

(No Model.)

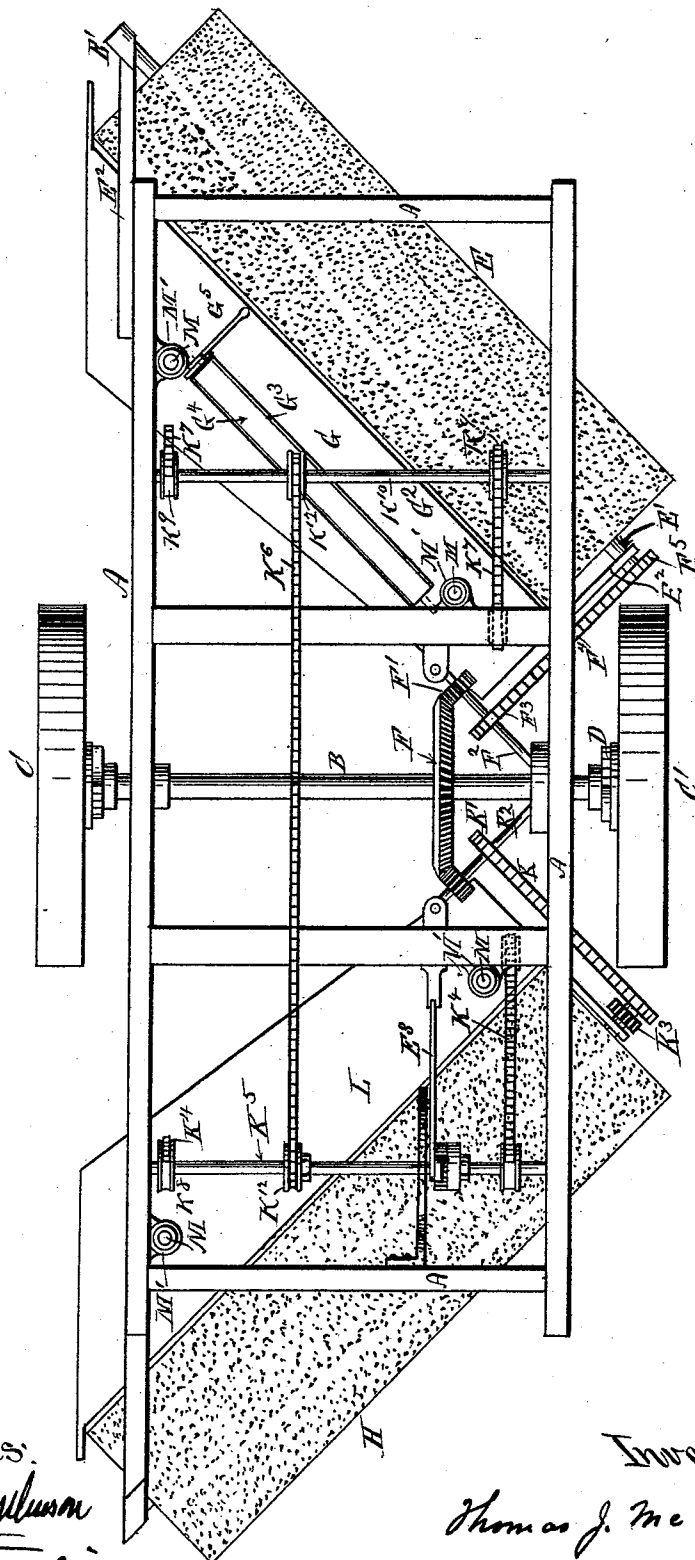
2 Sheets—Sheet 1.

T. J. McARTHUR.
STREET SWEEPING MACHINE.

No. 498,402.

Patented May 30, 1893.

Fig. 1.



Witnesses:
J. Edward Tomlinson
John Tomlinson

Inventor:
Thomas J. McArthur.

