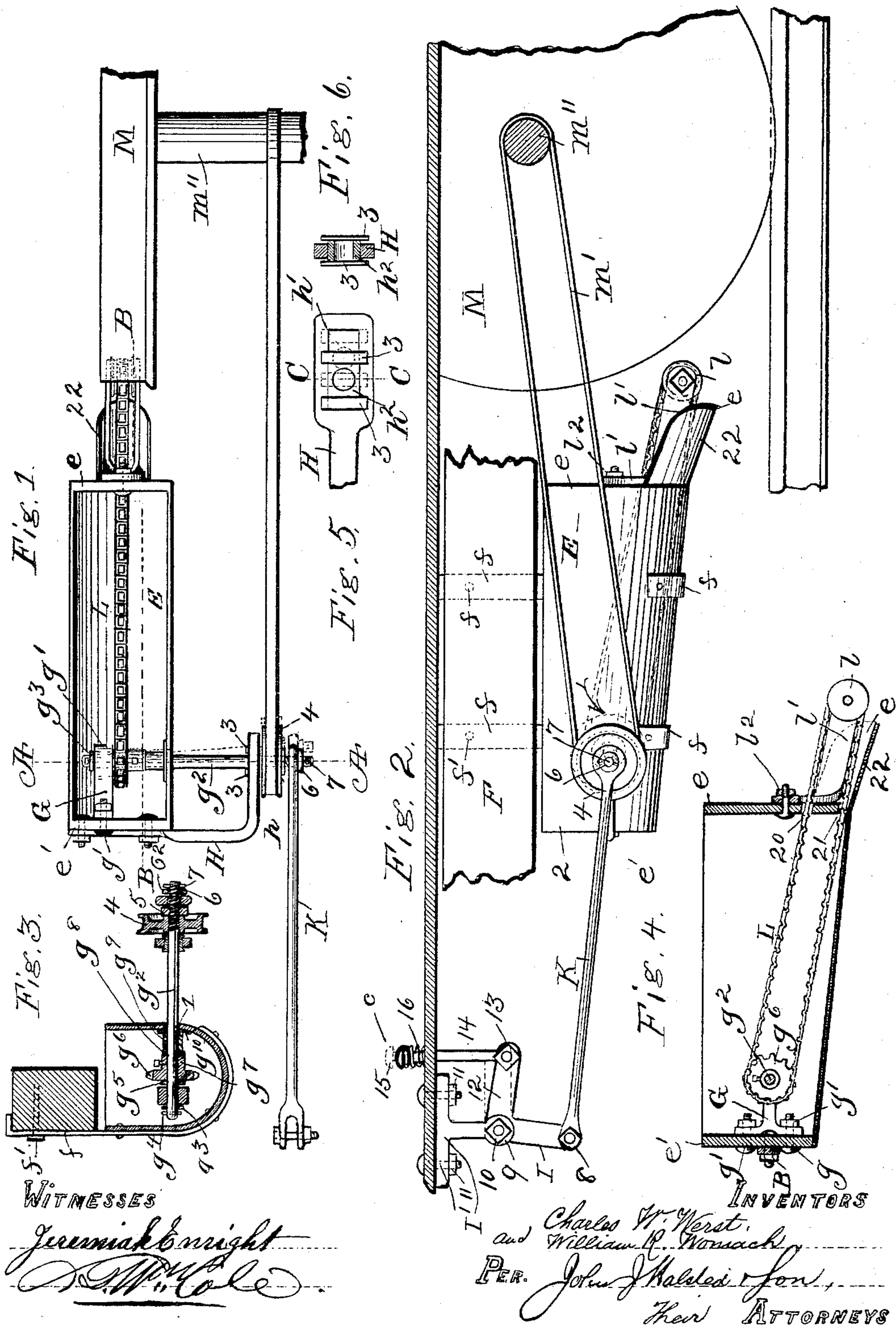


(No Model.)

