F. C. HOFFER & J. F. SMEDLEY.

STREET SWEEPER.

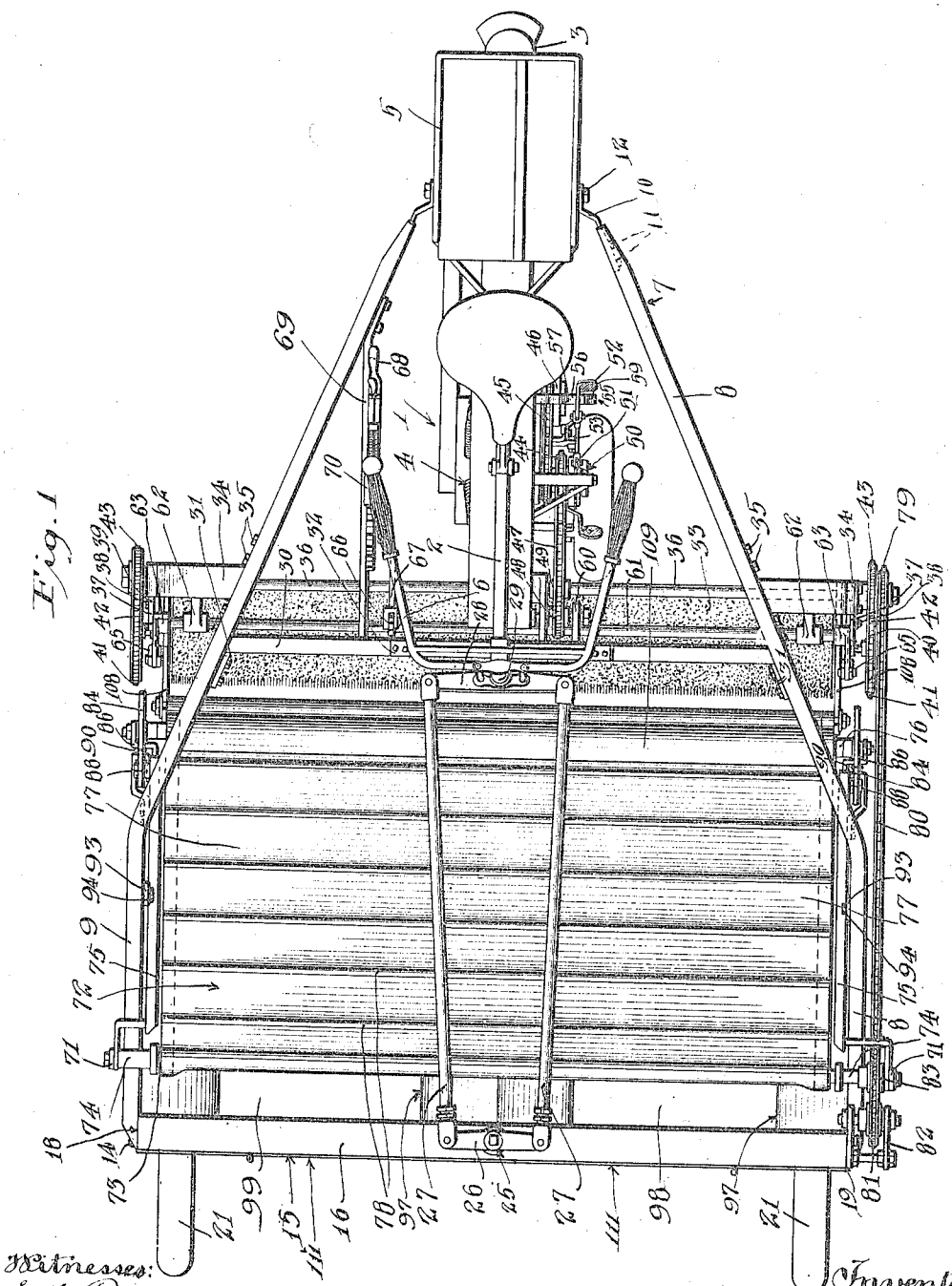
APPLICATION FILED AUG. 7, 1916.

1,254,803.

Patented Jan. 29, 1918.

3 SHEETS—SHEET 1.

Fig. 1



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3 SHEETS—SHEET 2.

