June 7, 1966 W. BLASNIK ET AL 3,254,844

ASPIRATION SPRAY DEVICE

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FIG. 1

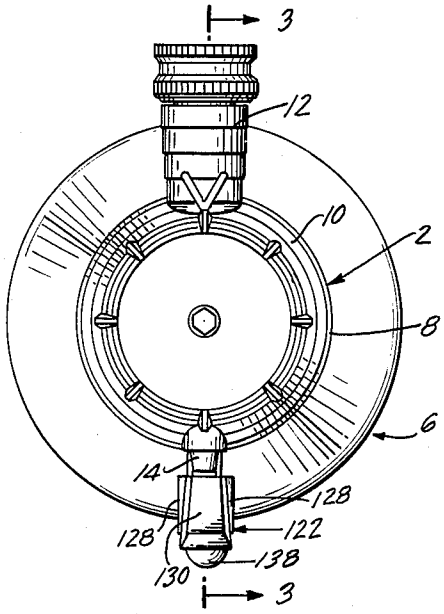


FIG. 9

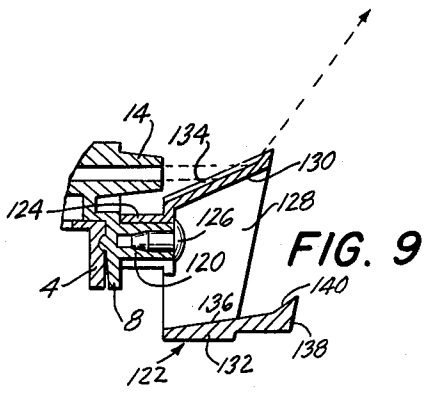


FIG. 10

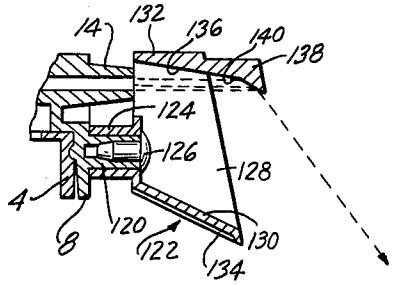


FIG. 2

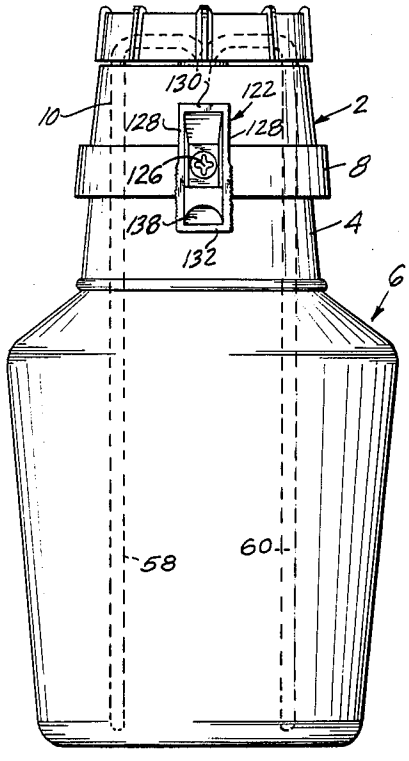
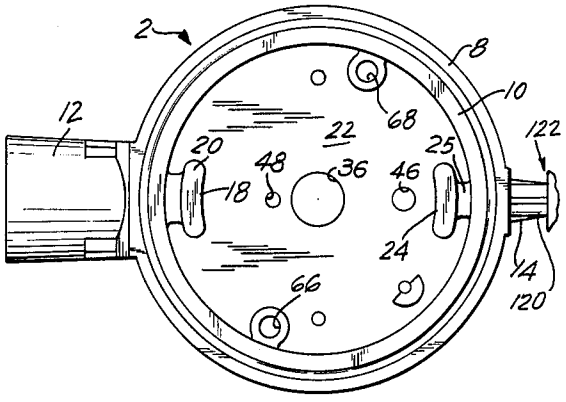


