Nov. 30 1943. A. E. ROSS 2,335,448

RUG NOZZLE

Filed March 7, 1941

Fig. 1.

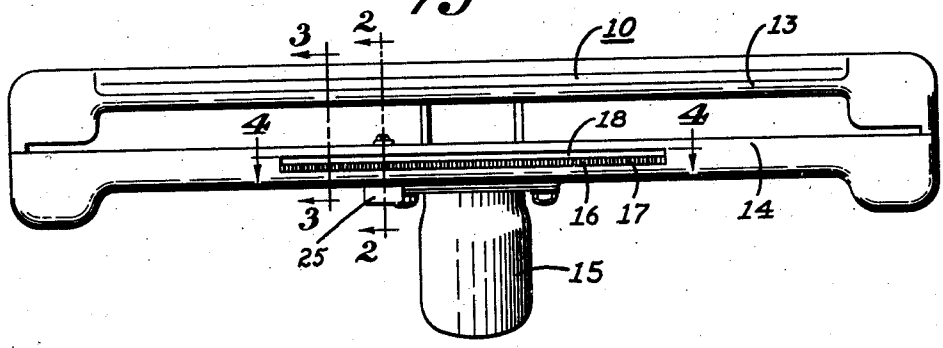


Fig. 2.

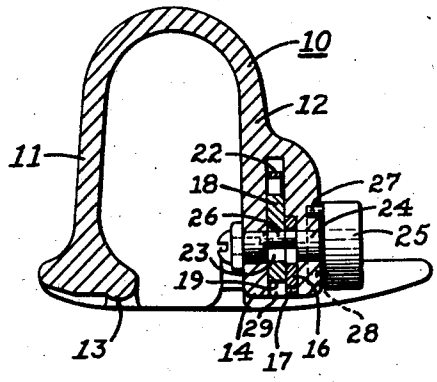


Fig. 3.

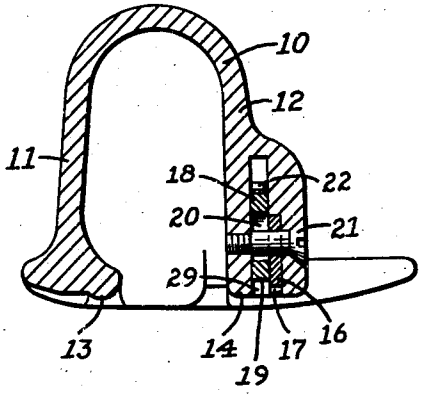
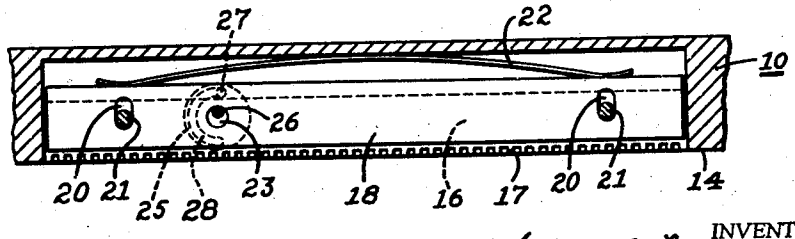


Fig. 4.



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UNITED STATES PATENT OFFICE

2,335,448

RUG NOZZLE

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Application March 7, 1941, Serial No. 382,675

8 Claims. (Cl. 15—157)

My invention relates to vacuum cleaners and more particularly to a suction rug nozzle for a vacuum cleaner.

It has been determined that an improved cleaning effect is obtained with a nozzle of this type if one of the lips thereof is provided with teeth disposed so as to form narrow channels extending transversely of the lip. These channels are preferably closed at their outer ends by a portion of the lip which extends flush with the outer ends of the teeth, the inner ends of the channels opening into a slot extending lengthwise of the lips. Such an arrangement has been found to be very advantageous in removing lint, threads or the like from the surface of the rug.

