Sheet 1 - 2 Sheets.

A. J. Roberts.

Street Sweeper.

No. 20,303. Patented May 18, 1858.

Fig. 1.

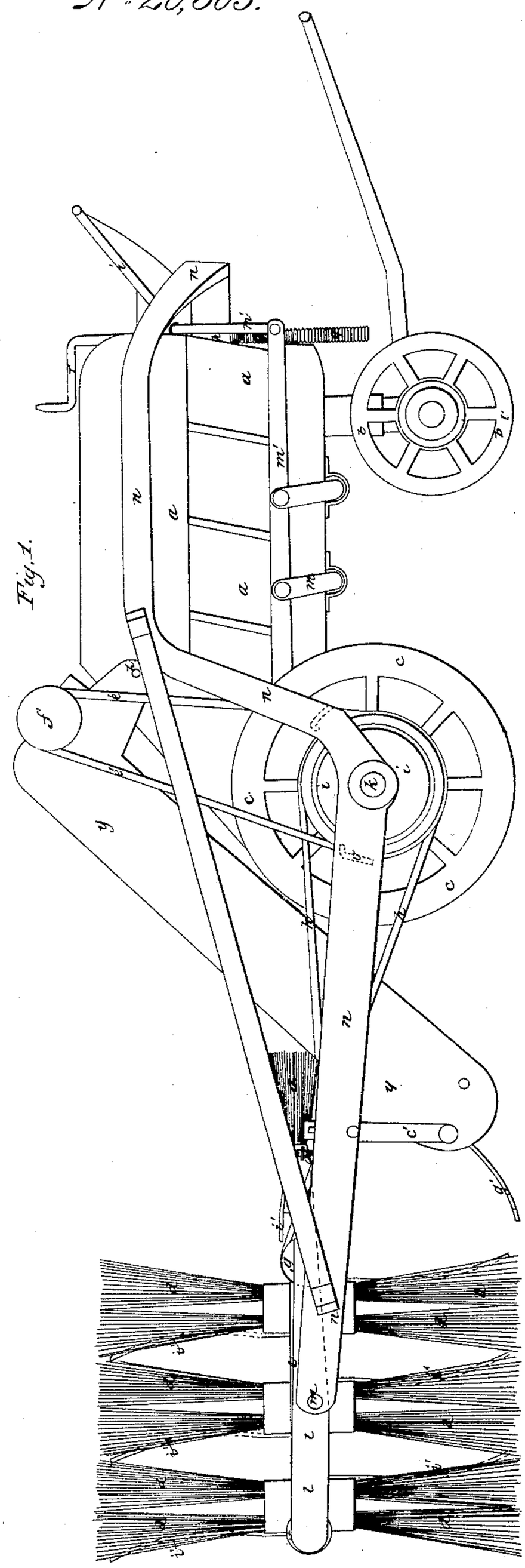
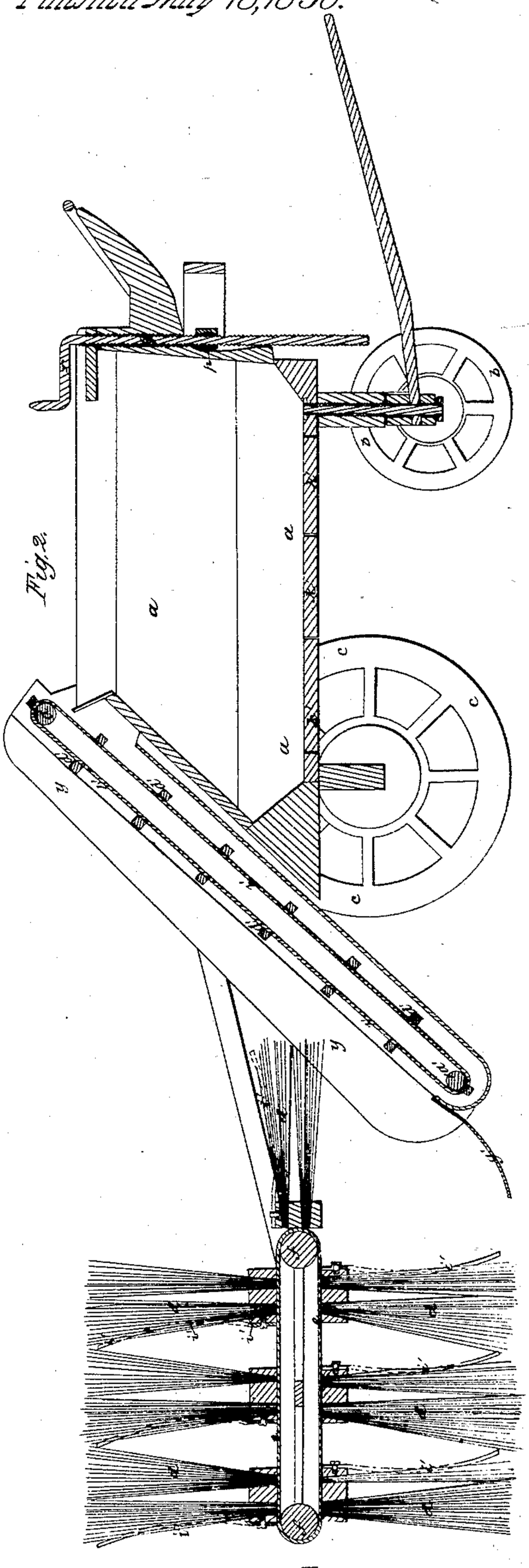


