

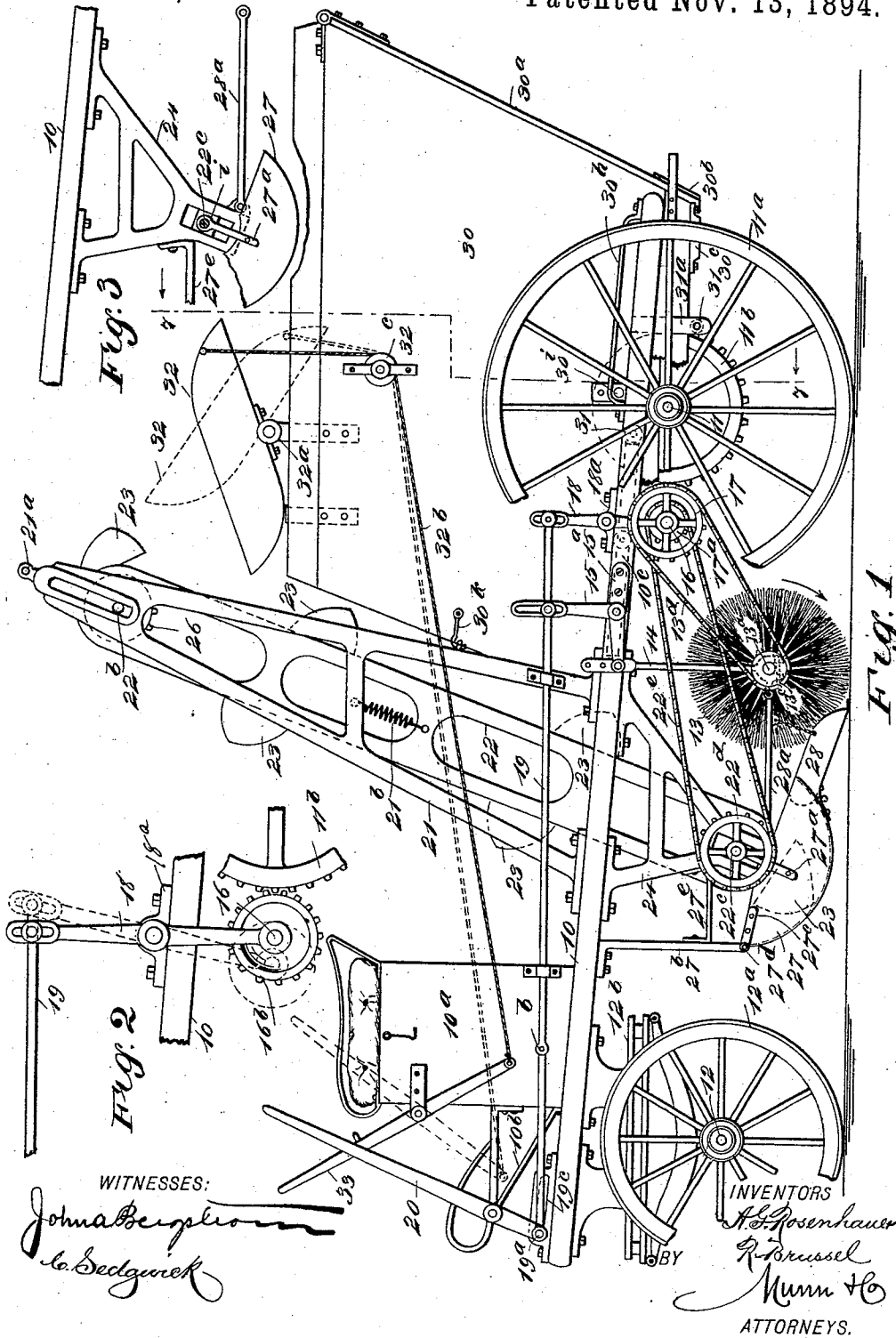
(No Model.)

3 Sheets—Sheet 1.

A. G. ROSENHAUER & R. BRUSSEL.
STREET SWEEPER.

No. 529,198.

Patented Nov. 13, 1894.



