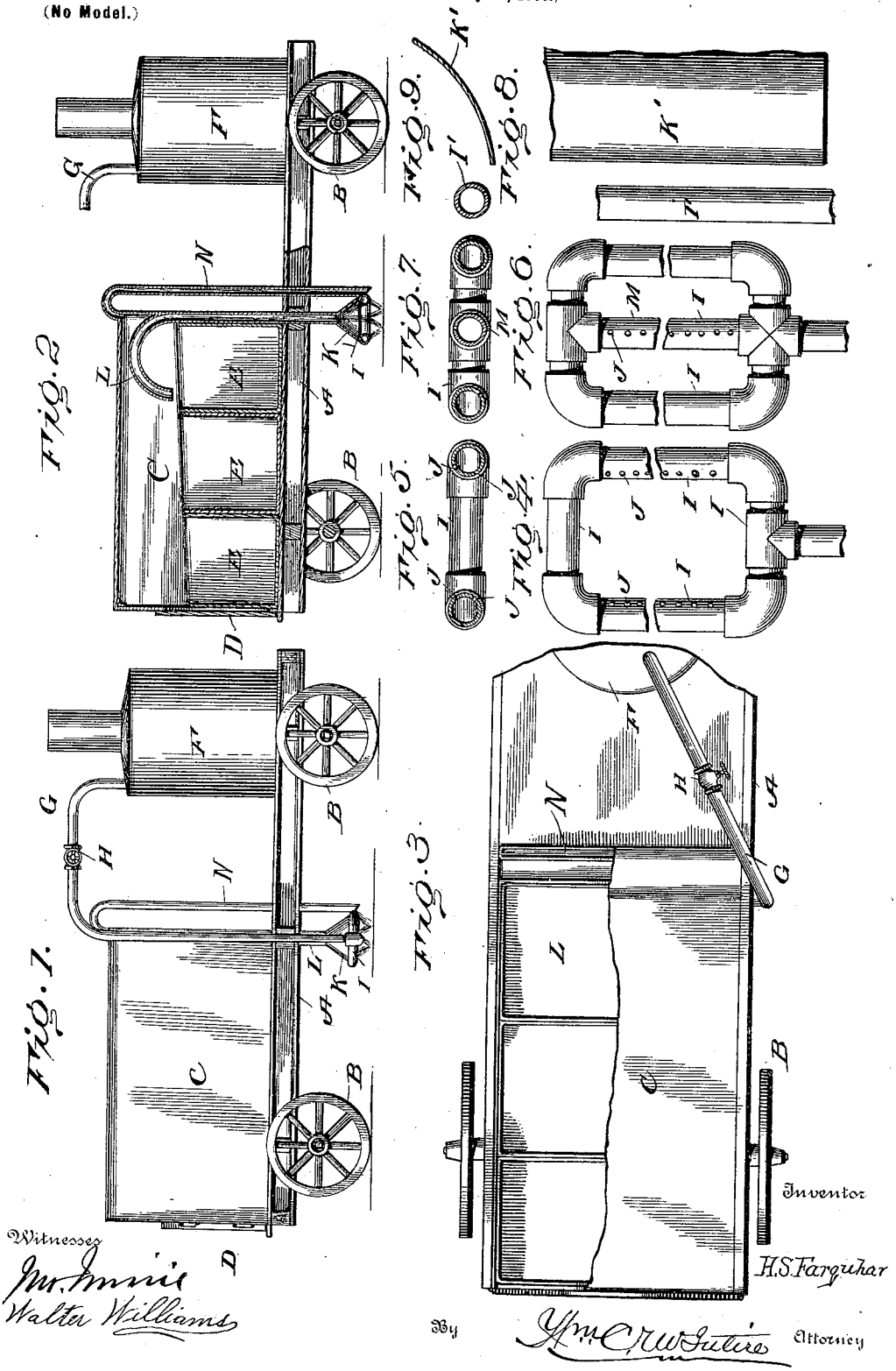
No. 659,440. Patented Oct. 9, 1900.

# H. S. FARQUHAR.

## MACHINE FOR REMOVING DIRT FROM STREETS.

(Application filed July 11, 1900.)

(No Model.)




