

Dec. 23, 1952

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BUMPER MOUNTING AND NOZZLE ASSEMBLY
FOR SUCTION CLEANERS

2,622,263

Original Filed Nov. 8, 1947

2 SHEETS—SHEET 1

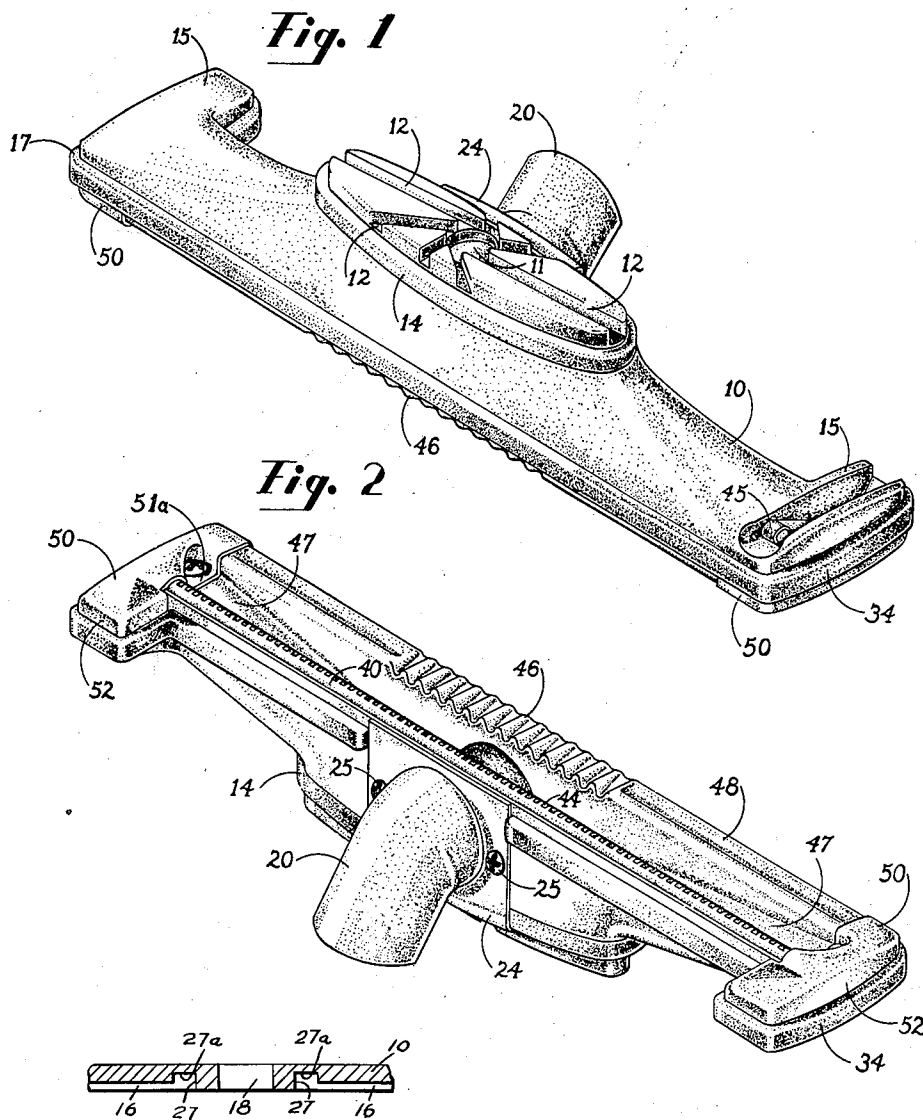


Fig. 4

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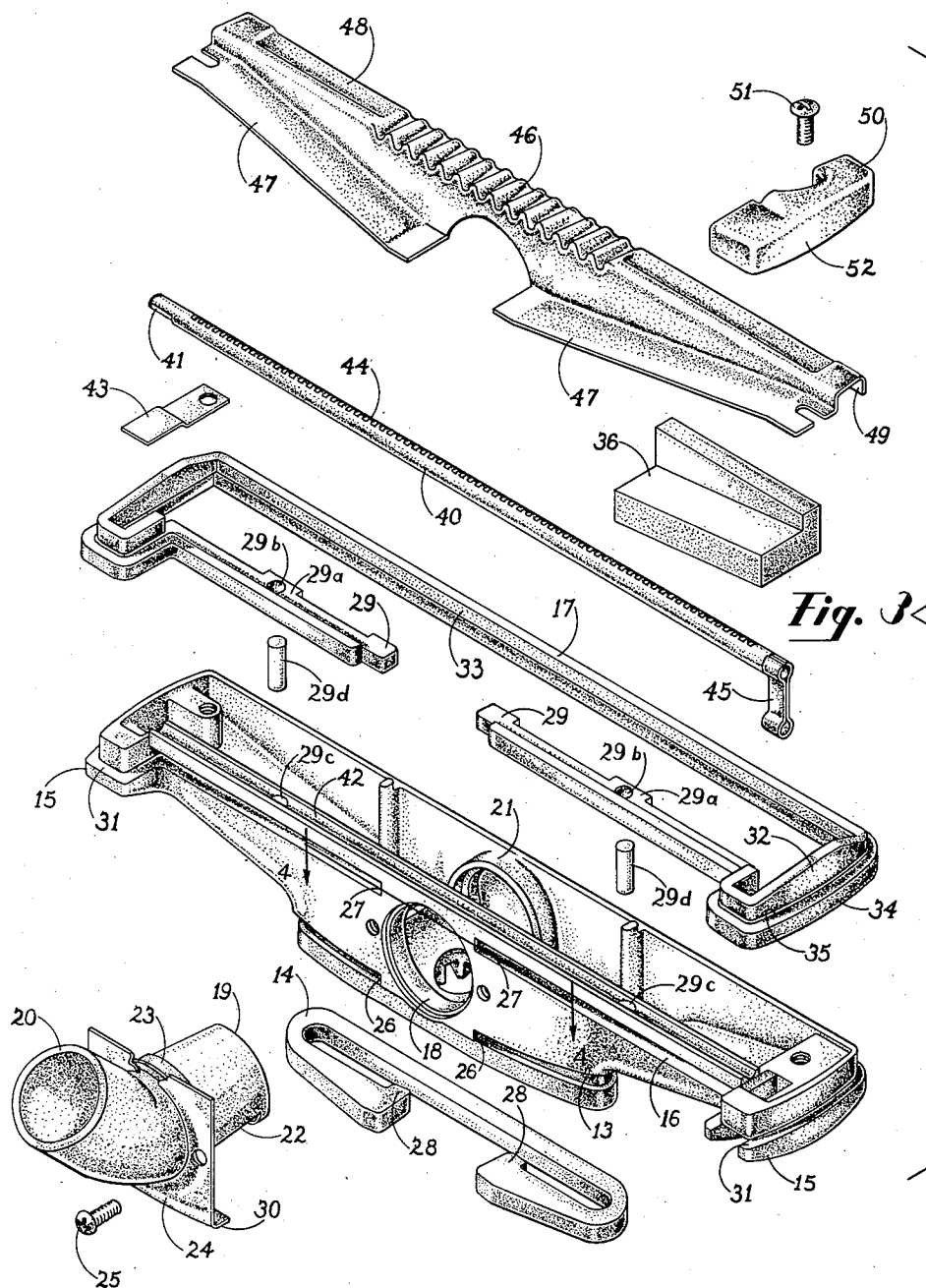


Fig. 3.

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BUMPER MOUNTING AND NOZZLE
ASSEMBLY FOR SUCTION CLEANERS

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Original application November 8, 1947, Serial No. 784,897. Divided and this application November 24, 1948, Serial No. 61,783

6 Claims. (Cl. 15—325)

1

This application is a division of my copending application Serial No. 784,897 filed November 8, 1947.

