B. L. GIFFORD.

STRAINER OR SEPARATOR.

APPLICATION FILED MAR. 23, 1916.

1,228,427. Patented June 5, 1917.

Fig. 1.

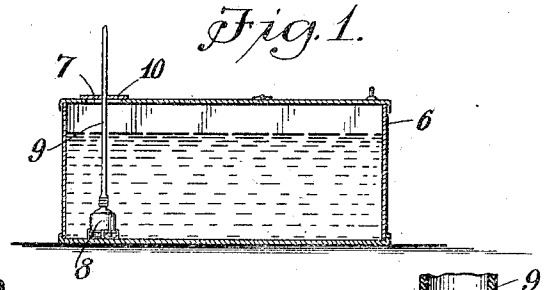


Fig. 2.

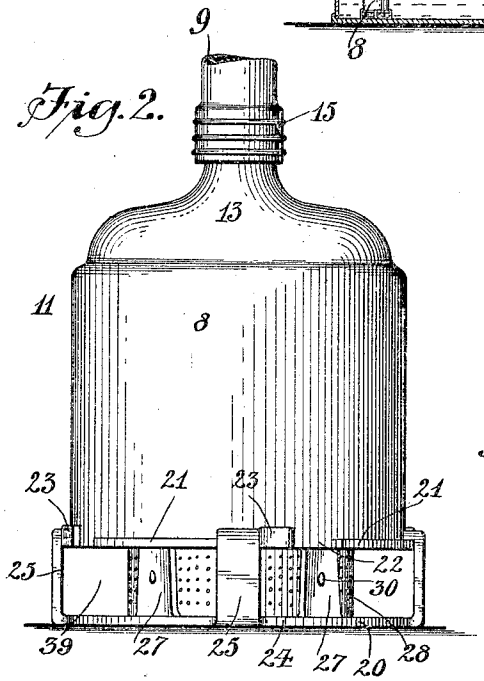


Fig. 3.

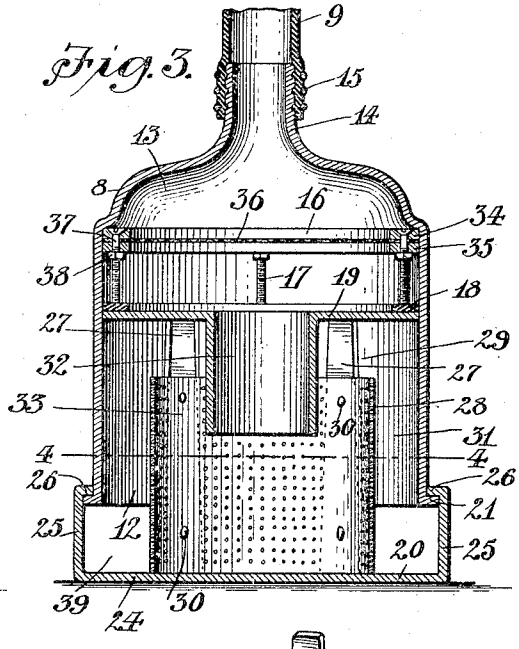


Fig. 4.

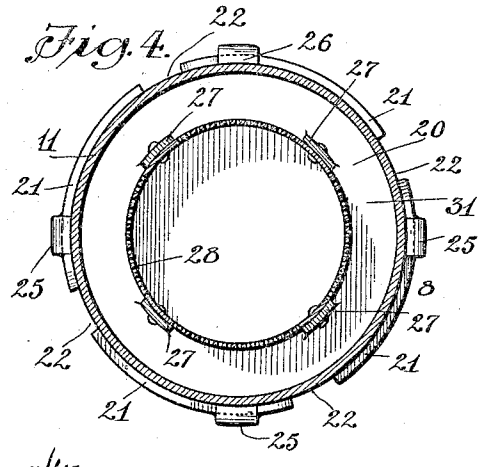
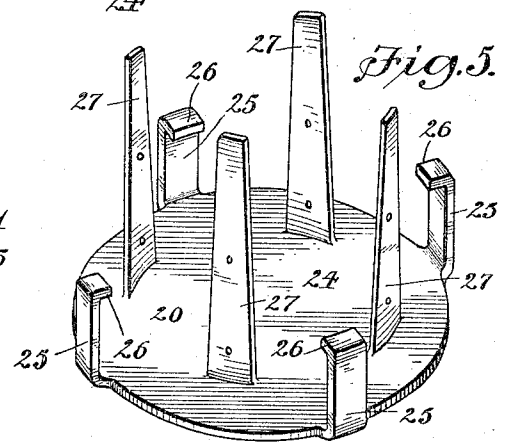


