Aug. 31, 1948. A. RUSSELL 2,448,328

POWER-DRIVEN SWEEPING MACHINE

Filed Jan. 17, 1947 3 Sheets-Sheet 1

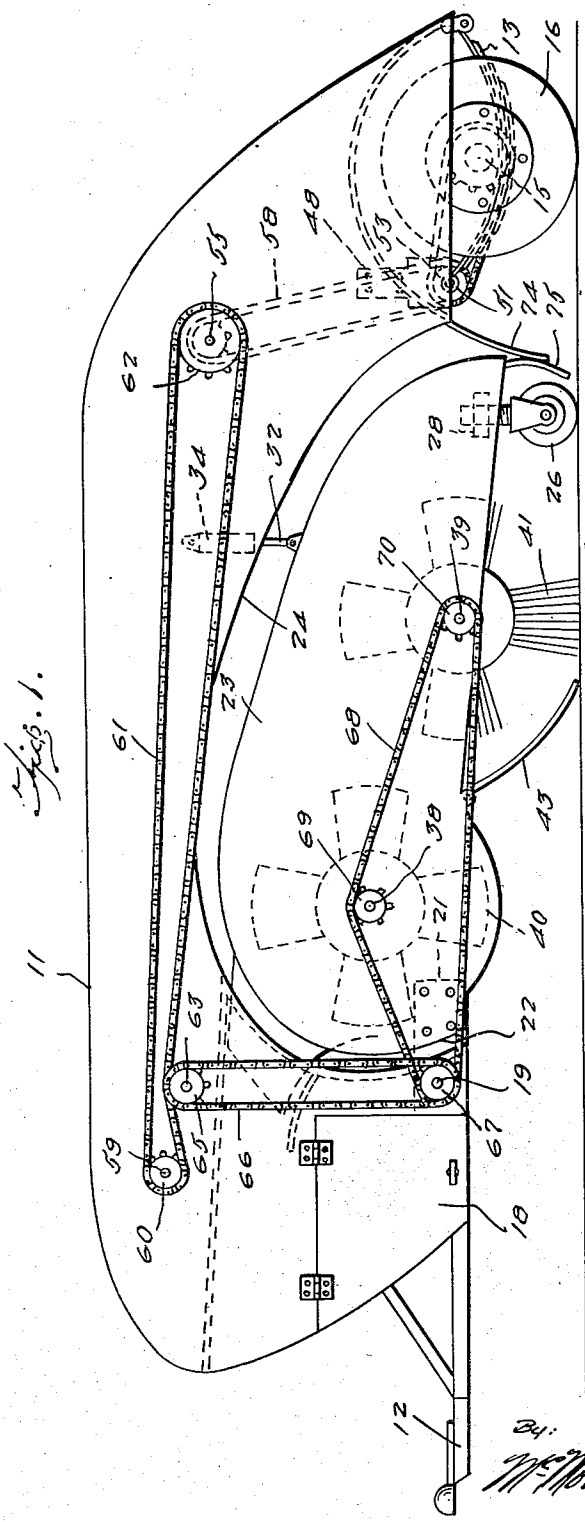


Fig. 1.

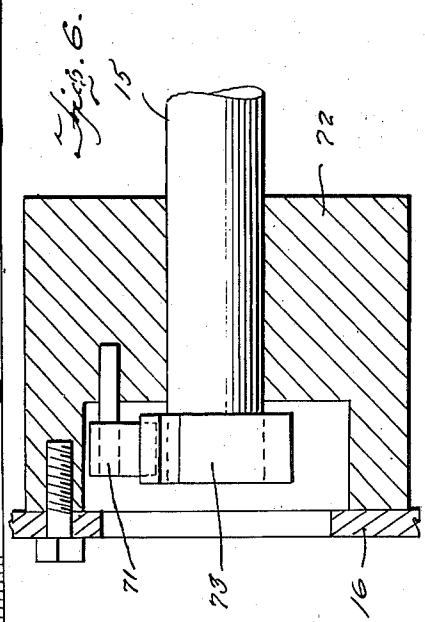


Fig. 6.

