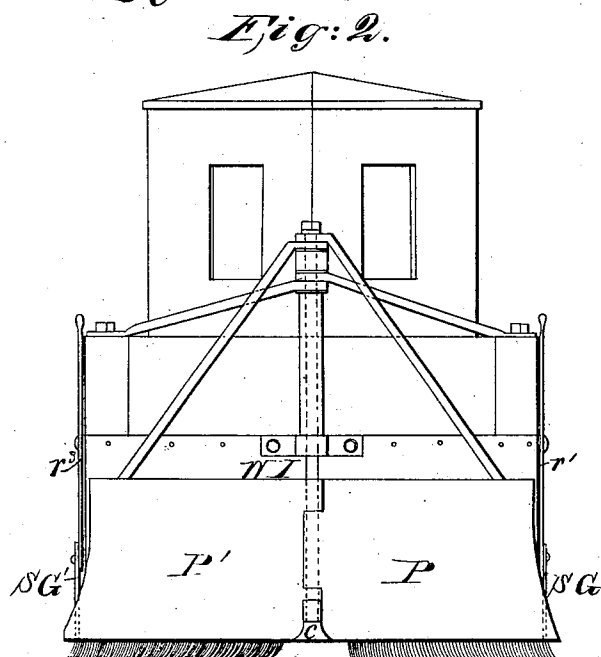
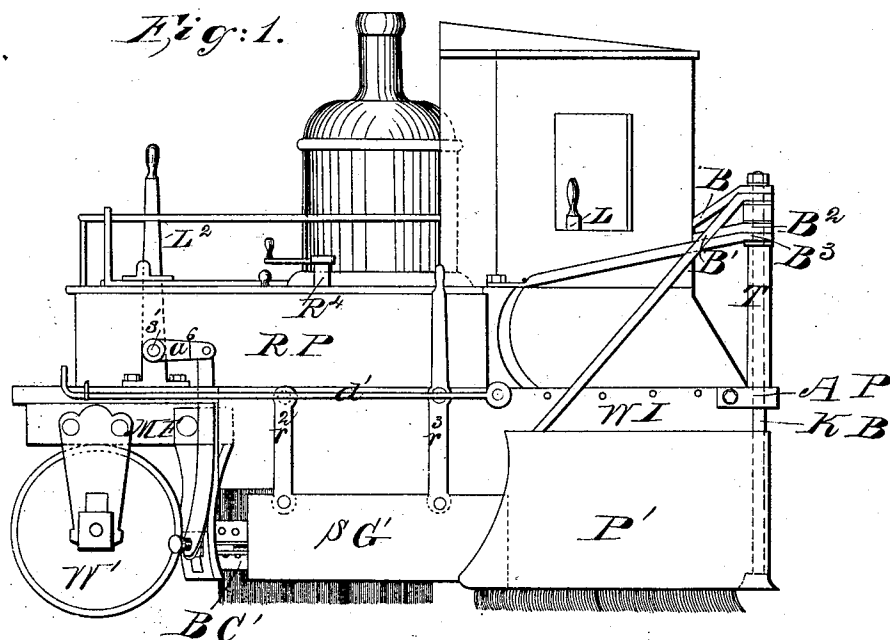


R. A. SMITH.
Railroad Track Cleaner.

No. 79,606.

Patented July 7, 1868.



Witnesses:
Charles H. Evans
Thos. R. Bedford.

