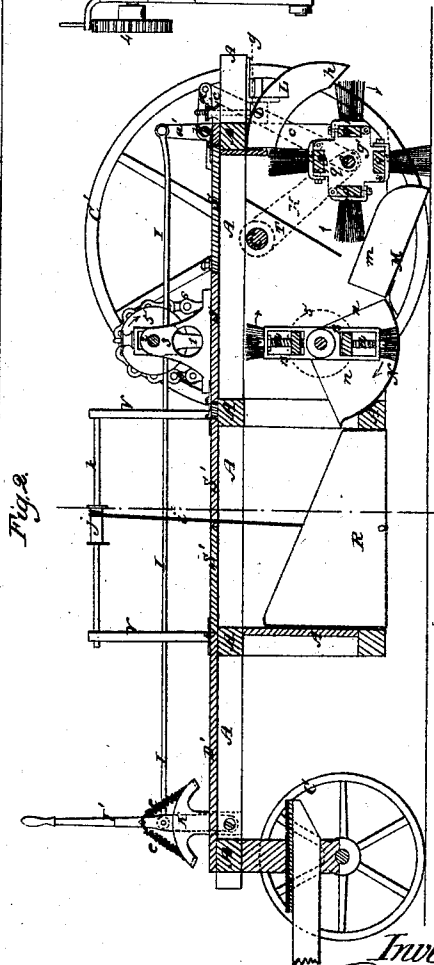
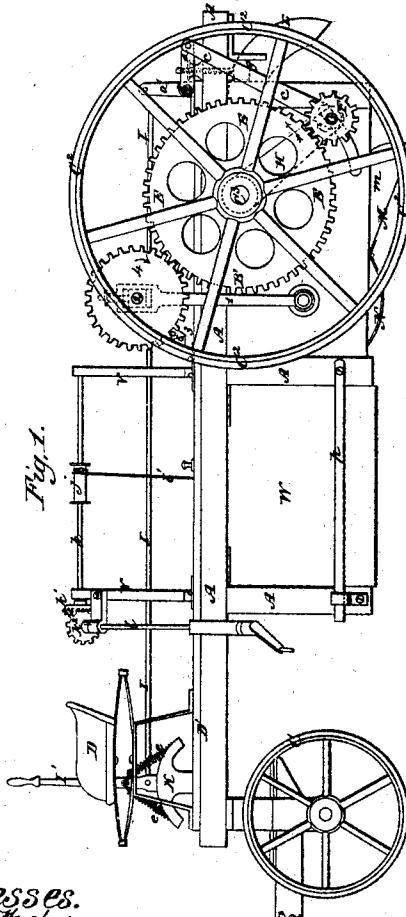
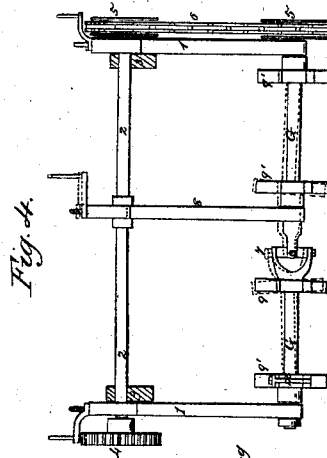
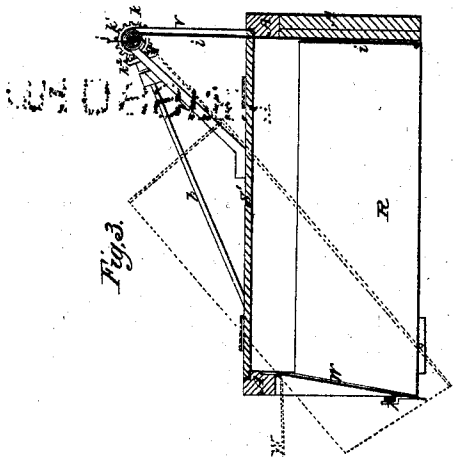


R. A. SMITH.
STREET SWEEPING MACHINE.

No. 27,839.

