

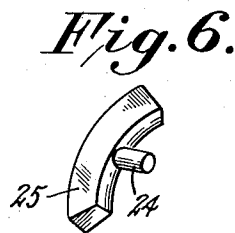
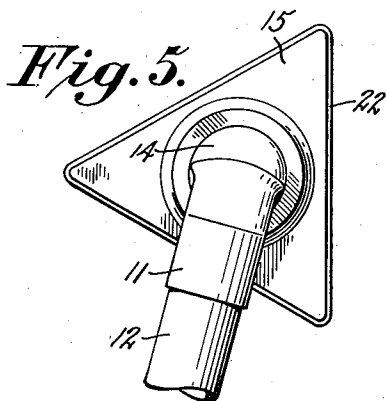
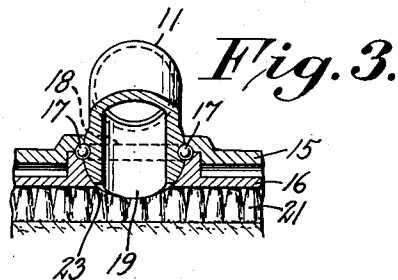
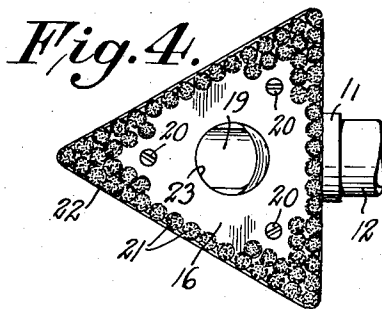
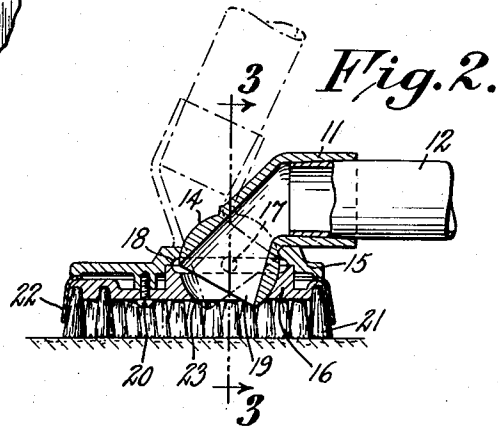
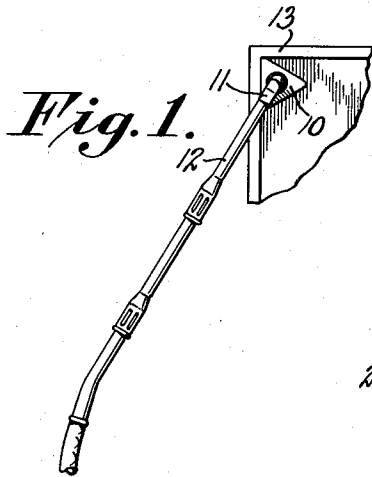
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2,241,771

SUCTION NOZZLE

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2,241,771

SUCTION NOZZLE

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3 Claims. (Cl. 285—91)

My invention relates to a suction nozzle for vacuum cleaners or the like, and more particularly to a nozzle which is movable in two different planes to permit it to follow the surface being cleaned.

An object of my invention is to provide an improved suction nozzle which readily assumes the desired position, depending upon the shape of the surface being cleaned.

Another object of my invention is to provide a nozzle with a ball and socket connection to a conduit, which permits the nozzle to rotate in the plane of the working surface and permits tilting of the conduit with respect to the nozzle and working surface.

Another object of my invention is to provide an improved ball and socket connection for a suction nozzle of rugged construction, consisting of a minimum number of parts, which may be readily assembled together and manufactured at a relatively low cost.

What I consider to be novel in my invention may be better understood by a reference to the following specification and appended claims when considered in connection with the accompanying drawing, in which Figure 1 is a plane view of my improved nozzle located in position for cleaning a window; Figure 2 is a sectional view, on an enlarged scale, of the nozzle and connector; Figure 3 is a sectional view, taken on line 3—3 of Figure 2; Figure 4 is a bottom view of the nozzle; Figure 5 is a top view of the nozzle; and Figure 6 is a perspective view of a modified form of pivot.

Referring to the drawing, 10 indicates my improved nozzle connected by a connector 11 to a suction conduit or tubular handle 12. Nozzle 10 is shown located in position on a window pane adjacent to the window frame 13. The nozzle 10 is of triangular shape to accommodate it for cleaning surfaces having sharp corners, such as windows and the like.