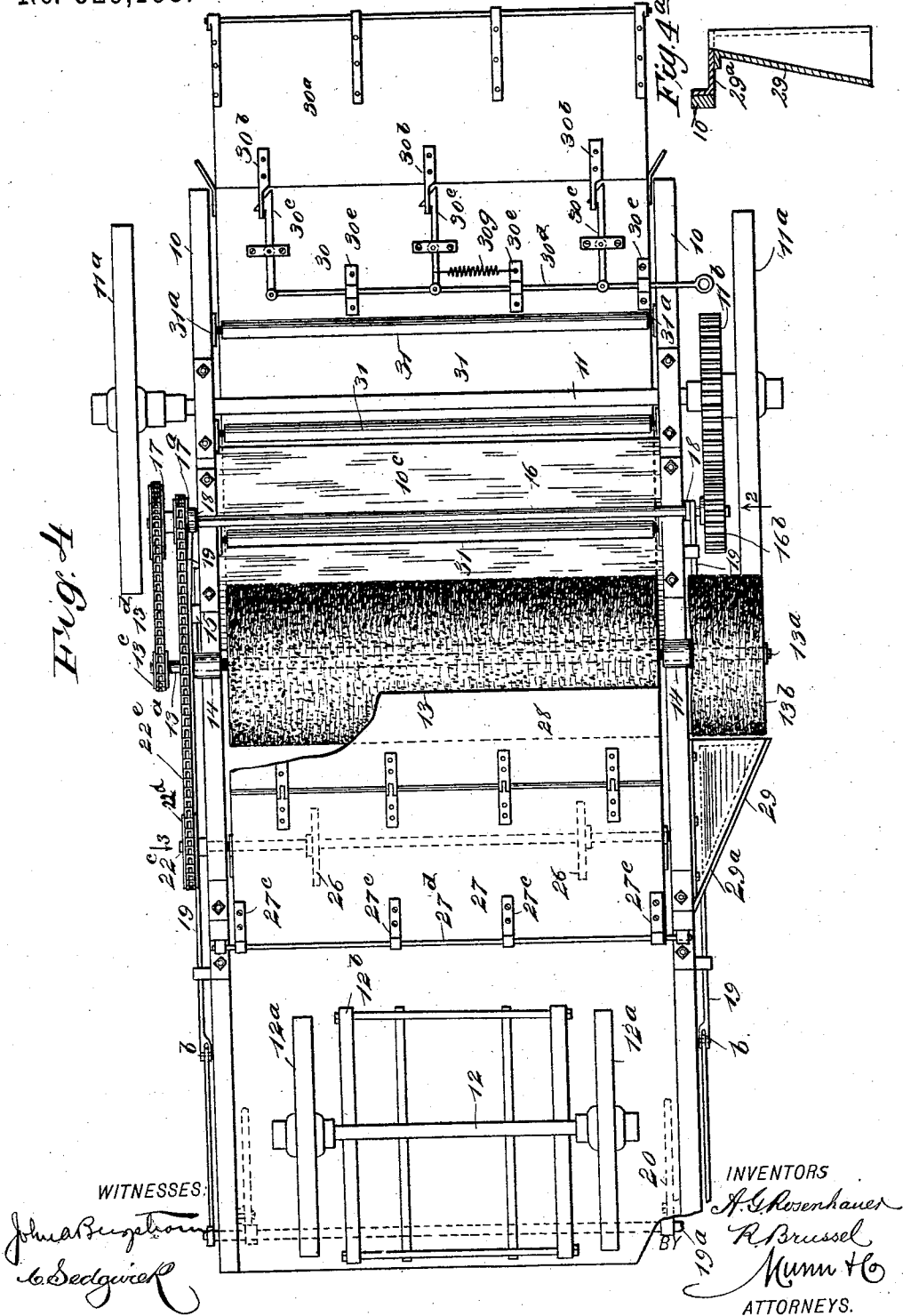
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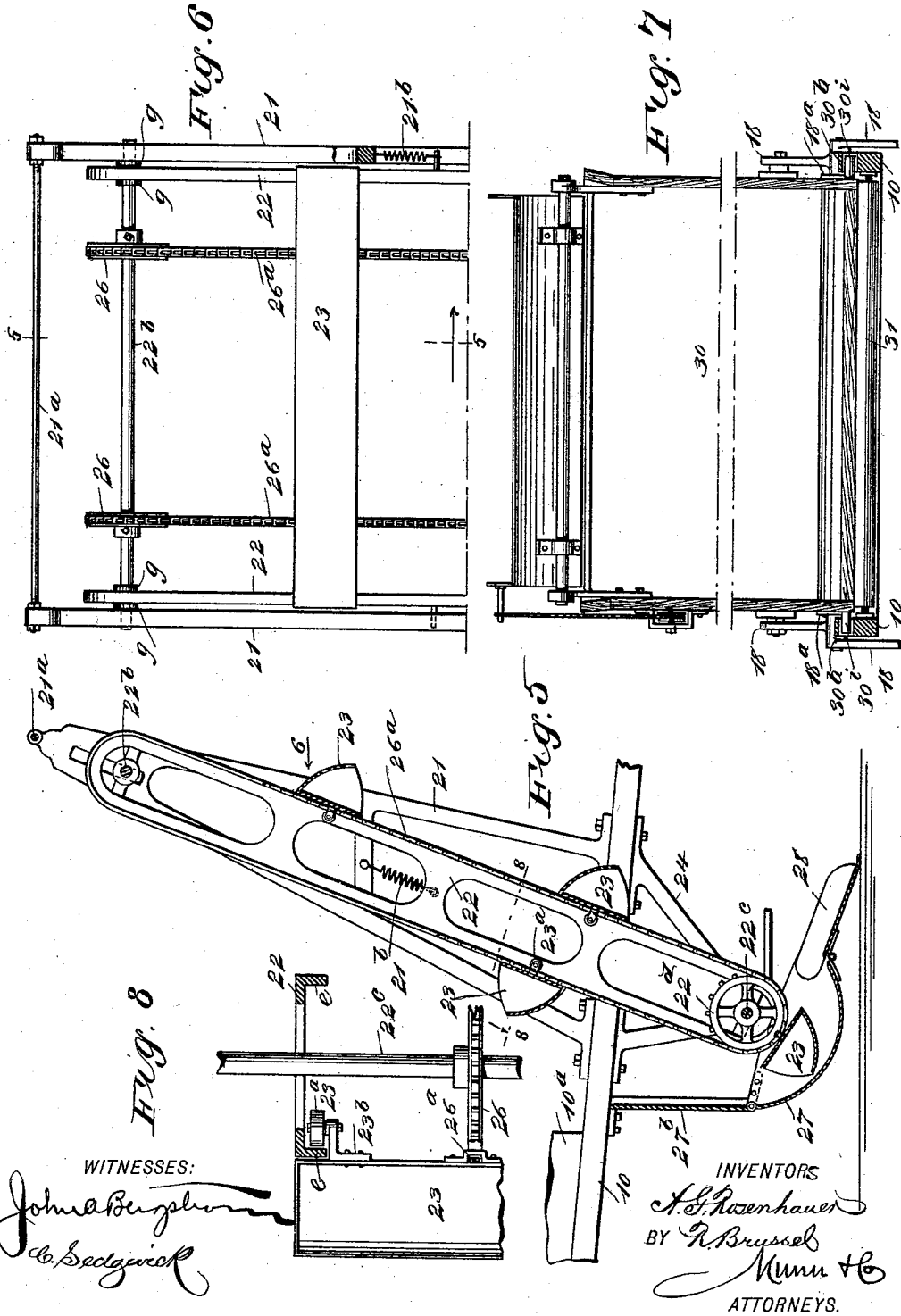
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3 Sheets—Sheet 3.

