

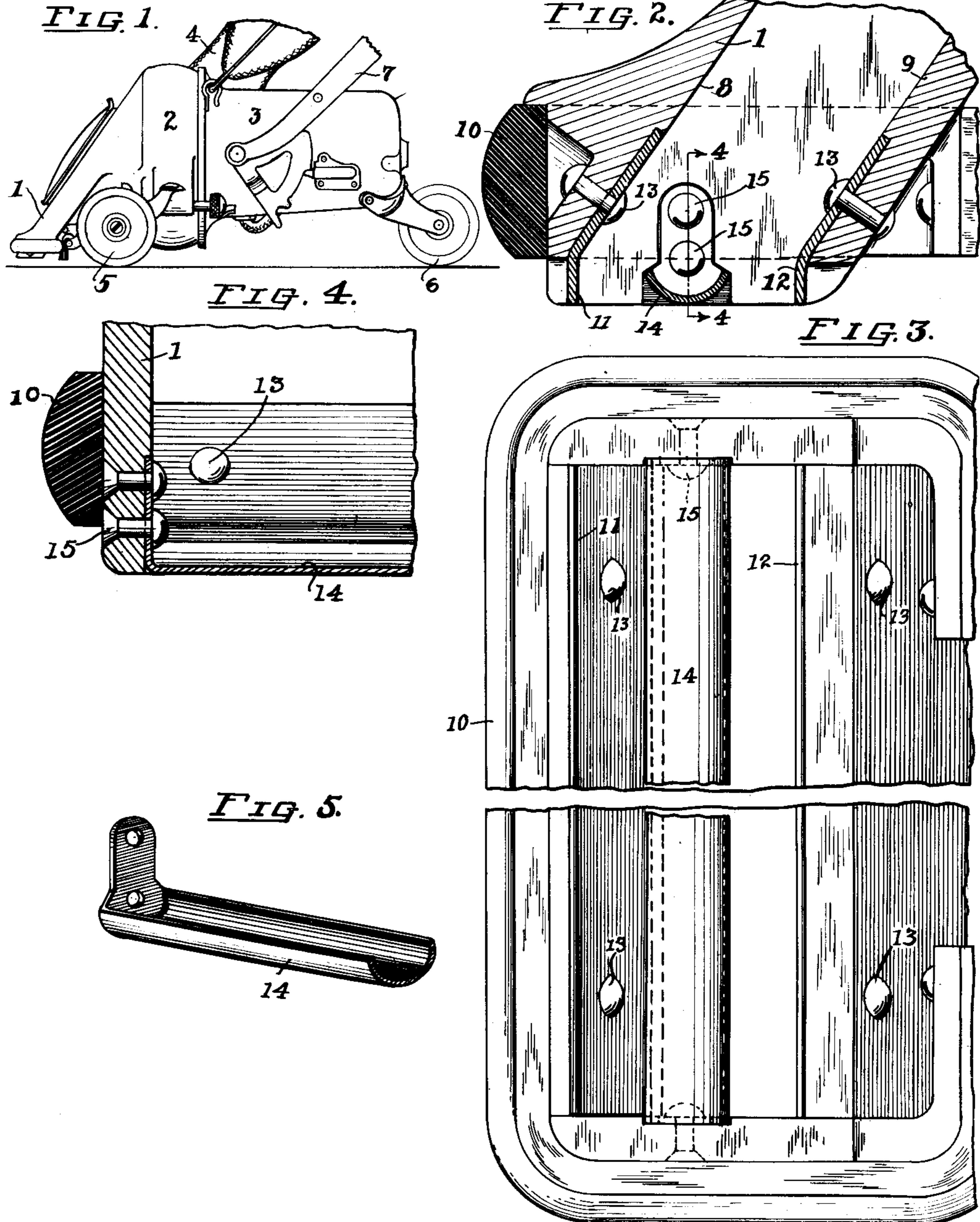
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H. S. DEMAREE

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SUCTION CLEANER

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INVENTOR  
HARRY S. DEMAREE.

BY

*W. P. Sears*

ATTORNEY

# UNITED STATES PATENT OFFICE

HARRY S. DEMAREE, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE HOOVER COMPANY, OF NORTH CANTON, OHIO, A CORPORATION OF OHIO

## SUCTION CLEANER

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The present invention relates to suction cleaners in general and particularly to suction cleaner nozzles. More specifically the invention comprises the provision of a suction cleaner nozzle having extremely thin surface-contacting lips of the type commonly known as "pile penetrating" and which is provided with a relatively broad smooth surface-contacting skid which extends within the nozzle and parallel to the nozzle lips for the purpose of preventing undue penetration of the surface pile by the penetrating lips for the further purpose of limiting the force required to move the cleaner over the surface covering undergoing cleaning.

It is an object of the present invention to provide a new and novel suction cleaner construction. It is a further object to provide, in a suction cleaner, a new and novel nozzle construction. It is a still further object to provide a suction cleaner nozzle provided with pile penetrating lips in combination with a surface-contacting skid. These and other more specific objects will appear upon reading the following specification and claims and upon considering in connection therewith the attached drawing to which they relate.

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

Figure 1 is a side view of a suction cleaner in which the present invention is embodied;

Figure 2 is a section through the nozzle of the cleaner shown in Figure 1 clearly disclosing the present invention;

Figure 3 is a bottom view of the nozzle shown in Figure 2;

Figure 4 is a partial section upon the line 4-4 in Figure 2 looking in the direction of the arrows;

Figure 5 is a view of a portion of the skid element removed from the nozzle.

