

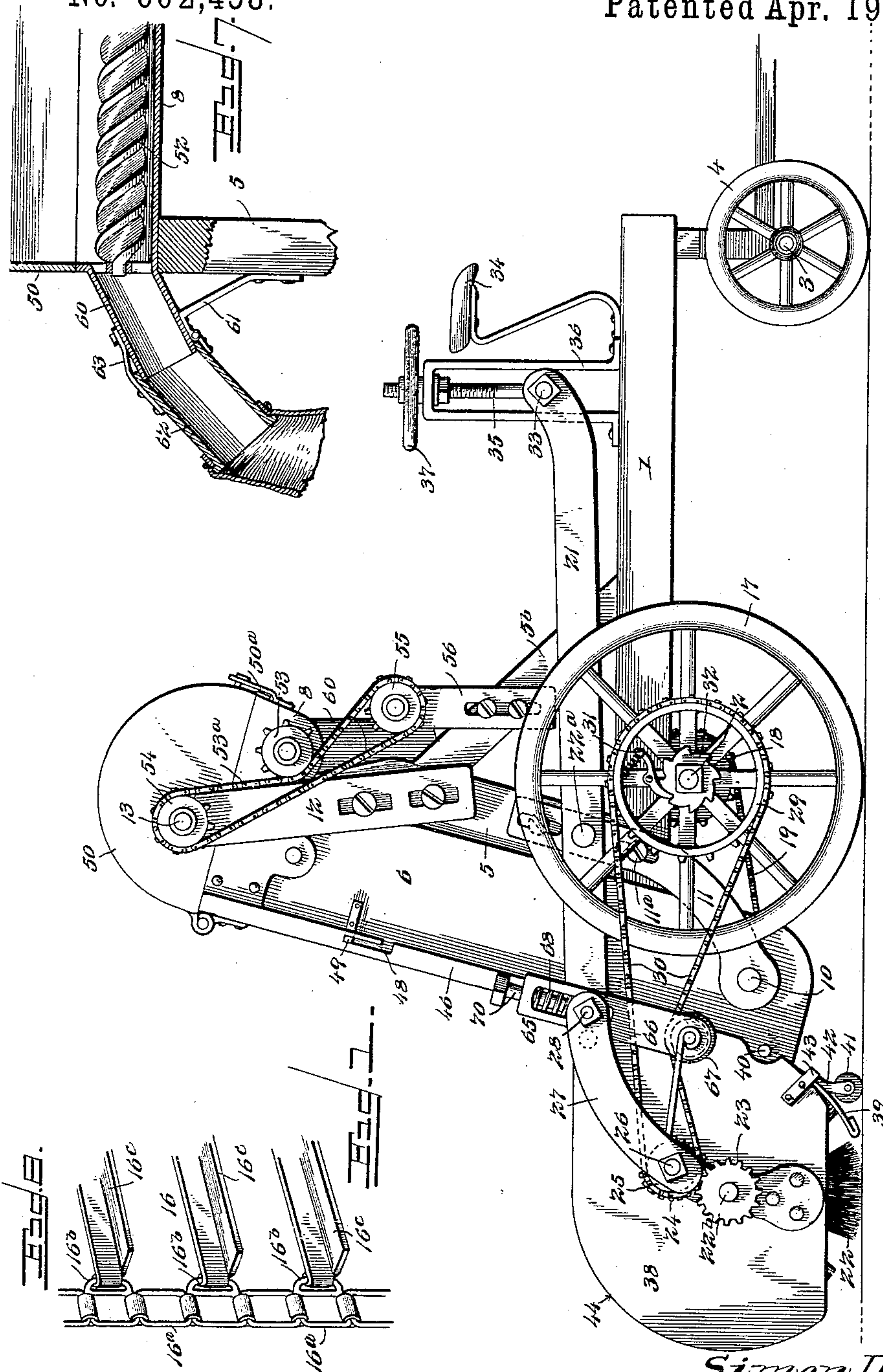
(No Model.)

3 Sheets—Sheet 1.

S. D. LANYON & J. W. TRIPP.
STREET SWEEPER.

No. 602,458.

Patented Apr. 19, 1898.



