-chute. The intermediate chute 5 is then placed within the discharge-chute with its perforated and flanged portions overlapping  
40 the flanged portion of said discharge-chute, thereby covering and protecting the pintles 8', and the sand box or hopper is then placed in position with its perforated flanges 17 in  
45 alinement with the other devices, so that the same set of bolts 19 will serve to secure all of the devices in place. By this means a convenient mode of assembling the parts in place is provided, and the pintles of the valve-plate 7  
50 are secured in place in the recesses 4<sup>2</sup> and are protected by the flanges 5' of the chute 5. After these parts have been assembled the pull or actuating rod 10 is connected to the stem 9' by inserting its crank end 10<sup>2</sup> into the perforation 9<sup>2</sup> thereof and giving said rod a slight  
55 turn, so that there will be no danger of its becoming detached. Spring 12 is then connected to the parts and the actuating-rod attached at its forward end to the angle-lever 14, when the device is in readiness for operation.  
60 Should the street or rails be slippery from any cause, the driver, motorman, or engineer by stepping upon the pedal 15 will turn the angle-lever 14 and impart a pull to rod 10 and in this way lower the corrugated or toothed  
65 disintegrator 9 and the swinging valve-plate 7. The teeth 9<sup>x</sup> of this disintegrator 9 are adapted on its downward movement to come into

contact with certain quantities of sand and to pull the same downward, thereby providing  
70 for the exit of aggregated particles or lumps of sand should such exist in the supply, and the disintegrator, swinging in the arc of a circle, as shown by dotted lines in Fig. 2, has a considerable range of action and is effective  
75 in producing the result set forth. After the desired quantity of sand has been delivered to the rails spring 12 immediately retracts the parts to their normal positions, and the disintegrator 9 on its upward motion stirs the sand  
80 and breaks it up in readiness for another operation. Should stones or other foreign bodies collect between the valve 7 and the sharp or beveled edge 5<sup>4</sup> of the chute 5, they will be  
85 readily displaced by the contact of the valve-plate against said edge, and the valve and its attachment being under perfect control if a foreign body of large dimensions should be  
90 within the sand box or hopper said body can readily be discharged by a simple pressure on the pedal 15, the parts after such pressure is removed immediately returning to their normal positions.

While I have shown the valve-plate 7, the disintegrator 9, and the stem 9' thereof as preferably formed of a single casting, yet it  
95 is distinctly to be understood that my invention is not limited thereto, for, as is obvious, these parts could readily be made detachable and the pull-rod could be connected to the valve-plate in other ways.  
100

The invention is not limited to the particular details of construction illustrated and described, as they could be variously modified and still be within its purview.

While but one sand-supplying appliance is  
105 illustrated in the accompanying drawings, it is of course to be understood that the number needed may be variously applied to the car or other vehicle, according to the circumstances required.  
110

My invention is also adapted to be applied to vehicles generally, and particularly to automobiles or motor-carriages, in which trouble  
115 is often occasioned by the failure of the wheels to obtain sufficient traction on account of the slippery condition of the street or pavement, and when employed with this class of vehicles the parts thereof will be so located that the device will be under complete control of the operator and the sand will be discharged at  
120 the proper place or places.

Having described my invention, I claim—

1. In a device of the class specified, the combination, with a sand box or hopper, of a discharge-chute having a perforated flanged  
125 portion resting upon the floor of the vehicle; a swinging valve-plate having pintles located in recesses in the flanged portion of said discharge-chute; means for securing said valve-plate in position, and thereby covering and  
130 protecting the pintles; and a toothed disintegrator connected to and operable with said valve-plate.

2. In a device of the class specified, the



combination, with a supply-hopper, of a discharge-chute; an intermediate chute having a wall with a sharp edge; a swinging valve-plate normally operating against said intermediate chute, said valve-plate carrying a disintegrating device; and means for actuating the valve-plate.

3. In a device of the class specified, the combination, with a supply-hopper, of a discharge-chute; an intermediate chute having a wall with a sharp edge; a valve normally bearing against said intermediate chute, said valve carrying a toothed disintegrator; and means for actuating the valve.

4. In a device of the class specified, the combination, with a supply-hopper having perforated flanges, of an intermediate chute and a discharge-chute each having perforated flanges; bolts passing through the aligned perforations in the flanges of said hopper and chutes and serving to secure them in position; a pivoted valve-plate normally in contact with the walls of the exit-opening of the intermediate chute; a disintegrating or stirring device carried by said valve-plate; and means for actuating said valve-plate.

5. In a device of the class specified, the combination, with a supply-hopper and with intermediate and discharge chutes, of a swinging valve held in place by the flanges of the intermediate chutes; a curved and toothed disintegrator carried by said valve; a stem

projecting from said valve; a rod connected to the stem; means for actuating said rod; and a spring for closing the valve.

6. In a device of the class specified, the combination, with a supply-hopper having a flanged base, of a discharge-hopper having a flanged upper portion and provided with recesses; a swinging valve-plate having pintles mounted in said recesses and held therein and protected by the flanged base of the supply-hopper; a disintegrating device carried by said valve-plate; a pull-rod connected with the stem of said disintegrating device; and means for actuating the pull-rod.

7. In a device of the class specified, the combination, with a supply-hopper having a flanged base, of a discharge-chute having a flanged upper portion provided with recesses; a swinging valve-plate having pintles located in said recesses and held therein by the flanges of the supply-hopper; a curved and toothed disintegrator having a stem and carried by said valve-plate; a pull-rod for actuating said disintegrator; and a chute intermediate the discharge and supply hoppers, said chute having a sharp edge cooperating with the valve-plate, substantially as and for the purpose specified.

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