Fig. 2

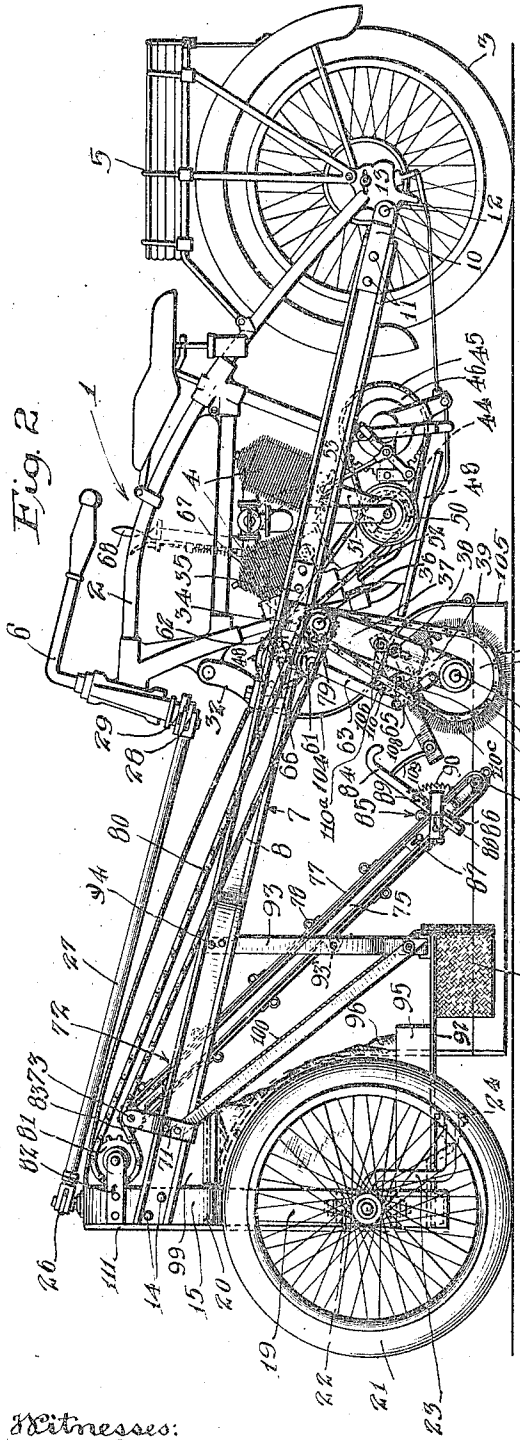
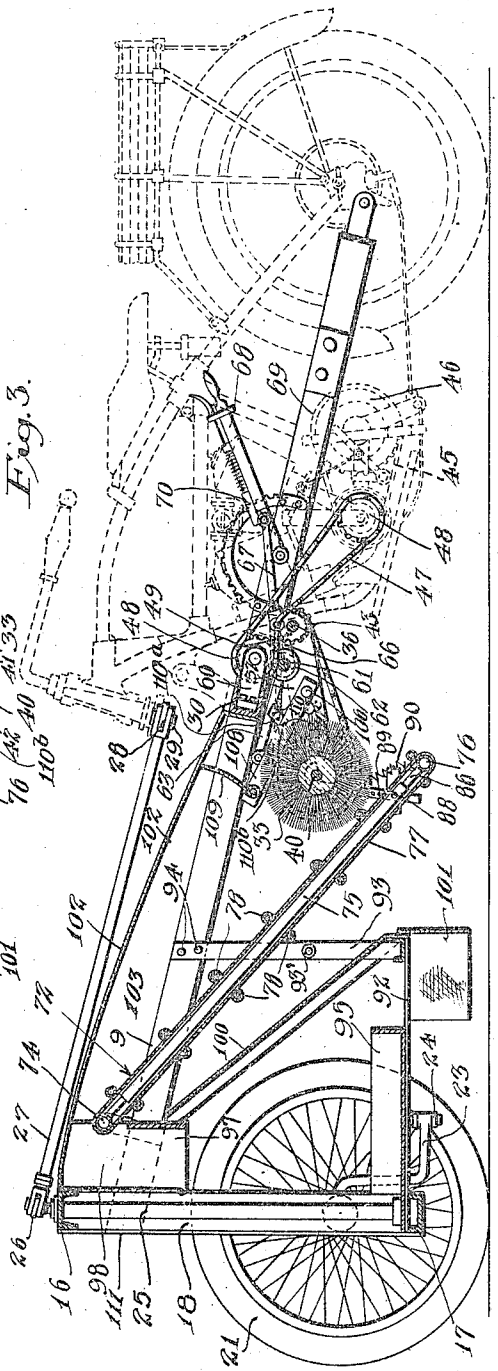


Fig. 3.



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3 SHEETS—SHEET 3.

