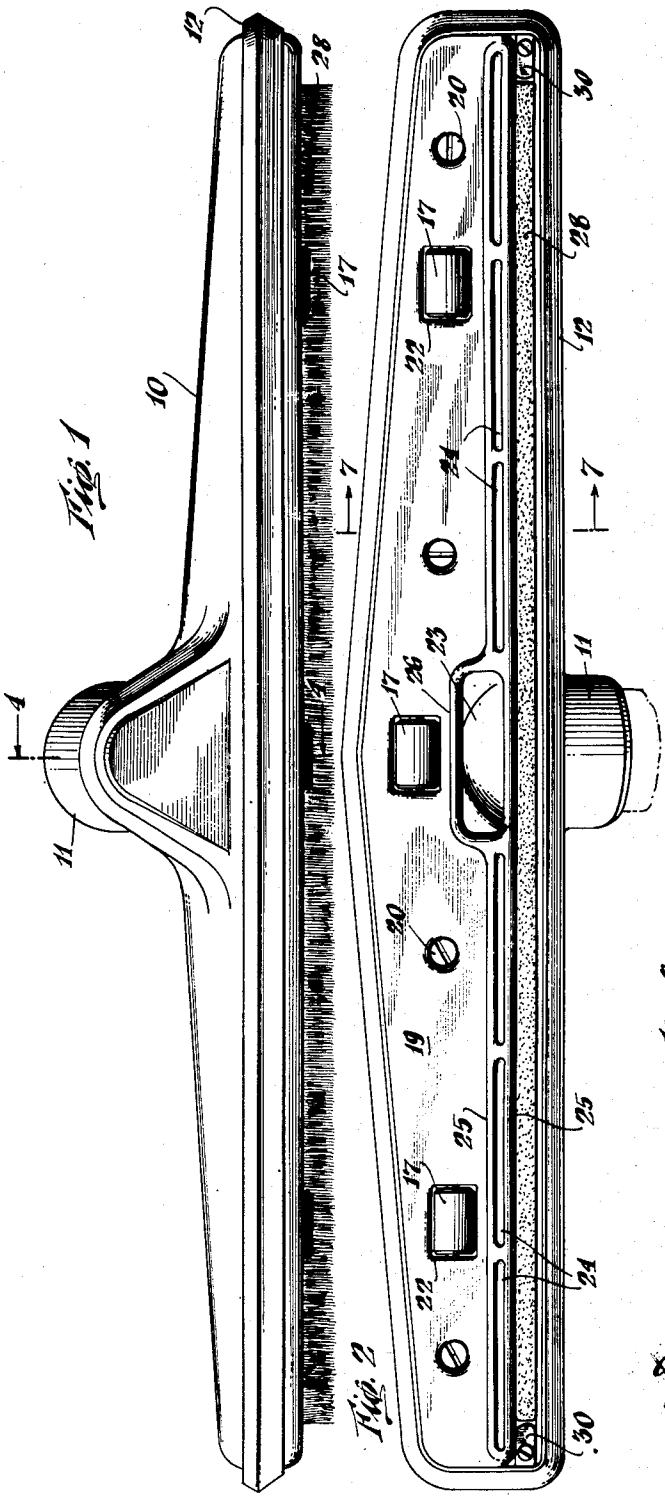
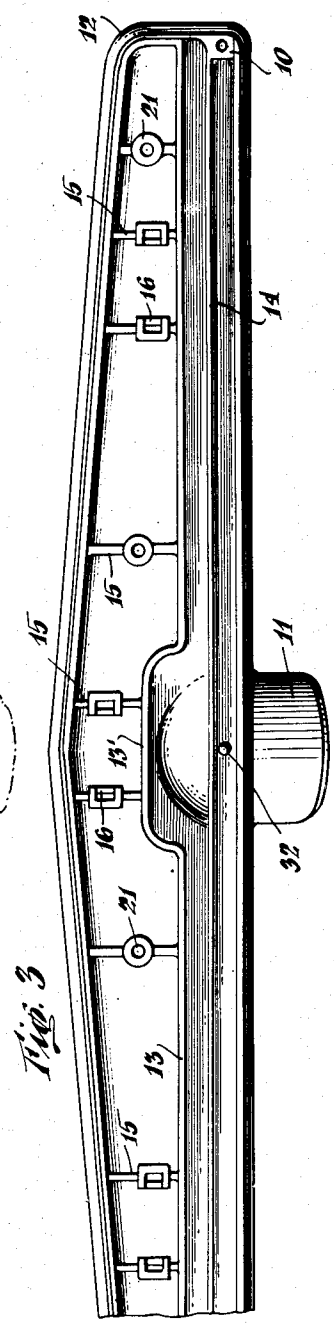
Nov. 10, 1953 C. E. MEYERHOEFER 2,658,228