Fig. 2.



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THE GRAPHIC CO. PHOTO-LITH. 39 & 41 PARK PLACE, N.Y.

Sheet 2 - 2 Sheets.

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Fig. 3.

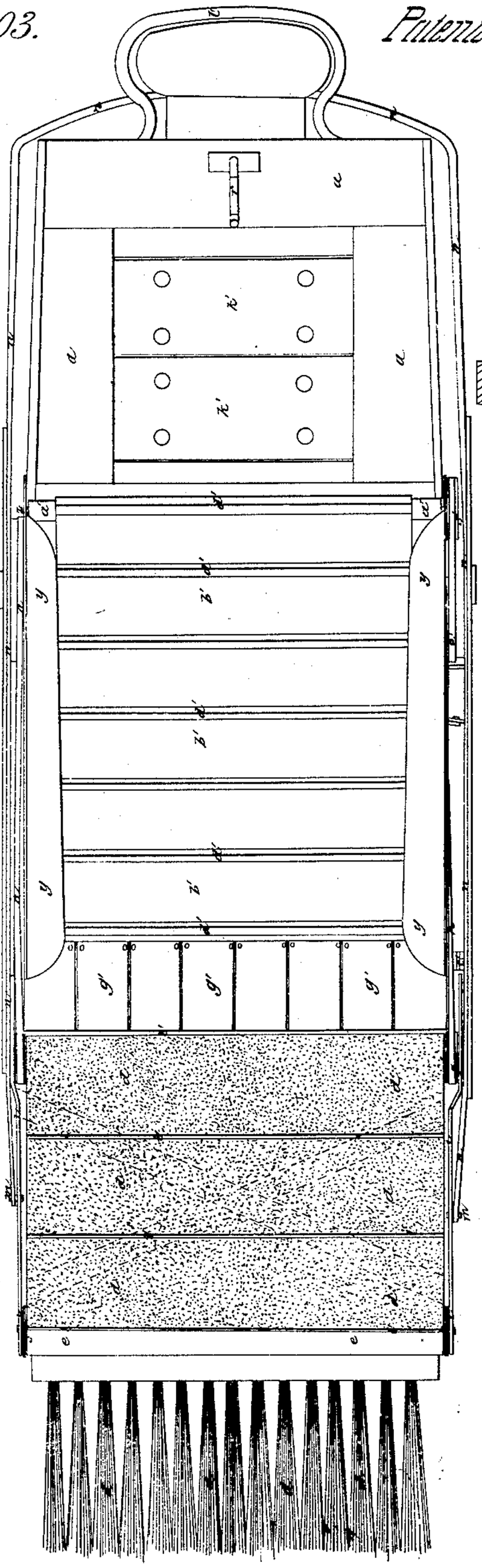


Fig. 4.

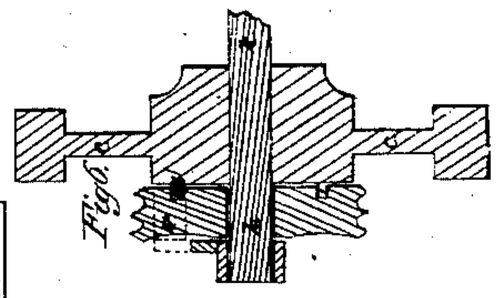


Fig. 5.

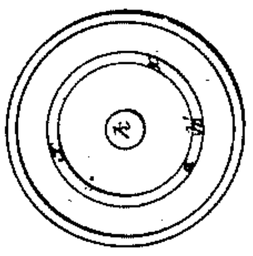
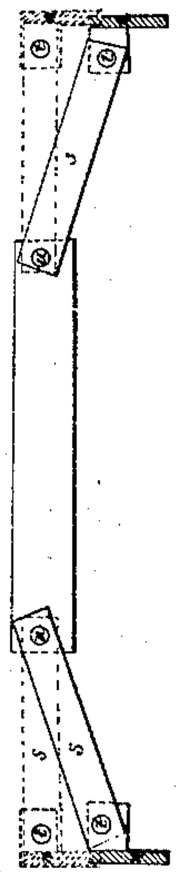


Fig. 6.