Fig. 4

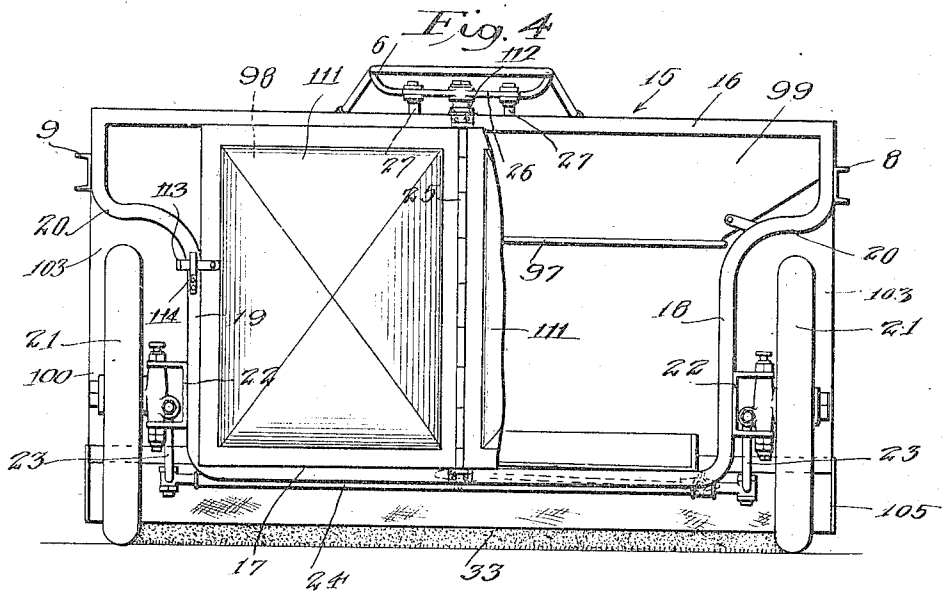
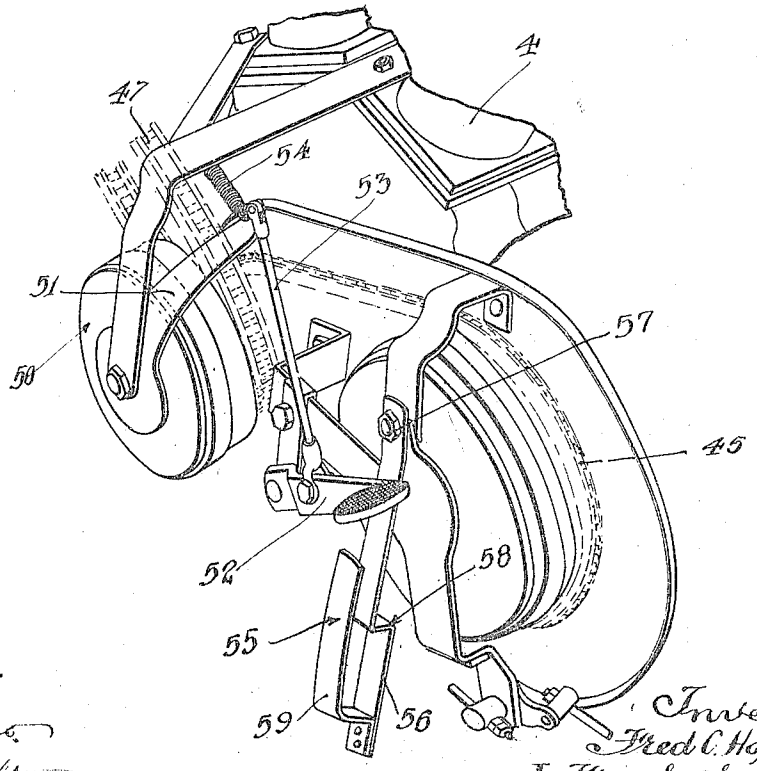


Fig. 5.



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UNITED STATES PATENT OFFICE.

FRED C. HOFFER, OF LOS ANGELES, AND JESSE FRANK SMEDLEY, OF PASADENA, CALIFORNIA, ASSIGNORS TO MOTORCYCLE SWEEPER COMPANY, OF LOS ANGELES, CALIFORNIA, A CORPORATION OF CALIFORNIA.

STREET-SWEEPER.

1,254,803. Specification of Letters Patent. Patented Jan. 29, 1918.

Application filed August 7, 1916. Serial No. 113,435.

To all whom it may concern:

Be it known that we, FRED C. HOFFER and JESSE FRANK SMEDLEY, both citizens of the United States, residing at Los Angeles and Pasadena, respectively, in the county of Los Angeles and State of California, have invented a new and useful Street-Sweeper, of which the following is a specification.

