

C. F. JOHNDROW.
RAIL SANDING DEVICE.
APPLICATION FILED MAY 9, 1908.

940,025.

Patented Nov. 16, 1909.

2 SHEETS—SHEET 1.

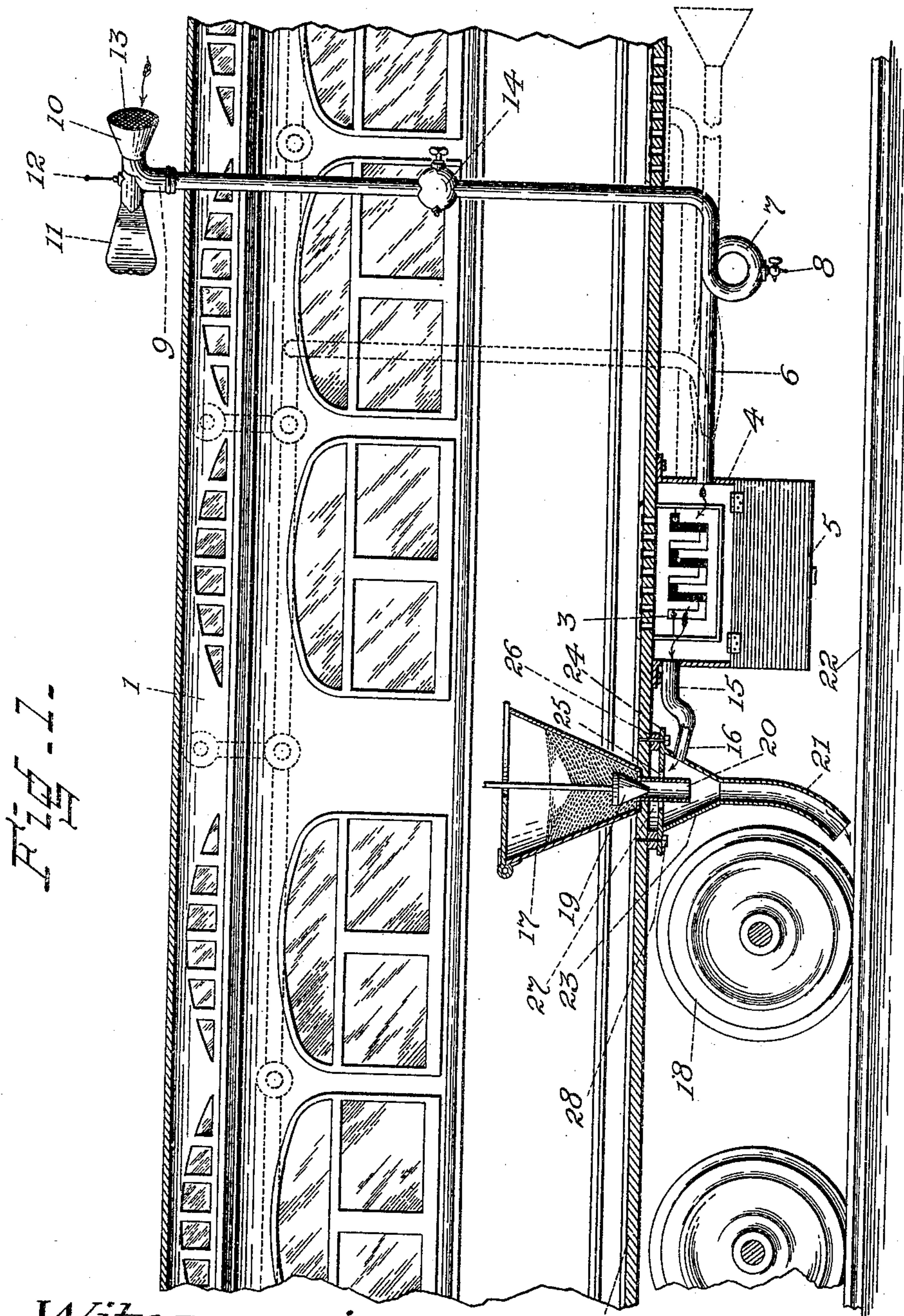


Fig. 1.

