

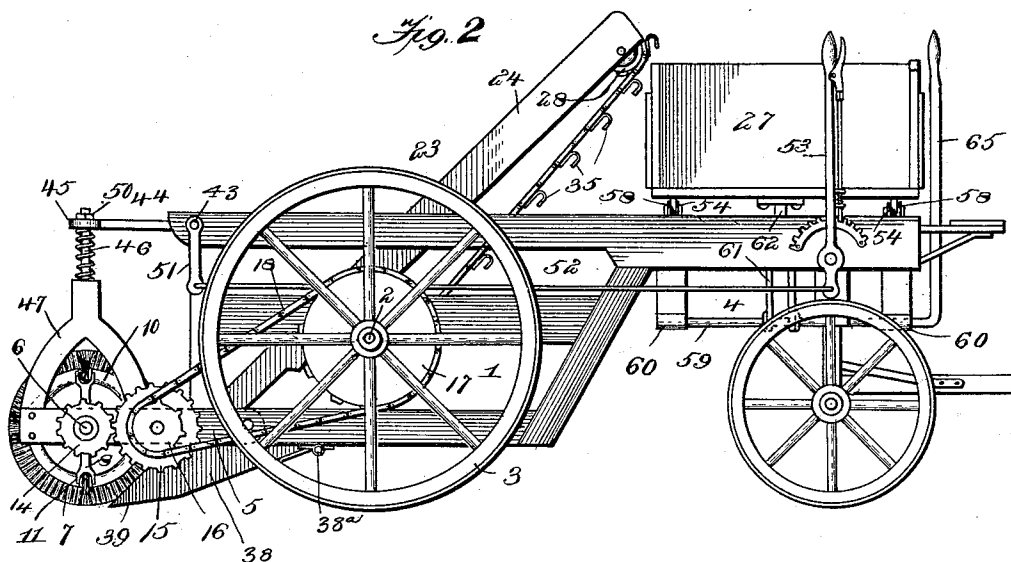
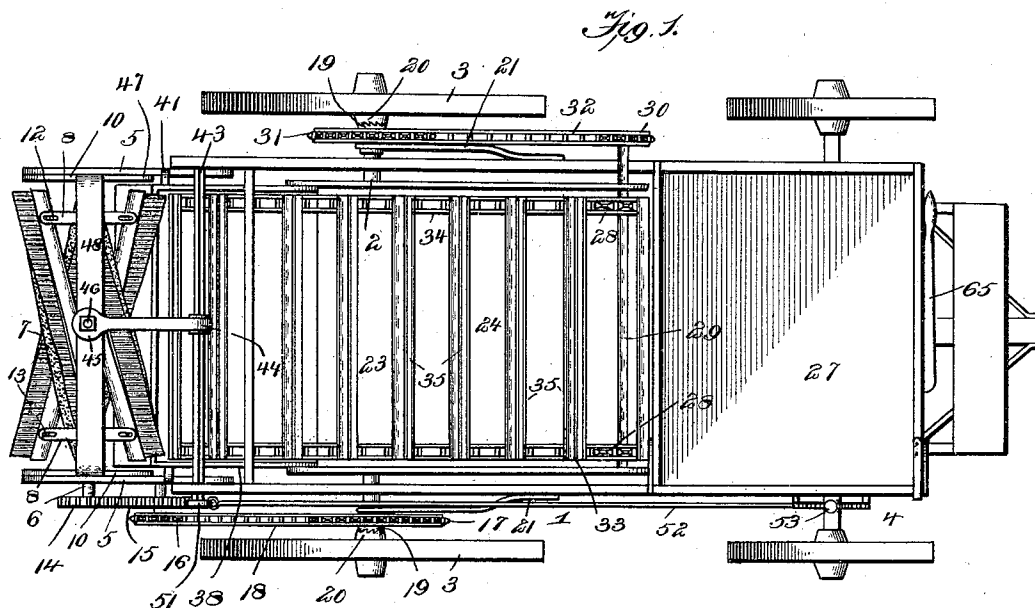
(No Model.)