The principal objections to the majority of street sweepers which have been put into practical use are that they are too costly, large, complicated and expensive to operate. These devices because of their size as a rule are very difficult to operate in congested streets and cannot be made to sweep in narrow places such as alleys and the like. In most of the large cities the street sweeping departments still retain a corps of men who sweep by hand or with small hand-operated devices. This method of sweeping is costly, requires a great deal of time and not specially satisfactory because of the failure of the operators to thoroughly sweep the streets. It is the primary object of this invention to provide a comparatively light, small and easily operable street sweeping device which may be effectively operated to thoroughly clean streets in an expeditious manner.

Another object is to provide a street-sweeping machine which includes standard motorcycle construction so attached to the street sweeping elements that the sweeping means may be operated from the motor of the motorcycle and a practical street sweeping machine provided.

A further object is to provide a street sweeping machine of the character described which principally includes a rotary sweeping brush, a frame for the brush, a standard motorcycle constructed for suporting the frame, and means associated with the brush for picking up and storing rubbish swept up thereby, such elements being so arranged and constructed relative to one another that the entire machine is exceptionally light, small and inexpensive to manufacture and maintain in operation although capable of as effectively and thoroughly cleaning and sweeping streets as larger and more complicated machines such as heretofore mentioned.

Another object of this invention is to provide a novel frame construction which coöperates with the motorcycle construction and supports the principal street sweeping elements.

The accompanying drawings illustrate the invention.

Figure 1 represents a top plan view of the street sweeping machine with the casing or covering for the sweeping and other elements of the machine removed.

Fig. 2 is a side elevation of the machine showing parts in section and the brush in position for operation.

Fig. 3 is a view similar to Fig. 2 showing the brush and coöperating parts in out-of-the-way position.

Fig. 4 is a front elevation of the machine.

Fig. 5 is an enlarged fragmentary detail perspective view of the clutch means and portion of the motor.

Referring to the drawings, 1 designates as an entirety a motorcycle, 2 a frame of the ordinary and standard motorcycle construction, 3 a rear wheel, 4 the motor of the motorcycle which is connected in the ordinary manner with and drives the wheel 3, 5 the package or luggage carrier of the motorcycle and 6 the steering means or handle bars and coöperating parts of the motorcycle. In this motorcycle, as will be later more fully described, the front wheel and front fork for supporting the same are removed from the motorcycle in order to attach the street sweeping means.

A frame 7 is attached to the motorcycle and comprises channel iron bars 8 and 9 mounted on opposite sides of the motorcycle and secured at their rear ends to the motorcycle frame 2 at a point adjacent the axle of the rear wheel 3. Angular brackets 10 are bolted as at 11 to the rear ends of the bars 8 and 9 and as at 12 to attaching plates 13 in which the rear axle for the wheel 3 is journaled, so as to space the bars from the sides of the frame 2. The bars 8 and 9 extend outwardly and upwardly from the sides of the motorcycle or, in other words, are upwardly inclined and diverged although located in the same plane.

At points intermediate their ends but adjacent to their outer ends the bars 8 and

9 are parallel and at their free ends are secured by suitable fastening means 14 to the upper portion of a substantially rectangular and upright frame 15. The frame 15 comprises horizontal top and bottom bars 16 and 17 which are joined at their ends by end bars 18 and 19. The bar 16 is considerably longer than and extends beyond the end of the bar 17, and the bars 18 and 19 extend upwardly parallel to one another for a distance equal to approximately two-thirds of their length and then outwardly and slightly upwardly as at 20. From this point the bars are parallel to one another. This offset construction provides for the positioning of the front wheel 21 in close relation to the frame 15 and the portions 20 of the bars 18 and 19 overlie the wheels 21.

The wheels 21 are connected by the ordinary means 22 with the bars 18 and 19 adjacent to the lower ends of said bars. Steering arms 23 are connected with the wheels 21 and with a horizontal steering rod 24 which latter has operative connection with a vertical steering shaft 25. The shaft 25 is journaled in the bars 16 and 17 approximately centrally at the ends of said bars preferably and extends above and through the bar 16. On its upper end the shaft 25 carries a horizontal arm 26 which is secured to the shaft intermediate its ends and at its ends is connected with steering links 27. The links 27 extend over the sweeping mechanism and have pivotal connection with the ends of a steering arm 28 which is similar to the one 26 and connected with the rotary steering member 29 of the handle bars or steering means 6. To reinforce and strengthen the bars of the frame 7, there is provided a brace bar 30 which is secured at its ends as at 31 to the bars 8 and 9 and by brackets 32 to one of the front frame members of the motorcycle frame 2, as shown clearly in Figs. 1 and 2 of the drawings.

