

[54] SUCTION SYSTEM FOR SKIN TREATMENT

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[58] Field of Search 128/38-40, 276-278, 128/297-300

[56]

References Cited**UNITED STATES PATENTS**

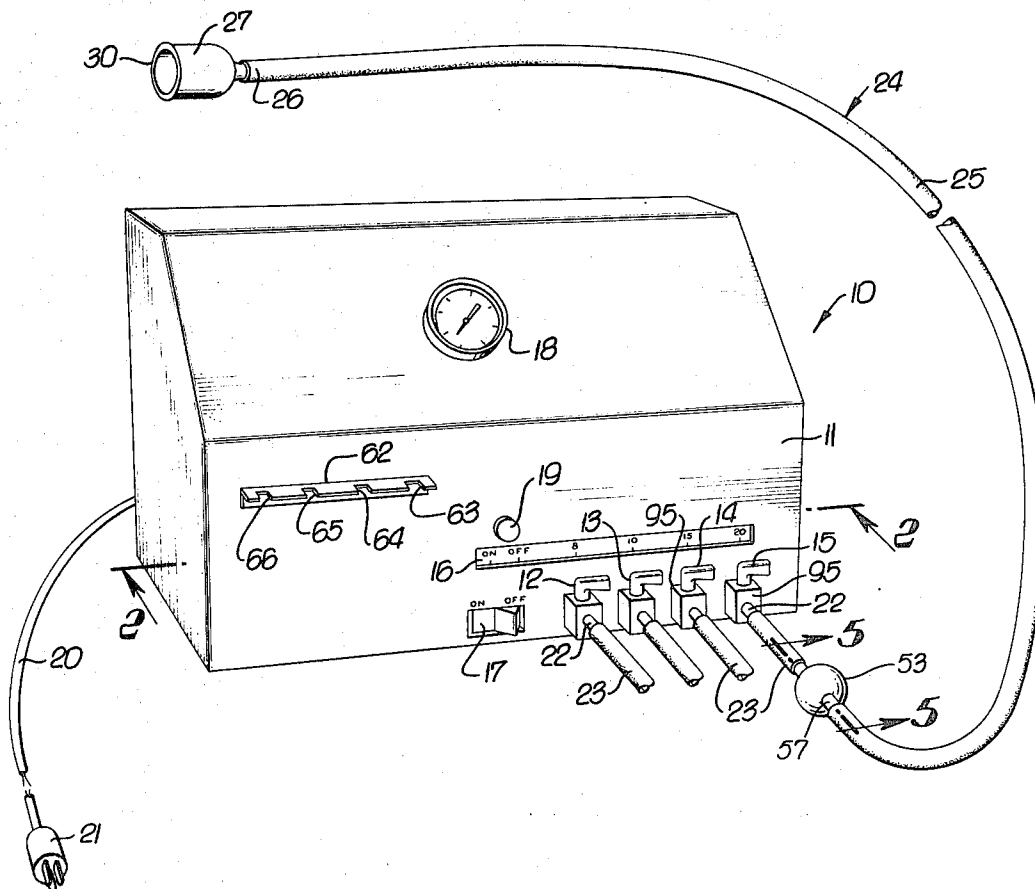
3,302,636	2/1967	Clemetson	128/300
1,547,562	7/1925	Byrd	128/276
1,732,310	10/1929	Naibert	128/297
2,142,689	1/1939	Emerson	128/297
3,066,672	12/1962	Crosby, Jr. et al.	128/276
3,224,434	12/1965	Molomut et al.	128/276
3,315,665	4/1967	MacLeod	128/299
3,665,682	5/1972	Ciavattoni et al.	128/278

Primary Examiner—Charles F. Rosenbaum

[57]

ABSTRACT

A power operated vacuum pump unit has a chamber connected to a vacuum pump maintained under negative pressure. There are four separate shut-off valves all connected to the chamber in each of which a fixed pressure is pre-set at amounts differing one from another, all of which are accessible from one side of a housing for the operating unit. There are a series of tubes having one end connected to each of the respective shut-off valves. Each tube is adapted at its other end to receive a glass or plastic suction applicator. Intermediate opposite ends of each tube is a transparent hollow spherical container having a beaded extension on each of two opposite sides for sealed engagement with a section of the respective tubing. In each spherical container is a mass of medical gauze serving as a filter for dirt laden liquids passing from the applicator end to the chamber.

