United States Patent [19]

Morinaga

[11] **3,903,564**

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[54] **TABLE TOP CLEANER**

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[52] **U.S. Cl.** **15/344;** 15/347

[51] **Int. Cl.²** **A47L 5/24**

[58] **Field of Search** 15/344, 347, 350

[56] **References Cited**

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Assistant Examiner—C. K. Moore
Attorney, Agent, or Firm—Hill, Gross, Simpson, Van Santen, Steadman, Chiara & Simpson

[57] **ABSTRACT**

A cleaner comprising a casing in which cells and an electric motor are placed, a fan chamber disposed at a lower end of the casing and formed with openings in side walls in which a downwardly directed fan is mounted, and a dust collecting chamber detachably attached to a lower end of the fan chamber. The dust collecting chamber is formed in its central portion with a dust drawing orifice, a filter is arranged inside the fan chamber and juxtaposed to the openings, and a dust guide plate is provided at the bottom of the fan chamber. Small and other particles of dust drawn by suction through the dust drawing orifice are collected in the dust collecting chamber by the filter means and the guide plate.

1 Claim, 6 Drawing Figures

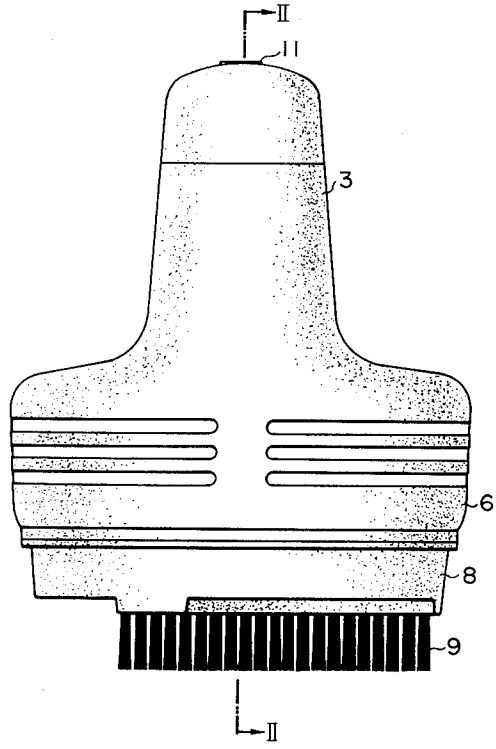


FIG. 1

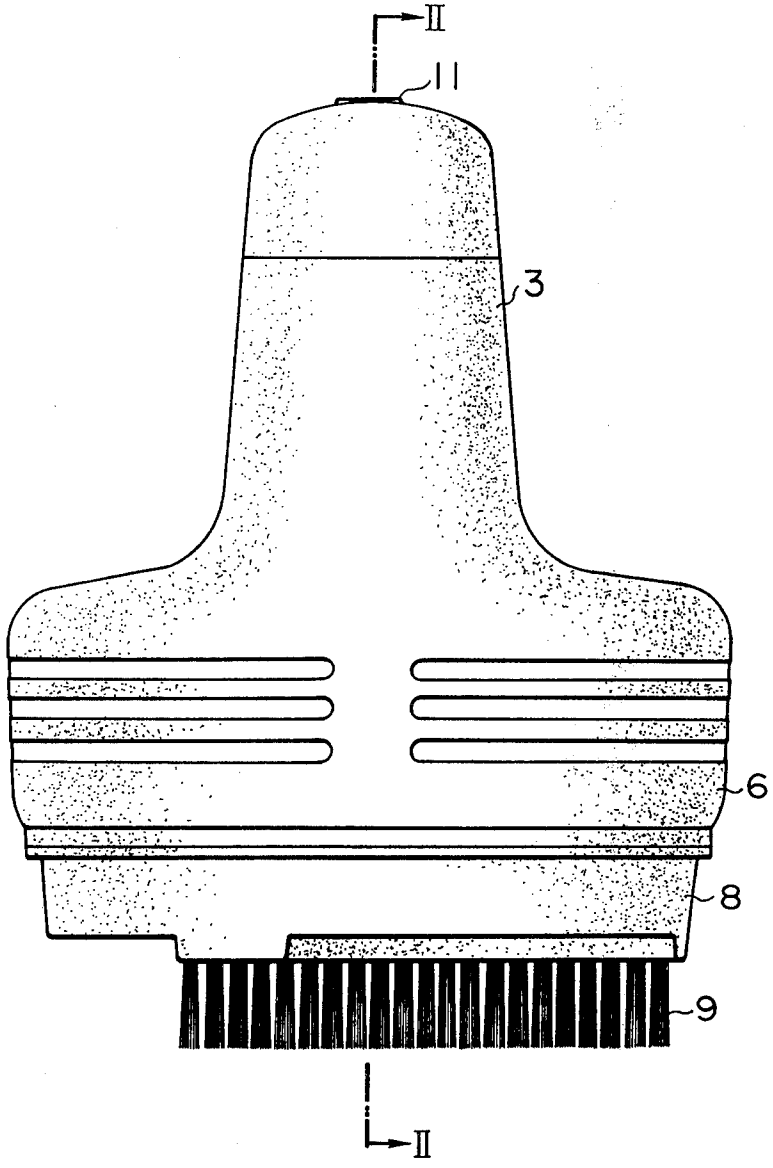


FIG. 2

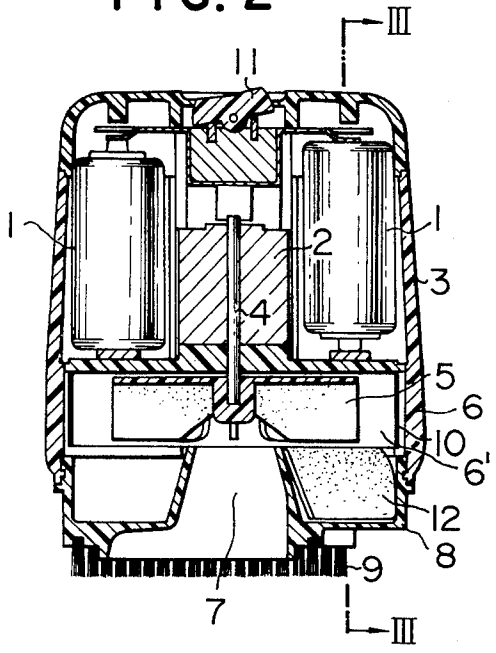


FIG. 3

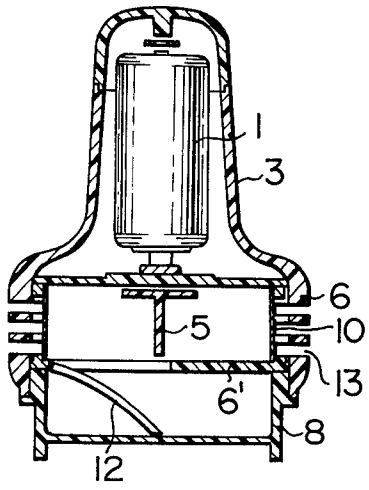


FIG. 4

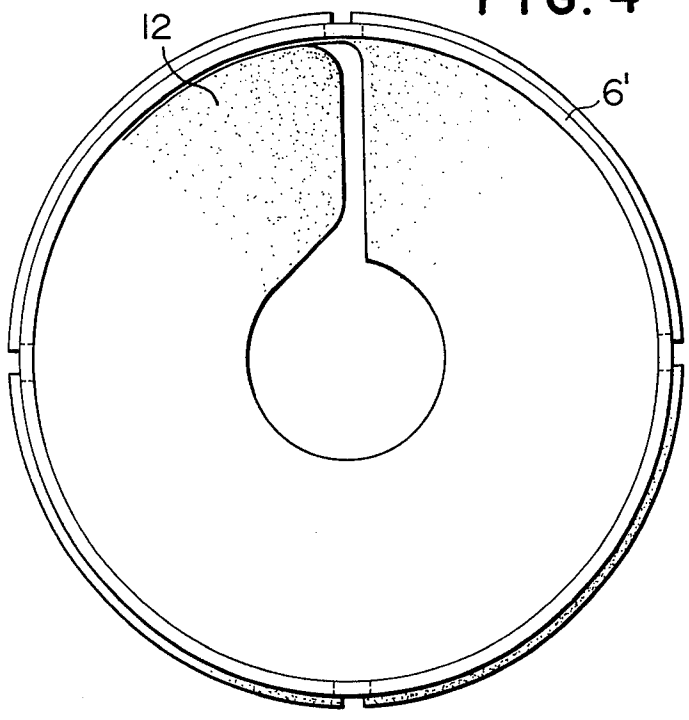


FIG. 5

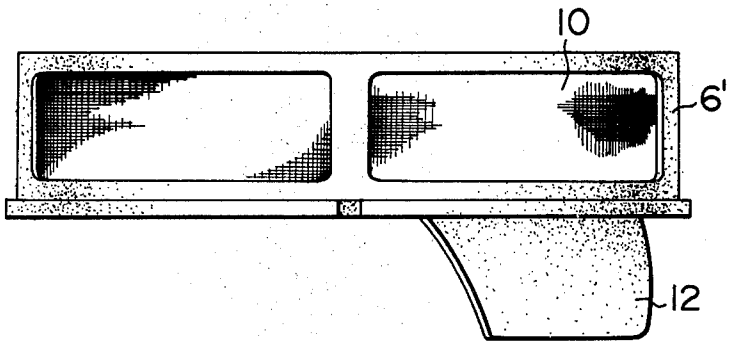


FIG. 6

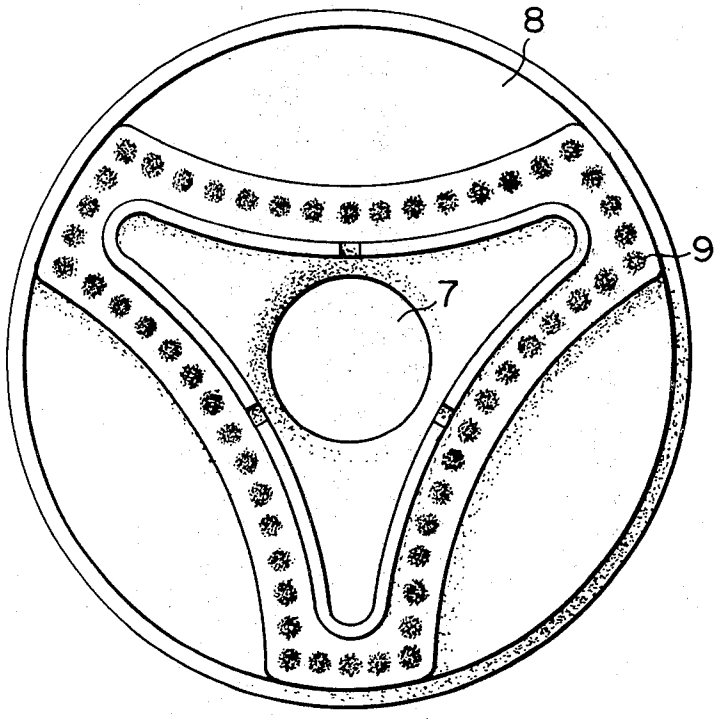


TABLE TOP CLEANER

BACKGROUND OF THE INVENTION

This invention relates to cleaners, and more particularly it is concerned with a small table top cleaner.

Small cleaners of the prior art adapted for cleaning the top of a table and the like have disadvantages in that they are not easy to handle and the hands of the operator tend to be soiled by the collected dust. Besides, the operator is required to hold the cleaner, by hand at all times when it is desired to use it.

SUMMARY OF THE INVENTION

An object of the invention is to provide a small table top cleaner obviating the aforementioned disadvantages of the prior art which permits small particles of dust to be collected and discharged from the cleaner readily and positively without soiling the hands of the operator.

