

O. R. CHAPLIN.
CARPET SWEEPER.
APPLICATION FILED JUNE 6, 1904.

4 SHEETS—SHEET 1.

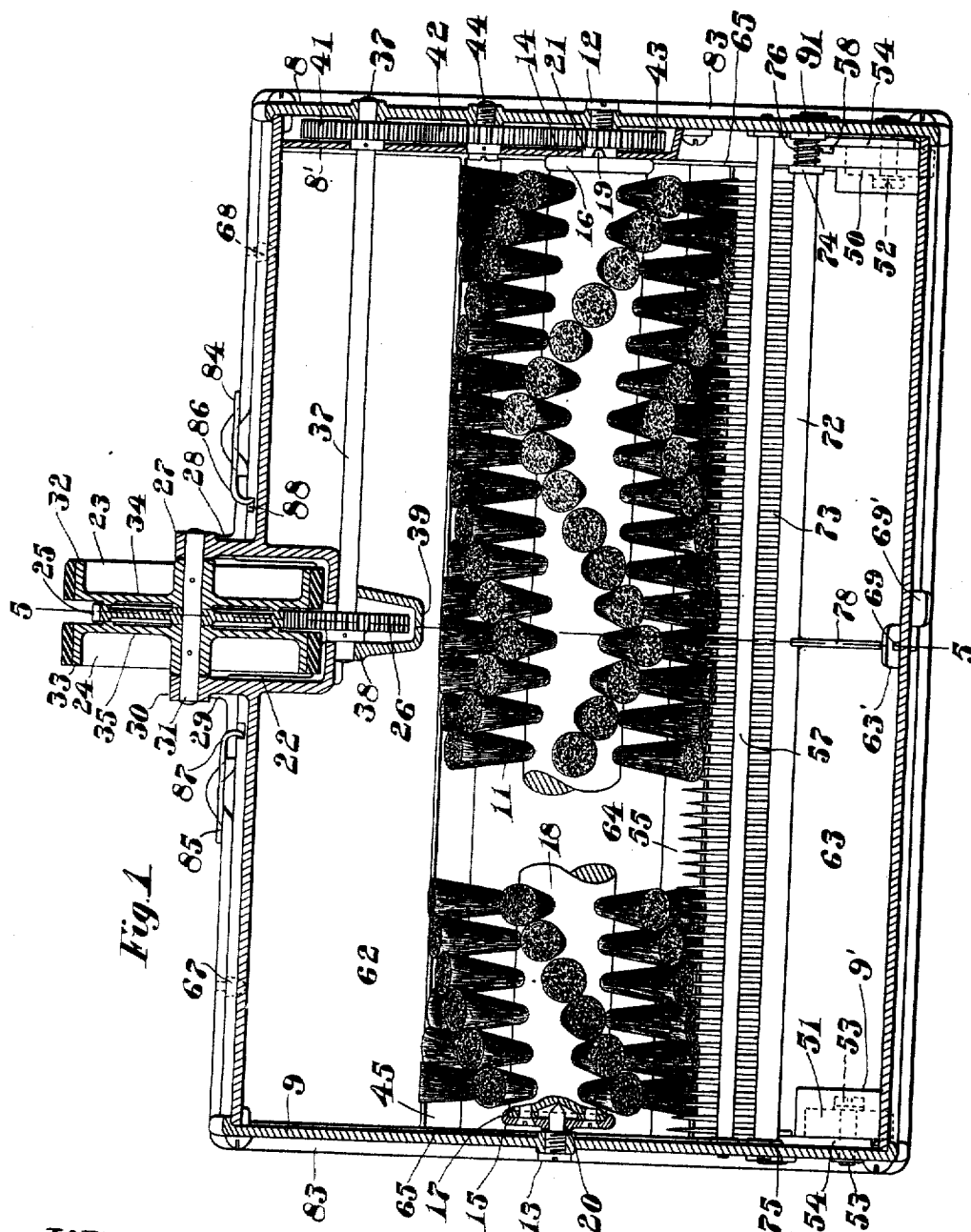


Fig. 1.