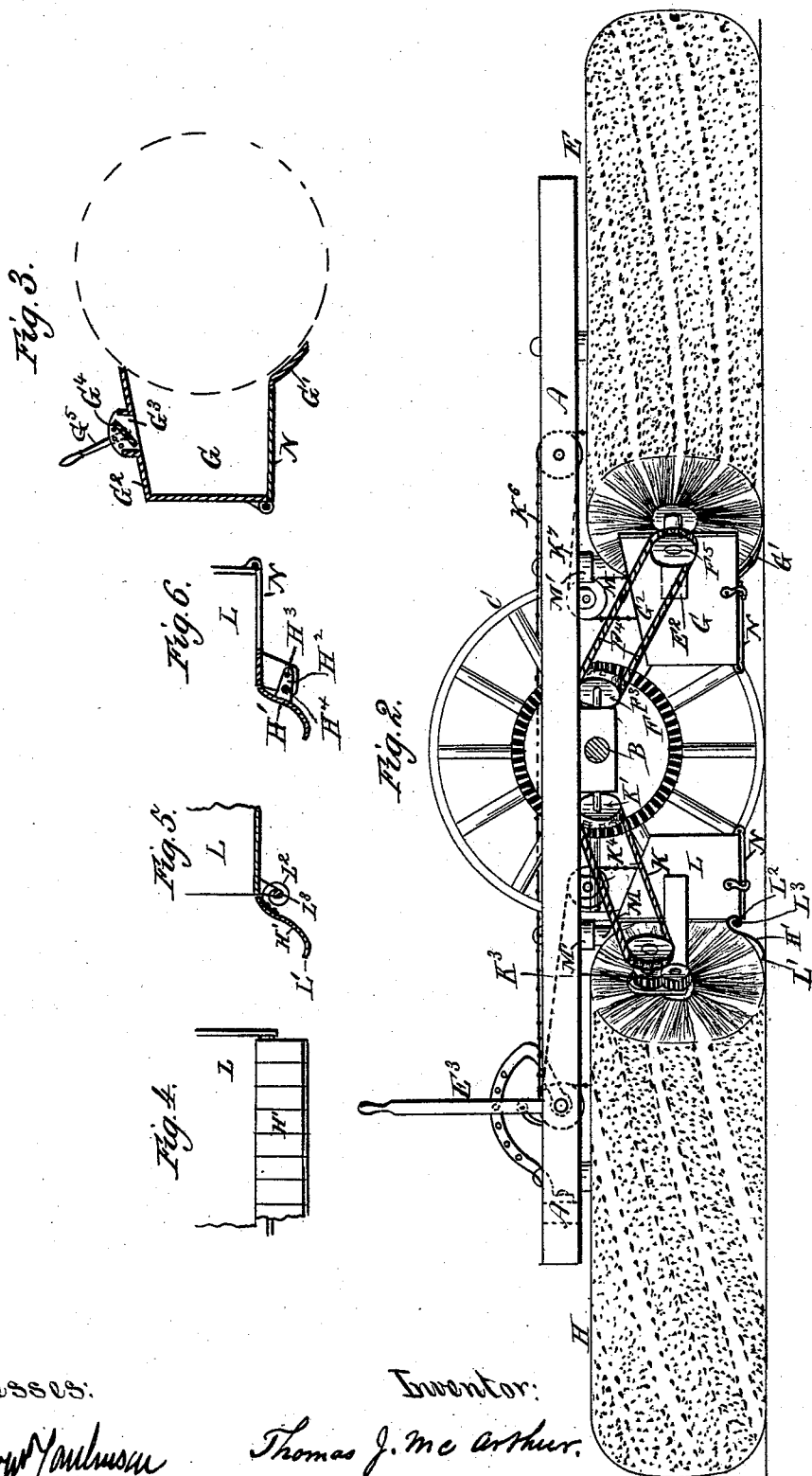
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Witnesses:

John A. Tomlinson
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Inventor:

Thomas J. McArthur

UNITED STATES PATENT OFFICE.

THOMAS J. MCARTHUR, OF NEW YORK, N. Y., ASSIGNOR TO LAURA SHAVE,
OF SAME PLACE.