7 Claims, 9 Drawing Figures

SHEET 1 OF 2

FIG. 1.

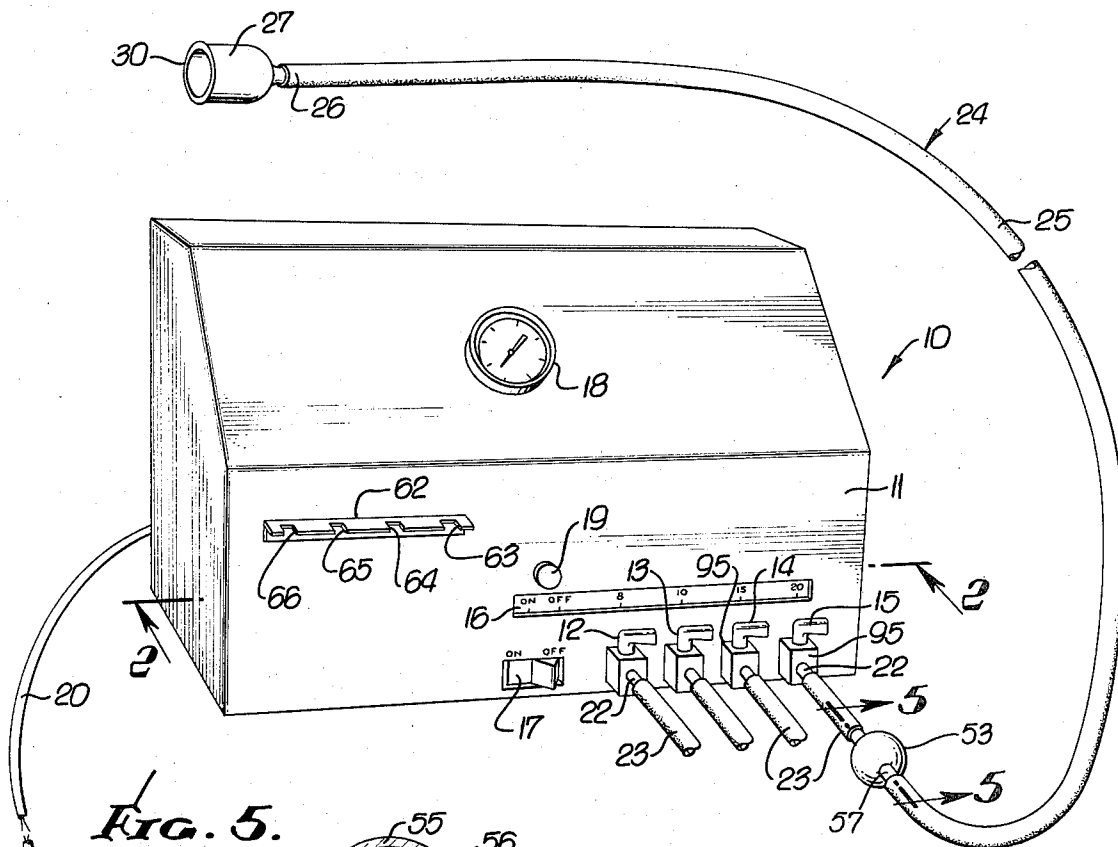


FIG. 5.

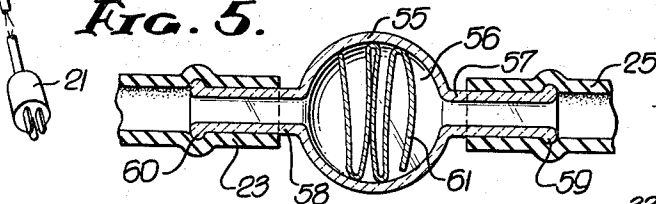


FIG. 6A.

