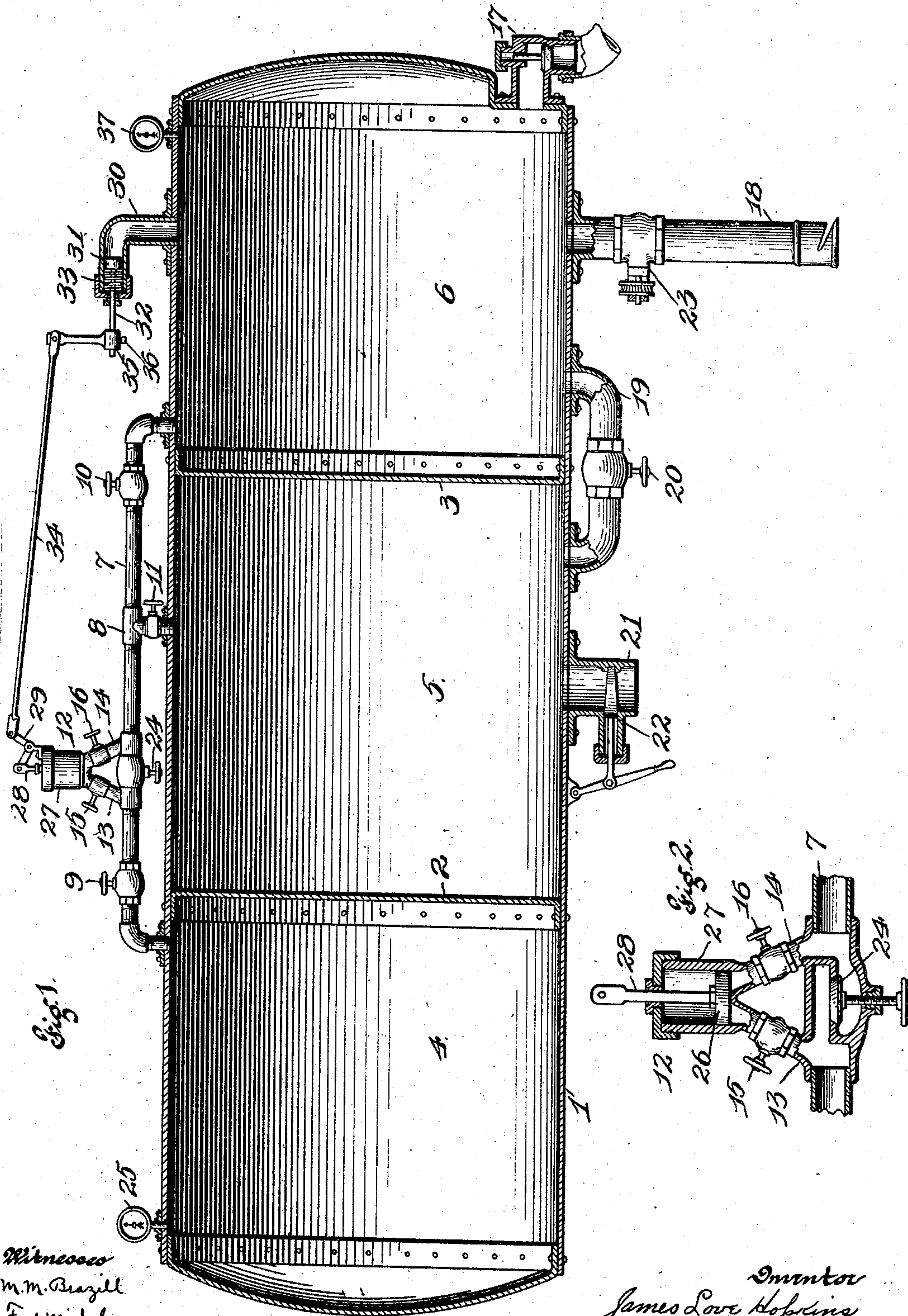


No. 858,602.

PATENTED JULY 2, 1907.

J. L. HOPKINS.
STREET FLUSHING MACHINE.
APPLICATION FILED JUNE 26, 1905.



UNITED STATES PATENT OFFICE.

JAMES LOVE HOPKINS, OF ST. LOUIS, MISSOURI.

STREET-FLUSHING MACHINE.