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UNITED STATES PATENT OFFICE.

AUGUST G. ROSENHAUER AND RICHARD BRUSSEL, OF NEW YORK, N. Y.

STREET-SWEEPER.

SPECIFICATION forming part of Letters Patent No. 529,198, dated November 13, 1894.

Application filed January 10, 1894. Serial No. 496,387. (No model.)

To all whom it may concern:

Be it known that we, AUGUST G. ROSENHAUER and RICHARD BRUSSEL, of New York city, in the county and State of New York, have invented new and useful Improvements in Street-Sweepers, of which the following is a full, clear, and exact description.

Our invention relates to improvements in power drawn street sweepers, of a class having a dirt-elevator and a dirt receptacle; and has for its objects to provide novel features of construction for a device of the character indicated which will adapt it for convenient and effective use, affording means to sweep the entire breadth of a roadway, elevate the sweepings as the machine is progressively moved, spread said sweepings in the dirt receptacle, and dump the receptacle at any desired point.

To these ends our invention consists in the construction and combination of parts, as is hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures of reference indicate corresponding parts in all the views shown.

Figure 1 is a side elevation of the street sweeper. Fig. 2 is a detached enlarged side view of details of construction opposite the arrow 2 in Fig. 4, showing mechanism to throw the sweeping brushes into and out of gear with the driving mechanism. Fig. 3 is an enlarged detached side view of parts of the dirt scoop for the elevator device opposite the arrow 3 in Fig. 4. Fig. 4 is a reverse plan view of the machine. Fig. 4^a is a detached transverse sectional view of parts on the line 4^a—4^a, in Fig. 4, showing the dirt deflector plate which is part of the improvement. Fig. 5 is a sectional side view of parts of the main frame and elevator device on the line 5—5 in Fig. 6. Fig. 6 is a broken rear view of the elevator device opposite the arrow 6 in Fig. 5. Fig. 7 is a transverse sectional view of the dirt receptacle, and a dirt distributing device on the line 7—7 in Fig. 1; and Fig. 8 is an enlarged sectional plan view of details on the line 8—8 in Fig. 5 showing parts of the dirt elevator mechanism.

There is an elongated rectangular main frame 10, provided for the street sweeping machine, which is supported upon an axle 11

and two wheels 11^a at the rear, and the front axle 12, wheels 12^a, and fifth wheel attachment 12^b of usual construction, whereby the main frame and parts it supports, are maintained in proper position and adapted for progressive movement in any direction; the frame 10 being downwardly-inclined from front to rear a proper degree to permit the effective operation of other parts sustained by it.

