June 1, 1943. A. E. ROSS 2,320,545

SUCTION NOZZLE

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Fig. 2.

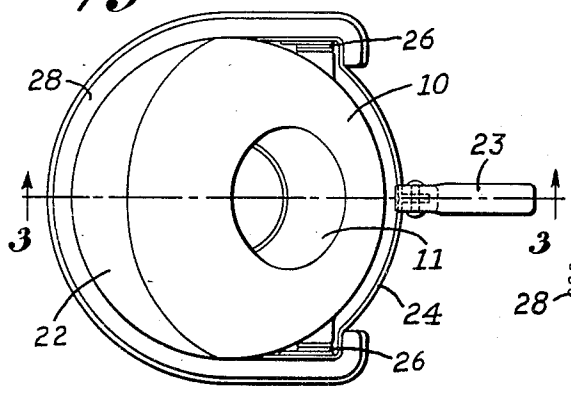


Fig. 1.

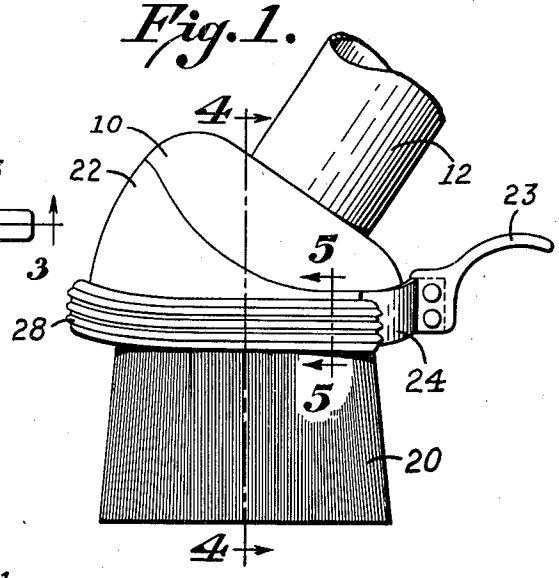


Fig. 3.

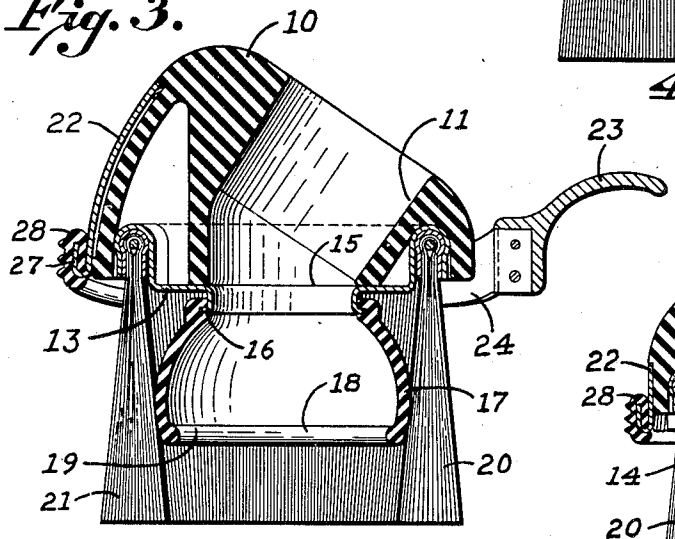


Fig. 4.

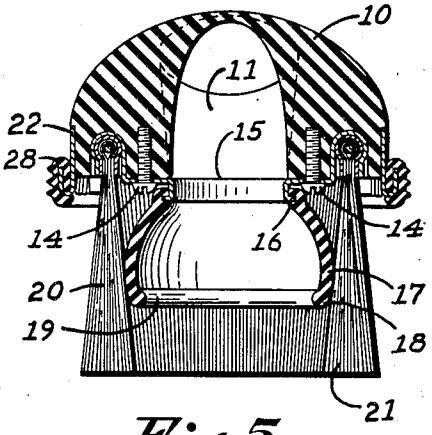


Fig. 6.