C. W. WERST & W. R. WOMACH.
SANDING DEVICE FOR STREET CARS.

No. 497,902.

Patented May 23, 1893.



UNITED STATES PATENT OFFICE.

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SANDING DEVICE FOR STREET-CARS.

SPECIFICATION forming part of Letters Patent No. 497,902, dated May 23, 1893.

Application filed February 3, 1893. Serial No. 460,903. (No model.)

To all whom it may concern:

Be it known that we, CHARLES W. WERST and WILLIAM R. WOMACH, of St. Joseph, in the county of Buchanan and State of Missouri, have invented certain new and useful Improvements in Devices for Sanding the Rails of Street-Railways; and we do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters and numerals of reference marked thereon, which form a part of this specification.

Our invention relates to that class of devices for attachment to cars or like vehicles, for the purpose of sanding or roughening the rails of the track, so as to afford a firm hold on the rails for the driving wheels.

The object of our invention is to supply a device which shall at once be strong, durable, cheap and easy of construction, simple in mechanism, and readily and easily applicable to all classes of street or other cars, whether on surface or elevated railway lines, and by whatever power or motor drawn or propelled.

Heretofore, so far as we know, all devices for sanding the rails of street railways have consisted mainly of a box of some form fixed under the platform of cars, with a tube attached to, and suspended from the bottom thereof over the rail to be sanded; and operated generally either by opening a valve in the bottom of said box to let the sand escape by gravity through said tube; or by means of agitating the sand within the box, and causing it to fall through a hole or holes in the bottom thereof through said tube and onto the rail to be sanded. In such devices, the sanding tube is so placed that it will not follow the rail on curves, emptying either on the inside, or outside of the rail, and the sand sometimes becomes choked and clogged from dampness or other causes in the tube or box, and fails to discharge, either from the box or the tube.

The principal object of our invention is to remedy these defects, and we accomplish this by providing a means by which the discharge from the sand box is made directly on the rail and directly in front of, and practically under the forward part of the driving wheels so that

the discharge from said sand box shall maintain automatically the line of the rail to be sanded, as long as the same is maintained by the driving wheel; and at the same time by our mechanism hereinafter described, packing of sand so as to prevent its discharge is impossible.

Our invention consists of various parts and details and combinations of the same, as will be fully described hereinafter, and set forth in the claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar letters and numerals of reference indicate corresponding parts in all of the figures.

Figure 1. illustrates a top plan view of our invention, looking into said sand box from above, and showing the arrangement of the movable shaft: the loose journal; the sprocket wheel and chain, with its bearings; the sand spout; the outer bearing of said movable shaft, with its pulley and operating belt; and the pitman or connecting rod by means of which said belt is thrown in or out of gear. Fig. 2. is a side view of our invention, thrown in gear, and in process of delivering sand; showing the method of attaching the sand box to the floor beams of a car; the action of the operating belt; and the mechanism by which said belt is thrown in or out of action at the will of the operator. Fig. 3. is a sectional view of our improved sand box through the line A. A. of Fig. 1. showing in detail the arrangement of the sprocket wheel with its various connections on the movable shaft: and also the belt pulley, with its connections on the movable shaft: and also the belt pulley, with its connections on the opposite or outer end of said shaft. Fig. 4. is a sectional view of said sand box, through the line B. B. of Fig. 1. showing in detail the sprocket chain, or conveyer, passing over a sprocket wheel on the interior of said sand box, and a bracketed pulley on the exterior thereof. Fig. 5. is a detailed view of the flattened head of the elbow bracket, showing the slide-bearing for the outer end of the movable shaft, together with the outer shoulders holding said slide bearing in place. Fig. 6. is a sectional view through the lines C. C. of Fig. 5.