In front of and near to the rear wheels 11^a, the cylindrical sweeping brush 13 is transversely supported from the main frame by two similar hanger rods 14, see Figs. 1 and 4, said rods having their lower ends loosely secured to the journal ends of a central shaft 13^a, that is the core of the brush.

The upper end portions of the hanger rods 14, are each longitudinally perforated in series, at spaced intervals, for a pivotal engagement with the outer end of a bell-crank lever 15, these bell-cranks being each pivoted oppositely on side bars of the main frame 10, by a loose engagement with bracket plates, such as 15^a, one being shown in Fig. 1.

At one side of the main frame of the machine the brush shaft 13^a is outwardly-extended for the support of a shorter brush 13^b which is of an equal diameter with the brush 13 and is adapted to sweep dirt at one side of the machine outside of the main frame.

A spur gear wheel 11^b is secured on the rear axle 11 to receive motion from it, which wheel is of considerable diameter and is located near the inner end of the hub on the adjacent rear wheel 11^a, and serves to communicate rotary motion to the brushes 13, 13^b, through intermediate mechanism which will be described, consisting essentially of a transverse countershaft 16 that is rotatably hung below the main frame as will hereinafter be explained.

The countershaft 16 projects at each end beyond the sides of the main frame 10 and at one side of the frame opposite the spur wheel 11^b a smaller spur gear wheel 16^b is affixed on the projecting portion of said shaft. Two sprocket wheels 17, 17^a are secured on the other end of the countershaft 16 near to each other, the larger wheel 17 being outside.

A small sprocket wheel 13^c is secured on the projecting end of the brush shaft 13^a which is unprovided with the shorter brush

13^b, said wheel being in the same vertical plane with the sprocket wheel 17, to which it is connected by the sprocket chain 13^d as shown in Figs. 1 and 4.

5 It is essential that convenient means be provided for controlling the movements of the brushes 13, 13^b, from the driver's seat 10^a, which latter is located on the main frame 10 near the front end of the machine. To this
10 end two similar rock arms 18 are provided for the rotatable support of the countershaft 16, which is loosely engaged with perforated hubs on the lower ends of the arms, said points of support being near the inner sides of the
15 wheels 16^b and 17^a.

The rock arms 18 are pivotally and oppositely sustained on journal studs that project outwardly from two bracket plates 18^a, one being shown in Fig. 1, these points of pivotal
20 support for the rock arms being near their longitudinal centers, so that the pendent portions of the same which serve as hangers for the countershaft 16 are about equal in length with the parts of the rock arms that project
25 above their pivotal supports.

The upper end portions of the rock arms 18 are longitudinally slotted to permit an adjustable connection to be produced between them and the rearward ends of two pusher
30 bars 19 that extend forwardly along each side of the machine above its main frame, and have a secured attachment at their front ends to the ends of the transverse rock shaft 19^a, each pusher bar being jointed at the same
35 distance from said shaft as shown at *b* in Figs. 1 and 4. The pusher bars are also pivotally-connected with the upper ends of the bell crank levers 15 by suitable bolts that engage said parts. Preferably the bell crank levers
40 are slotted lengthwise near the upper ends to permit these points of pivot connection to be changed as may be required for the proper adjustment of the brushes.

On the rock shaft 19^a, which is held free to
45 slide toward or from the front of the frame 10, by its loose engagement with the longitudinally slotted bracket blocks 19^c, the lower end of the lever 20 is loosely connected, said lever being pivoted upon the side of the foot
50 board 10^b as shown in Fig. 1, and projecting upwardly in a convenient position for manipulation by the driver who occupies the seat 10^a.

55 It will be seen from the foregoing description of parts, that when the lever 20 is drawn rearwardly as represented in Fig. 1, the consequent forward sliding movement of the pusher bars 19 will so adjust the rock arms 18 that the spur gear wheel 16^b will be thrown
60 into mesh with the larger gear wheel 11^b, so that the forward movement of the machine will transmit rotary motion from the larger gear wheel to the smaller meshing wheel, and through the countershaft 16 and its sprocket
65 geared connection, revolve the sweeping brushes 13 13^b in the direction of the curved arrow in Fig. 1.

When the countershaft 16 has been rocked toward the rear axle 11 by the longitudinal forward movement of the pusher bars 19, the
70 bell crank levers 15 will be so moved thereby, that the brushes will descend and have a light contact with the surface of the road bed that is to be swept by them, the means of adjustment for length of the hanger rods 14, and for
75 the pivotal connection of the pusher bars with the upright members of the bell cranks and rock arms, allowing the degree of brush pressure on the ground to be nicely graduated, a forward movement of the lever 20 simultaneously
80 lifting the brushes and stopping their rotary motion.

