No. 772,924. PATENTED OCT. 25, 1904.

A. A. CLOUGH.

STREET CLEANING MACHINE.

APPLICATION FILED DEC. 1, 1903.

NO MODEL. 2 SHEETS—SHEET 1.

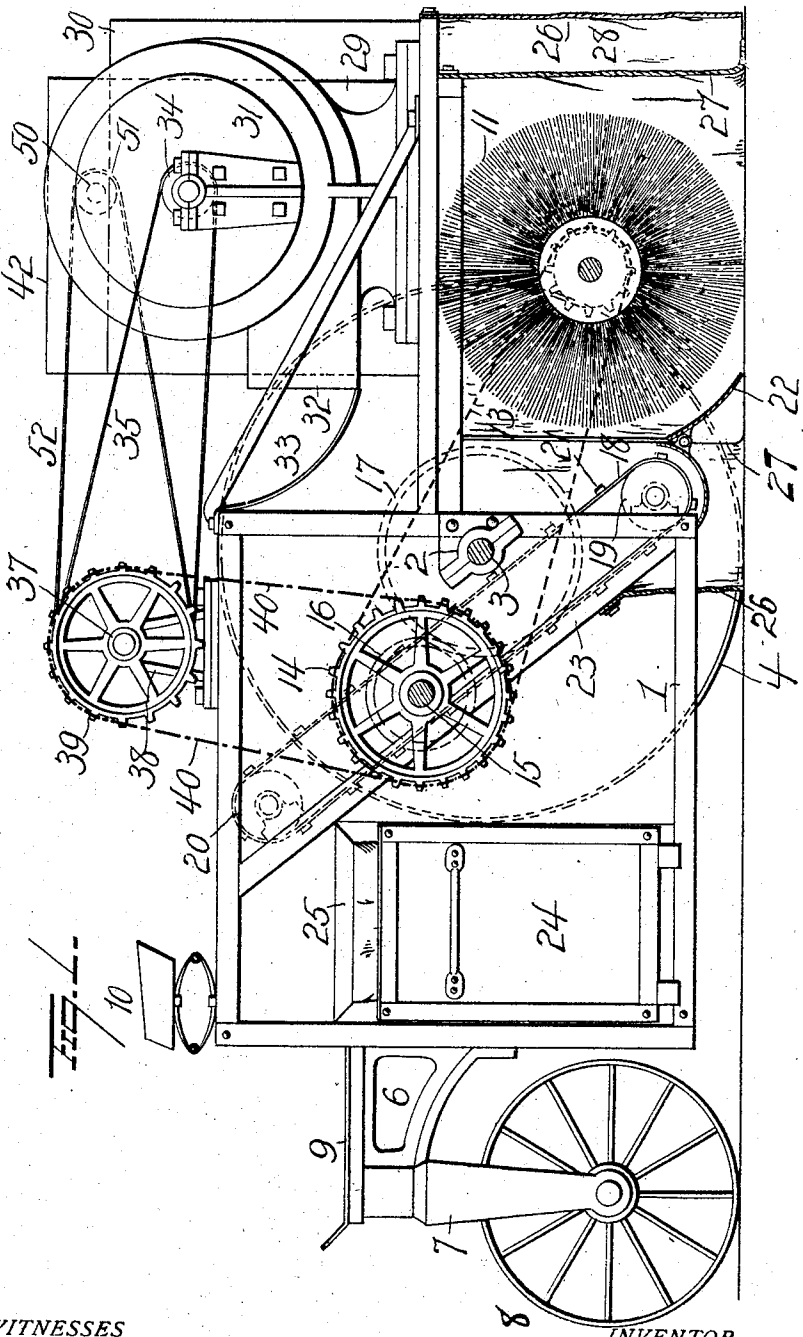


Fig. 1.

