A. BROWN.

STREET SWEEPER.

APPLICATION FILED DEC. 20, 1913.

1,144,292.

Patented June 22, 1915

3 SHEETS—SHEET 1.

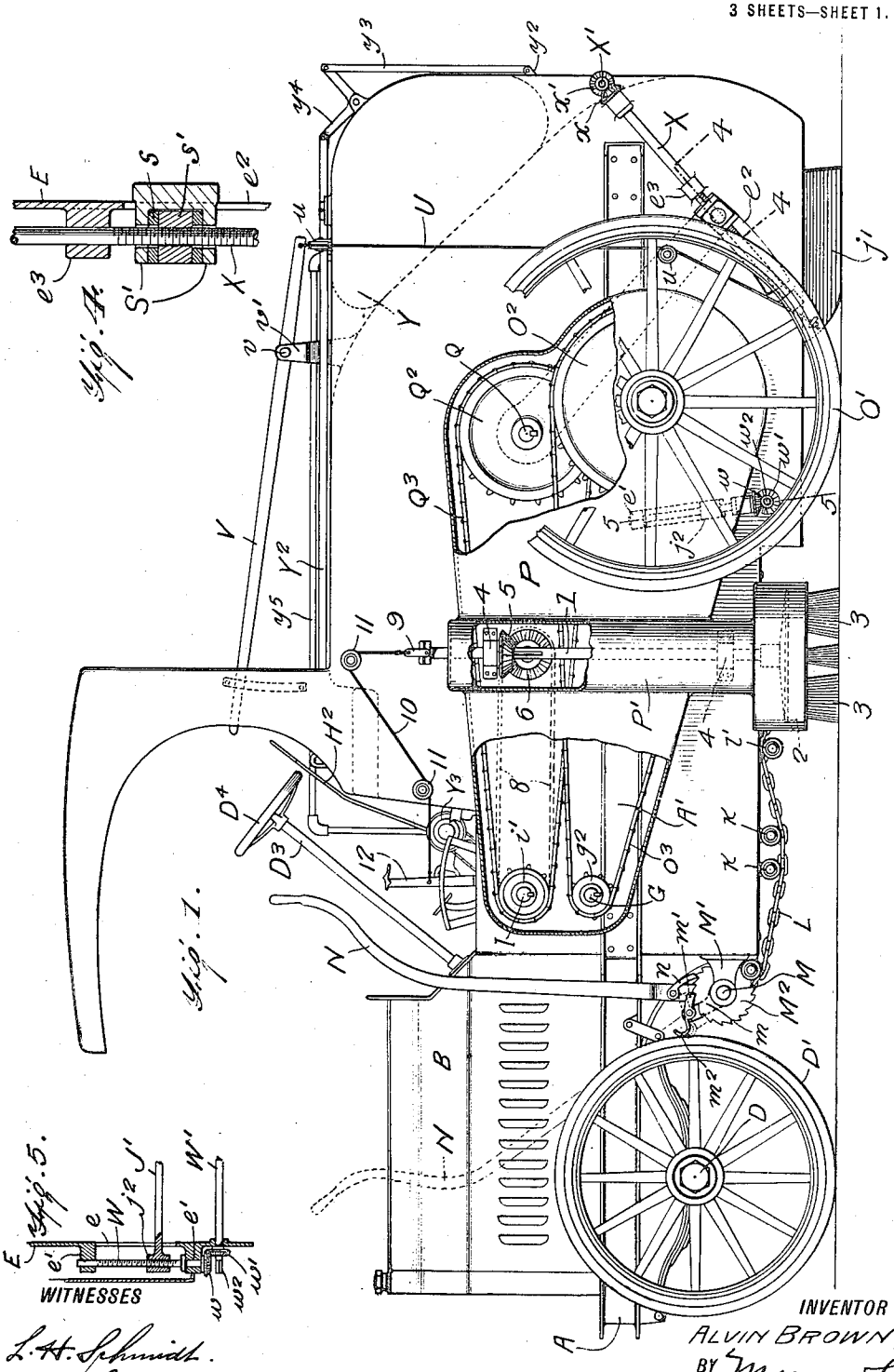


Fig. 4.