Witnesses:

Cicero J. Warner
Harry D. Benham

Inventor:

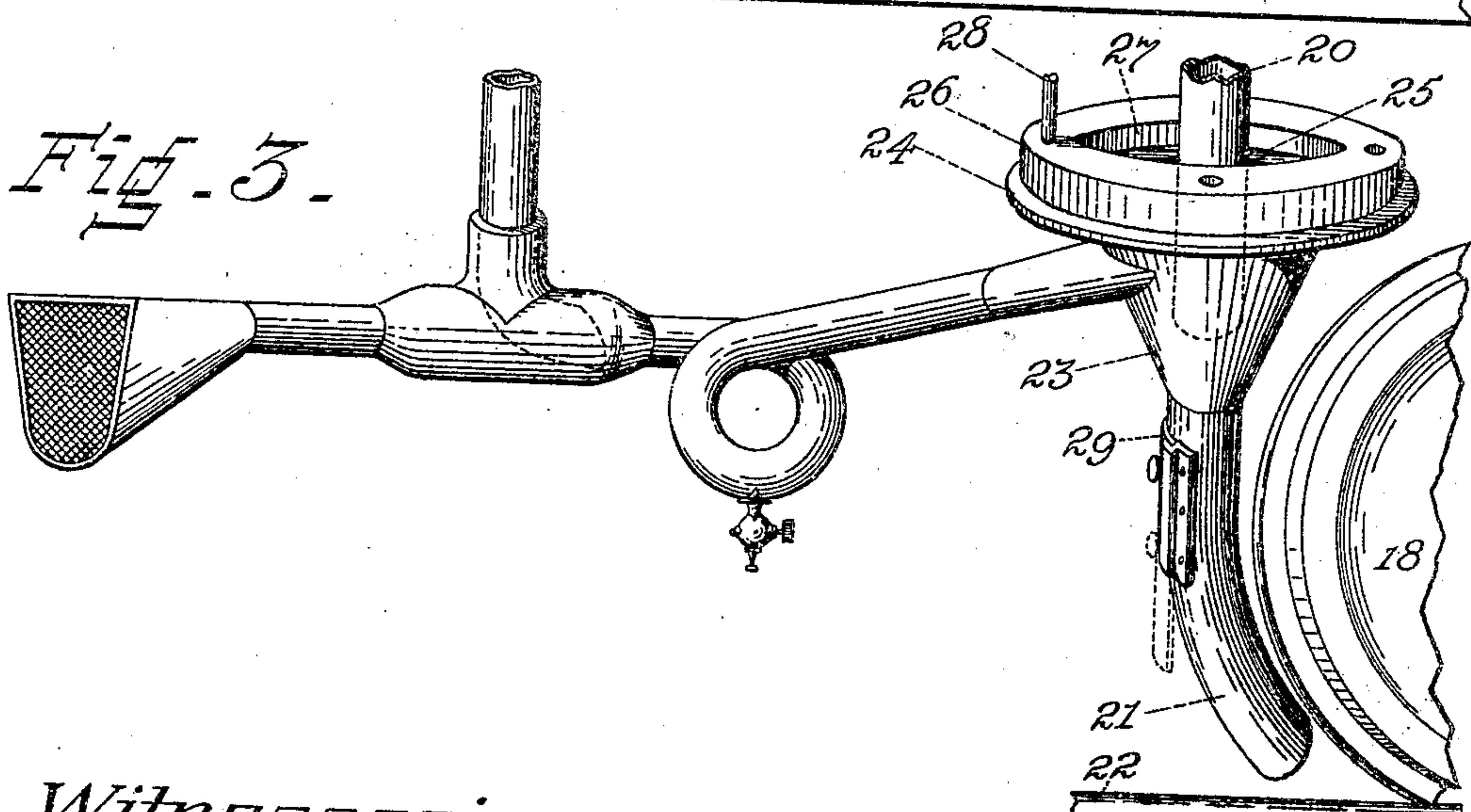
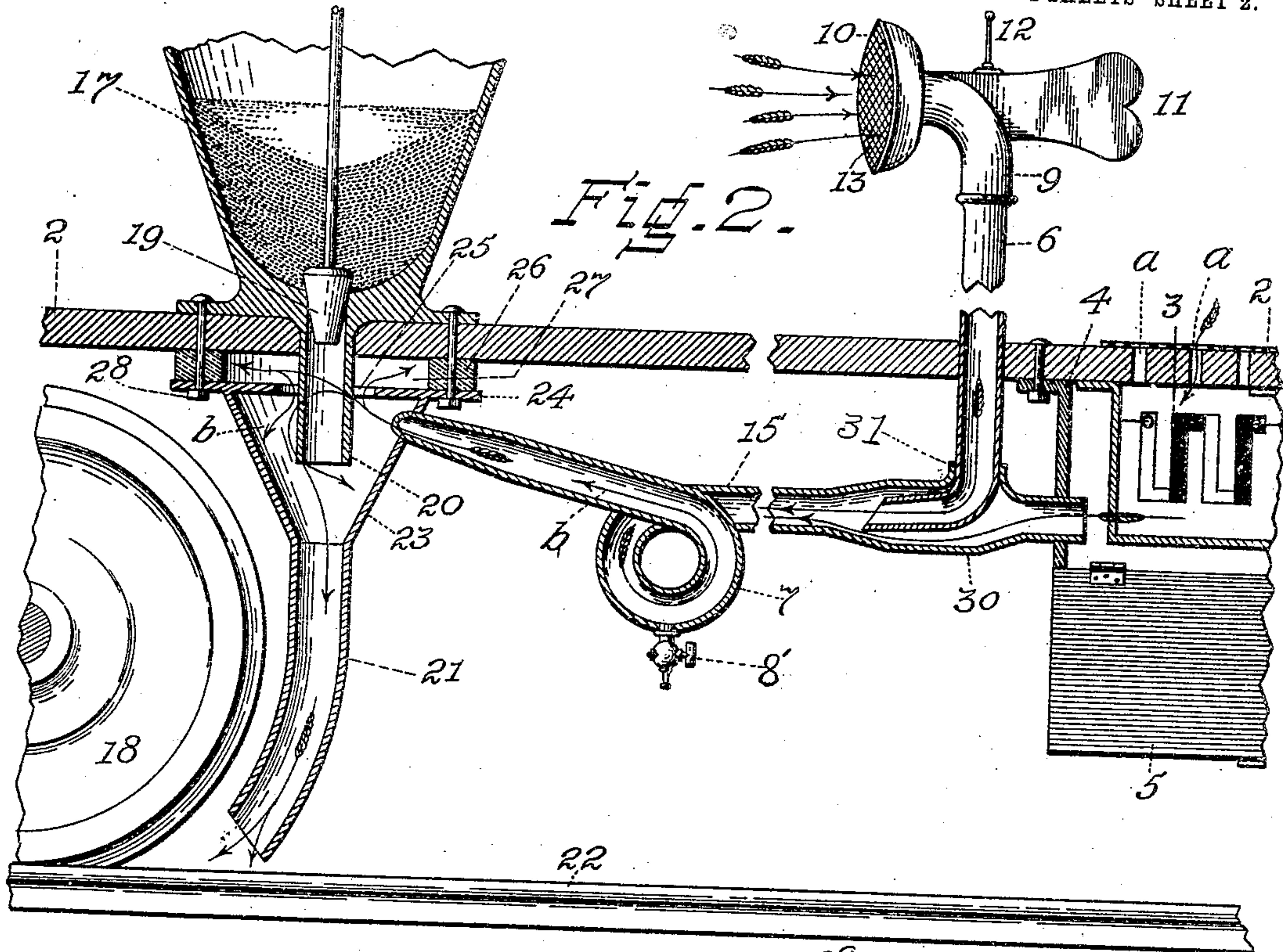
Clarence Francis Johnrow,
By Frank R. Rathbun
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WITNESSES:

Clarence J. Warner
Harry D. Burham

INVENTOR:

Clarence Francis Johnrow,
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UNITED STATES PATENT OFFICE.