VACUUM CLEANER NOZZLE

Filed April 22, 1950 2 Sheets-Sheet 1





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VACUUM CLEANER NOZZLE

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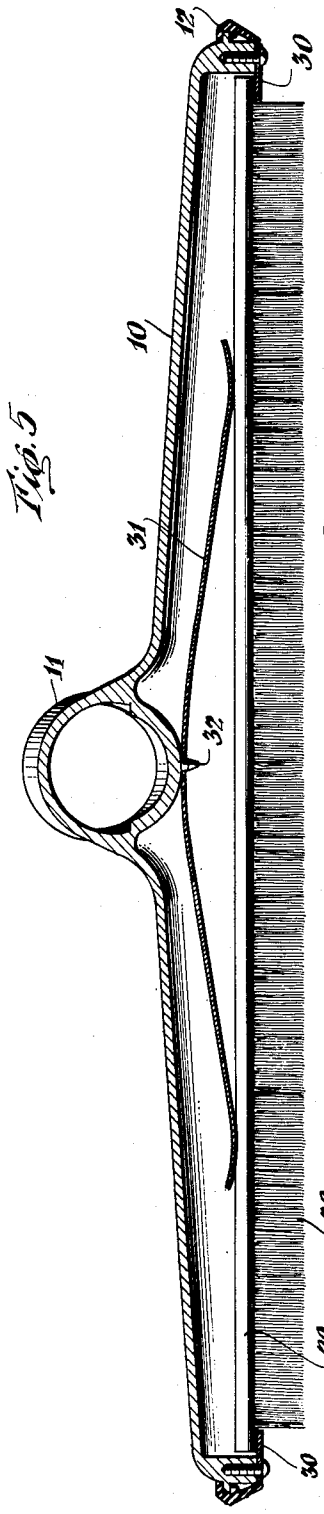