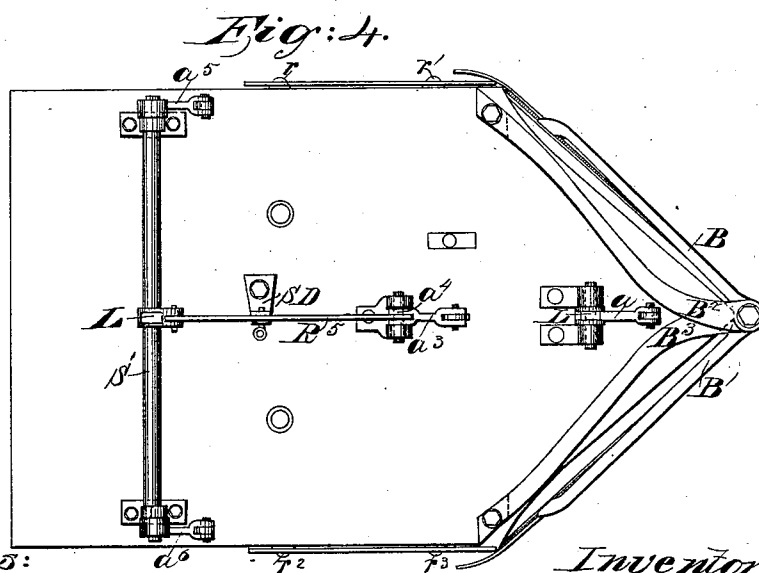
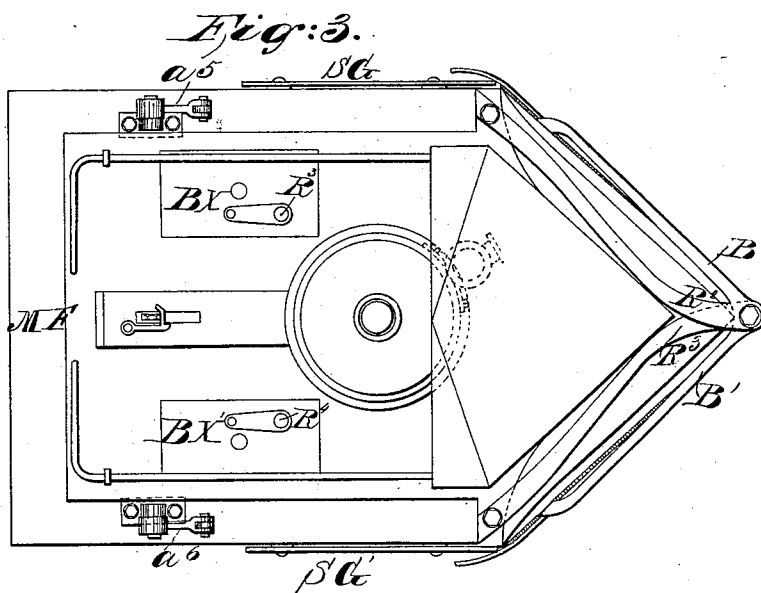
Inventor
Robert A. Smith

R. A. SMITH.
Railroad Track Cleaner.

4 Sheets—Sheet 2.

No. 79,606.

Patented July 7, 1868.



Witnesses:
Charles H. Brown
James R. Clarkford

Inventor:
Robert A. Smith

R. A. SMITH.

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Fig: 7.

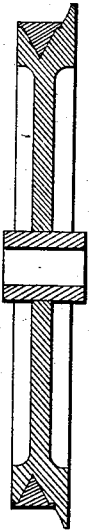


Fig: 9.

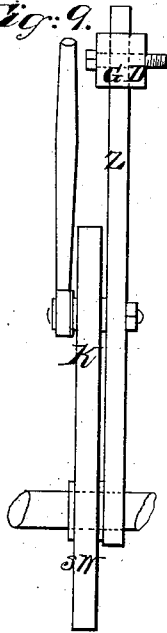


Fig: 8.

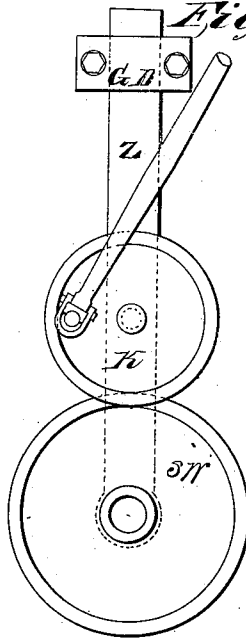


Fig: 10. Fig: 11.

