Nov. 8, 1955 O. L. ALLEN 2,722,710

AREA RESTRICTING RUG PAD FOR A VACUUM NOZZLE

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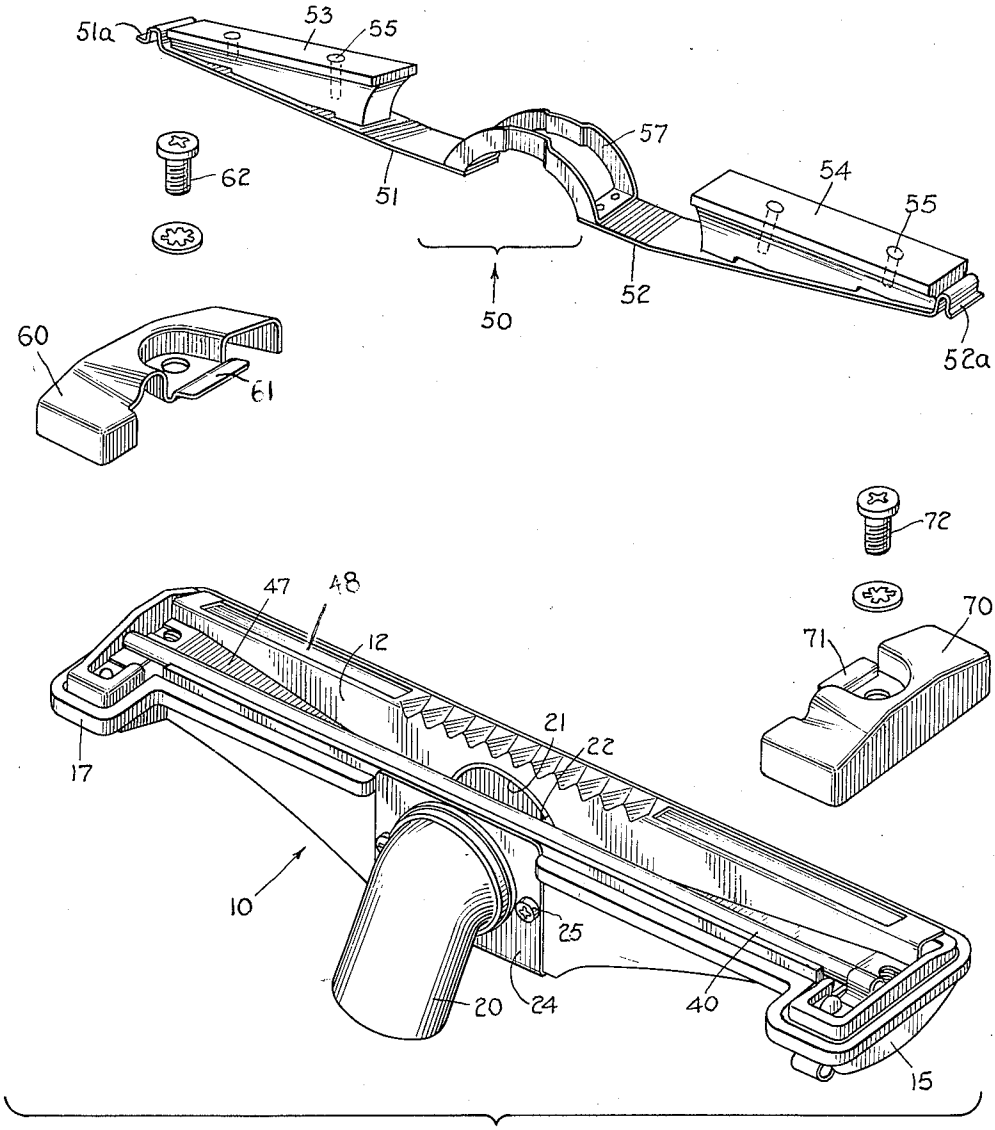


Fig. 1.

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Fig. 2.