Patented Apr. 10, 1860.



Witnesses.
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MACHINE FOR SWEEPING STREETS.

Specification forming part of Letters Patent No. 27,839, dated April 10, 1860; Reissued November 24, 1879, No. 6,153.

REISSUED

To all whom it may concern:

Be it known that I, ROBERT A. SMITH, of the city, county, and State of New York, have invented certain new and useful Improvements in Street-Sweeping Machines; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 represents a side elevation of a complete machine, showing from an outside view the several parts in their relative positions for sweeping. Fig. 2 is a longitudinal vertical section of Fig. 1 showing the arrangement of the brooms, dust-boxes, and receivers, with the plan for raising or depressing the main broom cylinder during the forward movement of the machine. This figure also shows the plan for preventing the dust raised by the brooms from escaping at the rear of the machine. Fig. 3 is a vertical transverse section taken through the machine and through the center of the dirt receiving box, showing said box in two positions, one for receiving the dirt and the other position for discharging it from the side of the machine. Fig. 4 is a front elevation of the hanging gear for the brushes or brooms, showing the broom shaft jointed at or near its center so as to have a universal play. This plan is to be used for sweeping narrow streets, or those with a very convex grade, the ends of the brushes will accommodate themselves to the surface of such a street. The same plan will however be found useful for every machine for either wide or narrow streets, curved or level surfaces. In this figure a device is shown for tightening the endless driving chain, should it become loose in consequence of wear.

Similar letters of reference indicate corresponding parts in the four figures.

This invention and improvement in machines for sweeping streets provides for gathering the dirt into a suitable receptacle from which it may be discharged at required intervals, and at suitable places for deposit along the street being swept, or into a tributary street where it will be out of the way until it can be finally carted away.

It also provides for giving the street a thorough cleaning without creating a dust on the outside of the machine, however dry the dirt or streets may be. This is a decided

advantage over former machines and renders it unnecessary to water the streets preparatory to sweeping.

It also provides for placing the management of the sweeping brooms under control of the driver so that he may raise or depress them while they are in motion, as occasion requires, they have besides this an automatic yielding action so that they will accommodate themselves to the uneven surface of the street, either to a level surface or to a convex grade.

For effecting these ends my invention consists, firstly, in a novel mode of hanging the sweeping brooms or broom cylinder, so that it will receive a direct rotary motion from the rear driving wheel or wheels; secondly, in hanging the cylinder shaft in such a relation to the driving gear of the rear wheel by suitable arms and connecting rods that said cylinder may be elevated or depressed while the machine is in motion; and, in connection with this mode of hanging the broom cylinder, my invention consists, thirdly, in applying to a hand lever for raising or depressing the broom cylinder suitable springs arranged in such a way that this cylinder will be yielding to the inequalities of the street surface; fourthly, in a swinging box or trap arranged in rear of the main broom cylinder for receiving the dust escaping from said cylinder; fifthly, in arranging in front of the broom cylinders, and in a suitable relation to a curved trough under the secondary broom cylinder, a suitable receptacle for receiving and holding the dirt from the brooms, from which receptacle the dirt is to be readily discharged at the desired intervals by an arrangement hereinafter described and represented; sixthly, in a novel device for securing the broom heads to their shafts as will be hereinafter described; seventhly, in arranging a guard board between the front and rear broom cylinders, for the purpose of preventing dirt and dust from returning back upon the main broom, as will be hereinafter described.

To enable those skilled in the art to fully understand my invention and improvements I will proceed to describe its construction and operation.

In the drawings, A A represent the main framing of the machine covered closely on top with trap doors. The whole is mounted on wheels C, C, C', C', the wheel C², is the

driving wheel for giving motion to the broom cylinders. The front axletree is attached to the body of the machine by a fifth wheel Z^b and the running gear is so arranged that the machine may be turned short around.

D is the drivers seat mounted on elliptic springs X^c which rests on standards which standards proceed up from and are supported on the platform D' .