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by Charles F. A. Smith
Atty.

No. 804,213.

PATENTED NOV. 14, 1905.

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4 SHEETS—SHEET 2.

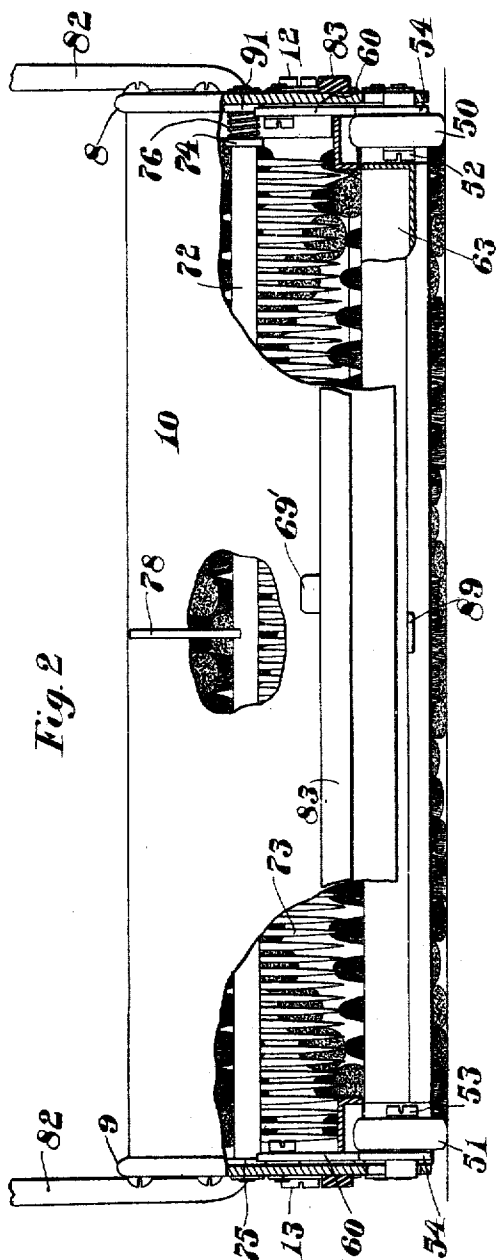


Fig. 2

