Oct. 3, 1933. W. H. MELLEN 1,928,944

SUCTION CLEANER

Filed Oct. 12, 1931

Fig. 1.

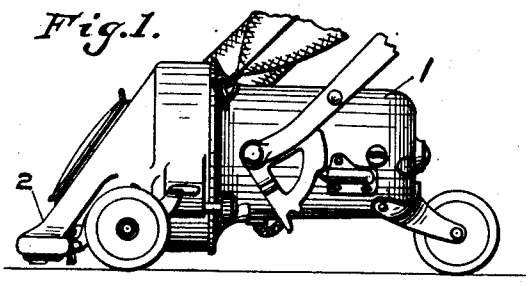


Fig. 2.

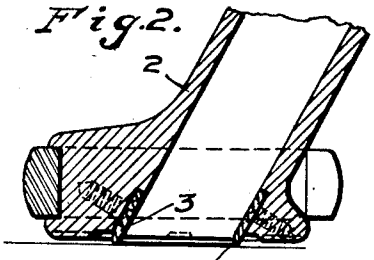


Fig. 3

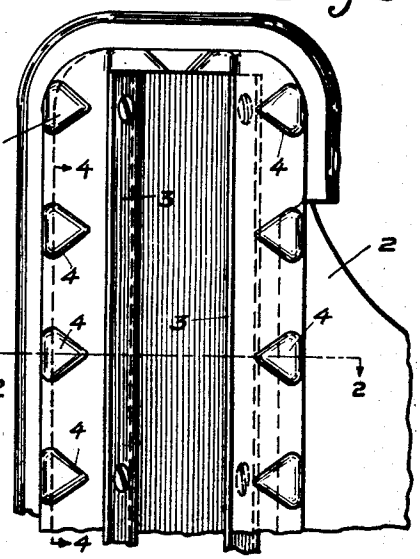


Fig. 5.

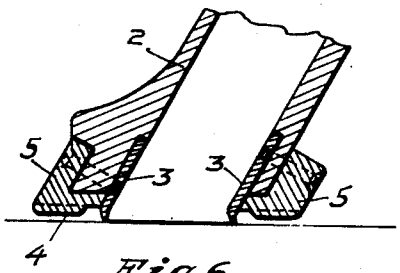


Fig. 4.

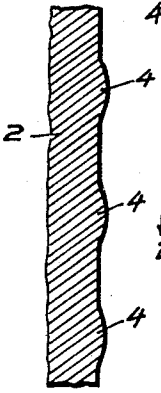
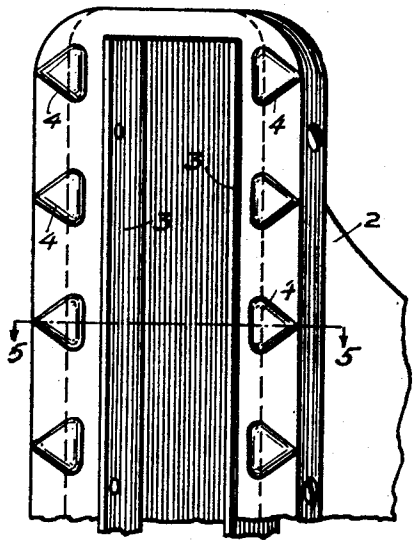


Fig. 6



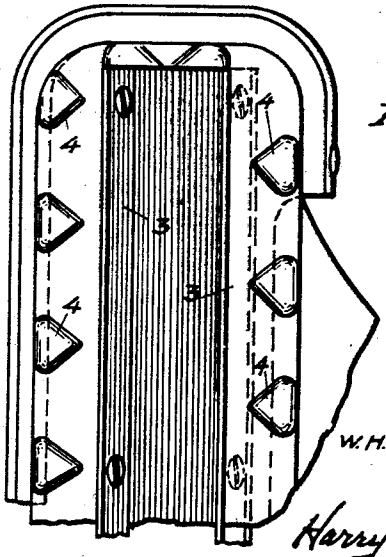


Fig. 7.

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SUCTION CLEANER

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5 Claims. (Cl. 15—157)

The present invention relates to suction cleaners in general and particularly to a new and improved suction cleaner nozzle lip construction. More specifically the invention comprises the provision, in a suction cleaner, of a surface-contacting nozzle lip which is much thinner than the usual nozzle lip to enable it to penetrate into the pile of a surface covering undergoing cleaning to thereby direct the cleaning air to the deeply embedded foreign matter, yet which is also provided with means to prevent an undue penetration of the lip which would result in increased force requirement for cleaner movement.

It is an object of the present invention, therefore, to provide a new and improved suction cleaner nozzle lip. It is a further object to provide, in a suction cleaner, a nozzle lip having a portion which is much thinner than the usual nozzle lip, in combination with surface-contacting means which prevent undue penetration of the aforesaid thin portion. A still further object is the provision of a combination nozzle lip comprising a portion, under which cleaning air must pass in gaining entrance to the cleaner nozzle and which is much thinner than the usual ordinary nozzle lip, together with surface-contacting portions which are of relatively great area which prevent the undue penetration of the thin portion into the surface covering. These and other more specific objects will appear upon reading the following specification and claims and upon consideration of the annexed drawing.

In the drawing in which a preferred embodiment of the present invention is disclosed:

Figure 1 is a view of a modern suction cleaner in which the present invention is embodied.

Figure 2 is a partial section through the nozzle of the cleaner shown in Figure 1 being taken upon the line 2—2 of Figure 3.