Another object of the invention is to provide a small table top cleaner which eliminates the need for the operator to hold the cleaner by hand during operation and which can be operated while left standing on the top of a table and the like, with the operator being required merely to move the cleaner along the top of the table.

Other and additional objects and features of the invention will become evident from the description set forth hereinafter when considered in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a front view of the table top cleaner according to the invention;

FIG. 2 is a vertical sectional view taken along the line II-II of FIG. 1;

FIG. 3 is a vertical sectional side view taken along the line III-III of FIG. 2;

FIG. 4 is a plan view of the guide plate;

FIG. 5 is a vertical sectional side view of the fan chamber showing the filter; and

FIG. 6 is a bottom view of the dust collecting chamber.

DESCRIPTION OF A PREFERRED EMBODIMENT

The Table top cleaner according to the invention comprises a casing 3 in which cells 1 and a small electric motor 2 rotated by the power supplied from the cells 1 are placed, a fan chamber 6 disposed at a lower end of the casing 3 and formed with openings 13 in side walls, and a dust collecting chamber 8 disposed at the lower end of the fan chamber 6. The motor 2 has a shaft which extends vertically downwardly and operatively connected to a suction fan 5 rotatably mounted in the fan chamber 6. A filter means 6' is disposed inwardly of the side walls of the fan chamber 6 in which the opening 13 are formed, so that the interior of the fan chamber 6 is maintained in communication with outside through the filter means 6' and openings 13. The filter means 6' comprises an air permeating filter 10 juxtaposed to the openings 13 in side walls of the fan chamber 6 and a guide plate 12 disposed at the bottom of the fan chamber 6 for guiding small particles of dust

in their downward movement into the dust collecting chamber 8 after such small dust particles are drawn by the fan into the fan chamber 6.

The dust collecting chamber 8 is formed in its central portion with a dust drawing passageway 7 which is maintained at its upper end in communication with the interior of the fan chamber 6 and at its lower end in contact with the upper surface of a table and the like. Bristles 9 are provided at the bottom of the dust collecting chamber 8 and surround the orifice of the passageway 7. 11 is a switch for the motor 2.

In operation, the switch 11 is actuated to operate the suction fan 5 while the table top cleaner is placed on the surface of a table. Particles of dust on the table are drawn by suction through the passageway 7 into the fan chamber 6 and guided by the guide plate 12 to move into the dust collecting chamber 8 disposed below the fan chamber 6. Thus the dust collected can be held in the dust collecting chamber without requiring to use a bag or the like. The air introduced into the fan chamber 6 together with the drawn dust is discharged to outside through the filter 10 and the openings 13 in the side walls of the fan chamber 6, with the dust particles kept from being discharged to outside by the filter 10 and moving downwardly into the dust collecting chamber 8 without staying in the fan chamber 6. The dust particles are collected in the dust collecting chamber 8 and said dust particles do not continue to be in the fan chamber 6, so that the filter 10 is prevented from being obturated by said dust particles. Thus, the dust drawing capability of the fan is not reduced even in a case of extended use. The table top cleaner according to the invention is easy to handle because it can be moved by hand while placed on the surface of a table.

When the dust collecting chamber 8 is filled with dust, the chamber 8 can readily be detached from the fan chamber 6 to dump the collected dust particles somewhere. The dust collecting chamber 8 may be threadably or otherwise connected to the fan chamber 6.

What I claim is:

1. A table top cleaner comprising a casing in which an electric motor and dry cells for operating same are placed, a fan chamber disposed intermediate the upper and lower ends of said casing and formed with openings in the peripheral walls of said casing and extending around substantially the entire periphery, said fan chamber having mounted therein a suction fan facing downwardly and connected to a shaft of said electric motor, a dust collecting chamber for collecting therein particles of dust drawn by said suction fan and introduced into the fan chamber through a dust drawing passageway extending through said dust collecting chamber, and a filter means comprising a filter disposed around the periphery of said fan chamber and juxtaposed to said openings in said peripheral walls, said openings being disposed outwardly of said filter, said dust collecting chamber being disposed at the lower end of the casing, and bristles arranged around the intake orifice of said dust drawing passageway.

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