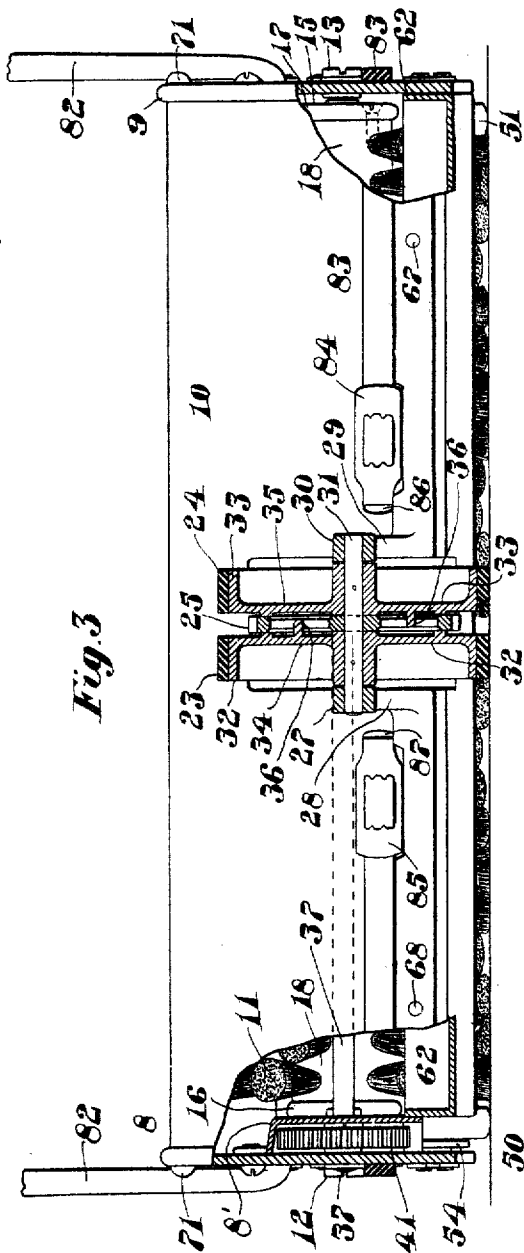


Fig. 3

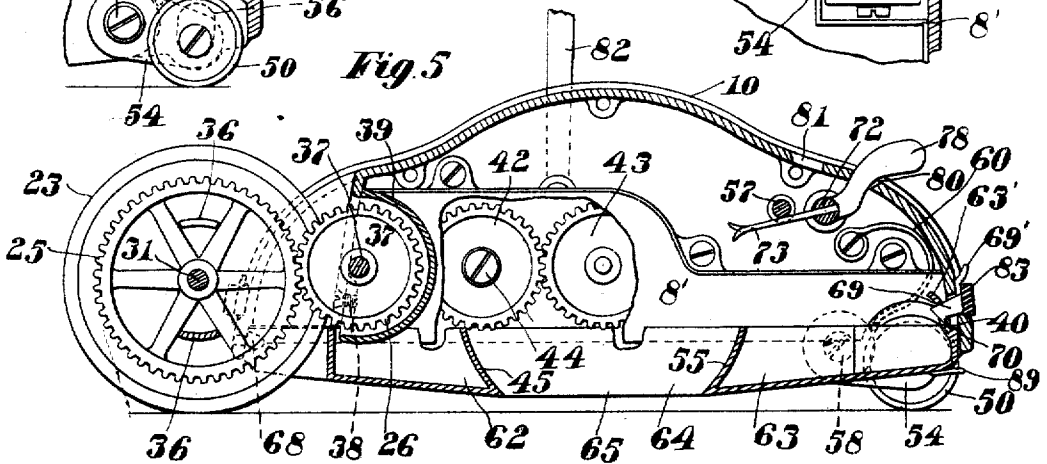
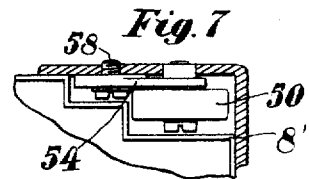
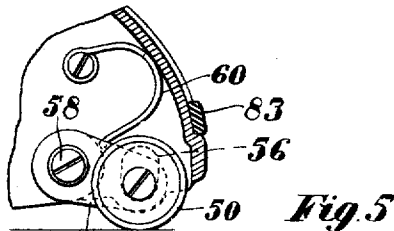
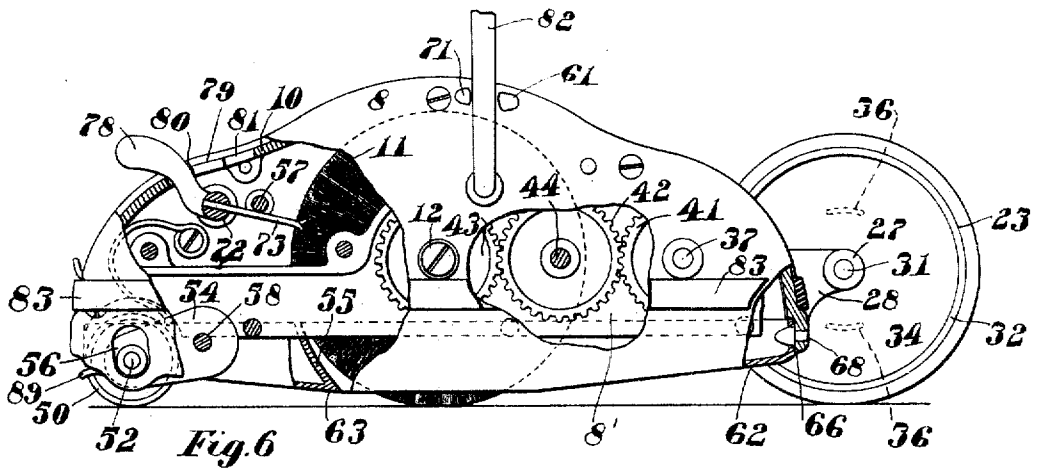
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4 SHEETS—SHEET 3.

