June 4, 1968 L. C. DOUGLAS 3,386,619

PREPACKAGED APPLICATOR DISPENSING

Filed Feb. 24, 1966 2 Sheets-Sheet 1

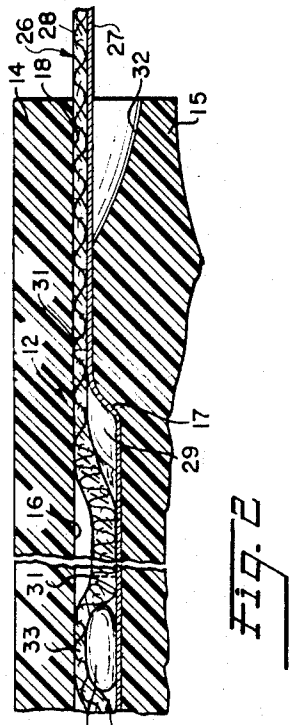
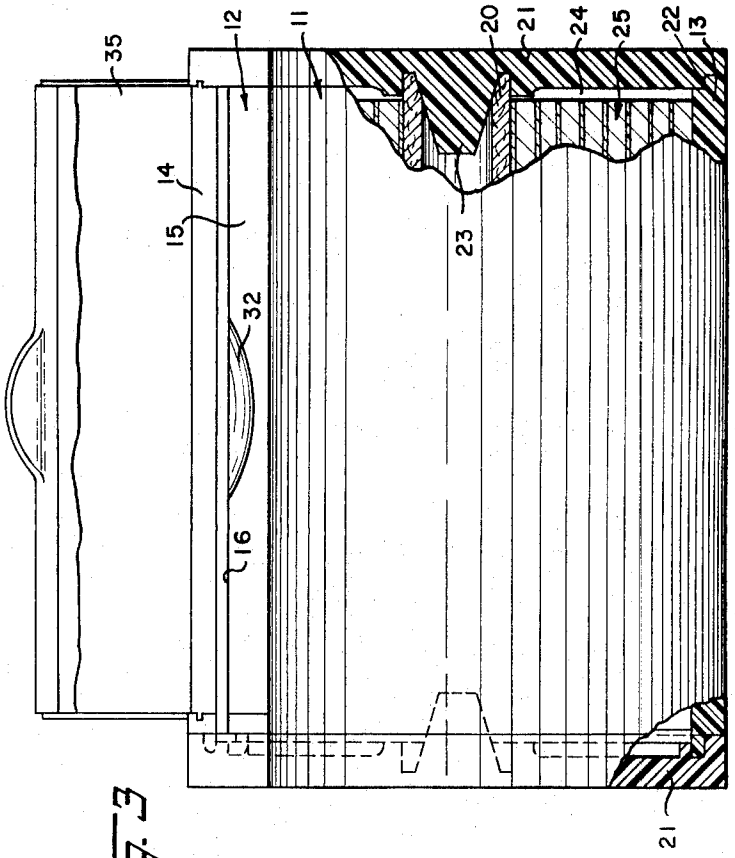