However, at times it is desirable to provide a substantially smooth lip in order to better seal against the rug so that more air will be drawn through the rug for the purpose of removing imbedded dirt. In accordance with my invention, I propose to render the teeth inoperative and provide a substantially smooth lip by means of a movable filler piece which may be adjusted so as to fill the aforementioned slot at the inner ends of the grooves between the teeth.

Further objects and advantages of my invention will be apparent from the following description considered in connection with the accompanying drawing which forms a part of this specification and of which:

Fig. 1 is a bottom view of a nozzle embodying my invention;

Fig. 2 is a cross-sectional view taken on the line 2—2 of Fig. 1;

Fig. 3 is a cross-sectional view taken on the line 3—3 of Fig. 1; and

Fig. 4 is a cross-sectional view taken on the line 4—4 of Fig. 1.

Referring to the drawing, reference character 10 designates a hollow nozzle body which includes a forward wall 11 and a rear wall 12. The lower edge of wall 11 forms a forward lip 13, while the lower edge of wall 12 forms a rear lip 14. The rear wall is formed with an opening which communicates with a hollow connection piece 15 to which may be connected a hose or the like communicating with a source of suction.

The more central portion of the rear wall 12 is formed with an elongated recess extending upwardly from the surface of the lip 14. Within one portion of this recess there is located a strip of material 16, the lower edge of which is formed with a plurality of teeth 17. The strip 16 may be fixed within the slot in any suitable manner, and is preferably pressed therein so that the ends of the teeth 17 are substantially flush with the surface of the lip 14. If desired, instead of employing a separate piece of material on which the teeth are formed, the teeth could be cut or cast directly in the rear wall 12.

Disposed beside the strip 16 within the slot is an adjustable filler piece 18 having a smooth lower edge 19. Adjacent to either end, the filler piece is formed with a vertically extending slot 20 and a bolt 21 extends through each slot and is screwed into a threaded aperture formed in the rear wall. A flat spring 22 is disposed within the slot above the filler piece 18 and tends to force the latter downwardly. At a point between one of the slots 20 and the connector 15, the filler piece is formed with an aperture 23. Journaled in the rear wall 12 is a pin 24 to the outer end of which is secured a knob 25. The inner end of pin 24 is formed as a cam 26 which extends within the aperture 23. Knob 25 carries an eccentrically located pin 27 which is movable within an arcuate slot 28 formed in the outer surface of the rear wall 12.

With the parts in the position shown in the drawing, the filler member 18 is held in raised position by means of the cam 26. The spring 22 tends to force the filler piece downwardly, but the cam in this position has been rotated slightly past dead center so that the action of the spring tends to turn the pin 24 in a clockwise direction, as viewed in Fig. 4. However, the pin 27 is in contact with the end of the slot 28 and prevents rotation in this direction. In this position, as clearly appears from Figs. 2 and 3, channel 29 is formed underneath the filler piece 18 and the inner ends of the grooves between the teeth 17 communicate with this channel. With the parts in this position, air flows through the grooves between the teeth and is effective for removing lint and threads or the like from the surface of the rug.

However, if it is desired to substantially reduce the flow between the teeth, so as to cause more of the air to be drawn through the material of the rug, the knob 25 is turned in a counterclockwise direction, as viewed in Fig. 4. This rotation of the cam 26 permits the spring 22 to force the filler piece 18 downwardly so as to fill the channel 29, thus blocking off the inner ends of the grooves between the teeth 17. The pin 27 contacts the opposite end of the slot 28 when the cam has turned sufficiently to permit the filler piece 18 to be lowered so that its lower ends 19 is flush with the surface of the lip 14, and hence with the ends of the teeth 17. In

this position the teeth are rendered ineffective and there is practically no flow of air through the spaces between the teeth.

While I have shown one more or less specific embodiment of my invention, it is to be understood that this has been done for purposes of illustration only and that the scope of my invention is not to be limited thereto, but is to be determined by the appended claims.