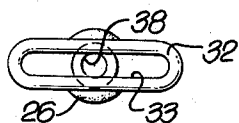


FIG. 6.

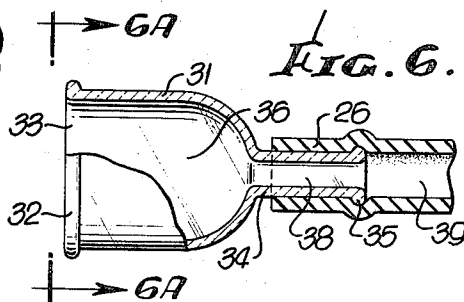


FIG. 7.

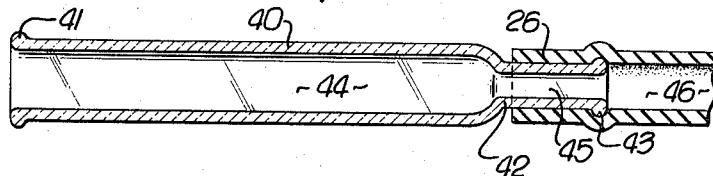
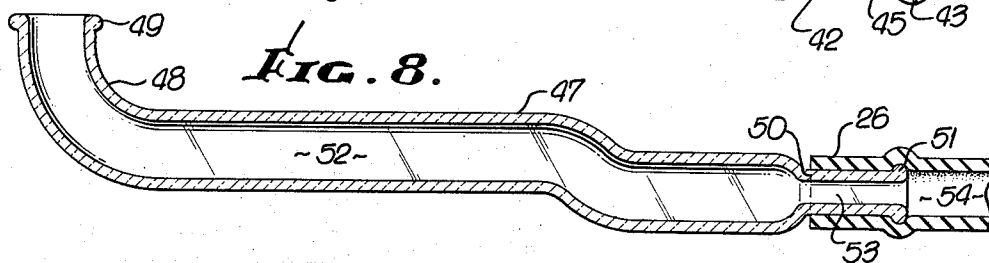
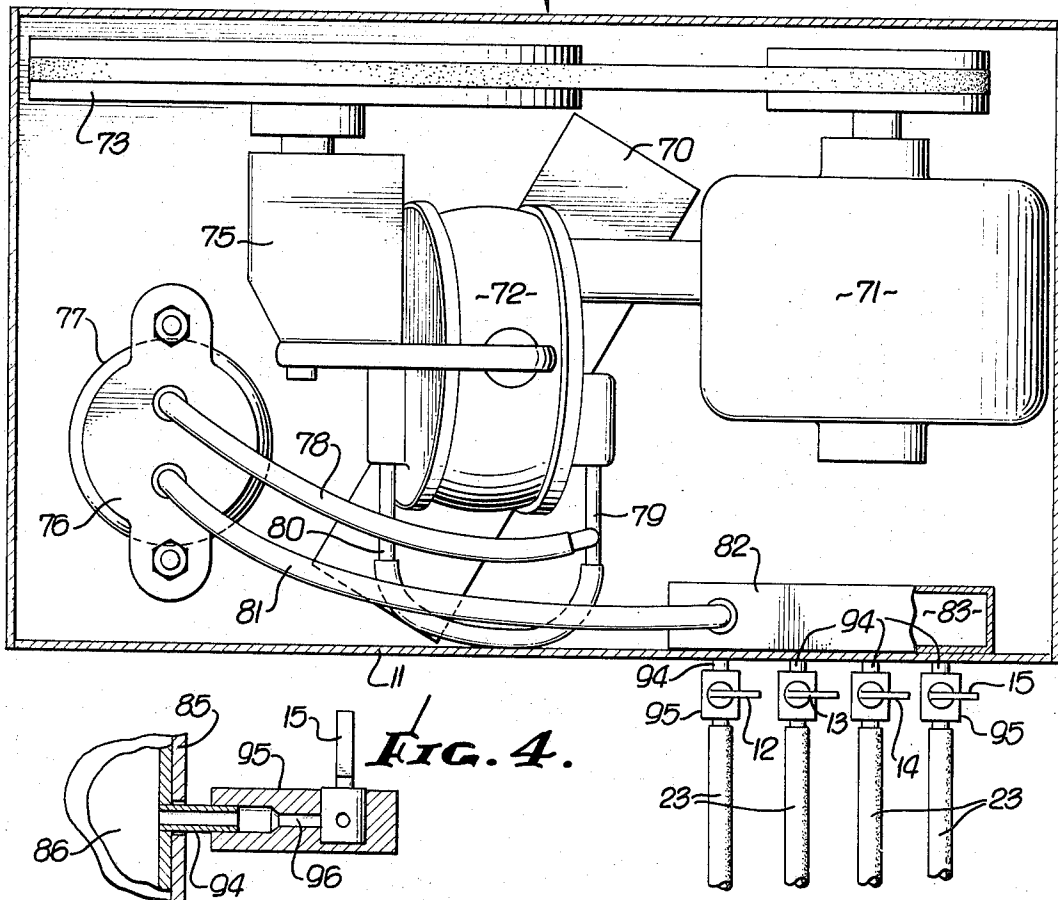
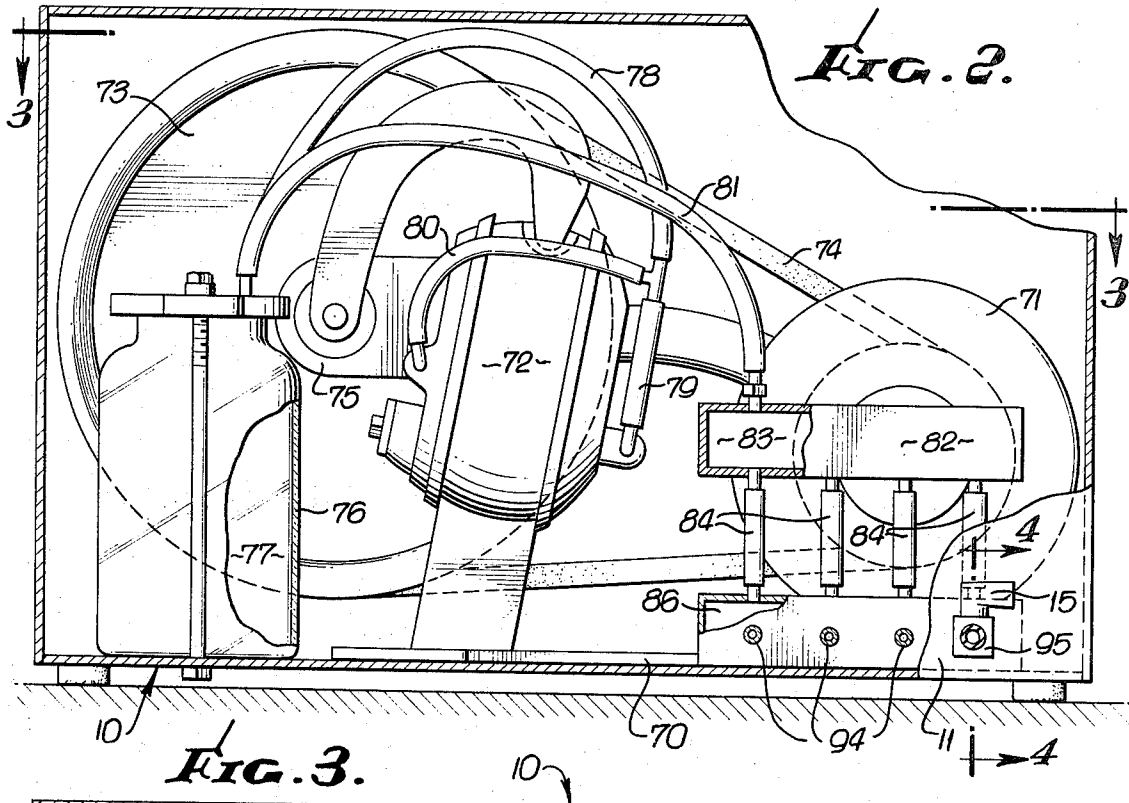


FIG. 8.





