

Feb. 27, 1923.

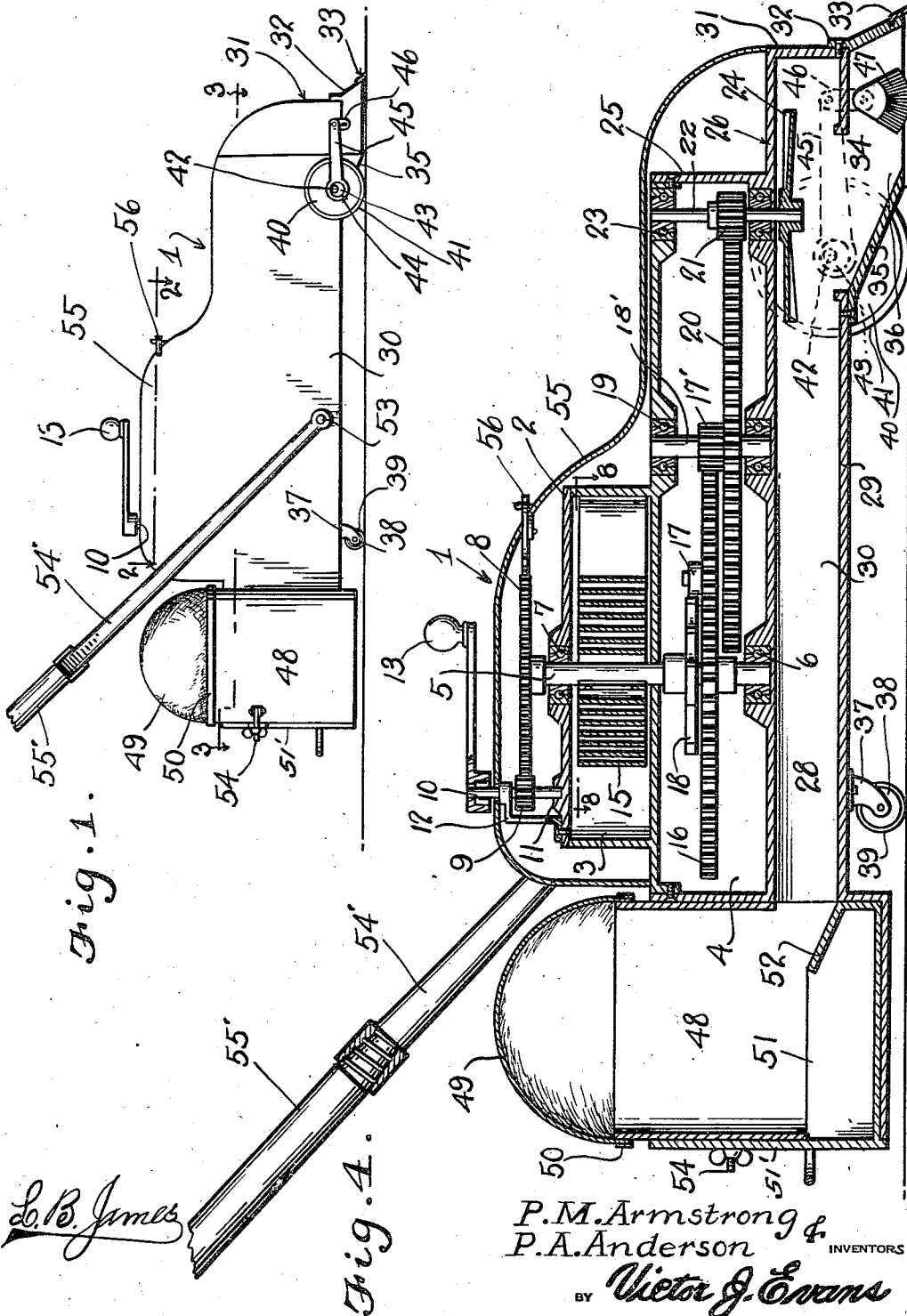
P. M. ARMSTRONG ET AL

1,447,115

SWEEPER

Filed Sept. 25, 1920

4 sheets-sheet 1



WITNESS:

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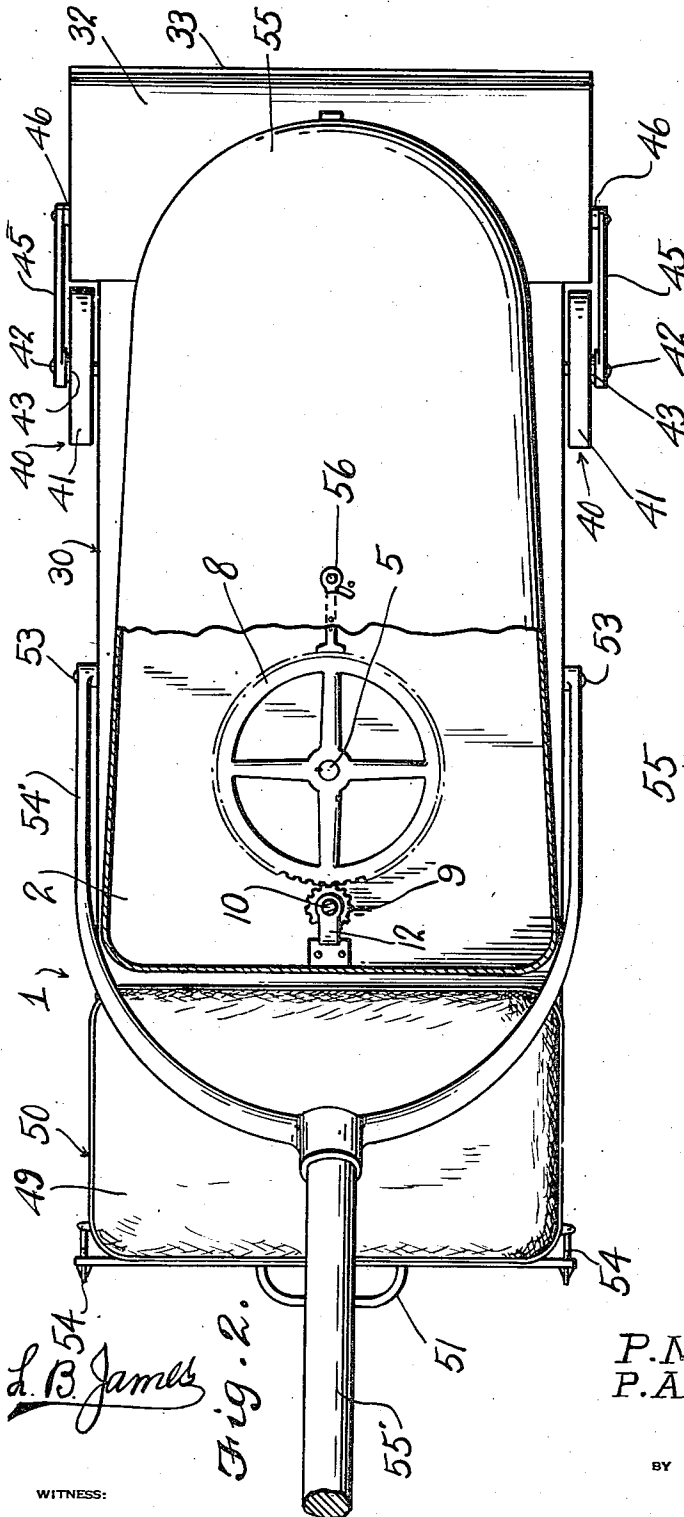


Fig. 2.

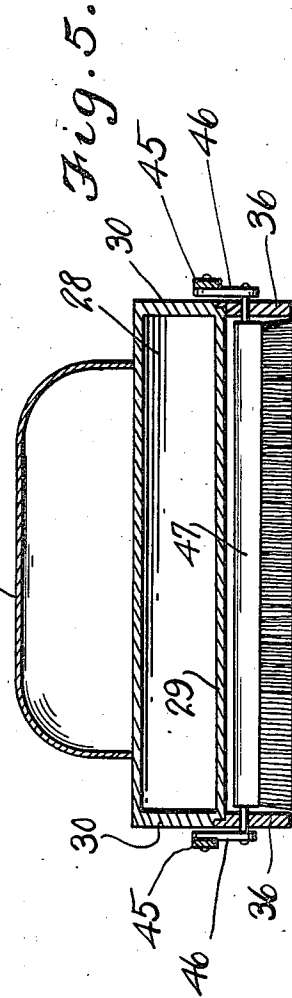


Fig. 5.