Fig. 2



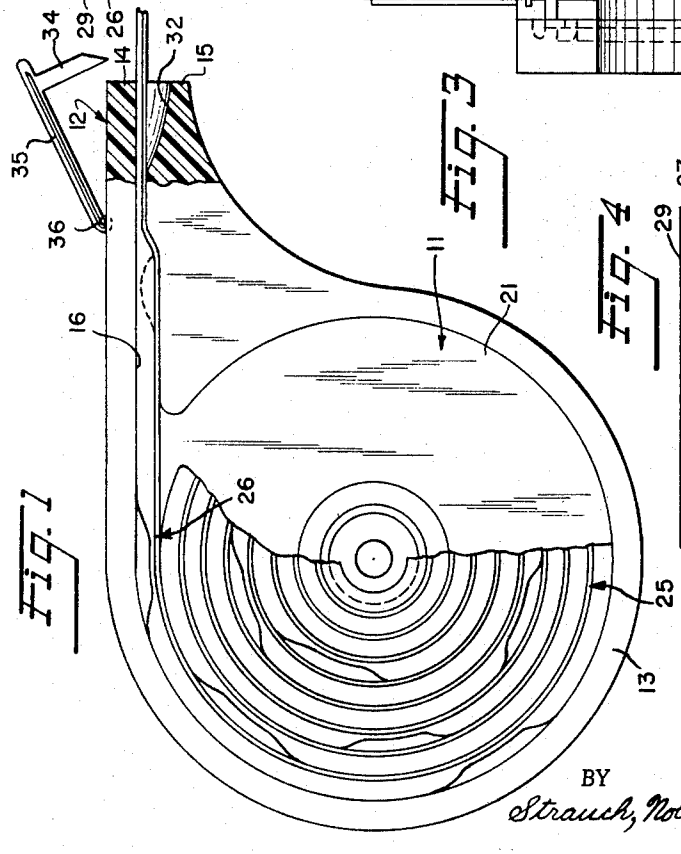


Fig. 3

Fig. 4

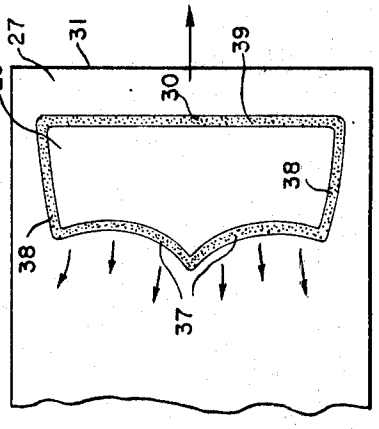


Fig. 1

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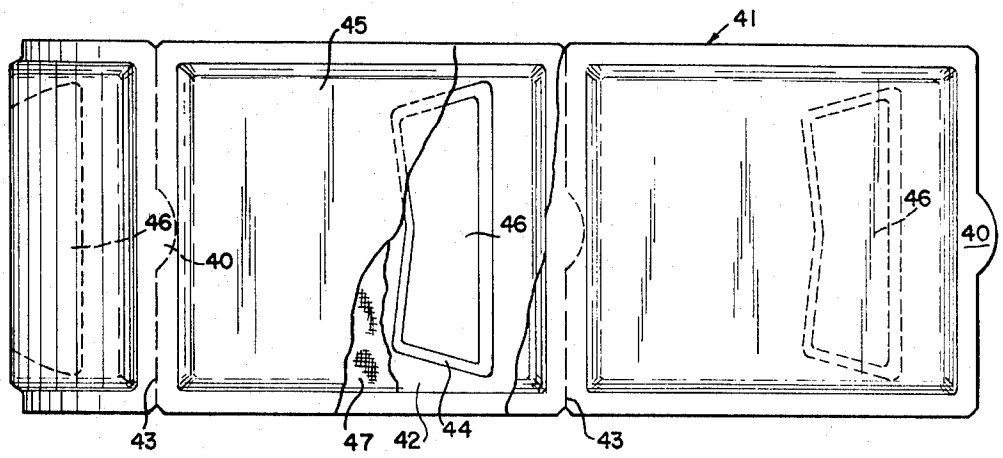


Fig. 5

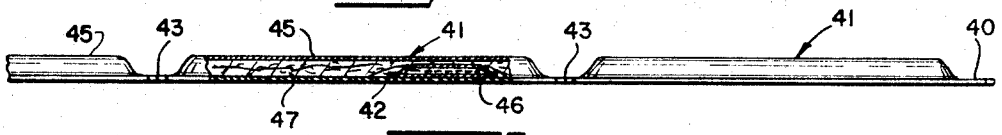


Fig. 6

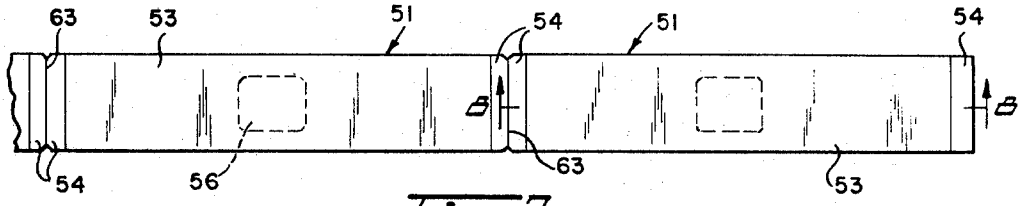


Fig. 7

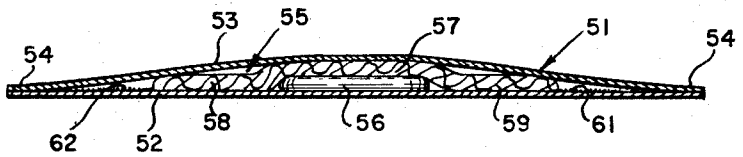


Fig. 8

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United States Patent Office 3,386,619
Patented June 4, 1968

