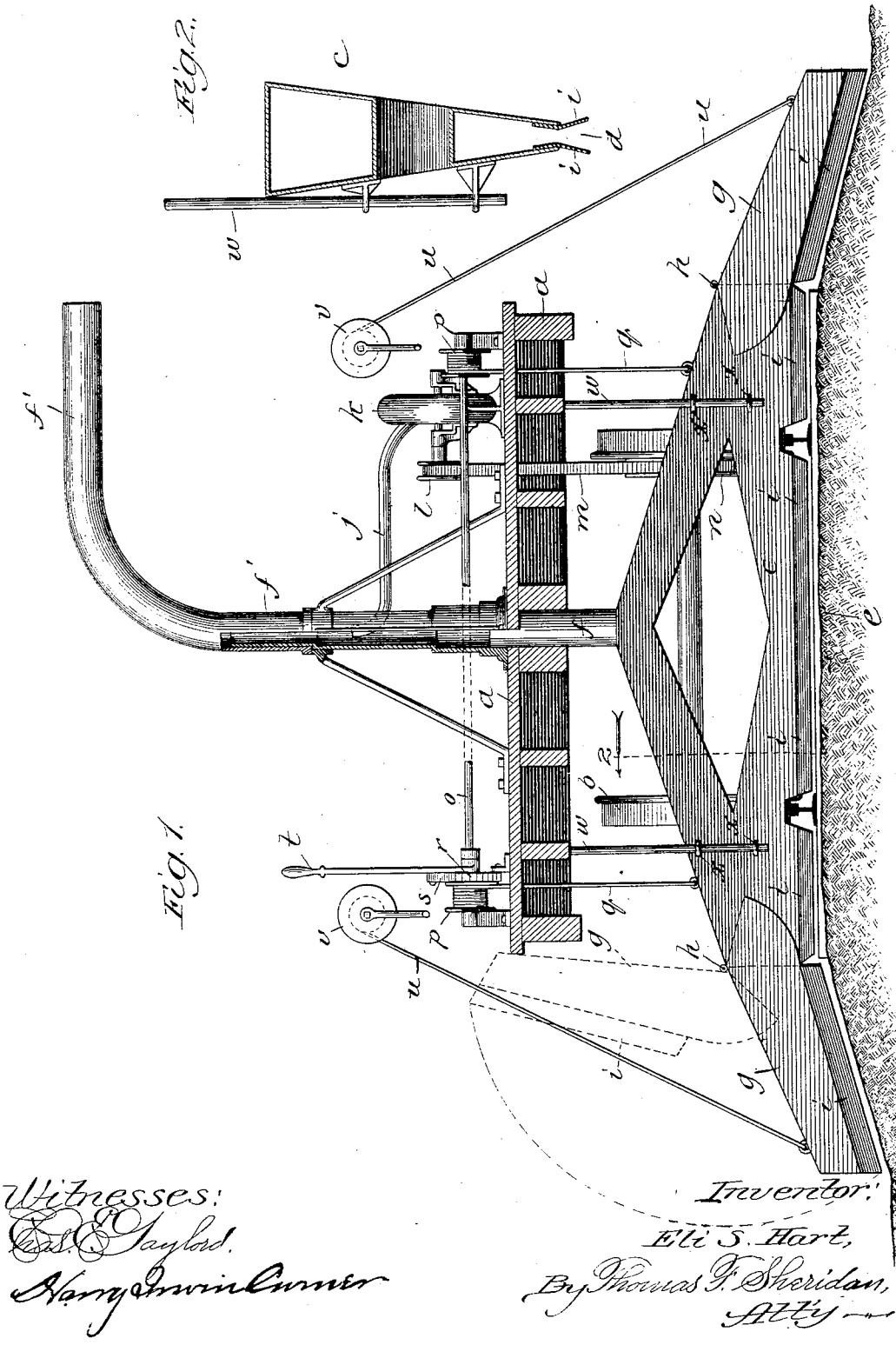
No. 750,852. PATENTED FEB. 2, 1904.

E. S. HART.

PNEUMATIC ROAD BED CLEANER.

APPLICATION FILED APR. 2, 1902.

NO MODEL.



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UNITED STATES PATENT OFFICE.

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PNEUMATIC ROAD-BED CLEANER.

SPECIFICATION forming part of Letters Patent No. 750,852, dated February 2, 1904.

Application filed April 2, 1902. Serial No. 101,137. (No model.)

To all whom it may concern:

Be it known that I, ELI S. HART, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Pneumatic Road-Bed Cleaners, of which the following is a specification.

