Sept. 20, 1960 F. P. REGGIO 2,952,861

DISPENSING AND APPLICATOR DEVICE

Filed July 1, 1957

Fig. 1.

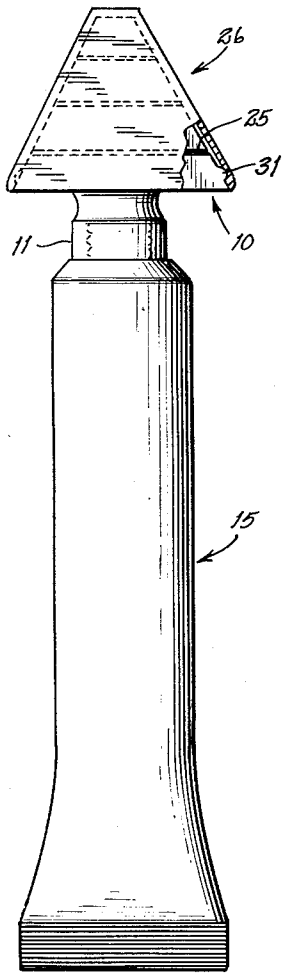



Fig. 2.

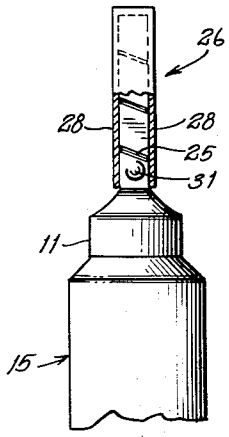



Fig. 3.

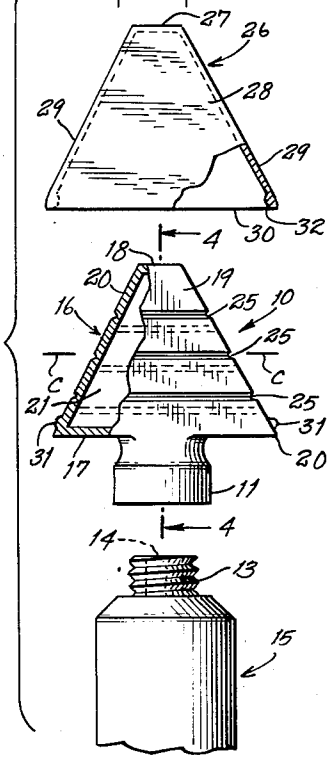



Fig. 4.

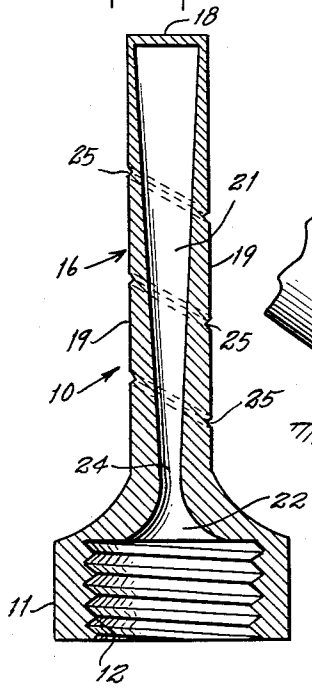
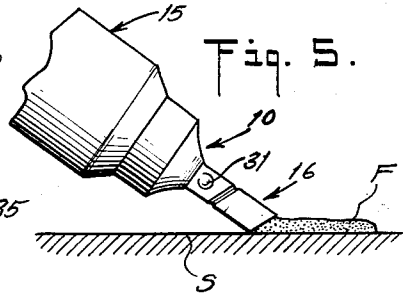



Fig. 5.

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# DISPENSING AND APPLICATOR DEVICE

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2 Claims. (Cl. 15—135)

The present invention relates to dispensing devices of the type including a closure portion adapted for securement over the outlet of a receptacle and a dispensing and applicator head on the closure portion and, more particularly, to such a device having an improved dispensing head primarily adapted for discharging and applying viscous fluids, such as heavy liquids and pastes, onto a surface by extruding the same from a collapsible receptacle.