An elevator device is located on the main frame 10 forwardly of and near to the brushes 13, 13^b, consisting of two similar housing
85 frames 21, that are stably erected on the side portions of the main frame 10, and preferably constructed as represented in Figs. 1, 5 and 6. Each housing frame comprises two upwardly-converged standards, joined together
90 at the top by a brace rod 21^a, a cross bar being produced or secured at a proper distance from the flanged feet of the standards, which are sufficiently separated from each other to afford a wide base for each
95 housing frame, these feet being bolted upon the main frame as indicated in Fig. 1, a rearward inclination of equal degree being given to the housing frames.

As shown in Fig. 1, the pusher bars 19 are
100 loosely secured by clip plates to the sides of the seat 10^a and also upon the sides of the housing frames 21, which serve to prevent these long bars from springing laterally when slid to rock the arm 18.

The elevator, which is of the endless chain and bucket type, consists of two similar elongated skeleton frames 22, that are rounded at each end and are each parallel on the side
110 edges as represented in Figs. 1, 5 and 8, having said edge portions widened by inwardly-extending flanges *e*, that afford track ways for the guidance of the elevator buckets 23, as will be further explained.

The similar frames 22 are retained in parallel planes suitably spaced apart, by the transverse bucket sustaining shafts 22^b, 22^c, the upper shaft 22^b, that is clearly shown in Fig. 6, indicating the manner of connection, which consists in providing the secured col-
120 lars *g* for each end of said shaft, at each side of the skeleton frames, whereby the frames are retained in parallel planes and the shafts are permitted to revolve.

The outer ends of the upper bucket shaft 125 22^b, project through longitudinal slots formed for their reception at the upper ends of the housing frames 21, this loose connection of parts serving to retain the upper part of the elevator side frames in place between the
130 housing frames, and permits the elevator to slide a limited distance on the latter.

The lower ends of the joined frames 22 are sustained in position so as to incline the ele-

vator rearwardly, by the similar hanger frames 24, two of these being provided, one on each side of the machine, each being secured to depend from the lower side of the main frame 10, below the housing frames 21 as represented in Figs. 1 and 5.

The lower bucket supporting shaft 22^c is sufficiently elongated to extend outside of one hanger frame at the side whereon the inner sprocket wheel 17^a is located on the counter shaft 16, and on this projected end of the bucket shaft a sprocket wheel 22^d is secured, said wheel being preferably made of large diameter so as to reduce the speed of rotary motion given to the shaft 22^c that is communicated to it by the chain connection 22^e, which engages the peripheries of the sprocket wheels 17^a and 22^d, as shown in Figs. 1 and 4.

The end portions of the lower bucket shaft 22^c project through upwardly and rearwardly-inclined slots formed in the lower portions of the hanger frames 24, and are therewith loosely connected by boxes *i* that are fitted upon the cylindrical body of the shaft with their center bores, and have two parallel edges in sliding engagement with the side walls of the slots said boxes are located in, as shown in Fig. 3.

The weight of the elevator complete, is sustained by two suspension springs 21^b which have their ends respectively secured upon intermediate cross bars of the housing frames 21, and elevator skeleton frames 22, the tensional force of said springs being sufficient for the purpose mentioned.

On the transverse shafts 22^b, 22^c, similar sprocket wheels 26 are secured, two on each shaft, at an equal distance from the side frames of the elevator, and sufficiently separated from each other to adapt them for effective service; and on each pair of vertically-aligned sprocket wheels an endless sprocket chain 26^a is placed in a taut condition, a suitable number of the scoop-like elevator buckets 23, being thereon transversely affixed at proper intervals of separation, their manner of attachment disposing their open tops upwardly while the buckets are on the front side of the elevator.

The elevator buckets 23, are made of such a proportionate length, that their ends will be flush with the outer sides of the frame 22, and on the surface of each bucket that is nearest to the flanged edges *e* of said frames, and near each end of each bucket, an anti-friction roller 23^a is secured by an attachment thereto of the bracket frame 23^b, of each roller, so that the peripheries of the rollers will loosely bear on the inner surface of each flange *e*, and thus sustain the ends of the buckets, preventing their outward displacement, this connection of parts being illustrated in Fig. 8.

A dirt-receiving scoop 27 is hung from the lower shaft 22^c by loop plates such as 27^a shown in Figs. 1 and 3 these points of support being near the center of width of each

end wall of the scoop; and the latter, having a downwardly curved bottom wall and parallel end walls, is of a length equal to that of the longer brush 13. See Fig. 4.

The forward transverse edge of the dirt scoop 27, is hinged to the lower ends of the depending bracket arms 27^b by means of a series of hinged leaves 27^c, that are affixed at proper distances apart on the bottom of the scoop, having scrolled ends projected beyond the front edge of said bottom for a loose engagement with a pintle rod 27^d, that is introduced through lateral aligned holes in the lower ends of the bracket arms mentioned, and loosely secured at its ends in bracket leaves which are attached upon the end walls of the scoop, one being shown in Fig. 1.

