H. K. POTTER.

METHOD OF SWEEPING STREETS.

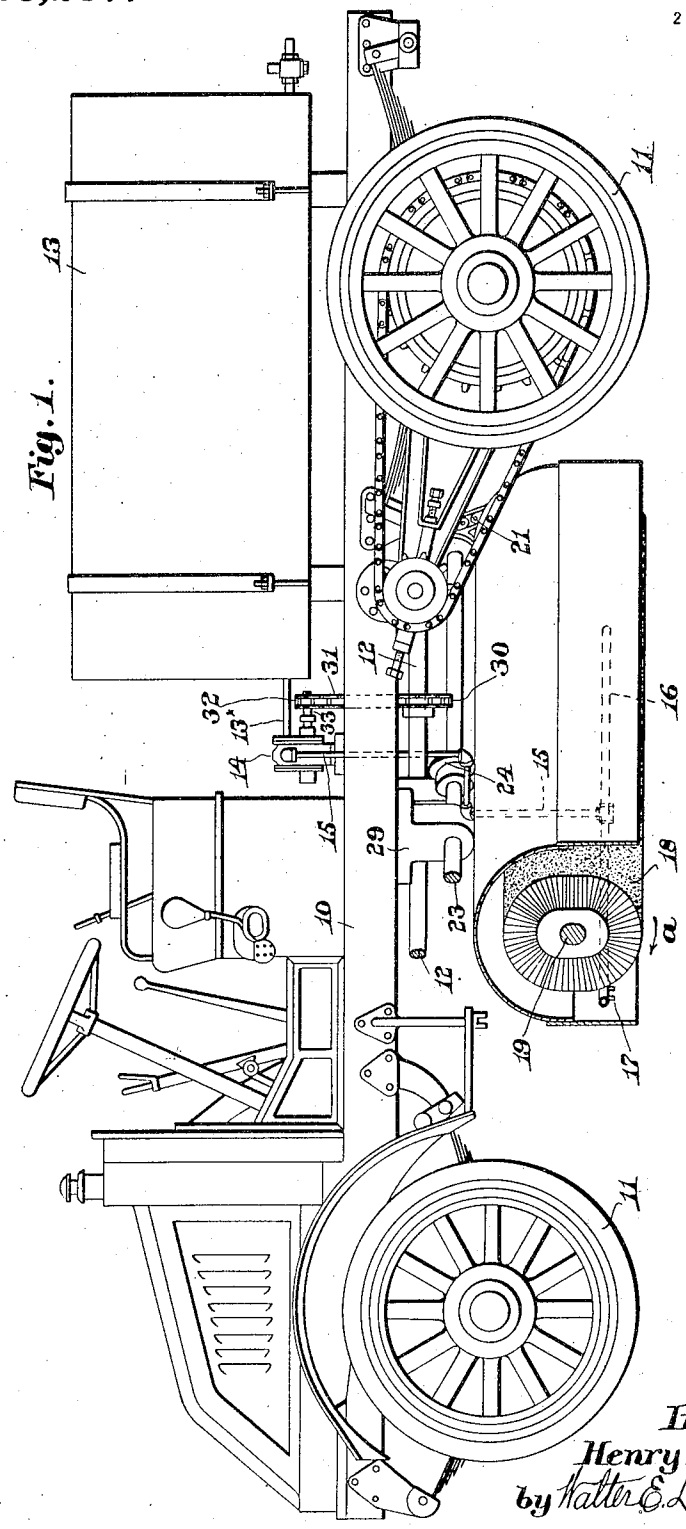
APPLICATION FILED OCT. 17, 1916.

1,328,237.

Patented Jan. 13, 1920.

2 SHEETS—SHEET 1.

Fig. 1.



Inventor:
Henry K. Potter,
by Walter E. Lombard, Atty.