FIG. 6



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ASPIRATION SPRAY DEVICE

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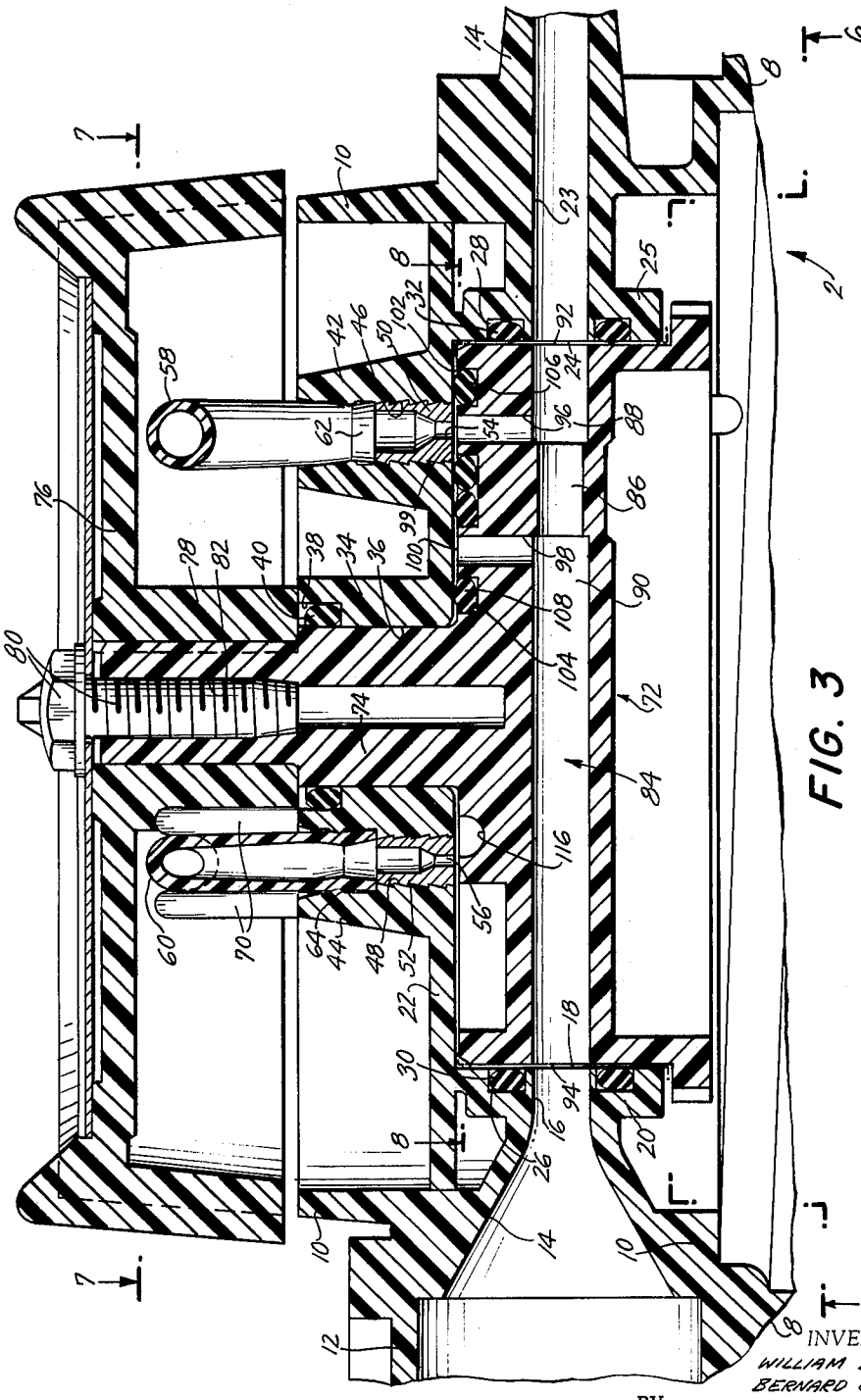


FIG. 3

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ASPIRATION SPRAY DEVICE

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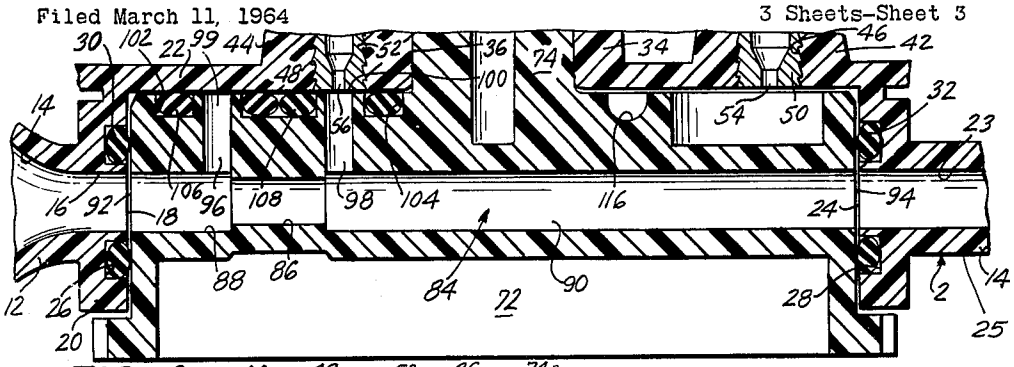