No. 858,602.

Specification of Letters Patent.

Patented July 2, 1907.

Application filed June 28, 1906. Serial No. 267,085.

To all whom it may concern:

Be it known that I, JAMES LOVE HOPKINS, a citizen of the United States, and a resident of St. Louis, Missouri, have invented certain new and useful Improvements in Street-Flushing Machines, of which the following is a specification.

My invention relates to improvements in street flushing machines, and has for its object to provide a structure comprising a street washing machine wherefrom water is expelled by compressed air, means for compressing such compressed air by utilizing the pressure of the charge water during its influx, means for increasing the degree of such air compression, and means for securing the equalization of the force with which the water is discharged.

In the drawings—Figure 1 is a vertical longitudinal view in mid-section of the device of my invention. Fig. 2 is a detail vertical sectional view of the equalizer made use of in connection with my invention.

The tank 1 is divided by the heads 2 and 3 to form the chambers 4, 5 and 6, 4 being an air-chamber, 5 an intermediate combined air-and-water-chamber, and 6 a water-chamber. At the top, the tube 7 connects, at its extremities, the air-chamber 4 with the water-chamber 6, while mid-way of its length it is provided with the T-joint 8, entering the air-and-water-chamber 5. At or near its end which enters the air-chamber 4, the tube 7 is provided with a valve 9; at or near its other end, the tube 7 is provided with a valve 10, and the T-joint 8 is provided with a valve 11. Between the valve 9 and T-joint 8, the tube 7 is provided with a pressure equalizer 12, connected to the tube 7 by pipes 13 and 14, in which the valves 15 and 16 are respectively seated. Between the pipes 13 and 14, the valve 24 is seated in the tube 7.

The water-chamber 6 is provided with an inlet-pipe 17 and one or more discharge-nozzles 18. The chambers 5 and 6 are connected at their bottoms by the tube 19 in which the valve 20 is seated. The chamber 5 is provided at its bottom with a discharge vent 21 controlled by the slide valve 22. The discharge from the nozzle 18 is controlled by a valve 23.

The mode of operation of the machine of my invention is as follows; The chambers 4, 5 and 6 being empty; the valves 23, 22, 15 and 16 being closed; and the valves 24, 20, 10, 11 and 9 being open, the inlet-pipe 17 is coupled to the source of water supply, for the purpose of charging the machine with water and compressed air. The chambers 5 and 6, being connected by the tube 19, are simultaneously charged with water, the influx whereof forces the air above its level and within said chambers to flow under pressure through the tube 7 into the air-chamber 4. This operation is continued until the chambers 5 and 6 are nearly filled with water, and thereupon the valves 20, 10 and 11 are closed, and the valve 22 opened, permitting the discharge of the water

in the chamber 5 through the vent 21. When the chamber 5 has thus been emptied, the valve 22 is first closed, and the valve 20 is then opened. The water in the chamber 6 is thus permitted to flow into the chamber 5 until its level is established, and the valves 10 and 11 then being opened, the influx of water through the inlet-pipe 17 is continued, to the end of further compressing the air in the chamber 4. This operation may be repeated as often as is necessary to secure the desired air pressure in the air-chamber 4, which pressure is indicated by the gage 25. When such air-pressure has been attained, the valve 24 is closed, the valve 23 is opened, and the compressed air passes from the chamber 4 through the tube 7 and pipe 13 into the equalizer 12, and outwardly through the pipe 14 into the tube 7, and so into the chambers 5 and 6, expelling the water through the discharge-nozzle 18 with the degree of force necessary to thoroughly cleanse the street surface.

The valve 9 may be dispensed with ordinarily, but is desirable where the operation of street washing is begun at a considerable distance from the source of water-supply.

Throughout the operation of charging the air-chamber 4, the influx of water through the inlet-pipe 17 is continuous, and uninterrupted, so that no time is lost during the emptying of the chamber 5.

