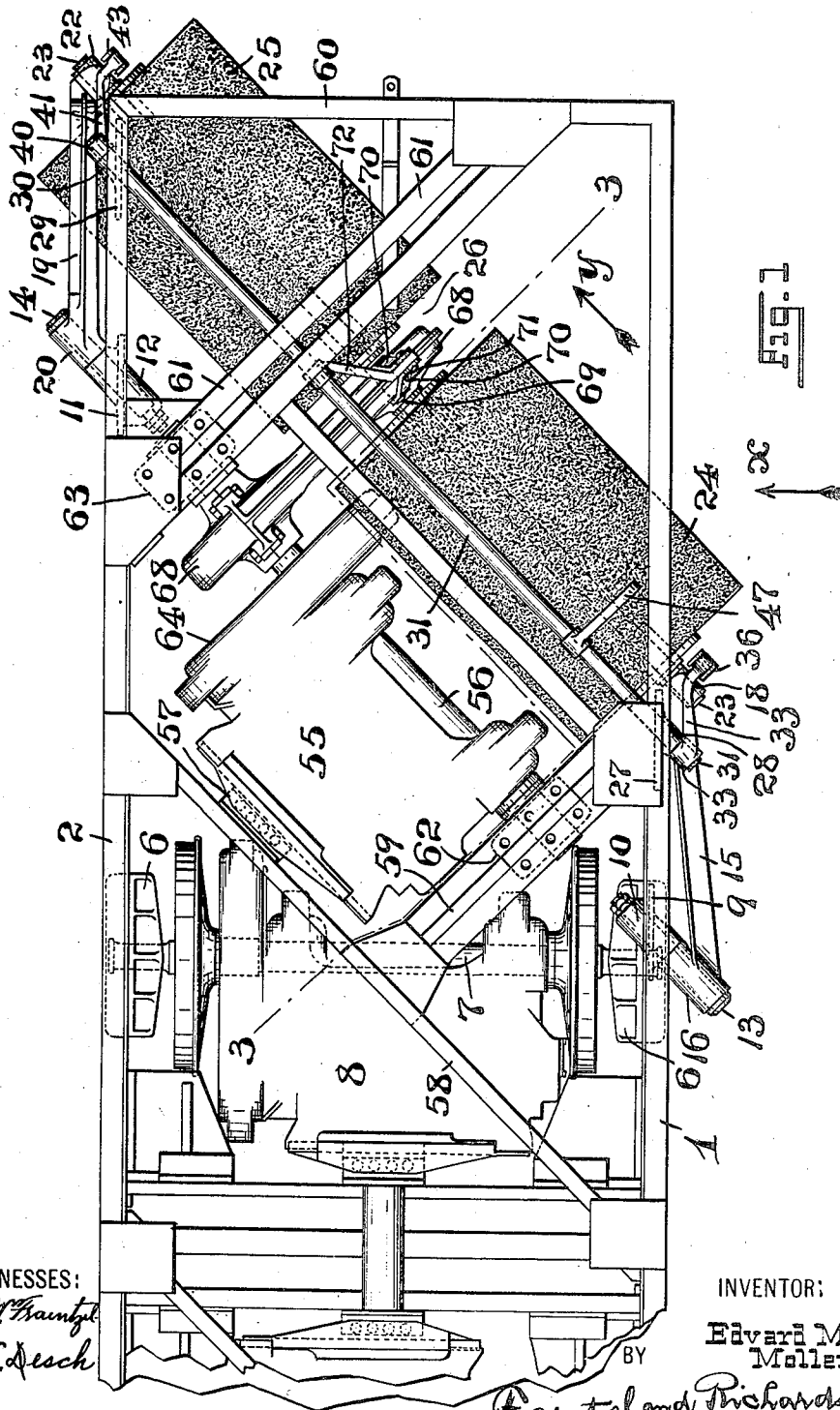


E. M. MOLLER.
 ROTARY SWEEPER.
 APPLICATION FILED NOV. 18, 1914.

1,133,653.