CLARENCE FRANCIS JOHNDROW, OF AUBURN, NEW YORK, ASSIGNOR OF ONE-HALF TO
EARL N. ELLIOTT, OF AUBURN, NEW YORK.

RAIL-SANDING DEVICE.

940,025.

Specification of Letters Patent.

Patented Nov. 16, 1909.

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To all whom it may concern:

Be it known that I, CLARENCE FRANCIS JOHNDROW, a citizen of the United States, residing at Auburn, in the county of Cayuga and State of New York, have invented new and useful Improvements in Rail-Sanding Devices, of which the following is a specification.

My invention relates to track-sanding devices for electric cars and otherwise on which is provided a sand receptacle or magazine having an operative valve for releasing the sand into and through a sand distributing pipe having its outlet just above the surface of the rail and in front of the car wheel for the purpose of keeping the latter from slipping and sliding thereon more especially when the rails are coated or covered with ice, snow and sleet, oil, water or otherwise. Under present conditions and as commonly constructed and used such provision is of an unreliable and unsatisfactory character; especially is such the case in frosty, freezing and sleety weather when the rails become coated and the sand in the sand magazine is lumpy and non-friable and the sand distributing pipe leading the sand therefrom is clogged and interiorly coated with frozen matter which prevents not only the free flow but at times wholly prevents the sand from issuing therefrom. More particularly is such a state of affairs sure to obtain at the most critical and inopportune moments, rendering it necessary for those in charge of the car or cars to sprinkle the rails with sand by hand, or otherwise to dig out the snow and ice from the distributing pipe, thus entailing not only great loss of time, the missing of connections and extra-hazardous work but imperiling the safety of the passengers when the car or cars descend steep gradients where reliable provision for their safety is most imperative.

It is the object of my invention, at all times and under varying climatic conditions to keep the outlet of the sand magazine and the immediate surroundings thereof as well as the interior surface of the sand-distributing pipe and its outlet as perfectly dry and unobstructed as possible and to keep the same thus clear and free from any accumulation of snow, ice or moisture, and in perfectly workable condition so that when sand is released from the sand magazine it will freely flow through the distributing pipe to

the rails and fully serve its purpose at such times and on such occasions as the exigencies of the case may demand. Such objects I aim to accomplish by the peculiar construction and arrangement of parts conjointly operative as hereinafter described, which I have illustrated in the accompanying drawings on two sheets, in which:

Figure 1, is a vertical longitudinal section of a portion of the interior of an electric car showing my appliances thereon, the seats and all other matter obstructive to a clear view and conception of the improvement being eliminated. Fig. 2, is a vertical longitudinal cross-section of my invention, shown on an enlarged scale and as connected relatively with the floor portion of an electric car. Fig. 3, is a detached perspective view of a simplified form of my invention.

In the several views similar figures and letters for reference refer to similar parts.

In Fig. 1, 1, represents the interior portion of an electric car, and 2, the floor or bottom part of the same. The under side of the floor 2, is equipped with a thermo electric generator or "resistance plates" 3, the object and utility of which,—in cars of the electric or trolley type,—will readily be understood by those skilled in the art, and which it is thought needless to describe in detail except to say that ordinarily they are exposed and uncovered and their heat wasted on the surrounding air. The said resistance plates 3, are normally attached to the under side of the floor of the car. To conserve and utilize their heat I inclose them in a box or casing 4, which also is attached or hung from the under side of the car floor, the sides of said box or casing 4, being hinged to the bottom part in the shape of doors 5, so the said resistance plates may be exposed for inspection when it is found desirable. From one side of the box or casing 4, (see in Fig. 1), is extended an air conduit 6, having a coil or coils 7, provided at the bottom of the bend with a stop cock 8; thence the said air conduit 6, is extended upwardly through the body of the car and terminates above the roof of the same in a rotary portion 9, closed at its top end and provided with a hood or funnel 10, on one side and a wind-vane 11, on the opposite side, the whole turning on a spindle 12, properly fastened at its bottom end to the air conduit 6, the funnel or hood part thus

