(No Model.)

N. H. BRUCE.

APPARATUS FOR REMOVING SNOW AND ICE FROM RAILWAY TRACKS.

No. 457,702. Patented Aug. 11, 1891.

Fig. 1.

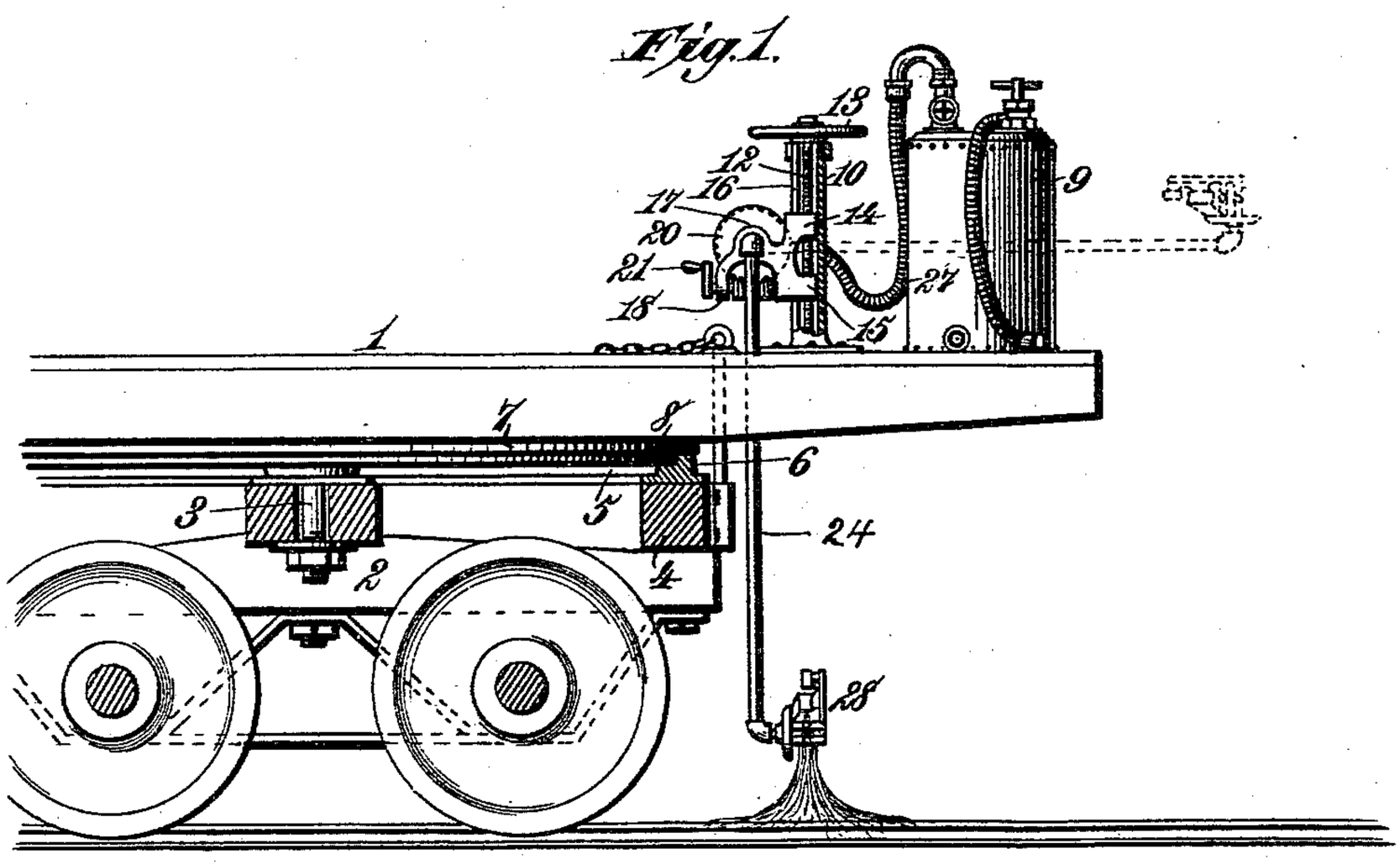
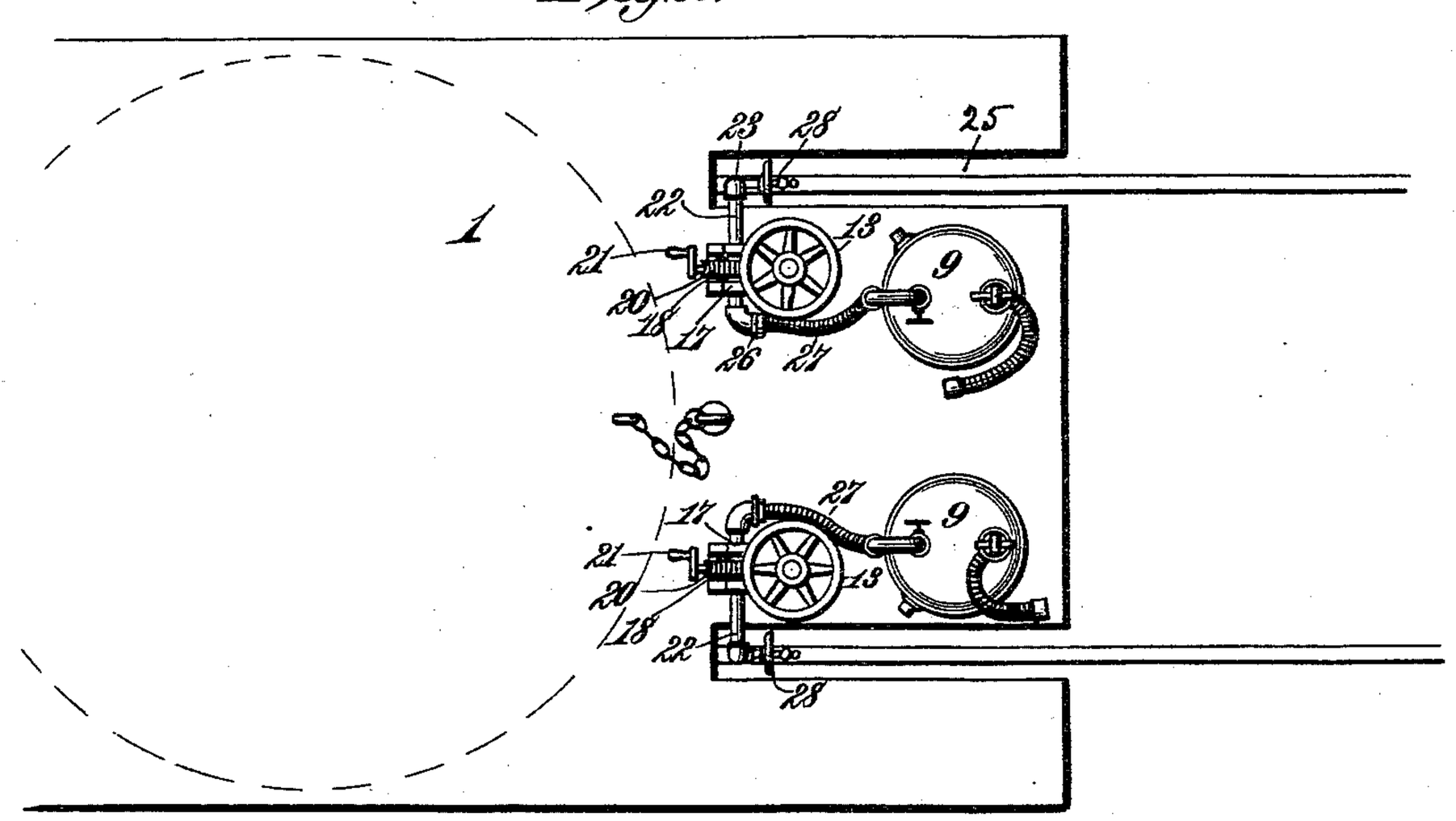