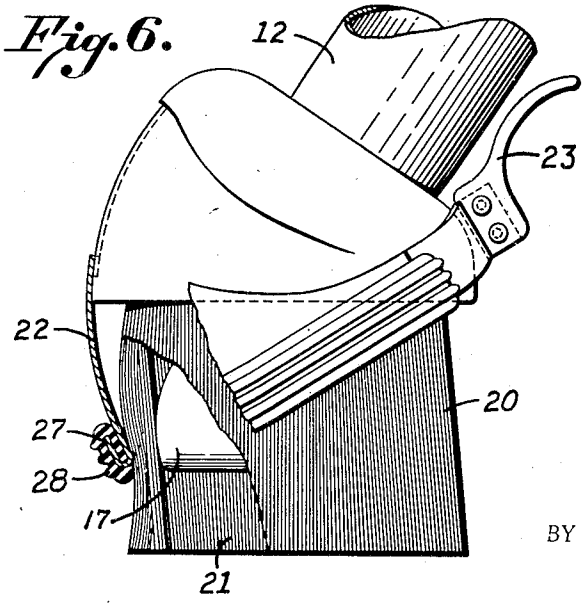
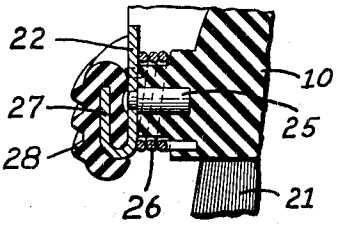


Fig. 5.



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Fig. 7.

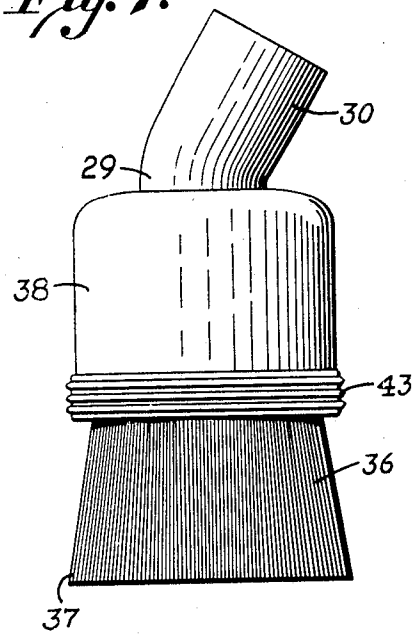


Fig. 8.

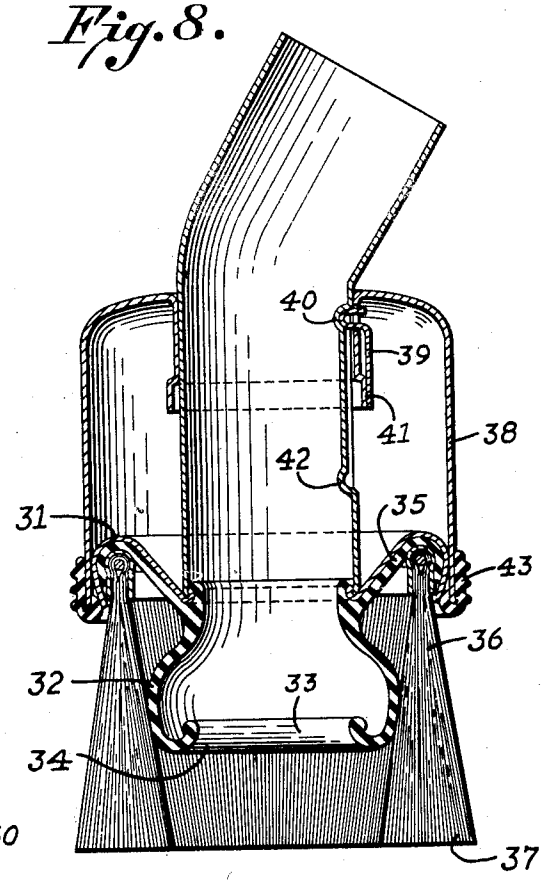
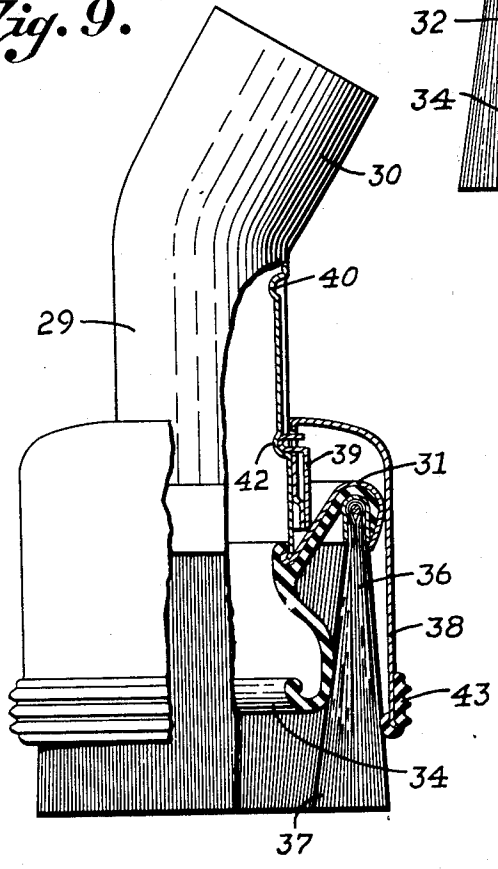