My invention relates particularly to pneumatic cleaners for the road-beds of ordinary railways or tramways, and especially to the construction and arrangement of mechanism by which a vacuum or suction is created close to the ground and adjacent to the surface of the road-bed, so as to remove particles of dust and dirt and blow them away from the right of way, all of which will more fully hereinafter appear.

The principal object of the invention is to provide a simple, economical, and efficient pneumatic road-bed cleaner for railways.

A further object of the invention is to provide an ordinary railroad-car with mechanism for creating an air-suction close to the surface of the road-bed, so as to remove the lighter particles of dust and dirt therefrom.

Further objects of the invention will appear from an examination of the drawings and the following description and claims.

The invention consists principally in a pneumatic road-bed cleaner for railways in which there are combined a movable car, a suction-pipe arranged below the platform of the car and with its inlet-opening adjacent to the surface of the road-bed, and means for creating a vacuum therein, so as to suck up the lighter particles of dirt and dust.

The invention consists, further, in a pneumatic road-bed cleaner for railways in which there are combined a movable car, a suction-pipe thereon provided with an inlet-opening arranged adjacent to the surface of the road-bed, an outlet-pipe, and means for creating a vacuum between the inlet and outlet of the suction-pipe.

The invention consists, further, in the combination of a movable car, a suction-pipe mounted therein and provided with an inlet-opening arranged adjacent to the surface of the road-bed and extending across the track, an outlet-pipe, and means for forcing a jet of fluid under pressure into the outlet-pipe, so as to create a vacuum therein.

The invention consists, further and finally, in the features, combinations, and details of construction hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a cross-sectional elevation of an ordinary flat-car constructed and arranged in accordance with these improvements; and Fig. 2, an enlarged cross-sectional view of a portion of the suction-pipe, taken on line 2 of Fig. 1 looking in the direction of the arrow.

In the art to which this invention relates it is well known that the ordinary road-bed of railways when ballasted properly still accumulates and retains a large amount of fine material, such as dirt and dust, and that during the passage of a train thereover, particularly in the dry hot season, such dust is raised into a perfect cloud and causes extreme annoyance and embarrassment to passengers. Over trunk-lines having considerable travel this dust often remains in the air for a considerable time, not only annoying the passengers of the particular train which caused it and soiling their clothes and the furniture of the train, but also causing considerable annoyance to passengers on following trains. The principal object of this invention therefore is to provide simple, economical, and efficient pneumatic mechanism for sucking up this dirt from the surface and out of the interstices of the ballasted road-bed and throwing it out of the right of way where it can no longer embarrass or annoy patrons of the road, all of which will be understood and appreciated by those skilled in the art.

In constructing an apparatus in accordance with these improvements I provide an ordinary platform-car *a*, having the usual car-supporting wheels *b*, by which the mechanisms thereon are transported from point to point. Secured to this car in a suitable manner and underneath the platform thereof is a suction-pipe *c*, arranged across the road-bed and having its inlet-opening *d* arranged adjacent to the surface *e* and substantially or entirely across the same. The upper part of this suction-pipe is provided with an outlet-pipe *f*, extending outwardly and with the upper part

of such pipe bent, as at f', in the shape of an elbow and pivotally secured to the main portion of the outlet-pipe, so that it may be swung from side to side or to the rear of the car whenever desirable or necessary. Each end of the suction-pipe is provided with a wing or extension g, hinged thereto at h, so that they may be swung down into the position shown in full lines or swung up and out of the way, as shown in dotted outline to the left of Fig. 1. The suction-pipe and extensions thereof are provided with flexible flaps i, formed, preferably, of rubber and arranged at each side of the inlet, so that such inlet-opening may be brought as close to the surface of the road-bed as possible and permit of the flaps striking obstructions which might happen to be in the way without injury to such flaps or the other parts.

In order to clean the road-bed by pneumatic means or air, it is necessary to provide a suction of air, or, in other words, a vacuum or partial vacuum in the suction-pipe, tending to force outside air into the inlet and with it the dust and finer particles of dirt. There are many ways by which this vacuum may be formed, either by connecting the inlet-pipe of an ordinary exhaust-fan with the outlet-pipe of the cleaner or, as shown in the drawings, by connecting the exhaust-pipe j of a blower k with the cleaner outlet-pipe in such a manner as to form an injector—that is, to bend the discharge end of this exhaust-pipe j upwardly and in line with the outlet-pipe of the cleaner and toward its outlet end—thus forcing the air out through the outlet-opening and causing a partial vacuum in the suction-pipe, all of which tends to force the fine particles on the surface of the road-bed into the suction-pipe through its inlet-opening. Instead of using a blower a steam-pipe may be introduced into the outlet-pipe of the cleaner in a manner similar to the pipe j, so that a jet of steam may be used to create a partial vacuum and at the same time mingle with the dust and dirt and moisten it, so that it can be thrown farther from the right of way.

