(No Model.) 2 Sheets—Sheet 1.

J. W. WOOD.

STREET CLEANING MACHINE.

No. 452,153. Patented May 12, 1891.

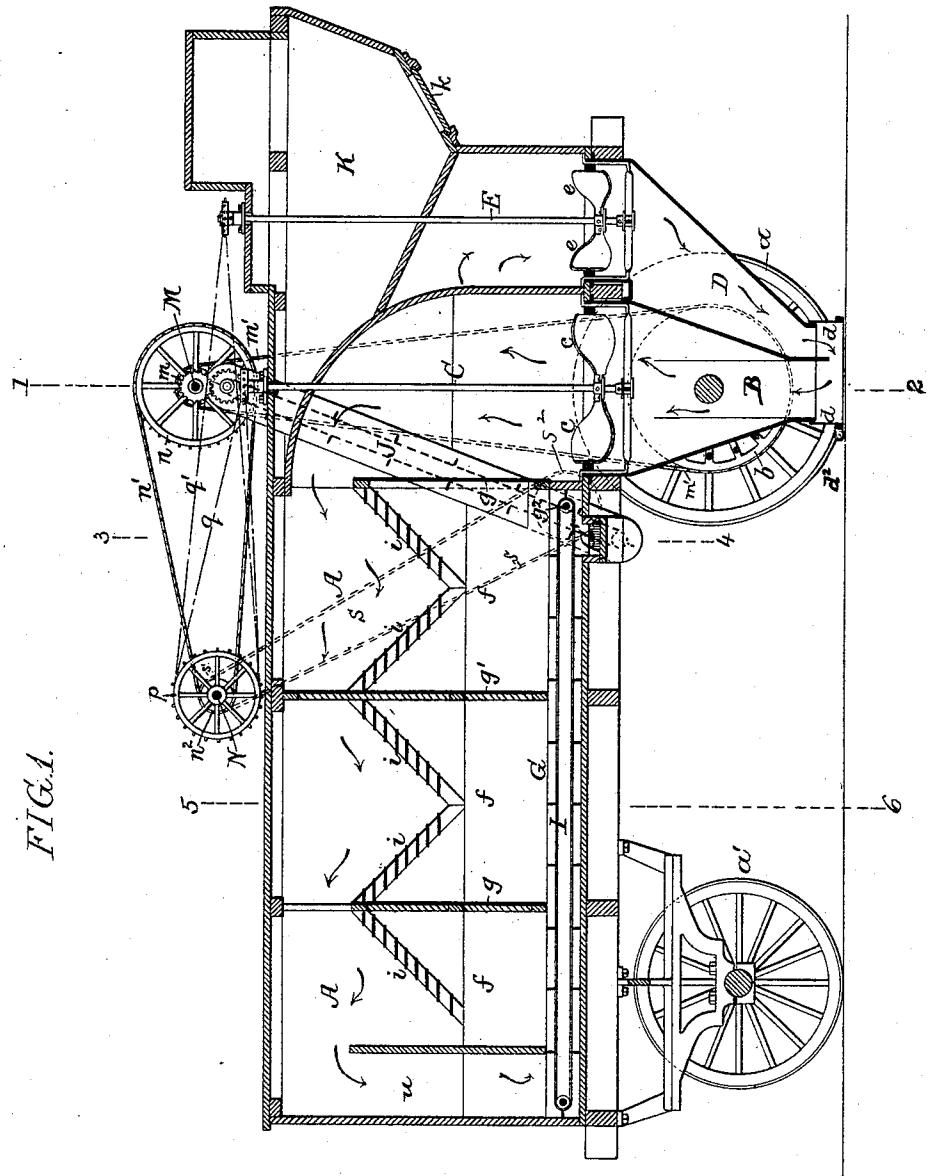


FIG. 1.

Witnesses:
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Inventor:
John W. Wood
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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.) 2 Sheets—Sheet 2.

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STREET CLEANING MACHINE.

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FIG. 2.

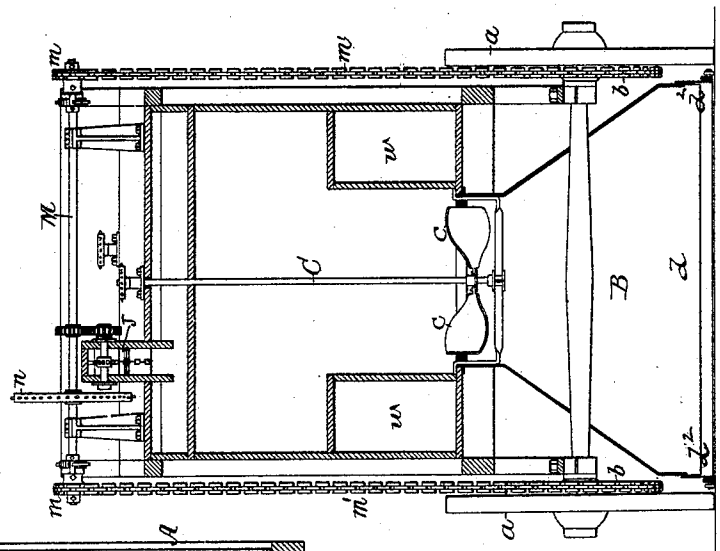


FIG. 3.