STREET-SWEEPING MACHINE.

SPECIFICATION forming part of Letters Patent No. 498,402, dated May 30, 1893.

Application filed January 14, 1892. Serial No. 418,027. (No model.)

To all whom it may concern:

Be it known that I, THOMAS J. MCARTHUR, a citizen of the United States, residing in the city, county, and State of New York, have invented a new and useful Improvement in Street-Sweeping Machines, of which the following is a specification.

My invention relates to the class of sweeping machines in which revolving brooms are used and the invention consists, first, in the employment of two brooms or broom cylinders whose axes are at a right angle or nearly so to each other and each axis is at an angle of forty-five degrees to the line of travel when in operation so that the dirt will be moved in opposite directions and transversely to the street.

Second. The invention further consists in providing a receptacle for the dirt lifted by each broom, so constructed and arranged that the dirt will be collected by the motion of the brooms as will hereinafter appear.

I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1, is a plan of the machine as seen from above it and without the flooring or platform over the frame. Fig. 2, is a side elevation and with the brooms and dirt boxes in perspective. Fig. 3 is a vertical transverse section of one of the dirt boxes. Fig. 4 is a detail view of a sectional apron or scoop with which one or both dirt boxes may be provided. Figs. 5 and 6 are sectional detail views illustrating different ways of attaching the apron or scoop to the lower part of a dirt box.

Similar letters refer to similar parts throughout the views.

The main frame A, may be made of wood or metal and is supported by suitable bearings on the main shaft or axle B, which is carried by the wheels C and C'. One of the wheels as at C' is provided with a pawl and ratchet mechanism as at D, to give rotation to the brooms, similar to ordinary sweeping machines. The rear broom E is constructed in the usual manner and is mounted obliquely to the shaft or axle B of the machine and in rear thereof, as shown. The axis E' of the broom E may be journaled in arms or bear-

ings E² supported by a vertically movable dirt box G arranged in front of said broom; a lever E³ being arranged near the driver's seat through which said box and broom can be raised and lowered together as required, in the manner hereinafter described. The driving wheel F on the axle B engages with a pinion F' on the counter shaft F² which carries the sprocket wheel F³ and chain belt F⁴ to the sprocket F⁵ on the rotary broom shaft, which shaft is inclined at nearly half a right angle to the main frame A, so that the sweeping action is partly in a transverse direction or across the street as in ordinary machines.

Adjacent to the broom I provide a dirt receiving box G, the rear edge of which is curved to correspond nearly to the circumference of the broom and at the lower corner, is attached a plate G' with an edge like a dirt scoop that collects the dirt as it is raised from the surface of the street by the broom splints and the air currents produced by the broom. Said box G is provided with a hood or cover G² which extends rearward sufficiently far to catch the dirt and dust in the air currents and thereby cause the dirt to be collected in the box G whence a removal may be made by any suitable means such as a scraper or drawer or sliding or tilting bottom as desired.

To prevent any reaction of the currents of air from the box G, an opening or long slot G³ is provided near its upper front corner as shown in Fig. 1, for the escape of the air and in said opening or slot is pivotally supported a deflecting plate or valve G⁴ which by means of the lever G⁵ at one end can be adjusted to close or open the slot and thereby control the air currents as well as collect the dirt and dust into the receptacles.

I have found both from observation and experiment that there are conditions where a single broom will not and cannot perform efficient sweeping and for several reasons, the chief of which is that when the dirt is wet and somewhat plastic, the splints of the broom are liable to bend back from the mass, and instead of sweeping, merely plaster or smooth over the surface and leave the dirt only slightly flattened. To overcome this objection, I have provided a disintegrating broom H, suspended near the front end of the main

