Oct. 22, 1963 S. KATT 3,107,387

DOUBLE ACTION SQUEEGEE

Filed Feb. 26, 1962

Fig. 1

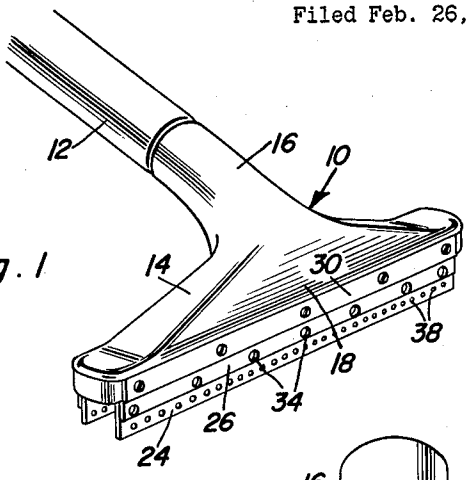


Fig. 4

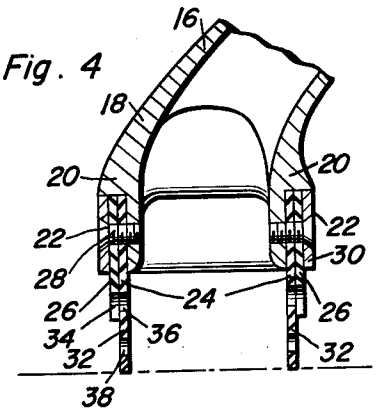


Fig. 2

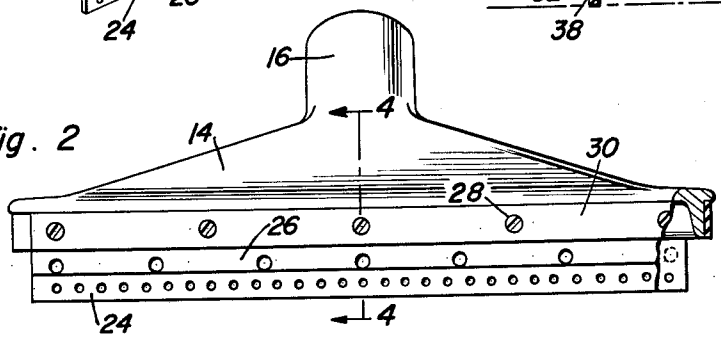


Fig. 3

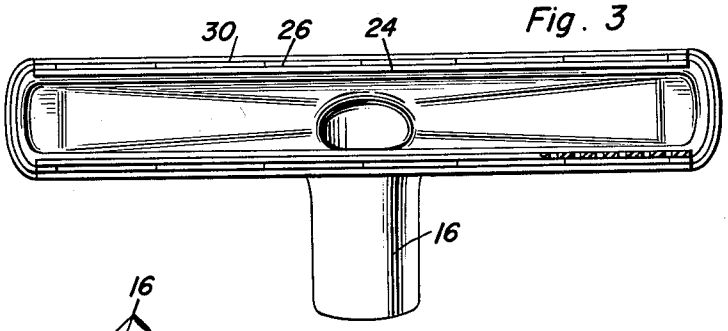
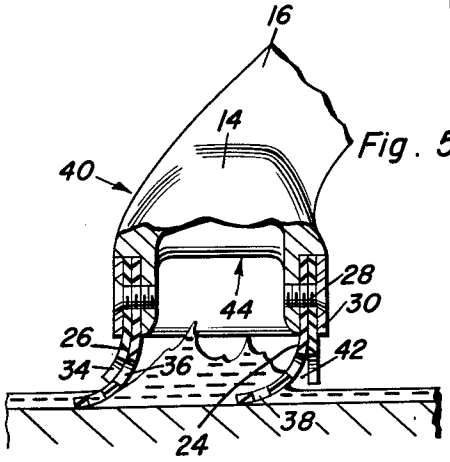


Fig. 5



Sam Katt

INVENTOR.

BY Lawrence O'Brien and Harvey B. Jacobson

Attorneys

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DOUBLE ACTION SQUEEGEE

Sam Katt, 517 Euclid Ave., Sheboygan, Wis.