Patented Mar. 30, 1915.

3 SHEETS—SHEET 1.



WITNESSES:

Frank H. W. Krautzel
Eva E. Desch

INVENTOR:

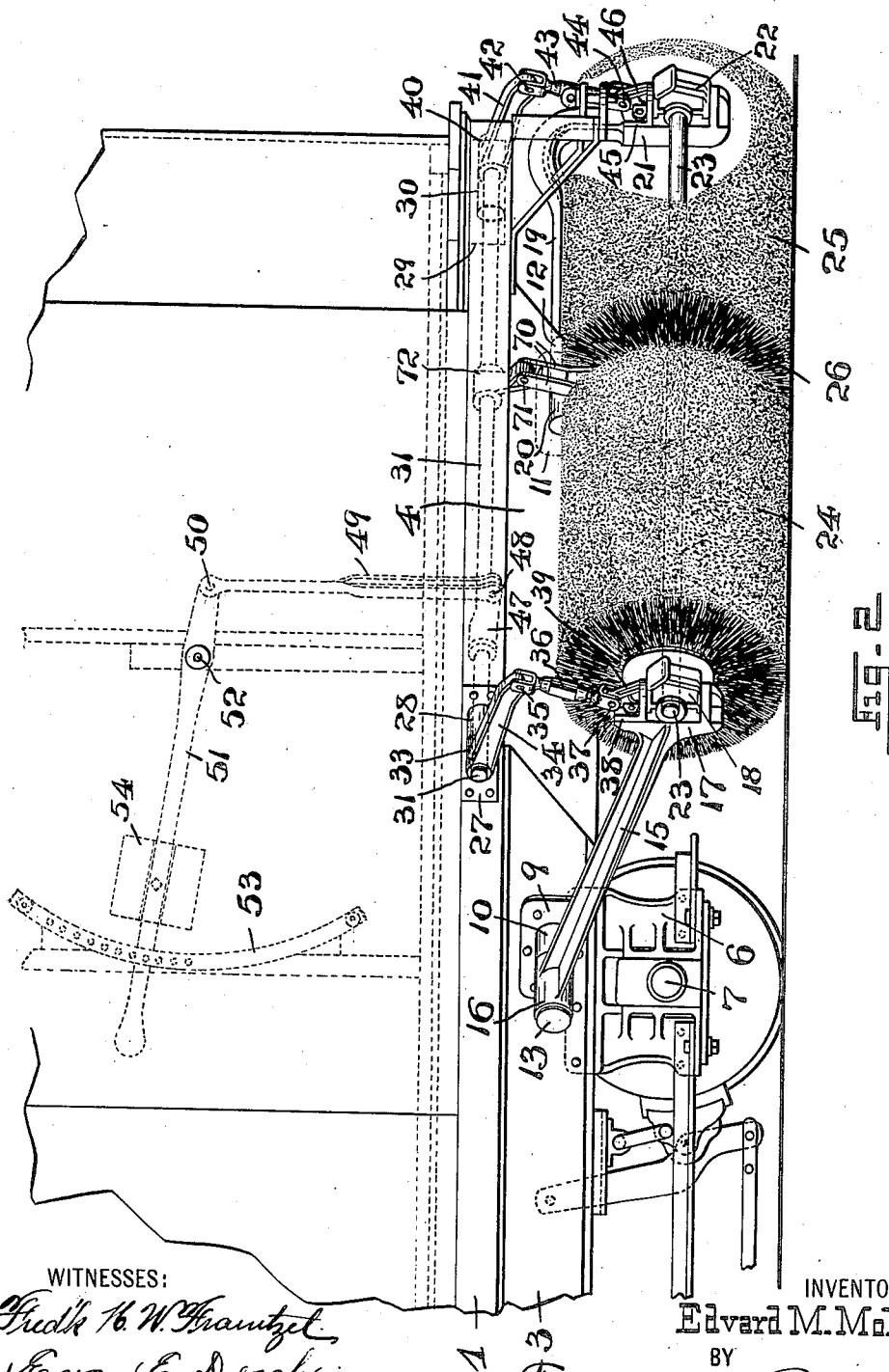
Edward M. Moller,
 BY *Krautzel and Richards,*
 ATTORNEYS

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3 SHEETS—SHEET 2.



