

W. WESTHEFFER.
POSITIVE FEED CAR TRACK SANDER.

Patented Nov. 19, 1895.

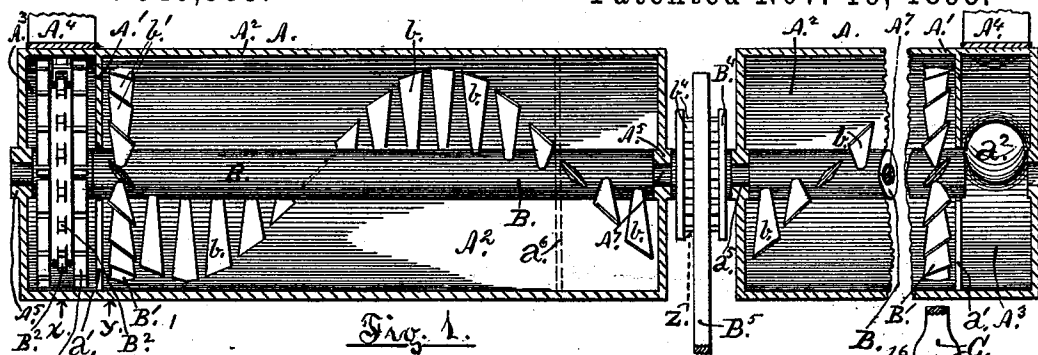


Fig. 1.

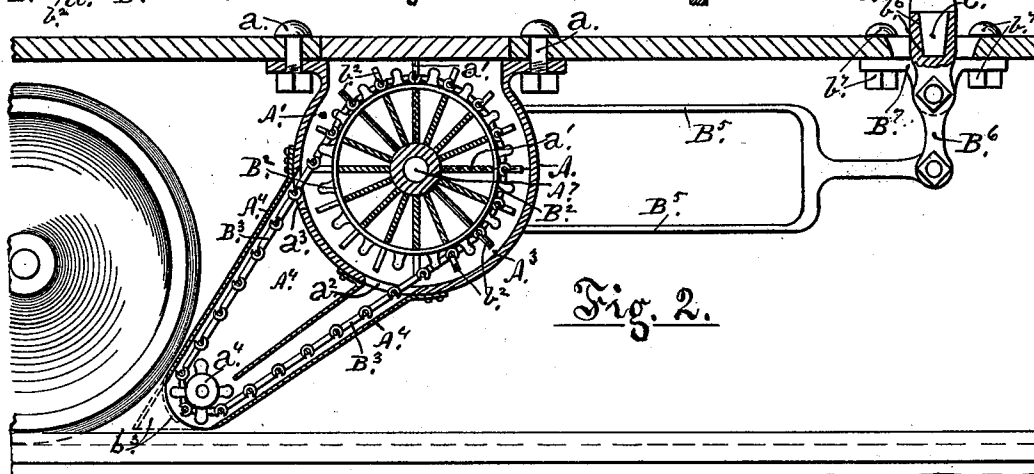


Fig. 2.

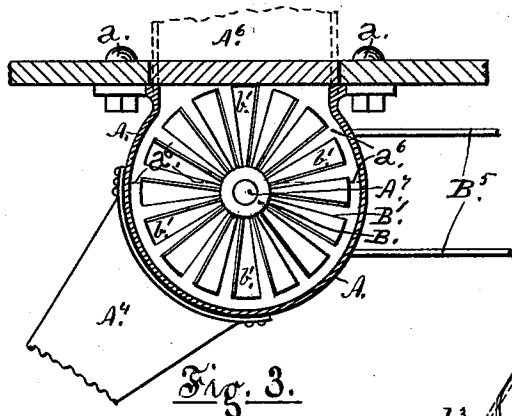


Fig. 3.

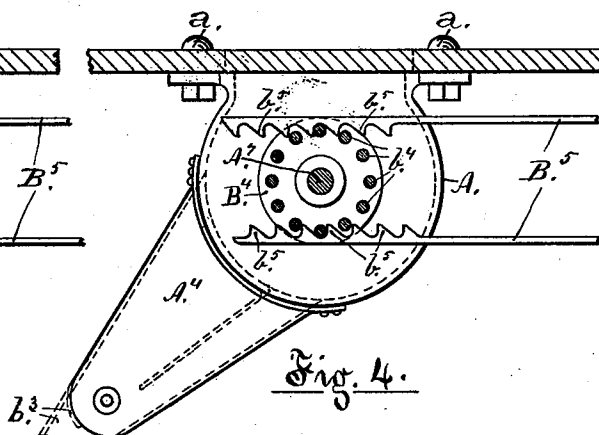


Fig. 4.

