Dec. 25, 1934. G. W. ALLEN 1,985,849

VACUUM CLEANER

Filed June 19, 1931

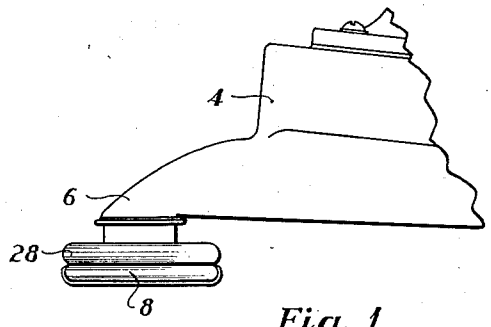


Fig. 1

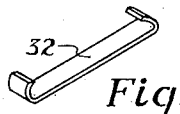


Fig. 4

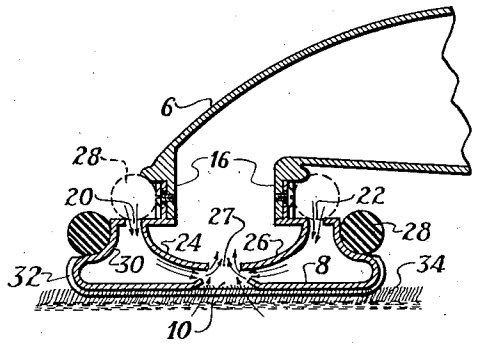


Fig. 2

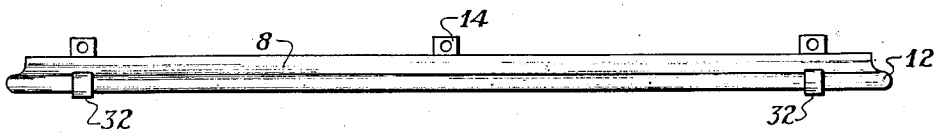


Fig. 3

Witness
Ernest A. Myers

Inventor
George W. Allen
by his attorneys
Van Everen, Fish, Wildrath & Cary

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VACUUM CLEANER

George W. Allen, Boston, Mass., assignor to B. F. Sturtevant Company, Hyde Park, Mass., a corporation of Massachusetts

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6 Claims. (Cl. 15—155)

The present invention relates to vacuum cleaners and more particularly to the traveling type of domestic cleaner that is propelled over the surface to be cleaned with the suction nozzle in contact therewith.

With such a vacuum cleaner difficulty is often experienced in picking up threads or lint from the surface of the rug or carpet, and to facilitate such action it has been proposed to provide auxiliary streams of air which are directed onto the surface to be cleaned for the purpose of loosening and freeing such threads and lint from the nap or pile of the rug or carpet.

The principal object of the present invention is to improve the design and construction of the nozzle portion of such cleaners whereby these auxiliary air streams will be rendered more efficient in the freeing and removal of such threads and lint from the material being cleaned.

A further object of the present invention is to improve the construction of the nozzle shown and described in the Allen and Allen application, Serial No. 388,729, filed August 27, 1929, and to avoid interference with the operation of a nozzle of the type therein shown by preventing the accidental entrance of lint or dirt into the auxiliary air intakes and the partial or complete closure of the air passages.

Other features of the invention consist of certain novel features of construction, combinations and arrangements of parts hereinafter described and particularly defined in the claims.

In the accompanying drawing illustrating the preferred form of the invention, Fig. 1 is a side elevation of the nozzle and fan chamber; Fig. 2 is a sectional elevation of the apparatus shown in Fig. 1; Fig. 3 is an end elevation of the nozzle; and Fig. 4 is a perspective view of one of the skids.

The illustrated embodiment of the invention comprises a vacuum cleaner including the usual fan chamber 4 and inlet chamber 6, a nozzle 8, and the usual supporting wheels, handle, and dust bag.

The nozzle 8 comprises a hollow body having a long narrow slot or mouth 10 extending along the bottom thereof and transverse to the normal direction of movement of the cleaner. The body is provided with a peripheral bulge or flare 12 extending completely around the nozzle. The nozzle is detachable from the inlet chamber 6, and to that end, is provided with a plurality of lugs 14 to be attached by screws to the depending walls 16 at the front end of the inlet chamber.

In addition to the air drawn through the object to be cleaned, air is supplied to the nap or pile of the fabric in opposite directions substantially parallel to the surface by means of front and rear air inlets 20 and 22 in the top flat surfaces of the body portions of the nozzle. These inlets are long narrow slots extending substantially the full length of the nozzle. The placing of the inlets in the top of the body instead of in the side prevents the accidental entrance of lint or thread directly into the body of the nozzle. This safeguarding against entrance of foreign material into the auxiliary air inlets is enhanced by the bulged portion 12 of the body and by the presence of the band 28. Extending from the top of the body portion toward the mouth on both the front and rear sides thereof are side walls 24 and 26 which are curved adjacent to the nozzle mouth to direct the air into substantial parallelism to the surface to be cleaned. As shown in Fig. 2, these walls define a mouth 27 slightly above and narrower than the nozzle mouth 10. The auxiliary air enters in two streams from opposite sides of the mouth and as explained in the co-pending application, it agitates the nap and also dislodges stringy particles from the surface to be cleaned, an action enhanced by the turbulence afforded by the eddying of the streams in the nozzle mouth.