being always turned in the direction in which the car moves and catching the wind current. The said hood or funnel 10, is provided over the mouth part with a screen 13, which serves to prevent the entrance therein of flying particles of matter such as leaves, bits of twigs and the like. At a suitable point, and in convenient reach of the operator, in the said air-conduit 6, is provided an automatic check-valve or damper 14, of any preferred type that will serve to check the too abundant draft of air passing in the said air conduit when the car is moving. At the opposite side of the box or casing 4, which I have described, is attached another air conduit 14, which is sufficiently extended and terminated in a flattened outlet 15, which is secured to a member hereinafter described.

A sand box, dome, or magazine 17, is preferably located on or near the floor 2, of the car, in a vertical line outside of but adjacent to the periphery of the car-wheel 18, as shown. It is provided with a tapered plug or valve 19, having a stem which serves to pull it from its seat and thus lets the sand out of the magazine after the usual manner. The bottom of the said sand magazine 17, is provided with a sand outlet pipe 20, which is extended through and below the floor of the car for the purpose hereinafter described. At a point preferably in vertical alinement with, and under the said sand magazine 17, I provide a peculiarly constructed sand distributing pipe 21. It may be of the curved form seen in Fig. 1, and round or square in cross section as desired, its outlet or sand distributing point being as near the surface of the rail 22, as practical and in front of the tread of the car wheel 18. It is furnished at its upper end with a funnel piece 23, having a flanged closure 24, provided at its central point with an aperture 25, somewhat greater in diameter than the outside diameter of the sand outlet pipe 20, of the said magazine 17, which passes in it as will presently be seen. Between the upper side of the said flanged closure 24, and the under side of the car-floor 2, is provided an annulus or gasket 26, which may be of any suitable material and is of a thickness sufficient to afford a desired air space or chamber 27, at that point as plainly shown in Figs. 1, and 2. The whole is secured to the under side of the car-floor 2, by bolts 28, which may be sufficiently extended if desired, to include the fastening of the sand magazine as I have shown, which latter is arranged above in such position as will permit its sand outlet 20, to centrally pass in and completely through the aperture 25, of the flanged closure 24, and on and down into the funnel piece 23, as I have shown it in the drawings. As already stated: the said central aperture 25, being larger in

diameter than the outside diameter of the said sand outlet 20, a desired opening is afforded around the latter through which an air current can pass on and into the air space or chamber which has been described.

On one side of the funnel 23, of the sand distributing pipe 21, is provided an opening in which is fastened the flattened end 16, of the air conduit 15, which connects said funnel with the box or casing 4, of the resistance plates 3, already mentioned. It will be observed that at the point of fastening to the said funnel, the flattened end 16, of the said connecting air conduit 15, is upwardly turned at a slight angle so that its mouth or outlet will practically aim at the space provided between the outer sides of the sand outlet of the sand magazine and the sides of the aperture provided in the flanged closure as has been described. The object of this peculiar arrangement and combination of parts presently will be explained.

