

M. A. BROWN.
 TRACK SANDING DEVICE.
 APPLICATION FILED MAR. 26, 1909.

937,358.

Patented Oct. 12, 1909.

2 SHEETS—SHEET 1.

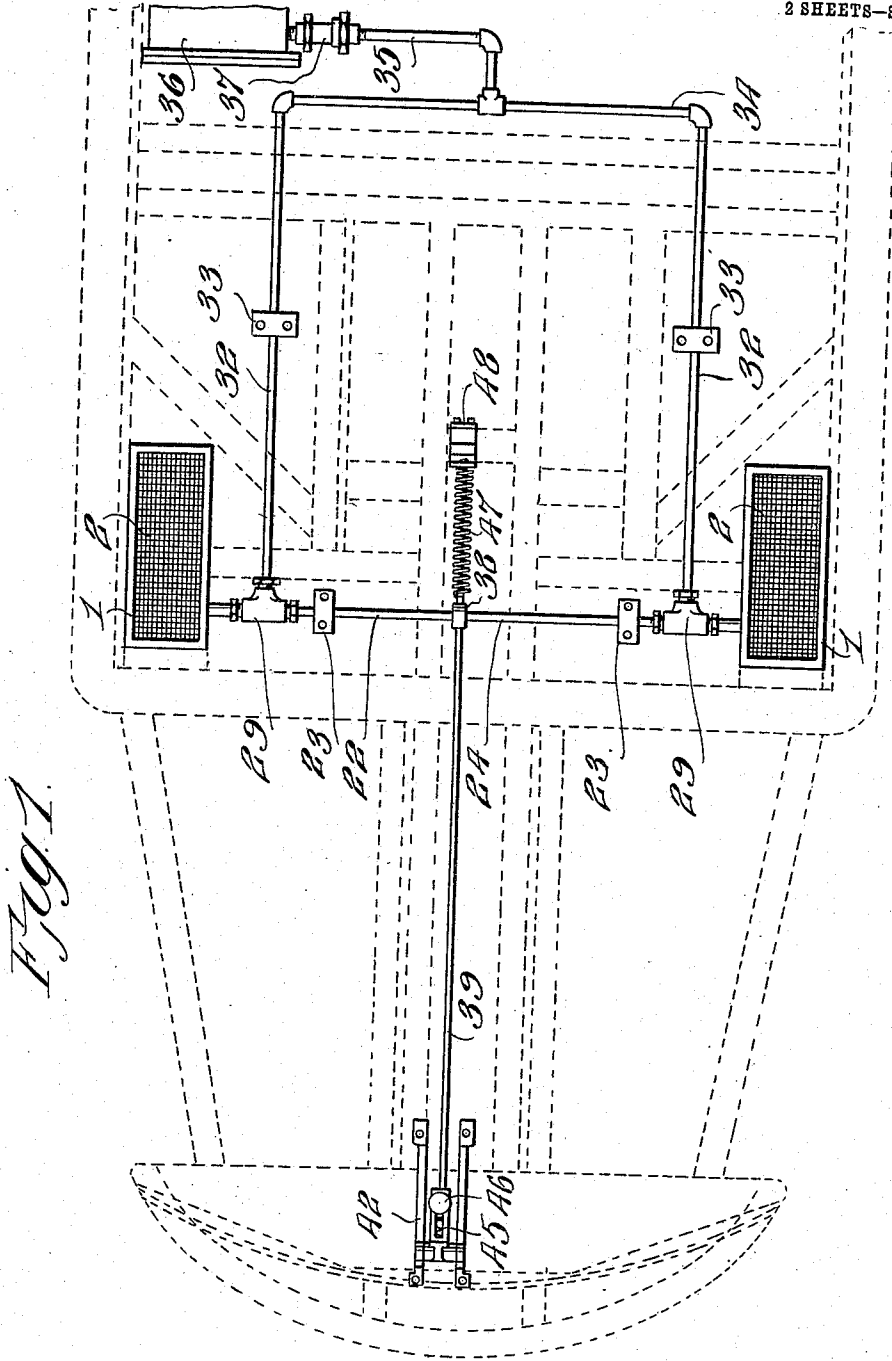


Fig. 1.

Witnesses
 Frank Hough
 C. C. Hines.