Fig. 5

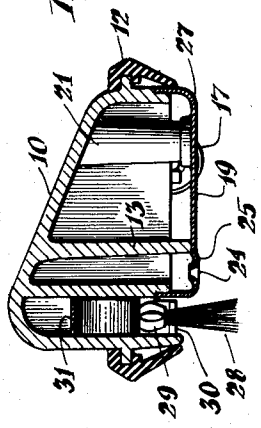


Fig. 7

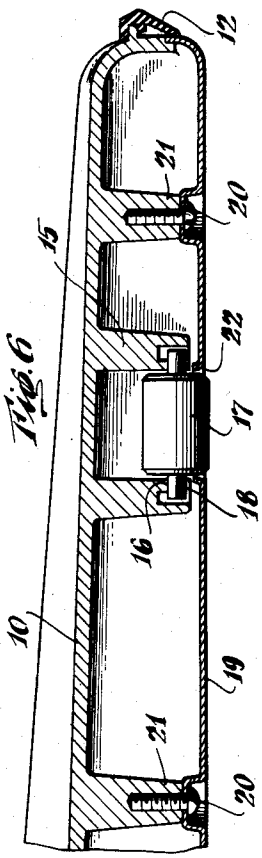


Fig. 6

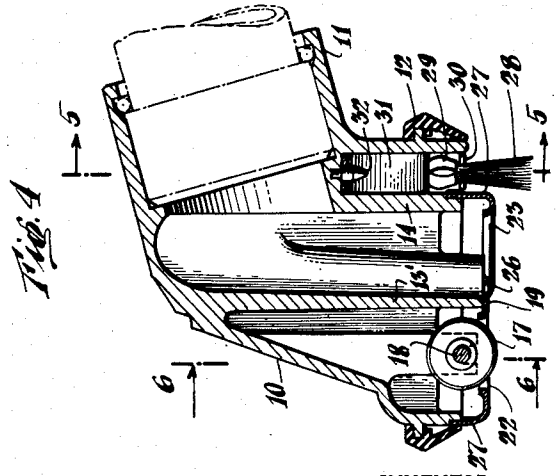


Fig. 4

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VACUUM CLEANER NOZZLE

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3 Claims. (Cl. 15—371)

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This invention relates to a structurally and functionally improved nozzle for use with a vacuum cleaner or similar suction-producing apparatus.

It is an object of the invention to provide a unit of this type and which will be particularly useful when employed in industrial associations and in other instances where relatively large surfaces are present. While the present unit may traverse and clean floor coverings, it is especially intended to be employed on bare wooden floors, concrete, linoleum, and similar surfaces especially where large areas are involved.

A further object is that of furnishing a vacuum cleaner nozzle which may be readily manipulated by the operator and which will cooperate with a surface to be cleaned with such efficiency that particles of matter will be loosened and completely removed from the surface even although the nozzle is traversed over the deck for a minimum amount of time instead of being repeatedly shifted back and forth across an area to be cleaned.

Another object is that of providing a mechanism of this type which will embody relatively few parts each individually simple and rugged in construction, these parts being capable of ready assemblage and when so assembled furnishing a compact article operating over long periods of time with freedom from all difficulties.

With these and other objects in mind reference is had to the attached sheets of drawings illustrating one practical embodiment of the invention and in which:

Fig. 1 is a front view of the nozzle;

Fig. 2 is a bottom plan view thereof;

Fig. 3 is a view similar to Fig. 2, but showing the sole or glider plate removed;

Fig. 4 is a transverse sectional view taken along the lines 4—4 and in the direction of the arrows as indicated in Fig. 1;

Fig. 5 is a sectional view taken along the lines 5—5 and in the direction of the arrows as indicated in Fig. 4;

Fig. 6 is a fragmentary sectional view taken along the lines 6—6 and in the direction of the arrows as also indicated in Fig. 4; and

Fig. 7 is a transverse sectional view taken along the lines 7—7 and in the direction of the arrows as indicated in Fig. 2.

In these views the numeral 10 indicates the body of the nozzle which is preferably formed of a relatively light weight metal and which is hollow. In accordance with conventional construction, this body embraces front and rear walls spaced from each other. These walls are connected adjacent their ends by side wall portions. All of these parts are preferably integral with each other and extend upwardly to furnish a housing or cover portion. Thus, only the lower edges of these walls define an opening which functions as the suction mouth for the nozzle. Extending rearwardly and upwardly from this body is an outlet hub 11 by means of which it may be connected to a suction-producing apparatus (not shown). Such connection will, in the usual manner, ordinarily include a hose, wand section, etc. In accordance with conventional practice a strip 12 of yielding material may extend around body 10 and provide a cushion or bumper so that the nozzle will not come into damaging contact with walls, articles of furniture, etc.