Witnesses.
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UNITED STATES PATENT OFFICE.

ANDREW J. ROBERTS, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN STREET-SWEEPING MACHINES.

Specification forming part of Letters Patent No. **20,303,** dated May 18, 1858.

To all whom it may concern:

Be it known that I, ANDREW J. ROBERTS, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Street-Sweeping Machines; and I do hereby declare that the following description, taken in connection with the accompanying drawings hereinafter referred to, forms a full and exact specification of the same, wherein I have set forth the nature and principles of my said improvements, by which my invention may be distinguished from others of a similar class, together with such parts as I claim and desire to have secured to me by Letters Patent.

The figures of the accompanying plates of drawings represent my improvements.

In Plate 1, Figure 1 is a side elevation of my improved machine. Fig. 2 is a central longitudinal vertical section of the same. In plate 2, Fig. 3 is a plan or top view; and Figs. 4, 5, and 6 are detail views, to be hereinafter referred to.

My improvements relate to that class of sweeping-machines for streets in which the dirt is taken by revolving brooms and carried to an endless apron, which conveys it into the body of the cart.

In the present invention the essential features are as follows: first, so hanging the brooms that they can be adjusted and leveled as fast as they become worn; second, an arrangement of devices whereby when the brooms are raised from contact with the ground the driving-pulleys by which they are revolved are at the same time disengaged from the driving-wheels of the machine, whereby the driving motion is disconnected from the brooms, both of these movements being effected by and entirely under the control of the driver; third, forming on the endless apron that conveys the dirt to the cart a series of partitions or projections extending across the endless apron and placed at right angles thereto, whereby the dirt, &c., is prevented from falling backward; fourth, the use of a series of spring-plates at the bottom of the endless apron that fit closely to the surface of the ground and adapt themselves to the contour thereof, thereby insuring the delivery of all the dirt swept up by the brushes to the endless apron; fifth, a peculiar construction of the driving-pulleys, whereby I am enabled to use two pulleys for imparting the revolving motion to the brushes and at the same time keep the brushes in motion while the machine is being turned around.

a a a on the drawings represent the body of the cart, supported upon four wheels *b b c c*, the latter being the driving-wheels.

d d d are the brushes, arranged, as shown, upon a revolving band or apron *e e*, which passes around two rollers *f f* and is driven by means of the small pulleys *g g*, cross-belts *h h*, and pulleys *i i*, which latter are the driving-pulleys, arranged loose upon the axle *k* of the wheels *c c* and connected with or disengaged from the said wheels, so as to impart motion to the brushes *d d* or prevent their receiving motion, as may be desirable, as will be presently explained. The rollers *f f*, around which the band *e e* passes, are hung in a swinging frame *l l*, which turns upon pivots *m m* in the end of a long bent lever-arm *n n n*, which has its fulcrum on the axle *k* of the wheels *c c* and sustains the brush-frame, &c. By means of a set-screw *o* passing through one of the end bars of the swinging frame *l l* and abutting against the lever-arm *n n n*, the swinging frame *l l*, and consequently the brushes, being hung as described, can be leveled or set at any desired angle as fast as they become worn, which is a great desideratum in sweeping-machines, as their efficacy depends in a great measure upon the brooms being kept level. The want of proper devices for effecting this result has proved a serious disadvantage in most of the sweeping-machines for streets heretofore constructed.

I will next proceed to describe the manner in which the driver can by one movement raise the brushes from the ground, when desirable, and at the same time cut off the communication between the driving-power and the brooms, so as to prevent their being revolved. The bent lever-arm *n n n* extends entirely around the front of the cart, and has passed through a projection *p* a vertical screw-shaft *q*, which terminates in a winch or handle *r* on the driver's seat. As the lever-arm *n n n* turns upon the axle *k* and as the said arm supports the whole sweeping apparatus, by turning the screw-shaft *q* up or