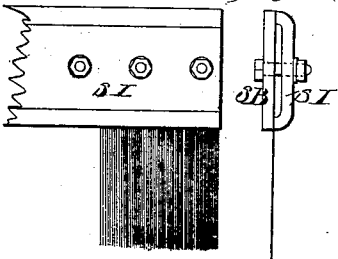


Fig: 14.

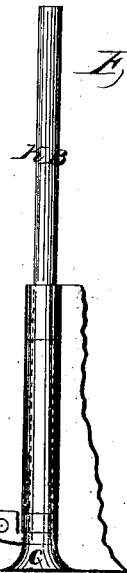
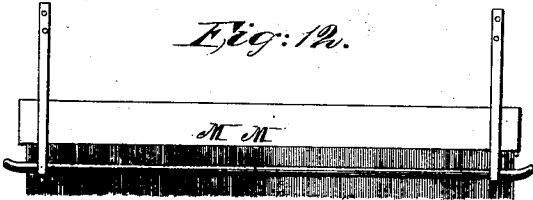


Fig: 13.



Fig: 12.



Witnesses:

Charles H. Lewis
Jesse P. Cofford.

Inventor:

Robert A. Smith

UNITED STATES PATENT OFFICE.

ROBERT A. SMITH, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVED RAILROAD-TRACK CLEARER.

Specification forming part of Letters Patent No. 79,606, dated July 7, 1868.

To all whom it may concern:

Be it known that I, ROBERT A. SMITH, of the city of Philadelphia, county of Philadelphia, and State of Pennsylvania, have invented a new and useful Improvement in Railroad-Track Cleaners; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Plate 1, Figure 1 is a side elevation of my machine with the combination of a locomotive and tender. Plate 1, Fig. 2 is a front elevation of same. Plate 2, Fig. 3 is a top view of same. Plate 2, Fig. 4 is a top view of my machine with the locomotive and tender combination removed. Plate 3, Fig. 5 is a side elevation of same with one side of the snow-plow extended. Plate 3, Fig. 6 is a bottom plan of my machine, this view being the same either with or without the combination of the locomotive and tender. Plate 4, Fig. 7 is a vertical section of one of the car-wheels. Plate 4, Figs. 8 and 9 are detached views of the pinion-guide used in connection with the engine. Plate 4, Figs. 10 and 11 are views showing the manner of fastening the broom-beard to the revolving cylinders. Plate 4, Figs. 12 and 13 are views of the springs used for keeping the brooms on the plow in their proper position. Plate 4, Fig. 14 is a detached view of the king-bolt and cone, the first named being used for raising and lowering the plow and the latter for giving it the proper mold.

This invention is intended to clean railroad-tracks of snow, ice, &c., and embraces in it several parts used in the machines for sweeping streets, patented by me September 9, 1856, and April 10, 1860.

For accomplishing this purpose my invention consists, first, in an adjustable main plow for the purpose of throwing the snow, dirt, or ice to the right and left by one operation, or to throw it entirely to the right or to the left, as occasion may require; secondly, in arranging a king-bolt with a cone on its foot for the purpose of operating and giving more or less mold to the plow; thirdly, in arranging on the lower end of the plow and on the inner side a series of brooms with a forward inclination of the beard, for the purpose as will be

hereinafter described; fourthly, in arranging springs in the rear of the brooms, so as to keep the broom-beard constantly in position; fifthly, in applying to the axle a pinion-standard with the upper end passing through and kept in position by guides, so as to conform to the springs of the car; sixthly, in a peculiar device for fastening the broom-beard to the revolving broom-cylinders; seventhly, in arranging a fender or side guard to prevent snow, dirt, or ice from being thrown by the revolving brooms on the opposite track or on sidewalks or passing vehicles; eighthly, in arranging the machine so as to combine with it a locomotive and tender, as will be hereinafter described.

To enable others skilled in the art to make and use my invention, I will now proceed to describe its construction and operation.