Fig. 4



Witnesses:

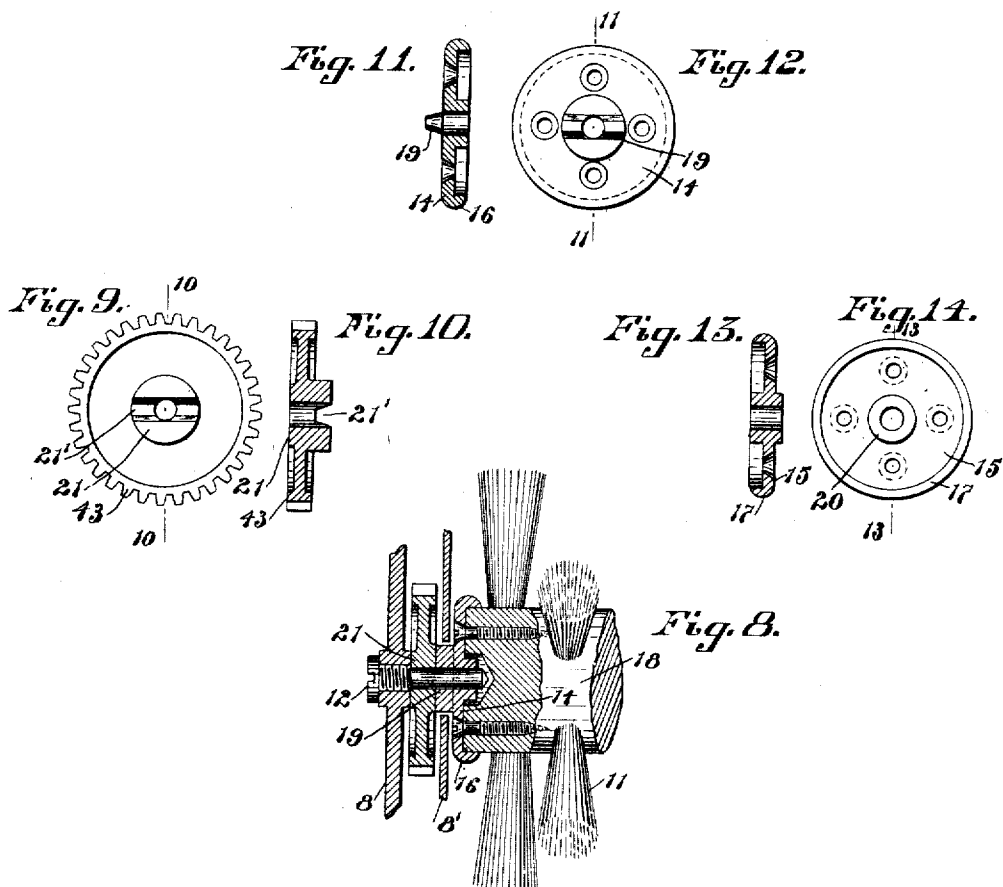
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4 SHEETS—SHEET 4.



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UNITED STATES PATENT OFFICE.

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CARPET-SWEEPER.

No. 804,213.

Specification of Letters Patent.

Patented Nov. 14, 1905.

Application filed June 6, 1904. Serial No. 211,253.

To all whom it may concern:

Be it known that I, ORRIL R. CHAPLIN, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Carpet-Sweepers, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to certain improvements in carpet-sweepers, particularly carpet-sweepers of that class which comprise a casing, a rotating brush within the casing with means for quickly and easily adjusting the pressure of the brush upon the carpet, driving-wheels in the rear end of the casing which have contact with the floor, and driving connections between said wheels and the brush for rotating the latter.

