

No. 858,946.

PATENTED JULY 2, 1907.

C. BLY.
STREET SWEEPING MACHINE.

APPLICATION FILED AUG. 8, 1906.

4 SHEETS—SHEET 1.

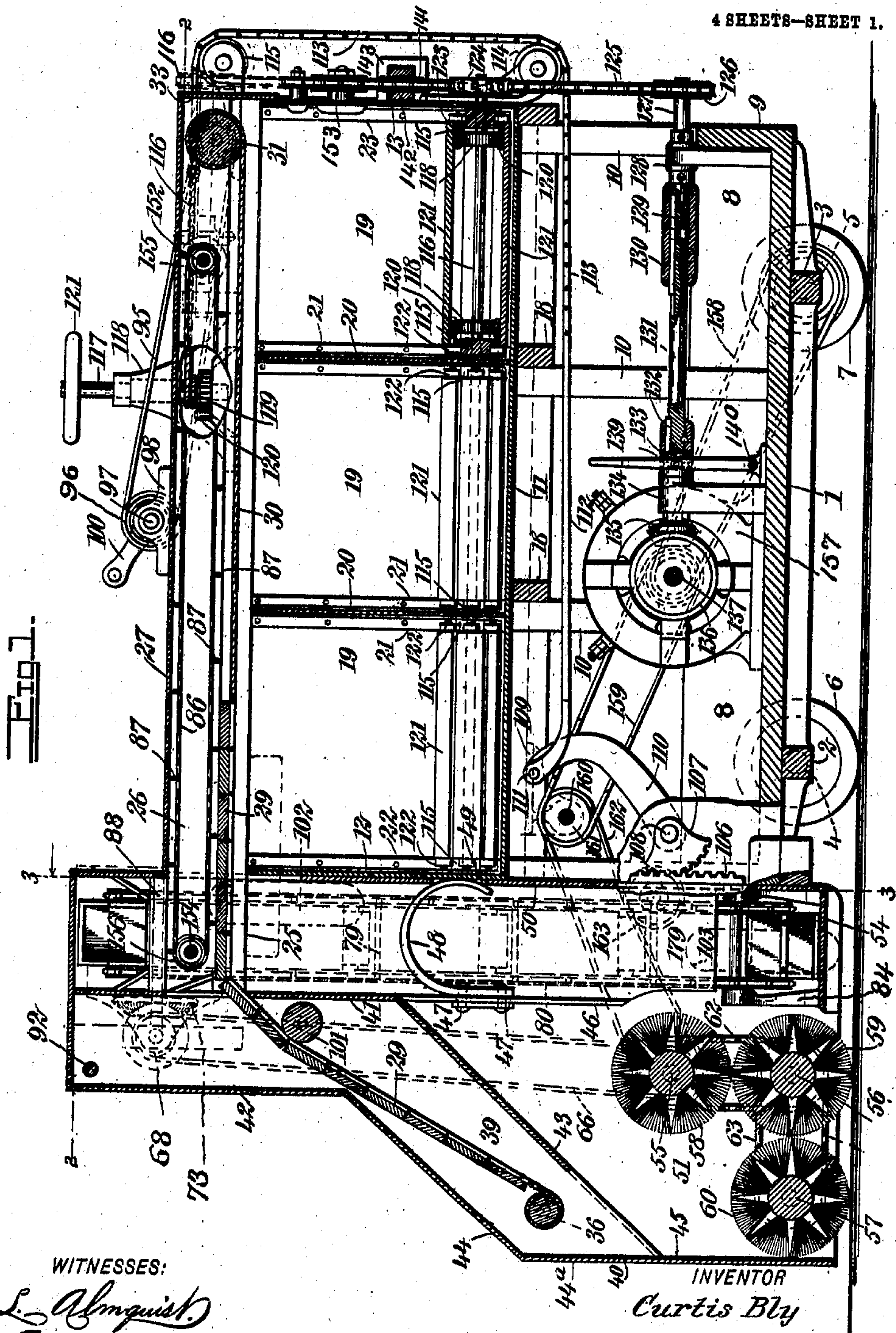


Fig. 1.

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4 SHEETS—SHEET 3.

Fig. 3.

