B. L. JONES & B. S. GREEN.

TRACK SANDING DEVICE.

APPLICATION FILED FEB. 14, 1916.

1,204,665. Patented Nov. 14, 1916.

FIG. 1.

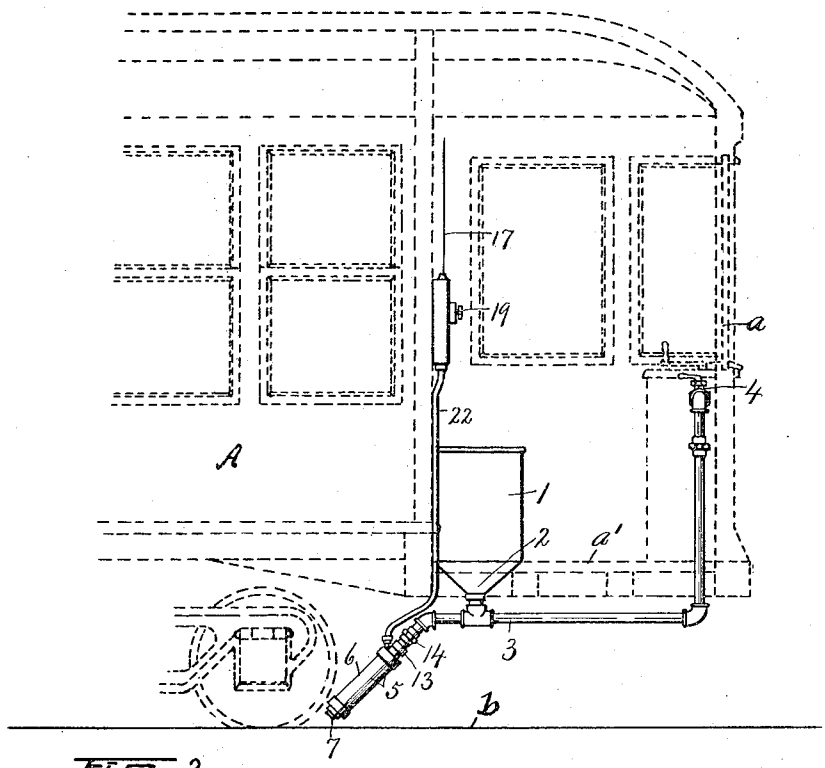
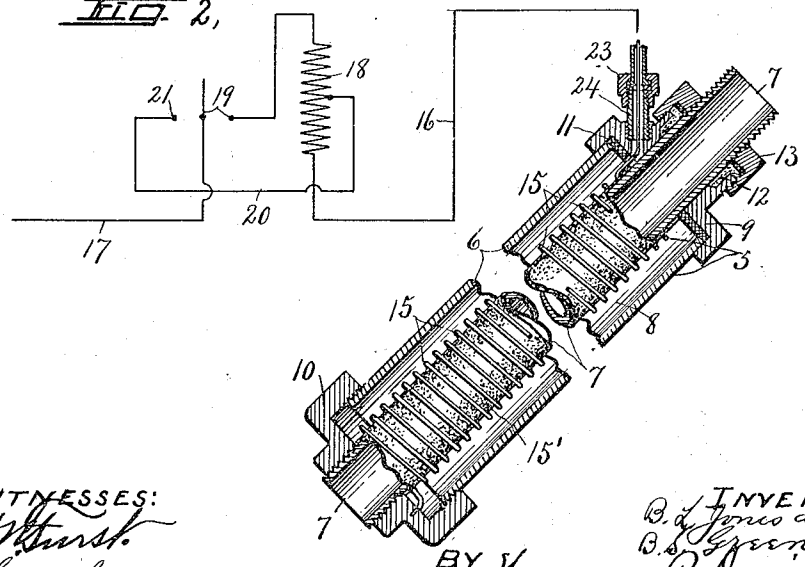


FIG. 2.



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TRACK-SANDING DEVICE.

1,204,665. Specification of Letters Patent. Patented Nov. 14, 1916.

Application filed February 14, 1916. Serial No. 78,156.