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Extending longitudinally of the nozzle body and substantially centrally thereof is a partition 13. This partition may be integral with body 10. The central portion of the partition is bowed or extended forwardly as indicated at 13'. This part is provided at a point preferably centrally of the ends of partition 13 and thus substantially in line with the outlet 11. A second partition 14 is provided to the rear of and spaced from partition 13. The partition is spaced forwardly from the inner face of the rear nozzle wall. Likewise, partition 13 in addition to being spaced forwardly of partition 14 is spaced from the inner face of the forward wall of the nozzle body. Thus, a well portion is furnished between the nozzle body and partition 14 which portion may be occupied by a brush, squeegee or similar unit as will be hereinafter described. As is apparent, space also exists between the front surface of body 10 and partition 13. Extending across this space to provide supports and to rigidify the nozzle are a series of transverse webs or partitions 15. Certain of these partitions are disposed more closely to each other than to the remaining partitions of the assembly. The pairs of partitions thus provided mount opposed retaining portion 16. The outermost of these portions are disposed immediately in advance of partitions 13. The central pair of portions 16 are preferably provided adjacent the forward wall or surface of body 10. Rollers 17 are arranged between the pairs of portions 16 and have their shafts 18 riding in bearing contact with the receiving portions 16. The height of the partitions 15 mounting the bearing portions 16 and the diameter of the rollers 17 is such that

the lower surfaces of the latter extend slightly below the lower face of the entire assembly; this having been especially shown in Figs. 4 and 6.

A sole or glider plate 19 is furnished for covering the lower face of body 10. This plate is conveniently maintained in position by means of securing elements 20, the threads of which engage with the threads of socket portions 21 preferably formed in those transverse webs 15 which do not mount portions 16. The plate is formed with openings 22 through which rollers 17 may extend. It is also formed with an opening 23 in line with the forwardly extending portion 13' of partition 13. To each side of opening 23 plate 19 is formed with a series of relatively narrow and long slots 24. Each of these slots is framed or defined by a downwardly extending bead or lip 25. A similar lip portion 26 defines or frames the opening 23. The front and rear edges of plate 19 are preferably upturned as indicated at 27. The length of partition 13 is such that it will engage the inner face of the plate when the latter is properly mounted upon the body of the nozzle. Therefore, under such conditions, the compartments of the nozzle are isolated from each other insofar as a flow of air from one to another is concerned.

Within the rear compartment or well of the nozzle between the rear face of body 10 and partition 14 a brush may be disposed. This brush preferably includes a row of bristles or tufts 28 secured to a backing strip 29. Inwardly extending retaining members 30 are mounted adjacent the ends of body 10 in line with the rear wall portion and these elements overlap the ends of strip 29. Accordingly, the latter will not shift from a position within the well. This brush is normally retained in projected position as shown especially in Figs. 4 and 5 by conveniently employing a spring 31 which may have its central portion formed with an opening through which a retaining pin 32 passes in line with the lower surface of the outlet hub 11. The ends of the spring bear against the upper edge of strip 29 to each side of the center of the latter to achieve the desired result. At this time it is to be understood that while in most instances a brush will be associated with the nozzle and extend into the rear well portion of the same, a rubber squeegee or metal scraping plate might be thus positioned. In such latter event, it is again preferred that the squeegee or blade have an outline similar to that of the brush assembly so that it may be properly retained against detachment from the nozzle although such detachment may be possible of achievement by an operator upon removing the retaining members 30.

With the parts assembled it is preferred that the sole or glider plate 19 have the main surface of its lower face spaced from the surface to be cleaned by approximately $\frac{1}{16}$''. The lips or beads 25 and 26 should extend downwardly so that they clear the supporting surface engaged by rollers 17 approximately $\frac{1}{32}$''. With the brush or its equivalent fully projected it would extend approximately ¼'' below the surface of the plate. Therefore, under normal conditions, the brush or squeegee will contact the surface being cleaned with substantial force and will serve to support the rear part of the nozzle. Under all circumstances this brush or its equivalent will prevent particles from freely passing under the nozzle.