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This invention comprises a novel and useful double action squeegee and more particularly relates to a suction nozzle for a moisture pick up vacuum cleaner especially adapted for use in removing water or other cleaning solutions from a floor surface or the like.

There are known and available moisture pick up vacuum cleaners having a squeegee suction nozzle or suction head by means of which the water or other liquid with which a floor or similar surface has been cleansed may be picked up by the nozzle and delivered to a storage tank and simultaneously effect a squeegee or brushing or wiping action upon the cleaned floor surface. Such devices, however, are usually characterized by a tendency for the squeegee elements for the suction nozzle head to pile up moisture in front of the same thereby leaving water marks upon the floor being wiped and cleaned. This condition is highly undesirable and requires a greatly increased amount of labor to rectify this disadvantage and to leave a cleaned floor surface free of moisture and of water marks.

It is therefore the primary purpose of this invention to provide a squeegee suction nozzle for a moisture pick up vacuum cleaner of this character which shall substantially overcome the above mentioned objections and will greatly facilitate the operation of wiping a surface free of moisture, removing the collected moisture and avoiding the leaving of water marks upon the surface.

A further object of the invention is to provide a device in accordance with the foregoing objects which shall be capable of being operated with both a pulling and pushing motion as desired thereby greatly facilitating the effectiveness of wiping a wet floor or the like therewith.

More specifically it is an object of the invention to provide an improved squeegee construction for a suction nozzle head for an apparatus of the character above set forth, which will not only apply suction to the suction chamber between forward and rearward sets of squeegee blades, but will also apply suction through the blades themselves to overcome any tendency of moisture to pile up on the exterior surface of the blades.

A further important object of the invention is to provide a double action squeegee nozzle for a moisture pick up vacuum cleaner which shall be of simple inexpensive construction and one wherein any wear occurring in the squeegee blades may be easily overcome by an easy replacement of the blades.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

FIGURE 1 is a perspective view of a squeegee suction nozzle in accordance with this invention and specifically adapted for use upon a moisture pick up vacuum cleaner;

FIGURE 2 is a front elevational view of the nozzle of FIGURE 1;

FIGURE 3 is a bottom plan view of the same;

FIGURE 4 is a vertical transverse sectional view taken upon an enlarged scale substantially upon the plane indicated by section line 4—4 of FIGURE 2; and

FIGURE 5 is a view similar to FIGURE 4 but showing the position of the blades during the use of the device as a squeegee for wiping a wet surface.

In the accompanying drawings the numeral 10 designates generally the improved squeegee suction nozzle in

accordance with this invention and which is adapted to be detachably secured to one end of a suction hose 12 whose other end is adapted to be connected in suitable type of moisture pick up vacuum cleaner, not shown, but whose construction may be of any conventional design and which in itself forms no part of the invention set forth and claimed hereinafter. The squeegee suction nozzle consists of a suction nozzle head 14 preferably of suitable metallic or plastic construction and which includes the usual tubular neck 16 extending from the top and mid-portion of the head for attachment to the suction hose 12. From the tubular neck 16, the head 14 extends laterally to both sides thereof and downwardly therefrom to provide an open bottomed elongated housing or casing 18 having a pair of parallel front and rear marginal walls each of which is designated by the numeral 20, and which walls have their outer surfaces recessed or cut-away to provide recessed vertical plane surfaces 22.

The squeegee suction nozzle further includes inner and outer sets of flexible pliable blades indicated at 24 and 26 respectively. By means of detachable fasteners 28 rigid reinforcing plates 30 of metal or any other suitable rigid material are clamped to the front and rear walls 20 thereby clamping the upper ends of the elongated blades 24 and 26. The arrangement is such that as shown in FIGURES 4 and 5, the upper ends of the two sets of blades are clamped in this recess with outer surfaces of the reinforcing plates or strips 30 being flush with the lower edge of the housing 20 of the suction head.

The blades 24 and 26 are of any suitable material and preferably comprise flat elongated strips of rubber or a suitable plastic having the requisite flexibility but still sufficient stiffness to effect a wiping action when the device is slid over a moistened surface.