Heretofore, various forms of applicators of the foregoing type have been devised, but none of these was capable of metering the flow of the fluid at a desirable rate in the course of its application and applying the fluid onto surfaces in a stream of a predetermined width varying over a wide range of dimensions, while controlling the amount of fluid applied.

Accordingly, an object of the present invention is to provide an improved dispensing device of the type indicated herein which fulfills the foregoing needs.

Another object is to provide such a dispensing device which meters the flow of the fluid from the receptacle to the dispensing head to assure a constant rate of flow.

Another object is to provide such a dispensing device wherein the discharge nozzle opening can be varied over a wide range of predeterminable dimensions.

Another object is to provide such a dispensing device wherein both the width and thickness of the stream of the fluid applied can be varied.

Another object is to provide such a dispensing device which facilitates the application of the fluid.

Another object is to provide such a dispensing device which seals the fluid against deterioration prior to use by the ultimate consumer, enables the ultimate consumer to establish the discharge nozzle opening, and includes a closure element for resealing the dispensing head after the discharge opening has been established to prevent deterioration of the fluid remaining in the receptacle.

A further object is to accomplish the foregoing in a simple, practical, convenient and economical manner.

Other and further objects will be obvious upon an understanding of the illustrative embodiment about to be described, or will be indicated in the appended claims, and various advantages not referred to herein will occur to one skilled in the art upon employment of the invention in practice.

A preferred embodiment of the invention has been chosen for purposes of illustration and description and is shown in the accompanying drawing, forming a part of the specification, wherein:

Fig. 1 is a front elevational view of a dispensing device in accordance with the present invention illustrating the same attached to a collapsible tube with a portion of a closure element being broken away to illustrate the manner in which it is detachably secured to the dispensing head.

Fig. 2 is a fragmentary side elevational view of the dispensing device shown in Fig. 1, also a portion thereof in section.

Fig. 3 is a fragmentary exploded front elevational view, partly in section, illustrating the elements of the dispensing device prior to attachment to the tube and to each other.



Fig. 4 is an enlarged sectional view taken along the line 4—4 on Fig. 3.

Fig. 5 is a fragmentary side elevational view illustrating the dispensing device in use as an applicator.

Referring now to the drawing in detail, a dispensing and applicator device **10** is shown which has a tubular depending portion **11** at its lower end formed with internal screw threads **12** or the like for effecting securement of the device over an outlet **14** in a threaded neck **13** of a receptacle **15** herein illustrated as a collapsible tube.

The device **10** further has a thin-walled hollow, relatively flat, triangular dispensing head portion **16** which is mounted on the depending portion **11**. The dispensing head portion **16** includes a base wall **17**, an apex wall **18**, generally triangular front and back walls **19** and converging side walls **20** which provide a generally triangular chamber **21** within the dispensing head portion. This chamber communicates with the receptacle outlet **14** at its base through an opening **22** in the portion **11**.

As shown in Fig. 4, the opening **22** converges upwardly to provide, in effect, a venturi throat **24** at its point of communication with the chamber **21** which meters the flow of viscous fluids from the receptacle to the chamber at a substantially constant rate, so that application of a constant pressure on the receptacle **15** will cause the same amount of material to flow from any one of the severed discharge nozzle openings, as will appear hereinafter.

From the time the tube is filled until the contents thereof are to be used by the ultimate consumer, the dispensing device **10** provides a closure for the tube which seals the contents against deterioration. When the ultimate consumer desires to dispense and apply the contents, a discharge nozzle opening can be established by cutting the dispensing head portion **16** crosswise, for example, along the line *c—c* (Fig. 3). In order to so cut the head portion either by a knife or shears, the device **10** is formed of a readily severable material, such as soft metal of the type collapsible tubes are constructed of, relatively soft or pliable synthetic resins of the polyethylene or vinyl types, or any other suitable materials.

By reason of the triangular chamber **21** within the head portion **16**, the width of the nozzle opening can be predetermined, depending upon how near to the base or apex walls the side, front and back walls are cut, whereby the width of the stream of fluid dispensed can be predetermined. This is desirable because the ultimate consumer or user of the device can select the nozzle opening dimension required for a particular purpose of application.