A sweeping means is provided and comprises a rotary cylindrical brush 33 including stiff bristles, the brush being substantially the same length as the width of the frame 7 at the widest point. This, however, is optional, it being possible to use a shorter or longer brush. Bearing brackets 34 are secured as at 35 to the bars 8 and 9 and journaled in said brackets transversely of the frame 7 and beneath the latter is a horizontal shaft 36. Loosely mounted upon and depending from the shaft 36 are brush supporting arms 37 which are located adjacent to the ends of said shaft 36 and have adjustable connections 38 with shorter arms 39. Journaled in the arms 39 is the brush shaft 40 to which the brush 33 is fixed and secured to the shaft 36 at the ends thereof are sprocket wheels 41 rove around which are chains 42. Similar sprockets 43 are fixed to the shaft 36 and the chains 42 are mounted upon and driven by said smaller sprockets. The tension of the chains may be regulated by properly manipulating the adjustable connections 38 for the arms 39 and 37.

A drive sprocket 44 which is driven by a chain 45 mounted upon a sprocket 46 is connected with the motor 4 and operates to drive the shaft 36 through a chain 47 and sprockets 48, 48′ and 49, the latter sprocket being fixed to the shaft 36 intermediate the ends thereof. Suitable clutch mechanism 50 is associated with the drive chain 45 and drive sprocket 44. This clutch mechanism includes a lever 51, an operating pedal 52, link 53 connecting the lever and pedal and a spring 54 for normally holding the lever 51 in position to hold the clutch "out." There is provided a spring catch 55 for holding the clutch pedal 52 in operative position and this spring catch comprises a strip of spring metal 56 which is secured as at 57 to some suitable part of the motor 4 and is provided adjacent to its lower end with an offset which forms a shoulder 58. The pedal 52 rides upon the outer face of the strip 56 and said strip is spaced save where connected, from the motor so that as the pedal is pushed downwardly it will snap in engagement with the shoulder 58 and be held in operative position. An angular guard arm 59 is secured to the lower end of the strip 56 to act as a buffer and allow the operator to kick the catch as a whole, inwardly to effect the release of the pedal 52. By pushing the catch 55 inwardly the shoulder 58 is moved from overlying relation to the pedal 52 and the spring 54 moves the pedal and coöperating clutch parts into normal position.

The sprocket 48 is journaled in a bearing 60 carried by the brace bar 30 and the chain 47 is mounted upon the sprockets 48′ and 48, the sprocket 49 being located beneath the lower side of the chain 47 and in mesh with said chain, as shown clearly in Fig. 3 of the drawings. This provides for the rotation of the shaft 36 and brush 33.

To provide for the raising and lowering of the brush, a shaft 61 is journaled transversely of the frame and parallel to the shaft 36, in bearings 62 which are carried by bearing brackets 34. At its ends this shaft 61 has rocker arms 63 rigidly secured thereto and connected with the ends of the rocker arms are adjustable links 65 pivotally connected with the arms 39 in which the brush is journaled. Intermediate its ends the shaft 61 has a crank arm 66 fixed thereto and said crank arm is pivotally connected by a link 67 with a lever 68. The lever 68 is pivoted upon a bar 69 which is secured at its ends to the bar 9 and brace bar 30 to one side of the motorcycle frame 2. This lever 68 is provided with the customary locking mechanism 70 and when pulled rearwardly will cause

the shaft 61 to rotate and the brush 33 together with the arms 37 and 39 to be moved upwardly and forwardly into out-of-the-way position.

Secured to the bars 8 and 9 adjacent to their forward ends are upstanding bearings 71 in which a conveyer 72 is pivoted as at 73. In this connection it will be noted that there is provided means to elevate the rubbish swept up by the brush 33 so that it will be deposited into receptacles such as will be later more fully described. The roller 73 is mounted upon a suitable shaft 74 and pivotally connected with this shaft is a conveyer frame 75 of suitable construction which extends downwardly and rearwardly to a point in advance of and adjacent the brush 33. On its lower end the frame 75 carries a conveyer roller 76 and an endless belt or apron 77 having a plurality of transverse cleats 78 thereon is mounted upon the rollers 73 and 76. Secured to one end of the shaft 36 is a sprocket 79 having a sprocket chain 80 mounted thereon, said chain being rove around a sprocket 81 which is journaled in a bearing 82 fixed to the upper end of a frame 15. The lower half of the chain 80 extends above the roller 72 and fixed to one end of said roller is a sprocket 83 which meshes with the lower side of the chain and in so doing provides for the rotation of the roller and endless belt or apron 77.