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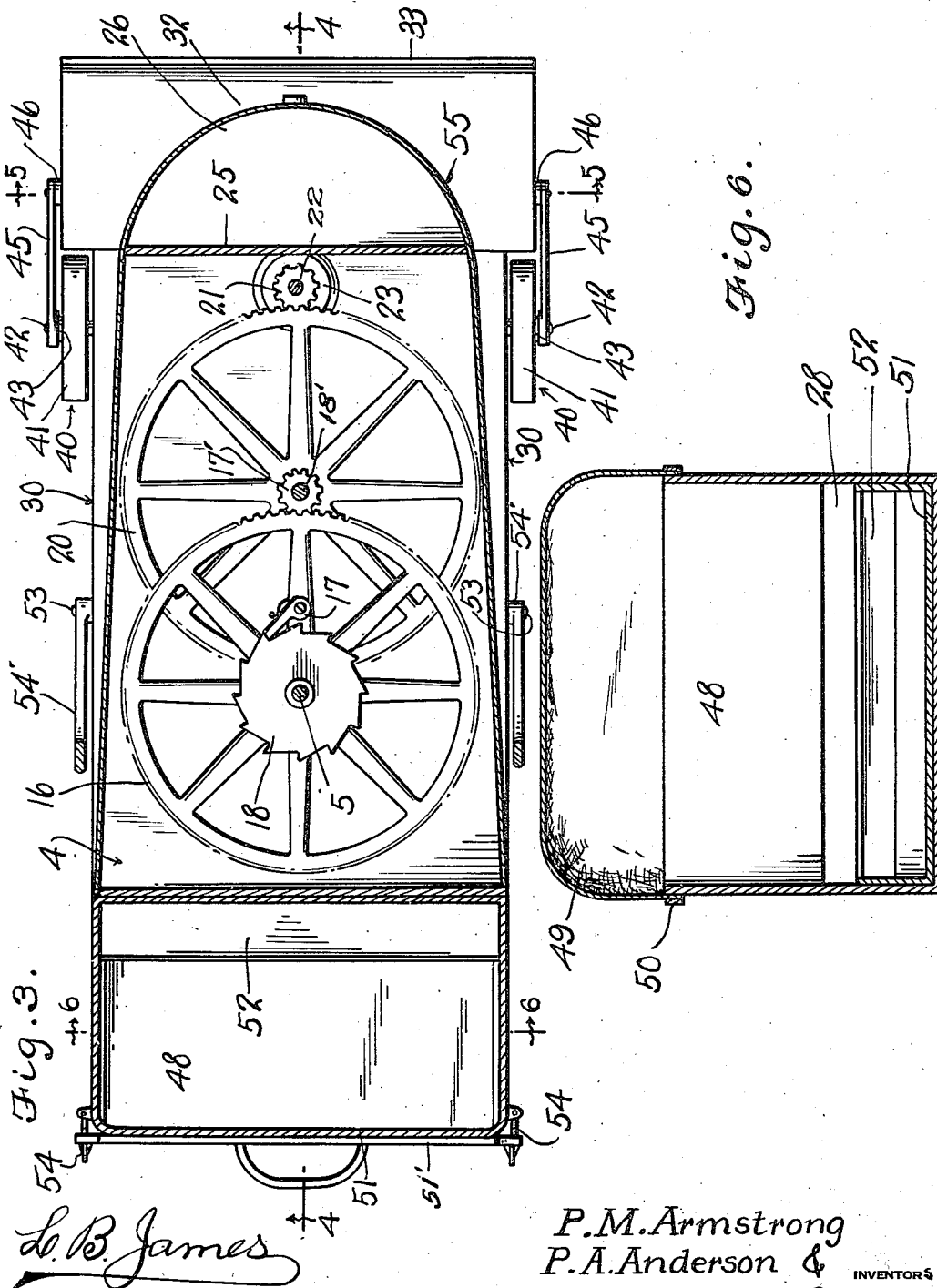
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WITNESS:

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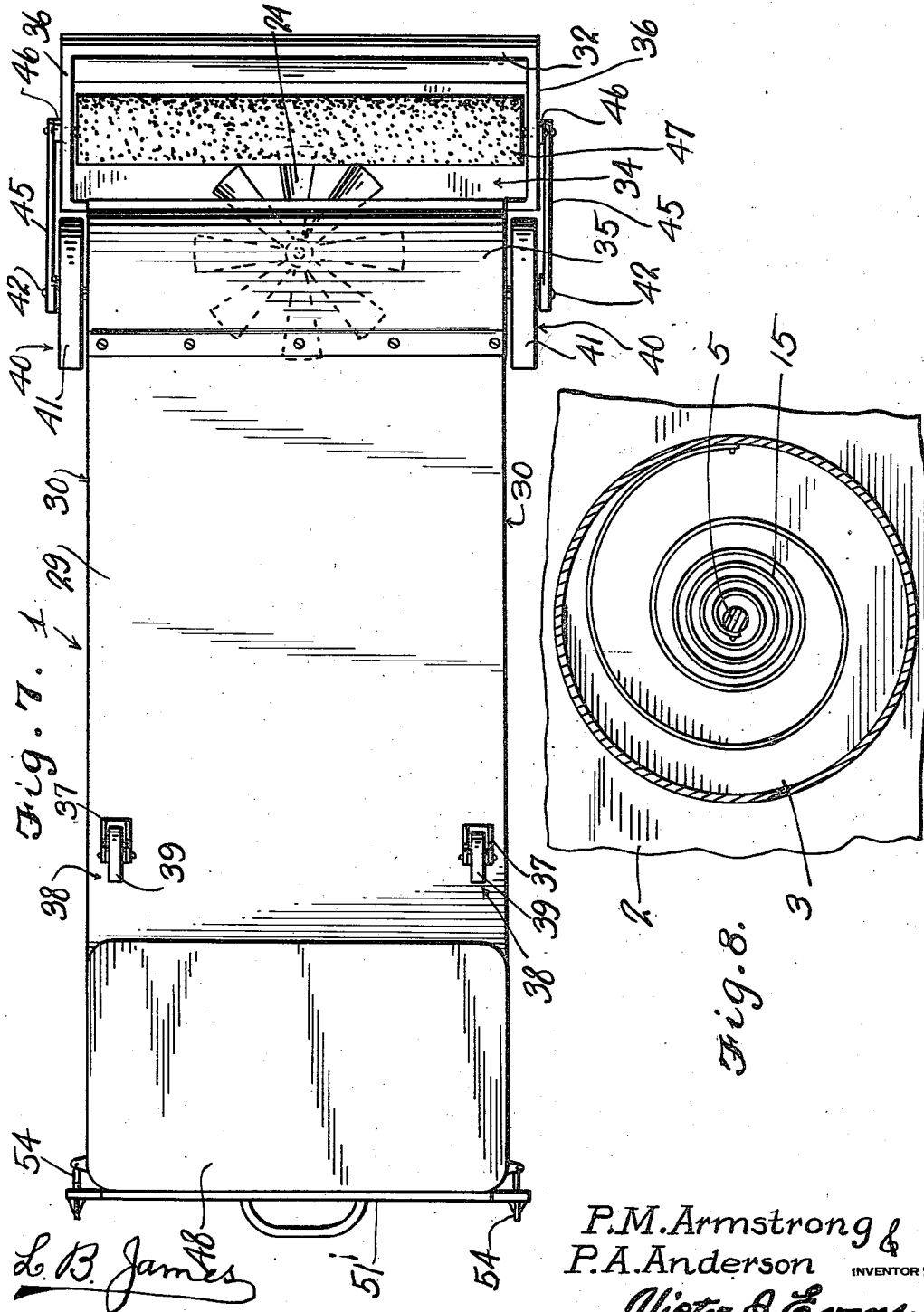
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UNITED STATES PATENT OFFICE.

PETER MARSHALL ARMSTRONG AND PETER ARMSTRONG ANDERSON, OF HAMILTON,
ONTARIO, CANADA.

SWEEPER.

Application filed September 25, 1920. Serial No. 412,709.

To all whom it may concern:

Be it known that we, PETER MARSHALL ARMSTRONG and PETER ARMSTRONG ANDERSON, citizens of the Dominion of Canada, residing at the City of Hamilton, in the county of Wentworth and Province of Ontario, have invented new and useful Improvements in Sweepers, of which the following is a specification.

