June 1, 1937. H. E. BRANDT 2,082,146

DISPENSING DEVICE

Filed Feb. 14, 1935

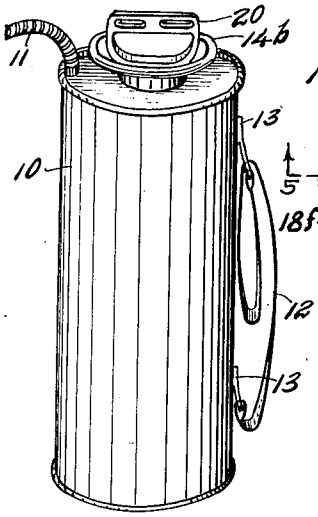


Fig. 1.

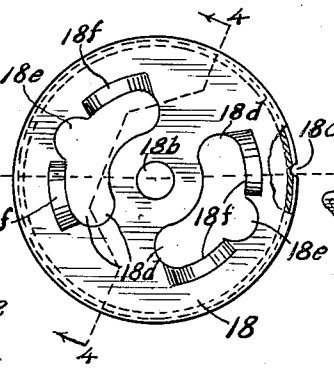


Fig. 3.

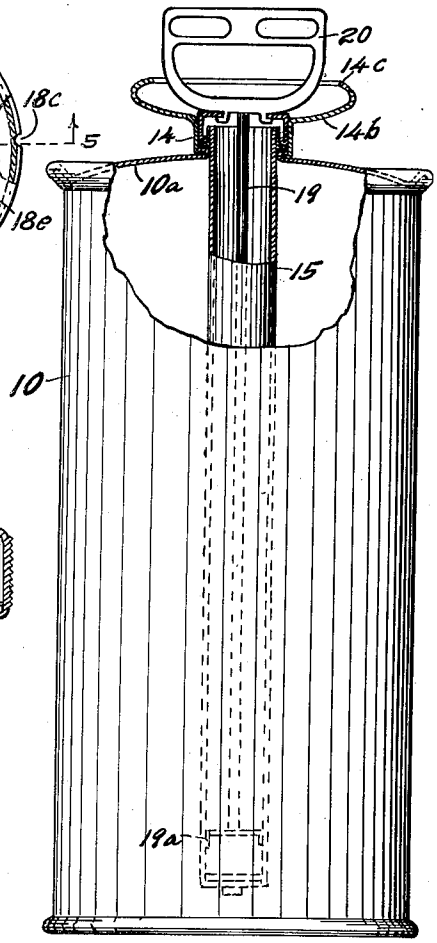


Fig. 2.

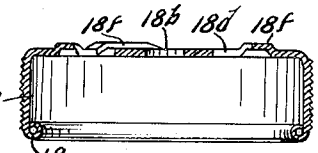


Fig. 5.

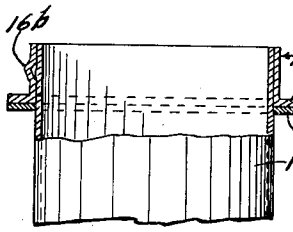


Fig. 6.

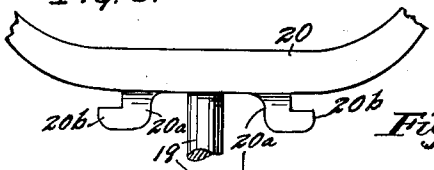


Fig. 8.

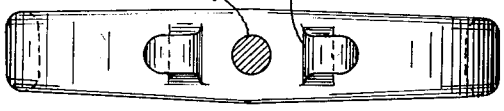


Fig. 9.

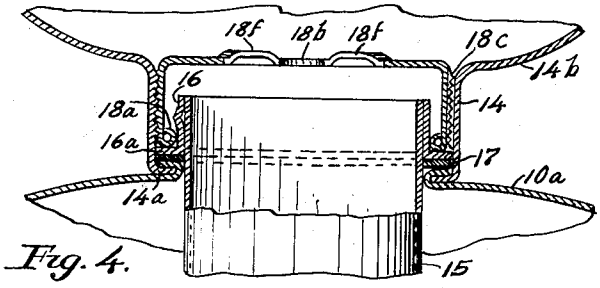


Fig. 4.