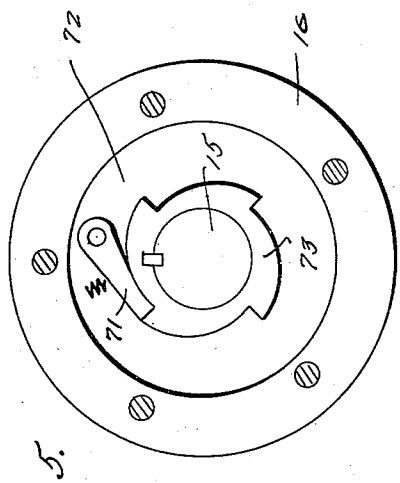


Fig. 5.

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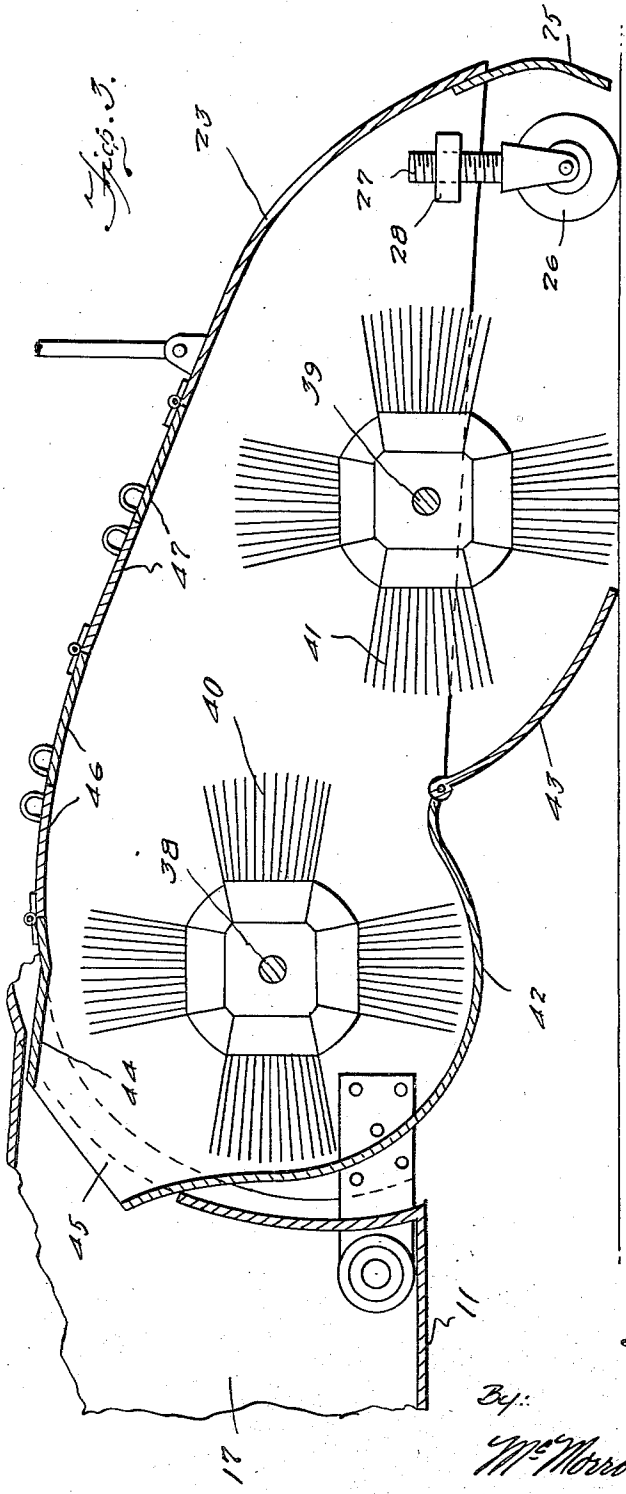


Fig. 8.

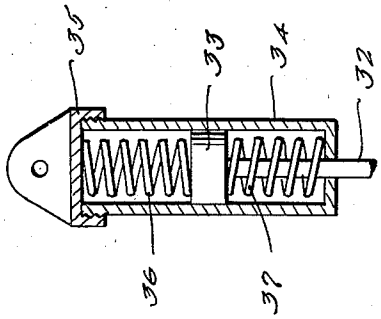
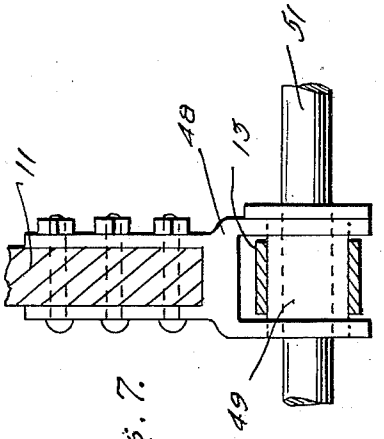


Fig. 7.