There is provided means which will cause the lower end of the elevator to be lifted upwardly in out-of-the-way position when the brush is accordingly moved. This means comprises hook members 84 which are adjustably secured by suitable means 85 to the sides of the frame 75 near the lower end of said frame. Brackets 86 are adjustably secured to the sides of the frame 75 as at 87 and the hooks 84 are pivotally secured by suitable pivots 88 to said brackets 86, there being provided a series of spaced pivot holes 89 in said hooks so that they may be pivoted in various positions. Retractile springs 90 are secured to the frame 75 and hooks so as to normally hold the hooks in positions to be engaged. The shaft 40 of the brush 33, when the brush is moved upwardly, engages with the hooks 80, and this lifts the lower end of the conveyer into position as shown in Fig. 3 of the drawings. It will be noted that the hooks in being pivoted are free to move in accordance with the upper movement of the brush and conveyer and that said hooks are free from any connection with the brush.

The means for supporting the rubbish receptacles comprises a flat horizontal plate 92 which is secured to the lower bar 17 of the frame 15 and extends rearwardly thereof to a point beneath the conveyer. Hangers 93 secured as at 94 to the bars 8 and 9 are secured at their lower ends to and support the plate 92 at the rear edges thereof. Lugs 93′ on the hangers 93 support the apron 77. A flanged holder member 95 is mounted upon the plate 92 and is of such shape as to hold flexible receptacles 96 for the rubbish swept up by the brush. These receptacles 96 or sacks are secured at their open ends to the flanged mouths 97 of hoppers or spouts 98 and 99. These hoppers or spouts are carried by the frame 15 and the upper end of the conveyer or endless apron 77 extends into said spouts. Thus rubbish carried upwardly by the conveyer will be deposited to the spouts and thence will drop into the receptacles 96.

A dust plate 100 is secured to the rear sides of the spouts 98 and 99 and extends downwardly and rearwardly over the plate 92, it being secured at its lower edge to the rear edge of said plate 92 and forms the back wall of a casing which is provided for the receptacles 96. A flexible guard strip 101 is secured to the rear edge and to the side edges of the plate 92 and depends therefrom. This strip being spaced from the surface being swept serves to spread out small heaps of rubbish so that it may be more readily swept up by the brush.

Secured to the upper bar 16 of the frame 15 and extending rearwardly and downwardly therefrom is a cover plate 102, the rear edge of which is secured to the brace bar 30. This plate extends over the frame bars 8 and 9 and covers the spouts 98 and 99, conveyer, brush and other coöperating parts of the sweeping elements. Suitable side curtains 103 and preferably ones which are secured to the plate 102, depend therefrom and at their lower edges are spaced from the surface to be swept. This will prevent dust being scattered during the sweeping action. A curved metal dust plate 104 is secured to the bar 30 and extends downwardly and rearwardly over and back of the brush 33. The lower end of the plate 104 terminates above the lower side of the brush and has secured thereto a flexible strip 105, the lower edge of which is disposed in close relation to the ground or surface being swept. Pivoted as at 106 to the arms 37 are guard plate supporting arms 108 between and to the lower ends of which is fixed a curved guard plate 109, which plate extends approximately at right-angles to the arms 108 and is located in front of and above the lower side of the brush so as to prevent rubbish from being thrown rearwardly of the brush or upwardly instead of forwardly and upon the conveyer. The arms 108 are adjustably held in the desired position by arms 110 which are secured to and extend outwardly from the arms 37. These arms 110 are provided with openings 110ª which are adapted to register with

openings 110b in the arms 108. Pins 110c are inserted through the openings to hold the arms in position. The sides 103 are secured at their forward ends to the vertical bars 18 and 19 of the arm 7 at a point rearwardly of the brush 33. Thus it will be seen that dust will not scatter during the sweeping action in that it is confined by the various dust guards, sides 103 and top 102. An extra supply of receptacles 106 may be folded and carried upon the luggage carrier 5 of the motorcycle. The front of the machine is closed by doors 111 hinged at 112 to the frame 15. These doors are held closed by pivoted latch members 113 engaging in keepers 114 on the bars 18 and 19.