The invention relates to novel means for removing pieces of thread, string, or other fibrous material that may become entangled with the bristles of the brush, so that the rotary brushes are kept clean, also to a novel form of sweeping-pan and its connections with the sweeper, whereby the dirt is easily removed, and to various other improvements, as will hereinafter appear, designed to lighten the labor incidental to the use of carpet-sweepers.

The invention consists in the combination of elements and in certain parts of construction entailed in the combination of said elements to obtain the desired result.

A full understanding of the invention can best be given by a detailed description of a preferred construction embodying the various features of the invention, and such a description will now be given in connection with the accompanying drawings, and I attain my object by the mechanism there illustrated showing such preferred construction, and the features forming the invention will then be specifically pointed out in the claims.

In said drawings, Figure 1 is a plan view of the apparatus, partly in section, the upper side of the casing being removed. Fig. 2 is a front side elevation of the carpet-sweeper, part of the casing being broken away. Fig. 3 is an elevation of the rear of the carpet-sweeper, part of the casing being broken away and the driving-wheel being in section. Fig. 4 is an elevation of the gear end of the same, part of the casing being broken away and part

of the frame being in section. Fig. 5 is a sectional elevation on the line 5 5 of Fig. 1, the brush having been removed. Figs. 6 and 7 are details of forward rollers. Fig. 8 is a sectional view of one end of the brush-core. Figs. 9 to 12 are details of the same. Figs. 13 and 14 are views of the circular disk at the other end of the brush-core.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

The carpet-sweeper is of that type in which a revolving brush within a casing is driven by a series of gears in one side of the casing, said gears, part of which are preferably of fibrous material, being operated by a shaft within the casing rearward of the brush and extending parallel with the core of the brush having its gear in mesh with a gear driven by the drive-wheels in the rear of the rotary brush.

As shown in the drawings, the inclosing casing consists of the end walls 8 and 9 and the top wall 10, which extends, as shown in Figs. 4 and 5, entirely over the top, front, and rear sides of the machine and incloses all of the mechanism of the carpet-sweeper except part of the drive-wheels and their gear. The ends and top wall are preferably made of rigid material, such as sheet metal or aluminium, although they can be made of wood, while the pan of the sweeper is preferably made of tin or galvanized iron.

The numeral 11 designates a rotating brush, mounted horizontally in the casing and projecting at its lower portion below the casing, so as to have contact with the floor. (See Figs. 2, 3, and 4.) The top wall 10, which is designed to cover the rotating sweeping-brush 11, has the end plates 8 and 9 preferably screwed thereon, and the rotative brush 11 is mounted within the frame by screw-studs 12, 13, extending inwardly through the end walls 8 and 9.

The core 18 of the brush 11 is provided at its end nearest the gear mechanism with a circular disk 14, which has a flange or rim 16 to inclose this end of the brush-core 18, and it is fastened to the brush-core 18 by suitable means. On the opposite end of the core 18 is secured a similar circular disk 15, having a similar flange or rim 17. The circular disk 14 next to the gears is provided with a lug 19,

extending outward to fit into a notch or slot 21' in the end of the gear-hub 21, whereby the brush 11 is driven. The brush 11 is journaled at this end by a screw-stud 12, screwed into and through the end wall 8 of the casing and extending inwardly through the gear and into the journal-bearing in the circular disk 14 on the end of the brush-core 18. The other end of said brush 11 is journaled on a similar screw-stud 13, screwed into the other end wall 9 of the casing and its stud end extending inwardly into journal-bearing 20 in the circular disk 15 on the end of brush-core 18. Said brush is removably supported in the casing, whereby the same may be detached therefrom when such detachment is desirable by first detaching the sweeping-pans and then taking out the screw-stud 13, that passes through the end plate 9 into the journal-bearing 20 of the circular disk 15 on the end of the brush-core 18, and this will allow of this end of the core and its brush dropping down and being removed from below without disturbing the gears. The sweeping-pans 62 and 63 will have to be taken out from the casing to allow the brush to be taken down and out.

