

Feb. 26, 1952

R. W. GOODELL

2,587,038

CARPET SWEEPER

Filed Aug. 16, 1946

2 SHEETS—SHEET 1

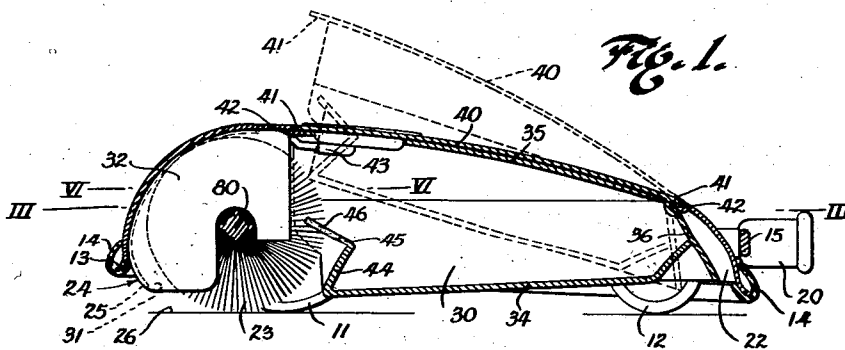
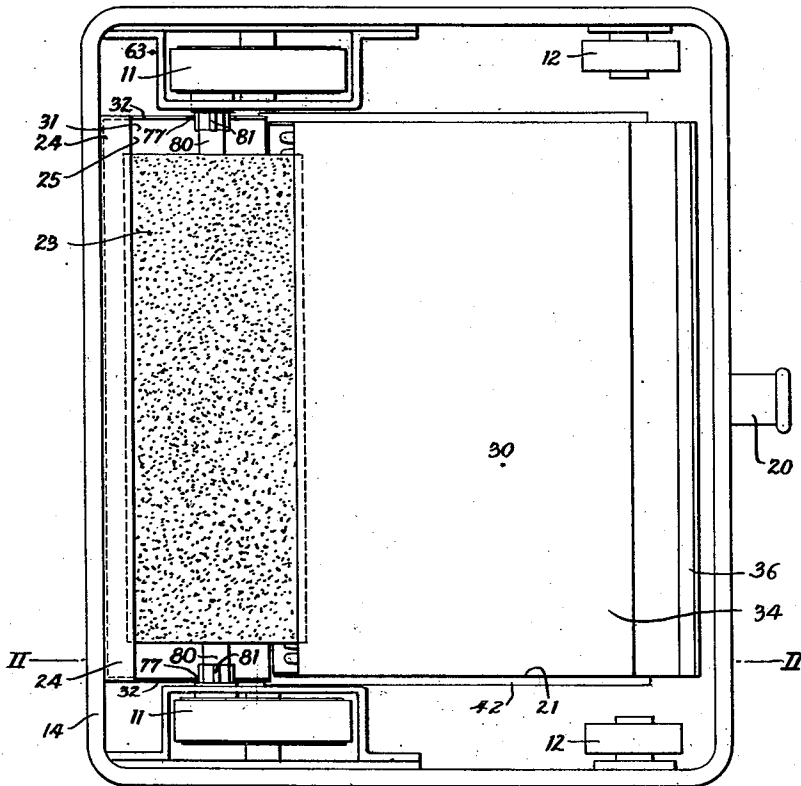


Fig. 2.

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2 SHEETS—SHEET 2

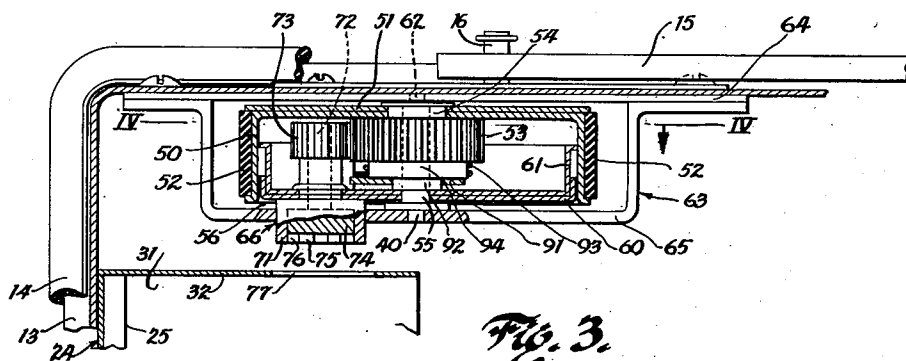


Fig. 3.