WITNESSES:
Fredk W. Fraentzel
Eva C. Desch.

INVENTOR:
Edward M. Möller,
 BY
Fraentzel and Richards,
 ATTORNEYS

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3 SHEETS—SHEET 3.

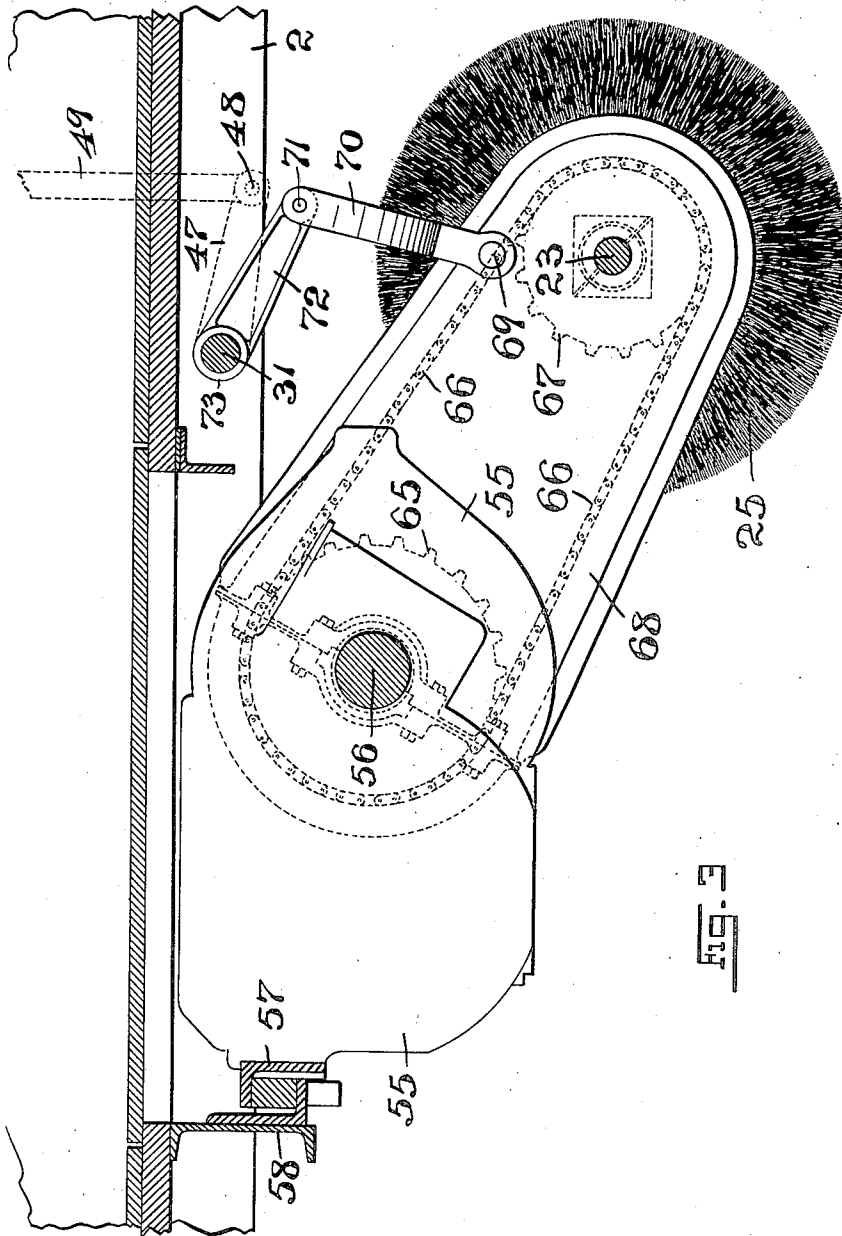


Fig. 3

WITNESSES:

Fredk H. W. Graentzel
Eva C. Gesch.

