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[21]	Appl. No.	3,125
[22]	Filed	Jan. 15, 1970
[45]	Patented	Nov. 9, 1971
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[54]	ADMINIST	G AND DISPENSING CONTAINER FOR FERING PILLS 4 Drawing Figs.
[52]	U.S. Cl	206/47 R,
		30/326, 150/0.5, 220/23, 229/43
[51]	Int. CL	B65d 1/36,
		B65d 81/32, B65d 85/56
[50]	Field of Sea	rch 206/47 A,
		47 B, 47 R, 65 R, 42; 229/43, 1.5 C; 150/0.5;
		220/23; 30/326; 99/77.1
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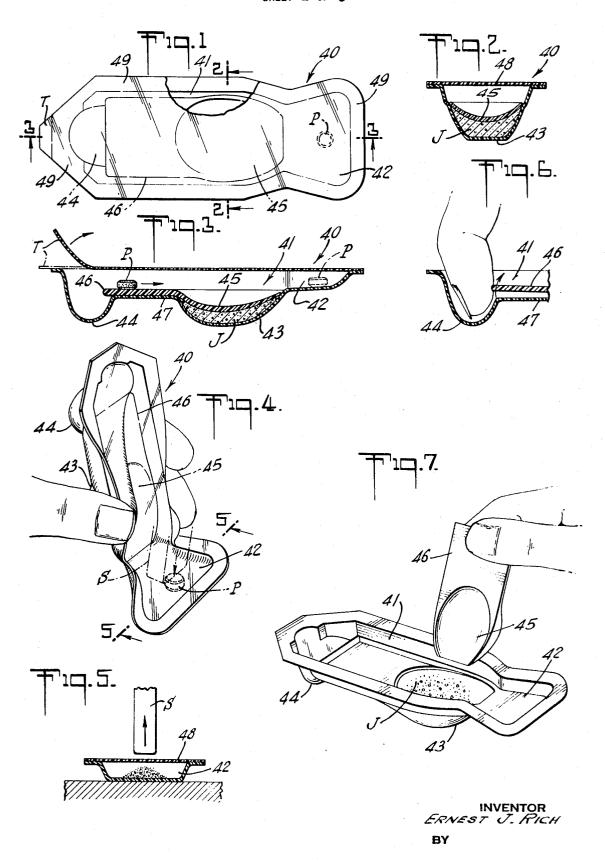
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ABSTRACT: A disposable self-contained device in a variety of different forms for crushing and administering pills in powder form in which a crushing surface is sealed within an envelopelike pouch formed from a tray base member and a plastic film sealed to the edges thereof, which tray contains a spoon and an edible gel in a depression, so that a part of the film can be torn, a pill can be inserted into the envelope pouch and then crushed by an external crushing force. The rest of the film is removed and the pill powder is then transferred to and mixed with the edible gel, and then dispensed to the patient by the spoon which is shaped so as to mate with the depression containing the edible gel and powder, so the patient easily can swallow substantially all the pill powder.