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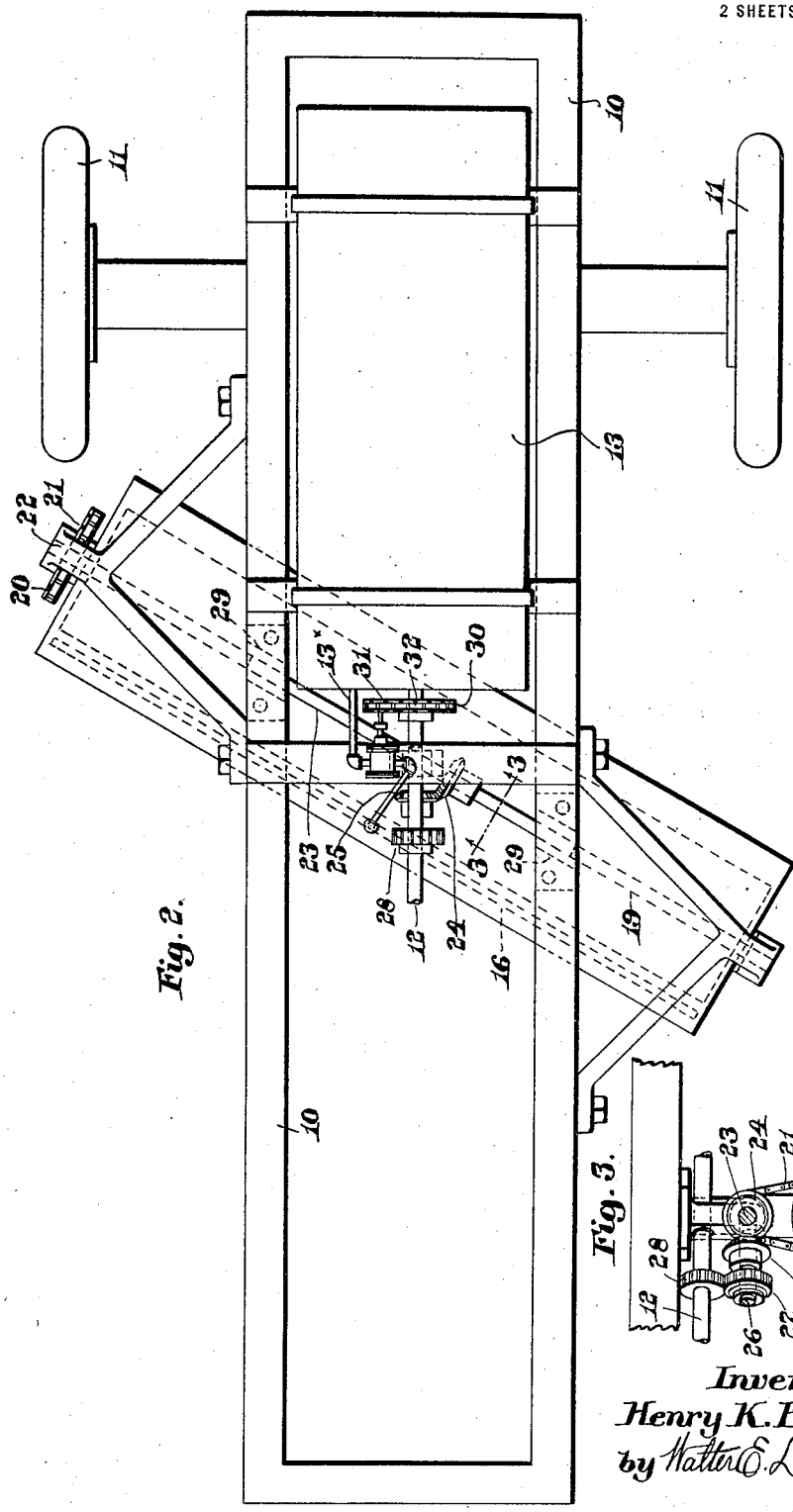

Fig. 2.

Fig. 3.

Inventor:
Henry K. Potter,
by Walter E. Lombard,
Atty.

UNITED STATES PATENT OFFICE.

HENRY K. POTTER, OF SOMERVILLE, MASSACHUSETTS.

METHOD OF SWEEPING STREETS.