The present invention relates to rug nozzles for suction cleaners which embody separately characterized rug cleaning apertures and surface engaging elements such that a plurality of types of cleaning may be accomplished by the use of a single nozzle.

The general object of the present invention is to provide a novel, simple and improved nozzle of the type set forth in which the structural arrangement is such as to facilitate manufacture and assembly and whereby the parts are securely united with the minimum of securing elements.

A specific object of the invention is to provide a novel assembly in which a pair of lip forming elements are jointly secured to the body of the nozzle by a novel and improved assembly arrangement which admirably lends itself to economy in manufacture and assembly, while insuring stability after such assembly.

Another object is to provide for a novel and improved bumper arrangement and locking means for securing the bumper on to the body of the nozzle.

Other objects and features of the present invention will be apparent from a consideration of the following specification when taken in conjunction with the accompanying drawings, in which;

Fig. 1 is a perspective view looking towards the top and front of the nozzle;

Fig. 2 is a similar view looking towards the bottom and back of the nozzle;

Fig. 3 is an exploded view of the nozzle shown in Figs. 1 and 2; and

Fig. 4 is a cross-sectional view of a portion of the nozzle taken on the line 4—4 of Fig. 3.

The nozzle of the present invention comprises a body member 10 preferably formed of a casting of aluminum or magnesium or similar light metal alloy. The top of the body 10 is reduced and provided with a small central high velocity aperture 11 which is surrounded with air directing channels 12 which are designed to direct incoming air through the aperture in a swirling vortex so as to apply an intense cleaning action when the top of the nozzle is applied to the surface being cleaned.

Adjacent the face of the top portion of the nozzle there is provided an encircling channel 13 which provides a seat for receiving a top rubber bumper ring 14. Below the channel 13 the body extends longitudinally outwardly, its ends termi-

2

nating in rearwardly extending wing portions 15. Adjacent the lower edge of the body at the rear wall thereof there is provided a bottom bumper channel 16 forming a seat in which is mounted the bottom rubber bumper 17.

The body 10 is substantially hollow, its rear wall being provided with an opening 18 within which is inserted the inner end 19 of a suction elbow or conduit 20. A socket 21 is provided within the body which receives the inner end of the elbow. The elbow 20 is cut away as at 22 to cooperate with the socket in such manner as to direct the flow of air through the aperture of the top when the nozzle is in inverted position in contact with the surface being cleaned and to direct the suction towards the open bottom of the body when the bottom is disposed towards the surface being cleaned. The elbow is also provided with a shoulder 23 by which it is secured within the body by the medium of the securing plate 24 which is engaged with the body by means of securing plate screws 25.

As will be noted more particularly in Fig. 3, the channels 13 and 16 terminate short of complete encirclement at points 26 and 27, respectively, adjacent the rear opening 18. The terminal points 26 and 27 of the channels are provided with inwardly extending portions or depressions which receive the inwardly directed ends 28 and 29 of the respective bumper rings 14 and 17. In Fig. 4 there are shown the depressions 27a at the ends 27 of channel 16, and the depressions at the ends 26 of channel 13 are similar thereto. These depressions are blind, that is they do not extend all the way through the wall of the casting 10, thus obviating the possibility of leakage of air into the interior of the nozzle at these points. It will be noted that at the terminal ends the bumper rings are of such configuration as to lie flush with the outer surface of the body adjacent the opening 18. With respect to ring 17, this is accomplished by indenting the outer surface of the ring adjacent to its ends, while the ends of bumper ring 14 are flush by reason of the fact that the depth of channel 13 in the rear wall of the nozzle body increases towards the points 26. When in assembled position the securing plate 24 engages over the flush terminal portions of the rings, thus securing the ends of the rings within their channels. An inwardly directed flange 30 of the securing plate also acts to overlies the terminal ends of the top bumper ring 14 to assist in securing it within its channel.