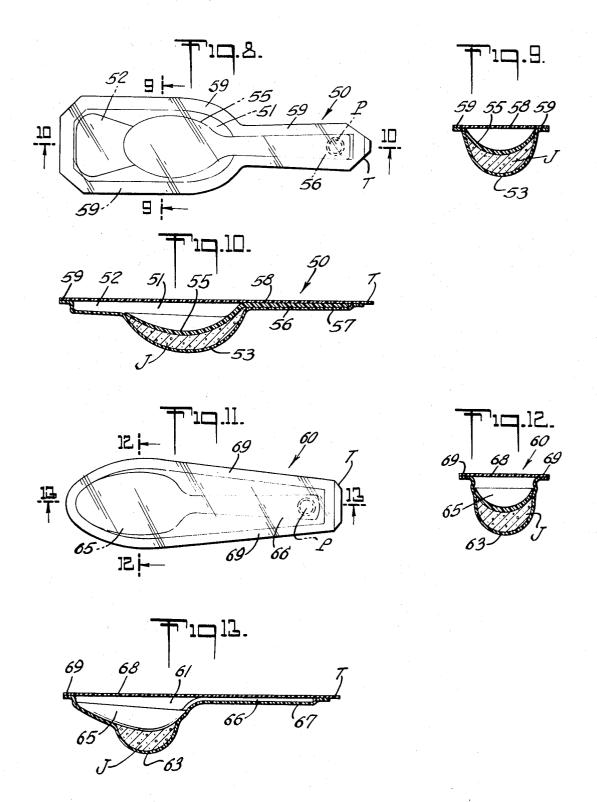
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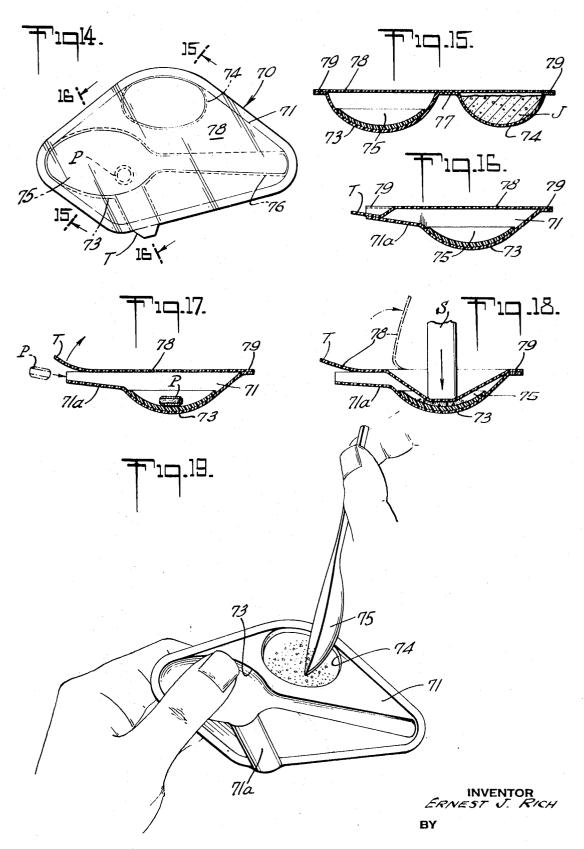


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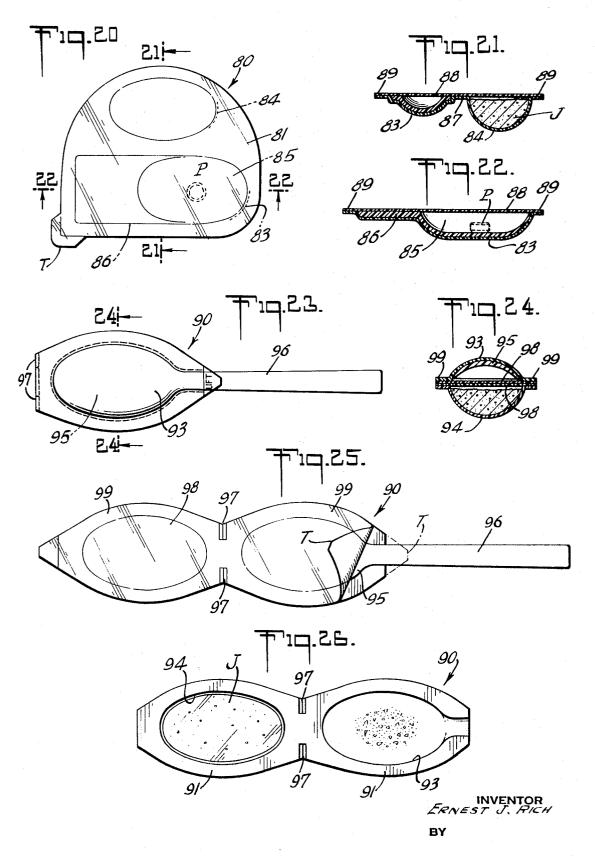
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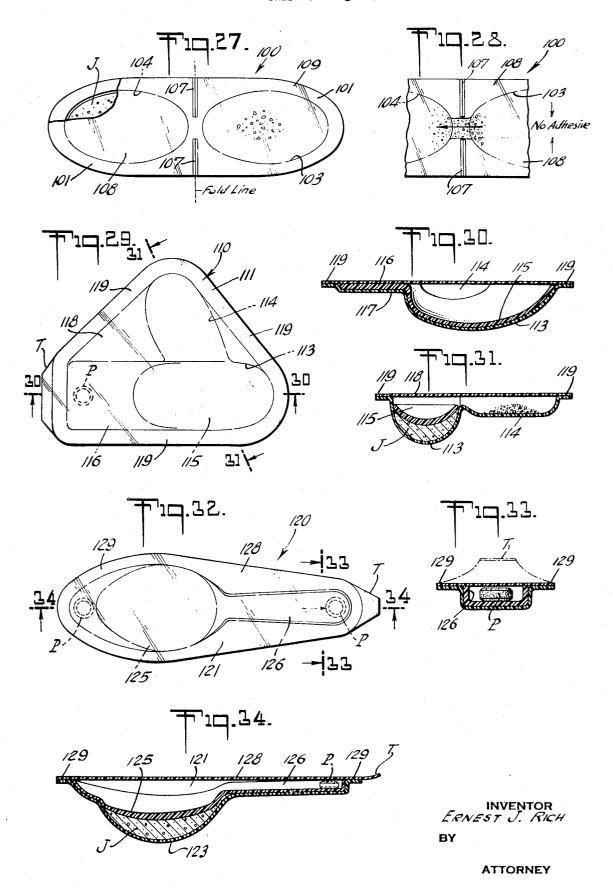
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CRUSHING AND DISPENSING CONTAINER FOR **ADMINISTERING PILLS**

