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PROTECTIVE PACKAGE FOR PILLS, TABLETS, AND THE LIKE

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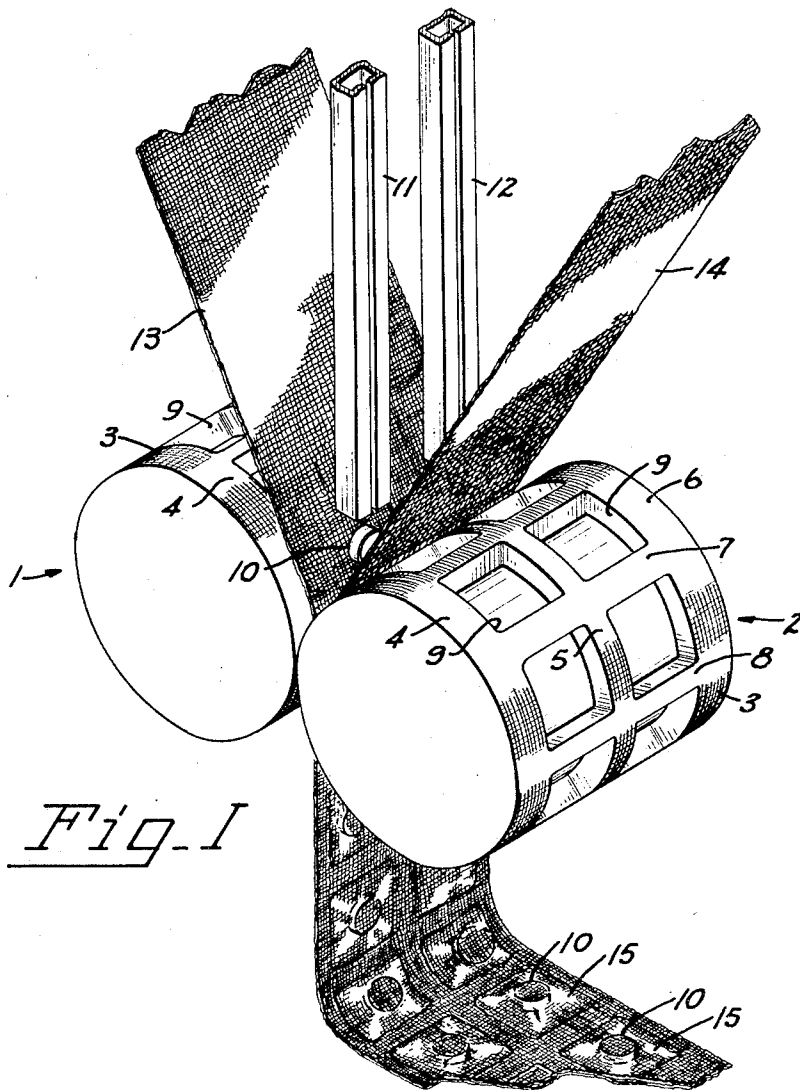


Fig. I

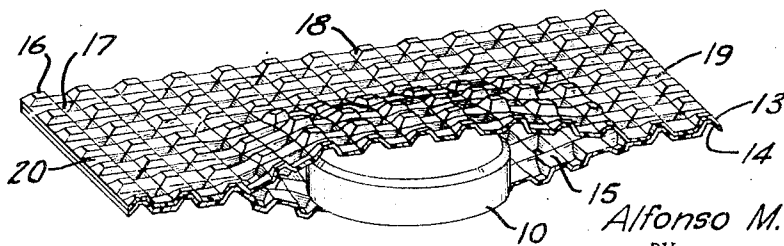


Fig. II

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PROTECTIVE PACKAGE FOR PILLS,
TABLETS, AND THE LIKE

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1 Claim. (Cl. 206—56)

1

This invention relates to protective packages for pills, tablets or for analogous things such as small charges of powder, capsules, etc., which are used in separate individual portions and which preferably should be maintained in clean, sanitary condition until use.

The packaging of such items in continuously formed packages made of, for example, transparent heat-sealable regenerated cellulose or other thin heat-sealable films, is well-known in the art and the packages produced in such a manner have wide acceptance with the public generally. One principal difficulty, however, exists in all packages so far as is known of this general type and this difficulty arises from the nature of the materials employed in the packages and from the desire that the packages should be sturdy enough to withstand considerable handling without rupture.