Inventors

Simon D. Lanyon
John W. Tripp

Witnesses

E. E. Stewart

H. A. Bunker

By their Attorneys,

C. A. Snow & Co.

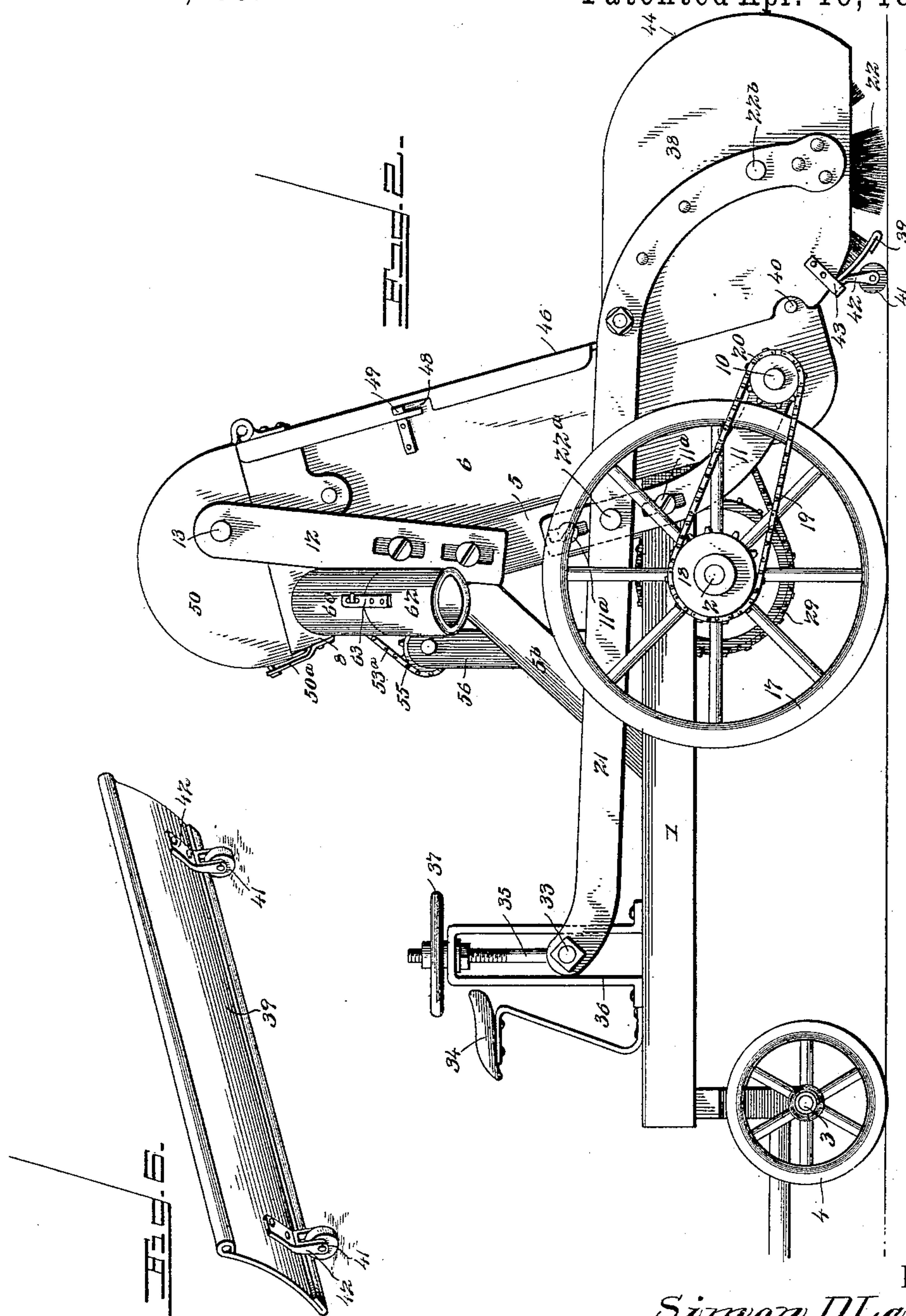