Our present invention has reference to a floor or carpet cleaning device.

An object is the construction of a vacuum cleaner in which a spring motor is provided in the casing of the machine for actuating the fan that is arranged directly over the mouth of the machine to suck the dirt therein and to deliver the same through a suitable passage to a bag in the rear of the machine, thus rendering the device particularly adaptable in rural districts.

A further object is the provision of a vacuum cleaner in which the dust conduit is located below the portion of the casing carrying the motor, so that dust entering the machine cannot contact with the parts of the motor or interfere with the operation thereof.

The foregoing, and other objects which will appear as the nature of the invention is better understood, may be accomplished by a construction, combination and operative arrangement of parts, such as is illustrated in the drawings accompanying and forming part of this application.

In the drawings:—

Figure 1 is a side elevation of a vacuum cleaning machine constructed in accordance with this invention.

Figure 2 is a sectional view approximately on the line 2—2 of Figure 1.

Figure 3 is a sectional view approximately on the line 3—3 of Figure 1.

Figure 4 is a sectional view approximately on the line 4—4 of Figure 3.

Figure 5 is a sectional view approximately on the line 5—5 of Figure 3.

Figure 6 is a sectional view approximately on the line 6—6 of Figure 3.

Figure 7 is a bottom plan view of the improvement.

Figure 8 is a sectional view on the line 8—8 of Figure 4.

Referring now to the drawings in detail, our improved cleaning device is broadly indicated by the numeral 1, and may be of

any desired size, shape or proportion, and likewise may be constructed of any desired material.

The improvement contemplates the employment of a motor casing, which is broadly indicated by the numeral 2. The casing is divided into two compartments, the upper compartment being of a less length than the lower compartment, and is indicated by the numeral 3, the lower compartment being indicated by the numeral 4. Passing through suitable openings in the compartments 3 and 4 is a shaft 5. This shaft has its lower end journaled in anti-frictional bearings 6 on the lower wall of the compartment 4, and likewise the shaft is engaged by anti-frictional bearings 7 arranged on the top of the compartment 3. The shaft, at its upper end has secured thereon, a toothed wheel 8 that is engaged by a pinion 9 on a stub shaft 10 journaled in bearings 11 in the top wall of the compartment 2 and in a bracket 12 that is secured to the said top of the compartment. The shaft 10 has its outer end engaged by a handle 13.

The compartment 3 contains the spring 15 that has one of its ends secured to the shaft 5 and its other end secured in the said compartment. Therefore this compartment may be referred to as the spring compartment. The compartment 4 has arranged therein a train of gears which actuate the suction fan, and thus this compartment may be referred to as the gear compartment. On the shaft 5, in the gear compartment 4, there is a comparatively large gear wheel 16 that is loosely and freely mounted on the said shaft. The gear 16 carries a pivoted dog 17 that engages with the teeth of a ratchet wheel 18 that is keyed or otherwise secured to the shaft 5. By this arrangement, it will be seen that the gear 16 can be turned by the shaft 5 only in one direction.

The gear 16 meshes with a pinion 17' secured on a shaft 18' in the gear compartment. The shaft 18' is journaled in anti-frictional bearings arranged in the upper and lower compartments as indicated by the numeral 19. The pinion 17' is secured to or may be integrally formed with a gear 20 that is in mesh with a pinion 21 adjacent to the front end of the gear compartment 4. The pinion 21 is secured on a shaft 22

that is journaled in anti-frictional bearings 23 at the upper and lower portions of the casing 4. The shaft 22 projects through an opening in the bottom of the gear compartment and has secured thereto a suction fan 24. The lower wall of the gear compartment projects a suitable distance beyond the front wall 25 of the said compartment, and for distinction, this projecting portion is indicated by the numeral 26. The lower wall of the gear compartment provides the upper wall of the dust duct 28. The lower wall of this duct is indicated by the numeral 29, and the side walls 30 may be arranged in a line with or be provided by projecting the side walls of the gear compartment 4. Preferably, but not necessarily, the spring compartment 3 is round in plan.