INVENTOR:

Edward M. Moller,

BY

Graentzel and Richards,
ATTORNEYS

UNITED STATES PATENT OFFICE.

EDVARD M. MOLLER, OF JERSEY CITY, NEW JERSEY.

ROTARY SWEEPER.

1,133,653.

Specification of Letters Patent.

Patented Mar. 30, 1915.

Application filed November 18, 1914. Serial No. 872,691.

To all whom it may concern:

Be it known that I, EDVARD M. MOLLER, a citizen of the United States, residing at Jersey City, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Rotary Sweepers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to characters of reference marked thereon, which form a part of this specification.

This invention has reference, generally, to improvements in street-sweepers; and, the present invention relates, more particularly to sweepers of that class employed upon street-railways, with a view of providing a motor-driven sweeper-brush or brushes, operating independently of the motor-driven car-truck or trucks of the car or other suitable body with which the sweeper is employed.

The invention, therefore, has for its principal object to provide a novel and simply constructed rotary street-sweeping mechanism of the general character hereinafter more particularly set forth, the means for raising and lowering the rotary brush or brushes being such, that the lifting or lowering actions take place in unison at all points of pivotal support, so as to remove all strains from the several journals and prevent distortion of the shaft upon which the brush or brushes are mounted, and also to prevent any undue torsional strain of the various parts of the mechanism.

Other objects of the present invention not at this time more particularly enumerated will be clearly understood from the following detailed description of the invention.

With the various objects of the invention in view, the invention consists, primarily, in the novel sweeper for street-railways hereinafter set forth; and, the invention consists, furthermore, in the novel arrangements and combinations of the various devices and parts, as well as in the details of the construction of the said parts, all of which will be more fully described in the following specification, and then finally embodied in the clauses of the claim which are appended to and which form an essential part of the said specification.

The invention is clearly illustrated in the accompanying drawings, in which:—

Figure 1 is a plan view of a portion of a motor-driven car, and a motor-driven sweeper-mechanism, showing one embodiment of the principles of the invention. Fig. 2 is a side elevation of the main portions of the car-body and a perspective view of the motor-driven sweeper-mechanism, looking in the direction of the arrow x in said Fig. 1. Fig. 3 is a detail vertical sectional representation taken on line 3—3 in said Fig. 1, looking in the direction of the arrow y , said view being made on an enlarged scale.

Similar characters of reference are employed in the said above described views, to indicate corresponding parts.

Referring now to the several figures of the drawings, the reference-characters 1 and 2 indicate the usual longitudinally extending side-members of a suitable car-body, to the lower surfaces of which are suitably secured suitable blocks, as 3 and 4, with which are connected in any usual manner the members 5 of the truck-bodies carrying the journal boxes 6. Rotatably mounted in said journal boxes are the car-wheel axles 7, and 8 indicates the usual motor suitably mounted upon the truck, and operatively connected in the usual manner with the axle 7.

Suitably secured to the block 3 which is connected with the side-member 1 is a bearing-plate 9 formed with a bearing 10, and similarly secured to the other block 4 which is connected with the side-member 2 is a bearing-plate 11, also formed with a bearing 12, the said bearings 10 and 12 being in alinement with relation to each other, but both lying in the same vertical plane, axially with the said bearings, and the said vertical plane being at acute angles to the vertical planes of the two longitudinally extending blocks 3 and 4, and the side-members 1 and 2, as will be clearly evident, more particularly, from an inspection of Fig. 1 of the drawings. Rotatably mounted in the bearing 10 is a journal-pin 13, and similarly mounted in the bearing 12 is a journal-pin 14, the purposes of which will be presently more fully described. Mounted upon a portion of one of said journal-pins, as 13, is the hub 16 of a forwardly extending link 15, said link being made at its forward end with a bracket-like receiving portion, as 17, with

