

Feb. 24, 1942.

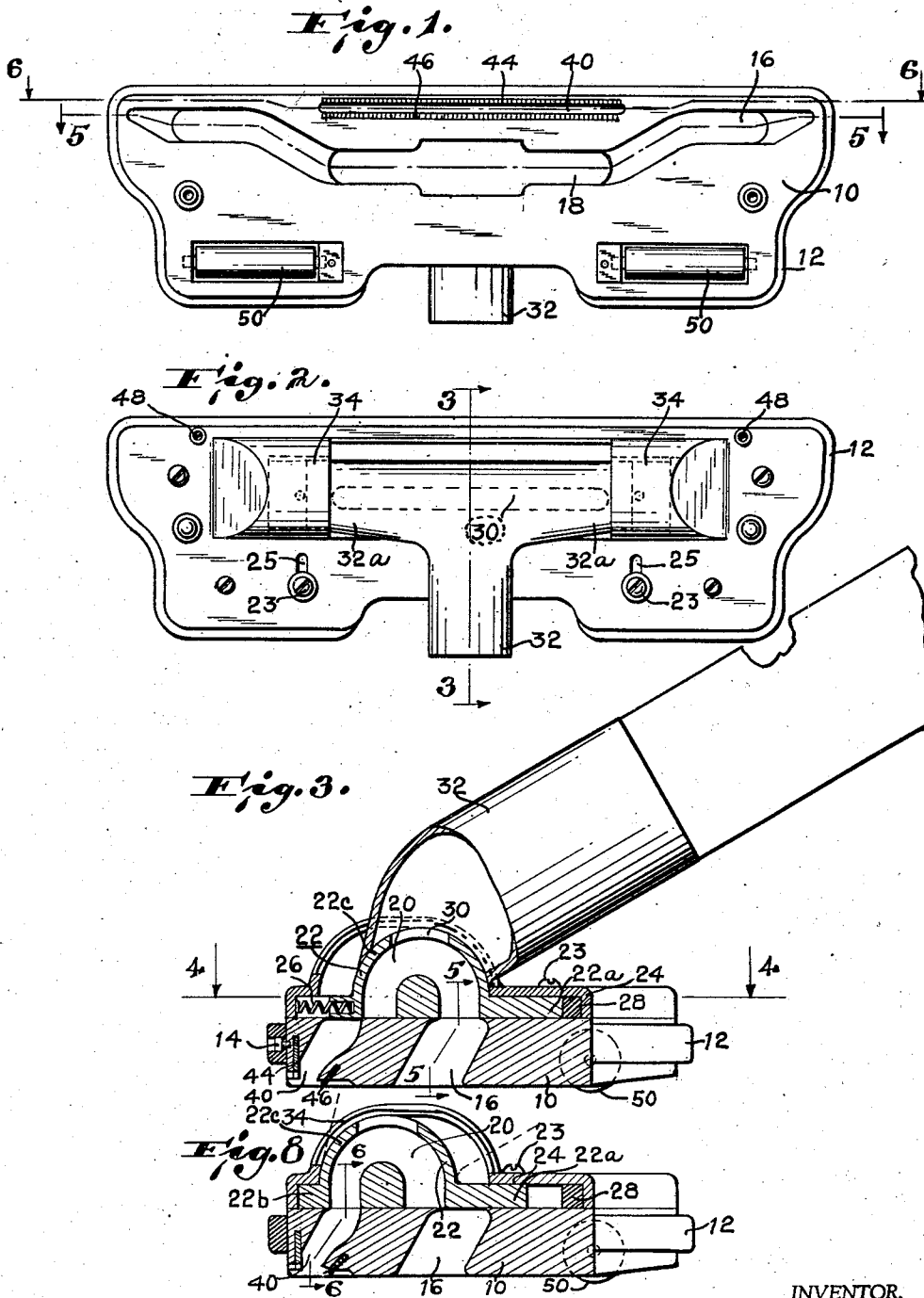
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2,274,560

VACUUM CLEANER ATTACHMENT

Filed July 13, 1939

2 Sheets-Sheet 1



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Fig. 4.

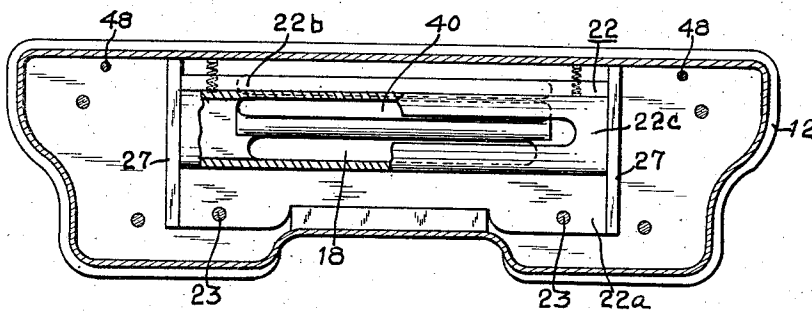


Fig. 5.

