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1,742,810

VACUUM CLEANER

Filed April 1, 1927

FIG. 1.

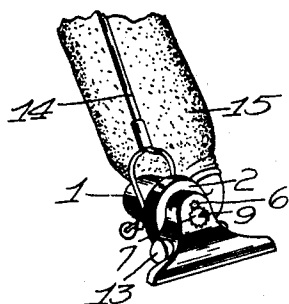


FIG. 2.

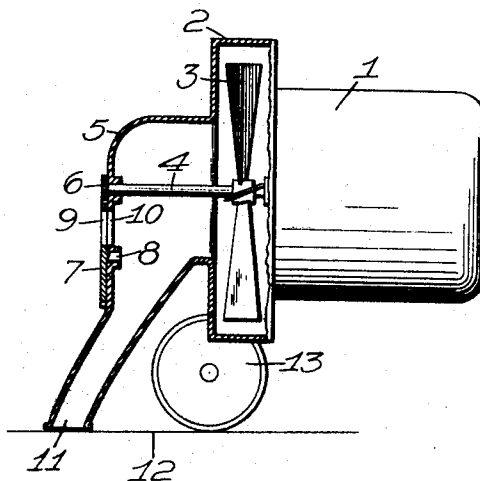


FIG. 3.

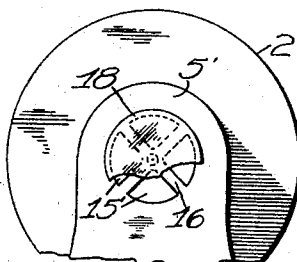
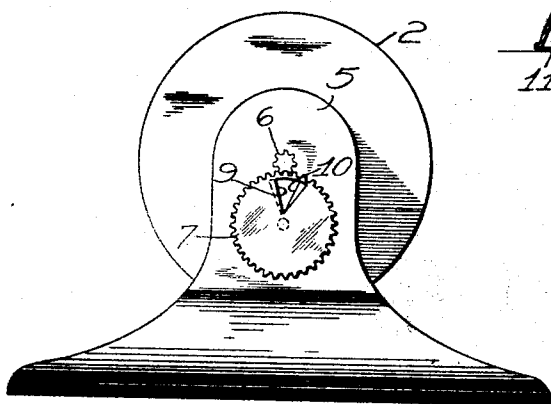


FIG. 5.

FIG. 4.

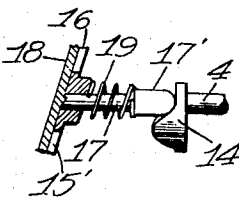
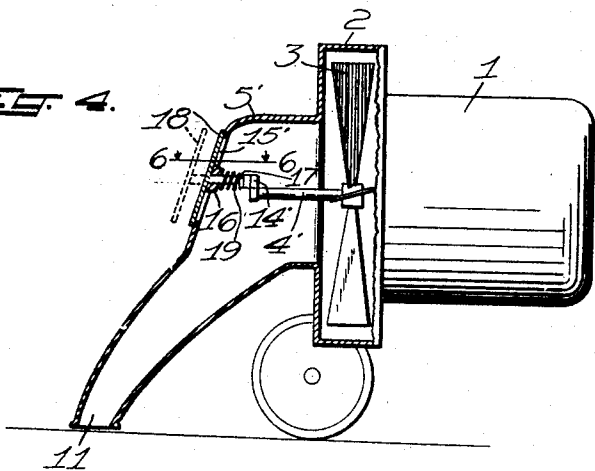


FIG. 6.

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VACUUM CLEANER

Application filed April 1, 1927. Serial No. 180,222.

My invention relates to improvements in vacuum cleaners, more particularly of the type used in households, and it consists in the combinations, constructions, and arrangements herein described and claimed.

An object of my invention is to provide a device in which there is an intermittent suction effect produced at the nozzle of the device, but without the necessity of closing off the nozzle from the main vacuum chamber by the use of valves or other devices.