The front wall of the dust duct 28, is indicated by the numeral 31 and is provided, at its lower portion, or the portion thereof below the floor 29 with a depending portion in the nature of an apron 32. Preferably this apron has its lower edge provided with a compressible facing 33 which, if desired, may be continued around the suction mouth of the device. The suction mouth is provided by forming an opening 34 in the floor 29 of the dust compartment, adjacent to the forward end of the device and directly below the suction fan 24. The rear wall of the opening 34 has a downwardly extending inclined directing plate 35 and side members 36 connect the ends of the apron with the ends of the director plate or member 35. The lower wall or floor 29 of the dust duct has secured thereon, adjacent to the rear of the device, swiveled bearing brackets 37 for the shafts of the rear supporting rollers 38. These rollers have tires of compressible material, as indicated by the numeral 39. The wheels 40, that support the front end of the device have compressible treads 41 and are secured on stud shafts 42 journaled in the sides 30. On the portion of each shaft that is arranged in the dust duct there is excentrically secured a wheel or roller 43 that is received in a round bearing opening 44 on the inner ends of arms 45. The arms 45, at the forward ends thereof have pivotally secured thereto depending links 46. The links are pivotally supported on the sides of the device and have their lower ends secured to trunnions provided on the ends of the head of a brush member 47. The brush member is arranged in the mouth of the device. It will be obvious that when the device is propelled the turning of the wheels 40 will revolve the shaft 42 which, incident to its eccentric connection with the arms may impart an oscillatory or sweeping movement to the brush. The brush thus stirs up the dirt in the mouth of the device so that the same will be sucked into the duct

28 by the fan 24 and forced through the said duct to the rear of the machine into a dust box 48. The dust box 48 has an open top which, however, is normally closed by a dome shaped top which is formed of a very fine mesh and which provides an air vent to the box. The air vent is indicated by the numeral 49. Preferably the box 48 is round in plan, as is also the vent 49. This permits of the edges of the vent being received over the mouth of the box, and the numeral 50 designates spring or elastic means for holding the vent member on the box.

In the box there is a drawer 51. This drawer has its inner end provided with an inclined transversely arranged plate 52 that is in the nature of a deflector. The vent 49 permits of a circulation of air through the duct 28 and through the box 48. The mesh of the vent is sufficiently close to prevent particles of dust passing therethrough, and dust accumulating thereon may be readily removed therefrom by compressing the vent when the device is not in motion. The rear of the box 48 has an opening which is closed by a door 55'. This door may be hingedly connected to the box if desired, but when in closed position is effectively latched thereon by means, indicated by the numeral 54.

The compartments 3 and 4 have arranged thereover a hollow cap member 55 which also encloses the gear 8 and pinion 9. The shaft 10, however, projects through an opening in the cap, so that the handle 13 is arranged exteriorly of the said cap. The sides of the device are provided with short shafts or trunnions 53 that are received in openings in the ends of a bail 54', the center of the bail having a socket for the reception of an operating handle 55'.

The motor being of the spring type and forming part of the improvement renders the device particularly useful in places where electricity is not available, but the same will be found equally useful in any locality. The motor will run for a comparatively long time, and suitable means, such as indicated by the numeral 56 may be employed for contacting with the gear 8 to hold the same against turning, and consequently prevent unwinding of the spring when the device is not required for use. The device, it will be noted, imparts both a sweeping and a suction action upon the carpet or other article to be cleaned. The box in the dust drawer may be readily withdrawn from the box when the dust is to be removed and the door 58' is locked on the box to provide a positively air tight joint between the same and the opening in the said box. The hollow semi-globular air vent permits of the proper outflow of air from the box and the mesh of the said vent is so fine that particles of dust will not pass therethrough. The air contacting with the

vent will, in fact, remove the dust therefrom, causing the same to be directed into the drawer 51, at the portion thereof not provided with the deflector 52.

5 Having thus described the invention, what we claim, is:—

10 In a carpet or floor cleaner, a wheeled body having a motor compartment and a motor in said compartment, a dust duct below the said compartment, a dust box to the rear of the duct, an air vent at the top thereof, said duct having an inlet mouth at its

opposite end, a suction fan in the duct above the mouth operated by the motor, a combined beater and brush in the mouth disposed for contacting engagement with the surface to be cleaned, and means, actuated by the wheels of the body for imparting an oscillatory movement to the combined brush and beater. 15

In testimony whereof we affix our signatures. 20

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