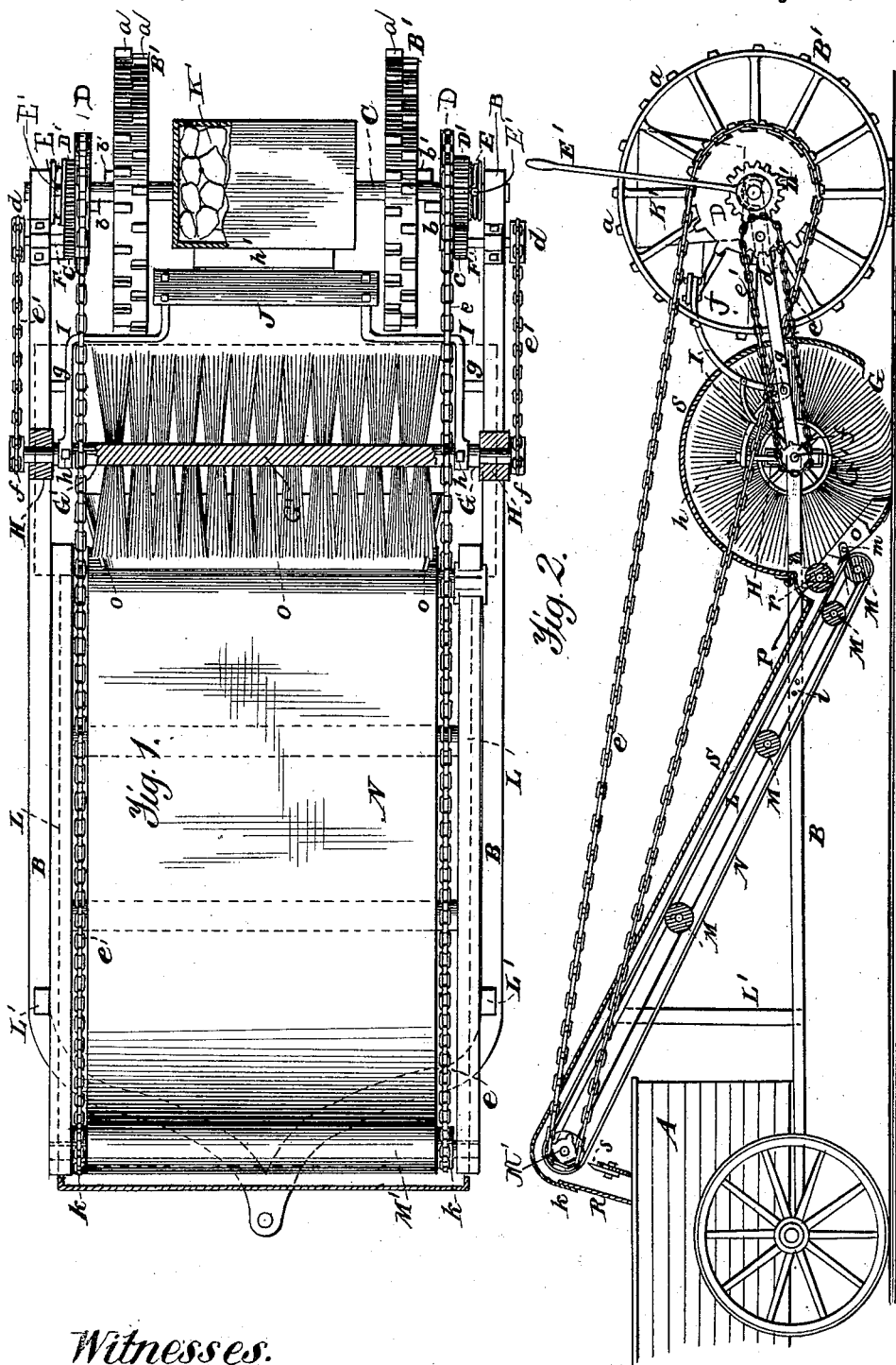


D. E. GROVE.
STREET SWEEPER.

No. 342,744.

Patented May 25, 1886.