Having described the several parts of my invention I will set forth the operative features of the same. The car moving along, the funnel 10, of the rotary member 9, of the air conduit 6, is forced to point in the direction the car moves, through the influence of the surrounding air on the wind vane 11. Thus air is caught by the funnel or hood 10, and as a strong current,—dependent on the speed of the car,—it is forced down and along the said air conduit 6, into the coil or coils 7, which diminish not only its strength but in a measure retain any moisture from condensation or otherwise which may take place at that point, and which from time to time, as the necessities of the case demand, can be drawn therefrom through the thumb-cock or faucet 8. The air-current in somewhat diminished force, proceeds from the coil 7, along the conduit into the box or casing 4, inclosing the resistance plates, the heat of which is transmitted thereto and whence it is forced with a higher temperature through the conduit 15, and out of its flattened end 16, on and upward through the aperture 25, of the flanged closure 24, of the funnel part 23, whence it sweeps and circles around the air chamber 27, and also around the sand outlet 20, of the sand magazine, eliminating any humidity that may have gathered at these points; and then, in a semi-rotative path, it passes on and down out of the outlet of the sand distributing pipe 21. Thus it will be seen that all of the parts with which this warmed current is forced against, and which are most liable to collect moisture and ice or snow, are kept in a perfectly dry and unobstructed condition, and in such state that the sand when released from the sand magazine as has been described will not only freely pass to the track, but be kept in a dry and friable state.

The course of the warmed or heated air current after it has entered the funneled top of the sand distributing pipe is clearly illustrated in Fig. 2, in which the curved and irregular arrows indicate the course which has been described. Should the current of air caught by the hood or funnel above the roof of the car develop too great force, it can be regulated by the automatic damper, or check valve 14, which has been referred to, or by a damper of common pattern, or further still by doubling or tripling the coil described.

Referring to Fig. 1, it will be seen that if the heat developed by the resistance plates is utilized for heating the interior of the car,—as I have shown by the registers in the floor of the car and a pipe, shown in dotted lines leading to one of the same,—the said interior heat of the car can be drawn therefrom through a system of hoods and pipes properly disposed in the interior and connected with a main pipe having its outlet in a swell of the air conduit in such a way that the strong air current of said conduit as it sweeps past the junctive point will draw the said warm air along and mingle with it, and through a suitable connection with the funnel portion 23, force the same to fulfil the office of drying the parts as already has been described. Such a system I have partially shown in the dotted lines of the interior of the car and otherwise without figures or letters for reference, the connective point, where the resistance plates and the box or casing appear, being omitted to avoid a confusion of lines. In Fig. 2, also I have shown a somewhat different arrangement of parts, although the principle of my invention is unaffected thereby, as practically they fulfill the same office as has been described. In this arrangement the air conduit 15,—connecting the box or casing of the resistance plates and the funnel portion of the sand distributing pipe,—is lengthened and provided with a swell 30, having a joint 31, and a coil or coils 7¹, having a thumb-cock 8¹. The main air conduit 6 is provided with a rotary member having a hood and vane and turning on a spindle as I have described. Its bottom end is introduced in the joint 31, of the swell 30, of the air conduit 15, at a slight downward angle and prolonged for a short distance toward the funnel portion as clearly shown in section in said Fig. 2. By this arrangement it will be obvious that as the air, through the motion of the car, is forced down the air conduit 6, and out of its outlet in the said swell, it will suck or draw the air from the interior of the car through the screened parts *a*, formed in the floor of the car over the box or casing of the resistance plates, downward upon and around or through the latter and thus increase its tem-

perture as shown by the arrows *b*, *b*. From thence it is forced into the funneled portion of the sand distributing pipe 23, up through the aperture 25, of the flanged closure 24, into the air chamber 27, and thence downward and out of the outlet of the sand distributing pipe 21, precisely as has been described and as shown by the deflected arrows.

In Fig. 3, the main air conduit is shown arranged in a horizontal plane under the floor of the car with a somewhat modified form of hood or funnel. The pipe in the swell of said air conduit is connected with the box or casing surrounding the resistance plates which arrangement is practically a reversal of the conditions which prevail in some of the arrangements I have described. It will be evident other forms and combinations of parts may be arranged and yet the spirit of my invention remain intact, and it is thought needless to illustrate further forms.