In the drawings E. is a box, of any suitable

dimensions, of any suitable material, though we prefer to construct it of Russian iron, or sheet steel. The main body of this box is constructed of one piece cut from a sheet and having one end narrower than its other end, so that when said sheet is bent so that the opposite edges thereof are even with each other, the bottom will form a half circle, with perpendicular sides: and when so formed, one end thereof will be deeper than the other end: and when placed in position, the forward end of the bottom of said box is higher than the opposite end (see Fig. 2). The front and rear ends *e. e'* of the box may be constructed of any suitable material, and fastened in any suitable manner. Said box E. is attached to the bottom of a car or other vehicle in the following manner:—F. is a longitudinal beam or sleeper of a car, to which on the outer side thereof, are fastened two straps or hangers *f. f.* by means of set screws *f'*, the upper ends of said straps or hangers being bent inward at a right angle so as to fit over the upper and outward corner of said beam F. The lower ends of said straps or hangers *f. f.* are curved inward, passing under the bottom of said box E. being fastened thereto by means of bolts, and firmly supporting the same. To the forward end of the interior of said box E., is a double footed bracket G. removably attached thereto by means of bolts and nuts *g' g'*. The interior ends of said bracket G. terminates in a journal bearing adapted to receive the end of a horizontal movable shaft *g*². in such manner that the end of said shaft *g*². may fit loosely therein, and that the other or outer end of said shaft may by means of the mechanism hereinafter described be thrown in or out of gear, with the axle of said car. On the inner end of said shaft *g*². is placed a washer *g*³. secured by a key *g*⁴. passing through a hole for that purpose in the end of said shaft *g*². On the inner side of said journal is provided a washer *g*⁵., and a sprocket wheel *g*⁶ provided with a hub *g*⁷., and set screws by means of which said sprocket wheel is attached to said shaft *g*². On the outside of said hub *g*⁷. is provided another washer *g*⁸. held in place by a rubber sleeve *g*⁹. around said shaft, which, in turn, bears against another washer *g*¹⁰. which protects said sleeve from abrasion against the inner face of the box E. All of these washers above described may be of any suitable material, though we prefer to construct them of metal. Said shaft *g*². passes through the inner side of said box through a slotted opening *l*. for that purpose provided and the washer *g*¹⁰. above described, not only protects the end of the sleeve *g*⁹. but also serves to prevent sand escaping through said shaft opening *l*. Across the front end of said box E., at right angles to the axis thereof, and parallel with the normal position of said shaft *g*². is firmly attached by bolts and nuts, a bracket H, the free end of which projects beyond the corner of said box E., and then

forms an elbow, the outer arm *h*. of which is parallel with the axis of said box E. The outer or free end of said bracket H. is flattened (see Fig. 5.) and a slotted opening *h*. is provided therein of sufficient length to permit the throwing in and out of gear of the horizontal movable shaft *g*². hereinbefore described: the object of said bracket H. being to afford a firm support and bearing to the outer end of said horizontal shaft *g*². On the interior of said slotted opening *h'* is provided a slide *h*². fitting easily therein adapted to move from one end to the other of said slotted opening *h'*. as occasion may require. A circular opening is provided in the center of said slide *h*² fitting easily therein, adapted to move from one end to the other of said slotted opening *h'*. as occasion may require. A circular opening is provided in the center of said slide *h*². as a bearing for the outer end of said horizontal shaft *g*². On each side of said slide *h*². are provided and fixedly attached to wings or shoulders, 3 projecting above and below said slotted opening *h'*. and serving to hold said slide in place. The outer end of said horizontal shaft *g*². terminates in a thread, and to said outer end is threaded on a grooved pulley 4. On the outer side of said pulley is provided a washer 5. Outside of said washer the extreme of said horizontal shaft is passed through one end of a pitman or connecting rod K., by an opening for that purpose, and additionally secured by a washer C. and key 7.