3 Sheets—Sheet 1.

J. A. SMITH.
STREET SWEEPER.

No. 536,941.

Patented Apr. 2, 1895.



Inventor

Joseph A. Smith,

Witnesses

John Shaw
J. A. Smith

By his Attorneys.

Cashow & Co.

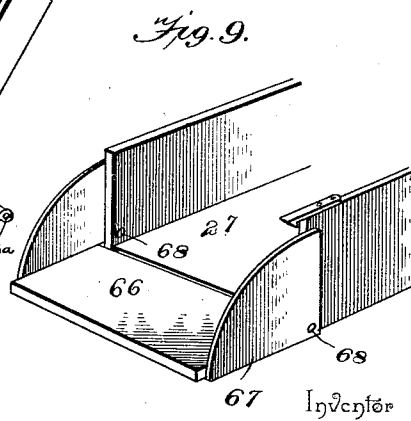
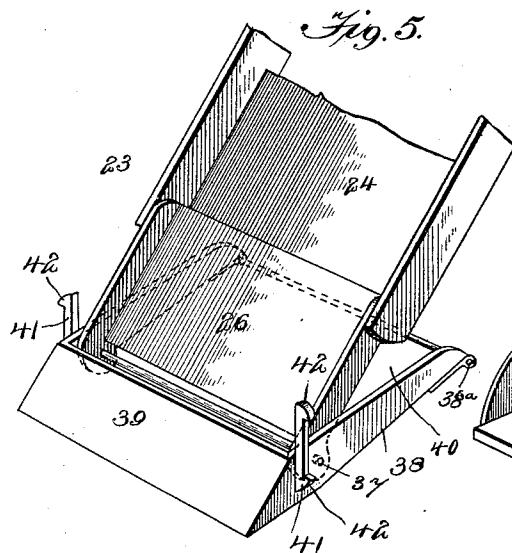
