

Aug. 28, 1962

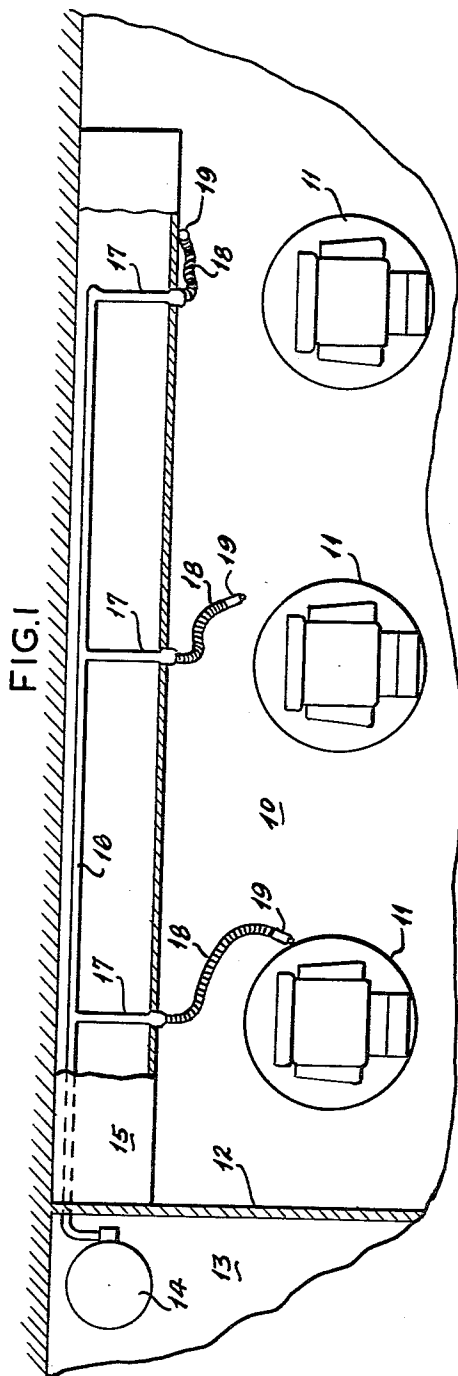
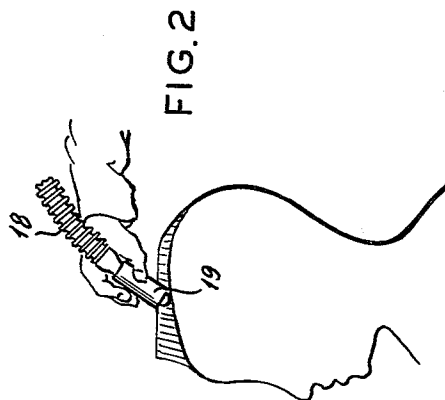
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VACUUM SYSTEM AND NOZZLE FOR REMOVING CUT HAIR