The depending arms 27^b are braced by two stay pieces 27^e that are attached at their ends to said arms and also to the hanger frames 24 at the front edges of the latter.

On the rear edge of the scoop 27 an apron 28 is hinged by its forward edge, so as to allow its rear edge to approach the ground, said rear edge being shod with a leather or gum flap to adapt the apron to have contact with the varying surface of the road bed as the machine is progressively moved.

Similar carrier bars 28^a are extended from the hanger rods 14 toward the hanger frames 24 and are jointed to the latter at their front ends and to the rods 14 at their rear ends, and on these bars which are nearly horizontal and are located above the end walls of the apron 28 a flexible connection is secured to each bar by its upper end, and to the end wall of the apron with its lower end, said chains or wire ropes being designed to sustain the apron at a proper inclination as shown in Fig. 1.

The means for suspending the scoop 27 from the lower bucket shaft 22^c adapts the scoop to receive rocking adjustment, if the elevator buckets need such a movement to permit their front transverse edges to have a scraping contact with the inner surface of the bottom of the scoop.

The geared connection of the lower bucket shaft 22^c with the sprocket wheel 17^a enables the operator moving the lever 20 to elevate the lower edge of the apron 28, if said lever is adjusted to throw the spur gear wheel on the countershaft 16 away from the spur gear wheel on the axle 11. Hence it will be evident that the vibration of the lever 20 controls the action of the brushes 13, 13^b, and also the adjustment of the apron, this being of advantage if the sweeping machine is to be temporarily suspended from work, when it is being moved over ground that it is not required to sweep.

It will be noticed that the elastic suspension of the elevator permits the scoop and its apron to slide upwardly if the latter meets with an obstruction such as a stone or like object while the machine is in forward motion, which will obviate danger of breakage should an

impediment of moderate dimensions be encountered.

As the apron 28 is projected close to the surface of contact of the brush 13 with the road bed, it will be adapted to receive all the dirt swept by said brush, the rotary forcible action of which is sufficient to throw the sweepings forwardly into the scoop 27.

As the shorter brush 13^b is outside of the main frame 10 its sweepings are not caught directly by the apron 28 and scoop 27, and to enable the machine to take up the dirt swept by said brush 13^b, a deflector plate 29 is hung from the main frame by a triangular frame 29^a, which plate inclines from the outer edge of the triangular frame downwardly and inwardly, the rear side of the latter named part being equal in width with the length of the brush 13^b that it is directly in front of, the front angular end of the frame 29^a and front edge of the deflector plate both being close to the outer side of the main frame 10, as represented in Fig. 4.

By the inclination of the deflector plate 29, downwardly, inwardly and forwardly, it will be seen that the dirt swept by the brush 13^b will be forcibly projected against the inner side of said plate, and deflected inwardly and forwardly to be subsequently swept by the brush 13 into the scoop 27.

Upon the rear end portion of the main frame 10 the dirt receptacle 30 is mounted, this portion of the device comprising a box-like structure having a width nearly equal to the space between the side timbers or bars of the main frame, the side walls of the receptacle being parallel and vertical.

The front transverse wall of the dirt receptacle is sloped upwardly and rearwardly, and a downwardly and forwardly-inclined rear end gate 30^a, is hinged upon the upper edges of the box 30, at its rear end, fitting closely on the side walls at the rear edges that are suitably sloped upwardly and rearwardly to receive it, a locking device for retaining the gate in a secure condition with provision for a ready release being made, which will presently be described.

There is a substantial bottom wall provided for the dirt receptacle as shown in Fig. 7, and behind the rear axle 11 a depression in this bottom portion of the box 30 is made, as indicated in Fig. 1.

The main frame 10 is furnished with stout cross planking 10^c that extends rearwardly from near the front of the dirt receptacle to a point near the axle 11, joining the side portions of the main frame together, its front being held intact by the bolster pieces of the fifth wheel attachment before mentioned.

Any suitable number of rollers 31 are transversely arranged below the dirt receptacle 30, these rollers being journaled at their ends in proper boxes on the side pieces of the main frame, occupying slots or recesses formed for their accommodation in the cross planking 10^c, the diameter of the rollers permitting them

to receive the bottom of the dirt receptacle that normally lies in front of the axle 11.

Near the lower edge of the dirt receptacle 30 another transverse roller 31 is located, its journal ends being loosely sustained by their engagement with the perforated hanger plates 31^a, that depend oppositely from the sides of the main frame; said roller being thus rotatably supported in contact with the bottom wall of the depressed rear portion of the receptacle 30.

The locking and releasing device for the end gate 30^a consists of a series of plate-ended hooks 30^b which are attached in vertical order across the lower end of the end-gate on its outer side, the hooks on their lower terminals extending a sufficient degree below the lower transverse edge of the end gate to permit them to receive the hooked rear ends of the latch bars 30^c, the latter being pivotally-sustained near their centers of length on the lower side of the bottom wall of the dirt receptacle 30, as represented in Fig. 4.

