May 3, 1960 H. A. TAPLIN 2,934,780

VACUUM CLEANER NOZZLE

Filed April 2, 1958

FIG. 1

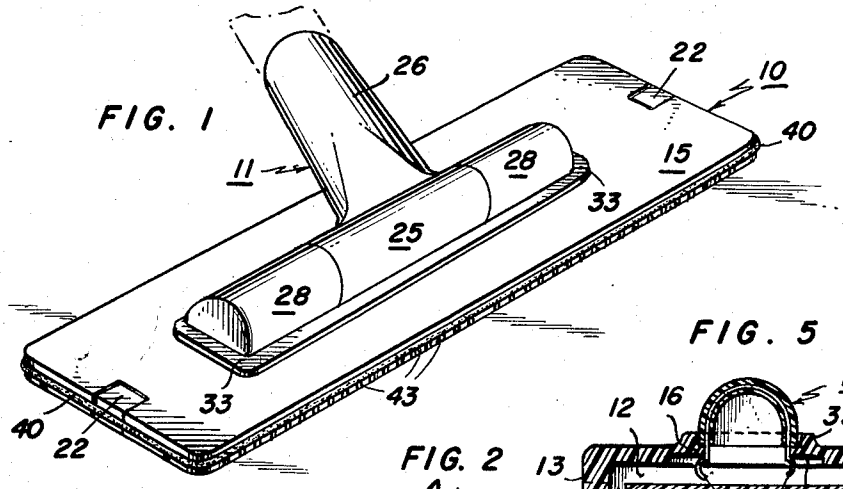


FIG. 5

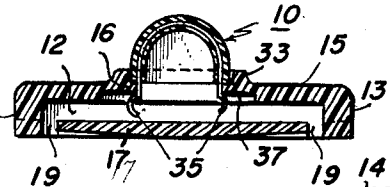


FIG. 2

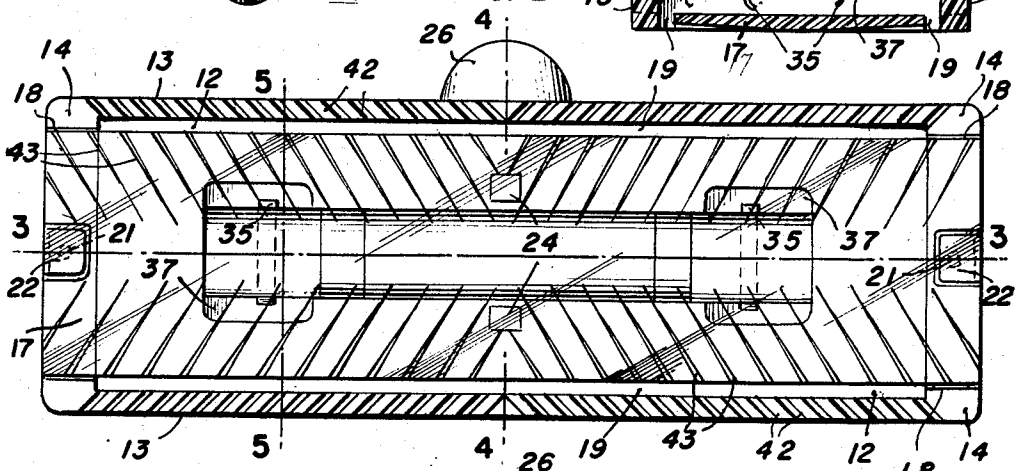


FIG. 3

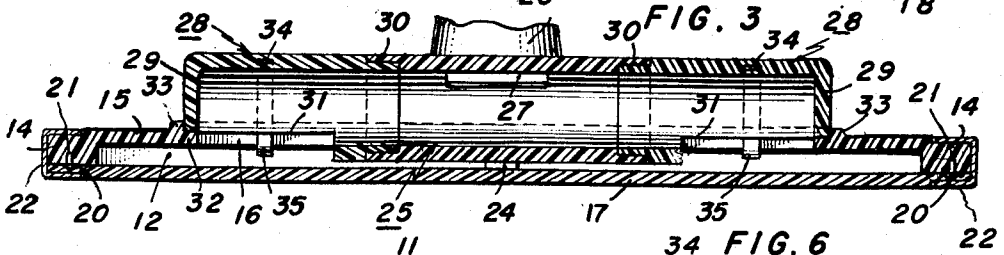


FIG. 4

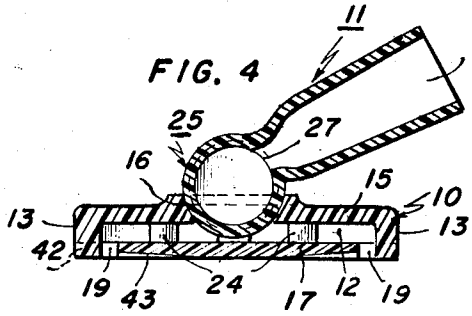
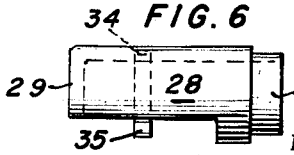


FIG. 6



INVENTOR

HOWARD A. TAPLIN

BY W. B. Willson & Co.

ATTORNEYS

United States Patent Office

2,934,780

Patented May 3, 1960

2,934,780

VACUUM CLEANER NOZZLE

Howard A. Taplin, Los Angeles, Calif.

Application April 2, 1958, Serial No. 725,835

4 Claims. (Cl. 15—402)

This invention relates to vacuum cleaners and more particularly to nozzles used on the handle portions of suction hose of such cleaners for removing dirt, threads, hair and other loose litter from the floors, rugs, carpets, etc.

One object of the invention is to provide a combined nozzle head and pivoted handle unit composed of few parts which are held together by snap action so that the unit may be quickly assembled and disassembled without the use of any tools.

Another object is to provide a lightweight unit of the above character in which all of the principal parts are made of a moldable plastic material that is hard and strong, so that the parts may be formed by a plastic injection mold process or a die cast process, and hence no machining of the parts will be necessary.

Another object is to provide a unit of the above character in which the bottom of the nozzle head is flat and provided with front and rear inlet slots and associated grooves so that the nozzle will effectively pick up threads, hair and the like without the use of stationary or rotary brushes.

With the above and other objects and advantages in view, the invention resides in the novel combinations and arrangements of parts and the novel features of construction hereinafter described and claimed, and illustrated in the accompanying drawings which show the present preferred embodiment of the invention.

In the drawings:

Fig. 1 is a perspective view of the improved nozzle unit;

Fig. 2 is a bottom plan view of the same;

Fig. 3 is a longitudinal section taken on the line 3—3 in Fig. 2;

Fig. 4 is a transverse section taken on the line 4—4 in Fig. 2;

Fig. 5 is a transverse section taken on the line 5—5 in Fig. 2; and

Fig. 6 is a detail view of one of the bearing elements for the pivoted handle section.