3,386,619

PREPACKAGED APPLICATOR DISPENSING

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Filed Feb. 24, 1966, Ser. No. 529,883
5 Claims. (Cl. 221—135)

This invention relates to prepackaged applicator dispensing, and particularly to special packaging wherein an applicator is automatically conditioned for use during dispensing.

In its preferred embodiment the invention will be described for the dispensing of applicators that are prepackaged in multiple strip form and stored in a magazine from which they may be extracted so that individual applicators may be detached from the leading end of the strip, and during such extraction each individual applicator issuing from the magazine is conditioned for immediate use, and the major object of the invention is to provide for such dispensing.

Another object of the invention is to provide a novel dispensing package wherein special applicators each containing a body of fluent material are connected in strip form and stored in a magazine having a throat structure through which the leading end of the strip is withdrawn and wherein a restriction is provided to spread the material through absorbent and like material in its associated applicator during withdrawal.

A further object of the invention is to provide an improved dispenser casing having a novel restricted throat structure.

Another object of the invention is to provide a novel prepackaged applicator strip wherein each individual applicator is detachably connected to the adjacent applicator and contains a rupturable capsule or like cell of fluent material such as a cream, powder, paste, liquid or the like associated with absorbent material adapted to receive the capsule contents.

A further object of the invention is to provide a novel applicator structure wherein successive individual applicators are detachably connected in strip form comprising backing strip means supporting at each individual applicator a body of absorbent material and a rupturable vessel containing a fluent substance to be distributed in the absorbent material. Pursuant to this object these vessels may be attached to the backing strip or enclosed by the absorbent material at each applicator, and usually the vessels are located near the leading edge of each individual applicator in the strip for optimum spreading during withdrawal from a magazine. The vessels may be shaped and constructed for selective discharge of their contents into the absorbent material.

Further objects will appear as the description proceeds in connection with the appended claims and the annexed drawings wherein:

FIGURE 1 is a side elevation, partially broken away and sectioned, showing a dispenser package according to a preferred embodiment of the invention;

FIGURE 2 is a fragmentary enlarged section illustrating passage of the applicator strip through the dispenser casing throat;

FIGURE 3 is a top plan view, partially broken away and in section, of the dispenser of FIGURE 1;

FIGURE 4 is a top plan view showing the leading end of a special strip applicator used in the invention;

FIGURES 5 and 6 are top and side elevation views partially in section showing another form of applicator strip usable in the dispensing magazine of FIGURES 1–3; and

FIGURES 7 and 8 are top plan and sectional side views respectively showing another form of applicator strip usable in the dispenser of FIGURES 1–3.

Referring to FIGURES 1–4, the invention in its preferred embodiment comprises a suitable dispenser magazine in the form of a casing **11** having an open throat section **12** through which the leading end of an applicator strip coiled within the casing is extracted during dispensing. As will appear, this throat section is specially formed for automatically conditioning the withdrawn applicator strip length for immediate use upon being detached.

Casing **11** may comprise a generally cylindrical body **13** having its side wall slit and turned out at one point in the circumference generally tangentially to provide the upper and lower jaws **14** and **15** respectively of throat **12**. Jaws **14** and **15** thus define a slot-like throat opening **16** to the interior of the casing, which opening **16** extends the length of body **13**.

Adjacent the outlet end of opening **16**, the jaw walls are formed to provide a restriction, which in the illustrated embodiment is provided by sloping the inner surface of the lower jaw at **17** along the entire length of body **13** toward the upper jaw and then parallel to the upper jaw surface to define a much narrower slot-like opening **18** also extending the length of body **13**. The purpose of this restriction will appear.