This invention relates to a self-contained device for administering pills and tablets and the like, and is primarily intended for use by those who have to administer oral medication to individuals who are unable to swallow such pills and tablets and require that they be crushed.

A problem commonly encountered in oral medication in the hospital and in the home is the inability of some individuals to swallow pills, for physical or psychological reasons. There is an especially high incidence of this difficulty among pediatric and geriatric patients. In pediatric medicine this problem has been recognized and, with some exceptions, medication commonly prescribed for children is available as liquids or suspensions. However, this is not true in general medicine; the largest percentage by far of medication prescribed for adults is in the pill or capsule form.

It has now been found that the dispensing of pills in a hospital to patients who require that they be crushed presents 20 a serious problem to the medication nurse, because the number of pills crushed daily in most hospitals is relatively large. Estimates of the pills crushed vary from 5 to 30 percent of the pills dispensed. This number can be expected to steadily increase as the population of geriatric patients grows.

In most hospitals at the present time pills are crushed either by grinding with mortar and pestle, pressing between two spoons, or by sandwiching the pill between two paper cups and crushing with a spoon handle. The pill powder is transferred to a paper or plastic medication cup and a suspending vehicle, such as orange juice, apricot juice, applesauce, honey or baby food, is added. In the case of a diabetic patient, a low calorie syrup is occasionally used. If extreme care is not taken, since the same equipment is used to crush different medica- 35 tions for different patients, one medicament could easily become mixed with another. Further, the patient may not receive the full dosage prescribed because some of the crushed powder will be left behind in the suspending medium or in the container to which the pill powder has been transferred.

It thus appears there is a serious hospital need in this area that has hitherto been overlooked or neglected. The methods commonly employed for crushing pills and dispensing the 45 powder to the patients are antiquated and generally unsatisfactory.

An object of the present invention is to provide a facile device, container or package in which pills can be easily crushed into powder form, in such a manner that the pill con- 50 removed and the spoon removed. tents will remain uncontaminated by the crushing device used to apply the crushing force.

Another object of the present invention is to provide a device in which and with which the powder from the crushed pill can be easily transferred to and mixed with an edible carri- 55 er gel which is then administered to the patient without any appreciable loss of powder, either in transferring the powder to the gel or in administering the powder-containing gel to the

Another object of the present invention is to provide a gel which is kept within the crushing device, in a manner that it is easily and conveniently accessible for admixture with the crushed pill powder, but yet remains sealed from its environment and uncontaminated by exposure to its surrounds, such 65 as hospital sick rooms.