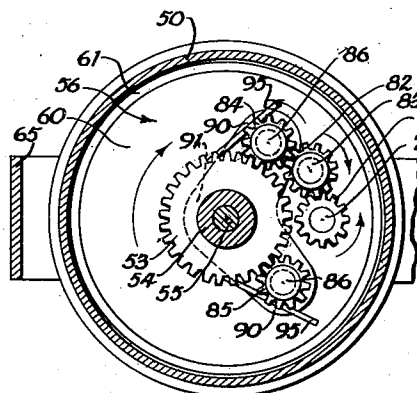


Fig. 4.

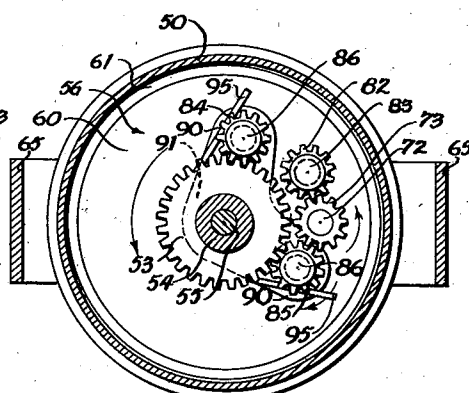


Fig. 5.

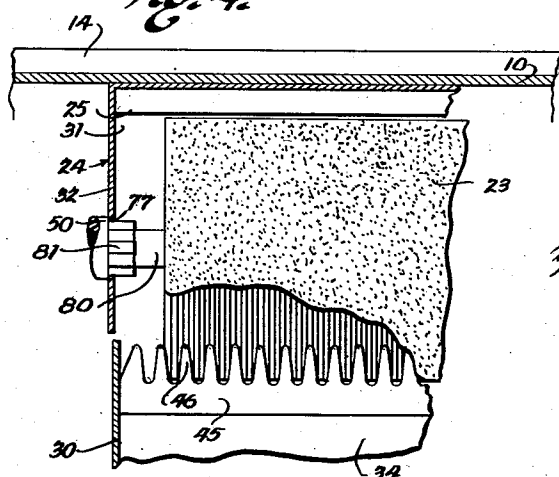


Fig. 6.

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CARPET SWEEPER

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2 Claims. (Cl. 15—48)

1

My invention relates specifically to carpet sweepers having a single brush located at one side of the sweeper casing and discharging the dust into an adjacent dust pan.

It has been found in sweepers of this type that where the dust and lint taken up by the brush is directed immediately at sweeping level into the adjacent dust pan, particles of lint and fluffy dirt are carried around with the brush and become again deposited upon the surface of the rug or carpet just cleaned. I have discovered, however, that if the dirt and lint collected by the brush are carried away from the adjacent edge of the dust pan forwardly toward the remote edge of the sweeper, upwardly with the brush, and discharges from the top of the brush into the top of the pan, the collected dirt will be permanently removed from the cleaned surface.

The principal object of my invention is to provide an improved construction in which the brush shall rotate away from the pan at cleaning level and thereby carry the dirt upwardly and over the top of the brush, depositing it well into the dust pan or dust box.

A further object is to provide a sweeper with two separate dust boxes each having an opening in its adjacent face thus forming a single continuous dust-collecting chamber.

Another object has been to make one of the dust boxes removable and to provide the forward edge thereof with a brush engaging comb, whereby any lint or fluffy dirt will be removed from the brush and thus be prevented from being carried thereby back onto the surface just swept.

Moreover, the comb is arranged at the upper edge of a retaining wall formed at the forward edge of the removable dust pan or box, thereby preventing the dust accumulated in the box from being drawn forwardly out of the box by the rotating brush or from being shaken from the pan by vibration or motion of the sweeper.

In order that the brush may rotate unidirectionally irrespective of whether the movement of the sweeper is forwardly or backwardly, I provide gear means to reverse the relative rotation of the brush and driving wheels each time the motion of the sweeper is reversed.

Futhermore, in order to conduct the dirt upwardly and around with the brush, I provide my invention with a box arranged about the forward side and top of the brush and preferably shaped concentric therewith.

The above objects and advantages have been accomplished by the device shown in the accompanying drawings, of which:

2

Fig. 1 is a bottom plan view of my invention;

Fig. 2 is a side sectional view taken on line II—II of Fig. 1;

Fig. 3 is an enlarged sectional plan view taken on line III—III of Fig. 2;

Figs. 4 and 5 show enlarged sectional views taken on line IV—IV of Fig. 3, showing the reversing and brush actuating gears in their operating positions; and

Fig. 6 is a fragmentary plan view taken on line VI—VI of Fig. 2, showing parts of the device in section and parts thereof broken away.

My improved carpet sweeper comprises a casing 10 mounted upon suitable traction wheels 11 which are located near the front of the casing 10 and upon supporting wheels 12, located near the rear thereof. The casing is provided around its periphery with an outturned edge 13 for the engagement with a buffer 14 made preferably of soft resilient material so as to prevent marring of furniture should the casing come in contact therewith. The casing is provided with a suitable ball 15 which is pivotally attached to the casing by means of pivot pins 16. The ball has a socket member 20 for the reception of a suitable handle.

