Aug. 3, 1943. W. E. DRAKE 2,325,942

DISPENSING ENVELOPE

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Fig. 1.

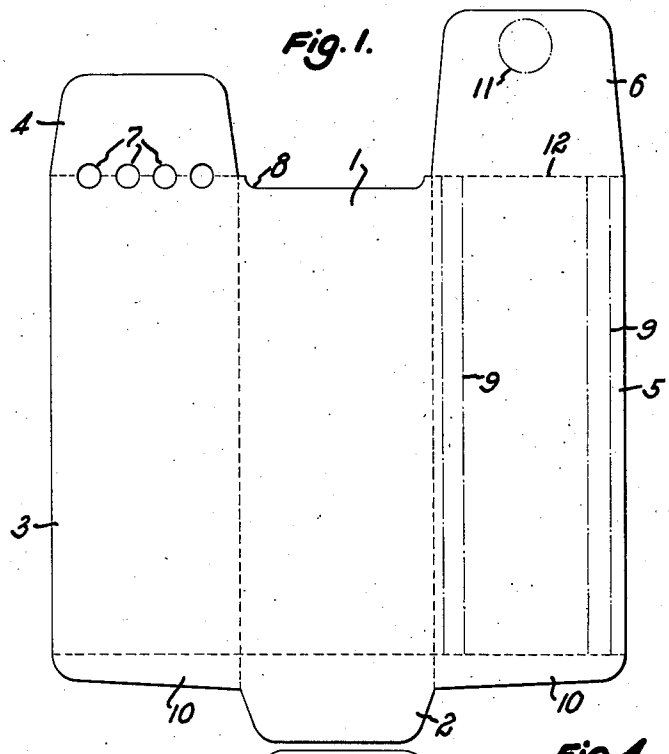


Fig. 3.

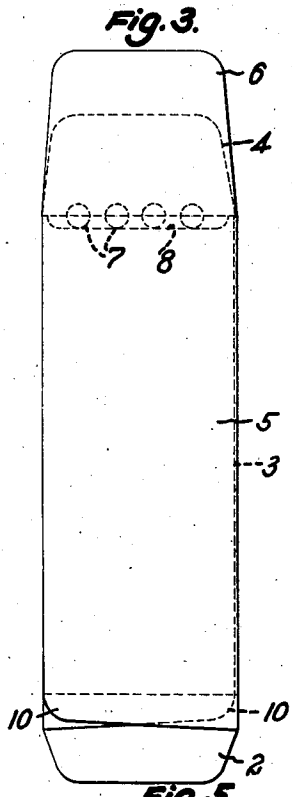


Fig. 2.

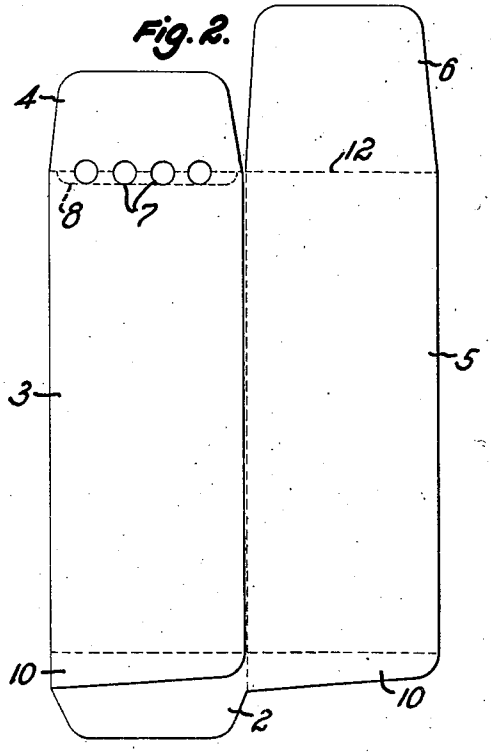


Fig. 4.