Yet another object of the present invention is to provide the foregoing devices which can be made at low cost so that they will only be used once, and will be disposable.

the invention will hereinafter appear in the progress of the disclosure and as pointed out in the appended claims.

The invention is capable of being embodied in a number of forms, some of which are specifically shown in the drawings accompanying this specification.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a face or plan view of the package showing the preferred form.

FIG. 2 is a vertical cross section taken along the lines 2-2 of FIG. 1.

FIG. 3 is a vertical cross section taken on the lines 3-3 of FIG. 1.

FIG. 4 is a perspective showing one end bending horizontally on a slant surface prior to the crushing of a pill.

FIG. 5 is a vertical cross section taken along the lines 5-5 of FIG. 4.

FIG. 6 is a vertical fragmental cross section similar to the left-hand portion of FIG. 3 showing the removal of the spoon.

FIG. 7 is a perspective of the package with the sealing film removed and the crushed pill spread over the surface of the gel prior to mixing.

FIG. 8 shows a modified form of the package in plan view.

FIG. 9 is a vertical cross section therethrough and taken along the lines 9-9 of FIG. 8.

FIG. 10 is a vertical cross section taken along the lines 10-10 of FIG. 8.

FIG. 11 is a still further modified form shown in plan view.

FIG. 12 is a vertical cross section taken along the lines 12-12 of FIG. 11.

FIG. 13 is a vertical cross section taken along the lines 13— 13 of FIG. 11.

FIG. 14 is a still further modified form in plan view.

FIG. 15 is a vertical cross section taken along the lines 15—

FIG. 16 is a vertical cross section taken along the lines 16— 16 of FIG. 14.

FIG. 17 is a vertical cross section similar to FIG. 16 showing the lifting of the tear tab and the insertion of the pill.

FIG. 18 is a view similar to FIG. 17 showing said pill being crushed.

FIG. 19 is a perspective of the tray of FIG. 14 and its use.

FIG. 20 is a modified form in plan view.

FIG. 21 is a vertical cross section taken along the lines 21— 21 of FIG. 20.

FIG. 22 is a vertical cross section taken along the lines 22— 22 of FIG. 20.

FIG. 23 is a further modification shown in plan view.

FIG. 24 is a vertical cross section taken along the lines 24— 24 of FIG. 23.

FIG. 25 is a plan view of the spoon shown in FIG. 23 that has been opened up along its hinge line.

FIG. 26 is a similar view to FIG. 25 with the film covering

FIG. 27 is a modified form of the prior figures showing a simplified form of package.

FIG. 28 is a fragmental plan view of a portion of FIG. 27 showing the transfer of the powdered pill from one depression or cavity to another.

FIG. 29 is a further modification in plan view.

FIG. 30 is a vertical cross section therethrough taken along lines 30-30 of FIG. 29.

FIG. 31 is a vertical cross section taken along lines 31-31 of FIG. 29.

FIG. 32 is a further modified form shown in plan view.

FIG. 33 is a vertical cross section taken along the lines 33— 33 of FIG. 32.

FIG. 34 is a vertical cross section taken along the lines 34-34 of FIG. 32.

DESCRIPTION OF VARIOUS EMBODIMENTS

FIGS. 1-7 show the most preferred embodiment. The Further objects and other incidental ends and advantages of 70 package 40 has a shaped tray base member portion 41 with a shallow crushing surface section 42 for crushing the pill at one end, a blister or cavity or depression 43 which contains edible carrier gel J in the center portion. The gel is effectively sealed in place by the bowl portion of a spoon 45, the handle portion of which spoon 46 extends over the edge of a cavity or depres-