A further object of my invention is to provide a device of the type described in which the intermittent action is effected by admittance of air through a by-pass around the mouth of the nozzle, through the body of the nozzle itself, thus obviating the necessity of mechanism within the chamber itself for causing the intermittent action.

A further object of my invention is to provide a device of the type described which is simple in construction and positive in operation, and which is not liable to easily get out of order.

Other objects and advantages will appear in the following specification, and the novel features of the invention will be particularly pointed out in the appended claim.

My invention is illustrated in the accompanying drawings, forming part of this application, in which

Figure 1 is a perspective view of a vacuum cleaner constructed according to my invention,

Figure 2 is a view, partly in section, showing one form of my invention,

Figure 3 is a front view of the device shown in Figure 2,

Figure 4 is a view similar to Figure 2 but of a modified form of the device,

Figure 5 is a portion of the front of the device shown in Figure 4, and

Figure 6 is a detailed view of the valve shown in Figure 4.

In carrying out my invention, I make use of a motor casing 1 containing an electric motor, not shown. At 2 I have shown a fan housing provided with a suction fan 3 which is mounted on a motor shaft 4. As will be observed from Figure 2, this shaft extends

through the front face of the nozzle 5 and has upon it a gear 6 in mesh with a gear 7, the latter being journaled at 8 in the nozzle wall. The gear 7 is provided with a cutaway portion 9 which is adapted to be brought into registration with a cutaway portion 10 in the wall of the nozzle. The lower part of the nozzle is extended downwardly and the mouth 11 is arranged to engage the floor 12. The device is mounted on wheels 13 and is provided with the usual handle 14 and dust bag 15 connected with the suction chamber.

From the foregoing description of the various parts of the device, the operation thereof may be readily understood. As the motor drives the fan 3, the latter causes a movement of the air up through the mouth of the nozzle, thence into the bag 15 in the usual manner. As the shaft 4 turns, it actuates the gear 7 through the medium of the gear 6, and when the cutaway portions 9 and 10 come into registration, air is admitted above the mouth so that the suction effect at the mouth is suddenly interrupted. This tends to cause an intermittent draw and release on the particles of dirt or other matter which are being carried up by the vacuum cleaner, and this intermittent suction tends to more effectually release such particles than where there is merely a steady flow of air through the mouth. The result is that a device of this kind is particularly efficient in gathering up dust and dirt, while the power required for the operation of the valve 7 is very little more than that for the operation of the fan alone.

In Figures 4 to 6 inclusive I have shown a modified form in which the shaft 4', upon which the fan 3 is mounted, has at its end a cam member 14'. The nozzle 5' has on its front face openings 15'. Mounted on a spider 16 between these openings is the shaft 17 of a valve 18 which is arranged to cover all of the openings at times and at other times to be forced away from the openings so as to permit the entrance of air. Thus it will be seen that in Figure 6 when the cam 14' engages the end member 17' of the shaft 17, it will force it forwardly against the tension

of the spring 19, thus causing the opening of the valve 18, and when the high surface of the cam has passed, the valve will be brought back into position by the spring 19 so as to close the opening. In this way, as in the form shown in Figures 1 to 3 inclusive, there is an intermittent action caused at the mouth 11' of the nozzle 5'.

I am aware that intermittent action at the mouth of the nozzle of a vacuum cleaner is not broadly new. It has been proposed to cause such intermittent action by the placing of a valve between the nozzle and the fan chamber so as to cut off the flow of air from the nozzle to the fan chamber. The trouble with this construction is, however, that strings, hair, hairpins, or other articles are liable to be caught by the valve so as to clog the device and to prevent its operation. By making an air inlet so that the air can pass around the mouth of the nozzle, the intermittent effect may be secured without any danger of the clogging of the device due to the drawing of articles into the path of valves or other devices between the nozzle and the fan chamber.

I claim:

A vacuum cleaner comprising a fan casing, a nozzle communicating therewith at one end and having a mouth at the other end, a fan disposed in said casing, means for operating said fan, an opening in said nozzle, a valve disposed externally of said nozzle and juxtaposing said opening to close and open the same and means actuated by the fan-operating means for operating said valve.

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