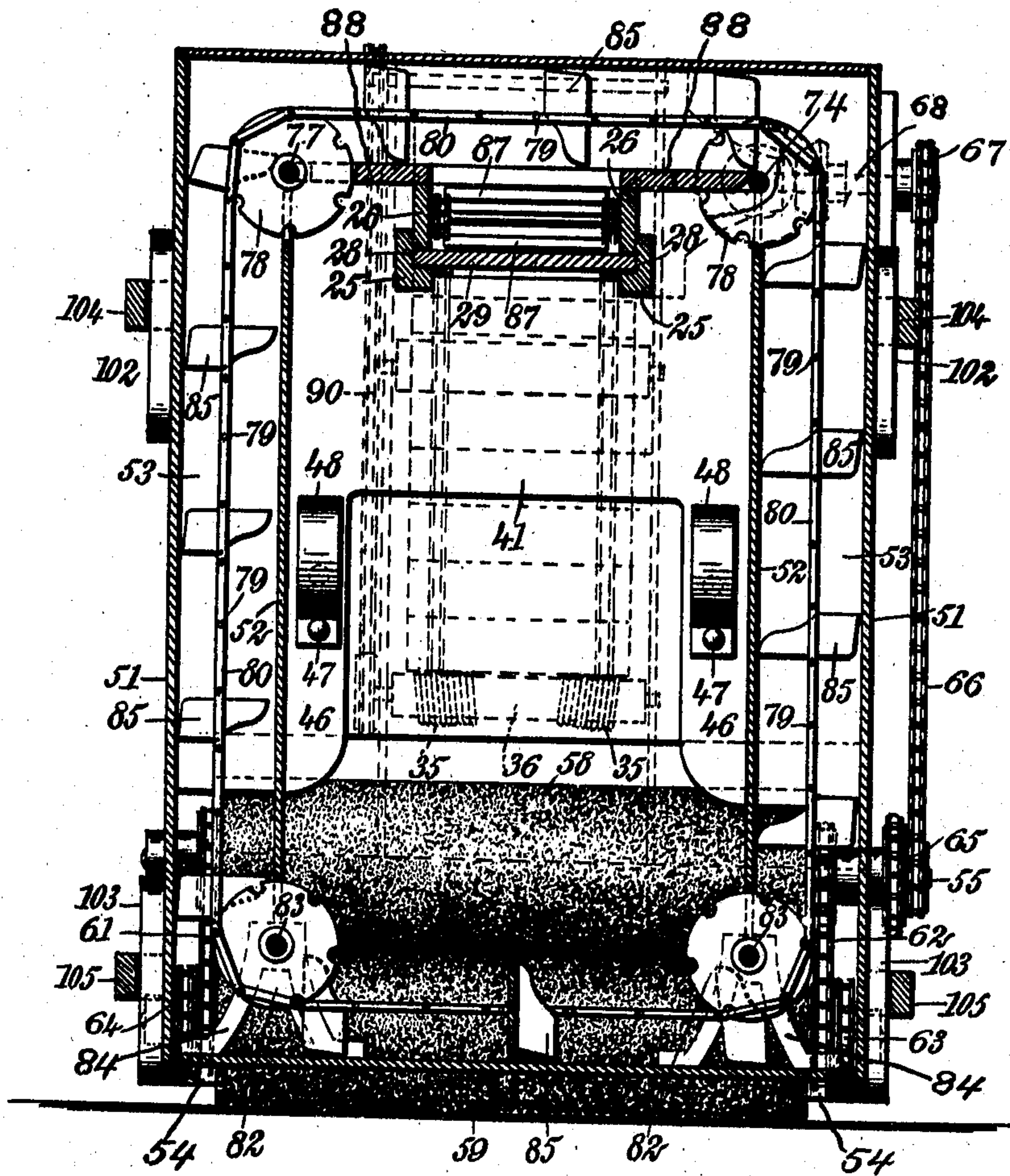