Fig. 9.



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UNITED STATES PATENT OFFICE

2,320,545

SUCTION NOZZLE

Adrian E. Ross, Stamford, Conn., assignor to Electrolux Corporation, New York, N. Y., a corporation of Delaware

Application February 24, 1941, Serial No. 380,219

5 Claims. (Cl. 15—158)

My invention relates to suction nozzles and more particularly to a nozzle adapted for use as a dust remover. A suction nozzle of this type is customarily provided with relatively long flexible brush bristles extending around a suction opening. Such a nozzle, or dusting brush, as it is customarily called, is used for removing light dust from relatively hard surfaces, such as table tops, hard-bottom chairs, pianos, walls, picture moldings, and the like. Usually, a so-called upholstery nozzle is used for cleaning upholstered furniture, curtains, clothes, and other fabric-covered surfaces. However, it is frequently found that when there is embedded dirt in the pile, or nap, of a fabric-covered surface, it is desirable to use a dusting brush because the brush bristles assist in dislodging the dirt within the pile or nap. When tenaciously adhering litter, such as dog hairs, threads, and the like are encountered on such fabric-covered surfaces the brush bristles are too flexible to efficiently dislodge such materials.

An object of my invention is to provide an improved dusting brush with the customarily long flexible bristles with means for increasing the rigidity of the bristles to assist in removing tenaciously adhering litter.

What I consider to be novel and my invention may be better understood by reference to the following specification and appended claims, when considered in conjunction with the accompanying drawings, in which

Fig. 1 is a side view of my improved suction nozzle;

Fig. 2 is a top view of the nozzle;

Fig. 3 is a sectional view taken along the lines 3—3 of Fig. 2;

Fig. 4 is a sectional view taken along the lines 4—4 of Fig. 1;

Fig. 5 is an enlarged detail view taken in section along lines 5—5 of Fig. 1;

Fig. 6 is a side view similar to Fig. 1 showing a removable member in a different position;

Fig. 7 is a side view of a modified form of nozzle;

Fig. 8 is an enlarged sectional view with a removable member in a retracted position; and

Fig. 9 is a similar side view partly in section showing a removable member in a different position than in Fig. 8.

Referring to the drawings, Figs. 1 to 6, 10 indicates a body member of circular shape having an inwardly extending portion 11, forming a connecting member for receiving a tubular member, or hose end, 12 for connection to a source of suction. A base plate 13 is secured to the underside of body member 10 as by means of screws 14. Base plate 13, adjacent a central passage 15 communicating with the interior of body member 10, is provided with an outwardly extending flange 16, adapted to receive a hollow outwardly flared nozzle member 17 formed of resilient material.