SUCTION SYSTEM FOR SKIN TREATMENT

When a mechanical device employing suction is applied to body tissue such as the skin on the face and neck consideration must be given to the character of the particular individual who is being treated and also to an understanding that generally speaking treatment which is long and continuous is more beneficial than treatment which is thorough but harsh because of being too rapid. Although treatment is the primary objective, avoidance of ultimate damage to the skin is the requisite.

Some skin conditions are quite stubborn to treatment by customary massage, use of astringents, and comparable treatment. A mechanical device which can kneed the tissues and at the same time remove surplus loose dirt and skin is highly advantageous and the practice has been prevalent for a considerable length of time. Because such treatments of the skin must be undertaken with care an appreciable amount of skill has been necessary for proper results and this has meant the training of the individual assigned to use of the mechanical outfit. There is of course the ever present possibility of human error despite the training of the individual and as a consequence mechanical devices which do not have a built in guard against mal-treatment of the subject have not been entirely accepted. This circumstance has been one of increasing importance as the result of a current tendency toward making devices fullproof against mishandling thereby to insure the user to a greater degree against liability. The problem takes on increased importance as a greater number of people enter the field each requiring a greater or lesser amount of training depending upon particular individual ability to apply skill.

In addition because such machines must be equipped to handle waste material such as superfluous flesh, lotions, soaps, and detergents great care is needed to prevent those things acting as contaminants from interfering with the continued and efficient operation of the machine.

It is therefore among the objects of the invention to provide a new and improved power actuated facial applicator which is versatile in its performance in that means are provided for selecting a source of vacuum power suited to a particular condition and which will not deviate from the selection once it has been made.

Another object of the invention is to provide a new and improved power actuated facial applicator which comprehends a simple means for dividing the suction power into units of different preset vacuum pressure located in a readily accessible place where, if necessary, the operator can switch easily from one to another as conditions change.

Still another object of the invention is to provide a new and improved power actuated facial applicator equipped with a simple disposable filter means capable of preventing waste material from reaching the operating mechanism.

Still another object of the invention is to provide a new and improved power actuated facial applicator wherein controls are greatly simplified and wherein the filter changing technique is of such a simple and direct nature that need for a change is readily signalled by a visible indicator or condition and wherein once the change is indicated as being necessary the changing of

the filtering part can readily be made with a virtual minimum interruption in the continued operation of the device.

With these and other objects in view, the invention consists in the construction, arrangement, and combination of the various parts of the device, whereby the objects contemplated are attained, as hereinafter set forth, pointed out in the claims and illustrated in the accompanying drawings.

In the drawings:

FIG. 1 is a front perspective view of the device equipped with one complete tube and applicator.

FIG. 2 is a longitudinal sectional view of the device taken on the line 2 — 2 of FIG. 1.

FIG. 3 is a cross-sectional view taken on the line 3 — 3 of FIG. 2.

FIG. 4 is a fragmentary longitudinal sectional view of one of the shut-off valves taken on the line 4 — 4 of FIG. 2.

FIG. 5 is a longitudinal sectional view of a filter device taken on the line 5 — 5 of FIG. 1.

FIG. 6 is a longitudinal sectional view of another form of facial contacting applicator.

FIG. 6A is an elevational view taken on the line 6A — 6A of FIG. 6.

FIG. 7 is a longitudinal sectional view of another form of facial contact applicator.

FIG. 8 is a longitudinal sectional view of still another form of facial contacting applicator.

In an embodiment of the invention chosen for the purpose of illustration there is shown a housing 10 within which is located apparatus for creating vacuum pressure, details of which are shown in FIGS. 2 and 3. On a front wall 11 of the housing are shut-off valves 12, 13, 14 and 15. A panel 16 shows on its face the different vacuum pressures applicable to the respective valves as being 8, 10, 15 and 20 pounds per square inch. A switch 17 is provided for turning the apparatus on and off, there being a non-electric vacuum gauge 18 and a pilot light 19 also accessible on the front wall 11. An extension cord 20 is provided with a conventional plug 21, to plug into a source of electric power.