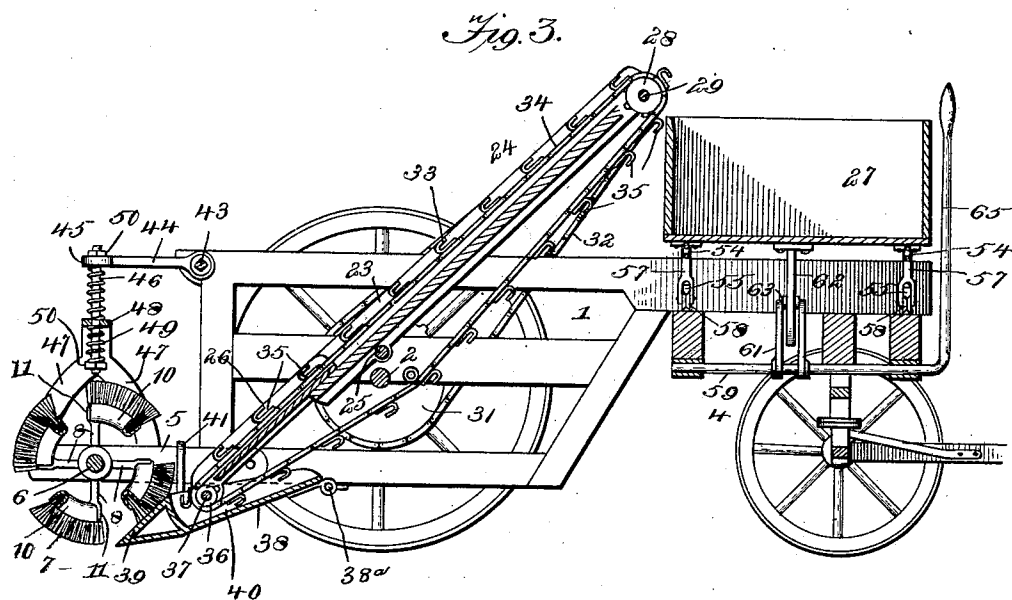
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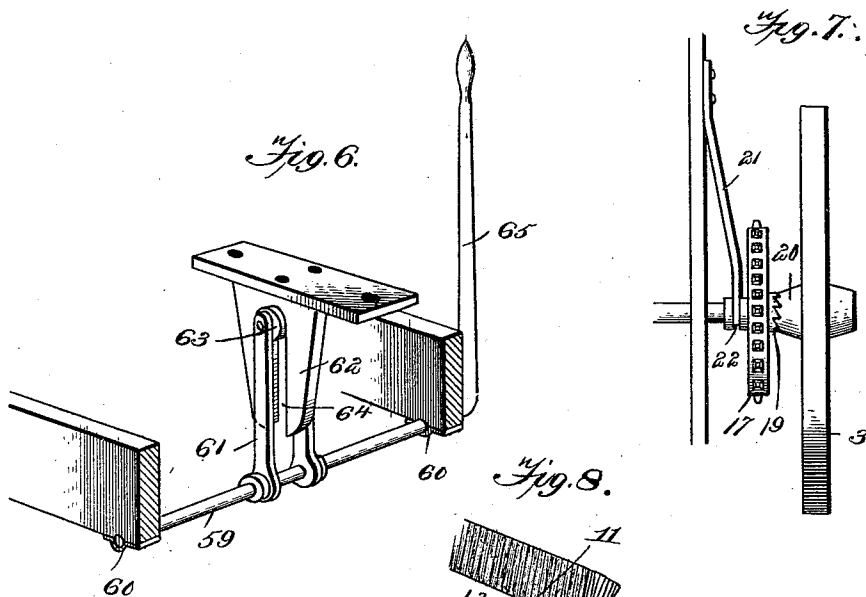
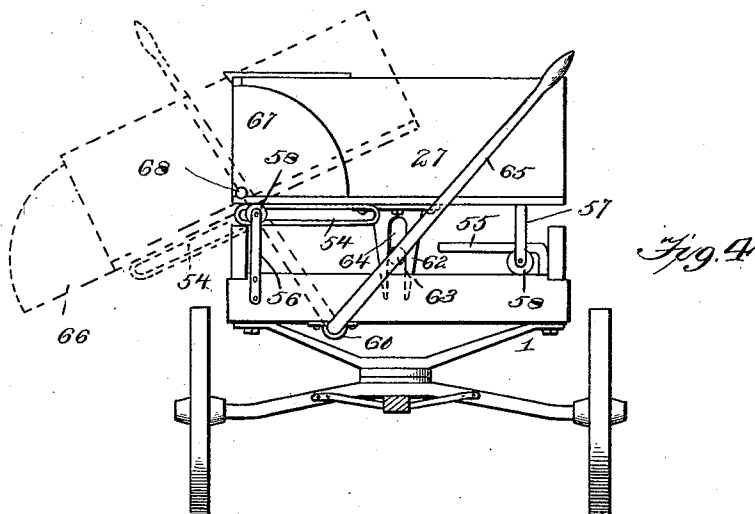
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3 Sheets—Sheet 3.