The center of the rear side of the upper casing 10 is cut away, as at 22, far enough to allow a portion of the drive-wheels 23 and 24 and their spur-gear 25 to extend inwardly far enough to mesh with the driving-pinion gear 26, journaled on the inside of the frame.

There is extending at the opening in the center rearwardly from each side of the upper main casing or frame 10 and at right angles to it two horizontal parallel projecting arms or brackets 28 and 29, with bearings 27 and 30 at their outer end to support the driving-shaft 31, that carries the two main supporting driving-wheels 23 24, located between the said arms 28 and 29 and which impart motion to the series of gearing that drives the revolving brush. The two supporting drive-wheels 23 and 24, which are suitably mounted in the center of the rear side of the main upper casing, are provided on their peripheries with yielding friction-tires of rubber or other suitable material.

The supporting drive-wheel 23 consists of a thin rim 32, which is provided with a web 34 on the inner end crosswise, forming at the center a hub, which is attached to the main shaft 31. On the inner side of the web is a lug 36, extending inward between the spokes of a driving spur-gear 25, to serve as a clutch to cause the gear to revolve with the drive-wheel in going backward or forward. The supporting drive-wheel 24 is constructed similar to the drive-wheel 23 and has the thin rim 33, with web 35, having a similar inward-extending lug 36. Between these drive-wheels 23 and 24 on the drive-shaft 31 is a driving spur-gear 25, which passes through the slot or opening 22 in the casing and meshes into the pinion 26, fastened on the driving-shaft 37 on

the inside of the framework, and a small casing 39 covers the pinion-gear near the center, so that dust and dirt from the brush cannot reach it. This shaft is journaled at one end in the casing 39 and then extends along on the inside of the main casing and is journaled at the other end in the side wall or end plate 8 of the casing, and there is secured to this end of the driving-shaft another spur-gear 41, meshing into an intermediate gear 42 and this gear into a gear 43, that drives the revolving brush 11. On the inner side is a plate or casing 8', protecting this gearing and the roller 50 from the sweepings of the brush, and at the other end on the inner side is a casing 9', protecting the roller 51.

The noise occasioned by the use of gears in carpet-sweepers has been found very objectionable; but by experimenting I have found that the gears can be made to run noiseless by using fiber or rawhide gears, and I also find that the same results are obtained if fiber gears are inserted between the metal gears, and in my machine I therefore preferably have the pinion 26 and the spur-gear 42 of fibrous material.

The intermediate gear 42 is journaled to the end wall 8 by a stud-pin 44, screwed in the end wall 8 of the frame, and the gear 43, that revolves the brush, is journaled on a screw stud-pin 12, extending from the outside and inwardly through the end wall 8, as hereinbefore explained.

To keep up the front side of the casing or frame 10 from the floor or carpet, there are in the front part of the machine supporting-rollers 50 and 51, of rubber or other suitable material, one at each corner or end of the casing, and these rollers are journaled on studs 52 and 53, each of which is screwed into one end of an arm or lever 54, with a hub extending outwardly and through elongated slots 56 in the end plates 8 and 9 to allow the hubs, levers, and rollers to move freely a short distance up and down. The other end of these levers 54 are journaled or pivoted on studs 58 to the end plates. Curved tension-springs 60, screwed, as at 60', to the end walls, have a free end extending downward and bearing on the levers 54, so that the free end of these levers where the roller is journaled is pressed down to the bottom of the slot in the end plates. This is to make a yielding pressure to the supporting-rollers in case of an uneven surface of the carpet or whereby the frame may be slightly depressed to vary the pressure of the brush on the carpet.