Fig. 5.

WITNESSES

L. H. Schmidt.

Myron Dillon.

INVENTOR

ALVIN BROWN,

BY Munn & Co.

ATTORNEYS

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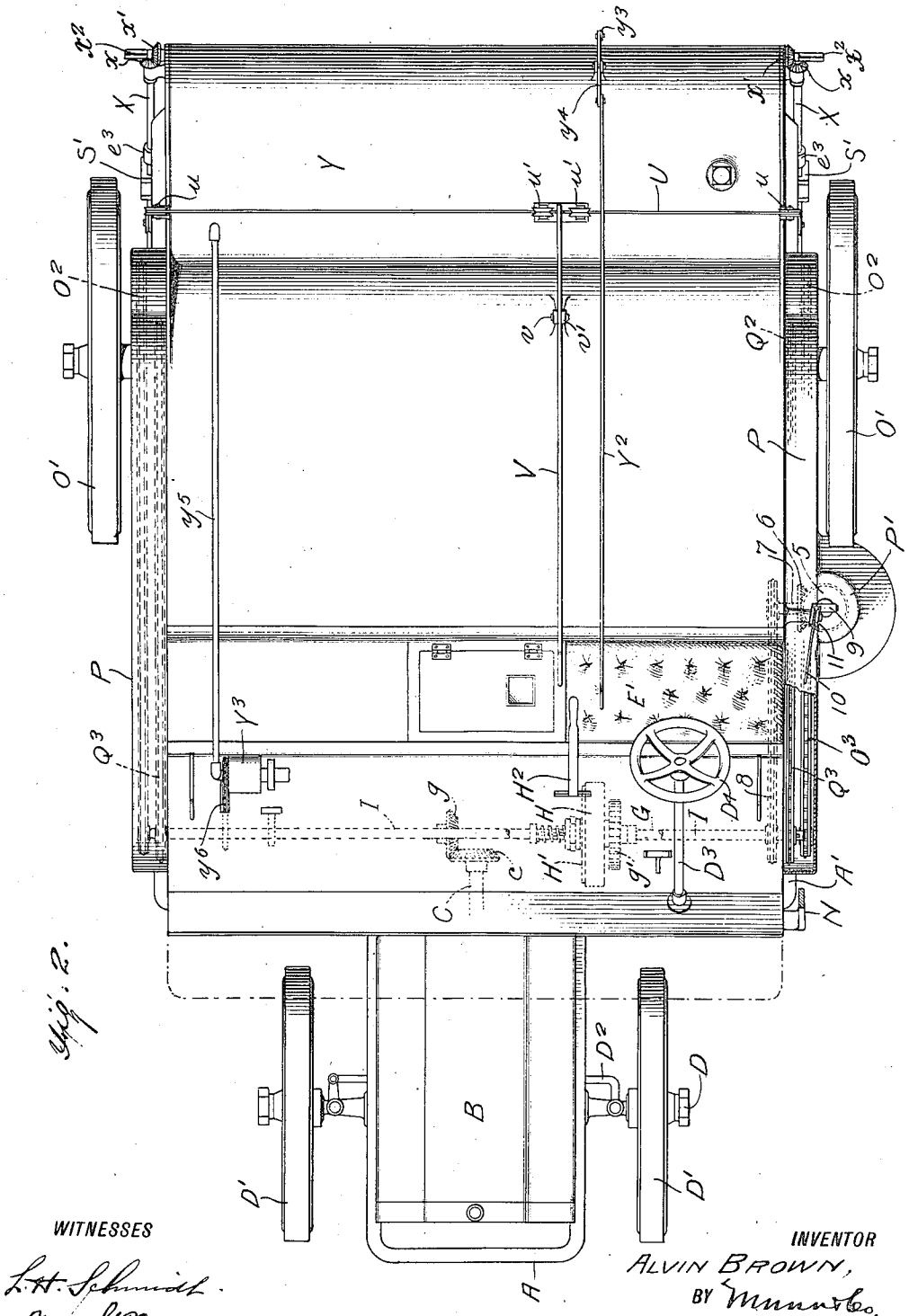


Fig. 2.