WITNESSES

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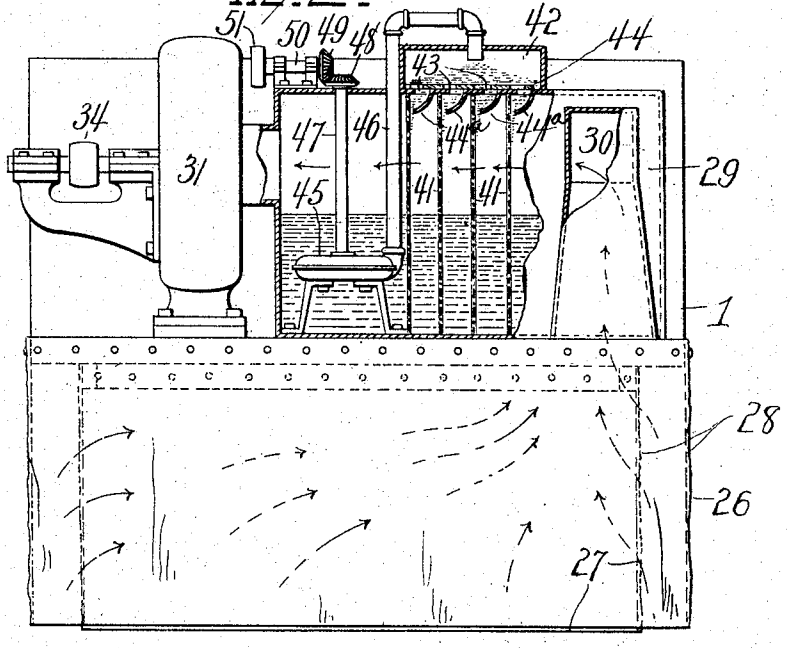
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STREET CLEANING MACHINE.

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NO MODEL. 2 SHEETS—SHEET 2.

FIG. 2.



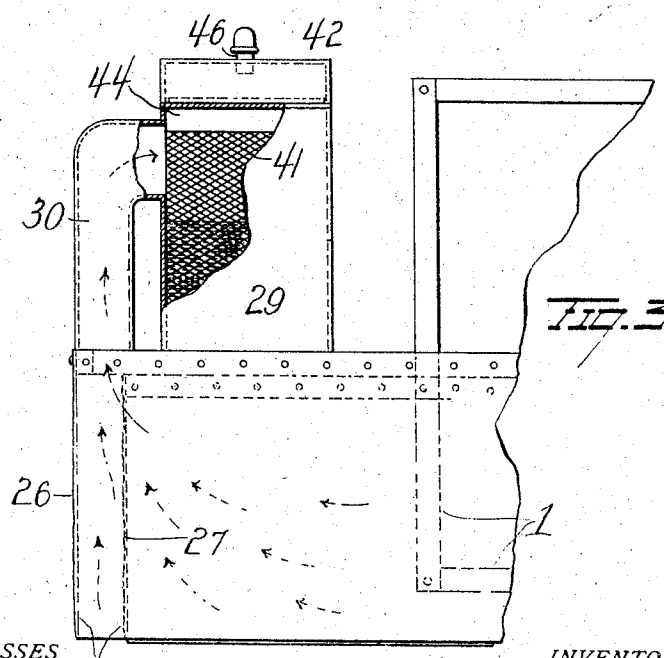


FIG. 3.

WITNESSES

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No. 772,924. Patented October 25, 1904.

UNITED STATES PATENT OFFICE.

AUGUSTUS A. CLOUGH, OF DENVER, COLORADO.

STREET-CLEANING MACHINE.

SPECIFICATION forming part of Letters Patent No. 772,924, dated October 25, 1904.

Application filed December 1, 1903. Serial No. 183,357. (No model.)

To all whom it may concern:

Be it known that I, AUGUSTUS A. CLOUGH, a citizen of the United States, residing at Denver, county of Denver, State of Colorado, have invented a certain new and useful Improvement in Street-Sweeping Machines, of which the following is a specification.

My invention relates to improvements in street-cleaning apparatus, the object of the invention being to so construct and arrange such apparatus as to effectually prevent the spread of dust created by the action of the brush and to provide means for collecting the dust as well as the dirt swept up by the brush.