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Witnesses

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UNITED STATES PATENT OFFICE.

JOSEPH A. SMITH, OF MACOMB, ILLINOIS.

STREET-SWEEPER.

SPECIFICATION forming part of Letters Patent No. 536,941, dated April 2, 1895.

Application filed April 16, 1892. Serial No. 429,441. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH A. SMITH, a citizen of the United States, residing at Macomb, in the county of McDonough and State of Illinois, have invented new and useful Improvements in Street-Sweeping Machines, of which the following is a specification.

My invention relates to street-sweepers adapted for conveying the dirt from the brushes to a receptacle forming a part of the machine; and the objects in view are to provide a simple and efficient construction sufficiently light in weight to be transported with facility, and to provide suitable means for adjusting the several parts to secure the effective operation of the brushes and of the elevating mechanism.

Further objects and advantages of the invention will appear in the following description, and the novel features thereof will be particularly pointed out in the appended claims.

In the drawings:—Figure 1 is a plan view of a street-sweeping machine embodying my invention. Fig. 2 is a side view of the same. Fig. 3 is a longitudinal section. Fig. 4 is a front view. Fig. 5 is a detail view in perspective of the lower portion of the elevator frame. Fig. 6 is a detail view of the means for sliding the receptacle to discharge its contents. Fig. 7 is a detail view of a clutch-device for communicating motion from a ground-wheel to an adjacent sprocket-wheel. Fig. 8 is a detail view of one end of a brush. Fig. 9 is a detail view of a portion of the receptacle.

Similar numerals of reference indicate corresponding parts in all the figures of the drawings.

1 designates the main frame of the machine, to which is attached the main axle 2, the ground or driving wheels 3 being mounted loosely upon the extremities of said axle beyond the sides of the framework. Suitable front running gear 4 is provided.

Pivottally connected to the main framework below the plane of the axle 2 and in rear thereof is a brush frame 5 having parallel side-bars connected by a transverse shaft 6, carrying the spiral brushes 7. These brushes are attached to the shaft 6 by means of radial arms or spokes 8 forming integral parts of the hubs 9, and the brushes are provided with U-shaped

brush-frames 10 in the forked outer ends 11 of said arms or spokes. The arms or spokes are longitudinally slotted, as shown at 12, for the reception of the screws 13 by which the brush-frames 10 are attached to the arms or spokes. By means of this slotted connection between the arms or spokes and the brush-frames, the latter may be adjusted radially to secure the desired equality of pressure of the bristles upon the surface of the street. The brush-wheel is driven by means of a pinion 14 fixed to the end of the shaft 6, and meshing with a gear 15 mounted upon an adjacent portion of the framework. Said gear-wheel 15 receives motion from a chain-wheel 16 attached to its side and receiving motion from a larger chain-wheel 17 by means of a chain 18. Said chain-wheel 17 is loosely and slidably mounted upon the axle adjacent to one of the ground-wheels, and is provided with a ratchet clutch-face 19, which engages a similar clutch-face 20 on the inner end of the hub of said wheel, the two clutch-faces being held in contact to cause rotation of the wheel 18 when the ground-wheel 3 is moved forward by means of a spring 21 attached at one end to the framework and forked at the other end to engage a groove 22 in the hub of the chain-wheel, all as shown clearly in Fig. 7.

The elevator 23 has a frame consisting of an upper section or member 24 pivoted at 25 to the framework by means of a transverse rod, and a lower member 26 which is slidably and adjustably fitted at its upper end in the lower end of said upper section or member. The upper end of the upper or main section or member is arranged adjacent to a receptacle 27 and is provided with chain-wheels 28 carried by a transverse shaft 29 mounted in bearings in the sides of the elevator-frame, and this shaft receives motion by means of a chain-wheel 30 fixed to one end thereof, a chain-wheel 31 arranged upon the axle 2, and a connecting-chain 32, said chain-wheel 31 being connected to the adjacent ground-wheel by means of a clutch-mechanism similar to that hereinbefore described, whereby when the machine is moved forward the motion of the ground wheels is communicated to the contiguous chain-wheels, and when the machine is moved backward, said chain-wheels remain stationary. The carrier 33 of the ele-

vator comprises the endless side-chains 34, which travel over the chain-wheels 28, and the transverse connecting bars or buckets 35, the lower ends of said chains passing around 5 idle chain-wheels 36 carried by a transverse shaft 37, which is mounted in bearings in the lower ends of the lower section or member 26 of the elevator frame.