WITNESSES

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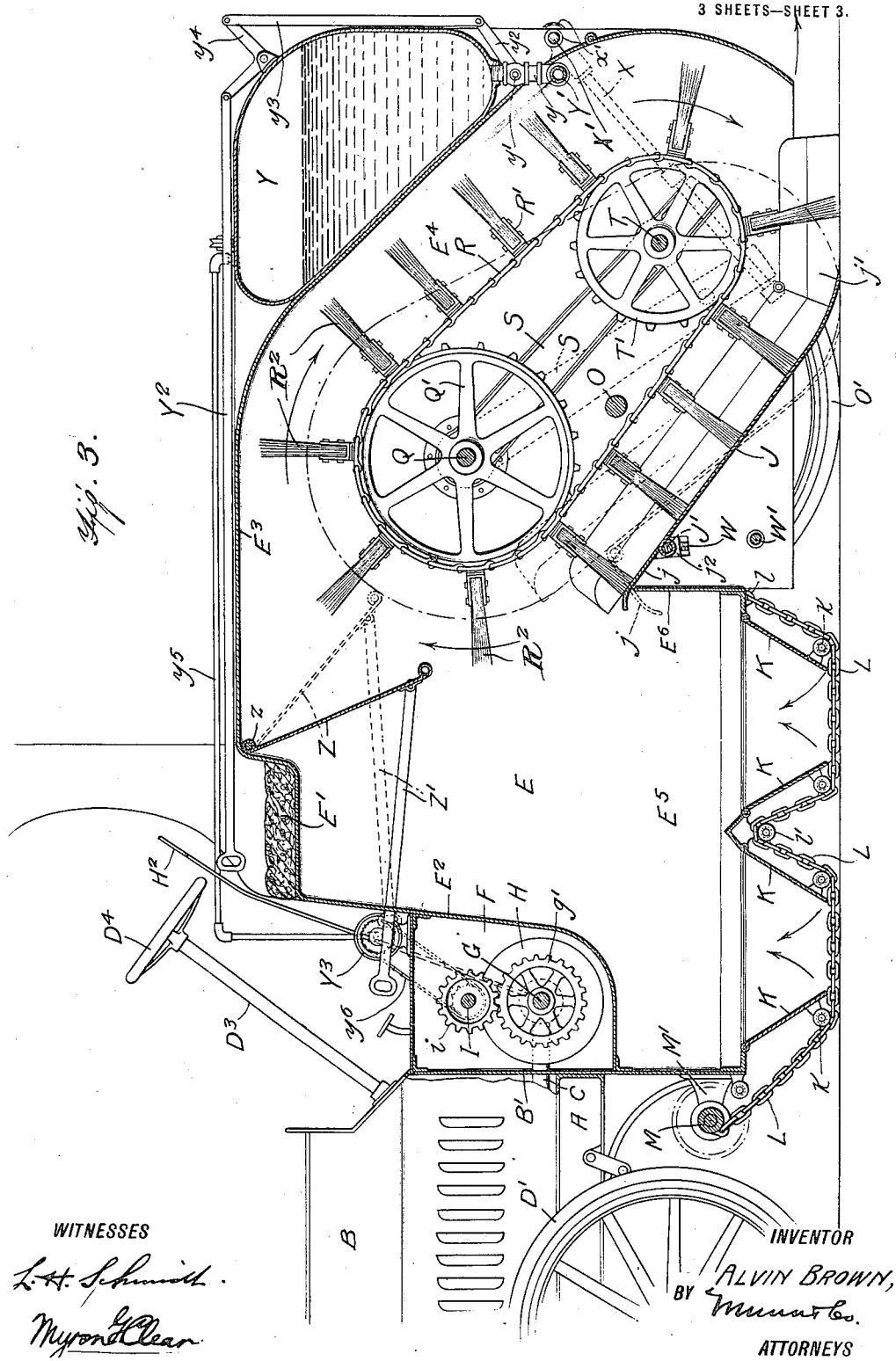


Fig. 3.

WITNESSES

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UNITED STATES PATENT OFFICE.

ALVIN BROWN, OF PLAINFIELD, ILLINOIS.

STREET-SWEEPER.