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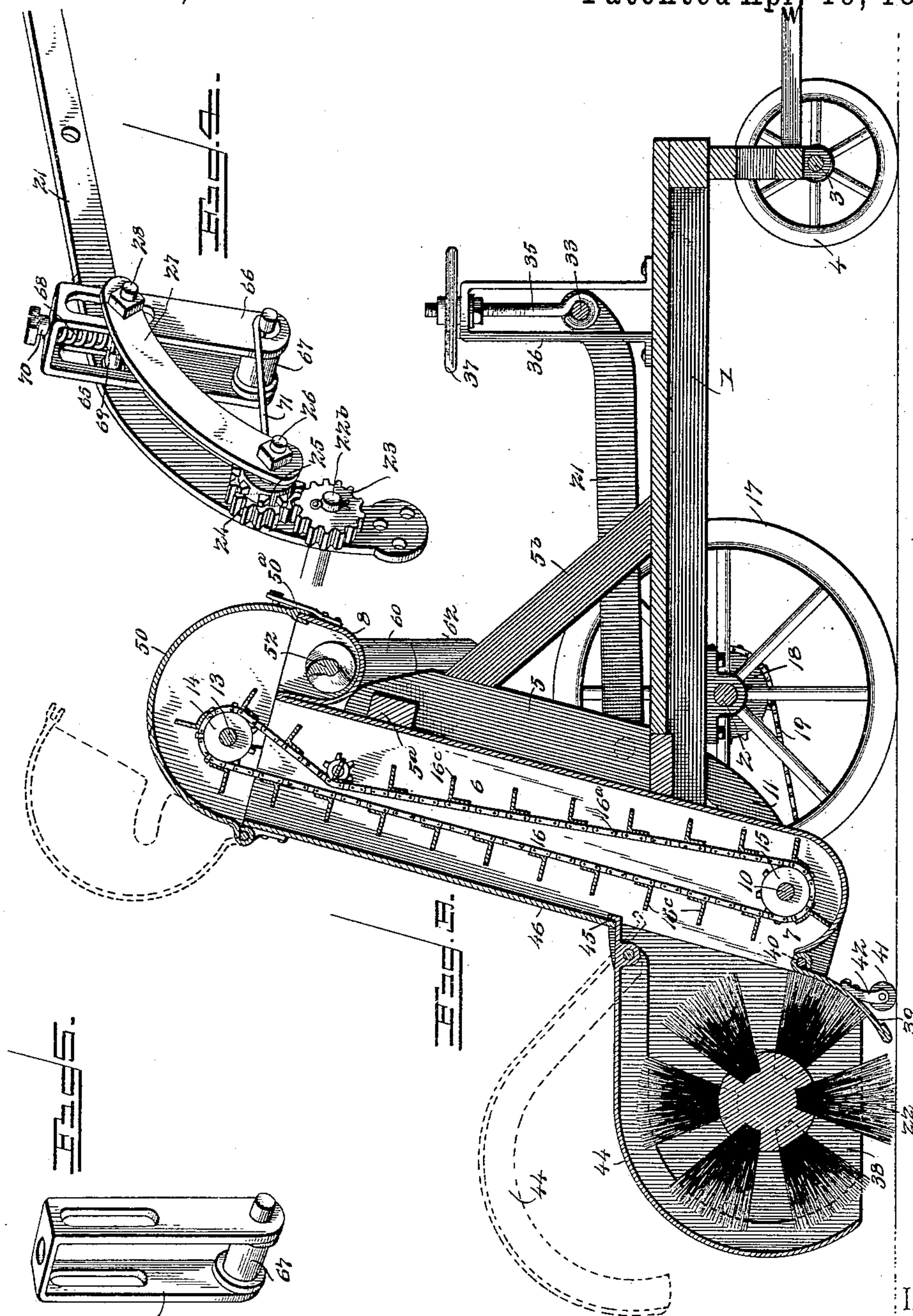
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UNITED STATES PATENT OFFICE.