Referring to Figure 1 in particular a modern suction cleaner is disclosed which comprises the usual parts found in a suction cleaner including a nozzle 1, a fan chamber 2, and a motor casing 3, the fan chamber and motor casing housing the suction-creating fan and the motor therefor as in the usual suction cleaner construction. A dust bag 4

is provided which is suitably attached to the exhaust outlet of the fan chamber 2 as in the usual suction cleaner while front supporting wheels, of which only one is shown at 5, and a rear supporting wheel 6, render the cleaner readily movable over the surface undergoing cleaning. A pivoted handle 7 is provided, the lower portion of which is shown in Figure 1, by which the operator may propel the cleaner. The foregoing comprise the usual parts of an ordinary suction cleaner and in themselves comprise no part of the present invention but instead form merely the general arrangement of parts in connection with which the present invention finds its usefulness.

Referring now to Figures 2 to 5, inclusive, the present invention is shown in detail. The nozzle 1 is formed of a casting, as in the usual cleaner construction, of a light, rigid and relatively brittle material such as aluminum which is itself undesirable as a surface-contacting unit. In order to provide the requisite strength the walls of the nozzle 1 are made relatively thick as is shown in Figure 2, the front and rear nozzle walls being indicated by the reference characters 8 and 9, respectively. Around the lower end of nozzle 1 is positioned a suitable furniture guard 10 which is preferably formed of a soft resilient material such as rubber and whose function it is to protect articles of furniture with which the nozzle often comes into contact in the operation of the machine. At the lower edge of each of the nozzle walls 8 and 9 is secured a nozzle lip of rigid, durable and non-marking material such as steel. The front nozzle lip is indicated by the reference character 11 while the rear lip bears the reference character 12, both lips being suitably secured to the adjacent nozzle wall with which they contact by means of suitable rivets 13, 13 etc. Nozzle lips 11 and 12 differ from the usual nozzle lips in that they are quite thin, being of such a thickness that they are adapted to penetrate between adjacent tufts of pile of a surface covering and in fact between adjacent fibres of a single tuft of pile. Because of their penetrating ability lips 11 and 12 are able to agitate the pile of the surface cover-

ing undergoing cleaning to dislodge there-  
 from the embedded foreign matter therein.  
 They also function to direct the cleaning air  
 to the base of the pile to permit it to remove  
 the more deeply embedded foreign matter as  
 5 they extend deeply into the surface covering,  
 and all cleaning air must pass under them in  
 gaining entrance to the nozzle 1 in the clean-  
 ing operation. The penetration of the lips  
 10 11 and 12, while effecting increased surface  
 agitation and dirt removal, would unduly in-  
 crease the force required to move the cleaner  
 if permitted to become excessive. Inasmuch  
 as high suction is desirable for the purpose of  
 15 obtaining maximum cleaning effectiveness  
 and in view of the fact that the greater the  
 suction the greater the penetration of the  
 penetrating lips it becomes necessary to pro-  
 vide some means to limit that penetration to  
 20 a point at which the force requirement to  
 move the cleaner is not excessive, yet which  
 at the same time permits the necessary pene-  
 tration to insure effective cleaning.

In the suction cleaner constructed in ac-  
 25 cordance with the present invention a sur-  
 face-contacting member or skid 14 extends  
 the length of the nozzle and parallel to the  
 lips 11 and 12, its main body or surface-  
 contacting portion being a smooth curved  
 30 portion which extends substantially into the  
 plane of the lower edge of the nozzle lips.  
 The curve of the body portion of skid 14 is  
 such that the member rides upon the top of  
 the surface covering thereby functioning to  
 35 prevent that covering from being lifted into  
 the nozzle 1 at its point of contact therewith  
 in response to the reduced pressure existing  
 therein. Skid 14 is suitably secured within  
 the nozzle 1 by means of rivets 15, 15 at its  
 40 ends which securely hold it to the end walls  
 of the nozzle.

In the operation of the suction cleaner con-  
 structed in accordance with the present inven-  
 45 tion the suction-creating means create a re-  
 duced pressure within the nozzle 1 which  
 functions to lift the surface covering under-  
 going cleaning into contact with the lips 11  
 and 12 and to lift the covering up into the  
 nozzle between those lips. The skid 14 ex-  
 50 tending parallel to and between the nozzle  
 lips and entirely across the nozzle functions  
 to restrict that movement of the surface  
 covering which would result in an excessive  
 penetration of the lips 11 and 12, their height  
 55 being fixed by the position of the nozzle.  
 The member 14 is so positioned relative to the  
 lips 11 and 12 that it permits sufficient lifting  
 of the surface covering to insure a desirable  
 penetration of the lips yet prevents an undue  
 60 penetration.

I claim:

1. In a suction cleaner, a nozzle, surface-  
 contacting lips on said nozzle defining the  
 mouth thereof and including thin portions  
 65 adapted to penetrate into the pile of a surface

covering undergoing cleaning, and means  
 positioned in said nozzle mouth and between  
 said lips to limit their penetration into a sur-  
 face covering undergoing cleaning.

2. In a suction cleaner, a nozzle, surface- 70  
 contacting lips on said nozzle defining the  
 mouth thereof and including thin rigid por-  
 tions adapted to extend into the pile of a sur-  
 face covering undergoing cleaning, and a  
 smooth surface-contacting skid carried by 75  
 said nozzle and positioned between said lips.

Signed at Chicago, in the county of Cook  
 and State of Illinois, this 5th day of Febru-  
 ary, A. D. 1932.

HARRY S. DEMAREE. 80

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