1,328,237. Specification of Letters Patent. Patented Jan. 13, 1920.

Application filed October 17, 1916. Serial No. 126,440.

To all whom it may concern:

Be it known that I, HENRY K. POTTER, a citizen of the United States of America, and a resident of Somerville, in the county of Middlesex and Commonwealth of Massachusetts, have invented certain new and useful Improvements in Methods of Sweeping Streets, of which the following is a specification.

This invention relates to methods of cleaning paved streets, and has for its object the provision of means whereby said streets may be dry cleaned by mechanical street sweeping machines, and whereby the raising of dust may be entirely prevented during the street cleaning operation.

The invention consists in providing a street sweeping machine of any well-known construction with a tank filled with volatile oil or other equally efficient volatile liquid which is adapted to be delivered under pressure in the form of a spray directly upon the dust agitated by the action of the sweeper broom upon dry street pavements.

While one form of street sweeping machine is shown and described which may be utilized in carrying out said method, it is obvious that any well-known form of street sweeper may be used without departing from the principles of the invention.

It is also obvious that while one form of the tank containing volatile oil and its delivery mechanism is shown and described, the principles of the invention will not be altered by the use of any other form of tank or oil delivery mechanism provided the oil is delivered under pressure in the form of a spray upon the dust being agitated by the revolving broom of the street sweeping machine.

Of the drawings:

Figure 1 represents an elevation of one form of street sweeping machine which may be used in carrying out the improved method.

Fig. 2 represents a plan of the same, and

Fig. 3 represents a vertical section on line 3—3 on Fig. 2.

Similar characters designate like parts throughout the figures of the drawings.

In the drawings, 10 is a chassis of one form of street sweeper which may be used in carrying out the present invention. The chassis 10 is mounted on wheels 11 driven by means of a revoluble driving shaft 12. Superimposed upon the rear end of the chassis 10 is a tank 13 having a pipe $13^{\times}$ extending from its front end and near the bottom thereof. The pipe $13^{\times}$ communicates with a rotary pump 14 having a delivery pipe 15 extending therefrom to a transverse pipe 16 having a plurality of nozzles 17 therein extending downwardly therefrom, as indicated in Fig. 1.

The machine is provided with a brush 18 secured to a shaft 19 and revoluble in the direction of the arrow *a* on Fig. 1 of the drawings. On one end of the shaft 19 is a sprocket wheel 20 connected by a sprocket chain 21 to a sprocket wheel 22 on the end of a supplemental shaft 23. This shaft 23 has a bevel pinion 24 thereon meshing with a pinion 25 on a short shaft 26 provided with a gear 27 meshing with a similar gear 28 on the driving shaft 12.

The rotary movement of the shaft 12 is transmitted through spur gears 28 and 27, and bevel gears 25 and 24, the sprocket wheels 22—20, and the chain 21, to rotate the brush 18 in the direction of the arrow *a*.

The shaft 23 is mounted in suitable bearings 29 secured to the under face of the chassis 10 and the shaft 19 is revolubly mounted in suitable brackets secured to said chassis. The shaft 12 has also secured thereon a sprocket wheel 30 connected by a sprocket chain 31 to a sprocket wheel 32 on the driving shaft 33 of the pump 14.

The details of construction of the street sweeping machine herein illustrated are omitted to a greater or lesser extent for the reason that any well-known construction of street sweeping machine may be utilized in carrying out the present invention. The tank 13 is adapted to be filled with a volatile oil or any other efficient volatile liquid.

When the machine is in operation the rotation of the shaft 12 will operate the pump 14, and pump the volatile liquid from the tank 13 and force it through the pipes 15 and 16 and deliver it through the nozzles 17 in the form of a fine spray.

As the machine passes over the paved streets the brush 18 will be rotated in the direction of the arrow *a* on Fig. 1 of the drawings and agitate the dust while simultaneously the volatile oil will be forced through the nozzle 17 under pressure in the form of a spray upon the agitated dust.

When this finely atomized spray of volatile liquid is thus projected under pressure directly into and upon the dust as it is raised by the revoluble broom, the effect on the dust is to immediately precipitate it and prevent it from being carried into the air during the process of sweeping.