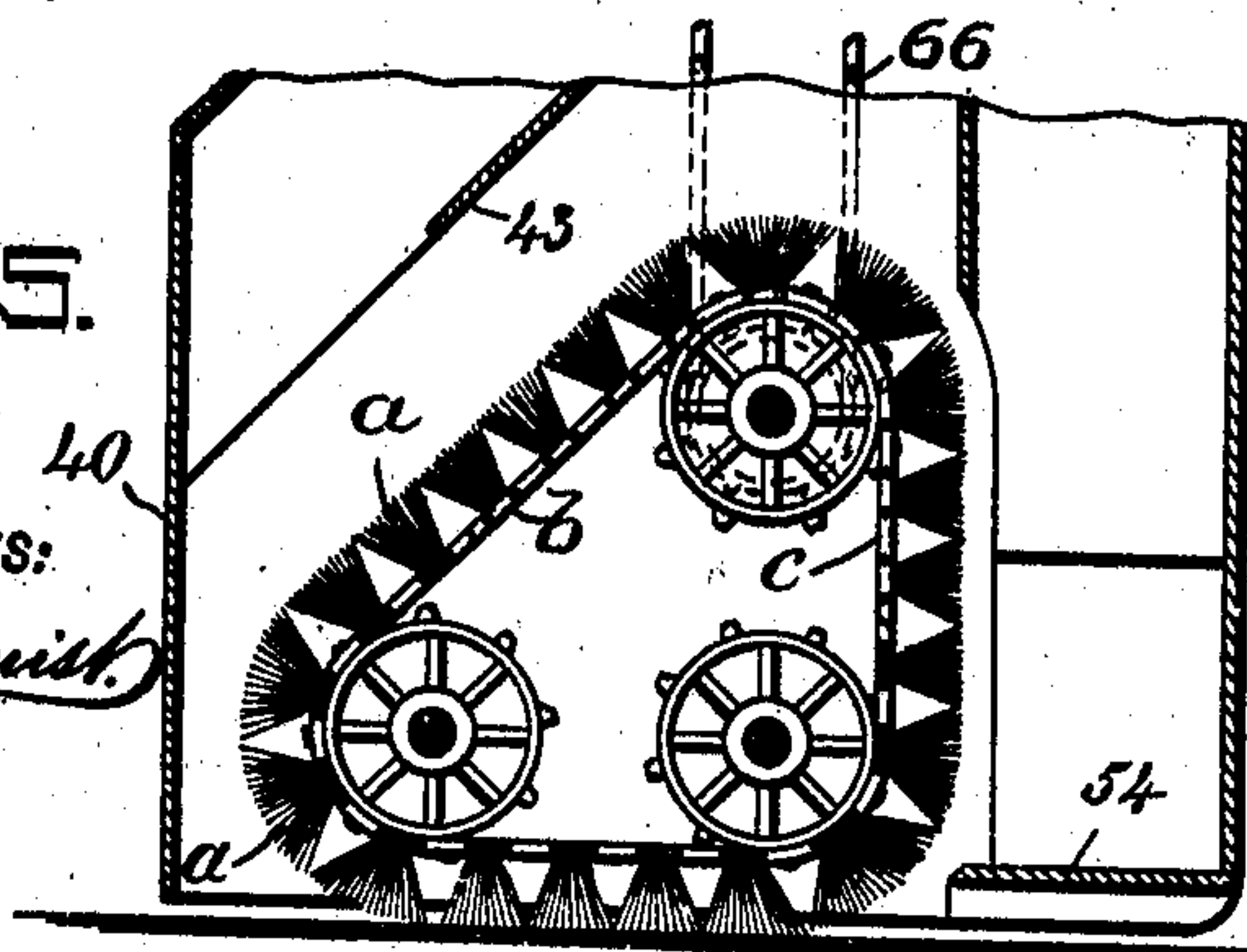