which is suitably connected a journal-box 18. Mounted upon the journal-pin 14 is the hub 20 of a forwardly extending link 19, said link 19 being also made at its forward end with a bracket-like receiving portion, as 21, with which is suitably connected a journal-box 22. Rotatably mounted in said journal-boxes 18 and 22 is a shaft 23 upon which is suitably secured a sweeper. In the present instance, this sweeper consists of two rotary brushes 24 and 25, suitably mounted upon the shaft 23 with a space 26 between the said brushes. It will be understood, however, that I do not intend to limit myself to this arrangement of brushes, and that any other suitable sweeper-construction may be placed between the journal-boxes 18 and 22. Also suitably secured to the longitudinally extending side-member 1 of the car-body is a bearing-plate 27 formed with a bearing 28, and similarly secured to the other side-member 2 is a bearing-plate 29, also formed with a bearing 30, the said bearings 28 and 30 being in alinement with relation to each other, but both lying in the same vertical plane, axially with the said bearings, and the said vertical plane being at acute angles to the vertical planes of the two longitudinally extending side-members 1 and 2. Rotatably mounted in the bearing 28 is a shaft 31. Suitably mounted upon one end-portion of the said shaft 31; so as to oscillate with said shaft, is the hub 33 of a crank-arm 34, to the free end-portion of which is pivotally attached, as at 35, an adjustable link 36. The lower end-portion of said link 36 is pivotally attached, as at 37, to a web-like member, as 39 of a bracket 38, which bracket 38 is suitably secured to the previously-mentioned bracket-like portion 17 of the link 15. Suitably mounted upon the other end-portion of the shaft 31, so as to oscillate with the said shaft, is the hub 40 of a crank-arm 41, to the free end-portion of which is pivotally attached, as at 42, an adjustable link 43. The lower end-portion of said link 43 is pivotally attached, as at 44, to a web-like member, as 46, of a bracket 45, which bracket 45 is suitably secured to the previously-mentioned bracket-like portion 21 of the link 19.

Oscillatory motion of the shaft 31, and consequent lifting and lowering movement of the shaft 23 and the brushes mounted thereon, is produced by means of a crank-arm 47, suitably fixed upon the shaft 31, said crank-arm 47 having pivotally connected therewith, as at 48, a link 49 which extends upwardly through and above the platform of the car-body. Pivotally connected with the upper end-portion of said link 49, by means of a pin 50, is a lifting and lowering lever 51, said lever being suitably fulcrumed, as at 52, and engaging with the usual retaining sector, as 53, as will be

clearly understood from an inspection of Fig. 2 of the drawings. Upon said lever 51 may be adjustably arranged a balance-weight 54.

Having in the foregoing described one means of perfectly balancing the sweeper-mechanism, and a means for easily lifting and lowering the said mechanism, and the rotary brushes thereof, without straining either of the journals or the journal-boxes, I will describe the means for revolving the brushes by means of an electric motor, independent of the motor or motors employed for operating the car. The motor, which is of any usual and well-known form, is suitably disposed in a dust and dirt-proof casing, as 55, suitably mounted upon its motor-driven shaft 56, and held in a fixed relation upon said shaft, by a suitable fastening device, as 57, which is connected with said casing 55 and is secured to a cross-bar 58, secured to and extending at acute angles across the space between the two longitudinally extending side-members 1 and 2. Extending from, in the manner shown in Fig. 1 of the drawings, and secured at its respective end-portions, to the said cross-bar 58 and the side member 1, is a supporting bar or beam 59, and suitably secured to the side-member 2 and the end-member 60 of the car-body, substantially as shown in said Fig. 1, is another supporting bar or beam 61, said bars or beams being provided with suitably constructed and downwardly extending bearings 62 and 63 in which the above-mentioned motor-shaft 56 is rotatably mounted. Suitably secured upon said shaft 56, between the bearing 63 and the outer portion 64 of the motor-casing 55 is a sprocket-wheel 65, over which passes a link-chain 66, said link-chain passing also over a sprocket-wheel 67 which is secured in a fixed position upon the brush or broom-carrying shaft 23, as will be readily understood from an inspection of Fig. 3 of the drawings, and from which figure the operation of this mechanism will be clearly evident. In order to protect these parts from dirt and dust, as well as from stones and pieces of ice, or other foreign matter, the said sprocket-wheels and chain are inclosed in a suitably-constructed shell or casing, as 68, from the opposite sides of which project laterally extending pins or pivot-studs 69. Pivotally connected with the said pins or studs are a pair of suitably shaped links, as 70, which are pivotally connected at their upper end-portions by means of a pin 71, with a crank-arm or lever 72, fixed by means of its hub 73 upon the previously-mentioned shaft 31. Thus, it will be clearly seen, that while the said shaft 23 is rotatably mounted in the journal-boxes 18 and 22, and is adapted to be suitably raised and lowered by the action of the links 15 and 19, the said shaft 23 is also suitably