In operation, the brush is lowered from position shown in Fig. 3 of the drawings to position shown in Fig. 2 so as to contact with the surface to be swept and this allows the elevator to assume the position whereby rubbish swept up by the brush will be thrown up on the elevator. The operator manipulates the motorcycle as is ordinarily done and can readily steer the device with the steering means 6. Owing to the construction of the sweeper and its smallness, it is possible to thoroughly and effectively sweep streets usually inaccessible to street sweepers of the large automatic type now in general use. By pushing the clutch lever 52 downwardly so that it is held by the spring catch 55 the clutch means 50 connects the sprocket 44 with the motor so that said sprocket is rotated and power is transmitted to the sprocket 49 through the chain 47. The sprocket 49 in rotating causes a rotation of the shaft 36 and transmits this rotary movement through the chain 42, to the brush 33, said brush rotating from left to right. Dependent upon the extent of sweeping necessary the brush 33 is adjusted relative to the surface to be swept. This adjustment may be readily effected by moving the lever 68 backward or forward into the desired position. The rubbish swept up by the brush is prevented from being scattered upwardly at too great an angle by the plate 109, it being possible to vary the position of the latter dependent upon the character of the brushing being done. When the surface being swept is exceptionally dirty and a severe brushing and sweeping action is required, the brush is moved downwardly to its greatest extent and upon "speeding up" the motor the increased rapidity of rotation of the brush provides for a thorough and effective sweeping. The rubbish swept up on the endless carrier or apron 77 is carried upwardly and deposited into the hoppers or spouts 98 and 99. These hoppers or spouts conduct the rubbish into the sacks or receptacles 96 and in this way much time is saved and a more effective sweeping action is had. The speed of rotation of the apron 77 is increased commensurate with that of the motor and brush 33 inasmuch as said conveyer is driven from the motor, as is the brush. To move the brush out of sweeping position and the elevator into out-of-the-way position, the lever 68 is pulled rearwardly and this causes the projecting ends of the shaft 40 to engage with the hooks 84 during the upward movement of the brush and to lift the elevator into position shown in Fig. 3 of the drawings. This renders the motorcycle adaptable for more rapid travel and is desirous in going from place to place where the sweeping is required. After the sacks or receptacles 96 become filled they may be readily removed by opening the doors 111.

With reference to the foregoing description and accompanying drawings it will be seen that we have provided a motorcycle street sweeper of simple, light and durable construction which is exceptionally mobile, may be operated at a low cost and to quickly and reliably sweep streets, alleys and small usually inaccessible places as well as roads, boulevards and wide streets.

We claim:

1. In a street sweeper, a vehicle frame, a frame secured to the opposite sides of the vehicle frame and extending forwardly and upwardly in front thereof, a sweeping brush connected with the last named frame, means to operate the brush, and wheels connected with the first and last named frames.

2. In a street sweeper, a vehicle frame, a frame secured to the vehicle frame comprising bars on opposite sides and extending in front thereof, a rotary sweeping brush connected with the second named frame, means to operate the brush, and wheels connected with and supporting the outer end of the second named frame.

3. A street sweeper comprising a vehicle frame, a frame secured to the vehicle frame and extending in front thereof, a rotary sweeping brush connected with the second named frame, means to raise and lower the brush, means to operate the brush, and wheels supporting the first and second named frames.

4. In a street sweeper, a vehicle frame, a frame secured to the vehicle frame and comprising bars on opposite sides and extending in front of the vehicle frame, a rotary sweeping brush, a frame for supporting the brush connected with the second named frame, means to operate the brush, a frame secured to the outer end of the second named frame, and wheels connected with the last named and vehicle frames.

5. In a street sweeper, a vehicle frame, steering means on said frame, a frame secured to the vehicle frame comprising bars on opposite sides of and extending in front of the vehicle frame, a rotary sweeping

brush connected with the bars, wheels connected with the bars, and steering connections between the wheels and steering means.

6. In a street sweeper, a vehicle frame, a frame secured to the vehicle frame and extending in front thereof, a brush supporting frame connected with the second named frame, a rotary brush carried by the brush supporting frame, means to operate the brush, rubbish receiving means, a frame connected with the second named frame for supporting the rubbish receiving means, and wheels supporting the vehicle and last named frames.

7. In a street sweeper, a vehicle frame, a frame secured to the vehicle frame and adapted to extend in front thereof, a second frame secured in upright position to the end of the second named frame, wheels connected with and supporting the last named frame, a rubbish receptacle carried by the last named frame, a spout carried by the last named frame, a street sweeping means, and means to convey materials swept up by the sweeping means into the spout.

8. In a street sweeper, a vehicle frame, bars secured to the frame and extending forwardly therefrom, a rotary sweeping brush, a shaft carried by the bars transversely thereof, a brush operating means carried by the frame, driving connections between the shaft and operating means, brush supporting arms mounted on the shaft and connected with the brush, driving connections between the shaft and brush, means to raise and lower the brush, a rubbish receptacle supported from the bars, an endless conveyer carried by the bars and adapted to convey material swept up by the brush into the receptacle, said conveyer being free from connection with the brush, and means to raise and lower the conveyer simultaneously with the raising and lowering of the brush.

9. In a street sweeper, a frame adapted to be secured to a vehicle frame to extend in front thereof, a frame secured to the forward end of the first named frame, wheels carried by and supporting said second named frame, a rotary sweeping brush, means to operate the brush, a frame supporting the brush connected with the first named frame, a rubbish receptacle supported by the second named frame, means to convey rubbish swept up by the brush into the receptacle, said brush and latter means being free from connection with one another, and means to raise and lower the brush operating to raise and lower the conveying means.