E is a large toothed wheel secured to and turning with the driving wheel C^2 , into which engages a pinion, F, Fig. 1. This pinion is keyed to the main brush shaft, G, which shaft has its bearings in two swinging arms, H, H; which arms are hung loosely from the axletree, C^3 , of the driving wheel, so as to describe an arc concentric with the axis of the driving wheel. The free ends of these arms are connected, by joints, to short arms, a , of a shaft, b , by rods c , which rods are inclined more or less according to the position of the brooms. The shaft, b , has its bearings on top of the machine it passing transversely across the machine. At right angles to arm, a , on the right hand side of the machine is an arm, a' , secured to the shaft, b , to the end of which arm is pivoted a connecting rod, I, which connects with a hand lever, I' , situated in a position to be conveniently operated by the driver from his seat, D. With this manner of hanging the main broom shaft, the brooms can be elevated or depressed by the driver, while they are in motion, and the machine moving along. But in order that the broom cylinder may be yielding and that the brooms may be capable of accommodating themselves to the inequalities of street surface two suitable springs, e , e , are used and connected with the hand lever, I' , and to the wings of a segmental guide-plate, K; these springs are of sufficient strength to hold the brooms down firmly to their work, the springs act upon the brooms through the medium of hand lever I' connecting rod I, arms a' , and a , rods c , c , and vibrating arms, H, H, as above set forth. Now for very heavy work it will be necessary for the brooms to press harder on the surface of the street, and for effecting this object the lever, I' , may be pressed back and held in this position by any suitable means. The brooms may also be elevated by the lever, I' , at the option of the driver, and fixed in this elevated situation by simply moving this lever forward, and holding it, or fixing it to the side of the seat or to the quadrant, K.

In rear of the main broom cylinder, and hanging pretty well over the brooms is a swinging box or trap L, shown clearly by Figs. 1 and 2, this curved trap is hung in adjustable bearing boxes, g , g , which are set in brackets, and suspended from projecting beams, A, A, of the frame of the machine. This trap has a receiver, h , in its lower end

for holding the dirt which escapes from the brooms, the sides of the trap are closed in, so that dust cannot escape at these points, and the curved plate or cover fits tightly against the cross bar, A, of the frame, so that dust cannot escape above the trap; and with this peculiarly formed swinging trap attached to the machine, as shown by the drawings, the dust lifted by the rapid motion of the brooms is prevented from escaping from the rear of the machine. When the receiver, h , is full it may be emptied by simply raising the trap. This is a very important attachment to my machine, and adds greatly to its perfection.

M, (Fig. 2), represents an inclined plate, with sides, m , which is hinged to a curved plate, N, the curve of which is concentric with the circle described by the secondary brooms, P; this latter plate is also provided with sides, n , which like the side plate, m , of the inclined plate, M, prevents the dirt from escaping from the ends. The mouth of the inclined plate, M, rests on the ground, and is so arranged in front of the main brooms as to receive the dirt swept up by these brooms and conduct it to the pan or trough, N, from which it is rapidly discharged by the secondary brooms, P, into a box, R, where it accumulates, and from which it may be discharged at suitable times, as will be hereinafter described.

The main and secondary brooms with the conducting plates, and the general receiving box, R, are all closely housed in, as represented by the drawings, and on top are hinged covers, S S, for the broom compartment, and covers, S' S' , for the receiving box, R, compartment.

Between the front and rear brooms is placed an inclined guard board, T, extending across the machine and of a sufficient width to prevent the dust and dirt thrown off by the secondary brooms, P, from falling on the main brooms, this guard board conducts this dirt back to the pan, N.