Witnesses:

S. Grant Johnston
Frank. G. Urban.

Inventor,

William Westheffer.

By

Dan. H. Herr:
Attorney.

UNITED STATES PATENT OFFICE.

WILLIAM WESTHEFFER, OF LANCASTER, PENNSYLVANIA.

POSITIVE-FEED CAR-TRACK SANDER.

SPECIFICATION forming part of Letters Patent No. 549,985, dated November 19, 1895.

Application filed March 25, 1895. Serial No. 543,031. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM WESTHEFFER, a citizen of the United States, residing at Lancaster, in the county of Lancaster and State of Pennsylvania, have invented certain new and useful Improvements in a Positive-Feed Car-Track Sander; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in a car-track sander of the class adapted to be fixed in position to the body of the car, in which a positive conveyer is used to conduct the sand from the storage-receptacle to the rail tops close to the place where the wheels come in contact therewith, and in which provision is made to prevent the sand from packing or baking in either the receptacle or the conveying tube or duct.

The object of the invention is to provide electric or other motor cars running on street-railway or other rapid-transit tracks with means to carry a supply of sand or other suitable mixture—such as sand and salt, or salt alone, all of which may be either dry or wet—and to positively deliver the required quantity thereof to the required point without stopping said cars, getting off therefrom and dropping it by hand, as was heretofore the case.

Devices for carrying sand provided with agitators, valves, and delivering-tubes have heretofore been applied to the tops of locomotive-boilers for the purpose of conveying sand to the rails near the driving-wheel *a*, and various devices for the same purpose have likewise been applied to electric and other motor-cars; but in none was there a positive feeding device to force the sand, and no provision was had to prevent packing or choking in the delivering-tube.

The elements of the invention separately and collectively appear in the following description, and they will be severally set forth in the claims.

The purposes of the invention are attained by the mechanism and devices illustrated in the accompanying drawings, similar reference-letters designating like parts throughout the several views, in which—

Figure 1 is a plan of a car-track sander embodying the elements of the invention, the casing appearing in central horizontal section with the lower end portions of the delivering chutes or tubes removed and an intermediate portion of the right-hand part, as well as a portion of the operating mechanism, broken away for want of room in the drawing; Fig. 2, a sectional elevation, viewed from the left, of the portion completed, which lies to the right of the point *x* in Fig. 1, secured in position to the under side of the body of a car, with the upper portion of the operating-lever, as well as the near wall of its socket, removed. Figs. 3 and 4 are similar elevations, viewed from the left, of the portions lying, respectively, to the right of the points *y* and *z* in Fig. 1.

Underneath the body of the car, extending crosswise, is a practically cylindrical tubular body *A*, open along the top, and secured in place by bolts *a*, passing through the floor, and side projecting flanges or lugs with the nuts of said bolts screwed home thereon. Within the body *A*, near to the end thereof next to the wheel, is a partition-wall *A'* dividing said body *A* into two compartments, *A*² being the sand-receptacle and *A*³ the delivering-chamber. The partition-wall *A'* is provided with a quadrant cut-out or opening *a'*, leaving a bridge-wall over which the sand is lifted to supply the rails, and the partition-wall prevents the sand from running out when none is needed.

Near the center, through the bottom of the chamber *A*³, is an orifice *a*² for the egress of sand and the downward passage of an endless chain, rope, or cord yet to be described; and through the rear wall thereof, at a prescribed point above said orifice, is a similar orifice *a*³ for the return of said chain, while on the outside of said chamber, inclosing both of said orifices *a*² and *a*³, is secured in any approved manner the upper end of a chute, tube, or duct *A*⁴, which, extending downward to the desired point above the rail and in front of the wheel, has pivoted in its lower end a grooved pulley or sprocket-wheel *a*⁴ to support there the endless chain, and the tube being adapted to house said chain as well as to convey the sand to the required point.

At the centers of the vertical end walls of the body *A* are formed hub-bosses *A*⁵, provided

with axial bores a^5 constituting bearings supporting the shaft ends of the feeding and distributing mechanism yet to be described. Should greater sand-storage capacity be required, a partition-wall a^6 (indicated by dotted lines in Figs. 1 and 3, may also be arranged within the receptacle A^2 , extending across the body thereof and secured in place, while above, extending into the body of the car, may be arranged a hopper A^6 of any approved size and convenient shape, according to the place it will occupy, a portion of which, in elevation, is indicated by dotted lines in Fig. 3.