The blower or exhaust-fan k can be operated in any way, either by the use of an electric current or by connecting the shaft thereof through the intermediary of its pulley l and belt m with a pulley n of the car-axle, or it may be operated by a small steam-engine, which in turn can be furnished by a supply of steam under pressure from the prime mover of the car.

To raise and lower the mechanisms into and out of position, an operating-shaft o is provided having winding-drums p at each end, which are connected, by means of cables q, with the main portion of the suction-pipe. The operating-shaft is provided with a ratchet-wheel r, arranged to be contacted by a pawl s on a hand-lever t, which hand-lever is loosely mounted upon the operating-shaft in such manner that it may be vibrated backward and forward to operate the winding-drums and raise the suction-pipe away from the road-bed. The releasing of the pawl s permits the parts to drop back into position.

The swinging extensions of the suction-pipe are connected, by means of cords or cables u, with winches v, by which they may be swung into and out of position whenever desired or necessary. Guiding-rods w are provided and secured to the framework of the car underneath the same and slidingly engage with clips x upon the suction-pipes, so that as such suction-pipe is raised or lowered and during its operation it is held rigidly in condition to resist the stress and strains incident to use.

I claim—

1. In a pneumatic road-bed cleaner for railways, the combination of a movable car, a suction-pipe mounted therein and provided with an inlet-opening arranged adjacent to the surface of the road-bed and extending across the track, an outlet-pipe connected with the suction-pipe and forming a continuation thereof, and means for forcing a jet of fluid under pressure into the outlet-pipe so as to create a partial vacuum therein, substantially as described.

2. In a pneumatic road-bed cleaner for railways, the combination of a movable car, a suction-pipe arranged therein so as to be transported thereby and provided with an inlet-opening adjacent to the surface of the road-bed and extending across the same, an outlet-pipe connected with such suction-pipe and forming a continuation thereof, means for forcing a jet of fluid under pressure into the outlet-pipe so as to create a partial vacuum therein, and means for lowering and raising the parts into and out of position, substantially as described.

3. In a pneumatic road-bed cleaner for railways, the combination of a movable car, a suction-pipe secured thereto so as to be transported thereby and provided with an inlet-opening arranged adjacent to the surface of the road-bed and extending across the same, wing extensions movably secured to the ends of the suction-pipe and also provided with inlet-openings adjacent to the surface of the road-bed, an outlet-pipe secured to the suction-pipe, and means for creating a partial vacuum therein, substantially as described.

4. In a pneumatic road-bed cleaner for railways, the combination of a movable car, a suction-pipe secured thereto so as to be transported thereby and provided with an inlet-opening arranged adjacent to the surface of the road-bed and extending across the same, wing extensions pivotally secured to the ends of the main suction-pipe and provided with inlet-openings adjacent to the surface of the road-bed, an outlet-pipe secured to the suction-pipe and extending upwardly therefrom, means for creating a partial vacuum therein,

and means for raising and lowering the parts into and out of position, substantially as described.

5. In a pneumatic road-bed cleaner for railways, the combination of a movable car, a suction-pipe secured thereto so as to be transported thereby and provided with an inlet-opening arranged adjacent to the surface of the road-bed and extending across the same, wing extensions pivotally secured to the ends of the main suction-pipe and provided with inlet-openings adjacent to the surface of the road-bed beyond the ties or sleepers, an outlet-pipe secured to the suction-pipe and extending upwardly therefrom, means for creating a partial vacuum therein, means for raising and lowering the main suction-pipe, and means for swinging the wing-extension parts into and out of position, substantially as described.

6. In a pneumatic road-bed cleaner for railways, the combination of a movable car, a suction-pipe secured thereto and arranged below the platform thereof provided with an inlet-opening arranged adjacent to the surface of the road-bed and extending across the same, flexible flaps arranged in the suction-pipe on each side of the inlet-opening, an outlet-pipe secured to the suction-pipe and extending upwardly therefrom, and means for forcing a jet of fluid under pressure into the outlet-pipe so as to create a partial vacuum therein.

7. In a pneumatic road-bed cleaner for railways, the combination of a movable car, a suction-pipe arranged underneath the same and provided with an inlet-opening arranged adjacent to the surface of the road-bed and extending across the same, extensions at each end thereof and pivotally secured thereto and provided with inlet-openings arranged adjacent to the road-bed, flexible flaps formed of rubber or similar material secured to the suction-pipe and sections thereof on each side of the inlet-opening, an outlet-pipe secured to the central portion of the suction-pipe and extending upwardly therefrom, means for creating a partial vacuum therein, and means for raising and lowering the suction-pipe and extensions thereof into and out of position, substantially as described.

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