Fig. 5.

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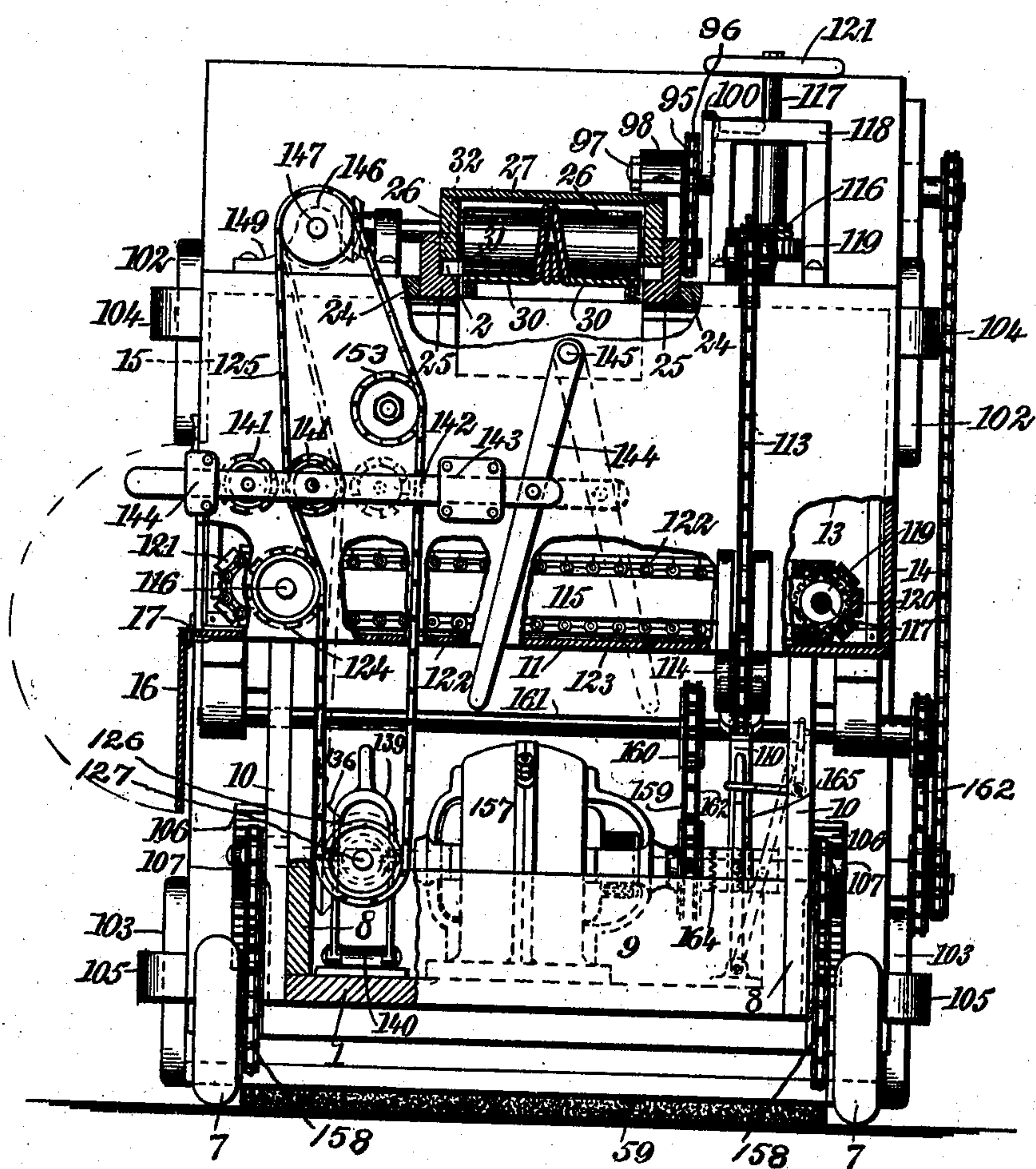
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4 SHEETS—SHEET 4.

Fig. 4.



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CURTIS BLY, OF TICONDEROGA, NEW YORK.

STREET-SWEEPING MACHINE.

No. 858,946.

Specification of Letters Patent.

Patented July 2, 1907.

Application filed August 3, 1905. Serial No. 272,508.

To all whom it may concern:

Be it known that I, CURTIS BLY, a citizen of the United States, and a resident of Ticonderoga, in the county of Essex and State of New York, have invented
5 a new and Improved Street-Sweeping Machine, of which the following is a full, clear, and exact description.

This invention relates to street sweeping machines, and it consists substantially in the details of construction and combinations of parts hereinafter more particularly described and pointed out in the claims.

The invention has reference more especially to motor-propelled street-sweeping machines, though capable of being drawn by animals in the ordinary way. I
15 seek to provide such a machine of this character as may be easily regulated and quickly controlled, thoroughly effective and reliable for its purposes, and possessing the capacity for long and repeated service.