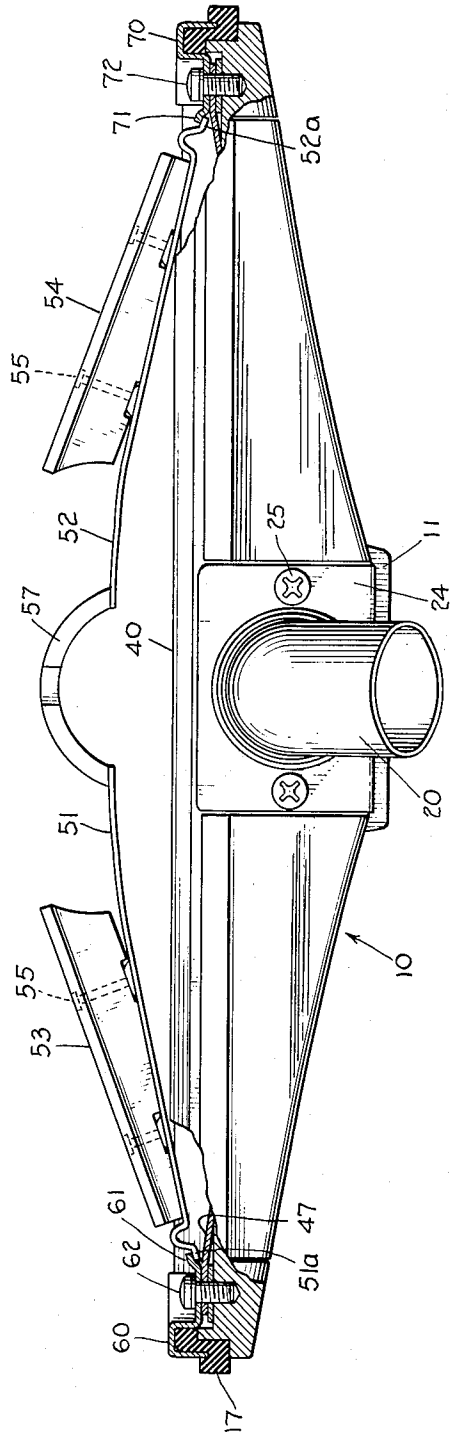
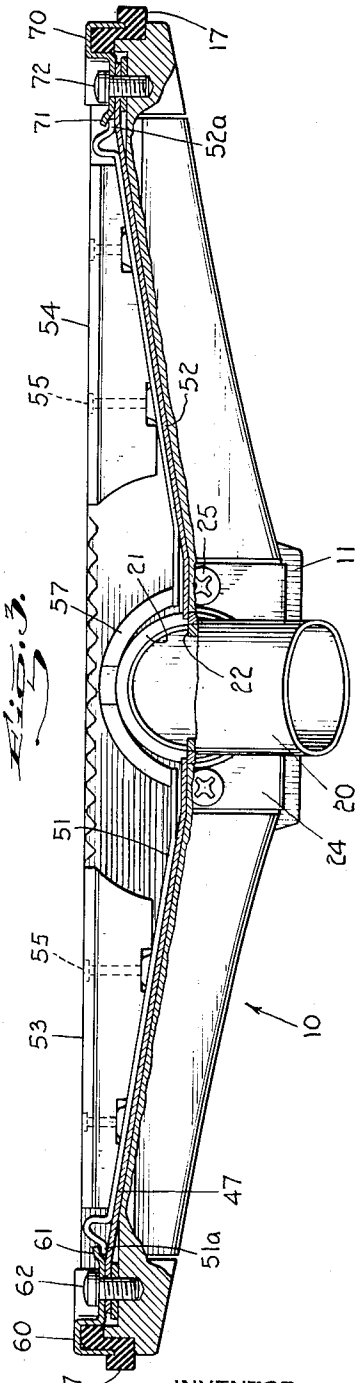


Fig. 3.



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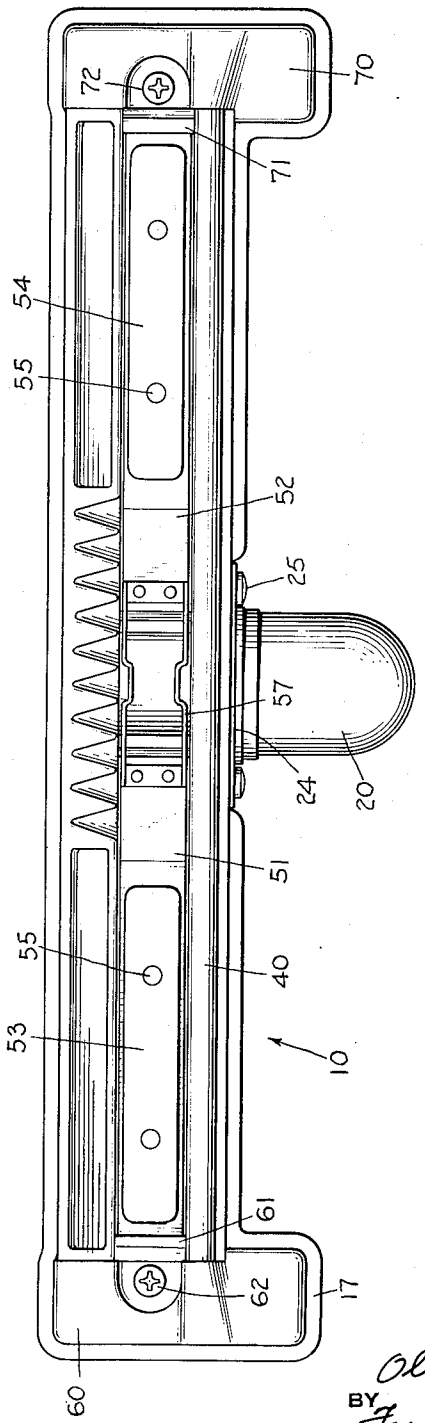