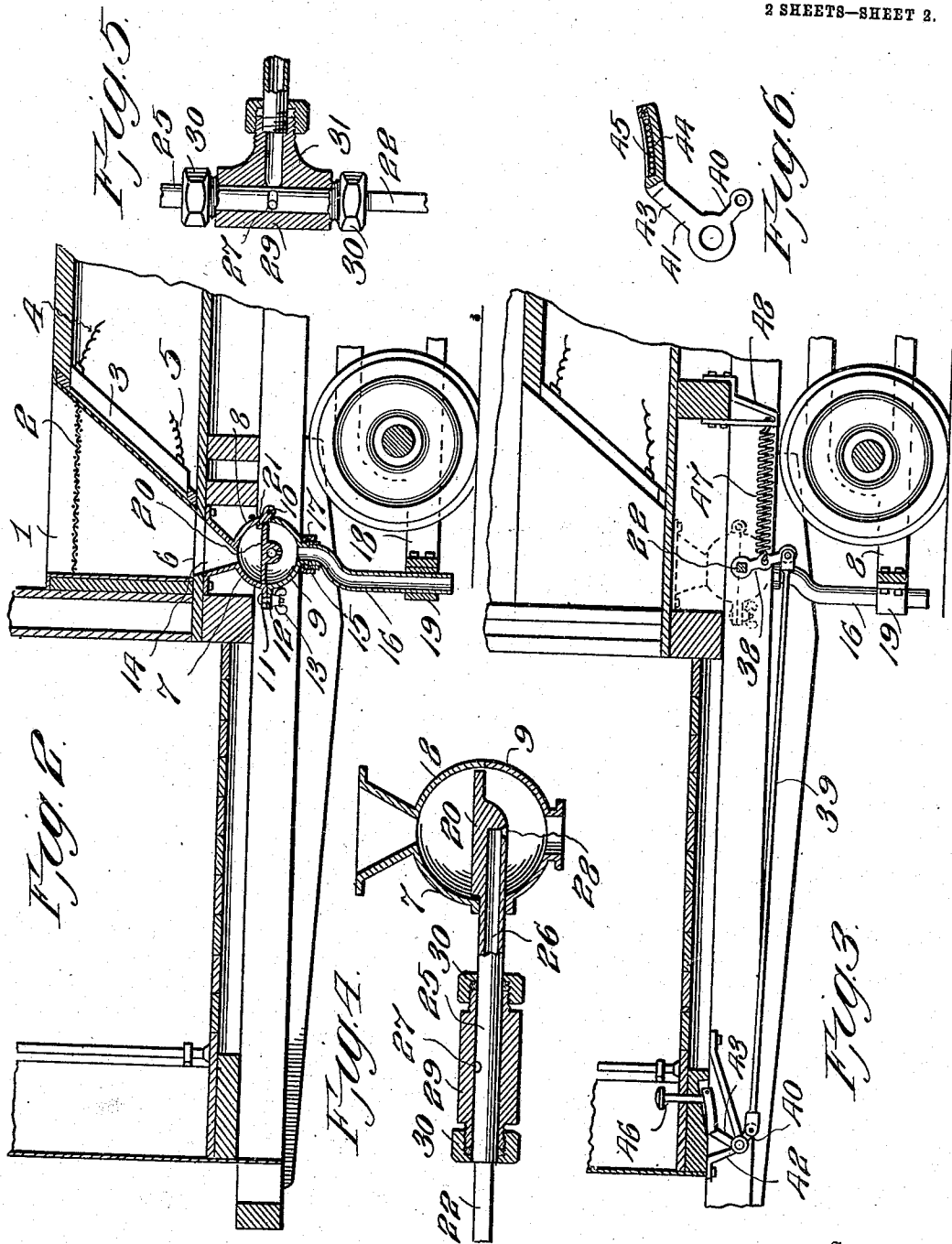
Inventor
 Martin A. Brown,
 By Victor J. Evans
 Attorney

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2 SHEETS—SHEET 2.



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 Frank Hough
 C. C. Hines.

Martin A. Brown,
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UNITED STATES PATENT OFFICE.

MARTIN A. BROWN, OF BALTIMORE, MARYLAND, ASSIGNOR OF THIRTY-FIVE ONE-HUNDREDTHS TO ERNEST C. PAINE, OF BALTIMORE, MARYLAND.

TRACK-SANDING DEVICE.

937,358.

Specification of Letters Patent.

Patented Oct. 19, 1909.

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To all whom it may concern:

Be it known that I, MARTIN A. BROWN, a citizen of the United States, residing at Baltimore, in the county of Baltimore City and State of Maryland, have invented new and useful Improvements in Track-Sanding Devices, of which the following is a specification.

This invention relates to a track sanding device for electric cars, the object of the invention being to provide a track sanding device of simple construction which is adapted to be effectually controlled to deposit a desired amount of sand on the track, and to keep the sand dry and loosened up so that it may be easily and uniformly distributed.