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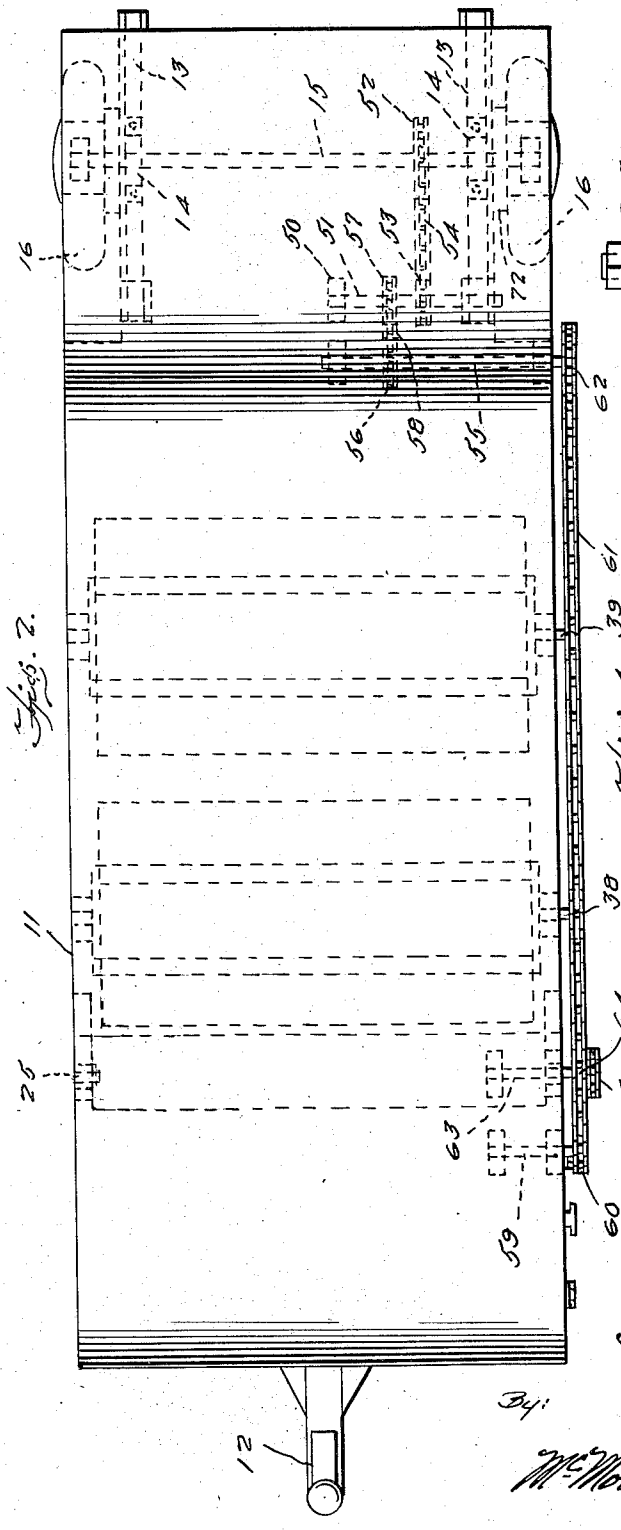


Fig. 2.

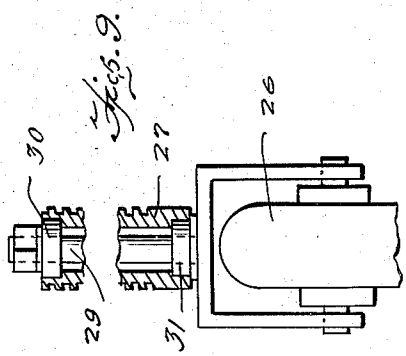


Fig. 3.