Fig. 5.



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UNITED STATES PATENT OFFICE.

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STRAINER OR SEPARATOR.

1,228,427. Specification of Letters Patent. Patented June 5, 1917.

Application filed March 23, 1916. Serial No. 86,234.

To all whom it may concern:

Be it known that I, BERT L. GIFFORD, a citizen of the United States, residing at Barker, in the county of Niagara and State of New York, have invented certain new and useful Improvements in Strainers or Separators, of which the following is a specification.

My invention relates to an improved strainer or separator, and more particularly to a device of this kind used in receptacles of spraying apparatuses containing liquid insecticides to be sprayed onto trees, plants, and the like.

In spraying apparatuses, the insecticide receptacle is invariably provided with a screening device to prevent undissolved and foreign matter entering the hose and spraying nozzle and clogging the same, but these devices are so constructed that the undissolved and foreign matter adhere to the screen and clog the same, thus preventing the liquid insecticide being drawn into the hose or other liquid conducting tube.

My invention is designed to eliminate this objection, and it has for its object the provision of a device which will screen or separate the undissolved and foreign matter from the free flowing portion of the liquid so that none of the undissolved or foreign matter can reach the hose or other conducting tube; in consequence of which the hose or tube and the spraying nozzle attached thereto is maintained unobstructed for the free flow of the liquid insecticide therethrough.

My invention consists in the novel features of construction and in the arrangement and combination of parts to be hereinafter described and particularly pointed out in the subjoined claims.

In the drawings,—

Figure 1 is a longitudinal section through a liquid insecticide receptacle or container forming part of a spraying apparatus and having a liquid conducting hose or tube extending thereinto and provided with my improved strainer or separator.

Fig. 2 is a side elevation of my improved strainer or separator.

Fig. 3 is a central vertical section of the same.

Fig. 4 is a horizontal section taken on line 4—4, Fig. 3.

Fig. 5 is a detached perspective view of the supporting member of the device.

Referring now to the drawings in detail, the reference numeral 6 designates the liquid insecticide receptacle or container having in one of its walls—preferably the top wall—an opening 7 through which my improved strainer or separator 8 is inserted into the receptacle or container with the hose or other conducting tube 9 attached to the strainer or separator and passing through the opening 7. The opening 7 may be closed by a cover or lid 10.

The hose or conducting tube is adapted for connection with the suction or inlet port of a pump and is continued in a separate stretch from the outlet of the pump and provided with any suitable form of spraying nozzle at its outer end, as is common in spraying apparatuses.

My improved strainer or separator comprises a casing 11, preferably cylindrical in cross section and open at its lower end, as at 12. The upper end is provided with a dome portion 13 and an externally corrugated nozzle or nipple 14 extending upwardly from the center of the dome portion and serving as an outlet. The hose or tube 9 is forced onto said nipple or nozzle and secured thereto by means of wire 15, or otherwise. The casing 11 is provided with an internal shoulder against which may be seated a screen 16, said screen having legs 17 which rest upon a rubber or other gasket 18 supported by a disk or horizontal wall or partition 19 held elevated within the casing by a support 20.

The casing has outstanding flanges 21 at its lower end which are separated from each other by spaces or passages 22, and at one end of each of said flanges, or if desired, at one end of at least one of said flanges, a stop lug 23 is provided, said lug or lugs, as the case may be, being formed by increasing the height of the flanges at one end, as clearly shown in Fig. 2.