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2 Sheets-Sheet 1



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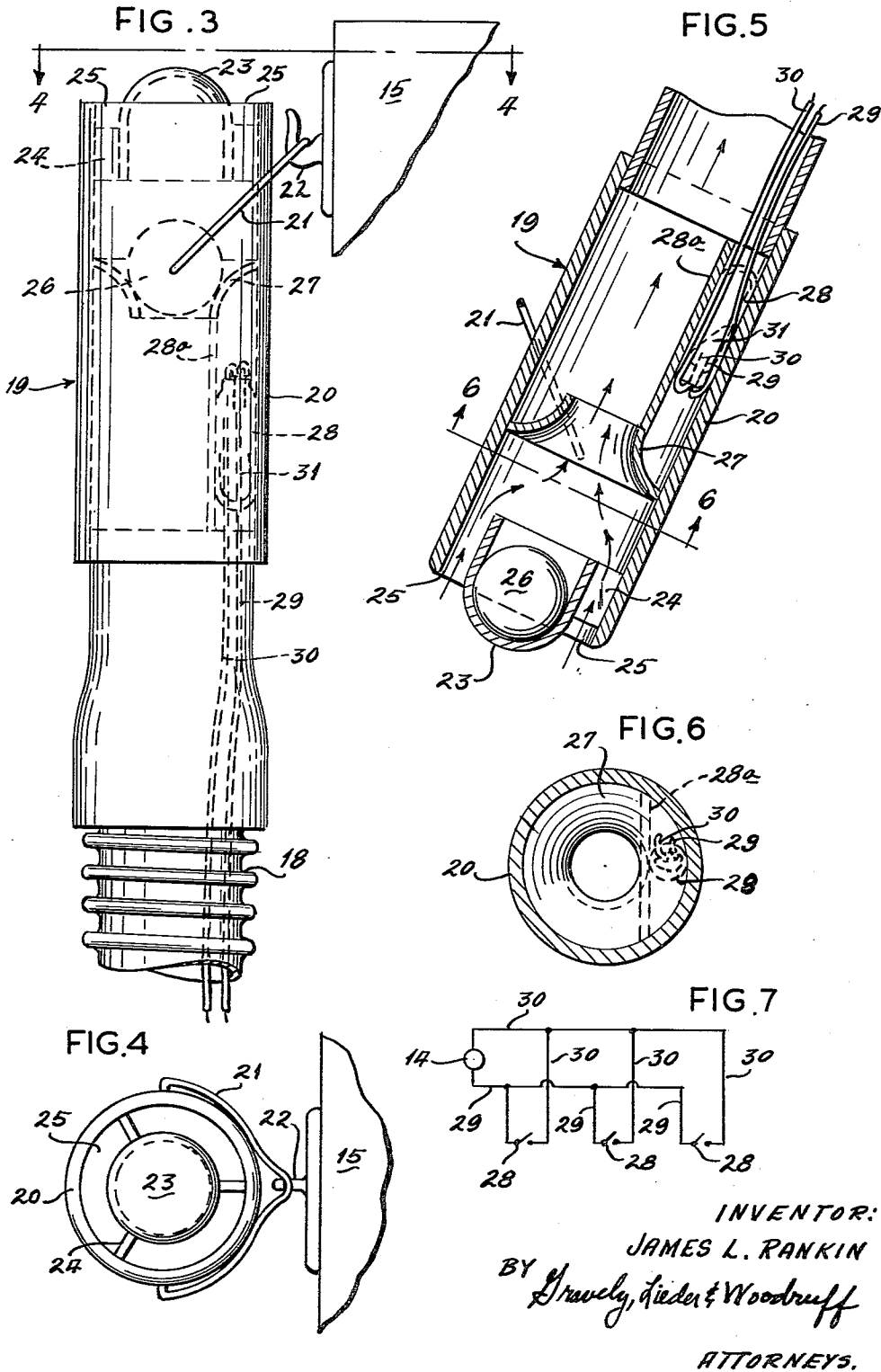
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VACUUM SYSTEM AND NOZZLE FOR REMOVING CUT HAIR

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The present invention relates to a vacuum system for use in removing cut hair from the head, and particularly relates to a nozzle suitable for use with a suction source.

Although vacuum devices have been proposed in the past for removing particles of cut hair from a patron's head, such devices have not proven completely satisfactory. For the most part, prior devices have been costly, complicated with many working parts, and noisy which is annoying to adult customers and particularly frightening to children.

One of the principal objects of the present invention is to provide a simple, inexpensive, compact, relatively noiseless central vacuum system for use in a multi-chair barber shop, said system including a main vacuum source positioned exteriorly of the main shop portion wherein the customers are barbered, with only a flexible hose being visible in said shop portion, so that obnoxious noises and bulky unsightly equipment are minimized.

Another object of the present invention is to provide a nozzle adapted to be connected to a suction means, said nozzle being particularly suitable for use in barber shops for removing pieces of cut hair from patrons' heads.

Still another object of the present invention is to provide a suction nozzle having a built-in on-off switch and a valve arrangement for automatically interrupting flow of air through the nozzle when said nozzle is positioned in an inoperative position.

A further object of the present invention is to provide a vacuum nozzle having an annular opening at its mouth with an outwardly projecting member adapted to space said opening from the object being vacuumed so that the nozzle will not become clogged and inefficient when pressed against the object being vacuumed.

A further object of the present invention is to provide a vacuum system for barber shops comprising a plurality of vacuum outlets, each of said outlets having a flexible hose and nozzle attached thereto, and on-off means in conjunction therewith for automatically actuating the vacuum source when any of said nozzles is removed from the backbar of the shop; each of said nozzles having a ball and seat valve means for interrupting flow of air through said nozzle when said nozzle is positioned on the backbar of the shop.

These and other objects and advantages will become apparent hereinafter.