FIG. 4

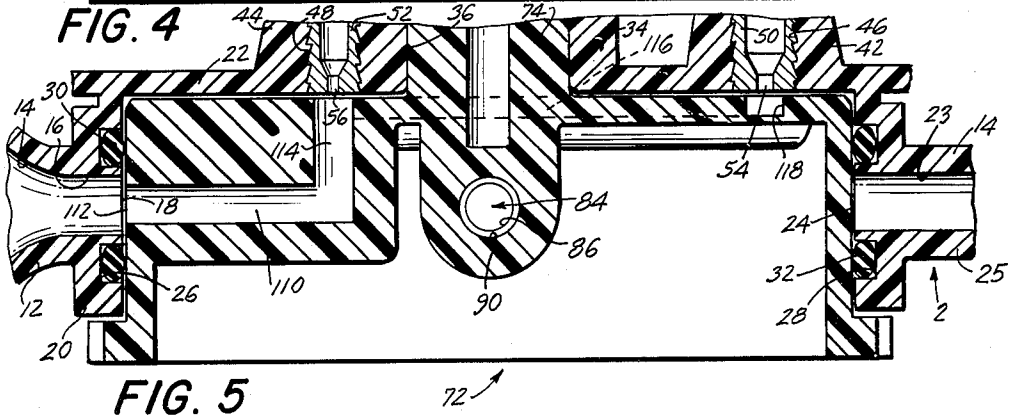


FIG. 5

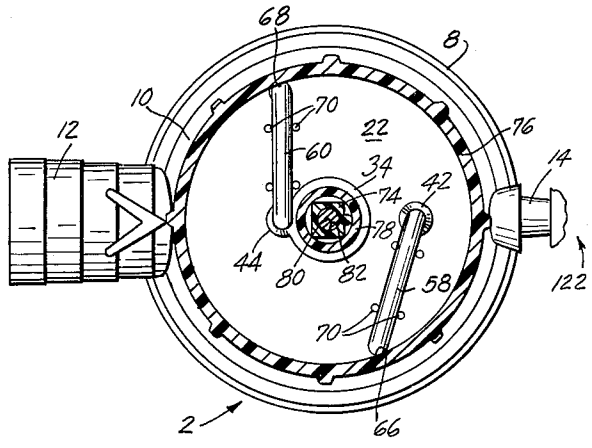


FIG. 7

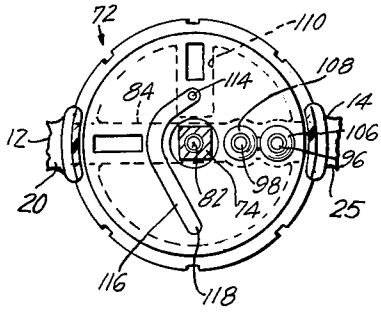


FIG. 8

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United States Patent Office

3,254,844

Patented June 7, 1966

3,254,844

ASPIRATION SPRAY DEVICE

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Filed Mar. 11, 1964, Ser. No. 351,031
20 Claims. (Cl. 239—318)

The present invention relates to an aspiration spray device, and in particular to one specially adapted for the spraying of lawn-or garden-treating materials, although it is by no means limited in utility to such applications.

The use of aspiration for mixing and spraying purposes is old, and many different constructions have been proposed to accomplish this result. In general, where such prior art devices have been characterized by simplicity of construction, they have also been characterized by lack of flexibility of use, and conversely, where such devices are capable of use in different fashions, as, for example, providing for the mixing of the aspirating material with the carrier fluid in different proportions (or selecting different materials for aspiration), they have been characterized by constructions which are complex, extensive, and unreliable, and require comparatively complex manipulation. There are control functions other than variation in mixing proportions which are desirable in devices of this type, among which may be mentioned the provision of a valve in the aspiration device to permit the flow of carrier fluid to be started and stopped, the ability to divert the carrier fluid into the aspiration material container for mixing or cleaning purposes, and the production of a spray the characteristics of which can be changed.