Fig. 2.



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UNITED STATES PATENT OFFICE.

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APPARATUS FOR REMOVING SNOW AND ICE FROM RAILWAY-TRACKS.

SPECIFICATION forming part of Letters Patent No. 457,702, dated August 11, 1891.

Application filed November 6, 1890. Serial No. 370,455. (No model.)

To all whom it may concern:

Be it known that I, NORMAN H. BRUCE, a citizen of the United States, residing at Waterford, in the county of Saratoga and State of New York, have invented new and useful Improvements in Apparatus for Removing Snow and Ice from Railway-Tracks, of which the following is a specification.

My invention relates to apparatus for removing snow and ice from railway-tracks, and especially from the tracks of street-railways.

It is the purpose of my invention to provide a comparatively simple mechanism carried by a platform pivotally mounted upon a truck-frame in such manner that it may be turned to run in the opposite direction without reversing the truck.

It is my further purpose to provide an apparatus whereby a jet of flame may be projected downward directly upon each rail somewhat in advance of the wheels of the truck, the burners by which the flame is produced being capable of vertical adjustment in a rectilinear path while suspended bodily below the car-truck frame, and also capable of swinging in a vertical plane on a swiveled connection with the fluid-supply pipe for placing the burner-carrying pipe in a perpendicular, horizontal, or intermediate position.

It is my further purpose to combine with the brackets or carriages supporting the adjustable pipes simple and easily-operated means whereby the pipes may be turned or swung upward into a horizontal position or into any desired position between the vertical and horizontal when the apparatus is not in use, and thereafter lowered into operative position at any moment.

It is my purpose, finally, to combine with the pipes and burners reservoirs capable of containing any suitable hydrocarbon oil under atmospheric pressure, whereby the oil is fed to the burners in such volume as may be required.

My invention consists, to these ends, in the several novel features of construction and new combinations of parts hereinafter fully set forth, and then definitely pointed out in the claims which follow this specification.

To enable others skilled in the art to understand and practice my said invention, I will proceed to describe the same in detail, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation, partly in section, showing my invention, part of the car-platform only being shown. Fig. 2 is a plan view of the parts shown in Fig. 1.

In the said drawings, the reference-numeral 1 designates the platform upon which the apparatus is mounted. This platform is mounted upon a truck 2 by means of a central or substantially central pivot 3, and upon the truck-frame are bolted or otherwise secured beams 4, which support a circular metallic plate 5, having a rib 6.

To the under surface of the car-platform 1 is secured a metallic plate 7, having a circular shoulder 8, outside of which lies the rib 6, forming a substantial support for the platform, and at the same time centering it and avoiding lateral strain upon the pivot-pin, whereby the platform may readily be turned end for end.

Upon the platform A, at or near one end thereof, I arrange the oil-reservoirs 9, of which I preferably use two, though I may employ one only. These reservoirs are composed of metal cylinders capable of sustaining a suitable degree of interior atmospheric pressure. Being constructed in accordance with any well-known preferred form, they require no specific description. Mounted upon the platform at any suitable point, but preferably somewhat in the rear of the oil-reservoirs 9, are vertical cylinders 10, within each of which is swiveled a threaded shaft 12, having at its upper end a hand-wheel 13, by which the shaft may be rotated in either direction. Upon each threaded shaft is mounted a bracket or carriage 14, having two widely-separated sleeves or nuts 15, with which the screw-shaft engages, whereby an extended base of support is given to the bracket. The sleeves or nuts 15 upon each bracket form part of a plate which lies and is movable in a vertical slot 16 in the cylinder 10, and immediately outside the slot the bracket is provided with two vertical supports 17, having substantially the form of an inverted U. The outer ends

of these parallel supports are connected by a cross-bar 18, which forms the bearing for one end of a worm-shaft, the other end being journaled in the solid portion of the bracket from which the parallel portions 17 spring. A worm-gear 20, meshing with the worm-shaft, is journaled in the upper central portion of the supports 17 and lies between the latter, its axis being transverse to the platform. The worm-gearing is revolved by a crank 21 upon the outer end of the worm-shaft. The construction set forth is the same in each of the two independent mechanisms shown in Fig. 2. Through the axis of each worm-gear, and rigidly connected therewith, passes a metallic fluid-supply pipe 22, having elbow-couplings at each end. To one of these couplings 23 is connected a burner-carrying pipe 24, which passes downward through a longitudinal slot 25 in the car-platform, said slot being cut longitudinally through the platform to the end thereof. The other coupling 26 is connected by a flexible pipe or tube 27 to the adjacent oil-reservoir in any preferred manner. Upon the lower end of each pipe 24 is mounted a burner 28, of any preferred type, whereby the oil may be either vaporized or sprayed and burned, the flame being directed downward upon the rail.

By means of the construction and arrangement described the pipes 24 may have vertical adjustment to locate the burner properly with relation to the rail, the depth of snow, or other circumstances, the flexible connections between the oil-reservoirs and said pipes permitting such adjustment. When the apparatus is not in use or whenever circumstances may require, either or both of the pipes 24 may be swung up into the position shown in Fig. 1 by dotted lines or into any intermediate position. This is accomplished by simply operating the worm-gearing, its pitch being such that it will securely hold the pipes at any point to which they may be adjusted.