In Fig. 3, it will be seen the sand distributing pipe is provided with a sliding piece 29, which is arranged to move over an opening formed in said distributing pipe 21, by means of which said pipe may be cleaned or obstructions removed without disorganization of the assembled parts. This feature I do not claim, neither do I claim the plug or tapered valve in the sand magazine for releasing the sand therefrom but,

What I do claim as new and desire to secure by Letters Patent of the United States of America is:

1. In a track sanding device for electric and other cars a sand distributing pipe having an outlet near the rail and in front of the car wheel, an inclosed funneled top part provided with a central aperture, an air chamber between said inclosed funneled top part and the floor of the car having means for inclosing the sides of the same, a sand magazine having an outlet downwardly extended through the floor of the car through said air chamber and said central aperture of said inclosed funneled top part of said sand distributing pipe into the funnel combined with boxed or inclosed resistance plates of a thermo-electric-generator and means for forcing an air current from the interior or exterior of the car into said box or inclosure for heating the same and means for conducting said heated air current from said box or inclosure into the said funneled portion and said air chamber of said sand-distributing pipe around said outlet of said sand magazine and thence through the said sand distributing pipe and its outlet substantially as described and shown.

2. In a track sanding device for electric and other cars a sand distributing pipe having an outlet near the rail and in front of the car wheel, a funneled top part having a

flanged closure at its top end provided with a central aperture, an air chamber formed by said flanged closure and a gasket piece or annulus between it and the under side of the floor of the car and means for securing the same in position, a sand magazine having an outlet pipe downwardly extended through the floor of the car said air chamber and said central aperture in said flanged closure into the said funneled top part of said sand distributing pipe combined with boxed or inclosed resistance plates of a thermo electric generator and means for forcing an air current from either the interior or exterior of the car into and through said box or inclosure around said resistance plates where it becomes heated and having means for regulating the force or flow of said air current and also having means for collecting and eliminating any condensation of said air current with means for conducting or throwing said heated air current into said funneled top part of said sand distributing pipe in such manner that it shall be thrown through said central aperture of said flanged closure of said funneled part into and around the air chamber above and thence down and around the said outlet of said sand magazine out of the outlet end of said sand distributing pipe substantially constructed and arranged for joint operation in the manner and for the purpose herein specified and shown.

3. In a track sanding device for electric cars and otherwise the combination of a sand distributing pipe having at the bottom end an outlet near the rail in front of the car wheel and at the top end a funnel shaped portion having a flanged closure at the top provided with a central opening, a gasket or annulus carried on said flanged closure adapted to form the sides of an air space or chamber between the under side of the floor of the car and the upper side of said flanged closure, means for securing the whole in proper position to the under side of said

floor of said car, a sand magazine in the car directly over said air chamber having a sand outlet projecting downwardly through the floor of the car through the said air space or chamber and through the said central opening of said flanged closure into the said funneled end of the said distributing pipe, with a box or inclosure surrounding the resistance plates of a thermo electric generator having hinged doors at the sides, and an air conduit or pipe having a rotary portion provided with a wind vane and a screened funnel or hood at its top end adapted to receive and throw or draw a current of air either from the interior or exterior of the car through the said box or inclosure, as the car moves along, where it absorbs the heat generated by the said resistance plates of said thermo electric generator, a check draft or damper adapted to regulate the force of said air current and a coil for further checking the force of the same provided with a stop-cock adapted to withdraw the condensation therefrom, and a pipe connecting said box or inclosure with said funneled part of said sand distributing pipe also provided with a coil having a stop cock and adapted to convey the heated air current into said funneled portion of said sand distributing pipe in such manner and at such an angle as to cause it to be thrown through the central opening of the flanged closure into the air chamber above and around in the same and from thence down and around the sand outlet of the sand magazine along through the sand distributing pipe and out at the outlet of the same conjointly operative in the manner and for the purpose herein described and shown.

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

CLARENCE FRANCIS JOHNDROW.

Witnesses:

FRANK A. WEDDIGEN, Jr.,
FRANK R. RATHBUN.