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DEVICE FOR NEBULIZING AND DISPENSING FLUENT MATERIALS, PARTICULARLY POWDERS

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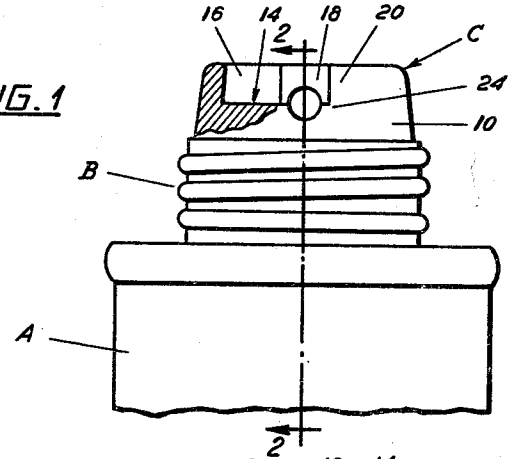
FIG. 1



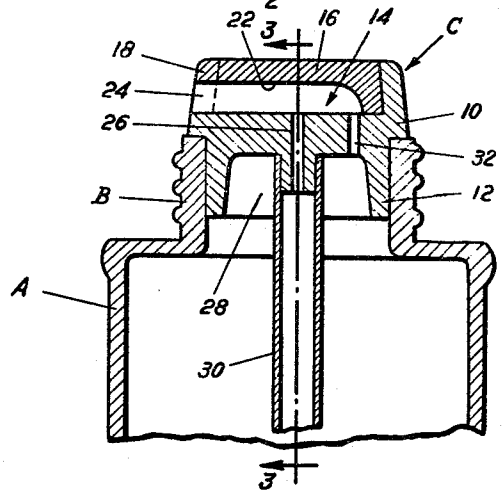
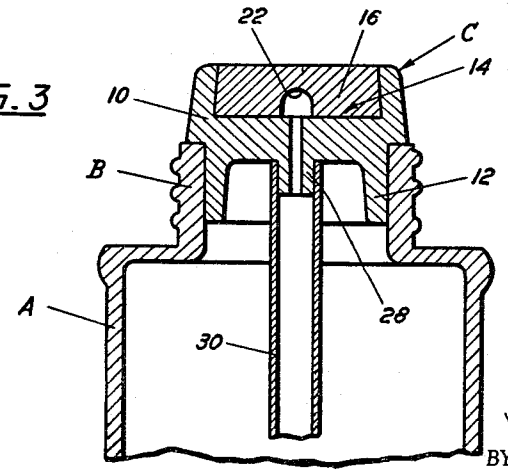


FIG. 2

FIG. 3



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DEVICE FOR NEBULIZING AND DISPENSING FLUENT MATERIALS, PARTICULARLY POWDERS

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This invention relates to a device for nebulizing fluent material in general, and particularly powders. Usually, the distribution of powders—done by mixing the powder with a gas and delivering the mixture as obtained.

This system has, however, in practice, some drawbacks in that clogging of the conduits conveying the air-powder mixture easily happens; on the other side there occurs also with an equal frequency the opposite condition, i.e. that only the air is delivered without the powder, as the air under pressure can easily agglomerate and compact the powder.

The device according to the invention has purpose of performing in a simple and efficient way the nebulization of even dense fluent material and in particular of powders as, for instance, talc or the like.

Such a device of a type, applicable to a container for the material to be delivered communicates with a delivery nozzle by means of two conduits, one of which extends toward the bottom of the container and is characterized in that said nozzle is connected to said conduit through at least one cavity constituting a mixing chamber into which are conveyed both the material to be nebulized and the compressed air, in such a way as to both convey and distribute exteriorly such material.

This inventive idea can give rise, in practice to various embodiments all of them being covered by present invention.

One of such embodiment forms of the device designed to be embodied by molding is illustrated as example on the annexed drawing, wherein:

The FIG. 1 is a front view of the upper part of a resiliently deformable container provided with the device according to the invention.

FIGURE 2 is a vertical sectional view on line 2—2 of the apparatus illustrated in FIGURE 1.