frame A, so as to be raised and lowered by the driver either by hand or foot levers as desired, and said broom is revolved in the same direction as the main shaft and its driving wheel, so that the splints of the broom descend into the dirt and disintegrate the mass and then sweep it back up a scoop-shaped apron H' and thus lift the dirt into a box L behind the broom; but the splints of this broom, are much stiffer than those of the rear broom, and must necessarily be so made to properly give this disintegrating action; but while their stiffness and coarseness prevent their most efficient sweeping action, yet the particles of dirt are left in the best possible condition for the rear broom to complete the work perfectly, as the mass has not only been penetrated by the splints, but moved in two directions viz:—to the rear and by an oblique movement. This front broom is driven by a sprocket belt K, as shown, leading from a sprocket wheel K' on a counter shaft K², which is driven by the same gear wheel F that drives the rear broom. But to give the front broom H the same motion as the main shaft B, an intermediate pinion K³ is employed and it is suspended in the same lifting device that raises the broom and dirt box, which are supported by chains K⁴ passed over sprocket wheels K⁸ on a shaft K⁵ extended across the frame A and rotated by a pawl and ratchet lever E¹⁰ near the driver's seat.

By reference to Figs. 1 and 2 it will be seen that each dirt box G and L is provided with vertical guide standards M the upper ends of which are inserted through collars M' secured at convenient points to the frame of the machine. The front box L is suspended by the chains K⁴ from the sprocket wheels K⁸ on the shaft K⁵ before mentioned. The rear box G is suspended in like manner by means of chains K⁷ from sprocket wheels K⁹ on a shaft K¹⁰, as shown.

The shafts K⁵ and K¹⁰ are provided with sprocket wheels K¹² connected by a chain K⁶ so that by shifting the pawl lever E³ mounted on the shaft K⁵ adjacent to the driver's seat both dirt boxes G L and attached rotary brooms E H can be raised or lowered at will.

I prefer to make the apron or scoop H' in the front edge of the dirt box L in sections and each suspended independent of the other as shown in Fig. 4 so that they can conform to the varying undulations of the street surface and rise over obstructions without interfering with one another. For this purpose I have made them with a somewhat blunt point and slightly curved upward in front, as shown at L' in Figs. 2 and 5, and their upper ends are suspended by volute springs L³ to a bar

L³ depending from the frame A, as shown. These volute springs may however be dispensed with and the scoop sections may each have a lever or arm H², Fig. 6, at its back pivoted upon a rod H³ and supported by a wooden pin H⁴, similar to the shoes of grain drills, so that the shoe or scoop section may yield before breaking anything but the pin. This front box L may be constructed like the one for the rear broom with an air vent, and an adjustable valve and a pan or scraper or tilting bottom.

In Figs. 2, 3 and 6 I have shown each dirt box provided with a hinged bottom N which can be tilted down to discharge the contents of the box.

Having thus described my invention, I desire to secure by Letters Patent and therefore claim—

1. In a street sweeping machine, the combination of two rotary brooms having their axes at a right angle to each other or nearly so and at an oblique angle to an intermediate wheel axle or main shaft, a dirt box or receptacle for the dirt lifted by each broom, and gearing for actuating said brooms from the wheel axle, substantially as described.

2. In a street sweeping machine, the combination of a frame having a main shaft or wheel axle, two rotary brooms having their axes at a right angle to each other or nearly so and at an oblique angle to the wheel axle, one of said rotary brooms being supported in advance of the wheel axle and the other in rear thereof, and gearing for actuating said brooms from the wheel axle, substantially as described.

3. In a street sweeping machine, the combination of a frame having a main shaft or wheel axle, two rotary brooms having their axes at a right angle to each other or nearly so and at an oblique angle to the wheel axle, one of said rotary brooms being supported in advance of the wheel axle and the other in rear thereof, gearing for actuating said brooms from the wheel axle, obliquely arranged dirt boxes or receptacles for the dirt lifted by said brooms, and means for raising and lowering said boxes and brooms together, substantially as described.

4. In a street sweeping machine, the combination with a rotary broom, of a dirt box having a hood or cover arranged with one edge next to the broom and provided with an air vent having an adjustable valve therein, substantially as described.

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Witnesses:

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