What I claim is:

1. In a suction nozzle, a hollow body having walls bounding a suction opening, the lower edge surfaces of said walls forming nozzle lips, the lip of one of said walls being formed with teeth having spaces therebetween, the ends of said teeth being substantially flush with the surface of said lip, said wall being formed inwardly of said teeth with a channel open only at the bottom and extending upwardly from the surface of said lip, a distance at least as great as the length of said teeth, whereby the inner ends of said spaces communicate with said channel, the outer ends of said spaces being closed by said wall, and a member movable into said channel for blocking off the inner ends of said spaces.

2. In a suction nozzle, a hollow body having walls bounding a suction opening, the lower edge surfaces of said walls forming nozzle lips, the lip of one of said walls being formed with teeth having spaces therebetween, the ends of said teeth being substantially flush with the surface of said lip, said wall being formed inwardly of said teeth with a channel open only at the bottom and extending upwardly from the surface of said lip a distance greater than the length of said teeth, whereby the inner ends of said spaces communicate with said channel, the outer ends of said spaces being closed by said wall, a member movably disposed in said channel and movable between a position in the upper part of said channel above the ends of said spaces and a position in the lower part of said channel blocking off the ends of said spaces, resilient means urging said member downwardly, and cam means for determining the position of said member.

3. In a suction nozzle, a hollow body having walls bounding a suction opening, the lower edge surfaces of said walls forming nozzle lips, one of said lips being formed with teeth having spaces therebetween which communicate with a channel extending inwardly from the surface of the lip, a member movably disposed in the upper part of said channel above the ends of said spaces, said member being formed with an aperture, and a pin journaled in the wall and having a cam located within said aperture for moving said member between a position in which it is above the ends of said passages and a position in which it blocks off said ends.

4. In a suction nozzle, a hollow body having walls bounding a suction opening, the lower edge surfaces of said walls forming nozzle lips, one of said lips being formed with teeth having spaces therebetween which communicate with a channel extending inwardly from the surface of the lip, a member movably disposed in the upper part of said channel above the ends of said spaces, said member being formed with an aperture, a pin journaled in the wall and having a cam located within said aperture for moving said member between a position in which it is above the ends of said passage and a position in which it blocks off said ends, and a spring for causing said member to follow said cam.

5. In a suction nozzle, a hollow body having walls bounding a suction opening, the lower edge surfaces of said walls forming nozzle lips, one of said lips being formed with teeth having spaces therebetween which communicate with a channel extending inwardly from the surface of the lip, a member movably disposed in the upper part of said channel above the ends of said spaces, said member being formed with an aperture and two vertically extending slots, pins fixed in the wall and extending through said slots for limiting movement of said member to a vertical direction, and a pin journaled in said wall and having a cam located within said aperture for moving said member between a position in which it is above the ends of said passages and a position in which it blocks off said ends.

6. In a suction nozzle, a hollow body having walls bounding a suction opening, the lower edge surfaces of said walls forming nozzle lips, one of said lips being formed with a slot extending upwardly from the lip surface, a bar of less width than said slot fixed therein adjacent to the outer side of said wall, teeth formed on the lower edge of said bar forming passages therebetween, a member movably disposed in the remaining portion of said slot beside said bar, and means for moving said member between a position in which it is above the ends of said passages and a position in which it blocks off said ends.

7. In a suction nozzle, a hollow body having walls bounding a suction opening, the lower edge surfaces of said walls forming nozzle lips, one of said lips being formed with a slot extending upwardly from the lip surface, a bar of less width than said slot fixed therein adjacent to the outer side of said wall, teeth formed on the lower edge of said bar forming passages therebetween, the lower ends of said teeth being substantially flush with said lip surface, a member movably disposed beside said bar in the remaining portion of said slot, and means for moving said member between a position in which it is above the ends of said passage and a position in which it is flush with said lip surface.

8. A pneumatic cleaning tool comprising a hollow body having an inlet opening adapted to be presented to a surface to be cleaned and an outlet opening adapted to be connected to a source of suction, the lip defining said inlet having a flat portion with transverse grooves therein extending only part way across the lip and terminating short of the outside edge of the lip, and means comprising a movable member mounted on the inside of the lip for blocking off the inner ends of said grooves.

ADRIAN E. ROSS.