In order to facilitate cutting the head portion **16** crosswise, sets of parallel grooves or recesses **25** are formed in the side, front and back walls which serve as cutting guides. Preferably, the sets of grooves are disposed in parallel planes inclined to the vertical planes in which the front and back walls **19** are disposed, whereby the head portion can be readily severed diagonally to provide a discharge nozzle opening which enables the fluid F to be applied onto a surface S (Fig. 5) by holding the tube **15** in an inclined position.

A further feature of the present invention is that the chamber **21** diverges from the throat **24** to the apex wall to provide a venturi-like formation (Fig. 4). An advantage of such a chamber is that, as the head portion is severed nearer to its base than its apex, so that as the nozzle opening becomes wider (see Fig. 3), the thickness of the stream of fluid discharged becomes thinner (see Fig. 4). This manner of controlling both the width and thickness of the stream is highly desirable because more uniformly even distribution of the fluid is assured. For example, the angle of flare of the chamber **21** and the

angle of convergence of the side walls **20** of the chamber can be of such values that the effective area of the nozzle opening is practically the same regardless where the head portion is severed, whereby the rate of flow of the fluid at the nozzle opening is the same in each instance and can be controlled by the metering throat **24**.

After the dispensing head portion has been severed to provide a nozzle opening therein, such opening can be sealed to prevent deterioration of the contents remaining in the tube by applying a closure element or cover **26** over the head portion **16**. A suitable cover **26** for such purpose is shown in Figs. 1 to 3 which cover comprises an apex wall **27**, triangular front and back walls **28**, converging side walls **29**, and an opening **30** at the base dimensioned to receive and snugly engage the front, back and side walls of the head portion **16**, whereby a sealing zone of a wide area is established between the head portion and the cover and a good seal is provided.

The cover **26** is detachably secured over the dispensing head portion **16** by suitable cooperating means. For example, as shown in Figs. 1 to 3, the side walls **20** of the head portion may have a projection **31** thereon near the base wall **17** and the side walls **29** of the cover may have a rib **32** at the lower, inner edge which can be slipped over the projections **31** to grip the same. The cover is formed of a slightly yieldable material to provide for the snap-over action between the projections **31** and the ribs **32**.

The cover is so applied when the tube is filled and remains on the dispensing head portion until it is desired to attain access thereto for establishing a dispensing nozzle opening. The cover thus is supplied with the dispensing device in a convenient manner and remains assembled thereon to assure its availability when it is required for resealing purposes.

From the foregoing description it will be seen that the present invention provides an improved dispensing and applicator device for viscous fluids and the like which is simple, compact and economical in construction and which can be used in a manner to suit various needs of the ultimate consumer.

As various changes may be made in the form, construction, and arrangement of the parts herein, without departing from the spirit and scope of the invention and without sacrificing any of its advantages, it is to be understood that all matters are to be interpreted as illustrative and not in any limiting sense.

What is claimed is:

1. A device for dispensing viscous fluids comprising a portion adapted to be secured over the outlet of a receptacle containing a viscous fluid and having an opening therein for communicating with the receptacle outlet, a hollow, relatively flat, triangular dispensing head portion having parallel front and back triangular walls and rectangular side walls that converge from a base to an apex thereof with its base in fluid flow communication with said opening and being formed of a material which is readily severed, whereby, by severing said head portion along different planes between the base and apex thereof, dispensing nozzle openings of predetermined dimensions can be provided, and a venturi throat interconnecting said opening and said head portion for dispensing substantially the same amount of fluid through any one of said dispensing nozzle openings, each of said front and back, triangular walls having a plurality of transverse, parallel recesses, wherein two related recesses at opposite walls are offset with respect to each other to facilitate severing said head portion diagonally to provide an inclined applicator nozzle.

2. A dispensing device according to claim 1, wherein said rectangular side walls are formed with inclined recesses each connecting two of the related transverse recesses at the ends thereof to further facilitate severing said head portion diagonally.

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