The present invention comprises a vacuum hair removal system having a plurality of outlets, an on-off switch, and valve means in combination with each of said outlets to cut off flow of air through said outlet when not in use. The present invention further comprises a nozzle for use with said vacuum system outlets, said nozzle having a ball and seat valve means to interrupt the flow of air therethrough, and a protruding member at the forward end thereof to space the nozzle opening from the surfaces of the object being vacuumed.

In the drawings, wherein like numbers refer to like parts wherever they occur,

FIG. 1 is a partially broken plan view of a shop utilizing the present invention,

FIG. 2 is a perspective view showing the nozzle applied to a patron's head,

FIG. 3 is a detailed side view of the nozzle in its inoperative position with the flexible hose and electrical leads partially broken away and showing the nozzle at-

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tached to a backbar with the backbar partially broken away,

FIG. 4 is a plan view taken along line 4—4 of FIG. 3 with the backbar partially broken away,

FIG. 5 is a transverse sectional view of the nozzle in its operative position with the flexible hose connection and electrical leads partially broken away,

FIG. 6 is a sectional view taken along line 6—6 of FIG. 5, and

FIG. 7 is a wiring diagram of the present invention.

FIG. 1 shows a barber shop 10 having a plurality of conventional barber chairs 11 positioned therein. A wall 12 divides the main shop area from a utility area 13 which houses a vacuum source 14. Since the vacuum source 14 is not in the same room as the chairs 11 the noise is minimized in the main shop 10. A backbar 15 is positioned along one wall of the shop 10 and houses therein a main vacuum conduit 16 which is connected to the vacuum means 14 and has outlets 17 spaced along its length. Flexible conduits 18 are positioned on each of the outlets 17 and have nozzles 19 fastened to the free ends thereof.

Each of the nozzles 19 can be made of a suitable colored plastic to give a pleasing appearance and includes an outer cylindrical shell 20 adapted to be connected at one end to the flexible conduit 18. A hook 21 is pivotally fastened to the shell 20 and is adapted to be connected to a bracket 22 on the backbar 15. A protruding hollow spacer member 23 having a semi-spherical outer surface is positioned at the open end of the shell 20 by spacer brackets 24. The inner surface of the shell 20 and the outer periphery of the spacing member 23 defines an annular opening 25 which is adapted to pass air and particles of hair, etc. into the vacuum apparatus. When the nozzle 19 is in use, the spacer member 23 engages the object being vacuumed and the annular opening 25 is spaced from said object, so that the opening 25 is kept open and does not become clogged (FIG. 2).

A ball 26 is adapted to be seated in a valve seat 27 which is fixed to the inner surface of the shell 20 and is spaced from the rear edge of the protruding member 23. Since the hollow pocket defined by the inner surface of the member 23 is adapted to receive the ball 26, the ball 26 is adapted to be seated in either the valve seat 27 or the hollow forward member 23, depending on the position of the nozzle 19. In other words, when the nozzle 19 is positioned with the free end upwardly (FIG. 3) the ball 26 is seated in the seat member 27 and effectively seals the annular opening 25 from the flexible conduit 18. However, when the nozzle 19 is in an operative position (FIGS. 2 and 5) the ball 26 is housed inside the hollow spacing member 23 and the flexible hose 18 is in communication with the annular opening 25 at the front end of the shell 20.

An on-off mercury switch 28 is positioned in a slip fit between a plate 28a and the inside of the shell 20 and is connected by leads 29 and 30 to the actuating mechanism of the vacuum apparatus 14. When the nozzle 19 is upright (FIG. 3), the mercury 31 is seated away from the leads 29 and 30 and contact therebetween is broken. However, when the nozzle 19 is in operating position (FIG. 5) the mercury 31 establishes contact between the leads 29 and 30 and the vacuum apparatus 14 is actuated. The plate 28a is fixed within the shell 20 and preferably is molded therewith. Since the switch 28 and the leads 29 and 30 are spaced from the main portion of the shell cavity by the plate 28a, the particles of hair, dirt, etc. are passed through the shell 20 into the conduit 18 and do not contact said switch 28.

The on-off switches 28 positioned in each of the nozzles 19 are connected in parallel to the actuating mechanism of the vacuum apparatus 14, so that if one of

the nozzles 19 is used, the vacuum source 13 is actuated. However, in order to insure that the vacuum is pulled through the nozzle 19 which actually is being used, the inoperative nozzles 19 are positioned in an upright position (such as being hooked onto the backbar bracket 22) so that the seating of the balls 26 in the valve seats 27 interrupts air flow between the annular openings 25 and the conduits 18 and thus prevents the vacuum from being pulled through any of the inoperative nozzles 19.