1,144,292. Specification of Letters Patent. Patented June 22, 1915.

Application filed December 20, 1913. Serial No. 807,906.

To all whom it may concern:

Be it known that I, ALVIN BROWN, a citizen of the United States, and a resident of Plainfield, in the county of Will and State of Illinois, have invented a new and useful Improvement in Street-Sweepers, of which the following is a specification.

My present invention relates to street sweepers and more particularly to a self-propelled machine of this character, forming an improvement upon my Patent No. 775,163, issued to me under date of November 15, 1904.

The object of my present invention is to provide a wholly metallic structure in which the several operating parts may be driven from the motor used to propel the vehicle and in which their adjustment either to compensate for wear or to throw the same into and out of operation may be readily and quickly accomplished with minimum labor.

A further object of my invention is to provide such connections for controlling the parts in operation as may be located convenient to the driver and operator of the vehicle and controlled by him from his seat.

Further objects and the advantages resulting therefrom will be apparent from the following description, in which reference is made to the accompanying drawings, forming a part of this specification and in which,

Figure 1 is a side elevation of my improved street sweeper, partly broken away and in section to better illustrate certain parts thereof, Fig. 2 is a plan view thereof, Fig. 3 is a vertical, longitudinal section taken therethrough on an enlarged scale, Fig. 4 is a detailed section taken through certain parts substantially on the line 4—4 of Fig. 1, and Fig. 5 is a similar view taken through certain parts substantially on the line 5—5 of Fig. 1.

Referring now to these figures, the frame of my improved street sweeper is generally U-shaped in form and consists of a reduced forward portion A and outwardly offset rear extensions A′, the particular shape of this frame being such as to enable it to follow along the outlines of the body of the vehicle. Upon the forward portion A of the frame is supported a hood B which incloses a motor of any desired structure, the main shaft of which is indicated by dotted lines at C in Fig. 2.

Below the forward portion A of the frame is flexibly supported front axle D carrying the front wheels D′ and having suitable steering connections as partly seen at D^2 in Fig. 2, connected to the steering post D^3, the steering wheel D^4 of which is located contiguous to the driver's seat E′ upon the upper forward portion of the body E. The upper portion E^2 of the front wall of the body E is spaced from the rear wall B′ of the hood, as seen particularly in Fig. 3, forming a closed space or chamber F, extending transversely across the entire forward portion of the body and through which space is mounted a transverse shaft G, the outer ends of which project laterally beyond the opposite sides of the body E. At a substantially central point shaft G is provided with a bevel gear *g* in mesh with a bevel gear *c* at the rear end of the motor shaft C, before mentioned, shaft G also carrying a spur gear *g′* at an intermediate point, this gear being loose on the shaft and rigidly connected to one part H of a clutch, which part is also loose on the shaft and adapted to be engaged by the other part H′ of the clutch which has a splined connection upon the shaft and is controlled by means of a lever H^2 extending upwardly adjacent the driver's seat E′. This clutch and its connections are best seen in dotted lines in Fig. 2.

The gear *g′* is in mesh with a gear *i* secured upon a shaft I mounted through the space or chamber parallel with and above the shaft G and also having its ends projecting laterally through the sides of the body E. The body E is hollow throughout and preferably formed from sheet-metal, its upper wall E^3 being bent downwardly at the rear of the body and the rear downwardly inclined chamber E^4 of the body, which is open at its lower end, is divided at its lower portion from the forward chamber E^5 by means of a vertical transverse baffle plate or wall E^6, upon the upper edge of which the upper extension hinge plate *j* of the downwardly and rearwardly inclined dust-pan J engages.

The rear chamber E^4 constitutes a brush chamber and the forward chamber E^5 forms a dust or storage chamber, the lower, open end of the latter being normally closed by hinged doors K movable to lower, open positions by their own weight, these doors having depending roller brackets *k* engaged by a chain L, the rear end of which is secured

at l beneath the body E, and the intermediate portion of which is passed over a roller bracket l' beneath the body E between the doors K. The forward end of chain L is secured to a short shaft M, constituting a drum upon which the forward portion of the chain may be wound as illustrated by comparison of Figs. 1 and 3, the shaft M being mounted through brackets M′ secured upon the lower front portion of the body beneath the frame. Shaft M carries a ratchet wheel M^2 and one of the brackets M′ has an extension m upon which is pivoted a pawl m' having its nose in engagement with the ratchet wheel M^2 and having an upwardly inclined and curved tail m^2.