Figure 3 is a partial bottom view of the cleaner nozzle shown in Figure 1.

Figure 4 is a section upon the line 4—4 of Figure 3.

Figure 5 is a section upon the line 5—5 of Figure 6 and shows a second embodiment of the present invention.

Figure 6 is a bottom view of the embodiment shown in Figure 5.

Figure 7 is a partial bottom view of a still further embodiment of the present invention.

Referring again to the drawing, and Figure 1 in particular, a modern suction cleaner is shown and is indicated generally by the reference character 1. The cleaner comprises the usual parts which are well known in the art and which will not be here described. For the purposes of the complete understanding of this invention it need only be said that the cleaner embodies, among other features, the nozzle 2 which is interiorly connected to the suction-creating means and through which the cleaning air together with foreign matter removed from the surface-covering passes in the operation of the cleaner. The lower end of the nozzle as in all suction cleaners, comprises the surface-contacting portions which are known as nozzle lips. In the usual cleaner construction no particular attention is paid to the shape or width or particular construction of these lips, but instead the size, shape or dimension is used which is dictated by manufacturing preferences. In the suction cleaner nozzle constructed in accordance with the present invention the surface-contacting portions or lips are scientifically designed to aid and assist the cleaning air in its cleaning function through insuring pile agitation and directing the flow of air through the covering undergoing cleaning.

Referring to Figures 2, 3 and 4 in particular, in which the first preferred embodiment of the present invention is disclosed, the surface-contacting portion of nozzle 2 is shown to comprise the spaced parallel thin-edged members 3, 3 which are preferably formed of hard non-abrasive metal. As is clearly shown in the drawing, the lower edge of members 3, 3 are very narrow or thin and are of such width that they are adapted to penetrate between adjacent tufts of pile of a surface covering undergoing cleaning or between the bristles of a single tuft of pile. These members 3, 3 because of their relatively small thickness are known as pile-penetrating lips. It is entirely possible to construct a cleaner nozzle in which the lip comprises only the members 3, 3. According to the present invention, however, it is desirable to provide additional surface-contacting means to prevent any undue digging-into the surface covering these members. These surface-contacting portions or members which prevent this undue penetration are shown as buttons 4, 4 etc. which are positioned at the sides of the members 3, 3 and are adapted to contact the surface covering. Buttons 4, 4 are rounded and smooth and, it is to be noted, are pointed at one end to make their movement over the surface covering easier. In the embodiment shown in Figures 2, 3 and 4 these buttons 4, 4 upon the opposite sides of the nozzle mouth defined by the members 3, 3 are directly opposite and the sharp angles point inwardly.

Referring now to Figures 5 and 6 in particular,

the second preferred embodiment of the present invention is disclosed in which the pile-penetrating means are constructed as in the aforedescribed embodiment. This embodiment differs from that first described in that the buttons 4, 4 are formed upon detachable members 5, 5 instead of being formed integrally upon the bottom of the nozzle 2, and also in that the angles of the buttons point outwardly from the nozzle mouth instead of inwardly. In operation this modification would function exactly as the first described modification.

In the embodiment disclosed in Figure 7 the buttons 4, 4 are arranged in staggered relation upon the opposite sides of the nozzles mouth, the construction being similar to that shown in Figures 2, 3 and 4 in other details.

In the operation of a suction cleaner embodying a nozzle constructed in accordance with the present invention, upon the turning-on of the current-controlling switch the electric current passing through the motor would cause the suction-creating fan to revolve. The fan would thereupon effect a reduction of pressure within the suction nozzle through drawing the air therefrom and air would rush into the nozzle between the lips 3, 3. The surface covering immediately below the lips 3, 3 would be drawn into contact with the lips because of the reduced pressure in the nozzle. Inasmuch as the lips 3, 3 are exceedingly thin, they penetrate into the covering and the air in entering the nozzle must thereafter pass below the lip and, therefore, through the covering. The raised covering also contacts the buttons 4, 4 which, through being positioned immediately adjacent the pile-penetrating portions 3, 3, prevent the excessive penetration of those members into the surface covering.

I claim:

1. In a suction cleaner a nozzle, said nozzle having a thin rigid lip portion adapted to extend into the pile of a surface covering undergoing cleaning, and spaced rounded buttons positioned adjacent said thin lip portion and adapted to contact said surface covering to prevent excessive lip penetration.

2. A nozzle lip comprising a thin surface-contacting element and rounded surface-contacting buttons arranged beside said element and spaced therefrom and from each other.

3. In a suction cleaner of the type adapted to lift a surface covering undergoing cleaning into contact with the nozzle lips, a nozzle having a mouth, a thin-edged rigid lip portion defining a side of said mouth and adapted to penetrate into a contacting surface covering, and spaced means closely adjacent the side of said lip portion adapted to contact said surface covering and limit the extent of penetration of said lip portion therein.

4. In a suction cleaner of the type adapted to lift a surface covering undergoing cleaning into contact with the nozzle lips, a nozzle having a mouth, thin-edged rigid surface-contacting lip portions defining said mouth, and smooth rounded surface-contacting portions closely adjacent but spaced from said lip portions and from each other to prevent excessive pile penetration by said lip portions.

5. In a suction cleaner of the type adapted to lift a surface covering undergoing cleaning into contact with the nozzle lips, a nozzle having a mouth, thin-edged rigid surface-contacting lip portions defining said mouth, and smooth rounded surface-contacting portions arranged at the sides of said lip portions, characterized by the fact that said smooth rounded portions are staggered upon the opposite sides of said mouth.

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