Each of the shut-off valves is provided with an extension 22 to which there is adapted to be attached a section 23 of a tube indicated generally by the reference character 24.

As shown in connection with the shut-off valve 15 the tube 24 has a second section 25 at a free end 26 of which is attached an individual suction applicator, customarily made of either glass or plastic, indicated at 27.

Applicators of various descriptions are adapted to be secured to the free end 26 of the respective tube 24, in appreciable variety. The applicator 27 has a relatively large annular end edge 30 and applicator 31, as in FIGS. 6 and 6a has a relatively elongated flat end edge 32 providing a narrow orifice 33 intermediate elongated portions of the end edge 32 as shown in FIG. 6a.

An extension 34 on the applicator at a side opposite from the orifice 33 is provided with a beaded end 35 which can be pushed into the somewhat resilient free end 26 of the tube to provide a sealed engagement between the tube 23 and the applicator 31 as shown in FIG. 6. Applicator 31 has a hollow chamber 36 in communication with the orifice 33 on one side and in communication with a passage 38 on the opposite side

which communicates with a central opening 39 in the second section 25 of the tube 24.

In FIG. 7 is shown an elongated applicator 40 provided with an annular end edge 41 smaller in diameter than the end edge 32 of the applicator 31. An extension 42 fits into the free end 26 in sealed condition by use of the beaded end 43. A chamber 44 in the applicator 40 is in communication with a passage 45 in turn in communication with a central opening 46 of the section 23 of the tube.

Again in FIG. 8 is shown an applicator 47 which is of elongated bent configuration provided with an elbow 48 terminating in a rounded end edge 49. An extension 50 at the opposite end provided with a beaded end 51 is in sealed engagement with the free end 26 of the section 23 of tube. A chamber 52 in the applicator 47 is in communication with a passage 53, in turn in communication with a central opening 54 in the section 23 of the tube.

Of special note is the structure shown in FIG. 5 which in the chosen embodiment consists of a hollow bulbous member 55 providing a central chamber 56. On opposite sides of the hollow bulbous member 55 are extensions 57 and 58, the extension 57 terminating in a beaded end 59 and extension 58 terminating in a beaded end 60. The extension 57 is in sealed engagement with the section 25 of the tube 24 and the extension 58 is in field engagement with the section 23 of the tube 24. A typical location is shown in FIG. 1.

Within the central chamber 56 of the bulbous member 55 is a mass 61 of crumpled gauze which serves as a filter for fluid passing through the tube 24. To insert the mass of gauze the bulbous member is disconnected from the sections 23 and 25 of tube 24 and the mass is poked out of the chamber 56 by employment of an appropriate conventional elongated rod, after which a fresh new mass 61 of gauze can be poked into the central chamber 56 by reverse operation.

When more than one tube 24 is available in place on the respective shut-off valve there may be provided a rack 62 on the front wall 11 of the housing 10 having slots 63, 64, 65 and 66 for reception of one or another of the applicators.

The applicators and also the hollow bulbous member may be of glass or in the alternative may be preferably of a transparent synthetic plastic resin material which is of such character that it can be sterilized in a conventional sterilizing device.

The operating components of the device are mounted on a base 70 within the housing 10. Included in the operating components is an electric motor 71 connected to a vacuum pump 72 by means of a flywheel 73 driven by a belt 74, the flywheel acting through a gear reducer 75 to drive the pump 72. A cylindrical container 76 houses a vacuum chamber 77, the chamber being connected to the vacuum pump 72 by tubing 78 having branches 79 and 80 on opposite sides of the vacuum pump. Another length of tubing 81 connects the vacuum chamber 77 with an upper manifold 82 which has a single chamber 83 therein. Individual passages 84, four in number in the embodiment illustrated, interconnects the upper manifold 82 with a lower manifold 85 containing a chamber 86.