The other end of pitman K. is bifurcated and pivotally connected at the point 8. in Fig. 2., by means of openings bolt and nut, with the lower or vertical arm of a right angled lever I. The arms of this lever I. are of equal length and are pivoted at their point of junction 9. by means of a bolt, and nut 10 with the head of the bracket or hanger I'. which is removably attached to the under surface of the bottom of the car by means of bolts and lock nuts 11. passing through openings made therefor in the foot of said bracket or hanger, and through the floor of said car. The horizontal arm 12. of said lever is pivotally attached at its extreme end by means of bolt and lock nut 13. to a vertical treadle rod or bar 14. which passes up through an opening made therefor in the floor of the platform of the car and terminates in a head or treadle 15. A coiled spring 16. is applied so that its lower end is loosely attached around the said treadle bar, and above the upper surface of the platform, in such manner that the lower part of the coil shall rest upon the upper surface of the platform and the upper end of the coil shall bear against the under surface of the head of said treadle bar, said coiled spring serving to hold up said treadle bar and maintain the vertical arm of lever I. in its normal position. From this arrangement it will be seen that whenever the treadle bar is pressed down, the arm 12. is depressed, and the vertical arm of said

lever thrown forward carrying with it the pitman or connecting rod K, which in turn being connected with the outer end of the horizontal shaft g^2 , pulls the same forward, and with it the slide h^2 , in such manner as to bring said horizontal shaft g^2 to a position perpendicular to the bracket G, and that when the pressure is taken off said treadle bar 14, the same is thrown up by the coiled spring 16, carrying with it the horizontal arm of the lever I, and throwing back the vertical arm thereof, thereby reversing the action above described upon the horizontal shaft g^2 , through the connecting rod or pitman K.

15 An endless sprocket chain, or conveyer L passes over, and is operated by the sprocket wheel g^6 , in the box F. From said wheel g^6 , said conveyer is carried through two openings made in the lower end e , of the box E, and passes over and is supported by a pulley 7, which is pivoted at the end of the arms of the bifurcated bracket l' , which is removably attached by a bolt and lock nut 12, to the outer side of the lower end of the box; said 25 bracket projecting in a line parallel with the bottom of said box so as to form a support and bearings for a said sprocket chain L. Openings 20 and 21 in the lower end of the box, are disposed so as to allow free egress 30 and ingress to the sprocket chain or conveyer, through the lower end of box E.; and the opening 21 is placed on a level with the bottom of the box, because it is through this opening that the sand is ejected or carried by the conveyer L, when the same is put in operation.

We make these openings 20 and 21 of just sufficient dimensions to admit of the passage of the chain or conveyer L, so as to prevent the escape of sand when the mechanism is 40 not in operation. A spout 22, is provided, fixedly attached to the bottom of the rear end of said box E, extending backward therefrom and downward so as to discharge sand from said box directly upon the rails to be sanded.

45 M. represents a driving wheel of the car or vehicle, and m'' represents the axle of said driving wheel M. m' represents a belt, which may be of any suitable material, but preferably of rubber cloth or leather;—one end of which passes over the grooved pulley 4, on the horizontal shaft g^2 , and the other end thereof over the axle m'' of the car wheel M. It will be seen from Fig. 1, that the box E, and the sand spout 22, are located directly in 55 front of the driving wheel M. and in such manner that when sand is discharged from said box through spout 22, it falls upon the track directly under the forward part of said driving wheel M.

60 Having described the mechanism of our invention, we will now describe its mode of operation.

When the mechanism above described is not in action, the coiled spring 16 holds up the treadle bar 14, and the two armed lever I, and the grooved pulley 4, are in the positions as shown by dotted lines in Fig. 2., and the hori-