supported at its middle, in the space 26 formed between the rotary brushes or brooms 24 and 25, so that thereby any sagging condition of the said shaft 23 at its middle is clearly avoided.

Having in the foregoing described the general arrangement and construction of the several devices and parts, the operations of the said devices and parts will be clearly obvious from an inspection of the several figures of the drawings, and need not, therefore, be more particularly described.

Of course I am aware that some changes may be made in the general arrangements and combinations of the various devices and parts, as well as in the details of the construction of the said parts, without departing from the scope of the present invention as set forth in the foregoing specification and as defined in the clauses of the claim which are appended thereto. Hence, I do not limit my present invention to the exact arrangements and combinations of the devices and parts as described in the said specification, nor do I confine myself to the exact details of the construction of the said parts, as illustrated in the accompanying drawings.

I claim:—

1. In combination with the longitudinally extending side-members of a car-body, bearing-plates carried by said side-members, bearing-portions connected with said bearing-plates, said bearing-portions extending at acute angles from the vertical faces of said side-members, journal-pins mounted in said bearing-portions, a forwardly extending link mounted at one end-portion upon each journal-pin, a journal-box connected with the other end-portion of each link, a shaft mounted in said journal-boxes, rotary brushes mounted upon said shaft, and means connected with the said links for lifting and lowering the said shaft and the brushes mounted upon said shaft, consisting of other bearing-plates carried by said side-members, bearing-portions connected with said last-mentioned bearing-plates, said bearing-plates also extending at acute angles from the vertical faces of said side-members, a shaft mounted in said last-mentioned bearing-portions, crank-arms extending in forward directions from said last-mentioned shaft, links between said crank-arms and the previously-mentioned links and journal-boxes, and means connected with said last-mentioned shaft for producing oscillatory motion of said shaft.

2. In combination with the longitudinally extending side-members of a car-body, bearing-plates carried by said side-members, bearing-portions connected with said bearing-plates, said bearing-portions extending at acute angles from the vertical faces of said side-members, journal-pins mounted in said bearing-portions, a forwardly extend-

ing link mounted at one end-portion upon each journal-pin, a bracket-like receiving member at the other end of each link, a journal-box mounted upon each bracket-like receiving member, a shaft mounted in said journal-boxes; rotary brushes mounted upon said shaft, and means connected with said bracket-like members for lifting and lowering the said shaft and the brushes mounted upon said shaft.