It is the prime object of the present invention to devise an aspiration spray device which is capable of accomplishing all of the above mentioned functions, which is characterized by a simple, study and reliable construction the parts of which may be easily and inexpensively manufactured on a mass production basis and assembled with one another in a simple and substantially foolproof manner and which, insofar as most of the controllable functions are concerned, permits selection of a desired mode of operation by the appropriate manipulation of a single control element. In particular, in the embodiment here disclosed the positioning of a single control element in a selected one of a plurality of operative positions provides for on-off control, selection of a desired mixing ratio when the device is on, or diversion of the carrier fluid into the aspiration material container, all as desired at any given moment by the user of the device. Separately controllable means are also providing for selecting the desired character of spray emanating from the device, thus permiting the character of the spray to be controlled independently of the mixing ratio which is selected.

To these ends, the spray device comprises a base having a carrier fluid inlet port, a carrier fluid outlet port, and a plurality of differently positioned aspiration ports, preferably of different sizes. Means are provided to connect a source of carrier fluid, such as a conventional garden hose, to the carrier fluid inlet port, and means are provided for connecting the aspiration ports to a supply of aspiration material. A single movably mounted control element is carried by the base, that control element being provided with a plurality of passages. A first passage is adapted to be brought into communication between the inlet and outlet ports, thereby to permit the flow of carrier fluid through the device, or to be positioned out of communication between the inlet and outlet ports, thereby preventing a flow of carrier fluid through the device. A second passage communicates between this first passage and the exterior of the control element, this second passage being adapted to be moved into communication with an aspiration port when the first passage is so positioned as to cause carrier fluid to flow therethrough. In order to provide for control of the character of aspiration, individual aspiration passages are provided in the control element, which individual passages are selectively brought into registration with a corresponding one of the aspiration ports for different positions of the control element respectively, in both of which different positions the first passage communicates between the carrier fluid inlet and outlet ports. Thus in a first operative position of the control element the device is turned off, and in second and third positions thereof the device is turned on but different aspiration ports are rendered effective thereby providing in said second and third positions of the control element, for different aspiration effects. If the two aspiration ports are connected to different sources of aspiration material, the positioning of the control element in either its second or third positions will select the desired material to be aspirated. When the aspiration ports are connected to the same source of aspiration material but are of different sizes, positioning of the control element in either of its second or third operative positions will permit control of the amount of aspiration material which is mixed with the carrier fluid.

The control element may also have a fourth operative position in which the first mentioned passage is not in communication between the inlet and outlet ports, the control element being provided with an additional passage which, in that fourth operative position, communicates between the inlet port and one or more of the aspiration ports, thereby permitting the carrier fluid to flow through the aspiration ports into the container for the aspiration material. This fourth operative position of the control element is advantageous when it is desired to dilute the aspiration material with the carrier fluid, or when it is desired to clean or flush the container for the aspiration material.

Control of the character of the spray emanating from the carrier fluid outlet port is accomplished by means of a deflector of novel design mounted on the exterior of the device and selectively movable into different positions in which different portions of that deflector intercept the stream of fluid emanating from the device and thus modify the character of the spray produced.

The control element and the base are so constructed and arranged that each is of comparatively simple design, the two parts cooperating with one another in a highly effective manner to produce the desired results.

The design is particularly well adapted to be embodied in a cap or cover for an open-topped jar or other container in which the supply of aspiration material may be kept, the cap being readily removable from the jar to permit the jar to be refilled when the original supply of aspiration material has been used up.

To the accomplishment of the above, and to such other objects as may hereinafter appear, the present invention relates to the construction of an aspiration spray device as defined in the appended claims and as described

in this specification, taken together with the accompanying drawings, in which:

FIG. 1 is a top plan view of an embodiment of the present invention in the form of a removable cap received on the open neck of a jar or bottle;

FIG. 2 is a front elevational view of the unit of FIG. 1;

FIG. 3 is a fragmentary cross sectional view on an enlarged scale, taken along the line 3—3 of FIG. 1, the control element being shown in a position in which carrier fluid flows through the device and a selected one of a pair of aspiration ports is in operative use;

FIG. 4 is a fragmentary cross sectional view similar to FIG. 3, but on a somewhat reduced scale, and showing the control element in a position in which carrier fluid flows through the device and a different aspiration port is in operative use;

FIG. 5 is a view similar to FIG. 4 but with the control element in a different position in which carrier fluid does not flow through the device but in which the carrier fluid inlet port is placed in communication with the aspiration ports;

FIG. 6 is a bottom plan view of the fixed part of the spray device removed from the container, taken in the direction of the line 6—6 of FIG. 3;

FIG. 7 is a cross sectional view on a reduced scale taken along the line 7—7 of FIG. 3;

FIG. 8 is a cross sectional view on a reduced scale taken along the line 8—8 of FIG. 3; and

FIGS. 9 and 10 are detailed cross sectional views, on an enlarged scale, showing two different operative positions of the deflector which is mounted on the device in front of the nozzle outlet thereof.