A further object is to so construct the apparatus that in its operation it will sweep the dirt from the street and collect it and at the same time collect the dust separately.

A further object is to construct a street-sweeper in such manner that the dirt removed from the street by the brush will be deposited in one receptacle and the dust-ladened air separately conducted to another receptacle containing means for separating the dust from the air.

A further object is to produce a street-cleaning apparatus which shall be simple in construction, from which dust-ladened air cannot escape, and which shall effectually perform the functions required of it.

With these objects in view the invention consists in certain novel features of construction and combinations and arrangements of parts, as hereinafter set forth, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation of a street-sweeper, partly in section, illustrating my improvements. Fig. 2 is a rear end view partly broken away and partly in section. Fig. 3 is a detail view, partly broken away, illustrating portions of the dust-collecting devices.

1 represents the framework of the machine, having bearings 2 for an axle 3, the latter being mounted at its ends in suitable carrying-wheels 4. A bracket 5 is secured in any suitable manner to the forward end of the framework and carries a bearing 6 for a standard 7, in which a caster-wheel 8 is mounted. The bracket 5 is also provided with a foot-rest or platform 9, and a driver's seat 10 is located upon the framework 1.

In the rear portion of the framework 1 the journals of a rotary brush or sweeper 11 are mounted, and to one of said journals a sprocket-wheel 12 is secured. Motion is transmitted to the sprocket-wheel 12 by means of a chain 13 from a sprocket-wheel 14, secured to a shaft 15, mounted in the framework. The shaft 15 also carries a pinion 16, which receives motion from a gear-wheel 17, secured to the axle.

A diagonally-disposed elevator or conveyer 17^a is located in the framework of the machine and comprises endless belts 18, passing over drums 19 20, and a series of transvere slats 21, secured at intervals to said belts. Motion is transmitted to the elevator from the shaft 15 in any suitable manner—such, for instance, as sprocket-gearing.

A deflector-pan 22 is pivotally attached to the boot 23 of the elevator and adapted to engage the pavement at its free edge for the purpose of directing the debris to the elevator.

A receptacle 24 is supported removably by the framework at a point under the discharge end of the elevator, and said receptacle is provided with a collapsible neck 25 to prevent the escape of dust and dirt.

The revolving brush or sweeper 11 is inclosed by two flexible curtains 26 27, which are suspended from the framework and spaced apart, so as to form an air-chamber 28 between them. The outer curtain 26 is made of sufficient length to nearly reach the ground, while the inner curtain 27 is made slightly lower, as shown in Fig. 1, to prevent as much as possible dust within the inner curtain from escaping. The outer chamber 28 forwardly of the brush is formed by the outer curtain on the front, the deflector 22 in the rear, the boot 23 on top, the side ends being open and connecting with the other portions of the outer chamber.

A tank 29 is located on the framework, preferably over the sweeper, and this tank communicates at one end with the chamber 28 between the curtains by a duct 30. With the

other end of the tank 29 a suction fan or pump 31 communicates for creating a draft through the tank. The discharge-outlet 32 of said fan or pump is located as shown in Fig. 1, and a deflector 33 prevents the air from being blown into the forward part of the machine. The shaft of the fan is provided with a pulley 34, which receives motion by means of a strap 35 from a pulley on a shaft 37. The shaft 37 is mounted in a bracket 38 on the machine and is provided with a sprocket-wheel 39, which latter receives motion through the medium of a chain 40 from a sprocket-wheel on the shaft 15.