Fig. 4.

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2,722,710

AREA RESTRICTING RUG PAD FOR A VACUUM NOZZLE

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Application February 7, 1952, Serial No. 270,447

8 Claims. (Cl. 15—418)

My invention relates to a new and improved suction nozzle for use in various and different cleaning steps, more particularly, for cleaning corded or long twisted thread type rugs.

My invention also includes an attachment or insert for use with a conventional vacuum cleaner rug nozzle to thereby adapt the latter for cleaning rugs of this type.

I have found that a conventional rug nozzle having a suction opening of usual width is not satisfactory for cleaning this type of rug for the reason that the long and relatively widely separated tufts enter the nozzle opening and engage the edges of the nozzle lips, thus making it difficult to move the nozzle over the rug. Also, the relatively large spaces between tufts provide so much space underneath the lips that the velocity of the air entering a conventional nozzle is too low for efficient cleaning.

Accordingly, one of the objects of my invention is to provide a nozzle having a narrow opening throughout the greater extent of its length. This not only prevents the entrance of the tufts of the rug into the opening to any substantial extent, but the small cross-sectional area of the opening assures a high velocity of the entering air and thus efficient cleaning.

Another object of my invention is to provide a removable insert for converting a conventional nozzle into one having the foregoing features.

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

Figure 1 is an exploded view in perspective of a partially disassembled rug nozzle together with the insert of this invention:

Figure 2 is a plan view of the insert mounted within the nozzle suction opening, with a portion of the nozzle broken away in order to show a preliminary step in its insertion;

Figure 3 is a partially sectional view of the nozzle showing the insert in plan view and self-biased within the nozzle opening; and

Figure 4 is a bottom plan view of the nozzle showing the insert in place and the narrow suction opening throughout the greater extent of its length.

Referring now more particularly ot the drawings, reference numeral **10** designates a conventional suction nozzle of substantially hollow structure having an elongated suction opening **12**. The pad bearing member **50** when inserted into nozzle **10** provides a novel, simple and improved rug cleaning embodiment in accord with this invention, one which is especially adapted for cleaning elongated cord or tufted types of rugs.

The outer ends of the nozzle opening **12** terminate in rearwardly extending wing portions **15**. Adjacent the lips of the lower edge of the body of nozzle **10** and at the rear wall thereof there is provided a bottom bumper channel in which is mounted the bottom rubber bumper **17**. Above the channel the body of the nozzle extends longitudinally inward culminating at the top of the body

in a reduced flat area provided with a small central high velocity aperture which latter is more specifically adapted to apply an intense cleaning action through a swirling vortex when applied to a surface being cleaned.

Nozzle **10** is substantially a hollow casting, its rear wall being provided with an opening through which is inserted a suction elbow **20**, the inner end of which is received in a socket **21** formed in the inside of the front wall. Elbow **20** is secured within the body by a securing plate **24** and screws **25** and is cut away at **22** to cooperate with the socket in such manner as to direct the flow of air through the appropriate upper or lower portion of the nozzle when the corresponding suction opening is disposed towards the surface being cleaned. The outer end of the elbow is adapted to be connected to a conduit leading from a vacuum cleaner in order to apply suction to the interior of the nozzle.

