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COMBINED CARPET SWEEPER AND DUST EXHAUSTOR

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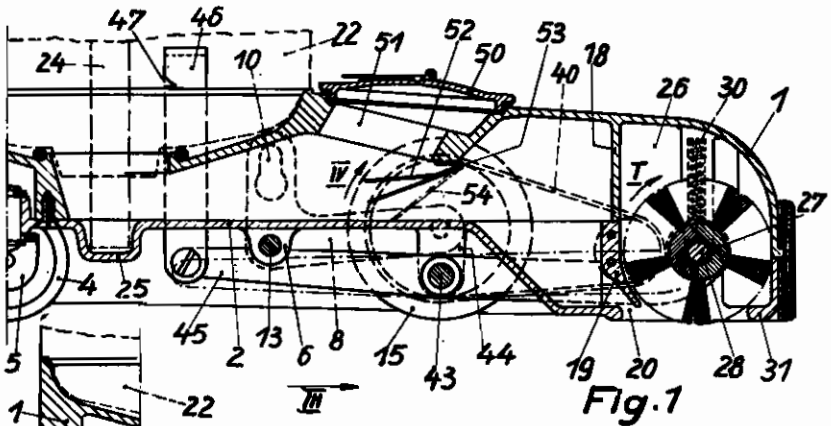

Fig. 1

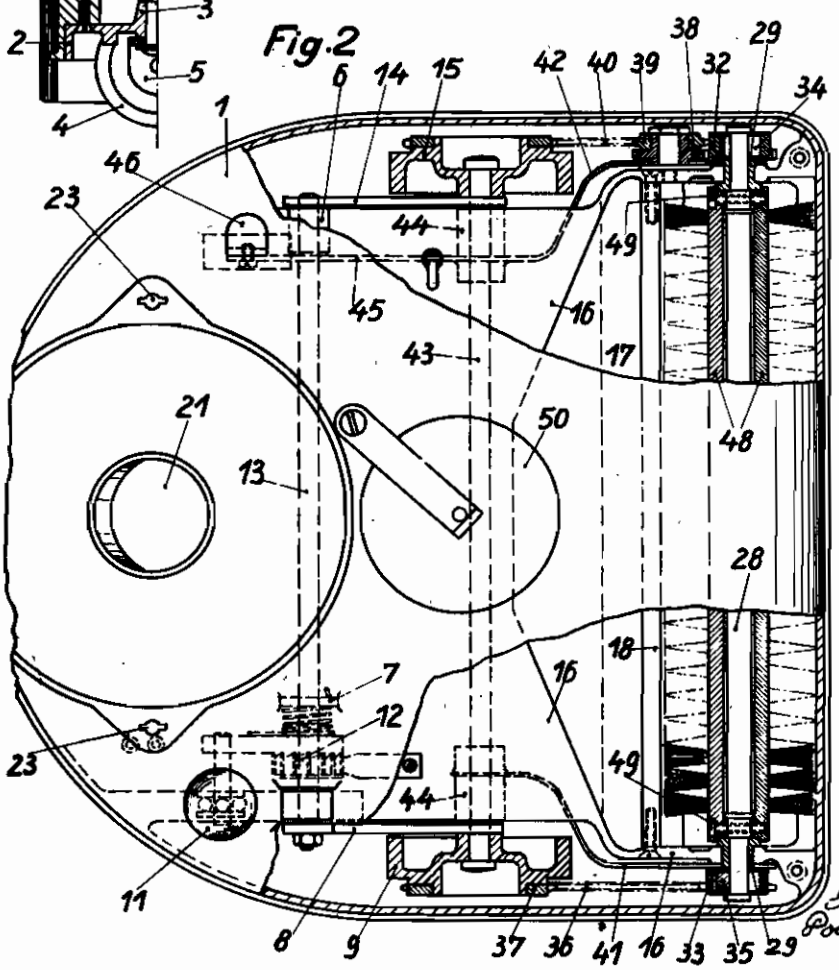

Fig. 2

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COMBINED CARPET SWEEPER AND DUST EXHAUSTOR

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This invention relates to a carpet sweeping machine combined with a dust collector provided with brushes driven by the rolls supporting the machine. The object of the invention is to increase the capacity of a machine of this type to draw the dust.

One of the characteristic features of the invention is that a gearing inserted between the running rolls and the brush roller is so designed that this roller rotates always in the same direction irrespective of the direction of motion of the machine, the dust being at any rate thrown into a suction slot extending parallel to the axis of the brush.

Another characteristic feature of the invention is that the driving members for the running rolls comprise also two free-wheel gearings, with the aid of which the brush roller is always rotated in the same direction, the one of said gearings driving the brush roller directly, the other driving it by the intermediary of change-wheels, the two free-wheel gearings being actuated alternately according to the change of the direction of motion of the carpet sweeping machine.

It is suited to the object in view to design the rim of the rear wall of the casing enclosing the brush roller, which rim forms together with a part of the nozzle bottom the suction slot as a sort of cutting edge and to arrange the slot-forming members in close proximity to the brush roller.

Still another feature of the invention is that the gap between said edge-shaped rim and the brush roller can be adjusted by means of an adjusting device capable to be locked by a lever operable by a foot of the person using the machine.