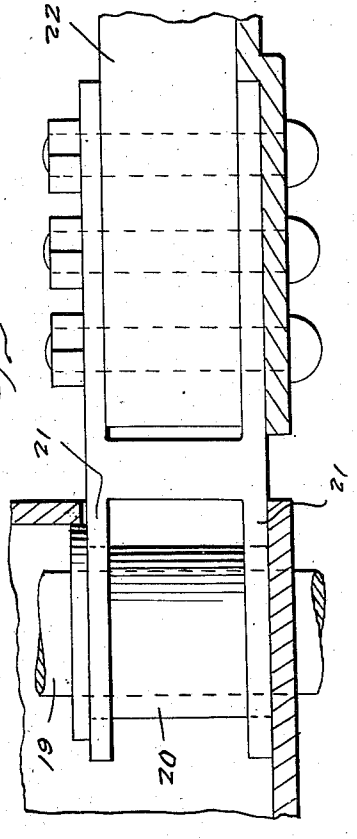


Fig. 4.

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UNITED STATES PATENT OFFICE

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POWER-DRIVEN SWEEPING MACHINE

Austin Russell, Elsinore, Calif.

Application January 17, 1947, Serial No. 722,697

6 Claims. (Cl. 15—83)

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This invention relates to sweeping machines, and more particularly to sweeping machines of the vehicle-propelled or animal-propelled type.

A main object of the invention is to provide a novel and improved sweeping machine for cleaning pavements and the like, said machine being relatively simple in structure, efficient in performance and dependable in operation.

A further object of the invention is to provide an improved power-drawn sweeping machine which is inexpensive to manufacture, sturdy in construction and easy to maintain in repair.

Further objects and advantages of the invention will become apparent from the following description and claims, and from the accompanying drawings, wherein:

Figure 1 is a side elevational view of a sweeping machine constructed in accordance with the present invention.

Figure 2 is a top plan view of the sweeping machine of Figure 1.

Figure 3 is an enlarged cross-sectional detail view taken longitudinally through the brush compartment of the machine of Figure 1.

Figure 4 is an enlarged detail view showing one of the connections of the forward end portion of the brush compartment to the main body of the machine.

Figure 5 is an enlarged detail view showing in elevation a ratchet drive mechanism employed for driving the sweeper brushes of the machine of Figure 1.

Figure 6 is a cross-sectional detail view taken axially through the ratchet drive mechanism of Figure 5.

Figure 7 is an enlarged cross-sectional detail view showing the supporting structure for the drive shaft of the brush-driving mechanism of the machine of Figure 1.

Figure 8 is an enlarged cross-sectional detail view of a suspension spring structure employed to support the rear portion of the brush housing from the body of the machine of Figure 1.

Figure 9 is an enlarged cross-sectional detail view of a caster and securing means therefor employed at the rear end of the brush housing of the machine.

Referring to the drawings, 11 designates the main body of the machine, said main body having a forwardly projecting drawbar 12 adapted to be secured to a tractor or other source of tractive power by conventional hitching means. The rear portion of body 11 is supported by leaf springs 13 provided with journal bearing members 14, 14 through which rotatively extends an axle 15 on

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which are journaled ground-engaging rubber-tired wheels 16, 16.

Body 11 is hollow and the forward portion thereof encloses a trash-receiving space 17. A side door 18 at the lower forward portion of the body permits access to the space 17 for removing trash accumulated therein by the action of the machine.

Journaled transversely in the lower portions of the side walls of body 11 rearwardly of door 18 is a shaft 19. Telescoped over shaft 19 is a flanged sleeve 20 and pivoted to sleeve 20 are parallel arms 21, 21 between the rearward portions of which are secured the forward end of the side wall 22 of a brush housing 23, said brush housing being received in a recessed under portion 24 of main body 11. The opposite side wall of brush housing 23 is pivoted at 25 to the adjacent side wall of the main body. The rear portion of brush housing 23 is supported by casters 26, there being one caster at each rear corner of the brush housing. Each caster comprises a vertical sleeve portion 27 threaded into a lug 28 provided at the inner side of the brush housing side wall, and vertically journaled in sleeve portion 27 is the caster shaft 29, said shaft being secured to bearing collars 30 and 31 seated in annular bearing recesses formed at the top and bottom of sleeve 27. The rear portion of brush housing 23 is further supported at its top by links 32 pivoted thereto, said links each carrying a plunger head 33 received in a cylinder 34. Cylinder 34 is threaded into a cap member 35 which is pivoted to a side wall of main body 11. Above plunger head 33 in each cylinder 34 is a coiled spring 36 bearing on cap 35 and below the plunger head is a coiled spring 37 encircling link 32 and bearing between the plunger head and the bottom wall of the cylinder. The springs 36 and 37 provide a cushioning action for the links, said links acting a shock absorbers for the brush housing.