sion or blister 44 which is found in the other end of the package 40 and which accommodates the finger for easier removal of the spoon as can be seen best in FIG. 6. The handle 46 rests on a bridge and handle support 47, which is like a shallow channel between the deeper depressions 43 and 44. The top surface of the package is sealed with a relatively flexible thin plastic film 48 which is heat-sealed on all edges 49 to the tray 41. In operation the tab T end of the film 48 is pulled up just far enough so that the pill P may be inserted into the package and allowed to slide down to the shallow crushing surface section 42. Then the pill is crushed either by being struck with a striker S or being squeezed between the jaws of a pair of pliers or with a spoon or any instrument capable of providing a crushing force so that the pill P, which is still contained within the envelope formed between the tray 41 and 15 the film 48 now becomes powdered as shown in FIG. 5. The package is then tipped and tapped to allow all the pill powder to slide from the shallow crushing surface 42 into the bowl portion of the spoon 45. The rest of the covering film 48 is then completely removed. The user's finger is then inserted into the depression 44 where it grasps the handle of the spoon 46, easily removing the spoon from the package. The spoon is thereupon utilized to empty all the pill powder into the gel, and powder is then scooped up into the bowl portion of the spoon 45 for oral administration to the patient. Because of the mating fit between bowl portion of the spoon 45 and the blister or depression 43 substantially all of the gel J and the pill powder mixed therein are scooped up in a single motion. 30 Where the tablet is to be crushed by a striker S or a hammerlike instrument, the package 40 should be flexed as shown in FIG. 4 so that the crushing surface 42 lies flat on a convenient surface such as a table, thereby giving resistance to the crushing force so that the pill will be crushed into a powder.

Another preferred form of the package is shown in FIGS. 8-10. There the package 50 contains a shaped tray base member portion 51 having a shallow crushing surface 52 wherein the pill will actually be crushed and a blister or cavity or depression 53 which contains the gel J spaced generally in 40 the middle of the package 50. The tab T of the film 58 is pulled open from where it is heat-sealed 59 to the edges of the tray portion 51 immediately above the handle portion of the spoon 56, which rests on a handle support 57, which is formed in the tray 51. The bowl portion of the spoon 55 is placed in sealing relationship to the gel-containing depression or blister 53 somewhat analogously to the embodiment previously described. After the tab T has been peeled back the pill P is inserted beneath the film 58 and allowed to slide down the spoon into the crushing surface 52. The package is thereupon flexed so that the crushing surface 52 lies flat on the surface of a table, whereupon the pill P is crushed by the application of force to the top of said pill by a hammer or by the use of a spoon or any other convenient object. The pill powder thereby 55 formed is placed in the bowl portion of the spoon 55 by tapping the end of the crushing surface 52 or by tilting the package. The covering film 58 is thereupon completely removed. The spoon 55 and 56 is thereupon lifted and the pill powder contained in the bowl portion of the spoon 55 is placed in the gel-containing cavity 53. The powder and gel are thereupon mixed with the spoon 55, and the spoon 55 is then used to completely scoop out the gel and pill powder mixed therewith from the cavity or depression 53. The patient thereupon eats the gel in normal fashion from the spoon.

Another embodiment is shown in FIGS. 11-13. There the package 60 is again made up of a film 68 which is heat-sealed to all edges of 69 of a shaped tray base member 61. Instead of there being a special crushing surface as a part of the shaped tray base member, now the bowl portion of the spoon 65 is 70 specially strengthened so that it serves as the surface upon which to crush the pill. The tab T of the film 68 is raised slightly allowing the pill P to be placed on the handle portion of the spoon 66, which rests on the handle support 67, formed

pill slides down to the end of the bowl portion of the spoon 65. The pill is then crushed, using either a plierslike force or a metal spoon or a strikerlike force so that the pill P is completely crushed into powder which is then retained in the bowl portion of the spoon 65. The film 68 is now completely removed. The spoon is thereupon raised and the powder permitted to slide off into the gel J which is contained in the blister or depression or cavity 63. The powder is then mixed with the gel using the bowl portion of the spoon 65 and the spoon 65 is then used to scoop out the entire contents of the cavity 63 and serve it to the patient. Again here as in the embodiments previously described and also that of FIGS. 32-34, the gel is doubly sealed from possible contamination from the air by both the bowl portion of the spoon 65 and by the film 68.