An operating lever N is mounted with its upper handle portion within reach of the operator and has a lower, inwardly offset end journaled upon a portion of the shaft M, the lever being provided adjacent its lower end with a pivoted pawl n in engagement with the ratchet wheel M^2. Thus by the use of the lever, the ratchet wheel may be turned to wind the chain L upon the shaft M in order to throw the doors upwardly to closed position, pawl m' serving to hold the ratchet wheel after each actuation by lever N and serving also to hold the doors closed. When, however, it is desired to release the chain and allow the doors to drop, lever N is thrown in an extreme forward position as indicated in dotted lines in Fig. 1, causing its pawl to ride upon the inclined, curved tail m^2 of the pawl m' so as to raise the nose of the latter out of engagement with the ratchet wheel and permit the shaft M to freely rotate.

The rear axle O is extended transversely through the body within the brush chamber E^4 and carries the rear wheels O′ upon its ends. The rear axle or shaft O also carries sprocket wheels O^2 upon its extended ends and beyond the side walls of the body E, these sprocket wheels being connected by forwardly extending sprocket chains O^3, to sprocket wheels g^2 mounted upon the outwardly projecting ends of the forward driven shaft G, it being noted that these chains and sprocket wheels are covered by supplemental side gear casings P secured upon the sides of the body E. The upper shaft Q of the endless brush chains R carries sprocket wheels Q′ around which the upper portions of the chains R travel, and is mounted transversely through the body E and through the upper forward portion of the brush chamber E^4. This upper shaft Q is also extended through the upper forward ends of downwardly and rearwardly inclined bars S connecting the upper and lower shafts of the brush as hereinafter described, and is provided upon its outwardly projecting ends with sprocket wheels Q^2 connected by sprocket chains Q^3 with end sprocket wheels i' of the upper forward shaft I, before mentioned, it being noted that these sprocket wheels and sprocket chains are also inclosed within the supplemental side gear casings P.

The bars S above mentioned extend along the inner surfaces of the sides of the body E within the brush chamber E^4 and through the lower portions of these bars are journaled the ends of the lower transverse brush shaft T carrying sprocket wheels T′ about which the lower portions of the brush chains R travel, these brush chains carrying spaced transverse clips R′ in which the tufts of bristles R^2 are secured.

The lower portion of the brush travels upwardly over the downwardly and rearwardly inclined dust-pan J, before mentioned, the bristles contacting with the surface of the ground through the lower open end of the brush chamber E^4 at the lower rear end of the dust-pan, in order to move the sweepings inwardly and upwardly over the dust-pan and discharge the same into the dust storage chamber E^5. To this end, the rear portion of the dust-pan J has a portion j' hinged thereto for contacting with the surface of the ground, to the sides of which hinged portion are secured the lower ends of a flexible connection U passing upwardly over the rear portion of the body over guide-rollers u and beneath spaced rollers u'. At a point between these rollers, and as particularly shown in Fig. 2, the rear end of a lever V is connected to the flexible member U, this lever V being intermediately pivoted at v upon a bracket v' upstanding upon the body E and its forward end being extended to a point above and adjacent the operator's seat, whereby it may be conveniently within the operator's reach for downward movement to raise the hinged rear portion j' of the dust-pan out of contact with the surface of the ground when the brush is inactive through disengagement of the clutch members H and H′, before described.

At the upper end of the dust-pan J is a transverse rod J′ to which the upper extension plate j is hinged, this rod being provided with tubular, internally threaded ends j^2, one of which is particularly shown in Fig. 5, these ends being extended outwardly through vertical slots e of the body E and being engaged by vertical screw rods W, the upper and lower ends of which are journaled through bearings e' extended outwardly from the sides of the body E above and below its slots e. As will be seen also in Fig. 5, the lower end of each of the screw rods W is provided with a bevel gear w engaging a similar gear w' upon the respective end of a shaft W′, journaled transversely through the body beneath the dust-pan and one end of which is extended and squared

as at w^2 to receive a suitable tool or implement for rotating shaft W′ to move the rod J′ up or down and adjust the dust-pan J accordingly. The extreme upper position of this dust-pan is indicated in dotted lines in Fig. 3 and its adjustment is accomplished in order to accord with the adjustment of the brush.