The spray device of the present invention, as here specifically disclosed, is in the form of a cap or cover generally designated 2 adapted to be removably received in any appropriate manner on the open neck 4 of a container generally designated 6, which container is adapted to carry a supply of aspiration material, that is to say, material adapted to be mixed in predetermined proportions with a carrier fluid such as water. To this end the cap 2 may be provided with an internally threaded flange 8 removably receivable on the externally threaded upper portion of the container neck 4.

Extending up from the flange 8 is a wall 10 having a female socket part 12 extending out therefrom at one point and having a nozzle 14 extending out therefrom at another point preferably diametrically opposed to the socket part 12. As may best be seen in FIG. 3, the interior of the socket part 12 communicates, via converging passage 14 and narrow passage 16, with a radially inwardly facing carrier fluid inlet port 18 provided in part 20 extending inwardly from wall 10. The nozzle part 14 communicates, via passage 23, with carrier fluid outlet port 24 provided in part 25 extending inwardly from wall 10, ports 18 and 24 having circularly curved inner faces, as may best be seen in FIG. 6. Grooves 26 and 28 surround the carrier fluid inlet and outlets 18 and 24 respectively, and compressible sealing rings 30 and 32 are received within the grooves 26 and 28 respectively.

Extending upwardly from the top wall 22 substantially centrally thereof is a hub 34 having an axial passage 36 with an inset area 38 at its upper end within which a compressible sealing ring 40 is received. Also extending upwardly from the top wall 22 at different distances from the hub 34, and preferably diametrically opposite one another, are a pair of projections 42 and 44 having passages therethrough designated 46 and 48 respectively, the lower ends of those passages being open to the lower surface of the top wall 22. Aspiration fittings 50 and 52 are received in the lower portions of the passages 46 and 48 respectively, those fittings having downwardly opening aspiration passages 54 and 56 respectively of different sizes. Conduits 58 and 60, preferably in the form of flexible hollow rubber or plastic tubes, have their ends 62 and 64 respectively received in the upper portions of the passages 46 and 48 respectively, thereby being in communication with the aspiration ports 54 and 56 respectively, the conduits 58 and 60 extending over the upper surface of the top wall 22 to points radially outside the ports 18 and 24 and there extending down through apertures 66 and 68 respectively and into the interior of the container 6. Pairs of pins 70 may extend up from the wall 22 between which the conduits 58 and 60 are adapted to be received, the pins 70 thus guiding the conduits 58 and 60 and holding them in position.

The unitary control element, generally designated 72, is adapted to be received in the space enclosed, at least partially, by the side wall 20 and the top wall 22. The radially outer surface of the control element 72 is circular in configuration, and is snugly radially received inside the ports 18 and 24. The control element 72 is provided with a central upwardly projecting portion 74 which extends through the passage 36, and a control knob 76 is adapted to be rotatably fixed thereto, as by having a portion 78 received over and splined or keyed to the portion 74, the two parts being held together by screw 80 threadedly received in an internally threaded aperture 82 in the portion 74. The lateral dimensions of the control knob 76 are preferably such as to completely cover the open top defined by the upper portions of the wall 10.

The control element 72 is provided with a diametric through passage 84 composed of a comparatively narrow inner portion 86 with wider outer portions 88 and 90 at each end thereof, the outer passage portion 88 having an outer end 92 and the outer portion 90 having outer end 94. A pair of vertical passages 96 and 98 extend upwardly from the passage portions 88 and 90 respectively to open ends 99 and 100 respectively at the upper surface of the control element 72. The passages 96 and 98 are both positioned on the same side of the axis of rotation of the control element 72, which is coincident with the axis of the hub 34. The radial distance of the upper ends 99 and 100 of the passages 96 and 98 respectively from the axis of rotation of the control element 72 corresponds to the distance of the aspiration ports 54 and 56 respectively from that axis. The lower ends of the passages 96 and 98 respectively meet the passage portions 88 and 90 respectively at points preferably immediately adjacent to the narrow inner passage portion 86. The upper ends 99 and 100 of the passages 96 and 98 are surrounded by recesses 102 and 104 respectively within which compressible sealing rings 106 and 108 are respectively received.