zontal shaft g^2 , is held in the position as shown by dotted lines in Fig. 1. There is no tension upon the belt m' , and the mechanism 70 is at rest. In this position, the slide h^2 , is thrown to the rear end of the slotted opening h' in the flattened head of the bracket H, and rests in position as shown by the dotted lines in Fig. 5, consequently the belt m' is loose and 75 therefore not actuated or driven by the axle m'' . When it is desired to discharge sand from the box, the driver from the advancing car contracts the coiled spring 16, by pressure upon the head 15, of the treadle bar 14, there- 80 by throwing down the horizontal bar 12, of the two armed lever I, throwing forward the vertical arm of said lever, and by means of the pitman or connecting rod K, draws forward the slide h^2 , to the forward end of said 85 slotted opening h' , thereby bringing the horizontal shaft g^2 , perpendicular or at right angles to the axis of box E, and bringing into tension the belt m' , thereby connecting the grooved pulley 4, with the axle m'' . The frictional 90 action of this axle on the belt m' through the grooved pulley 4, then causes the horizontal shaft g^2 , to revolve, which by means of the sprocket wheel g^6 , causes a corresponding action of the sprocket chain or conveyer L, 95 which acting upon the sand in said box, carries the said sand out through the bottom opening 21, in the rear end of said box, and discharges the same from the spout 22, in front of, and under the driving wheel M, upon the rail to 100 be sanded. When it is desired to stop the delivery of sand the pressure upon said coiled spring 16, is released, thereby throwing up the treadle bar 14, and relieving the belt m' of its tension and restoring the shaft g^2 to its 105 normal position, as shown in dotted lines in Fig. 1. The bottom of box E, is made semi-circular as shown in Fig. 3, so that no sand may adhere to the sides or corners thereof; but the mass of sand on both sides of said 110 conveyer L, must by gravity, have a tendency to converge toward the center of the bottom of said box.

What we claim is—

1. A track-sanding device for railways, comprising in combination the following elements, namely; a sand-box adapted for discharging sand on the rail just forward of the car wheel or wheels, an endless conveyer to deliver the sand from said box, a swing shaft 115 for actuating such conveyer, an endless driving belt from the car axle to said shaft and serving to operate it and the conveyer, a foot piece and intermediate connections to the shaft for tightening the belt, to operate the 120 conveyer, and a reacting spring to loosen the belt and arrest the delivery of sand, all substantially as set forth.

2. In a box for sanding or roughening the rails of a street or other railway, the combination of the box E, having a semi-circular 130 bottom inclined rearward; the bracket secured to the inner side of its forward end and provided with a journal bearing; the horizon-

tal shaft g^2 , washers g^3 and g^5 , the slotted opening in one side of said box; its sprocket wheel, the rubber sleeve g^9 , and its end washers; the bracket l' on the outside of the lower end of the box, a pulley supported by said bracket, the sprocket chain or conveyer passing over said pulley through holes 20, 21, in the lower end of the box, and over said sprocket wheel; and a spout attached to the bottom of the box, and adapted to discharge sand or other roughening material in front of and under the driving wheel of a car; and a means for operating said mechanism, substantially as and for the purpose described.

3. In a box for sanding or roughening rails of street or other railways; the combination of the box E, the bracket G. on the interior thereof; the sprocket wheel g^6 , the washers and sleeve g^9 , the two armed bracket l' , the pulley l , the horizontal shaft g^2 , the bracket H. having a flattened head and a slotted opening h' , the slide h^2 , serving as a bearing for the outer end of the shaft g^2 , the shoulders

3. holding said slide in place, the grooved pulley 4, and the belt m' , substantially as and for the purposes described. 25

4. In a sand box for sanding or roughening rails of street or other railways, in combination, the box E, the journal bracket G, the horizontal shaft g^2 , sprocket wheel g^6 , sprocket chain L, in connection with the two armed bracket l' and pulley l , the bracket H, having the slotted opening h' , the slide journal h^2 , with its shoulders h^3 , the pulley 4, and the belt m' , in connection with the pitman or connecting rod K, the hanger I' , the two-armed lever I, pivoted thereto, and the treadle bar 14, its head 15, and the coiled spring 16, substantially as and for the purposes described. 30 35

In witness whereof we have hereunto set our hands this 21st day of January, A. D. 1893. 40

CHAS. W. WERST.

WILLIAM R. WOMACH.

Witnesses:

NAE MAYES,

M. I. HUMISTON.