With these and other objects in view, the invention consists of the features of construction, combination and arrangement of parts hereinafter fully described and claimed, reference being had to the accompanying drawings, in which:—

Figure 1 is a top plan view of the sanding mechanism arranged at one end of a car, the frame and adjacent truck of the car appearing in dotted lines. Fig. 2 is a vertical longitudinal section of the same with the car body and truck shown in full lines, the section being taken on a plane through one of the hoppers. Fig. 3 is a central vertical longitudinal section. Fig. 4 is a vertical section through the sand and air feed valves. Fig. 5 is a horizontal section through the air feed valve. Fig. 6 is a sectional side elevation of the bell crank operating lever.

In the accompanying drawings I have shown the invention applied to one end of a car, but it will be understood that the mechanism may be duplicated at the opposite end of the car.

Arranged at each side of the body of the car is a sand receiving hopper 1 provided in its upper portion with a removable screen 2, by which the sand is sifted as the hopper is filled to separate the pebbles and other coarse particles from the fine sand. Upon the rear of the hopper may be mounted an electrical heater 3 whose terminals 4 and 5 are designed to be connected with the motor circuit of the car, by which a supply of current may be fed to the heater for the purpose of preventing freezing of the sand in cold weather and also driving out any moisture that may be contained therein.

The bottom of the hopper is in open communication with an opening or passage 6 in the floor of the car, below which opening is arranged a valve casing 7. This casing is preferably composed of upper and lower semicylindrical sections 8 and 9, pivotally connected at one side, as at 10, the meeting ends of the sections being formed at the opposite side of the casing with lugs 11 having openings for the passage of a bolt 12 fitted with a clamping nut 13, by which the sections of the casing may be clamped in closed condition. The upper casing section is provided with a tapered inlet 14 registering with the passage 6, while the lower section of the casing is formed with a neck having a discharge opening 15. A flexible discharge pipe or tube 16 is connected at its upper end to the neck by a suitable type of coupling 17 and extends downward to a position immediately above the underlying track and is fastened to the adjacent side of the frame 18 of the front truck by a clip or bracket 19. If from any cause the valve casing or the parts therein should become choked with sand it will be readily understood from the foregoing description that upon releasing the casing section 9, the latter may be swung downward to permit access to be obtained to the casing for remedying the difficulty.

Arranged within the casing 7 is a valve 20 for controlling the discharge of sand, which valve comprises a disk mounted to tilt in one direction and limited in its reverse tilting movement by a stop 21 which it engages when in closed position. The valve is carried by and integral with a hollow actuating shaft 22 which extends across the car beneath the floor thereof and is similarly connected with the controlling valve of the opposite hopper. The said shaft is journaled in suitable bearings 23 and is provided with a central angular or non-circular portion 24 and hollow circular end portions 25. Each end portion 25 is formed with an air feed passage 26 having an inlet 27 and an outlet 28, the latter opening through the bottom of the valve 20, as shown. The outer extremity of the portion 25, which forms an air feed valve having the port or inlet 27, is mounted to turn in a casing 29 provided at its ends with stuffing boxes 30 to prevent leakage.

The casings 29 of the two valve sections

25 of the shaft are formed with threaded inlets 31 coupled to the forward ends of air supply pipes 32 fixed by suitable brackets 33 to the under side of the car body and
 5 connected at their rear ends by a union pipe 34, which is in turn connected by a main air supply pipe 35 with the air reservoir 36 of the brake mechanism of the car. In the pipe 35 may be arranged a reducing valve 37 to
 10 reduce the pressure of the air to the extent desired on its passage from the reservoir to the feed valves.

To the angular central portion 24 of the shaft 22 is attached a crank or rocker arm 38, which is pivotally coupled by a connecting rod 39 with the short arm 40 of a bell crank actuating lever 41 pivotally supported by a bracket 42 secured to the under side of the platform of the car adjacent to the
 15 dash. The long arm 43 of said lever is provided with a socketed or chambered extremity 44 in which is arranged a series of anti-friction balls or rollers 45, said extremity being, in the normal arrangement of the parts
 20 when the valves are closed, arranged at an upward and rearward angle to the horizontal. A vertically depressible pin 46 is movable in an opening in the car platform with its lower end engaging the anti-friction balls or rollers 45 and its upper end provided with a
 30 suitable knob or head by which said pin may be conveniently depressed by the motorman. Upon the depression of the pin the arm 43 of the bell crank lever will be rocked downwardly and the arm 40 thereof forwardly, thereby drawing on the rod 39 to shift the crank arm 38 forwardly, by which the shaft 22 will be turned rearwardly a quarter revolution against the resistance of a coil spring
 40 47, connected with said rocker arm and a bracket 48 fixed to the car, which spring serves to hold the parts in normal position in which the valves are closed, and to return such parts to such position after actuation.
 45 As the pin 46 moves up and down upon depression and return to normal position, it slides in contact with the anti-friction balls or rollers 45, thus insuring easy motion of the actuating lever 41.