The control element 72 is further provided with a passage 110 which opens, at 112, to the side of the control element 72, preferably at a point intermediate between the ends 92 and 94 of the passage 84. The passage 110 does not extend through the width of the element 72, but instead has an upwardly extending portion 114 opening onto the upper surface of the member 72. The upper surface of the member 72 also carries a curved groove 116 which defines a fluid passage communicating between the upper end of passage 114 and a point 118 on the upper surface of the element 72. The passage 110 is oriented at substantially right angles to the passage 84, so that when, as illustrated in FIG. 5, the passage 110 is in registration with the carrier fluid inlet port 18, the ends 92 and 94 of the passage 84 are spaced from both the inlet port 18 and the outlet port 24. When the control element 74 is in this position the upper end of the passage portion 114 registers with the aspiration port 56, and the point 118 at the end of the passage 116 registers with the aspiration port 54.

The wall 8, immediately beneath the nozzle 14, carries a stud 120 on which the deflector, generally designated 122, is rotatably mounted, the deflector having a hub 124 rotatably received over the stud 120 and held in place by pin 126. The deflector comprises side walls 128, a top wall 130 and a bottom wall 132. As viewed in FIG. 9, the top wall 130 is upwardly and outwardly

inclined so as, when the deflector **122** is in the position shown, to intercept the stream of fluid emanating from the nozzle **14**, its upper surface being grooved or otherwise configured, as indicated at **134**, in order to impart a desired configuration or character to the spray. The bottom wall **132**, whose upper surface **136** is also inclined in the same general manner as the upper wall of the surface **130** and which may be provided with a lip **138** extending forwardly therefrom and having an appropriately configured and inclined upper surface **140**, is located more remotely from the pin **126** than is the upper wall **130**, and the space inside the walls **128**, **130** and **132** is open. Consequently, when the deflector **122** is rotated 90 degrees, as shown in FIG. 10, the spray emanating from the nozzle **14** will pass through the deflector **122** and engage the surfaces **136** and **140** of the wall **132** and lip **138**, those being the surfaces previously designated, with reference to the orientation of FIG. 9, as "upper" surfaces, those surfaces now, however, being downwardly inclined. Consequently, with the deflector **122** in the position of FIG. 10 the spray emanating from the nozzle **14** will be deflected in an entirely different manner from that involved when the deflector was in its position of FIG. 9. If no special deflection of the spray is desired, the deflector **122** will be positioned in what may be termed its "horizontal" position, rotationally intermediate its positions of FIGS. 9 and 10, in which event it will have no effect on the fluid escaping through the nozzle **14**, since its width, from one side wall **128** to the other, is less than the distance between stud **120** and nozzle **14**.

When the spray device of the present invention is to be used the container **6** is filled with a supply of aspiration material, a source of carrier fluid such as water is connected to the inlet port **18**, as by fastening the end of a garden hose to the fitting **12**, and carrier fluid is supplied through that hose to inlet port **18**.

When the device is to be turned off the control knob **76**, and with it the control element **72**, is rotated to a position 90 degrees clockwise from the position shown in FIG. 8. In this position the carrier fluid inlet port **18** will be blocked by the blank radially outer surface of the control element **72**, the sealing ring **30** will prevent leakage, and there will be no fluid flow.

When it is desired to cause aspiration at a comparatively high rate the control knob **76** and control element **72** are rotated to the position shown in FIG. 3. The passage **84** communicates between the carrier fluid inlet and outlet ports **18** and **24** and water flows therethrough. In moving through the narrow passage portion **86** the rate of flow increases, and when the rapidly moving carrier fluid comes to the beginning of the wider portion **88** aspiration takes place through the passage **96**, the aspiration port **54** and the conduit **58**. Aspiration material is sucked up into the carrier fluid, at a rate determined by the size of the aspiration port **54**, and flows out with the carrier fluid through the nozzle **14**.

If aspiration is desired at a slower rate, the control knob **76** and with it the control element **72** is rotated 180 degrees, to the position shown in FIG. 4. Once again the passage **84** communicates between the carrier fluid inlet and outlet ports **18** and **24** and carrier fluid flow therethrough, the rate of flow increasing as it moves through the narrow passage portion **86**, thereby producing effective aspiration at the lower end of the passage **98**, that passage now being in communication with the aspiration port **56**. Accordingly, aspiration of the contents of the container **6** occurs via passage **98**, aspiration port **56** and conduit **60**. Since the size of aspiration port **56** is smaller than that of aspiration port **54**, the aspiration which takes place occurs more slowly.