The ends of body **13** are closed by similar caps **21** which have annular rabetted interfit with the body as at **22** and preferably extend in closing relation along opposite ends of the throat **12**.

Centrally of the body, conical hubs **23** project from caps **21** into the body cavity **24**, and these hubs rotatably support the core **20** of a wound coil **25** of the special applicator strip **26**, for example that shown in FIGURE 2.

Referring to FIGURE 2, the applicator strip **26** consists essentially of a relatively thin moisture impervious tough backing sheet or tape **27**, of treated paper or fabric for example, functioning as a transport, an overlying web **28** of moisture absorbent material such as gauze, and a series of longitudinally spaced rupturable cells in the form of capsules **29** containing a treatment liquid, paste, powder, gel, cream or like fluent product to be spread into and along the absorbent material. The sheet **27** and web **28** are preferably coextensive in width and may be tacked or otherwise secured together adhesively at spaced points sufficiently to hold them in laminated assembly and retain the capsules **29** in place between them.

At spaced portions along its length, strip **26** is provided with transverse weakened or tear regions **31**, located between successive capsules, so that as the applicator strip emerges from throat **12** each leading individual applicator pad may be detached and used immediately with the treatment liquid fresh and sterile.

In practice the wound coil of applicator strip **26** is contained in the casing and the leading end of the applicator strip is accessible at the finger recess **32** in the lower throat jaw surface. The operator grasps this end and pulls the strip outwardly. The depth of throat opening **18** is approximately equal to the combined thickness of the backing sheet **27** and a compressed condition of gauze web **28**. Thus, when the thickened section **33** of the applicator strip, which freely enters and travels along the deeper inner throat opening **16**, encounters surface **17** it is wedged and compressed and capsule **29** is ruptured as illustrated in FIGURE 2.

As the strip **26** is being moved the fluid product contents of the ruptured capsule **29** in the throat are spread along and into the associated part of web **28**, mainly to the left in FIGURE 2. It will be noted that each tear

region 31 is preferably located adjacent and just forwardly of each capsule 29 since the spreading action will take place mainly rearwardly therefrom, and this arrangement provides for uniform distribution of the spread product in each individual applicator pad.

The strip is pulled out the length of one applicator pad and until a tear region 31 is accessible, and then the applicator pad is torn or cut off. FIGURE 1 shows a knife edge 34 carried by an arm 35 pivoted at hinge 36 on the casing body. When knife edge 31, which extends the length of the throat, is swung clockwise in FIGURE 1, it severs the strip at the weakened region or at least aids in the tearing process. It may remain swung down and serve as a closure for the throat 12 when the dispenser is not being used.

FIGURE 4 shows a mode of mounting the capsule 29 on backing sheet 27, and it will be noted that the capsule is preferably elongated to extend transversely across the applicator strip, and it is preferably so constructed and arranged that it will rupture mainly along its transverse rear edge 37 to discharge and distribute its product uniformly across and mainly longitudinally of the strip as indicated by the rearmost arrows in FIGURE 4. To this end the longitudinal edges 38 and the forward transverse edge 39 of the capsule may be reenforced to be stronger than rear edge 37 to resist rupture at these places. In practice the capsule 29 usually has a surrounding rim 30 by which it is heat sealed or adhesively anchored to the backing sheet so as not to be displaced during the squeezing action.

The capsule 29 may be in the form of a blister on the backing sheet, and if desired it may be partitioned to isolate two or more different or incompatible fluent materials that are desirably kept out of contact until the time of use when rupture of the partitioning permits them to mix and react if that is their nature.

The strip may have different shapes in cross-section, such as being corrugated transversely or lengthwise, to aid in winding the strip into coils and to control spreading of the product. Also instead of a wound coil, the strip may be packaged in a zigzag stack folded reversely along the tear lines.

The backing sheet 27 is advantageously a treated paper or fabric or a flexible sheet plastic that is moisture impervious, resistant to oil and grease and inert with respect to the product in the capsule. The material forming the capsule or blister is preferably a thin-walled gelatin or other plastic similarly water, oil and product resistant, and it may be opaque, colored or transparent for product identification.