To permit ready rotation of the nozzle 10 and at the same time to permit the tilting of the conduit or handle 12, connector 11 is provided with a ball joint adapted to fit in a spherical cavity or socket provided in the two parts 15 and 16 of nozzle 10. The two parts 15 and 16 are secured to the ball 14 of connector 11 by means of screws 20. To limit the tilting movement of the conduit 12 to a single plane to insure relative stability of the nozzle, two spherical pivot pins or balls 17 are seated in recesses at diametrically opposite sides of ball

14 of connector 11. The two balls 17 act as pivots for the connector 11, permitting the nozzle 12 to be inclined at a greater or lesser angle to the working surface as desired without permitting relatively loose universal movement of the handle. To permit the nozzle 10 to rotate about the connector 11 so that it may follow the irregular boundary of the surface on which it is working, a recess or track 18 is provided in the two parts 15 and 16 of nozzle 10 in a plane parallel to the flat surface of the nozzle in which the balls 17 are adapted to ride. The connector 11 is provided with a passage 19, which communicates with an opening 23 in the nozzle 10 at one end, and with the hollow tubular conduit 12 at the other end. As may be better seen by reference to Figure 3, the provision of the balls 17 for pivotally securing connector 11 to the nozzle and the track 18 cooperate to produce the desired movement of the handle 12 and rotary movement of the nozzle 10, without in any way obstructing the passage between the nozzle 10 and conduit 12. Also, the assembly of the nozzle and connector simply requires that the connector be inserted in one of the two parts of the nozzle, the two pivot pins or balls 17 located in position, and then the other part of the nozzle passed over the connector and secured by means of the screws 20 to the first-mentioned part of the nozzle. This produces a relatively simple construction for accomplishing the desired purposes which may be very readily assembled together. The bottom of part 16 is a substantially flat surface of triangular shape, around the edges of which is secured an annular brush 21. To insure the passage of the air into the nozzle adjacent the free end of the brush 21, a protective band 22 is secured around the edge of the nozzle 10 and is clamped in position between the two parts 15 and 16. In some cases, it may be found desirable to locate the band 22 on the inside of the brush 21 instead of the outside, as shown in the drawing. As better indicated in Figure 4, opening 23 of nozzle 10 is located substantially in the center of the nozzle, and communicates with the passage 19 of connector 11. Instead of the balls 17 for pivoting the connector 11, a cylindrical pin 24, as shown in Figure 6, may be used and connected to an arcuate segment 25, which is adapted to ride in the track provided in the two parts 15 and 16 of nozzle 10. If desired, of course, the pivot pin 24 may be arranged to ride directly in the track 18 of nozzle 10 without the provision of the segment 25.

From the foregoing, it may be seen that an improved nozzle is provided with a connector which permits the nozzle to rotate, to permit it to travel around an irregular surface, and also permits the conduit connected to it to be inclined at any angle desired by the provision of a ball and socket joint with pivot means for limiting the movement of the joint in some respects, without at the same time interfering at all with the operation of the nozzle. In addition, the nozzle and connector are provided with a minimum number of simple parts that may be readily assembled together.

What I claim as new and desire to secure by Letters Patent of the United States, is:

1. In a vacuum cleaner including a nozzle adapted to engage a relatively flat working surface, and a conduit, a ball and socket joint inter-connecting said nozzle and said conduit, and pivot means carried in diametrically opposite recesses in said ball and riding in an annular groove in said socket.

2. In a vacuum cleaner including a nozzle with a flat face and a spherical cavity and a conduit,

a connector for connecting said nozzle to said conduit and having a ball on one end seated in the cavity in said nozzle, two pins carried at opposite sides of said ball, and arcuate segments connected to said pins and adapted to ride in an annular track in said two part nozzle parallel to the face of the nozzle whereby the nozzle may rotate in a plane parallel to its face and the conduit may move in a plane perpendicular thereto.

3. In a vacuum cleaner including a nozzle adapted to engage a relatively flat working surface and a conduit, a ball and socket pipe joint connecting said nozzle and conduit, means providing for limited tilting and rotary movement between said nozzle and conduit comprising cooperating pivot and track means disposed respectively one on the ball and one on the socket with portions located in diametrically opposite positions relative to the ball and riding in said track providing for unobstructed passage through said pipe joint.

LARS JOHAN FAITH ELL.