3. In combination with the longitudinally extending side-members of a car-body, bearing-plates carried by said side-members, bearing-portions connected with said bearing-plates, said bearing-portions extending at acute angles from the vertical faces of said side-members, journal-pins mounted in said bearing-portions, a forwardly extending link mounted at one end-portion upon each journal-pin, a bracket-like receiving member at the other end of each link, a journal-box mounted upon each bracket-like receiving member, a shaft mounted in said journal-boxes, rotary brushes mounted upon said shaft, and means connected with said bracket-like members for lifting and lowering the said shaft and the brushes mounted upon said shaft, consisting of other bearing-plates carried by said side-members, bearing-portions connected with said last-mentioned bearing-plates, said bearing-plates also extending at acute angles from the vertical faces of said side-members, a shaft mounted in said last-mentioned bearing-portions, crank-arms extending in forward directions from said last-mentioned shaft, brackets connected with the first-mentioned bracket-like receiving members, said brackets being provided with web-like portions, links between said crank-arms and the said web-like portions, and means connected with said last-mentioned shaft for producing oscillatory motion of said shaft.

4. In combination with the longitudinally extending side-members of a car-body, bearing-members carried by said side-members, said bearing-members extending at acute angles from the vertical faces of said side-members, links pivotally connected at one end-portion with said bearing-members, a shaft rotatably connected with the other end-portions of said links, a brush mounted upon said shaft, a motor-shaft mounted in bearings secured to the frame-work of said car-body, said motor-shaft being axially in alignment with said bearing-members, a motor connected with said motor-shaft, a driving mechanism between the said motor-shaft and the shaft upon which the brush is mounted, and means connected with said links for lifting and lowering the said last-mentioned shaft and the brush mounted upon said shaft, consisting of other bearing-plates carried by said side-members, bearing-portions connected with said last-mentioned bearing-plates,

said bearing-plates also extending at acute angles from the vertical faces of said side-members, a shaft mounted in said last-mentioned bearing-portions, crank-arms extending in forward directions from said last-mentioned shaft, links between said crank-arms and the previously-mentioned links and journal-boxes, and means connected with said last-mentioned shaft for producing oscillatory motion of said shaft.

5. In combination with the longitudinally extending side-members of a car-body, bearing-members carried by said side-members, said bearing-members extending at acute angles from the vertical faces of said side-members, links pivotally connected at one end-portion with said bearing-members, a shaft rotatably connected with the other end-portions of said links, a brush mounted upon said shaft, a motor-shaft mounted in bearings secured to the frame-work of said car-body, said motor-shaft being axially in alinement with said bearing-members, a motor connected with said motor-shaft, a driving mechanism between the said motor-shaft and the shaft upon which the brush is mounted, a casing inclosing said driving mechanism, and means connected with said links for lifting and lowering the said last-mentioned shaft and the brush mounted upon said shaft, consisting of other bearing-plates carried by said side-members, bearing-portions connected with said last-mentioned bearing-plates, said bearing-plates also extending at acute angles from the vertical faces of said side-members, a shaft mounted in said last-mentioned bearing-portions, crank-arms extending in forward directions from said last-mentioned shaft, links between said crank-arms and the previously-mentioned links and journal-boxes, and means connected with said last-mentioned shaft for producing oscillatory motion of said shaft.

6. In combination with the longitudinally extending side-members of a car-body, bearing-plates carried by said side-members, bearing-portions connected with said bearing-plates, said bearing-portions extending at acute angles from the vertical faces of said side-members, journal-pins mounted in said bearing-portions, a forwardly extending link mounted at one end-portion upon each journal-pin, a bracket-like receiving-member at the other end of each link, a journal-box mounted upon each bracket-like receiving member, a shaft mounted in said journal-boxes, rotary brushes mounted upon said shaft, a motor-shaft mounted in bearings secured to the frame-work of said car-body, said motor-shaft being axially in alinement with said journal-pins, a motor connected with said motor-shaft, a driving mechanism between the said motor-shaft and the shaft upon which said brushes are mounted, and means connected with said

bracket-like members for lifting and lowering the said last-mentioned shaft and the brushes mounted upon said shaft.