The various commodities and articles which are packaged in this manner usually are for pharmaceutical or medicinal use and should be protected from contamination until the very moment of their administration. Other articles have been so packaged from time to time but more for the purpose of providing an attractive salable package than for the purpose of sanitation. When the commodity or article must be kept sanitary until its use, it is necessary that it be packaged in a material having sufficient toughness to withstand rupture during the packaging operation and also subsequently thereto during the numerous handlings which the package receives in preparing it for the market, shipping it, selling it and transporting it after sale. For this reason the sheet materials most frequently used are tough. For example, regenerated cellulose film, such as "cellophane," or other similar films, are difficult to originally tear although after the breaking of an edge they tear quite easily across the film proper.

Attempts have been made to facilitate the tearing of the edges of packages of this general nature by the expedients of weakening the edges by cutting notches in them or by changing the chemical nature of the material at its edges thereby to embrittle the material and to facilitate its tearing. Both of these methods have a common fault in that weak spots are thus produced which may be torn by accident, or otherwise, before it is desired to use the item contained in the package.

It is the principal object of this invention to provide a package for protecting and dispensing individual dosages or units of the substances

2

packaged which retains its tough protective nature thereby resisting accidental opening and yet which can be opened more easily when desired.

The cooperation of package characteristics by means of which there is provided a package embodying the invention and accomplishing the two apparently incompatible purposes of toughness and ready opening, can best be understood by explanation of the method of manufacture employed as well as by analysis of the structure of the resulting package. Therefore, in the drawings:

Figure I is an isometric, fragmentary view of portions of a packaging machine on which packages embodying the invention can be produced and showing the production thereon of such packages.

Figure II is a greatly enlarged fragmentary isometric view taken through the center line of an individual package and illustrating the details of construction thereof.

A continuous high-speed packaging machine capable of producing packages embodying the instant invention is disclosed and claimed in my co-pending application Serial No. 713,861. Packages embodying the invention may also be produced on packaging equipment such as that disclosed in numerous other patents in the packaging art as, for example, in Salfisberg Patent No. 2,083,617 or Zwayer Patent No. 1,986,422. The machine, portions of which are shown in Figure I, however, is that disclosed more fully in my application Serial No. 713,861 and has a pair of cooperating, pocketed and heated rolls 1 and 2. The peripheries 3 of the rolls 1 and 2 are formed with a surface consisting in spaced circumferential corrugated zones 4, 5 and 6 and spaced axial zones 7, 8, etc. The corrugated zones 4, 5, 6 and 7, 8, etc., marginally surround pockets 9 which are cut in the peripheries of the rolls 1 and 2. The rolls 1 and 2 are rotated synchronously with their opposed pockets 9 in registry and with their peripheries engaged.

Mechanism not shown in the drawings is provided for releasing pairs of tablets or pills or other material to be packaged, as exemplified by a pill 10 shown in Figure I, into the upper open ends of two downwardly extending parallel guide tubes 11 and 12. The tablets 10 or other material are released into the upper ends of the tubes 11 and 12 in timed relationship to the rotation of the two rolls 1 and 2 so that each pair of tablets 10 drops through and out of the tubes 11 and 12 at such time as to fall into the generally tri-

angular space between the two rolls 1 and 2 between successive ones of the axially extending zones 7 and 8 just after one of these axially extending zones on each roll has registered with its corresponding zone on the other roll and prior to the registry of the successive corresponding axial zones.

Either a pair of converging sheets of packaging material 13 and 14, or a single sheet folded along its longitudinal median to provide two opposed sheets of packaging material, is led between the converging portions of the peripheries of the rolls 1 and 2 on opposite sides of the feeding tubes 11 and 12. Thus, when pills 10 or other items fall from the lower ends of the tubes 11 and 12 they fall between sheets of packaging material which are being drawn between the rolls 1 and 2 by engagement with the rolls. The previous axially extending zone 7 seals the two opposed sheets of packaging material together before the arrival of the corresponding pill and, as the rolls turn toward each other downwardly, they pull the packaging material along progressively sealing the circumferential zones 4, 5 and 6 up around the margins of the unsealed areas of packaging material overlying the pockets 9 and between which areas the pills 10 are located. Eventually the successive axial areas 7 of the rolls 1 and 2 seal the packaging material above the particular pills 10 and the cycle of operations repeats itself continuously.