The above and additional objects are attained by means substantially such as are illustrated in the accompanying drawings, in which

Figure 1 is a broken side elevation (in part section) of a street-sweeping machine embodying my improvements; Fig. 2 is a top plan view in section on the line
25 2—2 of Fig. 1; Fig. 3 is a vertical transverse sectional view on the line 3—3 of Fig. 1; Fig. 4 is a rear end view, partly broken out and partly in section; and Fig. 5 is a part sectional detail view, showing a slight change in the form of the brushes employed.

Before proceeding with a more detailed description, it may be stated that in the form of my improvements herein shown I employ a machine comprising a main body of special construction, provided with means for supporting a suitable gasoline or other motor by which
35 the machine is propelled, and from which the active or movable parts of the machine are driven or operated. Brushes or sweepers are employed, in special organization, the same being disposed in a specially constructed casing or housing therefor, in such manner as that the
40 sweepings from the street are prevented from being scattered or dispersed about the vicinity of the machine, special means being also employed for receiving the sweepings within the machine as they are thrown up by the brushes. Further special means are
45 employed for lifting and conveying the sweepings from the receiver therefor, to any part of the interior of the main body of the machine desired; while still further special means are resorted to for enabling the brushes, together with the devices auxiliary thereto or associated therewith, to be elevated from the ground either
50 to avoid obstructions, or for any other reason. Other special means are employed for discharging the sweepings from the machine, in a heap or at a suitable dump therefor, said means being driven by special driving
55 connections from the shaft of the motor, and capable of being thrown into and out of operation, at will.

Reference being had to the drawings by the designating characters thereon, 1 represents the base or bottom of my improved street-sweeping machine, on the under side of which, at either side thereof, are axles 2
60 and 3, provided with journal necks 4 and 5 of the sets of forward and rearward supporting-wheels 6 and 7 for the machine. The base or bottom 1 is preferably rectangular in shape and provided with vertical side-pieces 8, connected by an end-piece 9 at the rear of
65 the machine, and, supported at a suitable height from said base or bottom, as by means of uprights 10, is the main body of the machine, also preferably rectangular in form and constructed with the floor 11, front and rear walls 12 and 13, and side-walls 14 and 15, the latter
70 embodying an outwardly swinging door 16, hinged at 17, or otherwise movably attached at its lower edge to the adjacent edge of said floor 11, the latter being secured in any suitable manner to transverse beams 18, secured also in any suitable manner to the uprights 10
75 for the floor. Said main body of the machine is divided into a plurality (three being shown) of transverse compartments 19 by means of partitions 20 preferably (though not essentially) having angular edge-
80 portions 21, by which they may be secured to the inner surface of the side-wall 14 of the main body, if desired, it being noted in Fig. 1 that both the forward end-wall 12 and the rearward wall 13 of this body are also provided with similar edge-portions 22 and 23, for
85 a like purpose.

The top of the main body of the machine is only partly closed (directly) by means of adjacent longitudinal top-strips 24 (see Fig. 4) extending inwardly from the upper edges of the said side walls 14 and 15 of the body, and having a central longitudinal space
90 between their own inner edges, along which latter edges are secured in any suitable manner opposite reversely disposed longitudinal angle-rails 25 (see Figs. 3 and 4) alongside the inner faces of the vertical members of which are supported in any suitable way the
95 parallel members 26 of a hood 27 extending practically the full length of the said main body, the forward extremities of said angle-rails 25 and parallel members 26 of said hood projecting beyond the front wall 12 of the main body of the machine, as shown in Figs. 1
100 and 2. The lower edges of the said parallel members 26 are separated from the adjacent or upper faces of the horizontal members of said angle-rails 25 by means of spaces 28 in which are guided the ends of the slats of a shiftable jointed slatted belt 29 provided at the
105 rearward end or extremity thereof with duplicate cords or chains 30, connecting with and winding upon a drum or roller 31 (see Figs. 2 and 4) having the journals 32 of the shaft thereof supported in suitable opposite bearings therefor formed in the aforesaid parallel
110 members 26 of the hood 27 near the rear end of the latter, attention being here called to the fact that such end