SIMON D. LANYON AND JOHN W. TRIPP, OF SEDALIA, MISSOURI.

STREET-SWEEPER.

SPECIFICATION forming part of Letters Patent No. 602,458, dated April 19, 1898.

Application filed October 14, 1897. Serial No. 655,179. (No model.)

To all whom it may concern:

Be it known that we, SIMON D. LANYON and JOHN W. TRIPP, citizens of the United States, residing at Sedalia, in the county of Pettis and State of Missouri, have invented a new and useful Street-Sweeping Machine, of which the following is a specification.

Our invention relates to improvements in street-sweeping machines; and one of the objects that we have in view is to provide an improved machine in which the working parts are all housed or inclosed within casings, forming a part of the machine, to prevent the dust from flying loose in the air.

A further object of the invention is to provide an improved mechanism for adjusting the rotary broom, and to enable the driver to adjust the broom, as may be required by the actual conditions of practical service of the machine.

A further object of the invention is to equip the machine with means for discharging the gathered dirt and refuse into a vehicle traveling alongside of the machine or into a suitable receptacle.

A further object of the invention is to simplify the construction of the machine with a view to increasing its efficiency and reliability and to reduce the cost of manufacture and of repairs to a minimum.

With these and other ends in view our invention consists in the novel combination of elements and in the construction and arrangement of parts, which will be hereinafter fully described and claimed.

To enable others to understand our invention, we have illustrated the preferred embodiment thereof in the accompanying drawings, forming a part of this specification, and in which—

Figure 1 is a side elevation of a street-sweeping machine embodying our invention. Fig. 2 is a similar elevation looking at the opposite side of the machine. Fig. 3 is a vertical longitudinal sectional view taken centrally through the machine. Fig. 4 is a perspective view of the broom carrying and adjusting devices detached from the machine. Fig. 5 is a detail perspective view of the tension device by which the endless driving-chain between the axle and the broom-shaft is maintained in a taut condition. Fig. 6 is a detail per-

spective view of the inclined floor-plate across which the broom is adapted to travel and lift the sweepings into a receptacle, from which they are carried by the elevator to a discharge-conveyer. Figs. 7 and 8 are detail views of the hinged discharge-spout and of a part of the endless conveyer, respectively.

Like numerals of reference denote like and corresponding parts in each of the several figures of the drawings.

1 designates the main carrying-frame of our improved street-sweeping machine. At its rear end this carrying-frame is provided with suitable bearings, in which is mounted the carrying-axle 2, and the front end of this frame is equipped with a pivoted axle 3, on which are mounted the front wheels 4. The main carrying-frame is provided at its rear end with the inclined uprights 5, which are connected together by a tie-bar 5^a and are braced by the struts 5^b, and on this rear part of the carrying-frame is fixed the upright casing 6, containing the endless elevator. At its lower end this upright inclined casing 6 is constructed to form a receptacle or chamber 7, which is open at its rear side next to the rotary broom, which will be presently described. The upper end of the upright casing is provided at its front side with another receptacle 8, which overhangs the uprights 5.

In the side walls of the upright casing 6 are formed suitable apertures or slots, through which pass the ends of the lower horizontal shaft 10, and the protruding ends of this shaft are journaled in suitable bearings in the hangers 11. These hangers are arranged on the outside of the carrying-frame, and at their upper ends they are provided with longitudinal slots, through which pass suitable securing-bolts 11^a, that serve to adjustably fasten the hangers to the main carrying-frame 1.

Adjustable slotted standards 12 are fastened by suitable bolts to the uprights 5 of the carrying-frame, and these standards project upwardly above the upright casing and are provided with suitable journal-bearings for the upper horizontal shaft 13.

The horizontal shafts 10 and 13 are arranged in parallel relation to each other and within the casing 6, and said shafts are provided with suitable sprocket-wheels 14 and

15, around which pass the links 16^a of the endless conveyer 16. The alternate links 16^a of the chains forming parts of the endless conveyer are provided with laterally-extending lugs or flanges 16^b, to which are rigidly fastened the buckets 16^c. As shown by the drawings, each bucket consists of a right-angled length of metal, one part or web of which is applied laterally to the lugs on the chain-links, while the other part or web stands outwardly from the line of the endless chains, whereby the offstanding webs of the buckets are adapted to receive and carry the sweepings thrown into the chamber 7 by the action of the rotary broom.