Witnesses:
Walter Williams

Inventor
H. S. Farquhar

By Wm. C. R. W. Sutton Attorney

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

# UNITED STATES PATENT OFFICE.

HENRY S. FARQUHAR, OF BALTIMORE, MARYLAND.

## MACHINE FOR REMOVING DIRT FROM STREETS.

SPECIFICATION forming part of Letters Patent No. 659,440, dated October 9, 1900.

Application filed July 11, 1900. Serial No. 23,257. (No model.)

*To all whom it may concern:*

Be it known that I, HENRY S. FARQUHAR, a citizen of the United States, residing at Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Machines for Removing Dirt from Streets; 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.

My invention relates to certain new and useful machines for removing the dirt from the surface of streets or to that class of machines commonly designated as "street-sweepers."

My invention has for its object to provide an apparatus which will effectively clean the surface of streets without the employment of moving mechanism other than the supporting or carrying wheels of the apparatus and which will at the same time deliver the dirt into a suitable receptacle or receptacles, all without the necessity of previous sprinkling and without in any manner distributing particles of dirt into the surrounding atmosphere.

With these ends in view my invention consists of a vehicle mounted upon suitable carrying-wheels and provided with a closed dirt-receptacle and also with a steam-generating boiler and means for projecting the generated steam against the surface of the street in such manner as to loosen and pick up said dirt and deliver it to the dirt-receptacle, all as will hereinafter and more in detail be described.

In order that those skilled in the art to which my invention appertains may know how to make and use my improved apparatus, I will proceed to describe the same, referring by letters to the accompanying drawings, in which—

Figure 1 is a side elevation of one of my improved machines. Fig. 2 is a similar view with the dirt-receptacles and dirt-lifting mechanism shown in vertical section. Fig. 3 is a plan view, partly in horizontal section. Fig. 4 is a plan view of the perforated pipe-frame, through which the steam is projected upon the street and upwardly also into the conduit leading to the dirt-receptacle. Fig. 5 is a vertical cross-section of the pipe-frame shown at Fig. 4. Fig. 6 is a view similar to Fig. 4 and illustrating a modification of the pipe-frame. Fig. 7 is a cross-section of the pipe-frame shown at Fig. 6. Fig. 8 is a detail plan view of another modification of the means for picking up and delivering the dirt, and Fig. 9 is a cross-section of Fig. 8.

Similar letters of reference denote like parts in the several figures of the drawings.

A is a platform or body mounted upon carrying-wheels B. The platform is constructed, preferably, of steel beams or of any other suitably strong material.

C is a dust or dirt compartment with closed top and sides and with a suitable door or manhole D in the rear. This receptacle is designed to receive the dirt removed from the street, and, if thought desirable, it may contain any suitable number of removable receptacles E, which when filled may be removed and placed near the sidewalk and emptied into or transported by ordinary carts, or when such receptacles are not employed the dirt may be deposited in the compartment C and carried by the machine to the dump.

F is a steam-generator mounted and suitably connected to the body A, and leading from said generator is a steam-pipe G, provided with a valve H. This steam-pipe communicates with a pipe-frame I, preferably of the form shown at Figs. 4 and 5, which is of rectangular form and is secured in any suitable manner to the under side of the body A and so that it will hang comparatively close to the surface to be cleaned, as clearly illustrated at Figs. 1 and 2. The parallel side pipes of the frame I are perforated obliquely, as shown at Figs. 4 and 5, by a series of holes J of about one-sixteenth of an inch area and about one-fourth of an inch apart, so that the steam admitted to the frame I from the generator will pass through the downwardly-inclined series of holes J, striking the surface at an angle, as clearly illustrated, and being deflected will rise upon a corresponding angle within a hood K, extending from the pipe-frame I to a flat conduit L, extending up the compartment C and curved rearwardly, as clearly shown at Figs. 2 and 3, while the steam emitted from the upwardly-trending oblique holes J will constitute an auxiliary lifting-vehicle and assist the deflected steam from the lower series of holes in carrying the dirt up the conduit L.