10. In a street sweeper, a vehicle frame, a frame secured to the vehicle frame, a third frame secured to the second named frame, wheels connected with and supporting the second named frame, rubbish receiving means carried by the third named frame, a street sweeping means, means for connecting said means with the second named frame, means to convey materials swept up by the sweeping means into the rubbish receiving means, a cover plate extending over the last named means, and an apron incasing the sides of the second named frame and covering the street sweeping and conveying means.

11. In a street sweeper, a vehicle frame, a frame secured to the vehicle frame and extending in front thereof, a frame secured to the outer end of the second named frame, wheels secured to the third named frame and to the vehicle frame, means to steer the wheels of the third named frame, a rotary sweeping member, means for supporting said member connected with the second named frame, a rubbish receptacle carried by the third named frame, and means to convey rubbish swept up by the sweeping means into the receptacle.

12. In a street sweeper, a frame adapted to be secured to a vehicle frame, a rotary sweeping brush, a shaft for said brush, means to raise and lower the brush, a rubbish receptacle, a conveyer operatively associated with the brush and receptacle, said conveyer being pivoted at its upper end to the frame and free from connection at its lower end with the frame and brush, and hooks carried by the conveyer on the lower end thereof, said hooks being located in the path of movement of said shaft whereby when the brush is raised the shaft encounters the hooks and elevates the lower end of the conveyer.

13. In a street sweeper, a vehicle frame, a frame secured to the vehicle frame, a brush supporting frame connected with the second named frame, a rotary sweeping brush, a shaft for said brush, means to rotate the brush, means to raise and lower the brush, a conveyer connected with the second named frame and having its upper end pivoted thereto and its lower end located adjacent to the brush, said lower end being free from connection with the brush, hooks carried by the conveyer on the lower end thereof, said hooks being located in the path of movement of said shaft whereby when the brush is raised the shaft encounters the hooks and elevates the lower end of the conveyer.

14. In a street sweeper, a vehicle frame, a frame secured to the vehicle frame, a brush supporting frame connected with the second named frame, a rotary sweeping brush, a shaft for said brush, means to rotate the brush, means to raise and lower the brush, a conveyer connected with the second named frame and having its upper end pivoted thereto and its lower end located adjacent to the brush, said lower end being free from connection with the brush, hooks carried by the conveyer on the lower end thereof, said hooks being located in the path

of movement of said shaft whereby when the brush is raised the shaft encounters the hooks and elevates the lower end of the conveyer, and means to vertically adjustably connect the hooks with the conveyer.

15. In a street sweeper, a vehicle frame, a frame secured to the vehicle frame, a brush supporting frame, a rotary sweeping brush carried by the frame, a shaft for said brush, means to raise and lower the brush, means to rotate the brush, a rubbish receptacle, a conveyer pivoted to the second named frame and having its lower end located adjacent to the brush, said conveyer adapted to convey rubbish swept up by the brush to the receptacle, hooks carried by the conveyer, said hooks being located in the path of movement of said shaft whereby when the brush is raised the shaft encounters the hooks and elevates the lower end of the conveyer, and a guard plate connected with the frame and located above and between the lower end of the conveyer and brush to prevent rubbish being thrown rearwardly of the brush.

16. In a street sweeper a frame adapted to be secured to a vehicle frame having a wheel thereon, wheels supporting the forward end of the frame, said frame extending in front of the vehicle frame, means to steer said last-named wheels, a rotary sweeping brush carried by the frame transversely thereof and means to operate the brush, a rubbish receptacle, an endless conveyer carried by the frame and operatively associated with the brush and receptacle, said conveyer being pivoted at its upper end to the frame, means for rotating the conveyer, a cover plate extending over the conveyer and brush and rearwardly of the brush, and side members connected with the cover plate and inclosing the brush and conveyer.

17. In a street sweeper a frame adapted to be secured to a vehicle frame, wheels supporting the forward end of the frame, said frame extending in front of the vehicle frame, means to steer said last named wheels, a rotary sweeping brush carried by the frame transversely thereof, means to operate the brush, a rubbish receptacle, an endless conveyer carried by the frame and operatively associated with the brush and receptacle, said conveyer being pivoted at its upper end to the frame, means for rotating the conveyer, a cover plate extending over the conveyer and brush and rearwardly of the brush, side members connected with the cover plate and inclosing the brush and conveyer, and a guard plate extending transversely of the frame and in front of the brush, said plate being spaced from the ground sufficiently to clear.

Signed at Los Angeles, California, this 31st day of July, 1916.

FRED C. HOFFER.
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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents. Washington, D. C."