In producing a package embodying the instant invention the sheets of packaging material 13 and 14 are treated by being run through a die machine to produce a continuous, overall pattern of laterally offset, reticulated embossings. As can best be seen by reference to Figure II and to the unsealed areas indicated by the reference number 15, these embossings consist in offset portions of the packaging material which extend generally perpendicularly to the plane of the surface of the packaging material. This pattern of reticulated embossings extends throughout both of the sheets of packaging material and establishes a roughened crimped surface which remains sharply defined even over the unsealed areas of the finished package such as that area indicated by the number 15. When the sheets with the preembossed surfaces pass between the heated sealing rolls 1 and 2, those areas of the sheets which are contacted by the peripheral zones 4, 5, 6 and 7, 8, etc. of the rolls are sealed together by virtue of the heat-sealable characteristic of the packaging material and, in addition, are formed with interdigitated opposed projections 16 and depressions 17 again, in a generally reticulated pattern and extending throughout package zones 18, 19 and 20 (Figure II) corresponding to the corrugated zones 6, 7 and 8 of the roll 2. Because the projections and depressions 16 and 17 are superimposed upon the embossings already existing in the surfaces of the two sheets of packaging material 13 and 14, and because the patterns of the embossings and projections and depressions, although similar, would not necessarily mesh, as well as because of the fact that the two sheets of packaging material 13 and 14 each having their own embossings are deformed together, a sharp creasing of the packaging material takes place throughout the sealed zones 18, 19 and 20 of each package. Although the creasing caused by the projections 16 and depressions 17 is sharp, yet it does not rupture the packaging

material and serves additionally as something in the nature of perforations or scorings which greatly facilitates the tearing of an edge of the finished package.

Only a slight line of demarcation exists between the sealed zones and the unsealed areas and because of the overall reticulated pattern of the embossings the package remains uniform in the degree of light transmission therethrough, the entire surface of the finished package presenting substantially the same appearance to the eye of an observer although the pill 10 or other object contained in the package can be seen because of its opacity. The embossings which extend throughout the area of the packaging material and, therefore, across the unsealed areas exteriorly of the pills 10 or other contents are so small and the packaging material grasps the contents so tightly that if, for example, a trademark or other distinctive indicia of the manufacturer is impressed in the surface of the pill, the cellophane or other packaging material frequently is drawn into such depression emphasizing clearly the recognition data on the pill itself.

A package embodying the invention thus presents a uniform exterior interrupted only by the opaque content material and the packaging material itself is not deleteriously weakened by any chemical change or incision designed to facilitate tearing. The provision of the continuous overall embossings which have superimposed upon them the sharply creased projections and depressions however, renders the package easily openable because, upon the application of sharp tearing force to an edge thereof, the action of the packaging material tending to flatten out the projections and depressions and along the sharp though interrupted creases at their margins, starts a tear line very readily which progresses directly along one of the lines of projections or depressions leading from any edge of a package into the unsealed embossed area where the object to be released is located.

Having described a package embodying my invention, I claim:

A protective package for pills, tablets and the like comprising two sheets of heat-sealable material having laterally offset, reticulated embossings throughout their areas; said sheets being sealed together in spaced, defined, longitudinal and transverse, intersecting zones; the two sheets together being further deformed with interdigitated, opposed, projections and depressions extending in reticulated pattern throughout said zones; the zones marginally surrounding laterally spaced, opposed, unsealed areas of the two sheets between which unsealed areas the package contents are located; the embossings extending continuously over both the sealed and unsealed areas with the interdigitated projections and depressions superimposed thereon in the sealed zones; whereby access to an individual item of contents by tearing across an interdigitated zone and into an unsealed area is facilitated by the excessive and sharp creasing of the material in the interdigitated zones and the continuously extending embossings provide an overall substantially uniform degree of light-transmission through the package.

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No references cited.