When it is desired to sand both rails of a car-track at the same time, two such bodies A may be arranged endwise across the body of the car and secured in place with a prescribed interval for rotating mechanism between them, and so as to bring the discharge ends of the delivering-chutes to the desired points in front of the required wheels running on said rails. A shaft A^7 , extending throughout the entire length of both bodies A , is journaled in the respective bearings of each body, as is best shown in Fig. 1.

Upon the shaft A^7 , within each receptacle A^2 , is then placed a tubular sleeve B , and rigidly secured thereto in any approved manner, as by set-screws. (Not shown.) The body of each sleeve is provided throughout its length with pins or wings b , arranged as a worm or screw propeller, which will, on being rotated, prevent the sand from baking or packing within said receptacle and positively feed it along from the inner to the outer end thereof, where a number of such pins or wings are arranged on the sleeve in the form of a paddle-wheel B' , whose blades b' will raise the sand and shed it over the adjacent wall into the delivering-chamber A^3 at said end, from which chamber, through its orifice a^2 and tube, said sand will flow to the required point on the rail top.

Within each delivering-chamber, mounted on and secured to the shaft A^7 , is a sprocket or chain wheel B^2 , which may be provided with wings or blades b^2 to push the sand along out through the orifice a^2 and into its tube or chute. Onto each wheel B^2 , as well as onto the companion lower-end pulley or wheel a^4 , is mounted an endless chain B^3 , which, as the wheel B^2 is rotated, passes down through the tube or chute A^4 , positively keeping said tube or chute open and preventing choking therein. In order that dirt or slush may not readily be thrown into the lower end of the chute, a guard or fender wall b^3 may be placed thereon, as is indicated by dotted lines in Figs. 2 and 4.

Within the delivering-chamber, on the right in Fig. 1, the sprocket-wheel and the chain are omitted, as well as the end of the shaft A^7 , cut away to show the outlet-orifice a^2 in the bottom of said chamber. In the interval between the bodies A , (best shown in Fig. 1,) mounted on and secured to the shaft A^7 , is a cradle-drum B^4 , whose rungs b^4 , in being en-

gaged by pawls or hooks yet to be described, adapt said drum to rotate said shaft when sand is required on the rails. Two parallel rods or bars B^5 , situated in the same vertical plane, have their rear ends applied above and below to the drum to rotate said shaft, both being provided with notches or hooks b^5 (best shown in Fig. 4) to engage the rungs b^4 , the upper ones in pulling and the lower ones in pushing thereon, while the forward ends of said rods are made resilient or yielding and rigidly secured to the extremities of the cross-bar of a T-shaped arm having the foot of its stem pivoted to the lower end of a lever B^6 , centrally pivoted to a hanger B^7 , secured to the body of the car by bolts and nuts b^7 , and at its upper end projecting through an opening in the car-floor provided with a socket b^6 , into which is placed the lower end of a handle or bar C , which is oscillated to and fro to operate the device, and which may be removed from the socket b^6 and conveniently stored when not needed.

Now, the several parts hereinbefore described occupying the several positions indicated in the drawings, and the receptacles A^2 , as well as the hoppers A^6 , carrying a supply of sand, the following observations will be noted: first, that by means of the partition of bridge-walls A' no sand will be in the chamber A^3 and none can run down through the tube or chute to the rail top, notwithstanding the jarring resulting from the motion of the running car, and that there is no valve closing the inlet into said tube or chute, and no sand can be delivered to the rail tops without first being lifted over said bridge-wall into said delivering-chamber; second, that as the lever or bar C is oscillated—moved back and forth on its pivot, as shown in Fig. 2—all the mechanism in connection therewith will be set in motion steadily in the same direction; third, that the fingers or wings b will stir up the sand in the chamber A^2 , preventing it from packing, baking, or arching therein, and said fingers or wings, in being arranged in the form of a screw or worm, will force or move the sand along from the inner to the outer end thereof, crowding it upon the wings or blades of the wheel B' ; fourth, that the wings or blades of said wheel will lift the sand, pressing against the partition-wall A' , over the top of the sleeve B , and, through the opening a' , over the bridge-wall into the chamber A^3 , thence through the orifice a^2 , into the chute a^4 , and out through its lower end onto the rail top, and, fifth, that the wheel B^2 rotating within said chamber will prevent the sand from packing therein, and by reason of the chain B^3 mounted on said wheel, as well as on the pulley a^4 , and by reason of its passage through the chute A^4 , said sand cannot clog or choke said chute, but must positively pass through the outlet end thereof onto the rail top, as is desired.