The brush is adjustable to compensate for its wear in use, and to this end the lower extremities of side bars S are provided with laterally extending ears S′ projecting outwardly through arcuate slots e^2 formed in the lower rear portions of the sides of the body E concentric with the shaft Q upon which bars S swing. These ears S′ are slotted and through their slots are extended screw rods X, portions of which are journaled through bearings e^3 projecting from the body sides at the opposite ends of the slots and the upper ends of which screw rods are provided with bevel gears x, meshing with bevel gears x' upon the ends of a transverse shaft X′, one end of this latter being extended and squared as at x^2 in Fig. 2 similar to the end w^2 of the shaft W′, to receive a like implement for rotating the shaft and the screw rods X. Between the ears S′ of each bar S is disposed a slotted block s having a transverse bore in which is disposed a circular nut s', this nut having a threaded aperture in which the screw rod works. Thus when the screw rods X are rotated, the lower ends of the brush side bars S may be raised or lowered as desired, lowering movement being necessary from time to time in order to compensate for the wear by the bristles.

On the upper rear portion of the body is a substantially triangular water tank Y projecting transversely thereacross upon the downwardly inclined rear portion of the body top, the lower end of this tank being connected by a valved vertical pipe y extending into the brush chamber E⁴ with a spray pipe Y′ located in said brush chamber and having a plurality of minute apertures through which a fine spray may be directed upwardly over the brush, as particularly seen in Fig. 3. The valve y' in pipe y has an arm y^2 pivotally connected to an upright link y^3 the upper end of which link is similarly connected to one arm of a bell-crank-lever y^4. The other arm of this bell-crank-lever is pivotally connected to the rear end of a longitudinally movable actuating bar Y², the forward end of which is provided with a handle, disposed above and adjacent to the operator's seat in order that the operator may conveniently move the same forwardly and rearwardly to open and close the valve y'.

The upper portion of tank Y above the surface of the water forms an air chamber into which air is forced through a pipe y^5 leading from a rotary pump Y³ which receives its rotation through a sprocket chain connection y^6 from the upper forward shaft I. Thus the pressure of air upon the water serves to discharge the water from pipe Y′ in an upward direction and in a fine spray.

Hinged at its upper edge at z within the upper portion of the body E immediately in the rear of the operator's seat E′ is a depending brush clearing plate Z, the lower edge of which is adapted to be adjusted by an adjusting bar Z′ into the path of movement of the brush bristles in order that the latter may strike the plate and free themselves of clinging particles of dirt and refuse matter, adjusting bar Z′ being extended forwardly through the front of the body E below the operator's seat so as to be within convenient reach.

Thus from the foregoing it will be seen that the motor with its usual clutching mechanism propels the vehicle by virtue of the connections described between the same and the rear axle upon opposite sides of the body, the connections between driven shaft G and the brush serving to rotate the latter from the motor and being independently controllable through the clutch members H and H′ in order that the machine may move while the brush is inactive.

It will be noted by particular reference to Fig. 1, that the supplemental side casing P at one side of the body E is extended to form a vertical tubular portion P′, in which tubular portion is arranged a vertical shaft 1 having a horizontal brush-head 2 at its lower end provided with depending bristles 3, this brush being adapted for contact with the ground at a point in advance of the rear wheel O′ upon the same side of the body E. The shaft 1 is rotatable and vertically adjustable in bearings 4 and is provided with a splined bevel gear 5, mounted upon a stud shaft 7 as seen in dotted lines in Fig. 2, which shaft is journaled through the adjacent side wall of the body E, and is provided within the body with a sprocket wheel connected by a chain 8 to a sprocket wheel mounted upon the upper forward shaft I. A clip 9 has a swiveled connection with the upper end of the shaft 1 and is secured to one end of a flexible connection 10, passing over guide-pulleys 11 upon the adjacent body side and united at its opposite end with a foot-lever 12 in front of and below the driver's seat E′. In this manner the brush-head 2 is normally driven when clutch members H and H′ are engaged to impart rotation to the main sweeper brush, the bristles 3 being in contact with the surface of the ground to throw the dust and dirt beneath the sweeper body. When, however, foot-lever 12 is pressed forward, shaft 1 is raised and in its elevated position bristles 3 are out of contact with the surface of the

ground and the action of the supplemental brush, therefore, discontinues.