I have illustrated in the drawing one form of pressure equalizer which may be employed. The valve 26 is slidably and vertically mounted within the equalizer-dome 27 and is provided with the projecting-tongue 28, the tongue 28 being actuated by the bell-crank-lever 29. A housing 30 is mounted at the top of the water-chamber 6 and a regulator 31 is slidably mounted therein and provided with the bar 32. The spring 33 serves to control the position of the regulator 31. The outer end of the bell-crank-lever 29 is connected to the collar 35 by a rod 34. The collar 35 is adjustably mounted on the bar 32 by means of a set-screw 36. The desired pressure being indicated by the gage 37, which is mounted on the water-chamber 6, the collar 35 is adjusted to fix the valve 26 in the necessary position to keep the flow of air through the equalizer 12 at the desired point, and thereafter the movement of the regulator 31 will serve to maintain the valve 26 in the necessary position to insure uniformity of the air pressure.

Having thus described my invention, what I claim as new and desire to secure to me by the grant of Letters Patent, is:

1. In a street-washing machine, a water-chamber, an air-chamber, and an air-and-water-chamber, means whereby said water-chamber and air-and-water-chamber may be simultaneously partially filled with water, and means for emptying the water from the last-named chamber and refilling it with water without interrupting the influx of water to the water-chamber, substantially as specified.

2. In a street washer, the combination of a water-chamber, an air-chamber and an intermediate chamber, and means for simultaneously introducing water to the

water-chamber and intermediate chamber, with means for disconnecting the water-chamber and intermediate chamber and emptying the intermediate-chamber without interrupting the influx of water to the water-chamber, substantially as specified.

3. In a street washer, the combination of a water-chamber, an air-chamber and an intermediate-chamber, means for simultaneously introducing water to the water-chamber and intermediate chamber, with means for disconnecting the water-chamber and intermediate-chamber, and emptying the intermediate-chamber without interrupting the influx of water to the water-chamber, and means for equalizing the outward flow of compressed air from the air-chamber to the other chambers, substantially as specified.

4. In a street washing machine, an air-chamber, a water-chamber, a tube connecting said chambers, a valve connected to the air-chamber, a regulator connected to the water-chamber, and an adjustable connection between said regulator and the valve, whereby the flow of air from the air-chamber is controlled by the pressure of the air in the water-chamber, substantially as specified.

5. In a street washing machine, an air-chamber, a water-chamber, a tube connecting said chambers, a valve connected to the air-chamber, a regulator connected to the water-chamber, and a connecting-means between said regulator and the valve, whereby the flow of air from the air-chamber is controlled by the pressure of the air in the water-chamber, substantially as specified.

6. In a street-washing machine, an air-chamber, a water-chamber, a suitable connecting means whereby water is supplied to the water-chamber, a suitable connecting means between the water-chamber and the air-chamber, means for controlling the influx of air to the air-chamber during the process of filling the water-chamber, and means whereby the flow of air from the air-chamber to the water-chamber is regulated by the air pressure within the water-chamber, substantially as specified.

7. In a device of the class described, the combination of an air-reservoir, a water-reservoir, and an air-and-

water-reservoir, connecting means between the air-reservoir and the other reservoirs, other connecting means between the water reservoir and the air-and-water reservoir, an inlet whereby water under pressure is admitted to the water-reservoir, a discharge-nozzle whereby water is discharged from the water-reservoir under air pressure from the air-reservoir, means for discharging the water from the air-and-water-reservoir without interrupting the influx of water to the water-reservoir, and a means for equalizing the air pressure from the air-reservoir during the discharge of water from the other reservoirs, substantially as specified.

8. In a street-washing machine, an air-chamber, a water-chamber, means whereby the influx of water to the water-chamber is adapted to supply compressed air to the air-chamber, a tubular connection between the chambers named, valves whereby said tubular connection may be closed in proximity to either of said chambers, an equalizer dome mounted upon said tubular connection, means whereby the outward flow of air under pressure from the air-chamber is diverted through said equalizer dome, a valve slidably mounted in said equalizer dome, a regulator mounted upon the water-chamber, and connecting means between the said regulator and the last named valve, substantially as specified.

9. In a street-washing apparatus, the combination of a chamber arranged to contain water, a sprinkling or washing attachment connected therewith through which the water is discharged, a chamber for containing a supply of compressed air, a connection between the said chambers, a valve arranged to control the flow of compressed air from its chamber to the water-chamber, and means controlled by the air pressure within the water-chamber for operating the valve, substantially as specified.

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

JAMES LOVE HOPKINS.

Witnesses:

M. M. BRAZILL,
ALFRED A. EICKS.