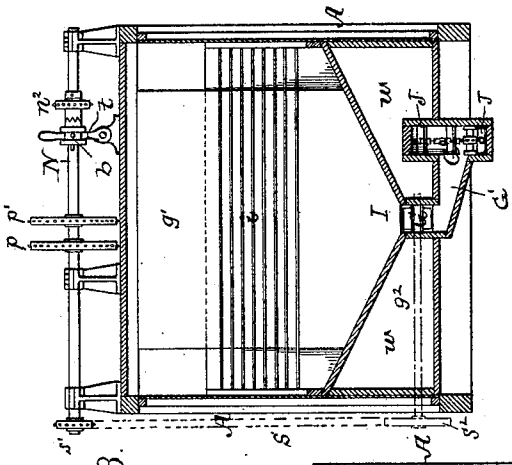
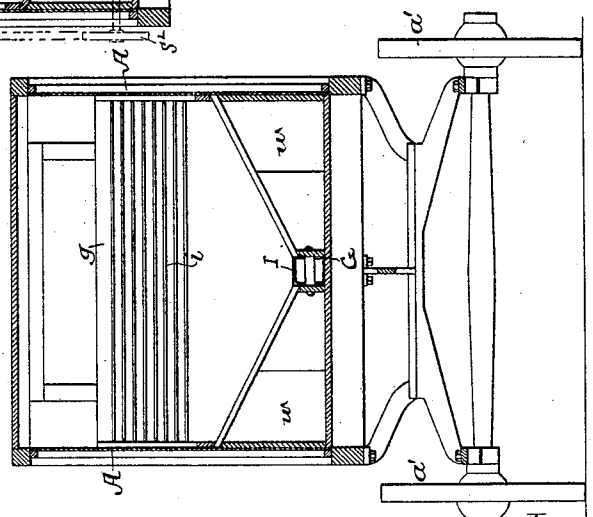


FIG. 4.



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UNITED STATES PATENT OFFICE.

JOHN W. WOOD, OF PHILADELPHIA, PENNSYLVANIA.

STREET-CLEANING MACHINE.

SPECIFICATION forming part of Letters Patent No. 452,153, dated May 12, 1891.

Application filed October 22, 1890. Serial No. 368,908. (No model.)

To all whom it may concern:

Be it known that I, JOHN W. WOOD, a citizen of the United States, and a resident of Philadelphia, Pennsylvania, have invented certain Improvements in Street-Cleaning Machines, of which the following is a specification.

The object of my invention is to construct a machine for cleaning streets by suction in such a manner that the heavy particles will be separated from the very light particles and be carried to a receiving-bin, as fully described hereinafter.

In the accompanying drawings, Figure 1 is a longitudinal sectional view of my improved street-cleaning machine. Fig. 2 is a transverse section on the line 1 2, Fig. 1. Fig. 3 is a section on the line 3 4, Fig. 1; and Fig. 4 is a section on the line 5 4, Fig. 1.

A is the body of the machine, mounted on wheels *a a'*, as usual. On one of the wheels *a*, or on its axle, are driving wheels or pulleys *b*, by which the mechanism carried by the machine is operated.

B and D are two chutes. One B is the suction-chute for conveying the dirt to the body A, and the other is a blowing-chute for agitating the earth and freeing it, so that it can be readily taken up by the suction-current in the suction-chute. Both chutes B and D extend as close to the ground as possible, and have flexible extensions *d d*, as clearly shown in Figs. 1 and 2.

A vertical shaft C, having its bearings in the chute B, has a suction-fan *c*, which is driven at a high rate of speed by the gearing described hereinafter.

In the chute D is a vertical shaft E, having a forcing-fan *e*, which is driven in a manner similar to the fan *c*.

The main portion of the body A is divided into a series of chambers *f f f* by transverse partitions *g*. These chambers or bins have bottoms inclined toward a central longitudinal gutter or chute G. In each chamber are a series of slats *i*, which tend, with the partitions, to impede the current of air and cause the heavy particles of dirt to fall into the chambers and into the conveyer-trough G. The heaviest particles fall into the first chamber or bin, and the lighter ones fall into the other bins, and the very light particles are carried with the air to the extreme end of the machine, and the particles that do not settle there are carried through to the chute D. The partitions *g* do not extend quite to the top of the body. Thus a space is left for the passage of the dirt over them, while the partitions *g'* extend to the top of the body, but are not quite as wide as the body, leaving passages for the dirt at the sides, as shown in Fig. 3. Thus it will be seen that the force of the air-current through the body is broken and the heavy particles allowed to fall into the chambers or bins.