Nozzle member 17 is of bulbous shape and has at its free end a reenforcing rib 18 surrounding the central suction opening 19. Secured to the base plate 13 is a cylindrical brush 20 having a plurality of long flexible brush bristles 21 extending around the suction opening 19 adjacent to the nozzle member 17. The brush bristles 21 extend from the body member 10 a substantial distance beyond the end of the nozzle member 17. The nozzle member 17 serves to reenforce the brush bristles 21, and also, to prevent a large flow of air over the entire extent of the brush bristles 21, by limiting the flow substantially to the portion of the brush bristles that extend beyond nozzle member 17. The relatively long and flexible brush bristles 21 very efficiently serve their purpose in disturbing light dust resting on relatively hard surfaces without any danger of damaging a highly polished finish.

When the dusting brush is used for cleaning fabric-covered surfaces, the brush bristles serve to loosen the dirt and dust embedded in the pile or nap surface. To facilitate removing tenaciously adhering surface litter from fabric material, a movable plate 22 is pivotally secured to the exterior of body member 10. Plate 22 is of substantially spherical shape, and in its retracted position overlies the body member 10. When pivoted to the position indicated in Fig. 6, the bottom edge of the plate 22 engages the exterior surface of the brush 20 a short distance from the free edge of the bristles 21. The plate 22, by engaging the brush bristles 21, adjacent the free end, and compressing the brush 20 against nozzle member 17 serves to reduce the effective length of the brush bristles 21. This engagement reduces the flexibility of the brush bristles, and so produces a more efficient rigid means for loosening the tenaciously adhering surface litter.

For moving the plate from one position to the other, a finger grip 23 is provided and secured to a strap 24, formed integrally with the plate 22. Pivot pins 25 are secured to the body member 10 and the plate 22, as best indicated in Fig. 5. The pivot pins 25 are located at opposite sides of the body member adjacent the rear thereof. In using the dusting brush, the tubular

member 12 is usually grasped by the hand adjacent the body member 10, and the finger grip 23 is so positioned that it may be readily grasped by the hand in this position. By compressing the finger grip, adjacent to the tubular member 12, it is moved to the position indicated in Fig. 6, and the plate 22 is projected to engagement with the brush bristles 21. When the finger grip 23 is released, two helical springs 26, surrounding the pivot pins 25, return the plate 22 to its retracted position. The bottom edge of plate 22 is provided with an upturned flange 27 to receive a rubber bumper 28 to prevent damage to furniture by contact with the surface of body member 10.

In Figs. 7, 8, and 9, a suction nozzle is shown consisting of a substantially tubular body member 29 with its end 30 extending at an angle to the main portion of body member 29, forming a connecting member for receiving a tubular conduit, or hose, for connection to a source of suction. Plate 31 is secured to body member 29 by its end being hooked over the end of body member 29 remote from the connector 30. A nozzle member 32 of resilient material is secured to the plate 31 and body member 29. The end of nozzle member 32 extends inwardly and has a reenforcing bead 33 surrounding a suction opening 34. Nozzle member 32 is provided with an integral extension 35 overlying the plate 31. A brush 36 is secured within plate 31 against the extension 35 of nozzle member 32. The brush bristles 37 surround the suction opening 34 and the nozzle member 32. A plate 38 in the form of a cylinder is slidably mounted on body member 29. Plate 38 is held in its retracted position as shown in Fig. 8, by means of spring finger 39 engaging a recess 40 provided in body member 29. Finger 39 is secured to plate 38 at 41 as by means of welding.

When it is desired to increase the rigidity of the brush bristles 37, the plate 38 may be projected downwardly by sliding it over the body member 29, to the position indicated in Fig. 9. In this position, spring finger 39 engages a second recess 42 in the body member 29. The free end of the plate 38 surrounds and engages the brush bristles 37 adjacent to the free ends. When the plate 38 is in this position, the brush bristles 37 are compressed between the nozzle member 32 and the plate 38 as in the construction of Figs. 1 to 6. The plate serves to produce more efficient means for loosening tenaciously adhering surface litter. An annular rubber ring 43 is secured over the edge of plate 38 to serve as a bumper for the nozzle.

It is to be understood that while I have illustrated two forms of construction, in which my invention may be embodied, the invention is not limited to the details of these constructions, but they may be modified and still embody the essential features of my invention.