A link rod 30^d is jointed to the forward ends of the latch bars 30^c, and is supported to slide transversely on the bottom of the dirt receptacle by the clip plates 30^e which loosely embrace the rod and are attached by their ends to the bottom wall of said receptacle. The link rod 30^d is projected at one end outside of the main frame 10 and has a handle ring or like provision made on the outer terminal for convenience in manipulation.

A spring 30^f is extended in a taut condition, between the center latch bar 30^c near the link rod 30^d and the clip plate that is nearest the hooked side of the outer latch bar, and the secured engagement of the ends of the spring with the parts mentioned and as shown in Fig. 4, is adapted to draw the latch bars toward the hook ends of the plates 30^b, so that the closed adjustment of the end gate 30^a will cause the series of latch bars and hook plates to interlock with each other, and thus retain the gate in closed condition until the link rod is drawn outwardly to release said gate.

The dirt receptacle 30 is designed to traverse the rollers 31, moving down the inclined plane of the main frame 10 when a load of sweepings is to be dumped from it; and to prevent the receptacle from leaving the frame at its rear end, two similar guide plates 30^h are provided which appear in Figs. 1 and 7. Each guide comprises a bar of proper length bent downwardly and then outwardly at each end, so as to produce pads at the ends for an attachment upon the side pieces of the main frame. The intermediate portion of each guide plate is raised a sufficient distance above and in parallel with the upper side of the main frame to permit the introduction between said plates and the frame of a strong bracketed stud for each plate, which studs 30ⁱ, project from the side walls of the dirt receptacle at opposite points at a proper distance from the rear end of the latter, the rear ends of the guide plates being close to the back end

of the main frame, so that a rearward movement of the receptacle 30, will be arrested at the rear end of the main frame and the receptacle then tilted over this end of the frame if such an adjustment is desired.

The dirt receptacle is retained in its normal position on the frame 10, by keeper hooks 30^a, that are loosely secured on each side of the receptacle and engage with staples on the housing frames 21.

The upper side edges of the dirt receptacle 30, have outwardly inclined wing boards attached to them which prevent dirt thrown into the open top of the receptacle from falling over the sides, and at a proper point near the front end of the receptacle, a dirt spreading chute 32, is pivotally mounted on two standards 32^a, that project upwardly and oppositely from the side walls of the box 30, the width of the chute being equal with that of the dirt receptacle or box.

The length of the chute 32 is so proportioned, that its front end will be located beneath buckets 23, that are successively brought into position at the top and on the rear side of the elevator, and as these buckets are inverted while in the position mentioned, it will be seen that dirt elevated by them, will be precipitated into the chute, that comprises a shallow box having two sides and a bottom that is upwardly curved at the front end.

In order to discharge the contents of the chute 32 toward the rear of the receptacle 30 and thus evenly dispose of the sweepings that are deposited in the latter, a rope 32^b is affixed by one end to a pin at one side of the chute and near its rear end, said rope or chain being downwardly extended to engage with a loose pulley 32^c, that is bracketed upon the side of the dirt receptacle, and thence is forwardly projected to have its forward terminal attached to the lower end of the upright lever 33, which lever is pivoted intermediately of its ends, on the side of the seat 10^a and forwardly inclined so that a rearward rocking movement of the lever 33 will tilt the chute 32, and cause it to assume the position shown by dotted lines in Fig. 1, which will throw the contents of the chute rearwardly into the receptacle 30.

The lever 33, may be hooked fast to the seat 10^a, and thus retain the chute in an inclined position if this is desired, such an adjustment being of use in case the dirt is to be thrown down near the front of the receptacle 30 and so load the latter evenly.

In use the improved street sweeping machine is drawn by suitable power, draft animals preferred, and is moved along each side and the intermediate portions of a road bed that is to be swept, and as before explained, this will by the operation of the revolving brushes 13, 13^b and other co-acting parts of the machine, thoroughly sweep dirt from the road bed, elevate it, and discharge the dirt into the dirt receptacle as it is taken up from the road.

After the receptacle 30 is filled, the brushes and apron of the elevator scoop are removed from the ground by the means that have been described, and the entire machine is drawn to the point of discharge for the dirt, which latter is readily effected by a release of the end gate 30^a, and a subsequent release of the dirt receptacle from the housing frames which will allow the loaded receptacle to move rearwardly and tip up at the rear end of the main frame 10, thus dumping its contents where this is required.

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

1. In a street sweeper, the combination with a main frame, two aligned transverse rotatable brushes hung therefrom one brush extending at the side beyond the main frame, and means to rotate the brushes, of an inwardly inclined dirt deflecting plate hung in front of the brush extension, substantially as described.