Referring more in detail to the drawings the numeral 10 denotes as a whole the nozzle head or body and 11 the tubular handle section. The body is flat and of elongated rectangular shape. The bottom of the body is recessed to provide a chamber 12, depending front and rear walls 13 and depending end walls 14. These side and end walls 13 and 14 depend from a top wall 15 which closes the top of the chamber 12 except for a longitudinally extending centrally positioned opening 16 in which a part of the handle section 11 is mounted as later explained. At the bottom of the chamber 12 is a flat rectangular bottom plate 17 which extends from end to end of the body 10 and has its end portions seated in recesses 18 in the bottoms of the depending end walls. The side edges of the bottom plate 17 are spaced from the side walls 13 to provide front and rear air inlet slots 19 for the chamber 12. The bottom 17 is preferably made from a flat sheet or plate of transparent plastic such as synthetic resin so that the parts within the chamber 12 may be observed as indicated in Fig. 2. The body 10 is also molded of a similar plastic material which is non-transparent, and in order to prevent longitudinal shifting of the plate 17 in the notches 18, metallic pins or studs 20 are molded centrally in the end walls 14 and have projecting ball shaped heads to seat in recesses or sockets 21 formed in the upper face of the plate 17, as seen in Fig. 3. The plate is detachably held on the body by two spring clips 22 which are snapped onto the body and plate at the ends of the nozzle. These clips are U-shaped and made of resilient sheet metal. They are disposed opposite the studs or detents 20 and their two end portions or arms engage depressions or seats formed in the body and plate, as seen in Figs. 2 and 3. If desired one or more spacing studs 24 may be formed on the bottom of the wall 15 for engagement by the intermediate portion of the plate 17.

The tubular handle section 11 is T-shaped having a cylindrical cross portion or head 25 open at both ends and a right angularly projecting straight arm 26 which is also cylindrical, the two parts being in communication through an elongated slot or opening 27. A suction hose or a rigid tubular handle on a suction hose may be telescopically engaged with the arm or end 26, although the latter may be of any desired length. The cross portion of the handle section is mounted for partial rotation in the central portion of the opening 16 by means of two hollow bearing members 28 which fill the end portions of the opening 16 in the top 15. Each of the bearing members is of cylindrical shape with a closed outer end 29 and an open inner end that is telescopically and rotatably engaged with one end of the cross portion 25, as shown at 30, but the bottom of a substantial portion of the bearing is cutaway as shown at 31 so that the interior of the bearing is in communication with the chamber 12, as seen in Fig. 3. The external diameter of the cross portion 25 and of the two members 28 is the same so that these parts nicely fit and fill the opening 16, but at least at the ends of the latter are inwardly projecting flanges 32 for engagement by the flat lower edges of the end walls 29. These flanges or shoulders limit the movement of the telescoped cross portion 25 and the members 28 into the chamber 12; and in order to better position these parts and provide a more leak proof engagement of these parts with the body 10, an upstanding bead or flange 33 is molded on top of the wall 15 and extends entirely around the opening 16, as seen in Figs. 1 and 3. When the parts 25 and 28 are telescopically engaged, they may be removably fastened to the body 10 by a snap action by molding in an intermediate portion of each of the members 28 an inverted U-shaped leaf spring 34. These springs are disposed transversely of the members as seen in Figs. 3 and 5, and the lower portions of their arms 35 project below the cutaway side portion of the members so that when the arms of each spring are pressed toward each other they may be snapped into the adjacent portions of the opening 16. The extremities of the spring arms 35 are bent to form curved shoulders that snap under the lower edges of the wall of the opening 16, as seen in Fig. 5. If desired the bottom of the wall 15 may be formed with recesses 37 at points adjacent the springs.

The usual endless bumper strip 40 of elastic material such as rubber may be stretched around the outer edge of the body 10 as shown in Fig. 1. This strip overlies the spring clips 22 to prevent accidental disengagement of them from the nozzle.

In order to cause the nozzle to more effectively loosen and pick up threads, hair or the like from a carpet or other fabric surface being cleaned, the bottom edge of the side walls 13 and the bottom face of the plate 17 are molded with angularly arranged groove or channels as shown in Fig. 2. The walls 13 have diagonally arranged parallel channels 42, the channels on each side of the longitudinal center of the wall extending in an inward

direction. A similar arrangement of shallow grooves 43 is formed in the bottom of the plate 17 along each of its side edges. These grooves or channels 43 are large along the edge of the slot 19 and decrease in width and in depth as they extend toward the central portion of the plate. These grooves make the bottom plate 17 a wide flat comb with grooves that receive the fibers of the carpet and agitate them to loosen threads. It will be noted that the diagonal grooves 43 in the bottoms of the front and rear walls will form angular teeth that move the nap and tend to loosen dirt as well as loosen hair and threads adhering to the carpet or rug.