Pivotally connected at its front end to the 10 framework by means of a transverse rod 38^a is a shoe 38 having a tapered rear edge 39 which is adapted to bear upon the surface of the street adjacent to and in front of the rotary brush, the front portion of said shoe being 15 provided with a cavity 40 through which the carrier passes and by means of which the cross-bars of the carrier engage the sweepings, said transverse shaft 37 being extended to fit in bearings in the sides of said shoe, whereby 20 the lower end of the lower member of the elevator frame is connected to the shoe. Attached to the sides of the shoe are the check-bars 41, having upper and lower stop shoulders 42, which are arranged respectively 25 above and below the upper and lower edges of the side bars of the brush-frames 5.

The means for adjusting the brush-wheel to secure the desired pressure upon the surface of the street embodies a transverse shaft 30 43 mounted in bearings in the main framework and provided with a rearwardly extending arm 44, provided with an eye 45, in which fits the upper end of a rod or bolt 46. The brush-frame 5 is provided with the upwardly 35 extending yokes 47 connected at their upper ends by a transverse bar 48 through which extends said bolt or rod 46, springs 49 being arranged upon the bolt or rod 4 respectively above and below the cross-bar 48, the ends, of 40 said bolt or rod being fitted with nuts or adjustable stops 50. The upper nut or stop is arranged above the eye 45 and limits the downward movement of the brush-frame, and the upper spring 49 bears against the under side of 45 said eye 45, and thus provides for an upward yielding of the brush-frame when meeting obstructions or inequalities of the surface of the street. Attached to one end of said transverse shaft 43 is a crank-arm 51, which is connected 50 by means of a rod 52 with a hand lever 53 provided with suitable means for holding it in the desired position. It will be seen that when the upper end of the hand-lever is moved to depress the free rear end of the arm 44 increased pressure will be applied to the brush, 55 and that the opposite movement of said hand-lever will reduce the pressure of the brush upon the surface of the street. It will be seen also that when desired the brush may be removed entirely from contact with the street and that the elevation of the brush-frame will cause a corresponding elevation of the drag-shoe by the engagement of the side-bars of the brush-frame 5 with the shoulders 42 at the upper 60 per ends of the limiting bars 41.

The receptacle 27 is slidably mounted for lateral movement upon the main frame of the

machine by means of the horizontal guides 54 and 55 attached respectively to the under side of said receptacle and to the framework and 70 the upright bracket 56 and the pendent bracket 57, both of which are provided with anti-friction rolls 58, which operate respectively in the guides 54 and 55. The guide 55 terminates short of the center of the frame, 75 whereby as indicated by dotted lines in Fig. 4, a lateral movement of the receptacle sufficient to carry the anti-friction roll of the bracket 57 beyond the extremity of said guide 55, will allow the receptacle to incline or tilt 80 and thus discharge its contents. The means for accomplishing this lateral movement of the receptacle comprise a longitudinally disposed shaft 59 mounted in bearings 60 depending from the main framework and carrying 85 an arm 61, which engages a slotted bracket 62 depending from the under side of the receptacle. The arm 61 is preferably looped and is provided at its outer end with an anti-friction roll 63, which operates in the slot 64 90 of the bracket 62. Attached to the front end of the shaft 59 is a hand-lever 65, and it will be seen that by the proper movement of this hand-lever motion may be communicated to 95 the receptacle to cause the discharge of its contents. The receptacle is provided at one end with a hinged or swinging end gate 66 provided with sector-shaped ends or heads 67, which are pivoted at their angles by means of 100 a transverse pintle-rod 68, said end gate being adapted to open automatically when the weight of the contents of the receptacle is thrown thereagainst by the tilting of such receptacle.

The operation of the above construction 105 will be readily understood without a detailed explanation thereof, and it will be obvious that various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the spirit 110 of the invention or sacrificing any of the advantages thereof.

Having described the invention, what I claim is—

1. In a machine of the class described, the 115 combination with a supporting framework and ground-wheels, of a brush-frame pivotally connected to said framework, a rotary brush mounted upon the brush-frame, operating connections between said brush and a 120 ground-wheel, said brush-frame being provided with a cross-bar arranged above the plane of the upper side of the brush, an arm 44 projecting rearwardly from the supporting framework and provided with a terminal eye, 125 a bolt or rod fitting in said terminal eye and in an opening in the cross-bar of the brush-frame, adjustable nuts or stops fitted upon said bolt or rod, springs arranged respectively above and below the plane of said cross-bar, 130 and means for adjusting the position of the arm 44, substantially as specified.