The shut-off valves 12, 13, 14 and 15 each have a passageway 94 for interconnecting the respective shut-off valves with the chamber 86 in the lower manifold 85. In order to have each shutoff valve deliver a differ-

ent vacuum pressure there is provided an orifice block 95 intermediate each valve such as the valve 15 and the passage way 94. In the orifice block 95 is a fixed orifice 96 which completes the passageway between the chamber 86 and the valve. The fixed orifices for the respective valves 12, 13, 14 and 15 are of different sizes so as to thereby establish a fixed vacuum pressure for each valve which differs one from another. For example a 5 pound pressure may be established for shut-off valve 12, a 10 pound pressure for shut-off valve 13, a 15 pound pressure for shut-off valve 14 and a 20 pound pressure for shut-off valve 15, these pressures being set irrespective of the vacuum pressure which may be present in the chamber 86 of the lower manifold 85, which conveniently is maintained at a pressure higher than the highest vacuum pressure which is available in the valve 15. As a consequence, by marking the vacuum pressure for each of the valves the operator need do no more than attach the tube 24 to the shut-off valve having the desired fixed vacuum pressure and the facial contacting applicator will then operate on that particular selected pressure and no other, until the tube is shifted to some other shut-off valve.

Having described the invention, what is claimed as new in support of letters Patent is:

1. An applicator for the skin comprising a housing, a chamber in the housing in which a vacuum is generated, a plurality of shut-off valves on the housing and in communication with the chamber, means in communication with said valves establishing a different vacuum pressure for each of said valves, and a flexible tube having one end adapted for sealing engagement with a selected one of said shut-off valves and filter means in each tube intermediate opposite ends thereof.

2. An applicator as in claim 1 wherein said filter means comprises a hollow bulbous member having oppositely directed extensions with beaded ends, said ends being adapted to sealably engage an adjacent end of a respective section of said tube, and a mass of relatively loosely compacted fibrous material releasably contained within said bulbous member whereby to serve as a filter for fluid material drawn through the tube into said chamber.

3. An applicator as in claim 1 wherein said means for establishing different vacuum pressures comprises a vacuum pump, a vacuum chamber in communication with said pump, a passage in communication between each valve and said chamber, and a restricted orifice in each passage, each said orifice having the capacity for passing air therethrough differing from every other passage whereby to make available at the respective valves a plurality of different fixed vacuum pressures.

4. A vacuum pressure applicator having a plurality of valves with a different fixed vacuum pressure available at each valve, said applicator comprising an electric motor, a vacuum pump, a manifold common to all said valves, a vacuum line connecting said pump and said manifold, a separate passageway between each valve and said manifold, and a constantly open restricted orifice in each passage in which flow is always in the same direction, the flow capacity of each orifice being different from every other orifice whereby to make available at the respective valves fixed vacuum pressures differing one from another while said motor and said pump

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operate at a constant rate, each said valve including a manual shut-off means acting independently of all the remaining shut-off means whereby any selected one of said valves is adapted to be operated at its individual flow capacity while the remaining valves remain inoperative.

5. A vacuum pressure applicator having a plurality of valves with a different fixed vacuum pressure available at each valve, said applicator comprising an electric motor, a vacuum pump, a manifold common to all said valves, a vacuum line connecting said pump to said manifold, a separate passageway between each valve and said manifold, and a constantly open restricted orifice in each passage in which flow is always in the same direction, the flow capacity of each orifice being different from every other orifice whereby to make available at the respective valves fixed vacuum pressures differing one from another while said motor and said pump operate at a constant rate, a separate container intermediate the vacuum pump and the manifold a vacuum line from said pump to said container and a vacuum line from said container to said manifold.

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6. A vacuum pressure applicator having a plurality of valves with a different fixed vacuum pressure available at each valve, said applicator comprising an electric motor, a vacuum pump, a manifold common to all said valves, a vacuum line connecting said pump and said manifold, a separate passageway between each valve and said manifold, and a constantly open restricted orifice in each passage in which flow is always in the same direction, the flow capacity of each orifice being different from every other orifice whereby to make available at the respective valves fixed vacuum pressures differing one from another while said motor and said pump operate at a constant rate, a second manifold intermediate the first identified manifold and the vacuum pump and a plurality of passages interconnecting said manifolds.

7. A vacuum pressure applicator as in claim 5 wherein there is a second manifold connected to the vacuum line from said container to said first identified manifold and a plurality of passages between said manifolds.

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