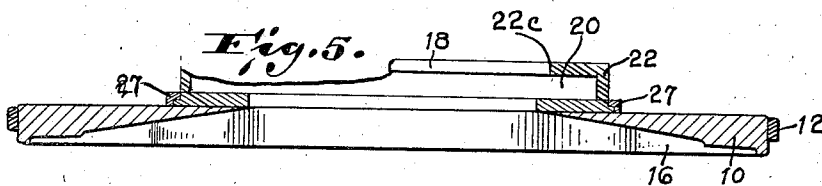


Fig. 6.

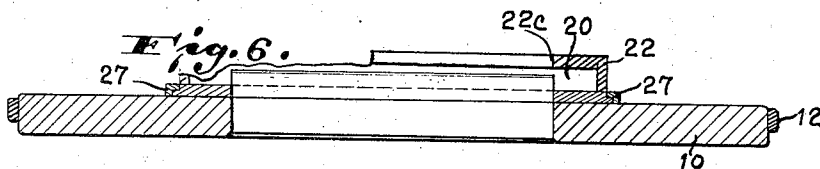
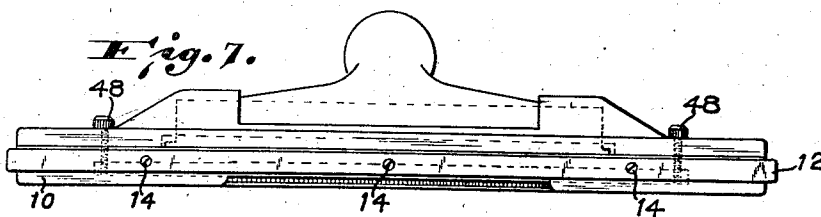


Fig. 7.



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UNITED STATES PATENT OFFICE

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VACUUM CLEANER ATTACHMENT

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3 Claims. (Cl. 15—155)

This invention relates to vacuum cleaners and more particularly to the nozzle thereof.

An object of this invention is to provide a nozzle having controlled suction.

Another object of this invention is to provide a nozzle adapted for cleaning in corners and close quarters, as for example, the edges of the floor along the walls and close to furniture resting upon the floor.

Another object of this invention is to provide a nozzle having a control element responding to the direction of movement of the nozzle to control the suction thereof.

Another object of this invention is to provide a nozzle for a vacuum cleaner having a greater suction per unit area when moving in one direction than when moving in the opposite direction.

Another object of this invention is to provide a composite nozzle, having a base member provided with a pair of passages underlying a capping member enclosing a passage control valve member sliding horizontally across the top of the base member, so as to select the passage.

Another object of this invention is to provide an efficient nozzle for controlling the suction per unit area, which nozzle is easily manipulated, sturdy, dependable and at the same time easily produced.

Another object of this invention is to provide a nozzle adapted for general cleaning when actuated in one direction and for specifically concentrated cleaning when moving in the opposite direction.

Other objects and advantages reside in the construction of parts, the combination thereof and the mode of operation, as will become more apparent from the following description.

In the drawings,

Figure 1 is a bottom plan view of a nozzle for use on a vacuum cleaner, showing the arrangement of the channels normally overlying the surface to be cleaned.

Figure 2 is a top plan view of the nozzle disclosed in Figure 1.

Figure 3 is a cross sectional view taken substantially on the line 3—3 of Figure 2.

Figure 4 is a horizontal cross sectional view taken substantially on the line 4—4 of Figure 3, with parts broken away.

Figure 5 is a cross sectional view taken substantially in the direction of the arrow 5—5 in Figure 3, with parts omitted.

Figure 6 is a cross sectional view similar to Figure 5 taken substantially in the direction of the arrow 6—6 in Figure 8.

Figure 7 is a front elevation of the vacuum cleaner nozzle.

Figure 8 is a cross sectional view similar to Figure 3 with the other passage in use.