In operation, the nozzles 19 are normally positioned in an upright position on the backbar brackets 22. Since the leads 29 and 30 are positioned in the forward end of the switches 28, the mercury 31 is spaced from said leads and contact therebetween is interrupted. The floating balls 26 are all seated in their respective ball seats 27 to interrupt air flow between the annular openings 25 and the flexible conduits 18. When one of the nozzles 19 is to be used, it is removed from the bracket 22, turned so that the free end is downwardly and the ball 26 floats into the hollow cavity defined by the inner surface of the member 23 to establish communication between the annular opening 25 and the conduit 18 through the passageway defined by the ball seat 27. The mercury 31 also falls to the front end of the switch 28 and establishes contact between the leads 29 and 30 to actuate the vacuum source 28. The air flow through the nozzle 19 is indicated by the arrows in FIG. 5.

Although the present nozzle primarily is intended for use in multi-chair barber shops having a central vacuum system, it can be utilized with individual vacuum units wherein the ball and valve seat are eliminated, but the unique spacer member is retained.

Thus it is apparent that the present invention provides a vacuum apparatus and nozzle which achieves all of the objects and advantages sought therefor.

The present invention is intended to cover all changes and modifications of the examples of the invention herein chosen for purposes of the disclosure, which do not constitute departures from the spirit and scope of the invention.

What is claimed is:

1. A vacuum system comprising a vacuum source, a main conduit connected to said vacuum source, a plurality of outlets communicating with said main conduit, a flexible conduit positioned on each of said outlets, a nozzle fastened to the free end of each of said flexible conduits, said nozzle comprising a casing having a free end, a hollow spacer member projecting forwardly of the free end and defining an annular opening therewith, a ball seat positioned within said casing rearwardly of said annular opening and defining a passageway communicating with said flexible conduit, and a ball adapted to seat in said ball seat to interrupt the flow of air there-through when said nozzle is positioned with its free end upwardly in an inoperative position, and a mercury switch positioned on each of said nozzles, said switches having leads positioned in the ends thereof nearer to the free ends of said nozzles, said switches being connected in parallel and adapted to actuate said vacuum source when any one of said nozzles is positioned with its free end downwardly in an operative position.

2. A vacuum nozzle comprising a hollow outer casing having a free end and a rear end adapted to be connected to a conduit, means on said nozzle to position said nozzle in an inoperative position with its free end upwardly, a hollow spacer member positioned at the free end of said nozzle and having a semi-spherical portion projecting forwardly thereof and a cylindrical portion projecting rearwardly thereof and defining an annular air passageway with the inner wall of said casing, an inwardly tapering seat means positioned inside said casing rearwardly of the cylindrical portion of said spacer member, said seat means defining an air passageway communicating the annular opening with the rear end of said nozzle, a floating ball adapted to seat in said seat means when said nozzle is positioned with the free end upwardly and interrupt air flow between said annular opening and the rear end of said nozzle, said ball being received in the hollow spacer member when said nozzle is positioned with the free end downwardly to establish air flow through said seat means, and a mercury switch positioned on said nozzle, said switch including a pair of leads and being constructed and arranged to establish electrical contact therebetween when the free end of said nozzle is positioned downwardly and to interrupt electrical contact therebetween when the free end of said nozzle is positioned upwardly.

3. A vacuum nozzle comprising a hollow outer casing having a free end and an end adapted to be connected to a conduit, a spacer member positioned at the free end and projecting forwardly thereof, said spacer member defining an opening with the free end and spacing said free end from the object being vacuumed, a plate positioned within said casing, and a mercury switch positioned between said plate and said casing inner wall, said switch comprising a pair of exposed leads and a pool of mercury, said mercury establishing an electrical connection between said leads only when the free end of said nozzle is in a downwardly operative position.

4. A vacuum nozzle comprising a hollow outer casing having a free end and an end adapted to be connected to a conduit, a spacer member positioned at the free end and projecting forwardly thereof, said spacer member defining an opening with the free end and spacing said free end from the object being vacuumed, a valve seat positioned interiorly of said casing rearwardly of said free end and defining an air passageway, and a ball adapted to be seated in said valve seat to interrupt flow of air through said passageway when said nozzle is positioned with its free end upwardly in an inoperative position, said spacer member having a hollow inner surface adapted to receive said ball when said nozzle is positioned with its free end downwardly in an operative position.

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