June 17, 1941. I. M. TAYLOR 2,245,738

PLURAL-COMPARTMENT ENVELOPE

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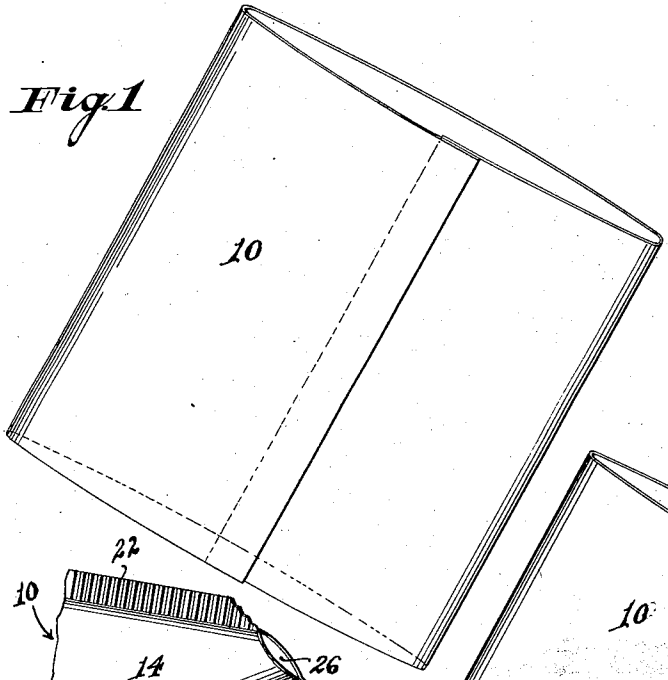


Fig. 1

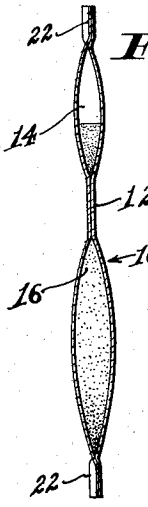


Fig. 4

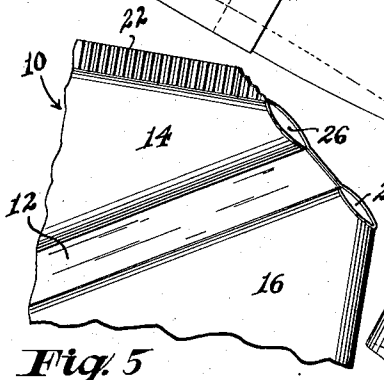


Fig. 5

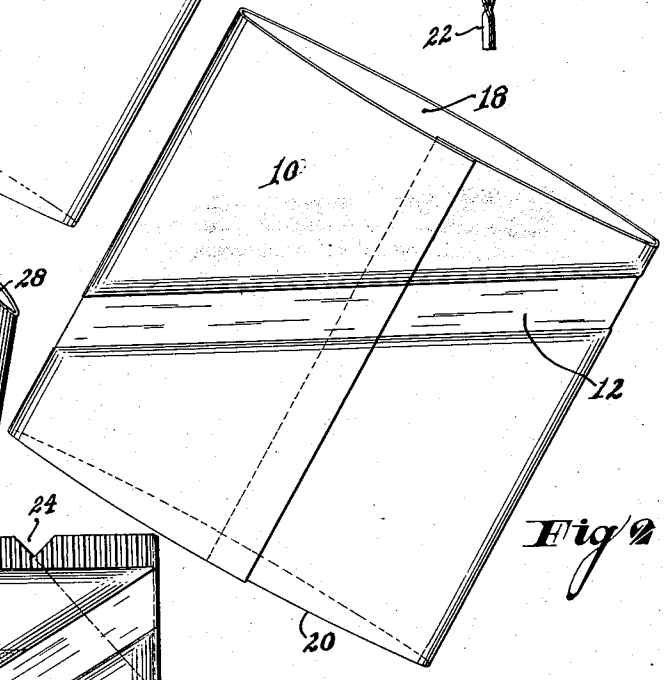


Fig. 2

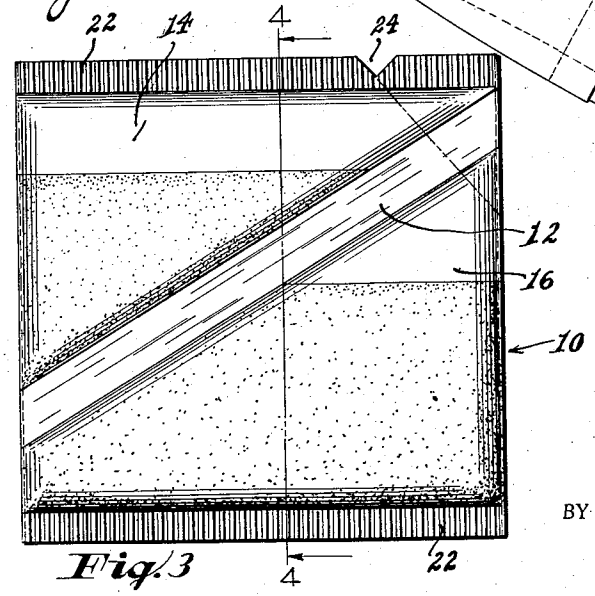


Fig. 3

INVENTOR.
Ivan M. Taylor

BY Everett Kent

ATTORNEY.