(rear) of the hood is preferably closed as indicated at 33. Secured to the forward end or extremity of said slatted belt 29 are other cords or chains 35 winding upon a drum or roller 36, the ends of the shaft 37 of which are rotatably supported in bearings provided therefor in the side walls 38 of an outer or superposed compartment 39 of a vertically-movable casing 40, said compartment being constructed of the aforesaid side-walls 38, the parallel vertical walls 41 and 42, and the forwardly and downwardly parallel continuations 43 and 44 of said walls 41 and 42 (see Fig. 1), the forward end of said continuation 44 joining with a vertical extension 44^a of the front or forward wall 45 of said vertically movable casing 40 (see also Fig. 1). Pendent from said wall 41 of the compartment 39 are duplicate vertical members 46 hanging within the casing, and to the inner faces of which are secured at 47 the lower ends of duplicate strong upwardly and rearwardly extending friction-springs 48, a portion of each of which, near its free end, projects through an opening 49 therefor in the rearward wall 50 of said vertically-movable casing 40, and presses against the outer side of the forward end-wall of the main body of the machine, thus to form a strong frictional support for this casing in any position thereof. The casing 40 is about equal in width to the aforesaid main body of the machine, while the width of the compartment 39 is considerably less, as shown, it being noted that the main interior of the casing 40 is provided adjacent to the side-walls 51 of said casing, with vertical partitions 52, which, together with corresponding portions of said side walls 51, form vertical lateral compartments 53 (see Fig. 3), the lower ends of which practically lead to the upper surface of a forwardly-extending horizontal shelf or floor-section 54 of the casing, said shelf or floor section serving as a receiver for the sweepings from the street, as will presently be explained.

Mounted in suitable bearings provided therefor, in the side-walls 51 of the vertically-movable casing 40, are the journals of shafts 55, 56 and 57 of rotatable brushes 58, 59 and 60, said shafts 55 and 56 having sprocket and chain connections 61 and 62 at the ends, and the end of the latter shaft (56) and end of shaft 57 having similar sprocket and chain connections 63 and 64 therebetween, by which it will be seen that rotary motion may be imparted to said brushes, so as to cause the sweepings to be thrown onto the said receiver or floor-section 54 of the casing 40, in an obvious manner, it being noted that the end of the shaft 55 at the right of the machine, is provided with an additional sprocket-wheel 65 (Fig. 3) with which engages a sprocket-chain 66, which also engages with another or upper sprocket-wheel 67 carried at the outer end of a short transverse shaft 68 (Fig. 2) supported by a bearing 69 on the adjacent outer side of casing 40, and another bearing secured at 71 to the corresponding outer side of compartment 39, said shaft 68 carrying a beveled toothed pinion 72, engaging with a corresponding beveled toothed pinion 73 carried at the end of a longitudinal shaft 74 mounted in bearings 75 located on the adjacent faces of the wall 41 of compartment 39 and the said rearward wall 50 of casing 40, just above one of the inner vertical partitions 52 of said casing. Also mounted in corresponding bearings 76, similarly located just above the other one of said vertical partitions 52, is another

longitudinal shaft 77, the two said shafts being provided with sets of notched wheels 78, engaging with the corresponding notches of which are the ends of joint-rods 79, between the links of a pair of endless traveling chains 80, working in or through the compartments 53, which ends of said joint-rods also engage the notches of corresponding notched wheels 82, the ends of the shafts 83 of which are supported in bearings therefor in the upper ends of sets of brackets 84 secured in proper position upon the receiver or shelf 54 for the sweepings from the brushes. Supported by corresponding links of said chains 80 are buckets or scoops 85, for taking up the sweepings from the receiver or shelf 54, and for elevating the same to the upper part of the interior of casing 40, it being shown in Fig. 3 that when the said buckets or scoops reach said upper interior of the casing, they are successively carried by the chains to positions to empty the contents thereof. These contents of the buckets are received upon the upper surface of the forward horizontal portion of the hereinbefore-mentioned shiftable slatted belt 29, it being noted that mounted above said slatted belt are a pair of parallel endless traveling chains 86, or their mechanical equivalent carrying between them the endless series of scrapers 87 which, in the movements of said chains, are caused to scrape along the surface of as much of the belt 29 as may be beneath the same, and thus carry or deliver the dirt into any one of the compartments 19 of the body of the machine, as will be apparent.