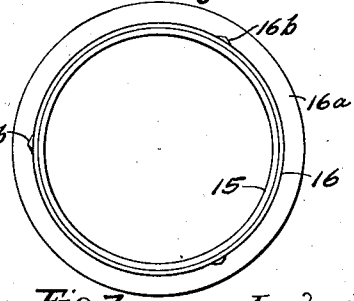


Fig. 7.

Inventor
HENRY E. BRANDT
BY
Chas. C. Reiff
Attorney

Patented June 1, 1937 2,082,146

UNITED STATES PATENT OFFICE

2,082,146

DISPENSING DEVICE

Henry E. Brandt, St. Paul, Minn., assignor to The Dobbins Manufacturing Company, North St. Paul, Minn., a corporation of Minnesota

Application February 14, 1935, Serial No. 6,516

16 Claims. (Cl. 221—77)

This invention relates to a spraying device for spraying liquid upon plants or other objects. While the invention might be applicable to various kinds of sprayers, it is particularly illustrated as applied to a sprayer comprising a container for liquid in which a pump cylinder is disposed forming part of a pump for pumping air into said container to place pressure on the liquid therein and spraying the same through a suitable outlet and nozzle.

It is an object of this invention to provide a sprayer having a funnel conveniently connected to the top thereof by means of which the sprayer may be filled.

It is a further object of the invention to provide a sprayer comprising a container having a pump cylinder carried thereby with means for holding said pump cylinder in place, together with means for relieving the pressure in said container so that said pump cylinder will not be forced outwardly when released.

It is another object of the invention to provide a sprayer comprising a container for liquid having a sheet metal top portion with an aperture therein, a neck extending upwardly from said top from around said aperture, a very simple and efficient means being provided to connect said neck and top.

It is still another object of the invention to provide a sprayer comprising a container for liquid having a top portion with an aperture therein, a neck portion extending upwardly from said top from around said aperture, a pump cylinder receivable in said aperture and having a flange supported by said top and forming a seal, a gasket preferably being provided for said seal and a closure member threaded into said neck portion to engage said flange and frictionally connected to said pump cylinder but rotatable relatively thereto under certain conditions.

These and other objects and advantages of the invention will be fully set forth in the following description made in connection with the accompanying drawing, in which like reference characters refer to similar parts throughout the several views and in which:—

Fig. 1 is a perspective view of the sprayer;

Fig. 2 is a view in side elevation of the sprayer, certain parts being broken away and others shown in vertical section;

Fig. 3 is a top plan view of a closure member used, a small portion thereof being broken away and a part shown in horizontal section;

Fig. 4 is a view in vertical section, the closure member being sectioned on line 4—4 of Fig. 3 as indicated by the arrows, the same being shown on an enlarged scale;

Fig. 5 is a vertical section taken on line 5—5 of Fig. 3 as indicated by the arrows;

Fig. 6 is a view of the upper portion of the pump cylinder used, partly in side elevation and partly in vertical section;

Fig. 7 is a top plan view of the pump cylinder;

Fig. 8 is a partial view in side elevation of the handle; and

Fig. 9 is a bottom plan view of Fig. 8.

Referring to the drawing, a sprayer is shown comprising a receptacle 10 and while this receptacle might take various forms, in the embodiment of the invention illustrated it is shown as substantially cylindrical in form and having a sheet metal top portion 10a slightly convex on its upper surface. Said receptacle has a discharge tube 11 connected thereto and a pipe (not shown) extends from this tube downwardly to adjacent the bottom of said receptacle. A strap handle 12 is also shown as connected to small brackets 13 at one side of the sprayer so that said sprayer may be carried by said strap.

The top 10a has a central aperture therein and a neck portion 14 of cylindrical form extends upwardly from top 10a from around said aperture. Neck portion 14 is of cylindrical form and has a flange 14a extending inwardly substantially at a right angle at its lower end. The flange 14a is disposed in engagement with the top 10a and the metal of said top is bent reversely upwardly and outwardly over the top of flange 14a and tightly clamped thereon so as to form a tight seal. Neck 14 is thus rigidly and strongly secured to top 10a in a simple and efficient way. A flange is thus formed in the bottom of neck 14. A pump cylinder 15 is provided and the same has at its upper portion a shell 16 fitting thereabout and secured thereto in any suitable manner as by welding, said shell having a flange 16a extending outwardly substantially at a right angle. A gasket 17 is provided beneath flange 16a and said flange 16a is adapted to be forced down against said gasket and the flange formed by top 10a to provide a tight seal. The shell 16 has circumferentially spaced conical projections 16b pressed outwardly therefrom, the same being illustrated as three in number. The neck 14 at its upper portion is formed as a funnel 14b which extends outwardly and upwardly, the same having its upper edge portion 14c bent inwardly substantially at a right angle to form an inwardly extending rim. The neck 14 is internally threaded and a closure member 18 is provided having a