The carrying-axle 2 of the machine is equipped with the wheels 17, and to one end of this axle is attached a sprocket-wheel 18, around which passes a sprocket-chain 19, that extends to and also passes around a sprocket-pinion 20 on the projecting end of the lower horizontal shaft 10 of the elevator, whereby the endless chain of buckets are operatively connected with and positively driven by the rotary carrying-axle of the machine. On opposite sides of the machine are arranged the horizontal levers 21, which extend practically the full length of the carrying-frame and project rearwardly beyond the casing 6, which contains the endless elevator. These levers 21 provide the means whereby the rotary broom 22 is held in operative relation to the endless elevator, and with said longitudinal levers 21 is combined the device for raising or lowering the broom mechanism relatively to the street-surface. The levers 21 are fulcrumed at points intermediate of their length to the carrying-frame 1 of the machine, preferably by employing strong bolts 22^a, which pass through said levers and are suitably fixed to the frame. The rear ends of these levers 21 are curved downwardly, as shown, and in said levers are formed suitable openings, or, if desired, journal-bearings may be provided on the levers to receive the shaft 22^b of the rotary broom. This shaft 22^b occupies a position in rear of and parallel to the lower shaft 10 of the endless elevator, and to one end of this shaft is secured a gear-pinion 23, which meshes with a similar pinion 24. This gear-pinion 24 is made integral with or united rigidly to a sprocket-wheel 25, and said pinion and sprocket-wheel are journaled loosely on a spindle or arbor 26. One end of this spindle is attached to one of the levers 21, and its other end is supported in a link or plate 27, which is arranged parallel to, but is spaced laterally a suitable distance from, the curved rear end of the lever 21, to which the spindle 26 is fastened. The other end of this plate or link 27 is joined to the lever 21 by means of a transverse supporting-bar 28. On the end of the axle 2 on the opposite side of the machine from the sprocket-chain 19 and the sprocket-wheels 18 and 20 is loosely mounted a driving sprocket-wheel 29, around which passes a belt or chain

30, that operatively connects the sprocket 25 with the driving sprocket-wheel 29 and transmits the motion from the axle 2 to the broom-shaft 22^b. This driving sprocket-wheel 29 carries a spring-controlled pawl 31, which normally engages with the teeth of a ratchet 32, fast with one end of the axle 2, and when the machine is drawn forward the sprocket 29 is thus made fast with the axle, to be rotated thereby; but if the machine is moved in the reverse direction the ratchet slips idly past the pawl to prevent the broom from being positively driven on the reverse motion of the machine.

From the foregoing description it will be observed that the rotary broom is supported by the longitudinal levers 21, and to provide for the adjustment of the broom with relation to the street-surface we have equipped the machine with means for raising and lowering the front ends of said levers to impart a corresponding adjustment to the rotary broom. The front ends of the levers 21 are joined together by a transverse tie-bar 33, which extends across the carrying-frame 1 adjacent to the driver's seat 34, and to this tie-bar is connected a vertical adjusting-bolt 35, which passes through the head of a stand 36, fastened rigidly to the carrying-frame 1 in a suitable way. The lower end of this adjusting-bolt is provided with a loop or eye, through which passes the tie-bar 33, and with the threaded shank of this adjusting-bolt engages a hand-wheel 37, equipped with a nut to engage with the threads of the adjusting-bolt.

The longitudinal levers 21 carry at their rear curved ends the side fenders 38, which are suitably fastened to said curved ends of the levers and afford protection against the dust escaping from the sides of the machine.

In advance of the rotary broom is arranged the inclined floor or plate 39, across which the broom is adapted to sweep for the purpose of raising the sweepings into the receptacle or chamber 7. This floor or plate 39 is hung or pivotally attached at 40 in the lower part of the upright casing 6, and said floor or plate is equipped with the ground wheels or rollers 41, journaled in suitable brackets 42, which are rigidly attached to the floor or plate on the lower front side thereof. These ground-wheels are designed to travel on the street-surface to sustain the floor or plate in proper relation to the rotary broom; but the movement of said plate away from the broom is limited by means of the stop-arms 43, which are fastened to the side fenders and have angular ends projecting in advance of the plate, so as to arrest the forward movement thereof under abnormal conditions of service.

The rotary broom is inclosed within a curved hood 44, which snugly embraces the side fenders and which is pivotally attached at its upper front edge to the longitudinal levers 21, and this fender is provided in advance of its pivots with the upwardly-pro-

jecting flange 45, that snugly fits against the closure 46 for the rear side of the casing 6 for the endless elevator. We prefer to provide this closure with the bayonet-slots 48 to receive the studs or pins 49, which are rigidly attached to the upright casing 6 and which serve to detachably confine the closure in place in relation to the hood and the elevator. To the upper end of this closure is hinged a hood 50, which serves to inclose within itself the upper part of the elevator, its shaft 13, and the receptacle 8 on the front side of the elevator. In this receptacle is arranged a transverse conveyer 52, the shaft of which is journaled in suitable bearings in the end walls of said receptacle. One end of this conveyer-shaft is provided with a sprocket-pinion 53, adapted to be engaged by an endless sprocket-chain 53^a, which passes around a sprocket-wheel 54 on one end of the upper elevator-shaft 13 and also around an idler sprocket-pinion 55, which is journaled in a suitable standard 56, adjustably fastened to one of the inclined struts for the uprights 5, said standard being adjustable for the purpose of compensating for wear on the sprockets and the chain.