FIGURE 3 is a section substantially on line 3—3 of FIGURE 2.

In these figures, A indicates the container in a resiliently deformable material, for instance polyvinyl chloride, the nozzle whereof B retains under elastic pressure the device C according to the invention and constitutes in a known way the compressed air generator.

In the illustrated case, the device is embodied as a plug to be applied by a resilient force into the nozzle B of the container or casing A.

The said device C is constituted by a head **10** terminating below with a collar **12**, which can be resiliently forced into the aperture of the nozzle B for achieving a tight closing thereof.

The head **10** has at its upper end a circular abutment in order to provide a tight seat for the bottom **14** of a plug **16**, which has at its periphery a nose **18** engaging into a recess **20** of the head **10**.

The lower face of the plug **16** is provided with a cavity or chamber **22** arranged on a substantially diametral direction and which is confined at the nose **18** by a nozzle **24**, which completes its contour with a portion of the bottom wall of recess **20**. This recess is tight closed by the bottom of the abutment **14** and by the order of the above considered head **10**.

The head **10** has on its axis a hole **26** beginning at the bottom of slot **22** and terminating in its lower part with a projection **28** holding a tube **30** extending toward the bottom of container A.

Further, the said head, opposite to the nozzle **25**, has a hole **32** opening on one side into the upper portion of the casing A already considered and on the other side near the rear wall of the cavity **22**, said wall being bent for a reason resulting hereinafter.

The device as described is designed in such a way as to be embodied by molding i.e. easily and at a limited cost.

After what has been said the operation of the device is easy to understand. In the specific case, in which the device is applied to the nozzle B of deformable container A, it is sufficient to slightly squeeze the said container to generate the required pressure.

The air, compressed on one hand through the hole **32** is conveyed into the chamber **22** and on the other hand causes the flow of the powder from the container A into the tube **30** and the hole **26** until into said chamber **22**. The powder arriving into the chamber **22** is immediately stricken by the air jet coming out from the hole **32** and which, meeting the bent wall, is shifted through 90° and collides with the said powder, mixing with the same; the mixture obtained in such a way is delivered through the outlet **24**.

A full subdivision and nebulization of the product is thus achieved especially when the product is in the form of a powder.

The hereabove described device may underlie changes and modifications depending on the application and use features of the device and nebulized product, for instance in the chamber **22** two or more holes **32** may open with their axes suitably inclined. In practice, the embodiment particulars may no matter how, vary without departing from the spirit of the invention and the scope of the appended claims.

I claim:

1. A nebulizing dispenser comprising a container adapted to receive fluent powder material to be dispensed, an outlet for said container, said outlet adapted to receive fluent material nebulizing means including an elongated nebulization chamber, said chamber having a dispensing outlet at one end and an inlet for air under pressure at the other end, an air passage communicating at one end with the air inlet to said nebulization chamber and communicating at the other end with the upper end of the interior of the container remote from the fluent material to be dispensed, the longitudinal axis of both said air passage and said air inlet being disposed substantially normal to the longitudinal axis of said chamber, a fluent material inlet to said chamber, said fluent material inlet being disposed substantially normal to the longitudinal axis of said chamber and substantially intermediate the dispensing outlet and the air inlet thereof, a further passage communicating at one end with said fluent material inlet to said chamber and communicating at the other end with the interior of the container adjacent the bottom thereof to provide a passageway for the flow of fluent material from the container to the nebulization chamber, said nebulization chamber having a vaulted spherical wall adjacent said air inlet to direct the air flow axially of said chamber to strike the inflowing fluent material substantially perpendicularly, and said container being resiliently deformable inwardly to simultaneously force air through the air passage into the nebulization chamber and fluent material through said further passage to said nebulization chamber.

2. The nebulizing dispenser defined in claim 1 wherein said elongated nebulization chamber has an arched wall positioned opposite the air inlet and the inlet for fluent material to said chamber.

3. The nebulizing dispenser defined in claim 1 wherein said fluent material nebulizing means comprises a head containing said air passage and said fluent material inlet, which head is a plug force fit at one end into said container outlet; the other end of said head including an annular recess having tapered walls within which said nebulization chamber is retained.

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