It will be noted that the nozzle and handle unit is composed of only five parts all of which may be made of a suitable plastic by the plastic injection mold process or a die cast process so that no machining will be necessary. Further, the parts may be quickly and easily assembled and disassembled without the use of any tools. The unit when made of plastic or a lightweight metal will be very light in weight and relatively inexpensive to manufacture. The pivotal connection between the body and handle section permits the nozzle to effectively clean beneath furniture with short legs. From the foregoing, taken in connection with the accompanying drawing, it will be seen that novel and advantageous provision has been made for carrying out the objects of the invention, and while preferences have been disclosed, attention is invited to the possibility of making variations within the scope of the invention as claimed.

I claim:

1. A combined vacuum cleaner nozzle and handle unit comprising in combination an elongated body of substantially rectangular shape having a top wall and depending side and end walls forming a chamber in the body, a flat substantially rectangular bottom plate extending longitudinally of the body and having its ends fixed to said end walls, the width of said bottom plate being less than the spacing of said side walls to provide two longitudinally extending inlets to said chamber, said top wall having a centrally positioned longitudinally extending opening of rectangular shape, a continuous bead extending upwardly from the top surface of said top wall and surrounding said opening, supporting flanges on said top wall extending inwardly from said bead at the ends of said opening, a swingable tubular handle and bearings therefor set in and closing said opening, said handle having a cylindrical tubular cross portion and said bearings having cylindrical tubular body portions with closed outer ends and with their inner ends telescopically engaged with the ends of said cross portion to permit swinging movement of the handle, the body portions of said bearings being disposed within said bead and having their end walls seated on said supporting flanges to position the handle and its bearings on the body, said body portions of the bearings being

formed with elongated bottom openings in communication with said chamber at longitudinally spaced points, and spring clips carried by said bearings and engaged with said top plate at its opening to removably hold said handle and its bearings on the body for quick attachment and detachment without the use of tools.

2. A combined vacuum cleaner nozzle and handle unit in which the parts may be assembled and disassembled without the use of tools, comprising in combination an elongated body of substantially rectangular shape having a top wall and depending side and end walls forming a chamber in the body, a flat substantially rectangular bottom plate having its ends removably seated in recesses in the end walls with its bottom face of said plate flush with the bottom edges of said side walls, U-shaped spring clips snapped over the ends of said body and said plate to removably fix the latter, the side edges of said plate being spaced from said side walls to provide two longitudinally extending inlets to said chamber, said top wall of the body having a central longitudinally extending rectangular opening, a swingable tubular handle and bearings therefor set in and closing said opening, said handle having a cylindrical tubular cross portion and said bearings having cylindrical tubular body portions with closed outer ends and with their inner ends telescopically engaged with the ends of said cross portion to permit swinging movement of the handle, the body portions of said bearings having openings in communication with said chamber, said bearings having their lower portions engaged with supporting shoulders at said opening in the top wall of the body, and spring clips carried by said bearings to snap into engagement with said top wall at its opening when the bearings are engaged with said shoulders to removably retain the handle and the bearings on said body.

3. The combination of claim 2 in which the bottom face of said plate is formed with longitudinally spaced and diagonally arranged grooves which extend away from its side edges and decrease in depth as they approach the longitudinal axis of the plate, the grooves on each side of the longitudinal center of the plate extending inwardly.

4. The combination of claim 3 in which the bottom edges of the side walls of the body are formed with diagonally extending channels to form angular teeth, the channels on each side of the longitudinal center of the plate extending in an inward direction.

References Cited in the file of this patent

UNITED STATES PATENTS

2,528,278	Kendrick	Oct. 31, 1950
2,799,518	Anderson et al.	July 16, 1957

FOREIGN PATENTS

1,229 of 1913	Great Britain	Jan. 15, 1913