It will here be observed that the precise arrangements of the said receptacles, as well as

the operating mechanism placed therein and the means provided to rotate the same, as hereinbefore described, and shown in the drawings, may all be changed at pleasure, or to

5 meet the requirements or conditions of the cars on which they are to be used, without materially affecting the character of the invention and without involving any new features. Said receptacles may be placed singly under-
10 neath the bodies of the cars, extending lengthwise thereof, and operated singly; and other rotating mechanism may be used—such as a ratchet-wheel, secured to the shaft A⁷, and revolvable disks, one on each side thereof, provided with oppositely-disposed dogs or pawls,
15 said disks adapted to be oscillated by rods, end-pivoted to the foot of the same lever B⁶ shown in Fig. 2, or said shaft may be steadily rotated in one direction, as by gear or
20 chain wheels operated by a hand-wheel or crank-handle in the body of the car above; all of which devices are old and so well known to those skilled in the art to which they appertain that it was deemed superfluous to give
25 them separate illustration.

Having now described the invention and fully ascertained the manner in which it is performed, what is considered new, and desired to be secured by Letters Patent, is—

30 1. In a car-track sander, a casing having an opening in its top secured to the under side of the body of the car, a sand receiving chamber and a sand delivering chamber with a bridge wall between them within said casing, orifices
35 or openings, through the bottom and a side of said delivering chamber with a downwardly sloping chute inclosing said orifices and having its upper end secured to the outer wall of the delivering chamber, and a pulley pivoted
40 into the lower end of the chute, a sprocket wheel rotatably journaled within said delivering chamber and an endless chain mounted on said sprocket wheel and on said pulley,
45 with mechanism provided to rotate said wheel and chain, all substantially as described and for the purpose hereinbefore set forth.

2. In a car-track sander of the character described, a sand delivering chamber secured to the body of the car with mechanism provided to feed sand into the chamber, open-
50 ings in the bottom and side thereof and a downwardly sloping chute inclosing said openings having its upper end secured to the body of the chamber and a pulley pivoted
55 into the lower end of the chute, a wheel rotatable within said chamber and an endless chain extended through said chute and mounted on

said wheel and pulley, with mechanism provided to rotate said wheel and chain, all substantially as described and for the purpose 60 hereinbefore set forth.

3. In a car-track sander of the character described, a sand receiving chamber secured underneath to the body of the car and having a sand delivering chamber in the forward 65 end thereof with a partition bridge wall between the chambers, a rotatable shaft extended centrally throughout the length of both of said chambers with mechanism provided to rotate the shaft, a feed device comprising fingers or wings secured to said shaft
70 within said receiving chamber, and a winged wheel at the forward end thereof adjacent to said bridge wall, an outlet opening through the wall of the delivering chamber with a
75 downwardly sloping chute inclosing said opening having its upper end secured to the outer wall of the chamber, a pulley pivoted in the lower end of the chute with a wheel secured to the shaft within the delivering
80 chamber and an endless chain within said chute and mounted on both wheel and pulley, all substantially as described and for the purpose hereinbefore set forth.

4. The herein described car-track sander 85 comprising an open-top casing secured to the under side of the bottom of a car, having within a sand receiving chamber and a sand delivering chamber separated by a bridge wall as shown with a storage hopper on the rear-
90 ward end thereof, a rotatable shaft journaled through the center of both of said chambers with mechanism provided to rotate the shaft, a sand propeller as described secured to the shaft within the said receiving chamber with
95 a winged wheel at the forward end thereof adjacent to the said bridge wall, a downwardly sloping chute having its upper end externally secured to the bottom and a side of the delivering chamber with an outlet orifice
100 therein opening into the chute, a chain-wheel within said chamber and secured to the said rotatable shaft, and a pulley pivoted in the lower end of the chute, and an endless chain
105 extended through said chute and mounted onto both the said wheel and pulley, all substantially as and for the purpose hereinbefore set forth.

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

WILLIAM WESTHEFFER.

Witnesses:

PAUL A. HERR,
EDWIN BOOKMYER.