The support 20 comprises a disk or plate 24 having upstanding arms 25, each of said arms being provided with an inwardly-bent or hook portion 26. Said portions 26 are passed through the spaces or passages 22 between the outstanding flanges 21 and bear with their undersides against the upper edges of said flanges and with one of their edges against the stop lugs 23. The flanges 21 and arms 25 may be said to constitute a bayonet joint, by means of which the casing and support are connected together. The

disk or plate 24 is provided on its upper face with comparatively long upstanding arms 27 against the upper ends of which the disk or horizontal wall or partition 19 rests, and arranged between said supporting arms 27 is an annular wall or curb 28 of less height than said supporting arms so that the upper edge thereof is separated from the disk or horizontal wall or partition 19 by a space or passage 29. Although it is not necessary that the wall or curb 28 is perforated I have so illustrated the same and prefer to use a perforated or other foraminous sheet of metal to form this wall or curb, and in order to retain the latter in position it is riveted to the supporting arms 27, as at 30, with its lower edge in contact with the disk or plate 24.

The curb or wall 28 is a tubular member of somewhat smaller diameter than the casing and is therefore separated from the latter by an intervening space 31. The disk or horizontal wall or partition 19 is preferably removable and fits snugly within the casing and it is provided centrally with a depending tube 32 which extends a distance into the space surrounded by said curb or wall 28, said depending tube being of less diameter than said curb or wall 28 and is consequently separated therefrom by an intervening space 33. The spaces 31, 29, and 33 in conjunction with the passage through the depending tube 32, form a circuitous passage through the casing.

The gasket 18 rests against the marginal portion of the upper surface of the disk or horizontal wall or partition 19 and fits tightly with its outer peripheral edge against the inner surface of the peripheral wall of the casing so as to prevent the passage of liquid insecticide between the peripheral edge of the disk or horizontal wall and the peripheral wall of the casing.

The screen 16 comprises two annuli 34, 35, which are of a size to fit snugly within the casing 18, and a disk of fine screening or other suitable straining material 36 held marginally between the two annuli and stretched taut. The screening and annuli are connected together by screws 37 which project a considerable distance below the lower annuli, and the projecting portions of which form the legs 17, hereinbefore described. Nuts 38 are threaded onto the screws and bear against the underside of the lower annulus. The screws therefore serve as means for clamping the screening material 36 between the annuli and also as supporting legs for the entire screen. The screws are of a length to position the disk or horizontal wall or partition 19 the proper distance from the lower face of the screening and it will be retained in such position by the supporting arms 27 when the hooked upstanding arms 25 engage the outstanding flanges of the casing. The support 20 therefore retains the screen and disk or partition 19 in proper position, and by reason of the screen being held against upward movement by the internal shoulder of the casing and the disk or horizontal partition 19 being held against upward movement by the legs or screws of the screen, the support 20 is positioned so that its disk or plate 24 is spaced from the lower edge of the casing and an entrance passage or inlet 39 formed between said disk or plate and the lower edge of the casing.

In this assembled condition the strainer or separator is positioned within the liquid insecticide receptacle or chamber and rests upon the bottom of the latter with the tubular member 28 open at its upper end and extending into the lower portion of the casing and with the depending tube of the wall or partition 19 extending into the upper portion of said tubular member. Preparatory to and while spraying, the liquid insecticide within the receptacle or chamber is agitated by suitable means to thoroughly mix the same, and during the agitation any floating substances within the liquid will be carried to the bottom of the receptacle or chamber while in the path of the agitator. The floating substances, however, tend to rise within the liquid when free of the agitator. Now, when starting the pump, to which the hose or tube 9 is attached, the suction created thereby draws the liquid insecticide through the passage or inlet 39 and upwardly through the intervening space 31, the disk or partition serving as an abutment or deflector to prevent the direct upward travel of the liquid and also to prevent floating substances reaching the depending tube 32, since such substances will lodge against the abutment or deflector and prevent the emergency screen 16 being clogged thereby. The liquid is then drawn through the intervening space 33 between the curb or wall 28 and the depending tube 32 and thence around the lower end of said tube and upwardly through the same into the space or chamber between the disk or horizontal partition 19 and the screen 16. The liquid will also be drawn through the perforations in the curb or cylindrical wall 28.