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PLURAL-COMPARTMENT ENVELOPE

Ivan M. Taylor, Boston, Mass.

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4 Claims. (Cl. 206—47)

This invention relates to improvements in plural-compartment envelopes.

More particularly it relates to envelopes for containing two or more substances, separately sealed, in such a way that they can be held safely until wanted, in the form of power, pellets or tablets, and then by a simple manipulation be simultaneously discharged, united in a single stream.

The invention has a primary utility for retail distribution of single composite charges, or doses, whose several ingredient substances require to be combined in proper proportions and quantity; and has further utility for consumer's use of the same, without the user having to trouble to measure them, and even without his needing to know what the substances are, or what their proportions are.

An instance is for the making of an effervescent medicinal drink. Specifically, for example, if citric acid and sodium bi-carbonate are to be used, these are best kept separate until wanted, and, when used, are best put into a glass of water at the same instant, in quantities which are suitably measured.

Also, the invention recognizes that it is preliminarily desirable to keep pre-measured quantities of the ingredients in associated-together nonperishable condition. If they are mixed together, as is sometimes now done, degradation may be caused by heat, or by moisture. But if they are kept separate neither heat nor moisture hurt them.

The envelope of the invention can be applied to other purposes to which it is useful.

The invention provides an envelope with a plurality of compartments for keeping pre-measured ingredients separate, in which envelope all compartments can be opened by a single motion which leaves each compartment with a converging discharge throat for an outpouring of contents from all compartments together, with the effect of a single stream. The single motion is merely a tearing or cutting off of a corner of the envelope.

It is an important feature that although my improved envelopes can of course readily be made by hand, they can be economically produced and filled by machinery. Starting with suitable sheet stock, a packet can be made and divided into separate compartments, and then a predetermined measure of desired contents to be put into each compartment, and then all be sealed, all by machinery, quickly and at low total cost.

The invention attains these ends by employing a strip of paper, or other suitable sheet material, folded upon itself with edges overlapped and sealed together, so as to make a long flattened tube; which is then to be cut into short lengths suitable for individual envelopes. These may be of any desired length. As here illustratively represented, each cut length of tube is approximately as long as it is wide, making a square two ply form having ends herein for convenience called "open ends" as they are not at this stage sealed closed, although they lie flat together. The other two sides of the square are closed, being folds by which the tube was made.

According to the invention such a section of flat tubing, having two open ends, is to be interiorly divided into a plurality of compartments, by sticking opposite flat sides of the tube together along one or more lines, each of which leads to or near one angle of the square, an angle between a fold and an open end of the tube. Such a line would start from some place, on the other open end of the tube, and be oblique to the two folded sides of the square, thus leaving at least a part of one open end as a mouth for filling each one of the compartments thus made. If more than two compartments are wanted, another interior division is to be made, running to the same angle, or near to it, from the open end of the tube which is remote from that angle. The partition can be made by making a line of adhesion together of opposite side walls of the tube, while they are lying flat together; or may be provided in any other suitable manner, as by plasticizing the stock in the desired line, or by a line of stitching.

The compartments thus formed are to receive their predetermined kind and measure of contents, in succession, one being filled, and its mouth sealed by closing and sealing its portion of the open end of tube before the next is filled. The packet is then complete, being a flat envelope containing its several substances in thin masses all in the same plane, but mutually separate.

The sheet stock of which the envelope is made will be chosen according to the needs, of the expected contents, as, in the case of hygroscopic contents, sheets which are impermeable by humidity will be used. The sealing of the open end adjacent to the angle into which the two or more compartments converge, may preferably be accompanied by a notching of the sealed area of that end, near the angle. This will indicate to a user which corner is to be torn from the envelope for the pouring out of contents; and it will facilitate his breaking of the material to inititiate the tearing.

Upon removing this corner of the envelope, as by a tearing or cutting across the narrow, converged ends of all of the compartments, and upon tipping the envelope so that the torn opening is downward, contents of all compartments will run out simultaneously.

If contents of one or more compartments are in crushable tablet form, the tablets may be re-

duced to a powder by squeezing between the fingers, while they remain in their respective compartments. This can be done before one tears off the corner of the envelope, so that, after the corner has been removed, the contents of the envelope compartments will run out freely together.

It is intended that the patent shall cover, by suitable expression in the appended claims, whatever features of patentable novelty exist in the invention disclosed.