It is to be understood that any suitable braces or structural stay members may be employed where desired throughout the body and frame of the sweeper and that I have purposely avoided illustration of a multiplicity of such braces and stay members in order that the operating parts may be more plainly seen and better understood.

I claim:

1. In a street sweeper, the combination of an endless sweeper belt mounted to swing at its upper end in order that its lower end may be adjusted toward and away from the ground, a rod extending horizontally and transversely beneath the upper end of the sweeper, a body within which the sweeper is disposed, and beyond the sides of which the ends of the said rod project, a dust pan with which the sweeper coöperates, disposed within this body and having its upper end carried by the said rod, said dust pan having an upper inner extension hinged on the said rod to swing freely with respect thereto, means external of each side of the body and engaging the projecting ends of the rod whereby to adjust the latter and the dust pan vertically, and connections between said adjusting means whereby to render their movements simultaneous.

2. In a street sweeper, the combination of a body having arcuate slots, in the lower rear portion of its sides, a brush within the body comprising an endless sweeper belt, an upper transverse driven shaft upon which the upper portion of the belt travels, side bars journaled at their upper ends upon the upper shaft and inclined downwardly and rearwardly therefrom, a lower transverse shaft upon which the lower portion of the sweeper belt travels, journaled in the lower portions of the said side bars, the said lower portions of the side bars having laterally extending ears projecting outwardly through the slots of the body, means external of each side of the body and engaging said extending ears for adjusting the lower end of the brush vertically, and connections between said adjusting means whereby to render their movements simultaneous.

3. In a street sweeper, the combination of a body, an endless sweeper belt operating within the body, an adjustable clearing plate hinged at its upper end within the body and having its lower end movable into and out of the path of movement of the brush whereby to engage the latter in operation, and an adjusting rod pivotally connected at its rear end to the lower end of said clearing plate and having its forward end extending forwardly through the body to a point convenient to the operator thereof, for the purpose described.

4. In a street sweeper, the combination of an endless sweeper belt mounted to swing at its upper end in order that its lower end may be adjusted toward and away from the ground, a dust pan with which the sweeper coöperates, a rod extending horizontally and transversely beneath the upper end of the sweeper, a body within which the sweeper and pan are disposed, and beyond the sides of which the ends of the said rod project, vertically disposed screw rods threaded through the said projecting ends of the said rod and mounted in bearings upon the body sides, a shaft extending through the body and having geared connections at its ends with the said screw rods, one end of the shaft being extended and squared for the reception of an implement whereby to cause the rotation thereof, the upper end of the dust pan being connected to and carried by the said horizontal rod to be adjusted.

5. In a street sweeper, the combination of a body having arcuate slots in the lower rear portion of its sides, a brush within the body comprising an endless sweeper belt, an upper transverse driven shaft upon which the upper portion of the belt travels, side bars journaled at their upper ends upon the upper shaft and inclined downwardly and rearwardly therefrom, a lower transverse shaft upon which the lower portion of the sweeper belt travels and journaled in the lower portions of the said side bars, the said lower portions of the side bars having laterally extending ears projecting outwardly through the slots of the body, blocks carried by the said gears, nuts rotatably disposed in the blocks, inclined screw rods journaled in bearings on the body and extending through the ears and blocks and threaded through the said nuts, and a transverse shaft mounted in bearings on the rear portion of the body and having geared connections at its ends with the said screw rods, one end of the said transverse shaft being extended and squared for the reception of an implement for rotating the same in order to adjust the side bars, substantially as described.

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Witnesses:
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GUSTAF A. ANDERSON.