cylindrical portion externally threaded to screw into the neck portion 14. The closure member 18 is of inverted cup form and the same is illustrated as having its lower edge rolled inwardly to form a bead 18a. This lower edge or bead portion bears on the top of flange 16a to press the same downwardly against gasket 17. The top portion of member 18 has a central cylindrical aperture 18b therein through which passes a pump rod or plunger 19 rigidly secured at its upper end to a handle member 20. Plunger rod 19 has a pump plunger 19a at its lower end so that air can be pumped in cylinder 15 and into the container. Handle member 20 has its bar-like lower portion extending outwardly and upwardly in curved form and as shown in Figs. 1 and 2 is receivable in funnel 14b. Said handle has parallel side portions and a transversely extending top portion. At the lower portion of handle 20 lugs 20a project downwardly at each side of rod 19, the same portions or extensions 20b. The member 18 has a vertical groove 18c extending along one side thereof through the threads thereof. Member 18 also has curved slots 18d at each side of aperture 18b and at equal distances therefrom, said slots having curved ends and having enlarged central portions 18e. At each end of each of said slots and at the outer sides thereof the metal forming the top of member 18 is struck upwardly as shown at 18f to form pockets on the under side of said top.

In operation, liquid will be placed in container 10 and for this purpose closure member 18 and pump cylinder 15 must be removed. To remove closure member 18 the handle 20 is grasped and lugs 20a are inserted through the slots 18d and through the central portions 18e thereof. Slots 18d are not of sufficient width to receive said lugs except at said enlarged portions 18e. When so inserted handle 20 and lugs 20a are rotated and the projections 20b on said lugs pass under the top of member 18. The lugs engage the ends of slots 18d and further turning of said handle then turns member 18, screwing the same out of neck 14. When in operating condition the sprayer has compressed air in the upper portion thereof and if this pressure is maintained until member 18 is completely unscrewed the pressure will force pump cylinder 15 outwardly causing the same to be ejected with some force. To prevent this the groove 18c is provided. As soon therefore as member 18 is unscrewed to release its pressure on flange 16a the air in the top of the container will pass around gasket 17 and flange 16a and out through the groove 18c. The pressure is thus relieved before member 18 is completely unscrewed. When member 18 is thus unscrewed it is lifted outwardly and will lift pump cylinder 15 therewith as the bead 18a is beneath the projections 16b. The liquid can now be poured into funnel 14b and will pass downwardly through the neck 14 and through the central aperture in the top 10a into container 10. The inwardly extending rim 14c prevents spilling of the liquid and directs the liquid back inwardly should the liquid approach the edge of the funnel. With the desired amount of liquid placed in the container, pump cylinder 15 will again be inserted in the container, gasket 17 resting on the flange surrounding the central aperture in top 10a. Member 18 will be screwed into neck 14, member 18 being turned by handle 20 as already described. The inner diameter of bead 18a is such that it can be forced with considerable force over the projections 16a and will frictionally engage the outer side of shell 16. As member 18 is screwed into neck 14 pump cylinder 15 and member 16 turn therewith until gasket 17 engages its supporting flange. At this time resistance is offered to the rotation of pump cylinder 15 and member 18 turns relatively to pump cylinder 15 so that the gasket 17 is not rotated in engagement with its seat. Member 18 is turned until it engages flange 16a and presses downwardly thereon, at which time a tight seal is made in the top of the container. The lugs 20a can now be removed through slots 18d and the handle 20 and plunger rod 19 may be reciprocated to pump air into the container and place the liquid under pressure. The sprayer is now in condition for operation and the liquid is sprayed by operating a nozzle on the end of tube 11 as is well known to those skilled in the art. The nozzle is a common feature of such sprayers and forms no part of the present invention. The sprayer can be carried about by handle 20 and when so carried the projections 20b are engaged in the pockets formed by portions 18f. This prevents rotation of container 10 as the same is being carried. It will be understood that member 18 can be pulled and disengaged from member 16 and the pump cylinder when so desired.