A great variety of types and constructions of vacuum cleaner nozzles has been produced for interconnecting the suction device to the surface to be cleaned. In the present embodiment a nozzle has been produced wherein two passages are used for the flow of air into the cleaner, one of said passages having a cross sectional area such that the entire vacuum head is concentrated on a small area, thereby creating a relatively large vacuum per unit area. The other passage is much larger and covers a wider sweep; but in this one the vacuum per unit area is less, as the total vacuum created by the suction device of the vacuum cleaner is distributed over a much larger area. One of the passages is so located in the nozzle head that the nozzle is very effective in cleaning along the edges of a room and adjacent furniture resting upon the floor and the like. In order to increase the benefits that may be derived from the use of a smaller passage having a greater amount of suction per unit area, suitable agitating devices are associated with this passage, so as to mechanically agitate or disturb foreign matter that is otherwise hard to remove. Thus, the suction device of the vacuum cleaner may be effectively used in removing foreign matter difficult to dislodge. This has been accomplished by a mechanical agitator disturbing the foreign matter when it is subjected to the greatest amount of suction per unit area, as will become more fully apparent from the following detailed description of the device disclosed herein.

Referring to the drawings, the reference character 10 indicates a base member of a nozzle of a vacuum cleaner. The periphery thereof is bounded or provided with a rubber bumper or cushioning device 12 secured in position by suitable screws 14, or in any other suitable manner. Member 10 is provided with a long and broad channel 16 extending substantially throughout the width of the base member. The channel 16 opens into the top by passage 18, adapted to communicate with the passage 20 in a valve member 22 mounted for sliding movement on the top of the base 10. This valve member 22 is provided with a rearwardly directed flange portion 22a underlying a capping member 24, holding the valve member 22 in position. This valve member 22 also has a forwardly directed flange portion 22b provided with suitable recesses for

receiving helical springs 26 normally urging the valve member into the rearward position, as viewed in Figure 3, against the cushion or rubber-like member 28, eliminating hammering sounds. Guide members 27, one on either end of the valve member 22, are housed within capping member 24, to guide the valve member 22 in its fore and aft movement. The valve member 22 is provided with a semi-cylindrical dome portion 22c terminating in an elongated outlet slot or passage 30 communicating with a suction T 32, interconnected to the suction device of the vacuum cleaner, having the flanges 32a arranged to project into a channel or recess underlying the guiding portions 34 of the capping member 24.

Valve member 22, when advanced into the position shown in Figure 8, communicates with a passage 40 near the leading edge of the base member 10. It is to be noted that the passage 20 in valve member 22 is substantially U-shaped, so that one leg of the U-shaped passage 20 communicates with the passage 16 when the valve member 22 is in the rear position and the other leg of the U-shaped passage 20 communicates with the passage 40 when the valve member 22 is advanced into the forward position.

Screws 23 threadedly engage flange 22a and project through suitable elongated slots 25 in the capping member 24. These screws are normally free to slide with the valve member into fore and aft position, the slots 25 functioning as guides. In the event it should be desirable to lock the valve member in either fore or aft position, this may be accomplished by tightening the screws 23, so as to lock the valve member 22 in any selected position. If it is desirable to use the channel or passage 16 exclusively, it is merely necessary to tighten the screws 23 when the valve member 22 is in the aft position, as shown in Figure 3. The valve member 22 may likewise be secured in the forward position, as shown in Figure 8. This permits the adaptation of the nozzle for one specific utility if so desired.

When the screws 23 are loosened, this valve member 22 is actuated from one position to the other when the direction of movement of the nozzle changes. When the handle, not shown, which is interconnected to the T 32, is used to push the nozzle forwardly, or to the left as viewed in Figures 3 and 8, the valve member 22 is forced into the forward position as viewed in Figure 8 against the helical springs 26, so as to utilize the narrow short passage 4 in the front of the nozzle. When the movement of the nozzle is reversed, the valve member 22 is shifted from the forward position shown in Figure 8 to the rear position shown in Figure 3, shifting the suction supplied by the suction device of the vacuum cleaner from the passage 40 to the passage 16. As best seen by referring to Figure 1, the passage 40 is very narrow and short, in that it extends only through approximately one-third of the maximum dimension of the base member 10. In addition thereto, the passage 40 is very narrow, thereby having a small cross sectional area receiving the entire suction of the suction device of the vacuum cleaner. By this arrangement, the vacuum per unit area supplied to the work surface to be cleaned through the passage 40 is very high and much higher than the vacuum per unit area supplied through the passage 16.