The sealing rings **105** and **108** around the upper ends of the passages **96** and **98** respectively in the control element **72** seal the fluid paths to the aspiration ports **54** and **56** respectively, thereby making for effective sucking of the aspiration material from the container **6** and preventing leakage. The sealing ring **32** prevents leakage of the carrier fluid and the aspiration material at the joint between the carrier fluid outlet port **24** and the end **92** or **94**, as the case may be, of the passage **84**.

If it is desired to cause carrier fluid to enter the container **6**, as may be desired either for dilution or cleaning purposes, the control knob **76** and with it the control element **72** is rotated to the position shown in FIG. 5 (90 degrees counter-clockwise as viewed in FIG. 8), thus bringing the end **112** of passage **110** into communication with the carrier fluid inlet port **118**. Hence carrier fluid will flow through passages **110** and **114**, and through aspiration port **56** and conduit **60**, into the container **6**. Fluid will also flow from passage **114** through passage **116** to aspiration port **54**, and then through port **54** and conduit **58** into the interior of the container **6**.

Thus it will be seen that through manipulation of but a single control element the aspiration spray device of the present invention can be turned off, can be conditioned to spray with a first type of aspiration or to spray with a second type of aspiration, and may be conditioned to cause carrier fluid to flow into the aspiration material container. It will be seen that by providing a desired number of different aspiration ports, and by providing the control element **72** with appropriately configured and positioned passages, more than two types of aspiration can be provided for selective use. Moreover, although the two types of aspiration here specifically disclosed relate to different rates of aspiration, it will be clear that selection of different materials for aspiration could be similarly accomplished, merely by causing the conduits **58** and **60** to extend into different containers or separated compartments within the same container. Various types of spray configurations can be achieved, independently of the type of aspiration selected, through appropriate positioning of the deflector **122**. Insofar as control of fluid flow within the device itself is concerned, that control is effected through the use of but a single moving part—the control element **72**. The remaining parts of the device, except for the control knob **76**, are all fixed in position, and the control knob **76** is in effect an integral part of the control element **72**. The individual parts may readily be made by conventional molding procedures, and thus are very well adapted for high quantity, low cost production. Assembly of the parts is simple to the extreme, and may be accomplished by relatively unskilled personnel. The cooperation between the parts is simple and of a type such as to be exceedingly reliable.

While but a single embodiment of the present invention has been here specifically disclosed, it will be apparent that many variations may be made therein, all within the scope of the invention as defined in the following claims.

We claim:

1. An aspiration spray device comprising a base having an aspiration port, a carrier fluid inlet port and a carrier fluid outlet port, a conduit communicating with said aspiration port and adapted to extend into a supply of aspiration material, and a control element movably mounted on said base in operative engagement with said ports, said control element having a first passage adapted, when said element is in a first position, to communicate between said inlet and outlet ports, and a second passage between said first passage and the exterior of said element and adapted to register with said aspiration port when said element is in said first position, said element having a third passage adapted, when said element is in a second position, to communicate between said inlet port and said aspiration port, said first passage then being out of communication between said inlet and outlet ports.

2. The device of claim **1**, in which said base comprises a top wall and side parts at least partially enclosing a

space, said inlet and outlet ports being in said side parts, said aspiration port being in said top wall, said control element being located in said space.

3. The device of claim 1, in which said base comprises a top wall and side parts at least partially enclosing a space, said inlet and outlet ports being in said side parts, said aspiration port being in said top wall, said control element being located in said space, said conduit extending down laterally outside said side parts to a point beneath said base.

4. An aspiration spray device comprising a base having a carrier fluid inlet port, a carrier fluid outlet port, and first and second spaced aspiration ports, conduit means communicating with said aspiration ports and adapted to extend into a supply of aspiration material, and a control element movably mounted on said base in operative engagement with said ports, said control element having first passage means adapted, for first and second positions of said element, to communicate between said inlet and outlet ports, and having second passage means between said first passage means and the exterior of said element and adapted to register with said first and second aspiration ports respectively when said element is in its first and second positions respectively.

5. The device of claim 4, in which said element rotates about an axis, said aspiration ports being spaced differently from said axis, said second passage means comprising first and second passage sections which, at the exterior of said element, are correspondingly spaced from said axis, said first and second passage sections registering respectively with said first and second aspiration ports respectively when said element is in its first and second positions respectively.

6. The device of claim 5, in which said first passage means comprises a narrow inner portion with wider outer portions at each end thereof, said first and second passage sections of said second passage means meeting said first passage means at said outer portions respectively and adjacent said inner portion.

7. The device of claim 5, in which said base comprises a top wall and side parts at least partially enclosing a space, said inlet and outlet ports being in said side parts, said aspiration ports being in said top wall, said control element being located in said space.