In moving across the upper part of the interior of the casing 40, the buckets are supported and guided on short shelves 88 (see Fig. 3) disposed in said casing laterally of the forward portions of the parallel members 26 of the hood 27.

It will be seen (Figs. 1 and 2) that one end of the shaft of the winding-drum or roller 36 for the forward cords or chains 35 of the shiftable belt 29 is provided with a sprocket-wheel 89, engaging with the teeth of which are the links of a sprocket-chain 90, also engaging with a similar sprocket-wheel 91, carried at the corresponding end of a transverse shaft 92 supported in any suitable bearings therefor in the upper portions of the side-walls 38 of the hereinbefore mentioned compartment 39 of the casing 40, the other end of said shaft being provided with a handle or crank 93, by the turning of which the forward end of the shiftable belt 29 may be carried more or less forwardly of the machine, as may be desired, and accordingly as the sweepings are to be conveyed to the first, second or third compartment 19 of the body, as will be understood. The winding-drum or roller 31 for the rearward cords or chains 30 of the belt 29 is provided at one end with a sprocket-wheel 94 (see Fig. 2), around which extends a sprocket-chain 95, which also extends around a similar sprocket-wheel 96, carried at the corresponding end of a short shaft 97, mounted in a bearing 98 therefor, secured at 99 to the upper surface of the hood 27. This shaft also carries at one end a handle or crank 100, by the turning of which in the proper direction, the belt 29 may be drawn rearwardly to any desired extent within the guides therefor, it being shown that the belt is partly guided and supported forwardly of the machine by means of a roller 101 supported within the compartment 39.

The vertically-movable casing 40 is supported in

proper position relatively to the body of the machine, by means of upper and lower vertically-disposed cleats 102 and 103, on either side of said casing, working in upper and lower guides 104 and 105 therefor, on the machine. It will be observed (Fig. 1) that the outer surface of the lower portion of the rearward wall 50 of the casing, is provided near the opposite sides of the latter with parallel vertically-disposed racks 106, the teeth of which are engaged by the teeth of toothed sectors 107 carried by a transverse shaft 108, mounted in bearings 109, and which is provided near the right side of the machine (see Figs. 1 and 2) with a cranked arm 110, movably connecting with the upper end of which at 111, is the bifurcated forward end of a connecting rod 112, the rearward end of which is in connection with a chain 113, which passes around a wheel 114, at the lower part of the rear wall 13 of the body of the machine, thence upwardly and over another wheel 115, mounted in guides or supports secured at 115^a, and forwardly of the machine, the end thereof being connected to the end of a cord 116, adapted to be wound upon a vertical spindle 117 supported in a bearing 118 therefor and provided near its lower end with a toothed ratchet-wheel 119 engaged by the end of a pivoted pawl 120. Said spindle is provided with a hand-wheel 121, and it will be seen that by turning the spindle in the proper direction the casing 40 will be raised, as will all the described parts situated therein. It will be understood, however, that said raising is never to any great extent, and consequently the operative connections between the movable parts are not disturbed thereby.

Located in the bottom of each compartment 19 of the main body of the machine, are parallel transversely-extending guide-strips 115, and extending all the way through these guides, as well as through openings therefor in the partitions 20, are parallel longitudinal shafts 116 and 117 (see Figs. 1 and 4) carrying within each compartment sets of rigid pinions 118 and 119, which engage with endless racks 120, disposed near the ends of the inner sides of the flexibly connected slats 121 of an endless conveyer within the compartment, said slats also having, just beyond the ends thereof, suitable rollers 122, mounted on pins 123, and which ride upon the upper and lower edges of the said-mentioned guide-strips 115, whenever the conveyers are operated to move or travel to cause the sweepings deposited thereon from the inner end of shiftable belt 29, to be discharged from the compartment, which discharge is permitted to be effected by opening the door 16 of the compartments. The rearward projecting end of the shaft 116 is provided with a sprocket-wheel 124, around the inner portion of which (see Fig. 4) passes a portion of an endless sprocket-chain 125, which also passes around a sprocket-wheel 126 carried at the outer end of a shaft-section 127 supported in a bearing 128, and the inner portion of which is grooved to receive a feather 129 of a sleeve 130 in which has longitudinal movement the outer end-portion of a shaft 131, grooved to receive a feather 132 (see Fig. 1) of a longitudinal shaft 133, supported in a bearing 134, and having at the forward end thereof a beveled pinion 135, engaging with another and larger beveled pinion 136 carried by the main driving-shaft 137, supported in a bearing 138 at each side of the machine, as shown in Fig. 2, for instance. The said shaft 131 has associated therewith a shifting device 139, pivoted at 140, and by