The air inlets 20 and 22 may be closed by a flexible rubber band 28 encircling the nozzle. When the inlets are to be left open, the band is pulled down over the vertical outer side wall 30 and in that position provides a protecting bumper for the nozzle. If it is desired to close the inlets 20 and 22, the band may be placed in its upper position, as indicated by dash lines in Fig. 2.

Near the ends of the nozzle mouth and disposed in the direction of travel are a pair of skids 32, each comprising a removable clip of thin, spring metal attached by sliding it over the ends of the nozzle, the ends of the clip being rounded over the bulged portion 12 of the nozzle body. The skids are sufficiently narrow to cover only a small portion of the mouth, yet are of sufficient thickness to permit the face of the nozzle to engage the top of the nap with good cleaning contact and without permitting it to sink too deeply therein. The skids may be removed for cleaning some classes of materials, if desired, but the cleaner operates entirely satisfactorily on all materials, even though the skids may be left in place.

The action of the skids in preventing chatter is illustrated in Fig. 2. The pile of the surface to be cleaned is indicated at 34 as being inclined against the direction of movement of the cleaner.

Without the skids, the rear edge of the nozzle mouth strikes against the nap and produces a jerking or chattering action, an action which may be accentuated by the blowing of the nap alternately in opposite directions by the opposed auxiliary air streams. This action is more pronounced the greater the suction and the greater the depth of pile of the rug. The skids not only support the weight of the cleaner, and thereby prevent the nozzle from sinking too deeply into the rug, but also afford means whereby travel of the cleaner is facilitated. By pressing directly on the portion of the work to be cleaned, the skids prevent arching of the work with consequent tendency to increase the catching of the mouth edge against the inclined nap. As a result, the nozzle moves over the rug with a sufficient seal on the pile to effect satisfactory cleaning, but with complete avoidance of any tendency for the mouth edge of the nozzle to undergo a jerky motion against the nap.

Although the skids may not be necessary in cleaning hard rugs, nevertheless they avoid any tendency to chatter that may exist, and they do not interfere in any way with the efficiency of cleaning. If desired, however, the skids may be removed for hard rugs by merely slipping them off the ends of the nozzle. On the other hand, for extremely soft and deep piles, it may be desirable, although not usually necessary, to employ more than two skids spaced along the nozzle, the additional skids providing additional support without appreciably limiting the cleaning area of the suction mouth.

Although the preferred embodiment has been shown and described, this embodiment may be modified without departing from the scope of the invention, except as limited by the appended claims.

Having thus described the invention, what is claimed is:

1. A vacuum cleaner nozzle comprising a hollow body portion having a long narrow suction mouth, side walls and top walls on opposite sides of the mouth, the side walls being formed with an inwardly extending groove adapted to receive a flexible bumper band and the top walls being provided with long narrow inlet slots above said groove, and curved fluid directing walls leading from the top walls to the mouth to direct air in substantial parallelism to the work to be cleaned adjacent to the mouth.

2. A vacuum cleaner nozzle comprising a hollow body portion having a long narrow suction mouth, side walls and top walls on opposite sides of the mouth, the top walls being provided with long narrow inlet slots, and curved fluid directing walls leading from the top walls to the mouth to direct air in substantial parallelism to the work to be cleaned adjacent to the mouth, the side walls having an inwardly extending groove below said slots, and a flexible band carried in said groove on the side walls to leave the air inlet slots open and adapted to lie over the top walls to close the slots.

3. A vacuum cleaner nozzle comprising a hollow body portion having a long narrow suction mouth, peripheral walls surrounding the mouth, the peripheral walls being provided with an auxiliary air inlet, a curved fluid directing wall leading from the inlet to the mouth to direct air in substantial parallelism to the work adjacent to the mouth, the walls having a seat below the inlet, and a flexible band serving as a bumper band and to so reduce the effective suction of the auxiliary air inlet as to prevent the passage of material from the surface of the work into the air inlet, the band being carried on the seat to leave the inlet open thereabove and adapted to be shifted to lie over the inlet to close the same.

4. A vacuum cleaner nozzle comprising a body portion having a long narrow suction mouth, peripheral walls having an auxiliary air inlet above the surface of the work to direct air internally of the body portion toward the suction mouth, and a band of resilient material carried by the body and disposed below the auxiliary air inlet and projecting beyond the nozzle to serve as a bumper and to provide an intervening projection between the auxiliary air inlet and the surface of the work to reduce the effective suction of the auxiliary air inlet and thereby to prevent passage of material from the surface of the work into the auxiliary air inlet.

5. A vacuum cleaner nozzle comprising a hollow body portion having a long narrow suction mouth, peripheral walls having an auxiliary air inlet spaced above the bottom face of the nozzle, and a band of resilient material interposed between the open air inlet and the bottom face of the nozzle to serve as a bumper band and also to prevent the direct passage of solid material from the surface of the work adjacent the nozzle into said inlet while permitting the free admission of air therethrough.

6. A vacuum cleaner nozzle comprising a hollow body portion having a long, narrow suction mouth in its bottom face, and peripheral side walls having an auxiliary air inlet spaced above the bottom face of the nozzle, said walls being provided with an inwardly extending groove below said auxiliary air inlet, said groove being adapted to receive a flexible bumper band.

GEORGE W. ALLEN.