MF represent the main framing of the machine with its front part extending out to a point. Said frame is mounted on four flanged wheels, W, W', W², and W³, and axles A and A'. The face or tread of the wheels W² and W³ are made with a V-shaped groove, as shown in Fig. 7, in which is placed a gum band for the purpose of giving more adhesion, and preventing slipping on the rails.

On the front, and directly at the point of the framing MF, is placed a main or king bolt, KB, Figs. 5 and 14, which extends below and above the top of the framing. The part of the bolt which extends above passes through a tube, T. The bottom of said tube rests on an angular plate, AP, which serves as a bearing, and acts as a tie at that particular angle of the frame. The part of the king-bolt KB which extends below the top of the framing has on its end a cone, C, for the purpose of giving more or less cutting-surface or mold to the plow.

The plow consists of two parts, P and P', which are secured and swing on the king-bolt KB by means of hinged joints, as shown in Fig. 5.

On top of the cone C, and encircling the king-bolt, is a bracket, CB, with its end which projects from the bolt made open. The hinged joints of the parts P and P' rest and work on the circular part of the bracket CB, which encircles the king-bolt.

Secured to the inner side, and near the outer ends of parts P and P', are two arms or

braces, B and B', the opposite ends of which extend up and encircle the upper part of the king-bolt. These braces are for the purpose of preventing the parts P and P' from sagging down when they are extended. The king-bolt is kept steady and in a vertical position by means of braces B² and B³, running from the upper part and fastened to standards on the sides of the framing MF.

Immediately in the rear of the axle A', and running partially across the bottom of the framing MF, is shaft S, having its bearings secured to the frame.

Attached to the shaft S are three braces, B⁴, B⁵, and B⁶, which extend to and are secured to the open part of bracket CB by means of a bolt or pin, b. Braces B⁴, B⁵, and B⁶ keep the lower part of the king-bolt in a rigid position, and prevent it from being forced back.

Connected to bracket CB by means of pin b is a rod, R, the part of said rod which connects with the bracket being formed with an open jaw, and the opposite end passes up through the framing, where it connects to arm a, said arm having its bearing connected to the top of the framing.

Connected and at right angles to the arm a is a lever and handle, L.

Placed on the inside of P and P', and secured by brackets, are round guides G and G', on which work circular slides D and D'. On the sides of said slides are formed projections, which fit on the jaws of the rods R' and R². Passing through the jaws and projections are bolts, for the purpose of holding them together and allowing a freedom of motion. The opposite ends of the rods R' and R² are attached to revolving standards RS and RS', placed on the end of the racks K and K'. Said racks work in guides secured to the bottom of the framing, and are operated by means of pinions p and p'. Connected to these pinions, and passing up through the top of the framing, are rods R³ and R⁴, which are provided with cranks at their upper ends for the purpose of operating the pinions.

Placed on and near the center of the axle A' are two beveled-gear wheels, BW and BW'. On the outer side of said wheels, and connected to axle A' by means of straps, are two arms, a and a², which diverge to and are connected in the center at the point O.

Underneath, and running diagonally with the framing MF, are placed two broom-cylinders, BC and BC', one end of the shafts of which pass through arms a' and a², and have on their ends bevel-pinions BP and BP', which gear into wheels BW and BW', and the opposite ends work in curve guides secured to the sides of the framing.

Attached to the arms a' and a², at point O, is a lever, L', which passes up through the center of the framing and connects with the arm a³, which has its bearing secured to the top of the framing.

Connected with the arm a³, and at right angles to it, is an arm, a⁴.

On top and at the rear of the framing, and running entirely across it, is a shaft, S', said shaft having on its ends arms a⁵ and a⁶, and having its bearings placed on the inner side of the arms. The ends of the shafts of the broom-cylinders which work in the curved guides are connected to arms a⁵ and a⁶.

On the center of the shaft S' is secured a lever, L². Said lever connects arm a⁴ by means of flat rod R⁵.