The conventional rubber bumper shown, namely bottom rubber bumper ring **17**, protects furniture against scuffing by the nozzle during a cleaner operation. It is held in position at the front by a lip **48** which extends downwardly and into the nozzle opening **12** and includes a pair of transverse flanges **47** which extend from the socket **21** outwardly to the ends of the nozzle body. A pair of end glider members **60**, **70** secured to the body of nozzle **10** by suitable securing screws **62**, **72** are adapted to engage the surface being cleaned to properly space the lips therefrom. Each glider member is adapted to hold the lower bumper ring **17** in position as well as to overlie the terminal ends of plate **48** and the terminal ends of rear lip forming rod **40**, thus constituting a unitary assembly means for the nozzle member **10**.

Referring now, more particularly, to the structural details of unit **50** which individually and in combination with nozzle **10** forms the subject matter of this invention, it comprises a pair of flat spring steel members **51**, **52** with individual specially shaped pads **53**, **54**, respectively, mounted thereon by rivets such as **55**. A central connecting bridge member **57**, having upwardly bent arching portions, Figs. 1, 2 (downwardly arching when the cleaner nozzle is in position for use on a tufted rug), is secured to the inner ends of the flat spring steel members **51**, **52** by riveting or spot welding, so as to place flat spring members **51** and **52** in substantial linear alignment with each other.

Member **57** thus forms a central port for free access of the suction air stream when the swivel suction elbow **20** is turned with its inner cut away portion **22** in direct communication with the large nozzle opening **12**. When the nozzle is inverted, bridge member **57** provides sufficient space for enabling swivel suction elbow **20** to turn freely and close the large opening in order to direct the air flow through the smaller upper nozzle member.

Pads **53**, **54** are shaped in such a manner as to lie flush with the lower outside cleaning lips of suction nozzle **10** when unit **50** is inserted and snapped into operative position within the cleaner nozzle opening. Pads **53** and **54** are spaced inwardly from the walls of the opening in the nozzle, as shown clearly in Fig. 4, and in addition pads **53**, **54** are separated from each other by a large center opening within which arch **57** lies. Flange **47** forms an upper boundary for the suction passage through the nozzle and also serves to limit the upward biasing action of spring members **51**, **52** which press against flange portion **47** thus retaining said members in fixed position and immobilizing the entire insert structure **50**.

End glider members **60**, **70** each have a small inwardly projecting lug portion in the form of a flanged member **61**, **71** respectively, under which the lateral free ends *51a*, *52a* of flat leaf springs **51**, **52** are retained. Each end glider member **60**, **70** is mounted on the body of

nozzle **10** by suitable securing screws and lock washers **62, 72.**

Unit **50** is readily inserted into the large suction nozzle opening **12** as shown in Fig. 2 by merely placing the ends **51***a*, **52***a* of unit **50** under the respective lug portions having the shape of flanged members **61, 71** of end glider members **60, 70**, respectively, thereby bowing the center **57** of unit **50** upwardly, Fig. 2; then, by pressing downwardly upon center **57**, unit **50** snaps into position bowed in the opposite direction, Fig. 3, and is thus seated well within the nozzle opening. The unit **50** thus is held within the nozzle opening **12** and securely pressed against the transverse pair of flanges **47** which extend from the socket **21** outwardly to the end of the nozzle body, unit **50** being held in place by the inwardly biasing spring action of flat spring steel members **51, 52.** Unit **50** is readily removed by grasping bridge member **57** or either of the inner ends of pad members **53, 54** with the thumb and index finger and pulling outwardly, whereupon the unit arches outwardly and is readily removed.

Various other modifications are intended to be embraced herein. Thus, if it is not desired to have the pads **53** and **54** removable, the structures **51, 52** and **57** may be omitted and the pads **53** and **54** may then be secured by rivets **55** directly to plate **47.**

It is to be understood that the embodiment herein specifically shown and described is merely illustrative and not limitative of the scope of the invention which may be variously otherwise modified within the definition of the appended claims.

What I claim is:

1. A suction nozzle for cleaning a surface comprising an elongated hollow body having a pair of spaced elongated walls, the lower edges of said walls forming lips bounding a suction opening of substantially uniform width, means for connecting a source of suction to said hollow body near the longitudinal center of said opening, and a surface contacting member disposed in fixed position in each end of said body, said members being spaced from each other and each member extending from adjacent one end of said opening to adjacent said means and having a lower surface substantially flush with said lips, said members being spaced inwardly substantially equal distances from said walls.