In accordance with this invention the inner set of blades 24 have their lower marginal portions 32 projecting downwardly below the corresponding portions of the outer set of blades 26. The lower portions of the outer sets of blades and the upper portion of the inner set of blades are provided with aligned registering apertures 34 and 36 respectively therethrough. The lower marginal portion 32 of the inner set of blades is provided with a further set of apertures 38 therethrough. The basic feature of this invention resides in the construction and arrangement of the apertures and their functions in the set of squeegee blades.

It will be observed that the outer set of blades 26 has as its primary function the stiffening of the upper portion of the inner set of blades so as to thereby greatly reduce the amount of flexing movement which will be imparted to the latter as the squeegee suction head is moved across the floor surface forward or backward. This operation may be observed from FIGURE 5 wherein it will be seen that when the squeegee is moved in the direction indicated by the arrow 40, the outer blade of the rear pair of blades will bear against the downwardly and rearwardly flexing inner blade of the rear pair of blades to reduce the amount of flexing of the latter, to stiffen the same. At the same time, the inner blade of the forward pair of blades will flex away from the outer blade thus leaving a space or clearance 42 therebetween. Any moisture tending to collect in front of the inner blade of the forward set of blades will thus be subjected to the suction through the tube 16 and the open bottom of the housing 14 and through the upper apertures 36 of the inner blade. Consequently, instead of the forward blade pushing moisture in front of it and allowing this moisture to flow across the ends of the blade, any moisture tending to pile up will be immediately drawn between the two blades and inducted into the intake of the suction head.

Moreover, the registering apertures 34 and 36, when

the blades tend to flex away from each other will facilitate this separation between the blades rather than causing the blades to cling together by suction maintained therebetween.

As a resulting of this construction, the space between the front and rear pairs of blades being at all times subjected to suction through the hose 12 and neck 16 to have any moisture such as that indicated at 44 quickly removed from therebetween. Further, owing to the open ends of the two sets of blades any moisture which might pass around the end of the blade will also be subjected to suction and drawn into this suction chamber.

It will thus be observed that there has been provided an improved squeegee suction nozzle which has a greatly increased resistance of the blades in one direction of travel as compared to that of the other direction of travel; and which has a differential effect for removing moisture from the exterior of the blades depending upon the direction of travel of the blades.

When a blade becomes worn it may be readily replaced by merely removing the fasteners 28 and the stiffening plate 30. The device is compact, may be used with any type of moisture pick up vacuum cleaner and will effect a squeegee wiping action upon either pushing or pulling for sliding movement of the suction nozzle in either direction.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. A squeegee suction nozzle for a moisture pick up vacuum cleaner comprising a suction head adapted for connection by a suction hose to a source of suction and having an elongated inlet opening, sets of inner and outer blades of a resilient and pliable material secured to and depending from said head in parallel relation on opposite

sides of said inlet opening, said set of inner blades having their lower marginal edges projecting downwardly below the corresponding edges of said set of outer blades whereby said set of inner blades is stiffened and strengthened against lateral flexing outwardly against the outer blades, said set of inner blades having straight unbroken bottom edges for effecting a uniform wiping action along the entire length of the blades with a surface being wiped by the squeegee nozzle, said marginal edges of said inner blades below said outer blades having a series of lower openings therethrough for passage of moisture from the outer side of said inner blades into the space therebetween for intake into said inlet opening, registering series of openings in said sets of inner and outer blades for breaking the suction between adjacent blades and facilitating inward flexing of said set of inner blades.

2. The combination of claim 1 wherein the space between said sets of blades is open at its ends.

3. The combination of claim 1 including longitudinally extending rigid reinforcing plates, means securing each plate to said suction head for clamping an inner and outer blade therebetween.

4. The combination of claim 1 wherein said suction head has flat, recessed plane surfaces in its exterior sides, said blades being received and seated upon said surfaces.

5. The combination of claim 4 including longitudinally extending rigid reinforcing plates, means securing each plate to said suction head for clamping an inner and outer blade therebetween.

6. The combination of claim 5 wherein the space between said sets of blades is open at its ends.

7. The combination of claim 1 wherein said lower openings are of sufficient size and total area to effect passage of commingled moisture and air therethrough.

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