To all whom it may concern:

Be it known that we, BENJIMAN L. JONES and BERTRAM S. GREEN, citizens of the United States of America, and residents of Syracuse, in the county of Onondaga, in the State of New York, have invented new and useful Improvements in Track-Sanding Devices, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates to certain improvements in track sanding devices for electric and other railway cars, and refers more particularly to the structure of the sand delivery nozzle and to the manner of coupling the same to the standard forms of sand reservoirs or boxes with which the cars are usually equipped. In devices of this character, the delivery pipes are usually arranged with the delivery end traveling in close proximity to the point of contact between the front wheels and track and are, therefore, always susceptible to the accumulation of moisture, snow and ice which causes the sand to clog or lodge in the pipe to such an extent as to prevent or seriously interfere with the free discharge of the sand upon the tracks.

The main object of our present invention is to provide simple and economical means for applying heat to the nozzle, and particularly to the discharge end thereof, so as to keep the sand therein dry and thereby prevent clogging by the accumulation of such moisture, snow or ice, thus greatly increasing the efficiency and reliability of the entire track sanding apparatus.

We are aware that certain forms of heaters have heretofore been proposed for drying out the wet sand in the main reservoir or parts immediately adjacent thereto a considerable distance remote from the track, but such devices have proven to be of little value in climates where rain, snow and ice prevail for more or less prolonged seasons, because it has been found that the greatest trouble is experienced in the accumulations of those elements at that portion of the apparatus which is nearest the track, owing to the fact that such portion is almost continuously trailing in such elements.

We have, therefore, sought in our present invention to remove these objections by applying the heat close to the delivery end of the sanding apparatus, and therefore, close to the track where the sand is to be applied.

Other objects and uses will be brought out in the following description.

In the drawings Figure 1 is a side elevation of our improved sanding apparatus showing by dotted lines a portion of an electric railway car upon which the sanding device is mounted. Fig. 2 is an enlarged longitudinal sectional view, partly broken away, of the detached sand delivery nozzle, showing diagrammatically a portion of the trolley circuit for supplying current to the heater in the nozzle.

As illustrated, the track sanding device is mounted in the vestibule —*a*— of an electric railway car —A— and comprises a sand-containing reservior —1— mounted in or upon the platform, as —*a'*— of the car and provided with a conical bottom having an outlet in its apex discharging directly into an underlying air pressure pipe —3— which extends horizontally across the outlet so as to normally check the out-flow of the sand from the reservoir without the use of valves. The pipe —3— extends in opposite directions from the outlet of the reservoir —2—, one end serving as a means for conducting air under pressure across said outlet and is usually connected by a valve —4— to the air-brake system, commonly used on cars of this character.

A sand delivery nozzle —5— is coupled to the pipe —3— at the opposite side of the outlet of the reservoir —1— and preferably inclines downwardly and rearwardly so that its lower discharge end is in close proximity to the track, as —*b*—, along which the car is adapted to move. The valve —4— is normally closed and, therefore, the sand in the outlet of the reservoir —1— simply rests within and against the underlying portion of the pipe where it is held against escape to any appreciable extent, but may be readily discharged through the nozzle at will by simply opening the valve —4— by hand, thereby allowing the air under pressure to force the air out from under the outlet along the pipe and through the nozzle where it is delivered upon the rail. This nozzle preferably comprises an outer tubular casing —6— and an inner sand pipe —7— of relatively smaller external diameter than the internal diameter of the casing —6— so as to form an intervening heating chamber —8—.

The casing —6— is provided with opposite end heads or caps —9— and —10— suit-

ably fitted thereon so as to form water-tight joints to exclude moisture, snow and other foreign matter from the chamber —8—, said heads being provided with reduced co-axial openings in which the pipe —7— is closely fitted to also form water-tight joints. The lower cap or head —10— is preferably screwed upon the adjacent ends of both the outer casing —6— and inner tube —7—, thereby holding those parts in fixed relation. The upper cap or end head —9— is slidably fitted over and upon the adjacent end of the casing —6— and pipe 7 with an interposed packing —11— to form a water-tight slip joint and is provided with a water-tight gland —12— having its cap, as —13—, screwed upon the adjacent portion of the pipe —7— to not only exclude foreign matter from entering the chamber —8—, but also to hold the cap or end head —9— firmly in place upon the adjacent end of the casing —6—. The pipe —7— extends centrally through the casing —6— and openings in the end heads —9— and —10— and preferably projects at its upper end some distance beyond the cap —13— of the gland —12— for receiving a union —14— or similar coupling, whereby the nozzle may be easily attached to or removed from the adjacent end of the sand-blast pipe —3—.