From the above description it is seen that applicant has provided a sprayer with a plurality of novel features which constitute quite a decided advance in the art. The funnel 14b is always present and it is thus unnecessary to provide a seperate funnel for filling the container. The funnel and neck 14 are constructed and connected to top 10a so that a minimum number of parts are used. The closure member 18 is small and handle 20 is formed so that it readily enters the funnel in order that member 18 may be engaged by lugs 20a. A very compact structure is thus produced. The device has been amply demonstrated in actual practice and is being commercially made.

It will, of course, be understood that various changes may be made in the form, details, arrangement and proportions of the parts, without departing from the scope of applicant's invention, which generally stated, consists in a device capable of carrying out the objects above set forth in the parts and combinations of parts disclosed and defined in the appended claims.

What is claimed is:—

1. A sprayer structure comprising a receptacle for liquid having a sheet metal top portion with an aperture therein, a substantially cylindrical neck portion extending upwardly from around said aperture and having an inwardly directed flange at its lower end, said top being reversely bent to embrace said flange and tightly connect said neck and top, said reversely bent portion forming a flange, a pump cylinder having a flange adapted to be supported on said flange and form a seal therewith a pump plunger rod extending upwardly from said cylinder, and a closure member threaded into said neck portion and adapted to force said pump cylinder flange toward said first mentioned flange and having an opening through which said plunger rod passes.

2. A sprayer structure comprising a receptacle for liquid having a sheet metal top portion with a central aperture therein, a cylindrical neck portion extending upwardly from around said aperture and formed at its top into an outwardly and upwardly extending funnel having an in-

wardly directed top portion for receiving liquid and directing the same into said aperture, said neck portion at its bottom being rigidly and tightly connected to said top and having an inwardly extending flange at its bottom and a closure member threaded into said neck portion and having an inwardly directed flange at its bottom.

3. A sprayer structure having in combination, a receptacle for liquid having a top portion with a central aperture therein, a cylindrical neck portion rigidly secured to said top at its bottom and extending upwardly from around said aperture, the same having at its upper portion a funnel, a flange surrounding said aperture, a pump cylinder insertable into said receptacle through said funnel and aperture and having an outwardly extending flange adjacent its top supported on said flange, a pump plunger rod extending upwardly from said cylinder, a gasket between said flanges to form a tight seal, a closure member in the form of an inverted cylindrical cup threaded into said neck portion to engage the top of said flange on said pump cylinder to press the same against said gasket said member having an opening therethrough for the passage of said plunger rod.

4. A sprayer structure having in combination, a receptacle for liquid having a top portion with a central aperture therein, a cylindrical neck portion rigidly secured to said top at its bottom and extending upwardly from around said aperture, the same having at its upper portion a funnel, a flange surrounding said aperture, a pump cylinder insertable into said receptacle through said funnel and aperture and having an outwardly extending flange adjacent its top supported on said flange, a gasket between said flanges to form a tight seal, a closure member in the form of an inverted cylindrical cup threaded into said neck portion to engage the top of said flange on said pump cylinder to press the same against said gasket, said closure member having slots in its top, a handle having lugs receivable in said slots for turning said closure member and having a plunger rod rigidly secured thereto and extending downwardly into said pump cylinder, said closure member having a central aperture through which said rod passes.

5. A sprayer structure comprising a container for liquid having a top portion with an opening therein, a neck extending upwardly from said top portion about said opening, a flange about said opening, a pump cylinder having a flange supported on said flange to form a seal therewith, a closure member threaded into said neck and connected to said cylinder so as to lift the same but rotatable frictionally thereon when considerable force is used so that said closure member will rotate after engagement of said flanges without rotating said pump cylinder.

6. A sprayer structure comprising a container for liquid having a top portion with an aperture therein, a cylindrical neck portion secured to said top and extending upwardly from around said aperture, a pump cylinder receivable in said aperture and having a flange forming a seal with said top, a closure member threaded into said neck portion to bear on said flange, said closure member having a passage therein at one side whereby with pressure in said container said pressure will be relieved as soon as said flange is released by said closure member and before said closure member is entirely unscrewed from said neck portion.