Using a nozzle of this type and with the parts proportioned generally as indicated, it will be found that particles of loose material approached by the forward end of the nozzle will be drawn with considerable velocity towards the slots 24 and the opening 23. The latter will, of course, permit of the passage of larger particles than can pass through slots 24. The velocity of movement of the particles is caused because of the close spacing of the sole plate from the surface being treated and especially the lip or bead portions 25 and 26. The full force of the suction developed by the apparatus connected to the nozzle acts on the relatively small openings 23 and 24. Thus, particles will move rearwardly of the nozzle and will strike against the forward face of the brush or other member. From this face they will rebound forwardly so as to be substantially in line with the opening 23 or slots 24 through which they will pass to the dust collecting apparatus.

Particles adhering to the surface being cleaned will be freed from such surface either by contact with the brush or the element substituted therefor. Where necessary the operator will, of course, flow water over the surface to be cleaned and may cause that surface to be scrubbed which will loosen the particles of matter adhering thereto. The nozzle may be effectively employed even where moisture is present upon that surface and especially if a squeegee or scraper blade is in association with the nozzle. Due to the high velocity of flow there will be no danger of moist particles adhering to the nozzle surfaces. Also particles which still remain adherent to the surface being cleaned will, of course, be loosened by the action of any squeegee or blade which might be employed.

Thus, among others, the several objects of the invention as specifically aforenoted are achieved. Obviously numerous changes in construction and rearrangement of the parts might be resorted to without departing from the spirit of the invention as defined by the claims.

I claim:

1. A vacuum cleaner nozzle including in combination spaced front and rear walls connected to each other adjacent their upper and side edges to provide a nozzle body having a downwardly opening suction mouth, a pair of partitions spaced from each other and also from said front and rear walls, said partitions being disposed generally parallel to each other and to said rear wall and within the mouth of said body, webs extending between the foremost partition and the inner face of said front wall, pairs of retaining portions supported by said webs, rotatable units carried by said portions and extending below the nozzle mouth, an outlet hub carried by said body and communicating with the space between said partitions, and a floor-contacting and cleaning element supported by said body at a point between the rearmost of said partitions and said rear wall.

2. A vacuum cleaner nozzle including in combination spaced front and rear walls connected to each other adjacent their upper and side edges to provide a nozzle body having a downwardly opening suction mouth, a pair of partitions spaced from each other and also from said front and rear walls, said partitions being disposed generally parallel to each other and to said rear walls and within the mouth of said body, webs extending between the foremost partition and the inner face of said front wall, pairs of retaining portions supported by said webs, rotatable units carried by said portions and extending below the nozzle mouth, an outlet hub carried by said body

and communicating with the space between said partitions, a floor-contacting and cleaning element supported by said body at a point between the rearmost of said partitions and said rear wall, a glider plate in contact with the lower edges of said partitions and extending rearwardly from said front wall, said plate being formed with openings through which said units extend and further openings in line with the space between said partitions and through which latter openings air is to pass.

3. A vacuum cleaner nozzle including in combination spaced front and rear walls connected to each other adjacent their upper and side edges to provide a nozzle body having a downwardly opening suction mouth, a pair of partitions spaced from each other and also from said front and rear walls, said partitions being disposed generally parallel to each other and to said rear wall and within the mouth of said body, webs extending between the foremost partition and the inner face of said front wall, pairs of retaining portions supported by said webs, rotatable units carried by said portions and extending below the nozzle mouth, an outlet hub carried by said body and communicating with the space between said partitions, a floor-contacting and cleaning element supported by said body at a point between the rearmost of said partitions and said rear wall, one of said partitions being formed with an extended portion in line with said hub, a glider plate extending rearwardly from said front wall in contact with and across said partitions, said plate being secured to said body and formed with openings through which said units extend, further relatively long and narrow openings in line with the space between said partitions and an enlarged opening in line with said hub and the extended portion of said partition.

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