The casing is provided with a top opening 21 and with a bottom opening 22. A sweeper brush 23 is mounted for unidirectional rotation along one side of the casing, and is driven by means of the traction wheel 11 through suitable gearing, to be hereinafter described. A brush box 24 is secured to the casing and is disposed about the brush 23. The brush box has its lower edge 25 extending downwardly to a point near the surface 26 of the rug or carpet which is being cleaned. This box is preferably concentric with the periphery of the brush, and the brush is rotated in such direction that the dirt removed thereby is conducted upwardly and around the inside of this box whence it is discharged into the dust box 30 to be hereinafter described. The brush box is formed with a bottom opening 31 through which the brush extends, and it is also formed with two end walls 32, arranged one at each end of the brush, so as to provide a chamber in which the brush is rotatable. Each of the end walls 32 is spaced from the side wall 33 of the casing, and the supporting wheels 11 are arranged in these spaces.

The dust box 30 is formed with a bottom wall 34, a top wall 35, and a back wall 36. A supplemental top 40 is secured to the top wall 35 and is so proportioned as to provide overhanging flanges 41 at the edges of the pan. The casing 10 is formed around the top opening 21 with a

depressed flange 42 for the reception of the flanges 41 of the auxiliary top of the dust pan, whereby when in position the top of the casing and auxiliary top will be substantially flush and thereby present a neat appearance. A latch 43 is provided preferably on the inside of the top and auxiliary walls of the dust box, whereby the box may be securely held in place. The dust box is thereby suspended within the bottom opening 22 of the casing with its forward edge in close proximity to the brush. Rising from the forward edge thereof is a backwardly inclined dust wall 44 having a comb flange 45 projecting forwardly therefrom. This flange is provided with a plurality of comb teeth 46 which project into the periphery of the brush 23 and thereby engage the bristles thereof. The parts of the dust box and casing are so designed that the flange 42 bounding the opening at the edge remote from the brush acts as a fulcrum whereby the dust box may be removed from the casing, as clearly shown in the dotted lines of Fig. 2. Each of the traction wheels 11 of my device comprises a wheel rim 50 attached to a wheel disk 51. The wheel rim is formed with suitable edge flanges between which is mounted a wheel tire 52 made preferably of flexible material, whereby traction is given to the wheel as it moves back and forth across the surface being cleaned. A driving gear 53 fixed to rotate with the wheel is disposed centrally therein, and it is formed with a supporting boss 54 disposed within a suitable aperture formed in the wheel disk and by which it is permanently secured thereto. The driving gear is formed with a central aperture for the rotative support of a wheel shaft 55. Mounted within the wheel rim so as to permit rotation of the wheel is a brush supporting shell 56. This shell is formed with a shell disk 60 and with a periphery 61. One end of the wheel shaft 55 is carried by the shell disk and is rigidly secured thereto by suitable flanges formed on the shaft. Each of the wheel shafts 55 is formed with a bearing portion 62 for supporting the wheel within a supporting bracket 63. This bracket comprises a back 64 and a yoke 65 which parts are secured together and to the side wall of the casing by suitable means.

Carried by the disk 60 of the brush supporting shell is a coupling member 66 comprising a bearing sleeve 70 secured to the disk 60 and extending into the interior of the traction wheel, and a socket portion 71 located on the outside of the disk. The bearing sleeve rotatably supports a coupling stud 72 having a brush pinion 73 secured to its inner end and a coupling head 74 secured at its outer end, said head being disposed within the socket portion 71 of said coupling member. The coupling head is formed in its outer end surface with a counterbore 75 extending from which are a plurality of equidistantly arranged slots 76. The brush 23 of my device is mounted upon a suitable shaft 80 which has its ends formed to fit into the counterbore 75 of the coupling members and which is formed with ridges 81 for non-rotative engagement with the counterbore and slots 76. The end walls 32 of the brush box 24 are each formed with recess 77 for the accommodation of the brush shaft 80 and its coupling.