The hinged hood 50 is adapted to be thrown back with relation to the closure for the elevator-casing and permit of easy access to the upper part of the elevator and to the transverse conveyer, and when this hood is adjusted to inclose the elevator and the conveyer it is designed to be fastened in place by a suitable catch 50^a.

The transverse conveyer is preferably a screw conveyer, one end of which is adapted to discharge to an inclined chute or spout 60, which projects laterally from one side of the machine. This chute or spout is braced by an inclined strut 61, and to the free end of the chute is hinged an adjustable section 62, arranged to discharge the sweepings into a wagon arranged to travel alongside of the machine or into a sack or other receptacle which may be suspended from the hinged section, as will be readily understood. This hinged section may be lowered with relation to the inclined spout for the purpose of having access to the interior to clean any accumulations in the inclined spout, and said hinged section is adapted to be held in alinement with the spout by a suitable catch 63.

To maintain the driving sprocket-chain 30 in a taut condition at all times, we resort to the employment of a tension device 65. This tension device consists of a suitable framework 66, which is slotted at its upper end to fit loosely on the fixed bar 28, which connects the plate or link 27 to one of the longitudinal levers 21, whereby the frame is slidably attached to the fixed bar. The lower end of this frame carries an idler-roller 67, arranged to engage with and form a loose rolling support for the lower strand of the driving-chain 30, and this frame and its idle-roller are normally elevated by a tension-spring 68, the

lower end of which is seated against a collar 69 on the adjusting-spindle 70. This collar or head of the adjusting-spindle is shaped to fit snugly to the fixed bar 28, and around said spindle is fitted the tension-spring, which has its upper end arranged to bear against the closed head of the vertically-slidable frame. The lower part of the slidable frame is held in proper relation to the curved lever by means of a link or stay 71, attached at its ends to the fixed spindle or arbor 26 and to the lower end of said slidable frame. The slidable frame, the roller journaled therein, and the lifting-spring provide an improved tension device which is operatively engaged with the endless sprocket-chain to hold the latter normally in a taut condition and to compensate for wear on the chain and the sprocket-wheels with which it engages.

In operation the machine is drawn along the street, and the motion of the axle is communicated through the described gearing to the broom-shaft for the purpose of rotating the broom to sweep the dirt and refuse across the plate or floor and into the receptacle 7 at the bottom of the upright casing. The endless elevator is driven positively by the described connections with the carrying-axle, and the conveyer is also positively driven by the sprocket-chain and wheel-gearing between the conveyer-shaft and the upper shaft of the endless elevator. Said elevator is arranged to have its buckets receive the dirt and sweepings from the lower receptacle 7 of the upright casing, and the elevator-buckets carry this dirt and sweepings up to the receptacle 8 to discharge the same upon the conveyer, which transfers the sweepings to the inclined chute, from whence the sweepings are discharged into a suitable receptacle.

In the practical operation of the machine the dust is confined by the described construction of the fenders, the hoods, and the casing-closure, so as to reduce to a minimum the escape of dust and dirt from the machine. The broom may be raised or lowered by the driver, who is able to conveniently reach the adjusting hand-wheel to raise or lower the levers 21, and such adjustment of the levers also moves the side fenders and the broom-hood to insure said fenders and hood remaining in their normal operative positions with relation to the rotary broom.

We are aware that changes in the form of the parts and in the details of construction may be made by a skilled mechanic without departing from the spirit or sacrificing the advantages of our invention.

Having thus described our invention, what we claim is—

1. In a street-sweeping machine, the combination with an upright casing, a wheeled carrying-frame, and an elevator within said casing, of the broom-carrying levers fulcrumed on the frame, a rotary broom mounted on the carrying-levers, driving mechanism for said broom, side fenders, 38, rigidly at-

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tached to the carrying-levers and arranged at the ends of the broom, a hood, 44, pivoted to the side fenders and extending from the upright casing rearwardly around the broom; said head and side fenders forming an inclosure for the broom and adjustable with the carrying-levers to remain in the same relation at all times to said broom, substantially as described.