the throwing of which (to the right in Fig. 1) the said pinion will be carried out of engagement with the said pinion 136. The sprocket-chain 125 also passes against one side of the inner one of two sprocket-wheels 141, supported in a transverse slidable frame 142 (see Fig. 4) working in guides 143 and 144 therefor, secured to the outer side of the rear wall 13 of the main body of the machine, said frame being provided with a pivoted operating lever 144, swinging upon a pivot 145. The sprocket chain 125 thence extends upwardly over a pulley 146, carried by a short longitudinal shaft 147, supported in bearings 148 and 149, secured on top of the body of the machine (see Figs. 2 and 4), said shaft carrying a beveled toothed pinion 150 engaging with a similar pinion 151 carried by a transverse shaft 152. Thence the sprocket continues downwardly around an idler 153, and it will be seen that when the slidable frame 142 is carried to the position shown in full lines, Fig. 4, the conveyers in the compartments 19 will be operated. When the lever 144 is operated to carry such frame to the dotted line position thereof, however, the said conveyers will be thrown out of operation. The said shaft 152 and another shaft 154, supported within the upper interior of the casing 40, carry corresponding sets of pulleys 155 and 156, around which extend or pass the hereinbefore-mentioned parallel chains 86 for the scrapers 87 above the shiftable belt 29.

The main driving-shaft 137 receives its motion from a gasoline or other motor 157 supported on the bottom 1 of the machine, and hence it will now be understood how all the movable or active parts referred to are operated. Belt connections 158 run from said shaft to the shaft of the rear wheels 7 of the machine. A belt connection 159 also runs from driving-shaft 137 to a pulley 160 on a transverse shaft 161, from which latter another belt connection 162 extends obliquely downward to the shaft of the upper brush 58, and in this way it will be seen how all the brushes, as well as the elevator devices for the sweepings are operated for the purposes hereinbefore set forth. The connection 162 runs over an idler 163, and the main driving shaft is provided with a clutch device (see Fig. 4) 164 having an operating lever 165, by which the shaft 161 may be thrown out of operative connection with said driving shaft to permit the machine to be propelled along at any time without operating any of the parts operated from the motor.

Instead of employing the construction and organization of brushes shown in Figs. 1 to 4, inclusive, I may employ the endless series of brushes *a*, the backs of *b* which are carried by one or more endless sprocket-chains *c* extending around and being engaged by suitably mounted sprocket-wheels *d* which may be driven in substantially the same manner as are the brushes first referred to.

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

1. A street-sweeping machine comprising a body, a vertically movable casing supported thereby, brushes rotatably mounted within the casing, means within the casing for receiving the sweepings thrown up by the brushes, means also within the casing for carrying the sweepings from the first named-means, means partly extending within the casing for receiving the sweepings from the second-named means and delivering the same into the body, and means for elevating said casing to raise the brushes from the ground.

2. A street sweeping machine, comprising a body hav-

ing an opening in its top and divided into compartments,
brushes movable in relation to said body, a receptacle for
the sweepings thrown up by said brushes, means for con-
veying said sweepings from said receptacle, guides along
5 the edges of said opening in the top of said body, a
slatted belt supported by and shifted lengthwise in said
guides, duplicate cords at the rear end thereof, and means
for winding up each of said duplicate cords so as to shift
said belt, and an endless traveling belt having scrapers
10 moving along the surface of said slatted belt.

3. A street sweeping machine, comprising a body hav-
ing an opening in its top portion, a hood covering said

opening, a vertically arranged casing communicating with
said opening, revoluble brushes mounted in said casing,
means controllable at will for sustaining said casing at 15
different heights, and mechanism for carrying the sweep-
ings from said brushes to said opening in said top portion.

In testimony whereof I have signed my name to this
specification in the presence of two subscribing witnesses.

CURTIS BLY.

Witnesses:

LEROY R. MEAD,
ROY LOCKWOOD.