While the top bumper ring 14 is mounted

3

throughout its entire length within the upper channel 13 it will be noted that only the rear portion of the bottom bumper ring 17 is so mounted. At the sides and the front edge of the body the bottom ring abuts a flange 31 and extends therefrom to a position below the bottom edge of the body. The downwardly extending portion of the ring 17 constitutes a flange 32 which is inwardly turned as at 33 to cover the terminal edges of the front and end walls of the body. The protruding portion 34 of the ring 17 is grooved as at 35 so as to receive and be secured by the interfitting parts hereinafter to be described. From the following description it will be seen that the downwardly extending portion of the ring acts not only to assist in the securing of the front end portions of the ring, but also acts as a sealing means for the associated parts.

At a point intermediate its ends, each rear channel 16 is formed with an inwardly extending recess which is adapted to receive a projection 29a formed on each rear branch of the bumper 17. Apertures 29b are provided in these projections and the rear wall of the nozzle body is formed with holes 29c extending inwardly from the bottom edge in alignment with the apertures 29b. Pins 29d are inserted through the holes 29c and the apertures 29b so as to positively secure the central portions of rear branches of the bumper in the channels 16.

To assist in rotation of the body with respect to the elbow a weight 36 is mounted within the body at one side of the elbow so as to dispose the center of gravity at a point displaced from the elbow whereby mere lifting of the nozzle from the surface cleaned will impart rotation thereto.

The present nozzle is provided with a lip forming rod 40 which throughout its length is fitted within a circular groove 42 formed in the terminal edge of the rear wall of the body. The holes 29c terminate in the groove 42 and the presence of the rod 40 in the groove retains the pins 29d in place. One portion of the surface of the rod is formed with a longitudinal slot and a multiplicity of transverse slots which intersect the longitudinal slot and which together form a plurality of oppositely disposed surface agitating projections 44. In order to provide for a rotation of the rod so as to dispose either its smooth surface or its slotted surface toward the material being cleaned, one terminal end of the rod is provided with a right angularly disposed arm 45 which extends through a cooperating aperture in the body so that it may be conveniently manipulated from the top surface of the body.

The opposite end of the rod 40 is provided with flat surfaces 41 which selectively abut a fiat retaining spring 43 by which the rod is secured in its selected rotative position.

The rod 40 constitutes one surface engaging lip of the nozzle, while the opposite lip is formed by a plate 46 which extends downwardly and into the nozzle body and includes a transverse pair of flanges 47 which extend from the socket 21 outwardly to the ends of the nozzle body. These flanges 47 provide an upper boundary for the suction passage through the nozzle, and one of them also serves to retain the weight 36 within the nozzle body 10. The plate 46 also includes a forwardly directed section 48 which terminates in an upwardly turned flange 49 which latter is received within the groove 35

4

of the bottom bumper ring 17 to secure the same in position.

As a means of agitating the rug surface, in a manner different from the agitation applied by the projections 44, the section 48 of the plate 46 is provided with an undulated or fluted central section through which air is drawn at a high velocity, while the nozzle is in operation. Such velocity together with movement of the pile of a rug through contact by such undulations will increase the efficiency of the cleaning at this point.

The nozzle assembly is completed by the provision of a pair of end glider members 50 which are secured to the body by suitable securing screws indicated at 51, each member 50 includes a downwardly inclined lower surface fastened at 51a which is adapted to engage the surface being cleaned to properly space the lips from such surface. The ends and sides of each member are turned upwardly to provide flanges 52 which encircle and engage the downwardly extending portion of the lower bumper ring 17. The members 50 also overlie the terminal ends of the rod 40 securing it in position and also overlie the terminal ends of the plate 46, thus constituting unitary assembly means for securing the rod, the plate, and the lower ring 16 all in assembled relation with respect to the body.