What I claim is:

1. A suction cleaning tool comprising a hollow body having an outlet adapted to be connected to a tube leading to a source of suction and having an inlet to which is attached a tubular member of resilient material, a band of brush bristles surrounding the inlet mounted on the body member and extending beyond said tubular member, the axis of said band being inclined to the axis of a tube connected to said outlet, a ring pivotally mounted on said body member and extending around said tubular member and said band of bristles, the pivot point being located on that side of the body which lies within the acute angle between said axes, and a finger grip on said ring adjacent said pivot point extending away from said body member adapted to be grasped by that hand of an operator in which the tool is held, said ring when pivoted from normal position into a second position engaging a portion of said bristle band between said tubular member and said ring.

2. A suction cleaning tool comprising a hollow body having an outlet adapted to be connected to a tube leading to a source of suction and having an inlet to which is attached a tubular member of resilient material, a band of brush bristles surrounding the inlet mounted on the body member and extending beyond said tubular member, the axis of said band being inclined to the axis of a tube connected to said outlet, a ring pivotally mounted on said body member and extending around said tubular member and said band of bristles, the pivot point being located on that side of the body which lies within the acute angle between said axes, a finger grip on said ring adjacent said pivot point extending away from said body member adapted to be grasped by that hand of an operator in which the tool is held, said ring when pivoted from normal position into a second position engaging a portion of said bristle band between said tubular member and said ring, and spring means for retaining said ring in normal position.

3. A suction cleaning tool comprising a hollow body having an outlet adapted to be connected to a tube leading to a source of suction and having an inlet to which is attached a tubular member of resilient material, a band of brush bristles surrounding the inlet mounted on the body member and extending beyond said tubular member, the axis of said band being inclined to the axis of a tube connected to said outlet, a ring pivotally mounted on said body member and extending around said tubular member and said band of bristles, the pivot point being located on that side of the body which lies within the acute angle between said axes, and a finger grip on said ring adjacent said pivot point extending away from said body member adapted to be grasped by that hand of an operator in which the tool is held, said ring when pivoted from normal position into a second position engaging a portion of said bristle band between said tubular member and said ring, said ring having a hoodlike plate mounted thereon at the side opposite from said pivot point, the upper extremity of said plate closely engaging the exterior of said body when said ring is in its second position in such a manner as to support the ring.

4. A suction cleaning tool comprising a hollow body having an outlet adapted to be connected to a tube leading to a source of suction and having an inlet to which is attached a tubular member of resilient material, a band of brush bristles surrounding the inlet mounted on the body member and extending beyond said tubular member, the axis of said band being inclined to the axis of a tube connected to said outlet, a ring pivotally mounted on said body member and extending around said tubular member and said band of bristles, the pivot point being located on that side of the body which lies within the acute angle between said axes, and a finger grip on said ring adjacent said pivot point extending away from said body member adapted to be grasped by that hand of an operator in which the tool is held, said ring when pivoted from

normal position into a second position engaging a portion of said bristle band between said tubular member and said ring, said ring having a hoodlike plate mounted thereon at the side opposite from said pivot point, the upper extremity of said plate closely engaging the exterior of said body when said ring is in its second position in such a manner as to support the ring, said plate lying in a depressed portion of the body in its normal position such that the plate and body form a smooth surface.

5. A suction cleaning tool comprising a hollow body having an outlet adapted to be connected to a tube leading to a source of suction and having an inlet to which is attached a tubular member of resilient material, a band of brush bristles surrounding the inlet mounted on the body member and extending beyond said tubular member, the axis of said band being inclined to the axis of a tube connected to said outlet, a ring pivotally mounted on said body member and extending around said tubular member and said band of bristles, the pivot point being located on that side of the body which lies within the acute angle between said axes, a finger grip on said ring adjacent said pivot point extending away from said body member adapted to be grasped by that hand of an operator in which the tool is held, said ring when pivoted from normal position into a second position engaging a portion of said bristle band between said tubular member and said ring, and a resilient cover for the outer periphery of said ring adapted to act as a bumper.

ADRIAN E. ROSS.