Another embodiment is depicted in FIGS. 14-19. There the package 70 contains a shaped tray base member portion 71 which is covered with a film 78 heat-sealed to all edges 79 of the shaped tray 71. The package contains a tab T which seals a side channel 71a formed in the shaped tray portion 71 so that when the tab is lifted, the pill P can be slid through the channel 71a into the bowl portion of the spoon 75. Initially, this spoon is positioned in the package 70 apart from the gel and the bowl portion of the spoon 75 is used as the crushing surface wherein and to mix all of the pill powder with the gel J. The mixed gel 25 the pill P is crushed with any convenient object, such as a striker S or a second spoon or a knife handle or a special crusher pliers. Once the pill P has been powdered, the covering film 78 is completely removed, the handle of the spoon 76, which lies in a handle support 77 formed in the shaped tray portion base member 71, is grasped and the powder from the bowl portion of the spoon 75 is allowed to slide into the gel J contained in the blister or depression or cavity 74 which contains the gel. The powder is thereupon mixed with the gel and the spoon is thereupon used to scoop out the gel and powder mixture and to serve it. Because the bowl portion of the spoon 75 and the cavity containing the gel 74 are matingly shaped, substantially all of the powder and gel is removed in a single scooping effort.

Another embodiment is shown in FIGS. 20-22. Here the spoon handle 86 has more of a square shape than the conventional spoon handle. The package 80 has a shaped tray portion, which contains two separate deeper depression or blisters or cavities, the first one of which cavities 83 is shaped to hold the bowl portion of the spoon 85. The handle portion of the spoon 86 rests on a lesser handle support depression 87, so that when the spoon is in place, the top sides thereof are relatively even with the top sides of the shaped tray base member 81. The other cavity 84 contains the gel J. Again there is a film 88 which is heat-sealed to the edges 89 of the shaped tray 81. In operation, a tab T of the film 88, or a corner of the film if optionally no tab is present, is raised and the pill P is inserted down the top of the spoon handle 86 to the bowl portion of the spoon 85 which then serves as the crushing surface. The pill is crushed into powder using any convenient object as the crushing force applied to the top of the pill outside of the film 88. The film 88 is then removed, and the powder is transferred to the gel cavity 84 using the spoon which is then used further to mix the powder with the gel and thereafter is used to scoop out completely the gel and powder mixture and serve it to the patient.

Yet another embodiment is shown in FIGS. 23-26. Here the package 90 is formed with a hinge portion 97, but otherwise is similar to those previously described in that it is made of a 65 shaped tray portion 91 bearing two depressions or cavities or blisters, one cavity 93 being shaped so as to receive the bowl portion of the spoon 95 and having a channel at one end to matingly hold the portion of the handle of the spoon 96 which is attached to the bowl portion of the spoon 95. The other cavity or blister 94 contains the gel J. The film 98 is heatsealed to the edges 99 of the shaped tray portion 91 thereby sealing the gel and the spoon separately and away from each other. Initially, the hinge 97 is closed as shown in FIG. 23. The package 90 is thereupon snapped open and the tab T of the in the tray base 61. The package 60 is then tilted so that the 75 film 98 over the spoon handle 96 is open sufficiently so that

the spoon can be removed without destroying the envelope formed by the film cavity of depression 93. The pill is thereupon inserted into this cavity and crushed with the spoon or any other convenient object. The covering film 98 is thereupon removed from all parts of the shaped tray portion 91 and the powder is transferred to the gel-containing cavity 94 or alternatively the gel is transferred to the powder in the cavity 93. The gel and powder are thereupon mixed, using the spoon which is then used to scoop out the mixture and serve it. Once again the dimensions of the spoon and the gel cavity are such that the spoon easily empties the gel cavity 94 substantially completely of all gel and powder contained therein.