From the foregoing it will be understood that the present invention provides a novel, simple, improved structural arrangement which admirably lends itself to economic manufacture and provides for new and improved cleaning action. It will be understood that numerous changes and modifications in this structural embodiment herein presented will not constitute a departure from the scope of the appended claims.

What I claim is:

1. In a suction cleaner nozzle, a hollow elongated body having a suction passage therethrough and formed with a suction inlet communicating with said passage, a pair of spaced parallel bumper ring seats formed in the external surface of said body and extending substantially therearound, all of the ends of said recessed seats being located adjacent to each other, a pair of separate spaced parallel bumper members mounted in said seats, and a single plate secured to said body and spanning said ends of said seats and overlying the ends of said bumper members to secure the same in the seats.

2. In a suction cleaner nozzle, a hollow elongated body having a suction passage therethrough and formed with a suction inlet communicating with said passage, a pair of spaced parallel bumper ring seats formed in the external surface of said body and extending substantially therearound, all of the ends of said recessed seats being located adjacent to each other, a pair of spaced parallel bumper members mounted in said seats, said body being formed with an aperture communicating with said suction passage, a conduit rotatably received in said aperture, and a plate secured to said body and spanning said ends of said seats and overlying parallel portions of said bumper members to secure the same in the seats, said plate constituting a means for securing said conduit to said body.

3. In a suction cleaner nozzle, a hollow elongated body having a passage therethrough and formed with a suction inlet communicating

5

with said passage, a pair of bumper ring seats formed in the external surface of said body and extending substantially therearound, all of the ends of said recessed seats being located adjacent to each other, said body being formed with blind depressions extending into the body from the ends of said seats, a bumper member mounted on each of said seats, projections from said bumper members extending into said depressions, and a single plate secured to the exterior of said body and overlying said bumper member in the regions of said projections to retain the latter in said depressions.

4. In a suction nozzle for cleaning a surface, a hollow body having a suction passage there-through and having a pair of substantially parallel elongated side walls, a bumper ring seat formed in the external surface of said body and extending substantially therearound, a bumper member mounted on said seat, a plate member mounted within said body and extending outwardly thereof to extend over the terminal edge of one of said side walls to constitute a surface engaging lip for said side wall and to hold said bumper on a portion of said seat which is on said side wall, a pair of surface engaging end members secured to said body, each of said end members engaging one end of said plate to secure the latter in assembled relation and engaging said bumper to hold it on portions of said seat which are adjacent to the ends of said side wall, and a retaining member secured to the exterior of the other wall to hold said bumper on a portion of said seat which is on said other wall.

5. In a suction nozzle for cleaning a surface, a hollow body having a suction passage there-through and having a pair of substantially parallel elongated side walls terminating in edges bounding a suction inlet opening communicating with said passage, a bumper ring seat formed on the external surface of one of said side walls adjacent to the edge thereof, said wall being formed with recesses extending thereinto from said seat, a bumper member mounted on said seat, projections from said bumper member extending into said recesses and formed with apertures, said one side wall being formed with holes extending parallel with

6

said wall from said edge to said recesses, pins extending from said holes into said apertures to retain said bumper member in place on said seat, and means for retaining said pins in said holes.

6. In a suction nozzle for cleaning a surface, a hollow body having a suction passage there-through and having a pair of substantially parallel elongated side walls terminating in longitudinally extending edges bounding a suction inlet opening communicating with said passage, the longitudinally extending edge of one of said side walls being formed with a longitudinally extending groove, a bumper ring seat formed on the external surface of said one side wall adjacent to said edge, said wall being formed with recesses extending thereinto from said seat, a bumper member mounted on said seat, projections from said bumper member extending into said recesses and formed with apertures, said side wall being formed with holes extending parallel with said wall from the groove in said edge and to said recesses, pins extending from said holes into said apertures to retain said bumper member in place on said seat, and a surface contacting lip member disposed in said groove and overlying the ends of said pins to retain the latter in said holes.

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