In the accompanying drawing:

Figure 1 is a perspective of a section of flat tubing suitable for use in making my improved plural-compartment envelope;

Figure 2 is a view similar to Figure 1, showing an oblique line of adhesion of walls of the tube dividing the interior of the tube into two compartments;

Figure 3 is a side elevation of a completed envelope, with powder-contents in the respective compartments;

Figure 4 is an edge elevation, in section on 4—4 of Figure 3; and

Figure 5 is a perspective of a fragment of the completed envelope of Figure 3, having a corner torn off to provide discharge openings for the compartments.

Referring to the drawing, the section of flat tubing 10 of Figure 1 may be of paper or of any other sheet material found suitable for holding and protecting the particular substances which are to be enclosed, and for making the partition. Cellophane and the like cellulosic sheets are especially useful, because varieties which are impervious to humidity are available, tight until wanted, easily torn, and particularly because material which is thermo-plastic can be had, so that two plies of such can be sealed together by heat and pressure constituting a welding of the material to make the partition and the end closures. Crimping to strengthen the seal at the ends is also easily done. Relatively long lengths of such tubes, of Cellophane, are available commercially at low cost, being made by known machines; and a tube of great length can be cut successively to provide a multiplicity of the sections of Figure 1.

In Figure 2 a flat section of the tube 10 of thermo-plastic cellulosic material has been subjected to heat and pressure along the oblique path 12, to make opposite sides of the tube adhere together strongly along this path 12, thereby to provide a separation of the interior of the tube into the two compartments 14, 16.

This oblique partition at 12 runs to one corner of the flat tube, at a place where the closure to be constituted by the sealing of the end of the tube, and the closure constituted by the fold will co-act to prevent any outlet existing between the partition and the end which is to be closed. The walls of each compartment 14, 16 converge there, in an acute angle. This facilitates a later opening of both compartments there by a single motion of cutting across the corner.

The plural-compartment intermediate product of Figure 2 is ready for its compartments to be filled and sealed in succession. Either compartment may receive its contents first, through its open end 18 or 20 of the tube section; after which that end is to be closed, as by being sealed tightly by any suitable means. As represented in Figure 3, a corrugating compression of the end portions of the sides of the tube, preferably accompanied by application of heat, effectively seals the ends as at 22. Then the other compartment may be filled and its end similarly sealed. Adhesive gum, or stitching might be used if preferred.

The sealing, of that end which extends to the corner which is to be torn off for pouring out of contents, preferably will be accompanied by a notching of that end as at 24, the notch being not deep enough to spoil the perfection of the seal. The notch indicates to a user the corner which is to be torn; and it facilitates his making an opening into both compartments, there, by tearing on a straight line.

The compartments may equal or vary from each other in capacity, as desired.

In use, contents ordinarily will not completely fill the compartments 14, 16; thus leaving the filled packet as a whole conveniently flat, and without being strained by contents.

Assuming that citric acid and sodium bicarbonate are contained in the twin-packet of Figure 3, a tearing off of the corner at the notch 24, and a tipping of that corner downward, enables both substances to be effectively and simultaneously poured into a glass of water, through the openings 26, 28 (Figure 5); as a funnel-like throat then leads downward from each to a mouth 26 or 28.

The particular means illustrated for providing the oblique partition 12; and the illustrated means for sealing the ends of the packet, have been found to be effective and economical. But it should be understood that the invention is not limited in these regards by the description and portrayal of preferred forms, but only by the scope of the accompanying claims. Also various other materials than those mentioned may be used without departing from the spirit and scope of the invention.

I claim as my invention:

1. A closed flat envelope, having two mutually overlying flat walls which are joined together on one or more lines extending across a flat non-folded mid-portion of said overlying walls of the envelope, and so dividing the interior of the envelope into a plurality of compartments; there being an angular edge region of the envelope, constituted by the angular meeting of two adjacent closed edges of the envelope; the said joinder of mid-portions of the walls constituting a partition and extending, with the compartments formed thereby, into said angular region of the envelope.

2. A plural-compartment envelope as in claim 1, wherein the body of the envelope is a flat tube with closed ends, one of which end closures is one side of said angular region, and said partition extends obliquely crosswise of the tube.

3. A plural-compartment envelope as in claim 1, wherein the body of the envelope is a flat tube of thermo-plastic material; linear portions of the flat sides of the tube are welded together to provide said partition; and the ends of the tube are closed.

4. A flat plural-compartment open envelope, comprising a straight flat tube having two mutually overlying flat walls joined together on a line which extends from opposite closed side edges of the tube, obliquely across a flat non-folded mid-portion of said overlying walls of the tube, and so divides the interior of the tube into two compartments; the ends of the tube being adjacent to the ends of said line of joinder of the flat walls, and being open, whereby each end of the tube constitutes a closable mouth for one of the two said compartments.

IVAN M. TAYLOR.