In lieu of the upwardly-obliqued series of holes J in the frame I an independent and centrally-arranged tube M, as shown at Figs. 6 and 7, may be employed, which tube is provided with a series of holes or orifices to permit the upwardly vertical escape of steam, or in lieu of either of the forms shown at Figs. 4 and 5 and 6 and 7 a single steam-tube I′ may be used in connection with an oblique or curved apron K′, extending rearwardly from the lower extremity of the conduit L; but I prefer the forms shown at Figs. 4 and 5, although in this case I may, if thought desirable, omit the upwardly-inclined series of holes.

While I have shown the body simply mounted upon carrying-wheels, it will be understood that I contemplate making the rear wheels driving-wheels and to propel them through suitable mechanism connected with the steam-generator and to provide the forward wheels with any suitable steering mechanism; but as this forms no part of my invention I have omitted all illustration thereof to avoid confusion of lines in the drawings.

From the construction shown and described it will be seen that as the steam under pressure is emitted from the lower series of oblique orifices or holes J it contacts with the surface of the street and necessarily loosens the dirt deposit thereon, driving it toward the center of the pipe-frame I and into the sphere of the upwardly-deflected columns of steam, which latter, either alone or aided by the central vertical column of steam from the pipe M, carries or transports the dirt through the conduit L to the compartment C, where it is deposited by gravity. The moisture imparted to the dirt by the steam increases the gravity of the former, and thus insures the proper deposit of the same.

The upper front end of the compartment C opens into a flat vertical conduit N, the lower end of which terminates in front of and immediately adjacent to the pipe-frame I, so that the steam used to pick up the dirt is exhausted within the influence of the live steam and is carried up by it and prevented from escaping to the surrounding atmosphere. It will be observed, and I desire to lay particular stress upon the fact, that in loosening and picking up the dirt with my improved apparatus no moving parts are involved in the action had upon the dirt, and consequently there is no friction to overcome and no consequent wear.

It will be seen that I am enabled to loosen and remove the dirt from depressions and interstices in the street as readily as from the level surface and that it does not become necessary to sprinkle the surface of the street in advance of the cleaning operation, all of which is of great importance. It will also be understood that when the pipe-frame I is provided either with the upwardly-oblique holes or with the auxiliary tube M, having the upward vertical holes, the steam projected from the holes referred to will in either case produce an upward inspiration, and under such circumstances the downwardly-oblique holes or orifices may be substituted by vertical orifices, because under the inspiration produced by the upwardly-trending holes or orifices the steam projected against the street-surface will be drawn within the influence of the induced upward current.

My improved apparatus may be varied in many details of construction without departing from the spirit of my invention, which rests in the generic idea of utilizing steam under pressure as a force for loosening the dirt and as a vehicle for transporting it to a suitable receptacle.

What I claim as new, and desire to secure by Letters Patent, is—

1. A street-cleaning machine consisting of a platform or body mounted upon suitable carrying-wheels and provided with a steam-generator and a dirt-compartment, a steam-pipe leading from the generator to a pipe-frame arranged below the body and provided with steam-orifices, a hood arranged over the pipe-frame and a conduit from the hood to the interior of the dirt-compartment substantially as and for the purpose set forth.

2. A street-cleaning machine consisting of a platform or body mounted upon suitable carrying-wheels and provided with a steam-generator and a dirt-compartment, a steam-pipe leading from the generator to a pipe-frame located below the platform or body and provided with steam-exit orifices, a hood arranged above the pipe-frame, a conduit leading from the hood to the interior of the dirt-compartment and a steam-exhaust conduit leading from the dirt-compartment and terminating at a point adjacent to the pipe-frame, substantially as and for the purpose set forth.

3. In a street-cleaning device of the type described, the pipe-frame I provided with downwardly and upwardly inclined steam-exits, substantially as and for the purpose set forth.

4. In a street-cleaning machine, a platform supported upon carrying-wheels and provided with a steam-generator, and a dirt-compartment, a perforated tube-frame below the platform, a steam-controlled conduit between the generator and the pipe-frame, and a dirt-conduit with one end adjacent to the pipe-frame and the other opening into the dirt-compartment, substantially as and for the purpose set forth.

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

HENRY S. FARQUHAR.

Witnesses:
CHARLES A. COOK,
FRANK A. KNOWLES.