As soon as the street sweeping machine has passed along the accumulated dust or sweepings may be taken up and removed by hand or otherwise without further conveyance through the air.

This is a great improvement over the present method of laying the dust in street sweeping where water is sprinkled upon the accumulated dust, for the reason that when volatile fluid is used the rapid evaporation thereof leaves the pavement clean and dry and free from the finest particles of dust, while if water is used the dust is mixed with the water and remains on the pavement in the form of mud. This mud is only partially removed by the sweeper broom and quickly dries to be again blown about by the air currents.

When it is attempted to clean paved streets by flushing or washing with water, the cleansing of the street is only partially successful owing to the fact that more or less mud unavoidably remains on the surfaces of the pavement, especially in crevices and depressions, which mud will soon be dried out again into dust. When the streets are washed with water, there is always more or less trouble caused by the clogging of the sewers and filling up of catch basins, and as a consequence there is considerable expense required in cleaning and repairs.

When the present method of cleaning the streets is used, this difficulty is wholly overcome, as in the dry sweeping the sewerage systems are relieved of this additional burden, and the cost of operation is greatly reduced. There is another great advantage in the dry method of sweeping the streets, inasmuch as in some localities at certain seasons of the year the low temperature will not permit the use of water for laying the dust on account of its freezing and the consequent danger to the street traffic from icy pavements.

By using the dry sweeping system the pavements may be swept clean at any time and in any locality and in any degree of heat or cold, the only condition being that the surface shall be free from moisture.

It is well known that street dust is largely the product of the attrition of vehicle traffic, and the finer this substance is pulverized the greater is the possibility of injury to health from its inhalation through the breathing organs, with the consequent conveyance of disease germs into the human system.

By the present method, all this finally pulverized germ laden dust could be completely suppressed and readily removed.

It is believed that the many advantages of sweeping paved streets by means of this improved method in which the agitated dust is laid by means of a volatile fluid will be fully apparent without further description.

Having thus described my invention, I claim:

1. The method of cleaning pavements which consists in raising the dust on said pavements and directing the particles of dust into the path of downwardly projected small globules of oil.

2. The method of cleaning pavements which consists in raising the dust on said pavements and directing the particles of dust into the path of downwardly projected small globules of oil ejected under pressure.

3. The method of cleaning pavements which consists in projecting the dust on said pavements in a direction to intersect the path of a plurality of small globules of oil.

4. The method of cleaning pavements which consists in projecting the dust on said pavements in a direction to intersect the path of a plurality of small globules of oil projected under pressure toward said pavements.

5. The method of cleaning pavements which consists in projecting the dust on said pavements in such manner as to intercept a plurality of sprays of small globules of oil.

6. The method of cleaning pavements which consists in projecting a plurality of sprays of small globules of oil under pressure toward the pavements and simultaneously raising the dust on said pavements and forcing the particles thereof toward said sprays of oil and into contact therewith.

7. The method of cleaning pavements which consists in raising dust from the pavements and projecting it forward and simultaneously projecting sprays of small globules of oil across the path of the projected dust whereby the dust and oil will be commingled and deposited upon said pavements.

8. The method of cleaning pavements which consists in raising dust therefrom by a sweeping action and then immediately precipitating the dust onto said pavements by sprays of small globules of oil under pressure.

9. The method of cleaning streets which consists in raising particles of dust from said pavements and projecting said particles of dust into the path of a plurality of globules of oil projected downwardly whereby said dust particles will cling to said globules of oil and be deposited upon said pavements.

10. The method of cleaning streets which

consists in raising particles of dust from said pavements and projecting said particles of dust into the path of a plurality of globules of oil projected downwardly under pressure whereby said dust particles will cling to said globules of oil and be deposited upon said pavements.

Signed by me at 4 Post Office Sq., Boston, Mass., this 10th day of October, 1916.

HENRY K. POTTER.

Witnesses:
WALTER E. LOMBARD,
NATHAN C. LOMBARD.