In Fig. 3 of the drawings the general receiving box, R, is more clearly shown, in connection with the manner of operating it so as to give it the proper inclination for dumping its load at the side of the machine. The object of which is to remedy many objections to sweeping the dirt in windrows, in the ordinary manner, with the diagonal broom machines. The bottom and front end of the box is suitably hinged to the frame, A, its rear end being free to move up or down. To this end is connected a cord, or chain, i , which passes over a flanged drum, j , on the pulley shaft, k . This pulley shaft is mounted in brackets, V V, and the chain, i , is wound up on the drum by beveled wheels k' k' , the latter being keyed to the end of an inclined crank shaft, l , which passes down through the opposite side of the

machine, near the discharge opening of the box R. By winding up the chain the rear end of the box will be elevated, the covers, S' S', having been previously opened the end, W, will be raised by the end of the box, as it is hinged to the frame, A, during the filling of the box, R; this hinged end, W, should be secured in a closed state by the bar, p, Figs. 1 and 2.

10 The secondary broom shaft is hung in arms 1, 1, which are made adjustable on a driving shaft 2, which shaft is hung in brackets 3, 3, on the top of the machine. This shaft is driven by a pinion 4, from the driving gear wheel and transmits motion to the broom shaft by pulleys 5, 5, and an endless link chain, 6; the use of the chain, 6, for this special purpose is very important for there will be a constant wear on this chain, and as it becomes loose in consequence of this wear it is necessary to set it up tight, for this purpose the adjustable arms 1, 1, are used to hang the broom shaft.

I am aware that it is an old method to tighten driving belts by adjusting the bearings of their shafts, but it is only the special application of such adjustment that I desire to claim.

Fig. 4 shows the manner of hanging the main broom shaft from the driving shaft. It also shows the manner of constructing said shaft for a very wide machine, where it is necessary to adjust the brooms to inclined positions for sweeping very narrow streets with a very convex surface; this is done by jointing the shaft at the middle of its length by a gimbal or universal coupling 7, and supporting the shaft near this joint by an adjustable hanger, 8, hung from the driving shaft; by adjusting this hanger, 8, the brooms will be more or less inclined.

The broom heads, 9, are secured to their shafts in a novel manner; and this is done as follows: 9', 9' are plates firmly fixed to shafts, in which are right-angular recesses, as shown by Figs. 2 and 4. The broom heads, 9, are fitted into these recesses—each plate having four—and locked in place by hinged clamps, 12, which are hinged to one side of the recesses, and, when the brooms are set in place, are drawn over and secured to the opposite side or lip, by screws or in any other suitable way. By this simple contrivance the broom heads can be readily secured in place and removed with the same facility. The secondary broom heads, P,

are set in adjustable bearing plates, 13, and adjusted as they wear by screws, 14, as shown by Fig. 2; by this adjustment the brooms may always be kept in a proper relative position with the surface of the pan, N.

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

1. Hanging the main broom shaft, G, in swinging arms, H H, from the axle, C³, so that said shaft will have a direct motion from the driving wheel, C², substantially as set forth.

2. In combination with the main broom shaft, hung as herein set forth, the rods, c, arms, a a', shaft, b, and rod, I, connecting with the lever, I', for the purpose of enabling the driver to raise, or depress this broom shaft, at pleasure, as set forth.

3. I claim giving to the main broom shaft, G, a yielding action so that it will adapt itself to the inequalities of the street surface, whether effected by the arrangement of arms and connecting rods and springs, e, e, as herein described, or in any other way substantially as described.

4. I claim the universal coupling of the main broom shaft with the adjustable hanger 8, for the purposes, and substantially as set forth.

5. I claim the adjustable hangers 1, 1, with the chain pulleys 5, 5, and secondary broom shaft, when the same are arranged with relation to the pan, N, or its equivalent, as described and represented, for the purpose of adjusting the brush shaft, and keeping the brushes in contact with this pan, at the same time to tighten up the chain as it wears loose on the pulleys.

6. I claim the adjustable swinging trap or box, L, suspended over the main brooms and in rear of the same, for the purposes, and substantially as described and represented.

7. I claim arranging in front of the secondary broom cylinder and in a suitable relation to the conducting pan, N, a dirt receiver, R, supplied with any suitable mechanism, by which the box may be emptied of its contents at suitable intervals.

8. I claim the guard board, T, placed between the front and rear brooms for the purposes, and as described and represented.

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Witnesses:

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M. M. LIVINGSTON.