FIGURES 5 and 6 show another advantageously constructed applicator strip 41 usable in the invention. Here the strip comprises a continuous paper, plastic or like sheet backing member 42 like that at 27 having longitudinally spaced transverse score lines 43. Each score line is bowed forwardly (in the direction of extraction of the strip from a container) to form a tab 40 available as at finger recess 32 in FIGURE 2.

Between each tear line is a shallow blister 45, usually a thin flexible plastic sheet having its peripheral edges sealed upon the backing member. Each blister contains a capsule 46 of the fluid product and a short length of absorbent sterile bandage material 47 preferably folded about the capsule 46, or disposed just rearwardly of the capsule. In either event, as this strip 41 is drawn out of the container of FIGURE 1, a blister 45 is squeezed at the throat to rupture the capsule and spread its contents into the bandage material of the extended applicator pad which may be detached at score line 43.

FIGURES 7 and 8 show another form of the invention wherein relatively elongated adhesive bandages of the so-called band-aid type may be enclosed in cells along the the strip and activated during withdrawal from the magazine.

Strip 51 comprises a continuous backing sheet 52 and a coextensive transparent light flexible top sheet 53 which is heat or adhesively sealed to sheet 52 at longitudinally spaced areas 54 to define chambers 55. These chambers each contain a rupturable cell of powdered or liquid medicant 56, and an overlying pad of absorbent material 57 which has its opposite ends 58 and 59 adhesively secured to the backing sheet. At opposite ends of pad 57 the backing sheet is coated at 61, 62 with an adhesive that will not stick to sheet 53, or if desired removable protective sheets may be provided in the areas as in the usual band-aid.

In any event as the strip 51, containing a succession of these chambers 55 and having tear or score lines 63 between the chambers, is pulled out of the reservoir of FIGURE 1, the throat restriction of the casing of FIGURE 1 ruptures capsule 56 which impregnates pad 57. Then the extracted cell now outside the magazine is detached at 63 and the oversheet 53 is removed, so that the sterile moist bandage is ready for instant use.

In all embodiments of the invention an absorbent applicator section or pad at the leading end of the strip is automatically freshly impregnated or coated with clean sterile treatment fluid product ready for instant use. The contents of the cell are protected right up to the time of use, and there is no leakage or escape of the product within the cell. It will be seen that the dispenser housing may be easily reloaded with a fresh coil of strip material by removing one cap 21 and inserting the coil 25 with the leading end threaded through the throat.

The invention may be embodied in other specific forms without departing from the spirit or essential characteristics thereof. The present embodiments are therefore to be considered in all respects as illustrative and not restrictive, the scope of the invention being indicated by the appended claims rather than by the foregoing description, and all changes which come within the meaning and range of equivalency of the claims are therefore intended to be embraced therein.

What is claimed and desired to be secured by Letters Patent is:

1. A device for dispensing a prepackaged applicator comprising in combination, a plurality of individual applicator sections spaced in succession and connected at transverse regions adapted to be severed as a strip, each of said applicator sections including a flexible uniform thickness moisture impervious backing sheet mounting on one side thereof, a rupturable cell containing fluent material to be applied to a surface and a body of fibrous carrier material mounted adjacent said cell on the said one side of said sheet and adapted to receive and retain distributed fluent material upon rupture of said cell, each said cell being located within its applicator section adjacent said transverse region nearest the leading end of the strip, means for mounting a supply of said strip comprising a housing provided with a restricted throat through which an end of said strip is adapted to project for withdrawal from said housing and means in said throat for automatically rupturing each said cell and for spreading said fluent material to permeate said carrier as each applicator section passes through said throat whereby said carrier, upon detachment at the transverse region, is adapted to apply the permeant material to a said surface.

2. The device defined in claim 1 wherein each said cell is a thin-walled capsule extending laterally substantially across the sheet near the leading end of said sheet.

3. The device defined in claim 1, wherein the carrier body and cell at each section are enclosed by a flexible moisture impervious cover sheet attached to said backing sheet.

4. The device defined in claim 1, wherein said throat is a slotted outlet extending substantially the length of the housing at right angles to the path of movement of said strip, and said restriction is an internal solid pro-

jection in said throat adapted to subject the outwardly moving strip to compression sufficient to rupture the cell passing therethrough and spread said material.

5. In the device defined in claim 1, said transverse regions being weakened for facilitating severance.

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