Several vertically-disposed perforated screens 41 are located in the tank 29 and suitably spaced apart, said screens extending from the top to the bottom of said tank. A compartment 44 is located upon the tank 29 and communicates with the latter at points between the screens through openings 43, provided with slide-valves 44. Water or other suitable fluid is discharged into the compartment and flows from the same through the openings 43 and is caught by curved deflectors 44^a, depending from the roof of the tank and directed against the screens, down which it will flow and finally become deposited in the tank, as shown in Fig. 2. On starting the machine the tank will preferably be supplied with enough fluid to about half fill it, and circulation of said fluid can be conveniently effected by means of a suitable fluid-elevator. In the drawings Fig. 2 I have shown a pump 45 for this purpose, said pump being immersed in the water or other fluid in the tank and connected by a pipe 46 with the compartment 42. The pump-operating shaft 47 is extended up through the top of the tank and provided above the latter with a bevel-pinion 48, which receives motion from a similar pinion 49 on a short shaft 50. The other end of this shaft is provided with a pulley 51, to which motion is transmitted by a strap 52 from a pulley on the shaft 37. Thus it will be seen that water will be continuously discharged against the screens, keeping them constantly wet, and that the water as it accumulates in the tank will be elevated to the compartment 42 and permitted to be again discharged against the screens.

In the operation of the machine the dirt or debris will be collected by the revolving brush or sweeper and thrown thereby upon the elevator, which latter will carry it up to the top of the machine and deposit it into the removable receptacle. At the same time air laden with dust will be drawn into the chamber 28 between the curtains 26 27, from which it will be discharged through the duct 30 into the tank 29. Here it will be met by the wet screens 41. As this air passes through the screens the water or other fluid flowing over the latter will catch the dust carried by the air and remove it from the latter, carrying said dust down into the body of water contained in the tank. The dirt will thus accumulate in the water in the tank and will become precipitated to the bottom. Accumulations of dirt can be removed from the tank through an opening (not shown) in any suitable manner. The air which enters the tank heavily ladened with impurities leaves it thoroughly cleansed of such impurities, and pedestrians are not annoyed by dust-ladened air, so common in the operation of street-sweepers.

Numerous changes might be made in the details of construction of my invention without departing from the spirit thereof or limiting its scope, and hence I do not wish to limit myself to the precise details herein set forth.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A street-cleaning machine having two independent chambers, one inclosing the other, a sweeper located within the inner chamber, dust-collecting means communicating with the outer chamber and means for creating a draft through said outer chamber and dust-collecting means.

2. A street-cleaning machine having two independent chambers, one inclosing the other, a sweeper within the inner chamber, a dirt-receptacle, mechanical means for conducting dirt from the sweeper to said receptacle, a separate receptacle for dust communicating with the outer chamber and means for separately withdrawing dust through the outer chamber and depositing it in the dust-receptacle.

3. The combination in a street-cleaning apparatus, of means for mechanically removing dirt from the street, means forming a chamber inclosing and separated from said dirt-removing means, means for separately removing dust-laden air from the street through said chamber, means for removing dust from the air entering said chamber and operating mechanism common to the mechanically-operated means.

4. The combination in a street-cleaning apparatus, of a rotary sweeper, two curtains inclosing said sweeper, means for withdrawing dust-laden air through the chamber between said curtains and separate means for receiving dirt removed by the sweeper.

5. The combination in a street-cleaning apparatus, of a sweeper, a receptacle for dirt removed by the sweeper, means forming a dust-receiving chamber inclosing said sweeper and separated therefrom and a dust-collector communicating with said dust-receiving chamber, whereby dust and dirt will be simultaneously removed from the street and separately stored.

6. The combination in a street-cleaning apparatus, of a sweeper, means forming a chamber inclosing the sweeper and separated there-

from, means for receiving dirt from the sweeper, means for causing dust-laden air to pass through said chamber, and means for separating dust from the air passing through said chamber.

7. The combination in a street-cleaning apparatus, of a rotary sweeper, means forming a chamber inclosing said sweeper and separated therefrom, a receptacle, an elevator for conveying dirt from the sweeper to said receptacle, and means for separating dust from the air entering the chamber inclosing the sweeper.

8. The combination in a street-cleaning apparatus, of a sweeper, means for receiving dirt therefrom, two curtains inclosing the sweeper and spaced apart, one curtain being shorter than the other, dust-separating means communicating with the space between said curtains, and a suction device communicating with said dust-separating means.

In testimony whereof I have hereunto affixed my signature in the presence of two subscribing witnesses.

AUGUSTUS A. CLOUGH.

Witnesses:

THOS. W. LIPSCOMB,

LUCIUS L. MOORE.