While I have shown the wall or curb 28 perforated and the screen 16 positioned between the disk or horizontal partition and the outlet of the casing, the action of the device will be similar should the screen be omitted and an imperforate curb or wall be substituted for the perforated curb or wall; and it is of course understood that the casing and parts fitting therein or extending thereinto may be given a contour other than cylindrical without in any manner detracting from the effectiveness of the device.

In the operation of the device, the undis-

solved and foreign matter may pass through the passage 39 but is prevented from passing over the upper edge of the curb or wall 28 and consequently cannot be drawn into the tube 32 which projects downwardly to a point beneath the upper edge of said curb or wall while the floating substances rise within the space 31 and, as stated, lodge against the abutment or deflector.

When using a perforated curb or wall the undissolved and foreign matter may adhere to the outer face of the curb or wall, being drawn thereagainst by the action of the suction through the perforations in said curb or wall, and should said perforations become clogged by reason of such adherence, all of the liquid drawn through the inlet 39 will pass upwardly through the intervening space 31 between the curb or wall and the surrounding wall of the casing.

When the pump ceases to operate the undissolved and other foreign matter adhering to the curb or wall 28 will quickly free itself and fall onto the disk or plate portion 24 or onto the bottom of the liquid insecticide receptacle or container. At regular intervals the device may be readily withdrawn from said receptacle or container and the undissolved and foreign substance removed therefrom.

The screening 16 is an element of my device which will be effective to guard against undissolved matter being drawn into the hose or tube 9 when the parts beneath become destroyed. This, however, is not likely to occur and therefore the screening may be considered as an additional safe guard against the entrance of undissolved and foreign matter to the hose or tube.

The arrangement of the curb or wall 28 and the depending tube 32 assures effectual separation of the undissolved and foreign matter from the free flowing liquid, and by the use of this device the constant annoyance of removing the spraying nozzle from the hose and disassembling the parts to clean the same is completely obviated.

While the construction shown and described is simple and effective in accomplishing the purpose intended, it is nevertheless to be understood that the principle involved may be embodied in strainers or separators differently constructed and fully fall within the scope of my invention as defined by the following claims. I therefore hold myself at liberty to make such changes as fairly fall within the scope of my invention and desire the claims hereto to be given the broadest interpretation permissible by the prior art.

Having thus described my invention, what I claim is,—

1. A device of the kind described, comprising a casing having an inlet and an outlet, a member within said casing open at its upper end, and a second member within said casing open at opposite ends and having its lower portion extending into the upper open end of said first-mentioned member and being spaced from the outlet of said casing.

2. A device of the kind described, comprising a casing having an inlet at its lower end and an outlet at its upper end, a wall or partition within said casing between said inlet and said outlet provided with a depending tube, said wall or partition fitting snugly within said casing, and a wall spaced from the wall of said casing and surrounding the lower end of said depending tube, the inlet of said casing being arranged to direct liquid insecticide into the space between said surrounding wall and the wall of the casing.

3. A device of the kind described, comprising a casing having an inlet at its lower end and an outlet at its upper end, a tubular member fitting into said casing from the bottom and spaced from the wall of said casing, and a horizontal wall within the casing having a centrally-disposed depending tube extending into the upper end of said tubular member and spaced from the same, said wall fitting snugly within said casing.

4. A device of the kind described, comprising a casing having its lower end open and provided with a nipple at its upper end serving as an outlet, said casing having an internal shoulder between the open lower end thereof and said nipple, a partition or wall held in a fixed position within said casing by said internal shoulder and having a depending tube, a supporting member spaced from the lower edge of said casing and having upstanding supporting arms engaging said partition or wall to hold the same elevated, and a curb or wall extending upwardly into the casing and spaced from the wall thereof and from said depending tube, said curb or wall having its upper edge in a plane above the lower edge of said depending tube and spaced from said partition or wall.