7. In combination with the longitudinally extending side-members of a car-body, bearing-plates carried by said side-members, bearing-portions connected with said bearing-plates, said bearing-portions extending at acute angles from the vertical faces of said side-members, journal-pins mounted in said bearing-portions, a forwardly extending link mounted at one end-portion upon each journal-pin, a bracket-like receiving-member at the other end of each link, a journal-box mounted upon each bracket-like receiving member, a shaft mounted in said journal-boxes, rotary brushes mounted upon said shaft, a motor-shaft mounted in bearings secured to the frame-work of said car-body, said motor-shaft being axially in alinement with said journal-pins, a motor connected with said motor-shaft, a driving mechanism between the said motor-shaft and the shaft upon which said brushes are mounted, and means connected with said bracket-like members for lifting and lowering the said last-mentioned shaft and the brushes mounted upon said shaft, consisting of other bearing-plates carried by said side-members, bearing-portions connected with said last-mentioned bearing-plates, said bearing-plates also extending at acute angles from the vertical faces of said side-members, a shaft mounted in said last-mentioned bearing-portions, crank-arms extending in forward directions from said last-mentioned shaft, brackets connected with the first-mentioned bracket-like receiving members, said brackets being provided with web-like portions, links between said crank-arms and the said web-like portions, and means connected with said last-mentioned shaft for producing oscillatory motion of said shaft.

8. In combination with the longitudinally extending side-members of a car-body, bearing-plates carried by said side-members, bearing-portions connected with said bearing-plates, said bearing-portions extending at acute angles from the vertical faces of said side-members, journal-pins mounted in said bearing-portions, a forwardly extending link mounted at one end-portion upon each journal-pin, a bracket-like receiving-member at the other end of each link, a journal-box mounted upon each bracket-like receiving member, a shaft mounted in said journal-boxes, rotary brushes mounted upon said shaft, a motor-shaft mounted in bearings secured to the frame-work of said car-body, said motor-shaft being axially in alinement with said journal-pins, a motor connected with said motor-shaft, a driving mechanism between the said motor-shaft and the shaft upon which said brushes are mounted, a casing inclosing said driving

mechanism, and means connected with said bracket-like member for lifting and lowering the said last-mentioned shaft and the brushes mounted upon said shaft.

- 5 9. In combination with the longitudinally extending side-members of a car-body, bearing-plates carried by said side-members, bearing-portions connected with said bearing-plates, said bearing-portions extending
 10 at acute angles from the vertical faces of said side-members, journal-pins mounted in said bearing-portions, a forwardly extending link mounted at one end-portion upon each journal-pin, a bracket-like receiving-
 15 member at the other end of each link, a journal-box mounted upon each bracket-like receiving member, a shaft mounted in said journal-boxes, rotary brushes mounted upon said shaft, a motor-shaft mounted in bearings
 20 secured to the frame-work of said car-body, said motor-shaft being axially in alinement with said journal-pins, a motor connected with said motor-shaft, a driving mechanism between the said motor-shaft and the
 25 shaft upon which said brushes are mounted, a casing inclosing said driving mechanism, and means connected with said bracket-like members for lifting and lowering the said last-mentioned shaft and the brushes mount-
 30 ed upon said shaft, consisting of other bear-

ing-plates carried by the said side-members, bearing-portions connected with said last-mentioned bearing-plates, said bearing-plates also extending at acute angles from the vertical faces of said side-members, a 35 shaft mounted in said last-mentioned bearing-portions, crank-arms extending in forward directions from said last-mentioned shaft, brackets connected with the first-mentioned bracket-like receiving members, said 40 brackets being provided with web-like portions, links between said crank-arms and the said web-like portions, means connected with said last-mentioned shaft for producing oscillatory motion of said shaft, a casing in- 45 closing said driving mechanism, another crank-arm connected with and extending from said last-mentioned shaft, and links pivotally connected at one end to said last-mentioned crank-arm and at their other ends 50 said links being pivotally connected with said driving mechanism-inclosing casing.

In testimony, that I claim the invention set forth above I have hereunto set my hand this 19th day of October, 1914.

EDVARD M. MOLLER.

Witnesses:

FREDK. C. FRAENTZEL,

FREDK. H. W. FRAENTZEL.