7. A sprayer structure comprising a container for liquid having a top portion with an opening therein, a cylindrical neck portion secured to said top portion and extending upwardly from around said opening, a pump cylinder having a flange some distance from the top thereof, adapted to engage said top portion and form a seal therewith, a gasket between said top portion and flange, a closure member having a cylindrical portion threaded into said neck portion to engage said flange to press the same against said gasket, the upper portion of said pump cylinder having circumferentially spaced projections whereby said upper portion of said pump cylinder can be forced into said closure member and will be frictionally engaged therewith so as to rotate said pump cylinder until said gasket is engaged and then to rotate relatively to said pump cylinder.

8. A sprayer structure having in combination, a container for liquid having a top portion with an opening therein, a neck extending upwardly from said top portion about said opening, a flange about said opening, a pump cylinder having a flange supported on said flange to form a seal therewith, a closure member threaded into said neck and frictionally connected to said cylinder so as to lift the same but being rotatable relatively to said cylinder after engagement of said flanges so that it will rotate without rotating said pump cylinder, said closure member being separable from said pump cylinder.

9. The structure set forth in claim 8, said pump cylinder having a plurality of circumferentially spaced projections on its periphery and said closure member having a bead formed at its lower end, said projections being insertable into said member past said bead under pressure to connect said closure member and cylinder.

10. A sprayer structure comprising a receptacle for liquid having a sheet metal top with an aperture therein, a neck portion secured to said top and extending upwardly from around said aperture and carrying a funnel at its upper end, said funnel extending upwardly and outwardly and having its upper edge portion turned inwardly substantially at a right angle, a closure member insertable through said funnel and threaded into said neck portion and a pump cylinder inserted through said opening having a flange engageable by said closure member.

11. The structure set forth in claim 10, a handle member having inwardly curving sides so as to be received in said funnel having a plunger rod extending into said pump cylinder and having downwardly and outwardly projecting lugs at its bottom, said closure member having a central aperture through which said plunger rod passes and having slots at each side of said aperture for receiving said lugs whereby it can be turned by said handle.

12. A sprayer structure comprising a receptacle for liquid having a sheet metal top portion with a central aperture therein, a sheet metal cylindrical portion extending upwardly from around said aperture forming an outwardly and upwardly extending funnel for receiving liquid and directing the same into said aperture, said cylindrical portion at its bottom being rigidly and tightly connected to said top, said top portion and cylindrical portion at their connected parts forming an inwardly extending flange at the bottom of said cylindrical portion.

13. A sprayer structure having in combination, a receptacle for liquid having a top portion with a central aperture therein, a cylindrical portion rigidly secured to said top at its bottom and extending upwardly from around said aperture, the

same forming a funnel, a flange surrounding said aperture, a pump cylinder insertable into said receptacle through said funnel and aperture and having an outwardly extending flange adjacent its top supported on said flange, a pump plunger rod extending upwardly from said cylinder, a gasket between said flanges to form a tight seal, a closure member threaded into said cylindrical portion and rotatable to closing position to press said flange on said pump cylinder against said gasket and having an opening therethrough through which said plunger rod passes and a handle secured to said plunger rod for rotating said closure member.

14. The structure set forth in claim 13, said closure member having slots in the top thereof and said handle having lugs receivable in said slots to rotate said closure member, said handle having a pump plunger rod secured thereto.

15. A sprayer structure comprising a receptacle having a top with an aperture therein, a member secured to said top and extending upwardly and outwardly from around said aperture forming a funnel, a closure member insertable through said funnel and rotatable to closing position in said member, said receptacle top having a flange surrounding said aperture, a pump cylinder insertable through said opening and having a flange engaging said flange and moved thereagainst by said closure member and a handle member receivable in said funnel having a plunger rod secured thereto and extending into said pump cylinder and having L-shaped lugs projecting at its bottom said lugs thus having downwardly and outwardly projecting portions, said closure member having a central aperture through which said plunger rod passes and having slots at each side of said aperture for receiving the outwardly projecting portions of said lugs whereby it can be turned by the downwardly projecting portions of said lugs on said handle.

16. A sprayer comprising a container for liquid having a top portion with an opening therein, a neck extending upwardly from said top portion about said opening, a flange about said opening, a pump cylinder having a flange supported on said flange to form a seal therewith, a closure member threaded into said neck and connected to said cylinder against relative longitudinal movement so as to lift said cylinder but rotatable frictionally on said cylinder when considerable rotative force is exerted whereby said closure member will rotate after engagement of said flanges without rotating said pump cylinder, said closure member and cylinder being separable longitudinally by considerable pressure.

HENRY E. BRANDT.