50 From the foregoing description, it will be apparent that when the motorman depresses the operating pin and actuates the bell crank lever in the manner described, the shaft 22 will be turned to open both sand discharge
 55 valves 20 and to simultaneously move the associated air feed valves 25 to a position in which the ports 27 register with the air feed pipes 32, thus allowing a current of air to enter each valve chamber 7 through the passage 26 and outlet 28 to loosen up and force
 60 the sand contained in said casing to discharge to and through the pipe 16. The blast of air thus introduced will not only loosen up and free any sand which may have
 65 become compacted in the valve chamber, but

will also pass upward from the valve chamber into the hopper and loosen up the sand in the inlet 14 and also within the body of the hopper. By thus injecting a blast of
 70 air into the discharge valve casing and hopper each time the discharge valve is opened, the sand will be maintained in a loose condition and caused to freely discharge each and every time the valve is opened. Hence the sand will be prevented from packing in
 75 the hopper and valve chamber to such a degree as to interfere with the valve in its movements or choke in the hopper or valve chamber so that it cannot freely discharge when the valve is actuated. The sand will
 80 accordingly be kept in a loose and fine condition, thus insuring its discharge in proper quantity to the rails when the mechanism is operated by the motorman. It will, of course, be understood that the air feed valve
 85 sections 25 of the shaft may be integral with the center of the shaft and the sand discharge valves, or that said parts may be made independent of one another and suitably connected together.

Having thus fully described the invention, what is claimed as new, is:—

1. In a track sanding device, a hopper, a discharge valve casing communicating therewith, a discharge valve arranged in said casing,
 95 a hollow shaft carrying the discharge valve and forming an air feed valve movable with said discharge valve and having a discharge passage communicating through said discharge valve with the valve casing,
 100 and means for simultaneously actuating said valve for the discharge of sand and the inlet of a blast of air.

2. In a track sanding device, a hopper, a discharge valve casing communicating therewith, a discharge valve arranged within the casing, a hollow shaft carrying the discharge
 105 valve and forming an air feed valve movable with said discharge valve and having a feed passage opening through the latter into the casing, and means for turning said shaft for simultaneously operating said valves.

3. In a track sanding device, a hopper, a valve casing communicating therewith, a rotary discharge valve disposed within said
 115 casing, a hollow shaft connected with said discharge valve and forming an air feed valve, said shaft being provided with a feed passage extending into and through said discharge valve, and means for rocking said
 120 shaft for a simultaneous operation of the valves.

4. In a track sanding device, a hopper, a discharge valve casing communicating therewith, an air feed pipe, an air feed valve
 125 casing communicating therewith, a discharge valve arranged within the discharge valve casing and provided with an air feed passage, a shaft having a hollow valve member connected therewith and with the discharge
 130

valve and provided with a passage communicating with the passage of the latter, said valve member being mounted in said air feed valve casing, and means for rocking
5 said shaft to actuate said valve.

5. In a track sanding device, a hopper, a discharge valve casing communicating therewith, a rotary valve mounted in said casing and provided with an air feed passage, an
10 air feed pipe, an air valve casing communicating therewith, a rock shaft having a hollow valve member mounted in said casing and connected with the discharge valve, means for turning said shaft in one direction
15 to actuate said valve, and means for automatically turning said shaft in the reverse direction to close said valves.

6. A track sanding device comprising a hopper, a valve casing comprising hinged
20 upper and lower sections, the upper section communicating with the hopper, means for holding the sections connected, a discharge pipe connected with the lower section, a valve in said casing, and means for operating
25 the same.

7. In a track sanding device, a hopper, a valve casing, a discharge valve carried by said casing, a hollow shaft carrying the valve and forming an air feed valve communi-

cating with the casing, and means for turning said shaft to operate both valves in unison.

8. In a track sanding device, the combination of hoppers, valve casings communicating therewith, discharge valves in said
35 casings, an operating shaft, air feed valves connected with the shaft and discharge valves and communicating with the valve casings, means for supplying air to said feed valves, and means for operating the shaft to
40 actuate the valves in unison.

9. In a track sanding device, a hopper, a sanding discharge and air feed valve associated therewith, a rock shaft for operating the valve, a bell crank lever having a cham-
45 bered portion, anti-friction bearings in said chambered portion, an operating connection between the shaft and lever, and a sliding pin engaging said anti-friction bearings, whereby motion may be imparted to the bell
50 crank lever.

In testimony whereof I affix my signature in presence of two witnesses.

MARTIN A. BROWN.

Witnesses:

ERNEST C. PAINE,
H. HOPKINS HOUSTON.