In practice a suitable quantity of air is pumped into the oil-reservoirs to produce the requisite oil-feed.

What I claim is—

1. In a track-cleaning apparatus, the combination, with a car-truck, of a reservoir carried thereby for containing the combustible fluid, a fluid-supply pipe communicating with the reservoir, a burner-carrying pipe provided with a burner and having a jointed or swiveled connection with the fluid-supply pipe to swing thereupon in a vertical plane for placing the burner-carrying pipe perpendicular with the burner below the truck-platform, and means for swinging the burner-carrying pipe and adjusting the fluid-supply pipe vertically in a rectilinear path, substantially as described.

2. In a track-cleaning apparatus, the combination, with a car-truck and a reservoir thereupon for the combustible fluid, of a fluid-supply pipe communicating with the reservoir and a burner-carrying pipe jointed or swiveled to the fluid-supply pipe to turn thereupon as a center for swinging the burner in a vertical plane from a position below the truck-platform to a position above such platform, substantially as described.

3. In a track-cleaning apparatus, the combination, with one or more oil-reservoirs, of independent pipes connected therewith and having suitable burners, vertically-adjustable carriages or brackets, supporting-gears journaled therein and having said pipes axially and rigidly attached thereto, and means for actuating said gears, whereby the pipes may be swung in the arc of a circle, substantially as described.

4. In a track-cleaning apparatus, the combination of a car-truck having a longitudinally-slotted platform, a reservoir for containing the combustible fluid, a fluid-supply pipe communicating with the reservoir, and a burner-carrying pipe jointed or swiveled to the fluid-supply pipe and turning thereupon as a center to swing the burner-carrying pipe in a vertical plane through the slot in the platform, substantially as described.

5. In a track-cleaning apparatus, the combination of a car-truck having a longitudinally-slotted platform, a reservoir for containing the combustible fluid, a vertically-adjustable fluid-supply pipe communicating with the reservoir, and a burner-carrying pipe jointed or swiveled to the vertically-adjustable fluid-supply pipe to swing thereupon in a vertical plane through the slot in the truck-platform to place the burner below or above the latter, substantially as described.

6. A track-cleaning apparatus consisting of a car-truck having a rotating platform provided at one end with a reservoir for containing the combustible fluid, a fluid-supply pipe communicating with the reservoir, and a burner-carrying pipe jointed or swiveled to the fluid-supply pipe to swing thereupon in a vertical plane, substantially as described.

7. A track-cleaning apparatus consisting of a car-truck having a horizontally-rotating platform provided with a reservoir for containing the combustible fluid, and a burner-carrying pipe communicating with the reservoir and movable in a vertical plane to place the burner below or above the platform, substantially as described.

8. A track-cleaning apparatus consisting of a car-truck having a rotating longitudinally-slotted platform and provided with a reservoir for containing the combustible fluid, and a hinged swinging burner-carrying pipe communicating with the revervoir and movable vertically in a rectilinear path, whereby the burner can be raised, lowered, and swung in a vertical plane through the slot in the truck-platform, substantially as described.

9. In a track-cleaning apparatus, the combination, with a car-truck and a reservoir for containing the combustible fluid, of a vertically-adjustable bracket or support carrying

a fluid-supply pipe which communicates with the reservoir, and a burner-carrying pipe jointed or swiveled to the fluid-supply pipe to swing thereupon in a vertical plane, substantially as described.

10. In a track-cleaning apparatus, the combination, with a car-platform pivoted upon the truck and having a circular support thereon, of independent pipes having burners, threaded vertical shafts upon which are mounted carriages or brackets, each consisting of two vertical parallel parts, worm-gears mounted upon and revolving between said parts, the independent pipes passing horizontally through the axes of said gears and being arranged transversely to the car-platform, said pipes being bent to pass downward through slots in the platform, worm-shafts meshing with the worm-gears and mounted upon the same brackets, and oil-reservoirs connected by flexible tubing with said pipes, substantially as described.

11. In a track-cleaning apparatus, the combination, with a pivoted car-platform having longitudinal slots cut from one end toward the center of the platform and lying substantially over the rails, of independent pipes having suitable burners, each pipe being mounted upon a vertically-adjustable axial support and arranged to hang in one of said slots, and means for raising and lowering said axial supports and for rotating the same, substantially as described.

In testimony whereof I have hereunto set my hand and affixed my seal in presence of two subscribing witnesses.

NORMAN H. BRUCE. [L. S.]

Witnesses:

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