Referring now to Figs. 4 and 5 where I show the gearing for connecting the traction wheels 11 with the brush 23, an idler pinion 82 is rotatably mounted upon a stud 83 suitably supported by the shell disk 60. This idler pinion is in

fixed meshing relationship with the brush pinion 73, and the axes of the brush pinion and idler pinion are equidistant from the axis of the driving gear 53 but are in non-meshing engagement therewith. Driving pinions 84 and 85 are rotatably mounted upon studs 86 one secured to each of the arms 90 of a pinion yoke 91. The studs 86 are so radially spaced with respect to the axis of the driving gear that the pinions 84 and 85 carried thereby are in constant meshing engagement with the driving gear 53. The pinions are, however, so spaced from each other that a rocking movement of the yoke is required to bring them alternately in meshing engagement with the cooperating pinions, as will hereinafter be more fully described. The pinion yoke is mounted for oscillation upon a reduced portion 92 of the driving gear 53. During the alternate rotative movements of the traction wheels, it is desirable that the pinion yoke follow such rotative movement to the limit of its back and forth oscillating movements, and to this end, I provide a friction spring 93. This spring has an annular part wound about a reduced portion 94 formed on the driving gear and it is provided with arms 95 which serve to carry the pinion yoke around with the driving gear.

As clearly shown in Fig. 4 it will be seen that when the traction wheel 11 and the driving gear 53 carried thereby are rotated in clockwise direction as indicated by the arrows in that figure, the pinion yoke 91 will be caused to rotate therewith to the limit of its respective movement owing to the action of the spring 93, thus serving to impel the yoke around with said gear until the pinion 84 is brought into meshing engagement with the idler pinion 82 causing it to rotate in clockwise direction. Since the idler pinion is at this time in engagement with the brush pinion 73 this pinion will be rotated in counterclockwise direction which will carry that portion of the periphery of the brush wheel in contact with the surface 26 forwardly toward the forward edge 25 of the brush box, thereby directing the dust and dirt upwardly within the box, over the top of the brush, and into the dust box 30. When the movement of the sweeper is reversed, the driving pinion 85 will be brought into direct meshing engagement with the brush pinion 73 as shown in Fig. 5 and serve to continue the rotation of the brush in counterclockwise direction.

When the brush is rotated as just above described, the dust and dirt will not only be carried forwardly away from the adjacent edge of the dust box 30 but upwardly over the top of the brush and between it and the brush box 24. Any lint, hair, or fluffy material picked up by the brush will be stripped from it by means of engaging teeth 46 of the comb and thereby deposited in the dust box.

Obviously, some modifications of the details herein shown and described may be made without departing from the spirit of my invention or the scope of the appended claims, and I do not, therefore, wish to be limited to the exact embodiment herein shown and described.

What I claim is:

1. A carpet sweeper comprising a casing of rectangular frame form open at the bottom thereof and provided at the top thereof with an opening extending short of the side walls thereof, a brush rotatably mounted within said casing to extend transversely thereof but short of the opposite side walls thereof and substantially longi-

5

itudinally coextensive with the lateral dimension of said top opening in said casing, a dust box and a brush box mounted within said casing, said boxes having facing open side portions and aligned end walls when mounted within the casing to define a single continuous chamber substantially enclosing said brush, said dust box having a bottom wall to receive accumulations of dirt swept up by said brush and a top wall defining a closure for the top opening of said casing, said dust box being detachably mounted within said casing so as to be withdrawable therefrom through the top opening of said casing for dirt removal purposes, the edge portion of the casing at the rear side of said top opening acting to support the rear edge of said dust box and acting as a fulcrum to support the latter as it is swung between mounted and dismounted positions relative to the casing, said brush box having a front and top wall structure curved substantially concentrically with said brush for dust guiding purposes, said brush box being open at its bottom for extension of the brush therethrough, and brush driving means disposed within the spaces between the casing side walls and the end walls of said boxes.

2. A carpet sweeper comprising a casing of rectangular frame form open at the bottom thereof and provided at the top thereof with an opening extending short of the side walls thereof, a brush rotatably mounted within said casing to extend transversely thereof but short of the opposite side walls thereof and substantially longitudinally coextensive with the lateral dimension of said top opening in said casing, a dust box and a brush box mounted within said casing, said boxes having facing open side portions and aligned end walls when mounted within the casing to define a single continuous chamber substantially enclosing said brush, said dust box having a bottom wall to receive accumulations of dirt swept up by said brush and a top wall defining a closure

6

for the top opening of said casing, said dust box having a comb device formed at its front edge to engage said brush for cleaning the latter and said dust box being detachably mounted within said casing so as to be withdrawable therefrom through the top opening of said casing for dirt removal purposes, the edge portion of the casing at the rear side of said top opening acting to support the rear edge of said dust box and acting as a fulcrum to support the latter as it is swung between mounted and dismounted positions relative to the casing, said brush box having a front and top wall structure curved substantially concentrically with said brush for dust guiding purposes and being open at its bottom for extension of the brush therethrough and having a front bottom edge portion extending down below the elevation of the front bottom edge portion of said casing, and traction wheel and gear means disposed within the spaces between the casing side walls and the end walls of said boxes for driving said brush unidirectionally irrespective of the direction of movement of the sweeper.

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