The portion of the pipe —7— between the end heads —9— and —10— is surrounded by an electric resistance wire or coil —15— which is insulated from the pipe —7— by suitable insulation —16— and constitutes an electric heater extending to a point in close proximity to the discharge end of the nozzle and, therefore, close to the track. The heater coil may be connected by a branch circuit —16— of a current supply wire —17— of the car motor circuit, said branch circuit —16— being connected to one end of the heater coil —15—, the other end of said coil being electrically connected to the casing —6— which is grounded through the pipe —3— and walls of the car to the track in any well known manner.

In the branch circuit —16— is connected an electrical resistance —18— for cutting down the electro-motive force to the heater coil, the branch circuit being adapted to be connected to the main line —17— by means of a normally open switch —19—. In some instances, it may be desired to supply a greater electro-motive force to the heater than that produced by the interposition of the whole of the resistance —18—, and for this purpose we have provided means for varying the resistance consisting in tapping one end of a wire —20— into the resistance —18— between its ends and attaching the other end to a switch terminal —21— of the switch —19— for coöperation with the movable member of the switch —19—. It, therefore, follows that when the switch —19— is closed, the whole of the resistance —18— will be introduced into the branch circuit —16— and heater coil —15— which will be sufficient to normally keep the sand in the discharge end of the pipe —7— free from moisture, snow and ice, but in the initial starting of the car, or in case the discharge end of the nozzle should become clogged by frozen or wet sand, the movable member of the switch —19— may be thrown into contact with the terminal —21—, thereby cutting out a part of the resistance and increasing the electro-motive force and resultant heat in the coil —15— to expedite the drying and free flow of the sand in the discharge end of the nozzle.

The important feature of the invention, therefore, lies in the specific structure of the nozzle by which the heat is brought close to the discharge end of said nozzle and to the rail to which the sand is to be supplied, the structure of the nozzle also serving to permit its parts to be readily removed for access to the heater, and furthermore to permit the nozzle as a whole to be easily and quickly attached to and detached from the sand pipe leading from the outlet of the reservoir.

In practice, the feed wire leading to the nozzle is concealed within and protected by a suitable pipe —22—, as shown in Fig. 1, the pipe —22— being connected to the upper end of the nozzle, as shown in Fig. 2, by means of a union —23— and nipple —24— leading through the head —9— into the chamber —8—. The chamber —8— constitutes a heating chamber extending to a point in close proximity to the delivery end of the nozzle, and while it is shown as receiving an electric heater, it is evident that it may be used for receiving any other heating medium without departing from the spirit of this invention.

What we claim is:

1. A discharge nozzle for track-sanding devices comprising outer and inner tubular sections in spaced relation to form an intervening heating chamber, a cap on one end of the outer section supporting the inner section, a separate cap slidably fitted on the opposite ends of both sections, and a heater within said chamber between the end caps.

2. A discharge nozzle for track-sanding devices comprising an outer case-section and an inner sand-pipe section in spaced relation to form a heating chamber, a cap secured to the delivery end of the sand-pipe section and to the adjacent end of the case-section, a separate cap slidably fitted upon the opposite ends of both sections, movable means on the inner section for clamping the second-named cap in place, and a heater in said chamber between the end caps.

3. A discharge nozzle for track-sanding devices comprising a sand-pipe section, a cap secured to the delivery end of said section, an electric heater surrounding a portion of the sand-pipe section, a tubular case-section surrounding the heater and secured at one end to said cap, a separate cap having a slip-joint connection with the opposite ends of the case section and sand-pipe section, and means on the receiving end of the sand-pipe section for holding the last-named cap in place.

In witness whereof we have hereunto set our hands this 8th day of February, 1916.

BENJIMAN L. JONES.
BERTRAM S. GREEN.

Witnesses:
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ALICE M. CANNON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."