At the lower edges of the top wall or main casing 10 is located and detachably secured two sweeping-pans 62 63, longitudinally arranged one on each side of the brush in position to receive its sweepings from the brush. Centrally between the sweeping-pans there is provided a longitudinal opening 64, through which extends the brush. On each side of the

opening are outwardly and upwardly inclined flanges 45 and 55, up which the brush throws the sweepings into the pans 62 63, and the two pans are preferably connected in one piece by ties or strips 65, one at each end of the pans across the longitudinal opening. The sweeping-pans when connected by these ties or strips 65 are inserted into the casing from the front and below the casing and extend across to the rear of the casing, which at its lower edge has two pointed pins or lugs 67 68, extending inwardly to enter the two corresponding holes 66 in the rear of the rear pan, so as to hold the rear edge of the pans up in place. The front edge of the forward pan is then moved upward until its upward and inwardly extending arm 63', containing the slot 70, receives the inwardly-projecting detent or latch 69. The latch 69 projects through an opening 40 in the front side of the casing near the center of said casing, forming a latch for locking the pans in place, and this latch is pushed and held in locking position by the buffer-strip 83. The pans are released by pulling or pressing out the free end 69' of the latch, which withdraws the latch 69 from the slot 70, and then pressing down upon the shoulder 89 the front edge of the pans is lowered and the pans easily drawn out from beneath the sweeper.

For cleaning the brush 11 from the threads, &c., after each sweeping there is located on the inside of the framework a cleaning device running across or lengthwise of the casing and parallel to the brush, and it consists of a rocker-shaft 72, which carries at its ends the bearing-trunnions 75, which are pivoted in the end plates and have a rocking and sliding bearing endwise. On one end of the rocker-shaft 72 is placed a spiral tension-spring 76 between a shoulder 74 of the shaft 72 and the collar 91, attached to the side wall 8, causing an endwise pressure on the rocker-shaft 72. This rock-shaft carries a series of pointed wires or teeth 73, inserted therein to cover the entire length of the brush on the shaft. The ends of the wires or teeth of this cleaning device, which acts as a rake to the brush, slightly enter the rotary brush to remove the sweepings that may adhere to the brush after each sweeping. The points of the teeth are slightly curved alternately to either side, as clearly shown in Fig. 5, so that when the brush 11 revolves in either direction the curved points will pick or rake off the remaining sweepings, including all hair, strings, &c., which may have become entangled within the bristles of the brush. Attached to the center of the rocker-shaft 72 is a lever or handle 78 to work the cleaning device to throw it in and out of contact with the brush 11, but is to be used only after each sweeping is finished, and in the top of this casing 10 is a small opening or slot 79, through which the lever passes outwardly, and at one side of the

slot are two notches 80 81 for the lever to rest in, and by pressing on the lever sidewise toward the spring on the trunnion the lever will leave the notch in which it is resting and may be moved over to the other notch, and the spring will keep it in place, so that the teeth of the rake can be kept in or out of contact with the brush, as desired. To prevent the teeth from striking the inner upper side of the top wall 10, a bar 57 is extended across from the end wall 8 to the opposite wall 9 above the teeth 73.

The bail 82, the upper part of which I have deemed it unnecessary to show and which may be of any preferred or desired construction, is pivoted to the end walls 8 and 9 of the casing near the top of the end walls and within a short distance of the center to the rear of the end walls of the casing. The end walls are provided with curved cam projections or lugs 61 and 71, which extend laterally outwardly therefrom and are adapted to engage the parallel ends of the bail 82 when the bail is raised into a vertical position, as it is a desirable position to occupy when the sweeper is not in use, while the location of the bail out of the center is made to bring the handle and bail pressure more nearly over the driving-wheel.

A buffer-strip 83, of rubber or other suitable material, extends nearly around the sweeper in horizontal alinement with the sides and ends of the sweeper at or near the lower edge of the framework. This buffer-strip 83 has attached to each of its ends a buckle or clasp 84 85, with inwardly-curved hooks 86 87, respectively, on the end of each clasp. One of these hook ends is entered or hooked into a small opening 88 in the rear side of the casing near one of the driving-wheels, and the rubber buffer is drawn tightly around the sweeper until it reaches another opening in the rear of the casing near the other side of the other drive-wheel and there is hooked. The said buckles or clasps are preferably made from sheet metal by a stamping operation which are stamped all in one piece having two openings to pass the rubber strip through to fasten it. On the edges of these openings are barbed points to enter the rubber strip to keep it from slipping. (See Fig. 3.)