Witnesses.
A. Ruppert
Eugene W. Carusi

Inventor.
David E. Grove
per O. E. Duff
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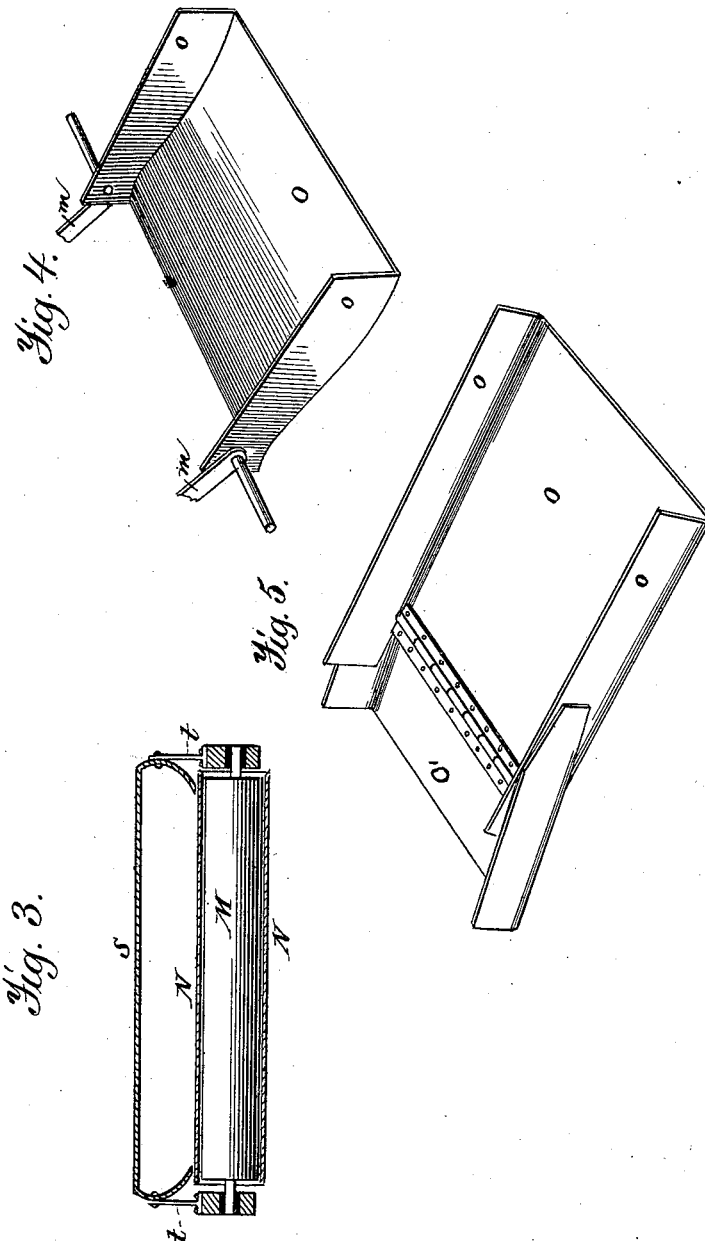
(No Model.)

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UNITED STATES PATENT OFFICE.

DAVID E. GROVE, OF ST. LOUIS, MISSOURI.

STREET-SWEEPER.

SPECIFICATION forming part of Letters Patent No. 342,744, dated May 25, 1886.

Application filed December 1, 1882. Serial No. 78,135. (No model.)

To all whom it may concern:

Be it known that I, DAVID E. GROVE, of St. Louis, and State of Missouri, have invented certain new and useful Improvements in Street-Sweepers; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification.

My invention relates to improvements in street-sweeping machines, and of that class known as "self-loaders," or in machines in which the dirt is swept up and conveyed to a cart or other vehicle, in which the sweepings are carried to the dumping-ground.

The object of my invention is to produce a machine which will be effective in operation, and at the same time prevent, in a great measure, the annoyance produced by the rising dust, which is usually allowed to fly at will, as will be more fully described hereinafter.