The valve member 22 is so designed that when the one leg of the U-shaped passage 20 registers

with the passage or channel 16, the other passage 40 in the base is closed, so that no air is drawn through this second passage. In other words, when the valve member 22 is in the position disclosed in Figure 3, the entire suction of the suction device of the vacuum cleaner is supplied solely to this passage. When the valve member 22 is actuated into the forward position shown in Figure 8, the other leg of the U-shaped passage 20 registers with the passage 40, at which time passage 16 is shut off. When the valve member is in the position disclosed in Figure 8, the entire suction produced by the suction device of the vacuum cleaner is supplied solely to the passage 40. In this manner it is possible to control the effectiveness of the vacuum cleaner automatically, by merely reversing the direction of movement of the nozzle.

In order to augment the effectiveness of the high vacuum supplied to the work surface through the passage 40, this passage may be bounded by one or two brushes 44 and 46, one of which is located directly ahead or in front of the passage 40 and the other to the rear of this passage, which brushes are adapted to mechanically agitate any foreign matter that should be removed. One or both of these brushes may be adjustably mounted and adjusted by suitable screws 48.

In order to facilitate handling and manipulating the nozzle head, rollers 50 may be mounted in the bottom thereof, so as to aid in relieving surface friction between the rear portion of the nozzle farthest removed from the passages. Thus, a pressure is exerted upon the handle that has not been shown, so as to force the forward portion of the nozzle into the nap of the rugs or carpets or other fabric surface to be cleaned. This force is absorbed primarily by the forward portion of the nozzle, the rollers 50 supporting the rear portion of the nozzle.

Due to the location of the passage 40 adjacent the leading edge of the nozzle, this nozzle may be used to effectively clean the edges of a room near the baseboards and the like, in that the passage 40 is located in the very front edge of the base member 10. This location, together with the high vacuum supplied to this passage, makes it very effective for cleaning edges of the floor and the like. The rear passage extends over a wider sweep, so as to clean a larger area. This passage is very effective for ordinary cleaning, the forward passage being particularly effective for the removal of foreign matter that is hard to dislodge. The valve member 22 responds to fore and aft movement of the handle, so as to shift the valve member from communication with one passage to communication with the other passage, as the direction of movement of the nozzle is changed, without orienting the nozzle and without exerting a large force upon the handle. This shifting of the nozzle takes place at all times unless the screws 23 are tightened, so as to lock the valve member 22.

Although the preferred modification of the device has been described, it will be understood that within the purview of this invention various changes may be made in the form, details, proportion and arrangement of parts, the combination thereof and the mode of operation, which generally stated consist in a device capable of carrying out the objects set forth as disclosed and defined in the appended claims.

Having thus described my invention, I claim:

1. An attachment for a vacuum cleaner hav-

ing a suction device, said attachment including a base member forming a nozzle having two air passage openings extending in from the bottom of said base member, one of said openings being larger than the other, the larger opening being located to the rear of the smaller opening and having the sides thereof directed forwardly so as to substantially laterally disposed with respect to the smaller opening on the sides thereof a valve member having a U-shaped passage interconnected to the suction device of the vacuum cleaner, said valve member having two normal positions, said valve member when in one of said positions interconnecting the suction device through one leg of the U-shaped passage to one of said air passage openings and when in the other position interconnecting the suction device through the other leg of the U-shaped passage to the other air passage opening, and means responding to the force actuating the nozzle for shifting said valve member from one position to the other.

2. An attachment for a vacuum cleaner having a suction device, said attachment including a base member forming a nozzle having two air passage openings extending through the base, one of said air passage openings being longer than the other, the longer opening being located to the rear of the shorter opening and having the sides thereof directed forwardly so as to be substantially laterally disposed with respect to the shorter opening, a valve member having a U-shaped passage interconnected to the suction device of the vacuum cleaner, said valve member having two normal positions, said valve member

when in one of said positions interconnecting the suction device through one leg of the U-shaped passage to one of said air passage openings, and when in the other position interconnecting the suction device through the other leg of the U-shaped passage to the other air passage opening, and means for locking said valve member in any one of said positions.

3. An attachment for a vacuum cleaner having a suction device, said attachment including a base member forming a nozzle having two air passage openings extending in from the bottom of said base member, one of said openings extending along the forward edge of the nozzle, the other opening being larger and longer extending to the rear of the first mentioned opening, the sides of the larger opening extending forward so as to extend near the front margin of the base to the sides of the smaller opening, a valve member interconnected to the suction device of the vacuum cleaner, said valve member having fore and aft positions, said valve member when in the fore position interconnecting the suction device to the smaller air passage opening extending near the front edge of the nozzle, and when in the aft position interconnecting the suction device to the other air passage opening, the suction device when in the fore position creating a greater vacuum per unit area throughout the area of the smaller opening than in the larger opening when in the aft position, and means responding to the force actuating the nozzle for shifting said valve member from one position to the other.

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