Still another embodiment is shown in FIGS. 27 and 28. This embodiment is a slight modification of the embodiment of FIGS. 23-26, differing therefrom in that the hinge 107 is widened and contains an interrupted portion in the middle thereof to which the film 108 is not heat-sealed or sealed with any adhesive so that the pill powder in the cavity 103 may be more easily transferred to the gel J containing cavity 104 without any holdup in the hinge channel. Aside from this, the embodiment package 100 contains the shaped tray portion 101 having the two distinct cavities, one cavity for the gel 108 and one cavity for the spoon 103 (which is not shown but is 25 the same as in the preceding embodiment) and a film 108 heat-sealed to the edges 109 of the tray. The operation here is analogous to that of the preceding embodiment.

Yet a further embodiment is shown in FIGS. 29 and 30. This package 110 contains a shaped tray portion 111 having a film 118 heat-sealed to the edges 119 of said shaped tray base member 111. There are two depressions or cavities or blisters, one such cavity 113 containing the gel J and which cavity is then covered by the bowl portion of the spoon 115 and a 35 raised extension of which cavity, the handle support 117, is covered by the handle of the spoon 116. There is a less deep depression or cavity 114 which serves as the crushing surface. The tab T of the film 118 is raised sufficiently to permit the pill to be placed on the handle portion of the spoon 116 and to be slid into the crushing surface cavity 114 where it is crushed either with a pliers or any convenient object. After the pill has been crushed into powder, the sides of the shaped tray 111 are tapped gently to allow all the powder to go into the bowl por- 45 tion of the spoon 115. The film 118 is then completely removed. The spoon is thereupon raised and the powder emptied from the spoon into the gel J which is in the cavity 113. Again as before the powder is mixed with the gel and scooped out with the special spoon 115 which is exactly fitted size wise 50 to completely scoop out in a single motion the entire contents of the gel cavity 113 and thus serve all the powder to the pa-

A still further and somewhat preferred embodiment is shown in FIGS. 32-34. There the package 120 consists of a shaped tray base member portion 121 which has a film 128 heat-sealed to all edges 129 of the tray portion 121. There is a single cavity 123 which contains the gel J. This is covered by the bottom of the bowl portion of the spoon 125. The handle 60 portion of the spoon 126 is channel shaped. The bowl portion of the spoon 125 has a specially elongated and strengthened front edge to serve as the crushing surface. The tab T of the film 128 or the end immediately above the handle of the spoon 126 is raised sufficiently to allow the pill P to be put in position 1. The package is tipped to allow the pill to slide down the channel in the spoon handle 126 to the tip of the spoon into position 2, where it is then crushed with a plierslike crusher or any convenient object. The covering film 128 is then removed 70 completely. The handle of the spoon 126 is then raised to permit the powder from the bowl portion of the spoon 125 to be emptied into the gel cavity 123 where it is mixed with the gel J using the spoon. It is then scooped out with the spoon and served.

THE EDIBLE CARRIER GEL

The carrier gel utilized in the present invention need not be, but preferably is, flavored. Any edible gel, such as a food store jelly or jam or a fruit puree, etc., could be used as the carrier gel vehicle.

The properties required in a preferred form of a flavored carrier gel are: all ingredients must be approved foodstuff or foodstuff additives, low calorie content, good mouth feel, rapid mouth clearing, good taste masking properties, no unpleasant aftertaste, pleasing color and consistency, medium viscosity, flavorable with acceptable flavoring agents, stable for an indefinite period at room temperature, good powder dispersing properties, and low cost.

The preferred formulation arrived at for this gel vehicle was based on carboxymethyl cellulose and Sorbitol as thickening agents. Sorbitol, in addition, contributes to good mouth feel. The gel formula meets all the requirements listed above. The formula is as follows:

Ingredients		Amount (%)
CMC 7H3SF (Hercules)		1.75
Sorbitol		13.0
Na Benzoate		0.2
Saccharin		0.05
Glycerin		0.45
Wild Cherry Flavor (F-3540)		****
(Givaudan)		0.035
F.D.&C. No. 2 Red		0.004
Citric Acid		0.43
Water		84.08
	Total	100.00%

This gel was prepared with four different artificial flavors—raspberry, custard, orange juice and banana. Other flavors are easily possible.