Referring to the drawings, Figure 1 is a top or plan view with the cap or cover removed from the brush and endless belt. Fig. 2 is a side elevation, partly in section. Fig. 3 is a sectional view of the endless belt-carrying roller and cover or cap. Fig. 4 is a view in perspective of the dust pan or float. Fig. 5 is a view in perspective of a modified form of attaching the dust-pan or float to the elevator portion of the machine.

A is a cart or other vehicle of any desired or suitable construction, to which the sweeping and loading mechanism is attached in any convenient manner. It is desirable, however, that the connection should be made with devices which will insure a ready attachment or detachment of the sweeping and loading mechanism.

B is the frame-work, in which is mounted the brush and mechanism for driving the same. The front end of this frame-work is designed to be connected to the vehicle A, while in the rear end thereof the traction-wheels B' are mounted on a suitable axle, C. The wheels B' are provided with teeth or shoulder projections *a*, as may be preferred, the function or operation of which will more fully appear. On each end of the axle C is

secured a sprocket-wheel, D, gear-wheel, D', and lever-wheel E. These wheels are all secured together and are loosely mounted on the axle C, so that they can be moved back and forth on the axle by means of the hand-levers E', which are connected to wheels E. Said hand-levers are within easy reach of the operator, so as to bring the lug *b* on the sprocket-wheel D into engagement with the lug *b'* on the drive-wheel B', and by which means the brush and dirt-elevating mechanism are thrown in and out of engagement with the driving mechanism.

F F' are shafts mounted in the frame B, the inner ends of which shafts are provided with pinion-wheels *c c*, which mesh with and are driven by the pinion-wheels D D' on the main shaft or axle C. To the outer end of the shafts F F' are secured sprocket-wheels *d d*, over which the sprocket-chains *e' e'* pass. The said sprocket-chains also pass over the sprocket-wheels *f f* on the axis of the brush, and impart thereto a motion in contrary or reverse direction to the line of travel.

I do not confine myself to the use of sprocket chains and wheels as the medium of imparting motion to the various parts from the driving shaft or axle, as it is obvious that miter-gearing may be substituted therefor.

G is the revolving brush, which is, by preference, made of thin strips of metal or steel wire; but birch or other hard-wood twigs or splints may be used, and are secured in the shaft G' in the ordinary manner.

To the frame-work B are secured the slotted guides H H, in which the broom-shaft G' is mounted in proper bearing-boxes, said boxes being supported by the front ends of the operating-levers, and are free to be moved up and down by the devices which I will now proceed to describe.

I I are bent levers, pivoted to the frame-work B by means of studs or pins *g g*. The front ends of the bent levers I I are properly secured to the boxes bearing the broom-shaft G' by means of rods or pendants *h h*. The levers I I extend back beyond the reach of the broom, where they are bent inward at right angles, and then bent again, so that their rear-ends will lie parallel to the frame-work B B. The rear ends of the levers I I are connected by a foot-board, J, which is within easy reach

of the operator when occupying the seat K on the box K', so that when operated by pressing down on the foot-board J they will elevate the broom and free it from contact with the ground, or regulate at will the pressure of the broom on the ground without interfering with the working of the other parts of the machine. The box K' is mounted on the axle C and braced by suitable frame-work to the frame B. The box K' serves not only as a seat for the operator, but also as a ballast-box, in which stones or other heavy material is placed to increase or diminish the weight on the driving-wheels B B', and thus increase or diminish the traction of the same on the ground. *h* is a foot-rest for the operator.

L L are bars, secured to the frame-work B by bolts *i*, in which are mounted the belt-carrying rollers M M. The upper ends of the bars L L are further braced by vertical stays L' L', secured thereto and to the frame B.

N is an endless belt which passes in close proximity to the broom, and by which the dirt and other material swept thereon is conveyed to the cart or other receptacle, A. The upper roller, M', is provided with sprocket-wheels *k k*, for the reception of the sprocket-chains *e e*, which connect the roller M' with the sprocket-wheels D D on the axle C, and by which means motion is imparted to the endless belt N.

O is a pan or float, the upper ends of which are secured to the bars L L by means of links *m*, while the lower end or edge of the pan rests on the surface of the ground in front of the broom, so as to form an incline upon which the dust and dirt are swept onto the endless belt.