2. In a machine of the class described, the combination with a supporting framework

and ground-wheels, of a rotary brush operatively connected with a ground-wheel, a brush-frame supporting said brush and pivotally connected to the supporting framework, means for elevating and depressing said brush-frame, a drag-shoe pivotally connected to the supporting framework and connected to the brush-frame, an elevating mechanism having an elevator frame comprising an upper section or member supported by the framework, and a lower section or member slidably connected to the upper section or member and pivotally connected at its lower end to said drag-shoe, and connections between the elevating mechanism and a ground-wheel, substantially as specified.

3. In a machine of the class described, the combination with a supporting framework and ground-wheels, of a pivotal brush-frame, a rotary brush carried by said frame, means for adjusting the elevation of said brush-frame, a drag-shoe pivotally connected at its front end to the supporting framework and provided at its rear end with shouldered limiting bars to engage side bars of the brush-frame, an elevator-frame having a movable lower section or member slidably connected with the upper section or member and pivotally connected at its lower end to the said drag-shoe, an endless carrier traveling over said elevator-frame, and operating connections between the carrier and a ground-wheel, substantially as specified.

4. In a machine of the class described, the combination with a supporting framework and ground-wheels, of a rotary brush operatively connected to a ground-wheel, a drag-shoe arranged in advance of said brush and pivotally connected to the supporting framework, an elevator-frame having an upper section or member which is pivotally connected near its lower end to the supporting framework and having a lower section or member which is slidably connected to said upper section or member and is pivotally connected to the said drag-shoe, means for elevating the free end of the drag-shoe and hence the connected movable section or member of the elevator-frame, a carrier traversing said elevator-frame, and operating connections between the carrier and a ground-wheel, substantially as specified.

5. In a machine of the class described, the combination with a supporting framework, ground-wheels, brushing and elevating mechanisms, and connections between said brush-

ing and elevating mechanisms and the ground-wheels, of a receptacle supported by the framework, horizontal guides attached respectively to the receptacle and the framework, roll-supporting brackets attached respectively to the framework and the receptacle with their rolls engaging said horizontal guides, and means for moving the receptacle laterally to discharge its contents, substantially as specified.

6. In a machine of the class described, the combination with a supporting framework, ground-wheels, brushing and elevating mechanisms, and operating connections between said brushing and elevating mechanisms and the ground wheels, of a receptacle arranged upon the supporting framework in position to receive sweepings from the elevating mechanisms, a guide 54 attached to the under side of the receptacle and terminating adjacent to the longitudinal center thereof, a stationary guide 55 fixed to the supporting framework and terminating short of the longitudinal center of the framework, anti-friction rolls mounted upon brackets attached respectively to the framework and the receptacle and operating in said guides, and means for imparting motion to the receptacle, substantially as specified.

7. In a machine of the class described, the combination with a supporting framework, ground-wheels, brushing and elevating mechanisms, and operating connections between said brushing and elevating mechanisms and the ground-wheels, of a receptacle 27 supported by the framework in position to receive sweepings from the elevating mechanism, guides 54 and 55 attached respectively to the receptacle and the framework, brackets 56 and 57 attached respectively to the framework and the receptacle and provided with anti-friction rolls operating respectively in the guides 54 and 55, a slotted bracket 62 depending from the receptacle, a shaft mounted in bearings on the supporting framework transverse to the direction of movement of the receptacle, an arm fixed to the said shaft and provided with an anti-friction roll operating in the slot in said bracket 62, and a hand-lever for moving the shaft 59, substantially as specified.

JOSEPH A. SMITH.

Witnesses:

MARTIN PRICE,
F. J. PRICE.