MATERIALS OF CONSTRUCTION

The particular materials of construction used in the various parts of the container of the present invention are not critical, save as they must have the properties necessary to perform their intended functions. Thus the shaped tray base member portion is preferably made of a relatively stiff, thin-walled plastic sheetlike material such as polyvinylchloride, polyethylene, polypropylene, polystyrene or any other plastic which is FDA approved for food stuff use and which is susceptible to inexpensive large-scale manufacture by vacuum forming, molding, or any other means. The spoon-shaped means, which is a spoon having a bowl and a handle portion, is preferably made of a hard styrene rubber, but it can be made of many other plastics or even of wood or other materials which are susceptible to inexpensive large-scale manufacture. The relatively flexible thin plastic film is preferably made of polyethylene film or polyvinylchloride film, but can be made of other films which can be heat-sealed or attached by use of an adhesive or other sealing means to the edges of the shaped tray base member. As with all materials used herein, the film should be of a material approved by the Food and Drug Administration for food stuff use. The film is preferably sealed to all of the edges of the shaped tray base member, and preferably has a tearing tab to permit it to be easily opened so the pill may be inserted. However, the tab is not vital, and in a less preferred version, the sealing could be on at least three sides only, leaving the side of the envelope or pouch where the pill is to be inserted open, for those packages where the spoon itself also seals the edible carrier gel from contamination by the air.

What is claimed is:

 A self-contained container package for crushing and dispensing pills comprising a shaped tray base member formed of a relatively stiff, thin-walled plastic sheetlike material having a depression therein which contains an edible carrier gel; spoon-shaped means containing a handle portion and a spoon portion in which said spoon portion is proportioned in size and shape to exactly fit the bottom and sides of said gel-filled depression when held in a relatively vertical position and used to scoop out the gel contents from said depression and further proportioned to matingly cover the gel-containing depression so as to seal it when laid in a horizontal position over said depression; relatively flexible thin plastic film sealed to at least three edges of said base to form an envelopelike cover over the top of said base, said container having a crushing surface contained within said film envelopelike cover which is strong 10 enough to allow a pill to be crushed thereon by crushing means applied externally of said base member and said film.

2. The container as set forth in claim 1, wherein the crushing surface is an elongated flange of the base member positioned on the side of the base member away from the handle 15 portion of the spoon means.

3. The container as set forth in claim 1 wherein the crushing surface is an elongated flangelike lip of the spoon means, which is positioned on the side which is away from the handle portion of the spoon means.

4. The container as set forth in claim 1, wherein the relatively flexible thin plastic film is sealed to all edges of the base member in such manner that the edge portion closest to the handle of the spoon means can be readily opened and unsealed so as to permit a pill to be inserted within the film envelope.

5. The container as set forth in claim 1 wherein the handle portion of the spoon-shaped means extends beyond the outer edge of the base member, and the base member contains a

channel mating with the handle portion, so that the top of the spoon handle is approximately even with the top of the base member.

6. The container as set forth in claim 1 wherein there is a second depression in the shaped tray base member positioned underneath the end of the handle portion of the spoon-shaped means, which permits the handle to be easily grasped by a finger inserted into said second depression.

7. A self-contained container package for crushing and dispensing pills comprising a shaped tray base member formed of a relatively stiff, thin-walled plastic sheetlike material having two depressions therein, one of which contains an edible carrier gel and the second of which contains spoon-shaped means containing a handle portion and a spoon portion in which said spoon portion is proportioned in size and shape to exactly fit the bottom and sides of the other gel-filled depression when held in a relatively vertical position and used to scoop out the gel contents from said depression; relatively flexible thin plastic film sealed to the edges of said base to form an envelopelike cover over the top of said base, the spoon portion of said spoon-shaped means being strong enough to allow a pill to be crushed thereon by crushing means applied externally of said base member and said film.

8. The container as set forth in claim 7 wherein the shaped tray base member is hinged, with one depression on either side of the hinge, so that one side can be folded back against the other in the storage position before use.

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