Journaled in the side walls of bruch housing 23 are transverse shafts 38 and 39 on which are secured respective roller brush units 40 and 41. The rear brush unit 41 is lower in elevation than the forward brush unit 40 and is substantially in ground engagement. The bottom wall 42 of the brush housing underlies and closely follows the configuration of the lower portion of forward brush unit 40. Pivoted transversely to the rear edge of bottom wall 42 is a flap 43 adapted to engage the ground immediately ahead of rear brush unit 41, whereby trash may be swept from the ground by said rear brush unit up to the trail-

ing flap 43 and into engagement with forward brush unit 40. Bottom wall 42 curves upwardly at its forward portion and is spaced at its top edge from the forward edge of the top wall 44 of the brush housing to define a discharge spout 45 which projects into the trash-receiving space 17 of the main body 11. The top wall 44 is provided with hinged closures 46, 46 and 47, 47 providing access to the respective brush units 40 and 41 for servicing and repair thereof.

Supported from the side walls of main body 11 at its rear portion by brackets 48 are transversely directed flanged sleeves 49. Said sleeves provide the shackle bearings for the forward ends of the leaf springs 13. Journaled at one end in a bearing bracket 50 secured to the under side of body 11 and at the other end in one of the sleeves 49 is a transverse shaft 51. Axle 15 carries a sprocket wheel 52 which is aligned with a sprocket wheel 53 carried by shaft 51, the sprocket wheels being coupled by a sprocket chain 54. Journaled in body 11 above shaft 51 is a transverse shaft 55. Shaft 55 carries a sprocket wheel 56 which is coupled to a sprocket wheel 57 carried by shaft 51 by a chain 58. Journaled in a side portion of body 11 at its forward portion is a transverse shaft 59 which carries a sprocket wheel 60. Sprocket wheel 60 is coupled by a chain 61 to a sprocket wheel 62 carried at the end of shaft 55. Rearwardly adjacent shaft 59 and lower in level is a shaft 63 transversely journaled in the side portion of body 11 and carrying a sprocket wheel 64 which meshes with the under side of chain 61. Shaft 63 carries a second sprocket wheel 65 on which is looped a chain 66 which meshes with a sprocket wheel 67 carried on shaft 19. Shaft 19 carries a second sprocket wheel on which is meshed a chain 68 which engages a sprocket wheel 69 carried by roller brush shaft 38 and a sprocket wheel 70 carried by roller brush shaft 39. By the chain connections above described, forward movement of the body 11, as viewed in Figure 1, produces clockwise rotation of the brush units 40 and 41, causing trash to be swept by the brush units from the ground into the trash-receiving space 17.

The rotation of the ground-engaging wheels 16, 16 is communicated to axle 15 by spring-biased pawl members 71 pivoted in wheel-carried housings 72 and cooperating with ratchet wheels 73 carried on and rigidly secured to axle 15. Therefore, the sweeping action only occurs when body 11 is drawn forwardly. When the body is moved rearwardly, the pawls 71 slide freely over the spiral surfaces of the teeth of ratchet wheels 73 and the ground-engaging wheels 16 transmit no torque to axle 15.

The rear portion of body 11 carries a depending transverse fender 74 of resilient metal which extends forwardly of rear wheels 16, 16 and engages a depending transverse fender 75 carried by the rear end of brush housing 23. Fenders 74 and 75 act as leaf springs to cushion shock or impact between brush housing 23 and main body 11 and also serve to protect the casters 26 from being fouled by mud or dirt thrown up by the rear wheels 16, 16.