In Fig. 5 I have shown the pan O hinged to a sheet-metal extension, O', by means of a strap or other hinge-joint, the extension O' being adapted to be nailed, screwed, or otherwise secured to the lower end of the elevator-frame, so that the pan or float O will be free to travel over the surface of the street and adapt itself to any irregularities or uneven portions of the street. This form of attaching the pan or float to the elevator-frame is perhaps the simplest, surest, and cheapest, and is the one I prefer to use.

The pan O is provided with flaring and tapering sides *o o*, to insure the deposit of dust and dirt onto the endless belt toward the center of the same, so that it will not be so liable to work off over the edges of the belt, and also to protect the ends of the broom from too rapid wear.

P is a roller, loosely mounted in elongated bearings *r*, so that it will rest on the endless belt N. The object of this roller is to roll or compact the dirt onto the belt, while the scraper *s*, which is attached to the discharge-spout R, or the elevator-frame, as may be most convenient, and made adjustable toward or from the elevator-belt by set-screws, and held rigidly in position in close proximity to the face of the return side of the belt, serves to clean it of any adhesive material elevated, and direct the same into the cart A through the

discharge-spout R. This roller P is more specially designed for use when snow or moist dirt is to be swept from the street, to press the water out of the sweepings.

S is a sheet-metal covering for the broom, and also for the endless belt, and is secured to the frames L and B. The portion of the cover over the endless belt has its edges bent downward and inward, so as to keep the dust and dirt from falling off over the edges of the endless elevating-belt.

The inclosing of the endless or elevating belt and broom in a casing and the use of discharge-spout are adapted for the successful operation hereof, for by these means the dust is confined and directed into the cart instead of being scattered abroad, to the annoyance and discomfort of every one within reach. The adjustable scraper *s* is also used in connection herewith where wet or adhesive material is to be handled, as it keeps the belt and mechanism clean and prevents the return on the slack side of the belt of any material elevated by the belt that would otherwise adhere to it, and insures the discharge of all material elevated by the belt; but these features do not enter into the spirit of my invention.

The operation of my machine is as follows: The cart or other vehicle, A, is backed up to the machine and the frame-work secured thereto. The driver then starts his team and draws after him the sweeping device. The traction of the wheels B' with the ground causes the brush and elevator-belt to be revolved by means of the sure-gearing sprocket wheels and chains described, while the operator, seated on the box K', is free to work the levers E, and also raise or lower the broom, as occasion may require. When the cart is loaded, it is detached from the sweeper and an empty cart substituted therefor, and so the work of sweeping, loading, and hauling away the dirt may be made practically continuous.

I have referred to my machine solely as a street-sweeper; but it is obvious that it can be modified and, made on a smaller scale, attached to a two-wheeled warehouse-truck and be advantageously used in sweeping warehouses, railroad-platforms, &c.; or it may be still further reduced in size, provided with a handle and receptacle for the dirt, and used as a carpet-sweeper or to sweep halls, offices, &c.

Having thus described my invention, what I claim as new is—

1. The floating pan O, hinged to the plate O', which is bolted or otherwise secured to the elevator-frame, in combination with the roller P, endless belt N, and the broom G, as set forth.

2. The sprocket-wheels *f d*, chains *e' e'*, shafts G' and F F', brush G, levers I I, connecting-board J, and box K', in combination with the wheels D D' *c k* and chains *e*, the chains *e e'* being separated by the frame B, substantially as set forth.

3. In a street-sweeper, the floating pan, the

roller P, the belt N, scraper s, and spout R, in combination with the broom operated by the sprockets and chains, as and for the purpose set forth.

5 4. In a street-sweeper, the wheels *f d*, chains *e' e'*, shafts G' and F F', brush G, levers I, connecting-board J, wheels D D' *e k*, and chains *e e*, in combination with the floating pan, the roller P, belt N, scraper s, and spout R, as set
10 forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

DAVID E. GROVE.

Witnesses:

O. E. DUFFY,
J. H. HOLMAN.