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A carpet-sweeper having a rotating sweeping-brush in combination with a swinging comb having its teeth provided with curved outer ends alternately pointing in opposite directions.

2. In a carpet-sweeper the combination with a frame having parallel outwardly-projecting arms of a shaft journaled in the arms, driving-wheels carried by the shaft, each driving-wheel having a web connecting the rim and hub, each web having an inward-extending lug, a spur-gear mounted on the shaft and having the lugs

in mesh with its spokes, a horizontal shaft having on one end a pinion in mesh with the spur-gear, a brush mounted in the frame, and gears connecting the other end of the horizontal shaft
5 and the brush.

3. In a carpet-sweeper the combination with a frame having an opening in its rear side, of outwardly-extending arms projecting rearward of the frame and on each side of the
10 opening, bearings on the end of each arm, an axle mounted in the bearings and carrying a pair of drive-wheels, lugs projecting from the side of each drive-wheel toward the other drive-wheel, a gear on the axle between the
15 drive-wheels having its sides in contact with the lugs, inwardly-projecting arms on each side of the opening, a shaft within the frame running parallel with the axle and mounted at one end in these arms, a pinion carried by
20 the shaft in mesh with the gear, the shaft being mounted at its other end in the end wall of the frame, a spur-gear carried on this end of the shaft, a brush-core mounted within the frame parallel with the shaft and having at one
25 end a gear, and a gear in mesh with the spur-gear and gear of the brush-core whereby the brush is driven upon movement of the drive-wheels.

4. In a carpet-sweeper the combination of
30 a frame consisting of parallel end walls, a convex upper wall supported by the end walls and having at its rear an opening for receiving the drive-wheels, arms projecting outward from the upper wall on each side of the opening, a brush supported in the frame, a driving-shaft mounted within the frame parallel
35 to the brush, a series of connecting-gears mounted on one of the end walls whereby the brush is operated by the driving-shaft, an inner casing protecting the gears from the sweepings, a pinion mounted on the other end of the driving-shaft, a casing protecting the pinion from the sweepings, drive-wheels mounted in the arms and extending within the
40 opening a gear carried by the drive-wheels and in mesh with the pinion, an inner casing protecting the drive-wheels from the sweep-

ings and having an opening through which extends the pinion.

5. In a carpet-sweeper having a frame, in
50 combination with a brush-core of circular disks fastened on each end of the core, and each having a hub, a stud screwed through each end of the frame extending into a hub, a gear loosely mounted on one of the studs and hav-
55 ing a notch in its hub, an outwardly-extending lug on the disk nearest to the gear and extending into the notch, driving-wheels in the rear of the frame and means connecting the gear and driving-wheels.
60

6. In a carpet-sweeper having a frame, a brush mounted within the frame, means for rotating the brush, a rocker-shaft mounted within the frame forward of the brush and having a series of teeth with curved outer
65 ends but which when in contact with the bristles of the brush have their body portion pointed toward the center of the core of the brush.

7. In a carpet-sweeper the combination with
70 a rotating brush and means for operating the brush, of a rocker-shaft forward of the brush, wires carried by the rocker-shaft the outer ends of which are alternately bent up and down, an operating-handle for the rocker-
75 shaft for throwing the wires in contact with the brush.

8. In a carpet-sweeper provided with a frame, a shaft mounted therein, teeth carried by the shaft and having curved outer ends,
80 said frame being provided with a slot having upper and lower notches, a lever attached to the shaft and extending through the slot and adapted to rest within the lower notch when the teeth are in operative position, and within
85 the upper notch when not in use and a spring for pressing the lever into either notch.

In testimony whereof I affix my signature in presence of two witnesses.

ORRIL R. CHAPLIN.

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CHARLES F. A. SMITH.