Between lever L² and arm a⁴ is a standard, SD, made with an open jaw at the upper end, through which rod R⁵ passes, a small opening in standard SD and a series of corresponding openings in rod R⁵ for the purpose of inserting a pin and keeping the broom-cylinders at any desired position.

In order to impart more strength and stiffness to the parts P or P', (which form the plow,) which ever should happen to be extended, I apply two long rods, d and d', one end being pivoted to the sides of the framing MF and the other end hooked into an eye on the part of the braces B and B' which are attached to the parts P and P'. Should either of the parts P and P' not be extended, the rods d and d' are thrown back out of the way.

Passing around the point of the framing M F, and extending back on the sides as far as the curved guides, is secured a wrought-iron fender, WI.

On the sides of the framing, and directly in front of the throw of the brooms on the revolving cylinders BC and BC', are hung, by means of rods r, r', r², and r³, side guards, SG and SG'. The rods r and r' are made slightly longer in order to give leverage to raise or depress the guards.

On the lower part and back of the parts PP', and extending their whole length, is secured a row of brooms M M, the beards of which project slightly below the cutting or lower edge. These brooms have a forward inclination, in which position they are maintained by means of strong springs S, arranged as shown in Fig. 13. Brooms M M, from their elastic tendency, throw the snow up from between stones, grooves, or rails, &c., and the snow so released is caught upon the blade of the parts P and P' and carried to the sides.

The broom-cylinders BC and BC', Figs. 1, 5, and 6, and detached views, Figs. 10 and 11, consist of two or more spindles fastened to the broom-shaft. To the arms of said spindles are fastened a stay-board, SB, made of wood or light metal. The beards of the brooms are kept firmly in place by a hollow strap of iron, SI, bolted through the center to the stay-board. In case of heavy ice on the track, I substitute and secure in the same manner as the brooms a series of steel or iron picks.

In the above description of my invention I allude to it constructed as shown in Figs. 4 and 5, and when in this form it is operated by being placed in advance of the locomotive and pushed ahead, or horses attached and pulled from the front part.

Figs. 1, 2, and 3 show the machine constructed as an independent steam-car, and combines a locomotive and tender. I construct on the framing MF a raised platform, RP, the front of which is formed as a mold-board, so as to act as an independent plow when running into deep drifts. The boiler and engine are placed directly over the front axle, A', and the fuel and water stored in boxes B^x and B^y. The engine-house is placed as shown in Figs. 1 and 2. Motion is given to the wheels W² and W³ from the engine by means of the crank-pinion K and spur-wheel SW, as shown in Figs. 5 and 6 and detached views Figs. 8 and 9. The crank-pinion is geared to the spur-wheel by a standard, Z, resting on and through which the axle A' revolves. The upper end of the standard Z is kept in position by means of guides G D, fastened to the bottom of the framing. By this arrangement the standard Z is allowed to move up and down in conformity to the car-springs, and the crank-pinion and spur-wheel are kept constantly in gear.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination of an adjustable main plow, composed of parts P and P' and the mechanism for operating the same, so that the snow, dirt, or ice can be thrown to the right and left by one operation, or thrown entirely to the right or to the left, as occasion may require.

2. The king-bolt KB and cone C, arranged substantially in the manner and for the purpose specified.

3. Arranging on the foot and back of the parts P and P', constructed and operating as described, a series of brooms, M M, with a forward inclination of the beard, for the purpose specified.

4. In combination with the brooms M M, arranged as set forth, the application of the springs S, for the purpose of keeping the broom-beard in position.

5. The arrangement of the standard Z and guides G D, substantially in the manner and for the purpose set forth.

6. The mode of fastening the broom-beard to the stay-board SB of the broom-cylinder, by means of a continuous hollow strap, SI, as described.

7. The side guards, SG and SG', with their rods r, r', r'', and r''', for the purpose as described and represented.

8. The within railroad-track cleaner, composed of the above-described parts, all combined, constructed, and operating in the manner and for the purpose specified.

ROBERT A. SMITH.

Witnesses:

CHARLES H. EVANS,
ISAAC R. OAKFORD.