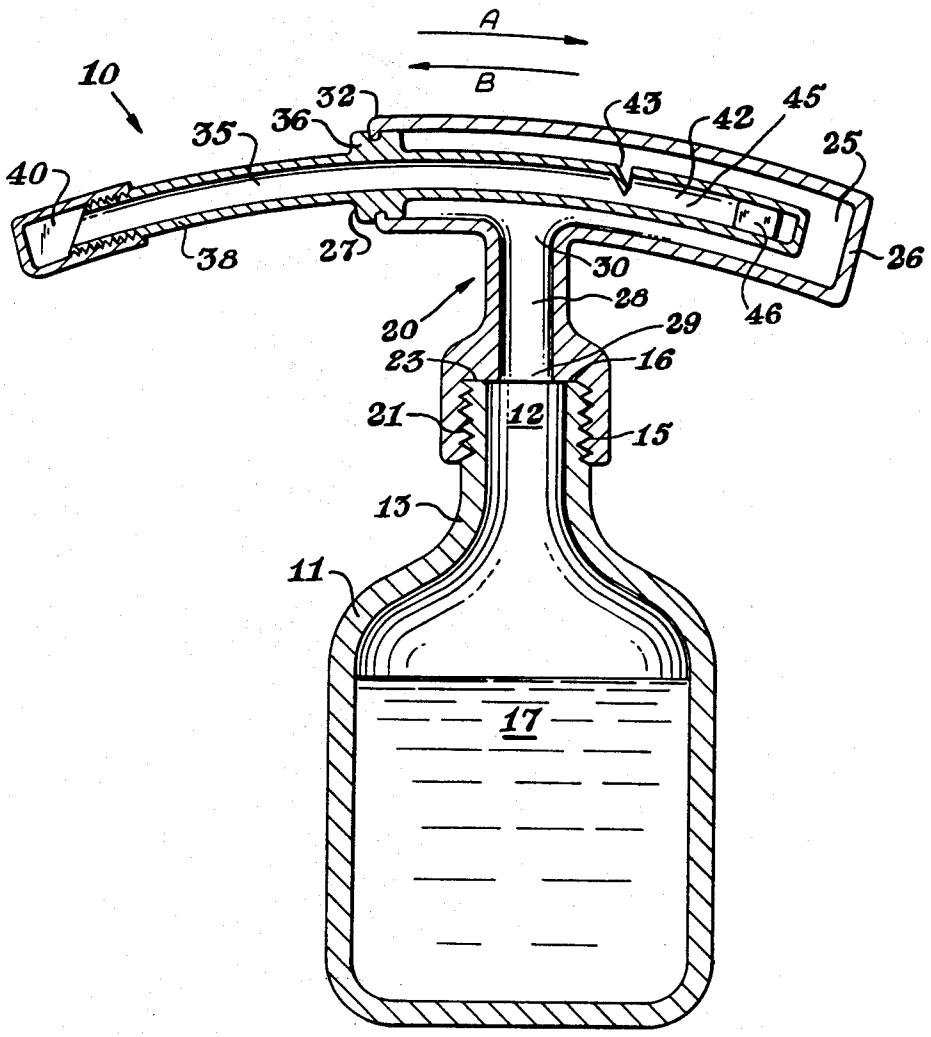
April 20, 1965 L. P. McCARTY 3,179,311

DISPENSING CONTAINER

Filed Jan. 2, 1964



INVENTOR.
Leslie P. McCarty
BY
AGENT
ATTORNEY

United States Patent Office 3,179,311 Patented Apr. 20, 1965

3,179,311

DISPENSING CONTAINER

Leslie P. McCarty, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich., a corporation of Delaware

Filed Jan. 2, 1964, Ser. No. 335,183
3 Claims. (Cl. 222—424)

This invention relates to a dispensing package. It more particularly relates to a dispensing package containing biocidal materials.

Many biocidal materials such as herbicides, insecticides, fungicides, and pesticides must be applied at a predetermined level of application to be properly effective. Over or under dosage can result in many undesirable effects. For example, under dosage with herbicides of the hormone type results in promoting the growth of plants rather than killing them, whereas overdosage will oftentimes result in killing or severely retarding the growth of desired species. For example, the application of an overdose of a broadleaf herbicide on a lawn frequently results in unsightly patches where the grass has been killed or its growth severely retarded. Much of this under and over dosage results from carelessness on the part of the person who is applying the pesticide in that the proper strength of solution is not prepared. Such carelessness on the part of the consumer frequently results in the consumer blaming the product or believing it to be ineffective or misrepresented.

It is an object of this invention to provide an improved dispensing package of a biocidal material.

A further object of the invention is to provide a dispenser containing a biocidal material which is capable of dispensing predetermined quantities thereof.

A further object of this invention is to provide an improved shippable, handleable package of biocidal actvie material utilizing a breakage resistant measuring dispenser.

These benefits and other objects in accordance with the present invention are readily achieved by employing a container having an opening therein to provide access to its interior, disposed within its interior a liquid biocidal material, affixed to said opening a breakage resistant housing, the housing defining means to engage the opening of the container and be secured thereto, a cavity disposed remotely from the opening having a closed end and an open end, the housing defining a passageway having a first opening and a second opening, the first opening and the second opening being disposed generally vertically from an upwardly facing opening of the container and providing communication between the interior of the container and the cavity, a tubular member having an open end, a closed end and a housing engaging means disposed intermediate between the ends, said closed end of the tube being disposed within the cavity, an opening in the wall of the tube intermediate between the closed end and the housing engaging means.