down the brooms will be raised or lowered. While the lever-arm *n n n* is being moved so as to raise the brushes from the ground the driving-pulleys *i i* are disengaged from the wheels *c c*, so as to prevent their receiving a rotary motion, and thereby arrest the motion of the brooms as follows: The bent arm *n n n* turns loosely upon the axle *k* and is connected to the rear portion of the cart *a a a* by short inclined arms *s s*, Fig. 4, Plate 2, each attached to the lever-arm *n n* by a pivot *t* and to the frame-work of the cart by a pivot *u*, so that when the rear portion of the lever-arm *n n n* is being raised the short arms *s s* will necessarily be brought into a straight or horizontal position, thereby pressing out the lever-arm *n n* (placed loosely upon the axle *k*, as before stated) laterally, which by means of hooks *v v*, Figs. 1 and 6, gives the pulleys *i i* a sufficient lateral movement (the said pulleys being also loose on the axle *k*) to disengage the pulleys from the wheels *c c*, the communication between each pulley *i* and wheel *c* being a stud *w* in the wheel *c*, entering a groove *x*, Figs. 5 and 6, on the inner face of the pulley. When the rear end of the lever-arm *n n n* is lowered, the pulleys will receive a lateral return motion until they are again brought into connection with the wheels *c c* (the studs *w* entering the grooves in the pulleys) by the short arms *s s* assuming an inclined position, whereby the brushes will be lowered and the communication of motion between them and the driving-power established.

y y is an inclined frame-work attached to the rear end of the cart *a a* by pivots *z z* In this frame-work *y y* the rollers *a' a'*, around which passes an endless apron *b' b'*, are sustained and have their bearings. The rear part of the inclined frame-work is attached by a short arm *c'* to the lever-arm *n n n*, so that the said frame-work and its apron *b' b'* will be raised and lowered with the brooms.

The endless apron is composed of a series of slats *b' b' b'*, having right-angular projections or partitions *d' d'*, Fig. 2, Plate 1. These projections prevent the dirt, &c., received upon the apron from the revolving brooms from dropping backward and secure its delivery into the cart. The endless apron receives its motion so as to convey the dirt upward into the cart by means of a belt *e'* and pulley *f'*, Fig. 1.

Across the bottom of the inclined frame-work *y y* and attached thereto is placed a series of metallic spring plates or teeth *g' g' g'*, which adapt themselves to the inequalities of the ground to be swept and insure the conveyance of the dirt collected by the brooms to the endless apron *b' b'*, and prevent any of its being left, which would otherwise be the case.

In order to obtain the advantage of driving the brooms by two driving-pulleys, which is very desirable, it is necessary to provide some means by which when the cart is being turned the brooms shall continue to revolve, and at the same time prevent the band by which the broom-pulleys are turned from slipping or breaking, which otherwise, in using two driving-pulleys, would necessarily occur. This result I effect by forming on the inner face of each pulley the groove *x*, Figs. 5 and 6, before referred to, which extends nearly but not quite around the entire circle, leaving a stop *h'* for the stud *w* on the wheel *c* to abut against, so that when the cart is being turned one of the pulleys *i* will simply turn backward upon the axle *k*, its driving-wheel *c* being nearly stationary and the groove *x* traveling upon the stud *w* until the stop *h'* comes in contact again with said pin, which will not occur until the cart is again moving in a straight line.

i' i', &c., are a series of bent spring-plates placed in front of the brooms and revolving with them, serving as hoes to take up the mud, &c.

It will be evident that in lieu of belts or bands for driving the endless apron, brooms, &c., endless chains may be advantageously substituted.

From the foregoing description the operation of sweeping the dirt upon the traveling endless apron and into the cart will be readily apparent, and when the cart becomes full its contents can be deposited in any desired locality by means of the turning slats *k' k'* of which the bottom of the cart is composed, operated by the driver by means of a treadle *l'* and lever-arms *m' m'*, as will readily be understood without further explanation.

It will be seen that from the peculiar mode of hanging the brooms they would be subject to a vibrating or "bobbing" motion, which would interfere with their successful operation were it not for the action of the spring-plates, which by the weight of the brooms brought to bear upon them press against the surface, and thereby prevent this vibration of the brooms, as will be readily understood.

Having thus described my improvements, I shall state my claims as follows:

What I claim as my invention, and desire to have secured to me by Letters Patent, is—

1. Hanging the brooms or brushes in a swinging frame on centers so arranged that it can be readily leveled and adjusted as fast as the brooms become worn, as described.

2. The combination of devices whereby the brooms are raised or lowered and at the same time the communication between the driving-power and brooms established or cut off, the same consisting of the bent lever-arm *n n n*, short arms *s s*, and pulleys *i i*, substantially as described.

3. Attaching the spring-plates to a swinging movable frame, which is raised and lowered with the brooms, as described, whereby the said springs are raised from the ground when the brooms are not in use and adapt

themselves closely to the surface of the ground and press against the same when the brooms are at work, thereby preventing, by the weight of the brooms acting upon the springs, the vibrating or bobbing motion which otherwise the brooms would receive.

4. In combination with the studs *w w* in the driving-wheels, the circular grooved pulleys, as set forth.

A. J. ROBERTS.

Witnesses:
JOSEPH GAVETT,
ALBERT W. BROWN.