2. A suction nozzle for cleaning a surface comprising an elongated hollow body having a pair of spaced elongated walls, the lower edges of said walls forming lips bounding a suction opening of substantially uniform width, means for connecting a source of suction to said opening, and a surface contacting member disposed in each end of said body, said members being spaced from each other and each member extending from adjacent one end of said opening to adjacent said means and having a lower surface substantially flush with said lips, and resilient supporting means for said members removably insertable within said elongated hollow body for retaining said members in fixed position, said members being spaced inwardly substantially equal distances from said walls.

3. A suction nozzle for cleaning a surface comprising an elongated hollow body having a pair of spaced elongated walls, the lower edges of said walls forming lips bounding a suction opening, means for connecting a source of suction to said hollow body near the longitudinal center of said opening, and a surface contacting member disposed in each end of said body, each of said members extending from adjacent one end of said opening to adjacent said means and having a lower surface substantially flush with said lips, and resilient supporting means for said members removably insertable within said elongated hollow body, said members being spaced inwardly from said walls, an end glider member affixed at each end of said body and each having a centrally disposed lug, and a cooperatively adapted area on said resilient supporting means engageable with said lugs for holding said surface contacting members stationary in said substantially flush position.

4. In a suction nozzle for a vacuum cleaner of the type having a hollow elongated body having a lengthwise extending opening at the bottom and with a suction tube communicating with the hollow body, the improvement comprising a pair of flat spring members having a U-shaped connecting member between the inner ends of said pair of flat spring members, the entire unit being insertable into said opening, and a pair of inwardly projecting flanged members, one on each end of the lengthwise extending opening, for holding the free ends of the pair of flat spring members against the inner surface of said hollow elongated body in biased position thereagainst, and a pad mounted on each of said flat spring members extending substantially across the opening of said suction nozzle for keeping elongated rug cord elements out of said opening.

5. In an insert for a suction nozzle of a vacuum cleaner wherein the nozzle has a hollow elongated body open at the bottom bounded by nozzle lips and substantially closed at the top and is provided with flanged members at the ends of said hollow elongated body, the improvement comprising flat resilient members nested in the hollow elongated body, said flat members being resiliently expanded into said open body and against the interior of said closed top and between said flanged members whereby they are removably retained due to their resiliency within said hollow elongated body, and a surface contacting member affixed to each of said flat members and having an outer surface substantially flush with said nozzle lips.

6. In a suction nozzle for a vacuum cleaner of the type having a hollow elongated body having a lengthwise extending opening at the bottom bounded by nozzle lips and with a suction tube communicating with the hollow body, the improvement comprising a pair of flat spring members having a U-shaped connecting member between the inner ends of said pair of flat spring members, the entire unit being insertable into said opening, and a pair of inwardly projecting flanged members, one on each end of the lengthwise extending opening, for holding the free ends of the pair of flat spring members against the inner surface of said hollow elongated body in biased position thereagainst, and a pad mounted on each of said flat spring members extending substantially across the opening of said suction nozzle opening, said pads serving as surface contacting members and being retained in fixed position within said suction nozzle opening and having an outer surface substantially flush with said nozzle lips for keeping elongated rug cord elements out of said opening.

7. A suction nozzle for cleaning a surface comprising an elongated hollow body having a pair of spaced elongated walls, the lower edges of said walls forming lips bounding a suction opening, said body being formed with recesses at opposite ends thereof and between said walls, said body being formed with an outlet opening, an insert receivable within said hollow body comprising an elongated resilient structure slightly longer than the distance between said recesses and having ends engageable within said recesses by bowing said structure outwardly, and surface contacting pads mounted on said structure and retained thereby in fixed position with respect to said body when said resilient structure is bowed inwardly through said suction opening and biased into contact with the inner surface of said hollow body.

8. A suction nozzle for cleaning a surface comprising an elongated hollow body having a pair of spaced elongated walls, the lower edges of said walls forming lips bounding a suction opening, said body being formed with recesses at opposite ends thereof and between said walls, one of said walls being formed with an outlet opening extending therethrough near the longitudinal center thereof, an elongated insert receivable within said hollow body comprising a pair of resilient arms joined by a relatively rigid arcuate member, the overall length of said

arms and member being slightly greater than the distance between said recesses, said arms having ends engageable within said recesses by bowing said resilient arms outwardly, and surface contacting pads mounted on said arms and retained thereby in fixed position with respect to said body when said resilient arms are bowed inwardly through said suction opening and biased into contact with the inner surface of said hollow body, said arcuate member extending around said outlet opening.

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