In the trough G is a conveyer I, (in the present instance in the form of an endless belt,) having conveyer-flights thereon. The material is collected in this trough and carried by this conveyer to a transverse chute G', from which it passes to a vertical conveyer J in the form of an endless band. The material is carried up by this conveyer into the receptacle K, which can be dumped at intervals by removing the tail-board *k*, and I prefer to so arrange the receptacle that the contents thereof can be dumped into a cart, which is simply backed up into position to receive its load.

I will now describe the gear by which the several parts are operated.

Preferably on each wheel *a* are driving wheels or pulleys *b*, being in the form of sprocket-wheels, as it will be understood that in the present instance I prefer to use chain belting.

M is the transverse shaft, mounted in bearings on the body A, and on this shaft are small sprocket-wheels *m m*, over which pass the belts *m'* from the main driving-wheels *b*. On this shaft M is a sprocket-wheel *n*, over which passes the belt *n'* to a sprocket-wheel n^2 on a second transverse shaft N, mounted in suitable bearings on the body, and on this shaft N are two sprocket-wheels *p p'*, which drive the vertical fan-shafts C and E, respectively, through the medium of belts *q q'*.

The conveyer in the trough G is driven from the shaft N by a belt *s*, passing over pulleys *s' s*^{2}, one being on the shaft N and the other on the shaft g^2, carrying the conveyer-belt I. The conveyer in the tube J is

driven from the shaft N, as clearly shown in Fig. 2.

I prefer to provide a clutch t between the shaft N and the sprocket-wheel n^2, so that the mechanism for driving the fans can be readily thrown out of gear by the operator when circumstances require.

As before remarked, the chutes have a flexible extension d, and the lower frame d' of this extension is carried by small wheels or rollers d^2, as clearly shown in Fig. 1.

The operation of the machine is as follows: The dirt on the street is agitated and loosened from the pavement by the force of the air passing down onto the pavement from the chute D. At the same time the fan in the chute B, being the suction-fan, is powerful enough to draw the loose particles of dirt up through the chute into the body A. There the particles fall into the different chambers or bins, according to their weight, and are carried up to the receptacle K, from which the dirt is transferred to a cart or wagon. The air, however, is drawn over the chambers or bins to a down-flue u at the forward end of the body, and through the side flues w w to chute D by the fan e. Thus a continuous current of air is produced in the body, and particles of dirt fall from this current of air in its passage through the machine.

I claim as my invention—

1. The combination, in a street-cleaning machine, of the receptacle for the dirt, the two chutes extending to a point near the ground and connected by passages with the dirt-receiver, an air-pressure fan in one chute and a suction-fan in the other chute, and mechanism for operating said fans, whereby air will be drawn from the dirt-receptacle and forced onto the ground, agitating the dirt thereon, and whereby air will be drawn into the suction-chute, carrying with it the agitated dirt and depositing said dirt in the receptacle, substantially as and for the purpose set forth.

2. The combination, in a street-cleaning machine, of the body, a series of chambers or bins therein, a trough at the bottom of said chambers, a conveyer in said trough, a receptacle to which the dirt is conveyed, and a chute extending to or nearly to the ground, with a suction-fan in said chute, substantially as set forth.

3. The combination, in a street-cleaning machine, of the body, a series of chambers or bins therein, a trough at the bottom of said chambers, a conveyer in said trough, a transverse trough with a lifting conveyer, and a receiving-chamber for the dirt, with a chute extending to or nearly to the ground and a suction-fan in said chute, substantially as set forth.

4. The combination, in a street-cleaning machine, of the body, a suction-chute connected with said body and extending to or nearly to the pavement, and partitions g g' in said body, the partition g' being narrower than the body and the partition g being shorter than the full height of the body, substantially as and for the purpose specified.

5. The combination, in a street-cleaning machine, of the body mounted on wheels, a separator for the dirt formed in the forward portion of said body, and a dirt-receptacle at the rear, with a suction-chute between the two, substantially as specified.

6. The combination, in a street-cleaning machine, of the body, a separator for the dirt in the forward end of said body, a dirt-receptacle at the rear end, a conveyer for carrying the dirt from the separator to the receptacle, a suction-chute, and an air-pressure chute situated between the separator and the receiver, with an air-passage connecting the front end of the separator with the pressure-chute, substantially as specified.

7. The combination, in a street-cleaning machine, of the suction-chute and an air-pressure chute, a receiver connected to both chutes, and partitions in said receiver, with slats i i between the partitions, substantially as set forth.

8. The combination, in a street-cleaning machine, of the suction-chute, an air-outlet, the body, a series of obstacles in said body to prevent a direct current through the body from the suction-chute to the air-outlet, said body having a tapered bottom, a trough in said bottom, a conveyer in said trough, and a receiver at the back of the machine, into which the dirt from the body passes, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN W. WOOD.

Witnesses:
EUGENE ELTERICH,
HARRY SMITH.