The invention is illustrated diagramatically and by way of example on the accompanying drawings on which Figure 1 is a vertical longitudinal section through a combined carpet sweeper and dust exhauster designed according to this invention, the left-hand end of the Figure being broken off for want of space. Figure 1a is a separate view of said lacking left-hand end of Fig. 1, and Figure 2 shows in its middle portion a plan of the machine, and the portions above and below said middle portion show horizontal sections thereof.

On the drawing 1 denotes a flat casing closed at its bottom by a plate 2. At the rear end of this plate is a bearing 3 holding a turnable frame 5 provided with two running rolls 4. There are, furthermore, at said bottom plate lugs 6 and 7, of which the first serves as a bearing for a two-armed lever 8 provided at one of its arms with a running roll 9, whereas the other arm is provided with a slot 10 engaged by a pivot of an excentric disk (not shown) which can be locked in its angular position by means of a pawl-and-ratchet mechanism 12 operable by a push-button 11.

The two-armed lever 8 is affixed to a shaft 13 extending through the bearing 6 and carrying on its extreme end a flat arm 14 provided at its free end with a bearing for a running roll 15.

Within the casing 1 are two walls 16 forming between them a suction channel 17. The front portion of this channel is horizontally enlarged and is narrowed at its lowermost portion by means of a vertical wall 18 extending downwardly from the top of the casing and an extension 19 of this wall so as to form a narrow suction slot 20. Counter thereto the suction channel 17 has a circular aperture 21, by the intermediary of which this channel communicates with the suction device 22 indicated in Fig. 1 by dotted lines. The suction device 22 is situated in a cavity of appropriate size and shape provided in the upper wall of the casing 1, and laterally from said aperture 21 are members 23 (Fig. 2) for connecting the casing of the suction device 2 is provided with a motor shaft 24, one end of which extends outwards from the machine; this end serves as an intermediate driving member when a floor-polishing implement is to be driven by the machine. In order to prevent said end from constituting a hindrance when the sucking device is inserted into the machine, the casing 1, or the cover 2 respectively, is provided with a suitable arranged cavity 25 (Fig. 1).

The wall 18 forms an oblong chamber 26 extending parallel to the suction slot 20 and enclosing the brush roller 27. The ends of the shaft 28 of the brush roller are supported in bearing pieces 29 (Fig. 2) which are vertically guided in the walls 16 of the casing 1 and are pressed by springs 30 in the direction to the broad nozzle supporting bottom 31 (Fig. 1) lying in the range of the brush roller 27. To both ends of the shaft 28, in the space between the casing and the walls 16 are driving wheels 32 and 33 attached which are combined with free-wheels 34 and 35 so designed that both serve to turn the brush roller 27 in the direction indicated by the arrow I in Fig. 1. The driving wheel 33 is designed as a chain-wheel 37 secured to the roll 8. The driving wheel 32 is cog-wheel and meshes with an intermediate wheel 38 rotatory supported in the wall 18 and combined

with a chain-wheel 39 driven by a chain-wheel 40 firmly affixed to the roll 15.

The bearing pieces 28 can be engaged by the ends of two levers 41 and 42 connected with one another by a shaft 43 supported in the casing of the machine. The shaft 43 is supported in lugs 44 of the cover 2. The lever 42 is provided with an arm 45 which is turnable by means of a slide 46 extending above the casing and provided with a notch 47 serving to lock the lever 45 and thereby also the levers 41 and 42 in the position indicated in Fig. 1 by dotted lines. In this position the bearing pieces are so much lifted in their guides, counter to the pressure exerted by the springs 30, that the bristles of the brush rollers do no more project over the bottom member 31 of the nozzle.

The brush roller consists substantially of two semi-cylinders 48 connected with one another by screws 49 penetrating the shaft 28.

The casing 1 is provided with an opening 51 which terminates into the channel 17 and can be air-tight closed by a lid 50. A suction hose provided with a connection branch (not shown) can be inserted into said opening. Below the opening 51 is a flap 52 attached to the casing 1 by means of a hinge 53. This flap is turned into the position shown in dotted lines in Fig. 1 when the above-mentioned hose connection branch is inserted into the casing through the said opening 51.

When the machine is moved in the direction indicated by the arrow III the rolls 8 and 15 rotate in the direction indicated by the arrow IV. As the roll 9 is directly connected with the driving wheel 33 it is rotated in the same direction and as the change-wheel 38 is inserted between the roll 15 and the driving wheel 32 this wheel is rotated in the reverse direction, i.e. in the direction indicated by the arrow I (Fig. 1). When this takes place, the free-wheel 43 drives the shaft 28. When the machine is moved counter to the arrow III the free-wheel 35 turns the shaft 28 in the direction of the arrow I. When the brush roller 27 is in operative position the dust or dirt is swept by it in the direction to the suction slot 20 which is always open, as the lower rim of the wall 19 lies a few millimeters above the plane determined by the nozzle bottom 31.

To throw the brush roller out of gear a pressure upon the slide 46 suffices to move the roller out of the range of said bottom 31 and to lock it in this position, if so desired.

Adjusting the height of the brush roller with respect to the carpet is effected by varying the position of the rolls 9 and 15 relatively to the casing by means of the adjusting members 11 and 12 already mentioned in a preceding paragraph of the specification.

If the machine shall be employed merely for sucking dust from any article of furniture or the like, the lid 50 is removed and the nozzle of the suction hose inserted into the opening 51 whereby the flap 54 will be compulsorily moved into the position shown in dotted lines and the channel 17 will, therefore, be closed so that the suction device draws the dust-laden air solely through the hose.

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