5. A device of the kind described, comprising a casing open at its lower end and having an outlet at its upper end, a screen within said casing, a partition or wall within said casing spaced from said screen and having a depending tube, means for holding said casing elevated from the surface on which said device rests, and a tubular member extending upwardly into the lower open end of the casing and being spaced from the wall thereof, said depending tube projecting into the upper portion of said tubular member and being separated therefrom by an intervening space.

6. A device of the kind described, comprising a casing open at its lower end and having an outlet at its upper end, a partition

or wall fitting snugly within said casing and having a depending tube, means for holding said casing elevated from the surface on which the device rests, and a tubular member extending upwardly into the lower open end of the casing and being spaced from the wall thereof, said tubular member being closed at the bottom and projecting below the lower edge of said casing, and said depending tube projecting into the upper portion of said tubular member and being separated therefrom by an intervening space.

7. A device of the kind described, comprising a casing open at its lower end and having an outlet at its upper end, said casing being provided with outstanding flanges separated by spaces, at least one of said flanges having a stop lug at one end thereof, a support comprising a plate having hooked upstanding arms at its marginal portion adapted to engage the outstanding flanges of said casing with the hook of one of said arms in contact with said stop lug, said plate also having upstanding supporting arms extending into said casing, a tubular member fitting within said supporting arms and closed at the bottom by said plate, said tubular member extending into the casing from the bottom and being separated from the wall thereof by an intervening space, a horizontal wall fitting snugly within said casing and spaced from the upper edge of said tubular member, said horizontal wall having a depending tube extending into the upper portion of said tubular member and separated therefrom by an intervening space, and a screen in the upper portion of said casing separated from said horizontal wall.

8. A device of the kind described, comprising a casing open at its lower end and having an outlet at its upper end, a support comprising a disk and upstanding supporting arms adapted to extend into said casing, a bayonet connection between said support and casing, a curb wall resting on said support and extending into said casing, and a horizontal partition or wall within said casing resting on said supporting arms and having a depending tube extending into the upper portion of and surrounded at its lower end by said curb or wall.

9. A device of the kind described, comprising a downwardly-opening casing having an outlet at its upper end, an upwardly-opening tubular member of smaller diameter than said casing and extending upwardly into the latter, and a wall or partition between the ends of said casing having a depending tube extending into the upper end of said tubular member and separated from the wall of the latter, said depending tube terminating in a plane passing horizontally through the upper half of said tubular member.

10. A device of the kind described, comprising a downwardly-opening casing having an outlet at its upper end, a tubular member open at its upper end and extending into said casing from the bottom and spaced from the wall of said casing, a partition within said casing having a depending tube extending into said tubular member and spaced from the wall of the latter, and a screen within said casing spaced from said partition.

11. A device of the kind described, comprising a downwardly-opening casing having an outlet at its upper end, a tubular member extending into said casing from the bottom and spaced from the wall of said casing, a partition within said casing having a depending tube extending into the upper portion of said tubular member and spaced from the wall of the latter, and a screen within said casing having legs resting upon said partition.

12. A device of the kind described, comprising a downwardly-opening casing having an outlet at its upper end, a tubular member extending into said casing from the bottom and spaced from the wall of said casing, a partition within said casing having a depending tube extending into the upper portion of said tubular member and spaced from the wall of the latter, and a screen within said casing spaced from said partition and comprising a disk of screening material and a pair of annuli clamped to opposite sides of said screening material at the marginal portions thereof.

13. A device of the kind described, comprising a downwardly-opening casing having an outlet at its upper end, a tubular member extending into said casing from the bottom and spaced from the wall of said casing, a partition within said casing having a depending tube extending into said tubular member and spaced from the wall of the latter, and a screen within said casing spaced from said partition, and comprising a disk of screening material, a pair of annuli at opposite sides of said screening material at the marginal portions thereof, screws passed through said annuli and screening material and extending downwardly within the casing in contact with said partition, and nuts threaded onto said screws and bearing against the underside of the lower of said annuli.

In testimony whereof I affix my signature.

BERT L. GIFFORD.