10 2. In a street-sweeping machine, the combination of a wheeled frame, an upright casing provided with a receptacle, 7, the broom-carrying levers, the side fenders and hood carried by said levers and forming an inclosure
15 in rear of the casing, a broom mounted on the levers, a driving mechanism for the broom, an elevator, and an inclined plate 39, situated within the side fenders in advance of the broom, hinged at its upper edge to the
20 receptacle, 7, and provided with the ground-rollers, substantially as described.

3. In a street-sweeping machine, the combination with a wheeled carrying-frame, an axle, and a driving-wheel, of the longitudinal
25 carrying-levers fulcrumed on the machine, a broom having its shaft journaled in said levers and provided with a spur gear-wheel, a fixed plate on one side of a carrying-lever, a compound sprocket and gear wheel journaled
30 between one lever and the fixed plate and meshing with the gear on the broom-shaft, a sprocket-wheel on the driving-wheel, and a sprocket-chain fitted to said driving sprocket-wheel and to the sprocket member of the
35 compound gear, substantially as described.

4. In a street-sweeping machine, the combination with a frame, a main axle and a broom-shaft, of a wheel mounted on the axle to rotate therewith and carrying a driving-
40 sprocket, a counter-shaft geared to the broom-shaft and having a sprocket-pinion, a driving-chain operatively connected to the driving-sprocket and to the sprocket-pinion on the counter-shaft, a slidable tension-frame
45 carrying a loose guide-roller arranged in contact with one strand of said chain, and a spring which normally lifts the slidable tension-frame and its roller, substantially as described, for the purposes set forth.

50 5. In a street-sweeping machine, the combination with the main carrying-frame, a driving-wheel, an axle and a broom-shaft, of longitudinal adjusting-levers fulcrumed to the carrying-frame and sustaining the broom-
55 shaft, a driving-sprocket on the driving-wheel, a counter-shaft journaled in the adjusting-levers and geared to the broom-shaft; a driving-chain between the driving-sprocket and the counter-shaft, a horizontal bar rigid
60 with one of said adjusting-levers, a slidable tension-frame mounted on said bar, an idler friction-roller journaled in said tension-frame

and engaging with one strand of the driving-chain, and a spring seated against said fixed bar and against the slidable tension-frame, 65 substantially as described.

6. In a street-sweeping machine, the combination with a carrying-frame, and a driving-axle provided with a clutch-controlled sprocket-wheel, of adjusting-levers fulcrumed
70 on said carrying-frame, a broom having its shaft journaled in said levers and provided at one end with a gear-pinion, a plate or link arranged parallel to one of said levers and connected rigidly thereto by a spindle and a
75 fixed bar, a pinion and sprocket-wheel journaled on said spindle and arranged for the pinion to gear with the broom-shaft pinion, a driving-chain operatively connected with said sprocket-wheel and with the clutch-controlled sprocket-wheel, a slidable tension-
80 frame loosely mounted on said fixed bar and carrying at its lower end a tension-roller which engages with one strand of the driving-chain, a spindle passing through the head of
85 the tension-frame and seated on the fixed bar, and a spring fitted at its respective ends against the spindle and the head of the tension-frame, substantially as described.

7. In a street-sweeping machine, the combination with a main frame, an upright elevator-casing and a broom, of a closure detachably fastened to the rear of said upright casing, side fenders situated in close lateral
90 relation to the ends of the broom, a pivoted hood attached to the lower part of the upright casing, a trough-like receptacle situated in advance of the upper end of said casing, a hood hinged to the rear closure and arranged to close the upper end of the upright casing
95 and the trough-like receptacle, an endless elevator within said upright casing, a transverse conveyer, and suitable driving mechanism for said elevator and the conveyer, substantially as specified.

8. In a street-sweeping machine, the combination with a main frame, an upright casing and its trough-like receptacle, of the delivery spout or chute extending laterally from the trough-like receptacle and provided with a
100 hinged delivery-section arranged to be fastened detachably to said spout or chute, a broom, an elevator, and a transverse conveyer, substantially as and for the purposes described.

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in the presence of two witnesses.

SIMON D. LANYON.
JOHN W. TRIPP.

Witnesses:

ADAM SCOTT,
M. WINZENBURG.