While a specific embodiment of a power-drawn sweeping machine has been disclosed in the foregoing description, it will be understood that various modifications within the spirit of the invention may occur to those skilled in the art. Therefore, it is intended that no limitations be placed on the invention other than as defined by the scope of the appended claims.

What is claimed is:

1. A sweeping machine comprising a main body portion having a pair of ground-engaging wheels and formed with a trash-receiving space, said main body portion being recessed at its under side, a brush housing pivotally secured to said main body portion in the recess thereof, said brush housing having a discharge spout extending into said trash-receiving space, brush means in said brush housing adapted to sweep trash from the ground under the housing to said discharge spout, and means responsive to forward movement of the machine for actuating the brush means.

2. A sweeping machine comprising a main body portion having a pair of ground-engaging wheels and formed with a trash-receiving space, said main body portion being recessed at its under side, a brush housing pivotally secured to said main body portion in the recess thereof, said brush housing having a discharge spout extending into said trash-receiving space, a plurality of rotary brushes journaled transversely in said housing, one of said brushes being substantially in ground engagement, means carried by the housing for guiding trash swept by said one brush into the housing, means for guiding such trash to said discharge spout, and means responsive to forward movement of the machine for revolving the brushes.

3. A sweeping machine comprising a main body having a pair of ground-engaging wheels at its rear end portion and a trash-receiving compartment at its forward end portion, the under side of the body being recessed at its intermediate portion, a brush housing in the recessed intermediate portion, means pivotally securing the brush housing to the forward portion of said main body, said housing having a discharge spout extending into the trash-receiving compartment, a pair of longitudinally spaced rotary brushes journaled transversely in said housing, the rearward brush being below the level of the forward brush and substantially in ground engagement, the bottom wall of the housing terminating short of the rearward brush, a ground-engaging flap pivoted to the rear edge of said bottom wall and extending adjacent said rearward brush, said bottom wall being forwardly curved to substantially follow the under periphery of the forward brush and terminating forwardly at said discharge spout, and means responsive to forward movement of the machine for synchronously revolving the brushes.

4. A sweeping machine comprising a main body having a drawbar at its forward end and a pair of ground-engaging wheels at its rear end portion, said body being formed at its forward end portion with a trash-receiving compartment, the under side of the body being recessed at its intermediate portion, a brush housing in the recessed intermediate portion, means pivotally connecting the forward end of the housing to the forward portion of the body, spring means connecting the rear portion of the housing to the under side of the body, said housing having a discharge spout at its forward end extending into the trash-receiving compartment, a pair of longitudinally spaced rotary brushes journaled transversely in said housing at different levels, the rear brush being substantially in ground engagement, the bottom wall of said housing defining guide means for guiding trash from said rear brush to said discharge spout, and means operated by said ground-engaging wheels for synchronously revolving said brushes.

5. A sweeping machine comprising a main body having a drawbar at its forward end and a pair of ground-engaging wheels at its rear end portion, said body being formed at its forward end portion with a trash-receiving compartment, the under side of the body being recessed at its intermediate portion, a brush housing in the recessed intermediate portion, means pivotally connecting the forward end of the housing to the forward portion of the body, spring means connecting the rear portion of the housing to the under side of the body, said housing having a discharge spout at its forward end extending into the trash-receiving compartment, a pair of longitudinally spaced rotary brushes journaled transversely in said housing at different levels, the rear brush being substantially in ground engagement, the bottom wall of said housing defining a guideway for guiding trash from the brushes to said discharge spout, an axle for the ground-engaging wheels, means rotatively supporting said axle beneath the rear end portion of the body, means

operated responsive to rotation of said axle for synchronously revolving the brushes, and a pawl-and-ratchet coupling between the axle and the ground-engaging wheels.

6. A sweeping machine comprising a main body portion having a pair of ground-engaging wheels and formed with a trash-receiving space, said main body portion being recessed at its under side, a brush housing including opposite ends, means pivotally securing one of said ends to said main body portion within said recess, ground-engaging rollable means supporting the other end of said housing, shock-absorbing means connecting said last-named end of said housing to said main body portion, said brush housing having a discharge spout extending into said trash receiving space, brush means in said brush housing adapted to sweep trash from the ground under the housing to said discharge spout, and means responsive to forward movement of the machine for actuating the brush means.

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