Further benefits and advantages of the present invention will become more apparent from the following specification taken in connection with the drawing wherein:

In the figure there is illustrated a package **10** in accordance with the present invention. The package **10** comprises a container **11**. The container **11** defines an opening **12** disposed within the neck portion **13**. The neck portion **13** is provided with external thread **15** and a sealing surface **16**. Disposed within the container **11** is a biocidal liquid material **17**. Affixed to the neck **13** of the container **11** is a housing **20**. The housing **20** defines internal threads **21** which are adapted to mate with the threads **15** of the neck portion **13**, a sealing shoulder **23** adapted to engage in sealing relationship the top portion of the neck **13**, a chamber **25** having a closed end

26 and an open end **27**, the chamber **25** being disposed generally at right angles to the axis of the container neck **13**. The housing **20** also defines a passageway **28** having an open terminal end **29** adjacent the internal threads **21** and an opening **30** in full communication with the chamber **25**. The housing **20** adjacent the open end of the chamber **25** terminates in a flange portion **32**. A generally tubular member **35** is partly disposed within the chamber **25**. The tubular member **35** is provided with a chamber engaging collar **36**, a pouring spout portion **38** having a closure **40**, and opposite the pouring or delivery spout **38** the tube **35** has a closed end **42**. The tube **35** defines an aperture **43** disposed remote from the opening **30** of the passage **28**. Between the closed end the tube **35** and the aperture **43** is a measuring volume **45**. Disposed within this measuring volume **45** is a plug **46**.

In operation the container of the present invention dispenses liquids by first tipping the container **10** in the direction illustrated by arrow A in the figure, thus disposing the tube **35** in a generally vertical manner, the fluid **17** flows through the passageway **28** into the chamber **25**. The cap **40**, if not removed, at this time should be removed. The fluid entering the chamber **25** enters the tube **35** through the aperture **43**. On rotating the container in the direction of the arrow B, (returning the container to the vertical position) a portion of the liquid in the tube **35** disposed between the aperture **43** and the open dispensing end **38** is forced by gravity from the aperture **43** into the chamber **25** through the passageway **28** and into the container **17**. However, a fixed volume of the liquid is retained in the measuring portion of the tube **45**. As rotation is continued in the direction of the arrow B the portion of the liquid contained in the measuring portion **45** of the tube **35** flows by means of gravity toward the open dispensing end of the tube and is discharged. A second measured quantity of the liquid is readily obtained by tipping first in the direction of the arrow A and secondly in the direction of the arrow B. Usually rotation of more than 180° (that is plus or minus 90° from the vertical) is unnecessary and when the container is full, substantially less rotation is required.

A wide variety of containers may be utilized in the preparation of the package of the present invention. Particularly advantageous and beneficial are conventional narrow mouth bottles of glass, polyethylene, polyvinylchloride, and like synthetic resins or plastic coated glass containers. Metal containers such as screwtop cans also can be readily utilized. The dispensing assembly comprising the housing **20**, tube **35** and the cap such as **40** are beneficially prepared from synthetic resinous materials which are impact resistant.

Advantageously if the quantity of liquid desired to be dispensed is to be changed a plug such as the plug **46** may be frictionally fitted within the volume determining portion **45** of the tube **35**. Alternately tubes **35** may be provided with predetermined volume dispensing capabilities and are readily interchanged. Using a container in accordance with the present invention, predetermined quantities of biocidal materials such as insecticides, herbicides and the like are readily dispensed in sufficiently accurate quantities to assure desired performance.

Typical of a wide variety of well known plastic materials are nylon, a condensation product of hexamethylene diamine and adipic acid, nylon 6, which is polycaprolactam, polystyrene containing dispersed therein a minor portion of a rubber such as about 20 percent of a polybutadiene rubber, plasticized polyvinylchloride, polyethylene, polypropylene resinous copolymers of ethylene and propylene, saran resins such as copolymers of 75 percent vinyl chloride and 25 percent vinylidene chloride,

and also useful are the polyester resins, and epoxy resins. Usually in many instances the phenolic resins are found satisfactory although there is some tendency for them to be brittle. Fabrication of the chamber **20**, the dispensing tube **35** and the cap **40** may be readily accomplished by compression molding or injection molding using conventional plastic fabricating techniques. Occasionally, if desired, the chamber **20** and the tube **35** may be prepared in one or more parts and subsequently cemented or heat sealed together.

As is apparent from the foregoing specification, the manufacture of the present invention is susceptible of being embodied with various alterations and modifications which may differ particularly from those that have been described in the preceding specification and description. For this reason, it is to be fully understood that all of the foregoing is intended to be merely illustrative and is not to be construed or interpreted as being restrictive or otherwise limiting of the present invention, excepting as it is set forth and defined in the hereto appended claims.

What is claimed is:

1. A container having an opening therein to provide access to its interior,

a breakage resistant housing demountably affixed to said opening,

said housing defining a means to engage the container adjacent said opening in sealing relationship therewith,

the housing defining a chamber disposed remotely from the opening, the chamber having a closed end and an open end,

the housing defining a passageway having a first opening and a second opening,

the first opening and the second opening being disposed generally vertically from an upwardly facing opening of the container and providing communication between the interior of the container and the chamber,

a tubular member having an open end, a closed end and a housing engaging means disposed intermediate between said tubular member ends, the housing engaging means positioned at the open end of said chamber,

the closed end of the tubular member being disposed within the chamber and the tube defining an opening in the wall thereof intermediate between the closed end and the housing engaging means,

said housing engaging means providing a liquid tight seal between the housing and the tube.

2. The package of claim 1 wherein the housing and tubular member are composed of a thermoplastic resinous material.

3. The package of claim 1 including a removable closure for the open end of the tubular member.

References Cited by the Examiner

FOREIGN PATENTS

142,210 5/49 Australia.

LOUIS J. DEMBO, *Primary Examiner.*