2. In a street sweeper, the combination with a four wheeled main frame, a cylindrical brush transversely hung below said frame, a shorter brush on the same shaft with the main brush, and means to rotate said brushes, of a dirt scoop, an elevating device for the main brush, and an inwardly and forwardly inclined dirt deflector plate hung in front of the short brush and adapted to project the dirt swept by it in front of the main brush, substantially as described.

3. In a street sweeper, the combination with a four wheeled main frame, a transverse cylindrical brush hung from this frame and arranged to be rocked upwardly, and means to rotate and means to raise the brush, of an upright elevator at the front of the brush and elastically supported to yield upwardly, a dirt scoop below the elevator buckets that are pressed thereon, and an apron on the scoop that is hinged thereto by one edge and hung from the brush supports so as to be raised with said brush from the ground, substantially as described.

4. In a street sweeper, the combination with a four wheeled frame, a sweeping brush transversely hung therefrom, and means to rotate said brush, of an elevator, a dirt receptacle on the frame rearward of the elevator, a dirt spreading chute supported to rock on the upper part of the dirt receptacle, and arranged to receive dirt from the elevator and discharge it by a rocking movement, a flexible connection fast by one end on the rear of the chute trending down to engage a pivoted pulley on the dirt receptacle, and thence forwardly to a vibratile lever whereon the other end of said connection is secured, substantially as described.

5. The combination with a dirt receptacle on the main frame of a street sweeper, and a gate hinged at the top edge to hang pendent and open by its gravity when released of a latching device for said gate, comprising the

hook ended pieces 30^b secured at intervals on the lower end of the gate 30^a, the laterally vibratile hook bars 30^c pivoted intermediately of their ends and located on the bottom of the receptacle 30, the transverse bar 30^d held to slide on the bottom of said receptacle by its loose engagement with the clip plates 30^e that are affixed to said bottom, and the retractile spiral spring 30^f which is attached by one end to one hook bar, and at its other end to the bottom of the receptacle so as to simultaneously actuate the hook bars, substantially as described.

6. In a street sweeper the combination with a wheeled main frame, a transverse sweeping brush, and an elevator above said brush, of a dirt receptacle on the main frame at the rear of the elevator, a rocking chute on the upper part of the receptacle, and a tilting device for the chute, comprising a flexible connection forwardly extended from the rear of the chute, and an upright lever pivoted at the front of the main frame and connected with the flexible piece, substantially as described.

7. In a street sweeper the combination with a wheeled main frame, a transverse brush hung therefrom, two upright housing frames on the main frame above the brush, an elevator frame, and springs supporting the elevator frame on the housing frames, of an endless chain and transverse bucket elevator device, anti-friction rollers on the buckets engaging flanges on the elevator frame, and a dirt scoop hung below the buckets and engaged therewith, substantially as described.

8. In a street sweeper, the combination with a wheeled main frame, brushes of differing length, supported on the same central shaft, hanger rods, and bell-crank levers pivoted to the upper ends of the hanger rods and adjustably pivoted to the main frame at its sides, of a counter-shaft rotatably hung by rock arms from the main frame, sprocket gearing on said shaft, arranged to rotate a sprocket wheel on the brush shaft, a spur gear wheel on the counter-shaft, adapted to engage with or move from a spur gear wheel on the rear axle of the machine as the rock arms are vibrated,

and means to rock the bell cranks and the rock arms from the front of the machine, substantially as described.

9. In a street sweeper, the elevator device, comprising the two upright housing frames on the wheeled main frame, two elevator frame pieces spaced apart by rotatable bucket shafts, the upper bucket shaft being slidably engaged with slots in the housing frames, springs supporting the elevator frames on the housing frames, sprocket wheels on the bucket shafts, endless chains thereon, a series of scoop-like buckets transversely fixed in sequence on the chains, anti-friction wheels on the ends of said buckets, bearing on flanges of the elevator frames, and a dirt-receiving scoop hung below and near the buckets of the elevator, substantially as described.

10. In a street sweeper, the combination with a wheeled main frame, a rotatable main cylindrical brush hung from said frame, and a shorter cylindrical brush on the same shaft with the main brush and projected at one side of the main frame, of a triangular frame secured upon the outer side of the main frame in advance of the short brush, and a depending deflector plate inwardly-inclined from the outer diagonal side of the triangular frame, substantially as described.

11. In a street sweeper, the combination with a main frame, and a spring-supported elevator thereon of the endless chain and bucket type, and slidable on its supports above and below the main frame, of a dirt scoop having a downwardly-curved bottom wall hung near its center on the lower shaft of the elevator, depending arms on the main frame, hinged to the front edge of the scoop, an apron hinged to the rear edge of said scoop, and auxiliary supports for the apron adapted to elevate or lower it when actuated from the front of the main frame, substantially as described.

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Witnesses:

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C. SEDGWICK.