8. The device of claim 5, in which said base comprises a top wall and side parts at least partially enclosing a space, said inlet and outlet ports being in said side parts, said aspiration ports being in said top wall, said control element being located in said space, and in which said first passage means comprises a narrow inner portion with wider outer portions at each end thereof, said first and second passage sections of said second passage means meeting said first passage means at said outer portions respectively and adjacent said inner portion.

9. The device of claim 4, in which said element rotates about an axis, said aspiration ports being located on opposite sides of said axis.

10. The device of claim 4, in which said element rotates about an axis, said aspiration ports being located on opposite sides of said axis and being spaced differently from said axis, said second passage means comprising first and second passage sections which, at the exterior of said element, are correspondingly spaced from said axis, said first and second passage sections registering respectively with said first and second aspiration ports respectively when said element is in its first and second positions respectively.

11. The device of claim 10, in which said base comprises a top wall and side parts at least partially enclosing a space, said inlet and outlet ports being in said side parts, said aspiration port being in said top wall, said control element being in said space.

12. The device of claim 10, in which said first passage means comprises a narrow inner portion with wider outer portions at each end thereof, said first and second passage sections of said second passage means meeting said first passage means at said outer portions respectively and adjacent said inner portion.

13. The device of claim 10, in which said first passage means comprises a narrow inner portion with wider outer portions at each end thereof, said first and second passage sections of said second passage means meeting said first passage means at said outer portions respectively and adjacent said inner portion, and in which said control element has third passage means adapted, when said element is in a third position, to communicate between said inlet port and at least one of said aspiration ports, said first passage means then being out of communication between said inlet and outlet ports.

14. The device of claim 10, in which said base comprises a top wall and side parts at least partially enclosing a space, said inlet and outlet ports being in said side parts, said aspiration ports being in said top wall, said control element being in said space, said conduit extending down laterally outside said side parts to a point beneath said base, said first passage means comprising a narrow inner portion with wider outer portions at each end thereof, said first and second passage sections of said second passage means meeting said first passage means at said outer portions respectively and adjacent said inner portion, said control element having third passage means adapted, when said element is in a third position, to communicate between said inlet port and at least one of said aspiration ports, said third passage means then being out of communication between said inlet and outlet ports.

15. The device of claim 4, in which said control element has third passage means adapted, when said element is in a third position, to communicate between said inlet port and at least one of said aspiration ports, said first passage means then being out of communication between said inlet and outlet ports.

16. The device of claim 15, in which said base comprises a top wall and side parts at least partially enclosing a space, said inlet and outlet ports being in said side parts, said aspiration ports being in said top wall, said control element being in said space.

17. The device of claim 15, which said base comprises a top wall and side parts at least partially enclosing a space, said inlet and outlet ports being in said side part, said aspiration ports being in said top wall, said control element being in said space, said conduit means extending down laterally outside said side parts to a point beneath said base.

18. The device of claim 4, in which said base comprises a top wall and side parts at least partially enclosing a space, said inlet and outlet ports being in said side parts, said aspiration ports being in said top wall, said control element being in said space.

19. The device of claim 4, in which said base comprises a top wall and side parts at least partially enclosing a space, said inlet and outlet ports being in said side part, said aspiration ports being in said top wall, said control element being in said space, said conduit means extending down laterally outside said side parts to a point beneath said base.

20. The device of claim 15, in which said base comprises a top wall and side parts at least partially enclosing a space, said inlet and outlet ports being in said side parts, said aspiration ports being in said top wall, said control element being in said space, said element rotating about an axis, said aspiration ports being located on opposite sides of said axis and spaced differently from said axis, said second passage means comprising first and second passage sections which, at the exterior of said element, are corespondingly spaced from said axis, said passage sections registering with said first and second aspiration ports respectively when said element is in its first and second positions respectively, said first passage means comprising a narrow inner portion with wider outer portions at each end thereof, said first and second passage

sections of said second passage means meeting said first passage means at said outer portions respectively and adjacent said inner portion.

References Cited by the Examiner

UNITED STATES PATENTS

2,123,425	7/1938	Kelley	239—510
2,358,515	9/1944	Jepson	239—510
2,462,752	2/1949	Kotches et al.	239—318
2,719,704	10/1955	Anderson et al.	239—318
2,724,583	11/1955	Targosh et al.	239—318
3,128,949	4/1964	Kaufman	239—318
3,132,806	5/1964	McNair et al.	239—318
3,140,829	7/1964	Rose	239—318

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