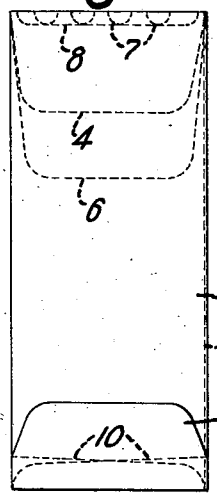
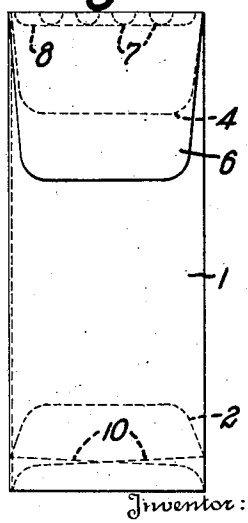


Fig. 5.



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Fig. 6.

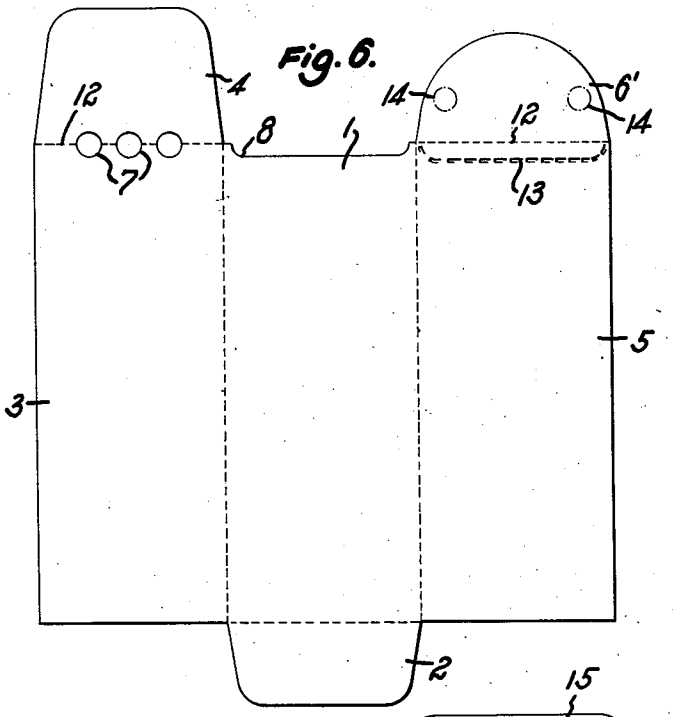


Fig. 7.

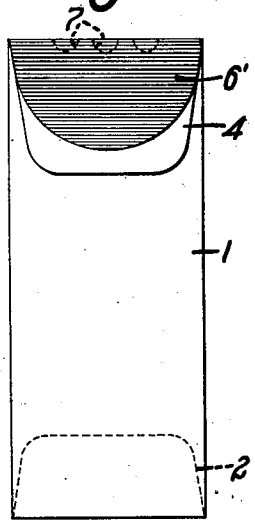
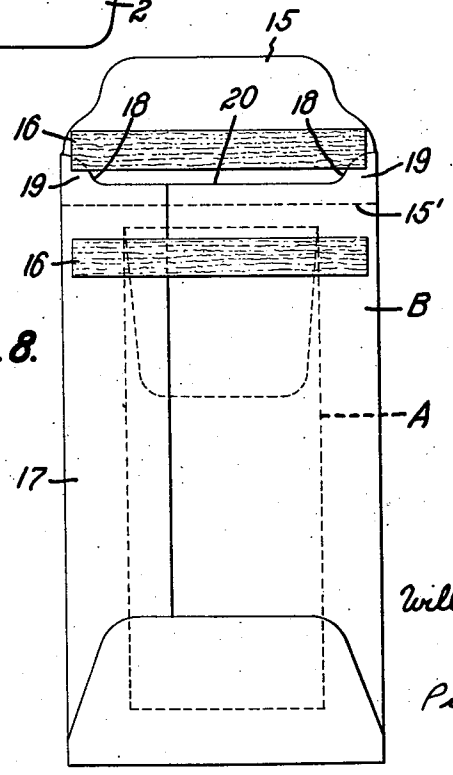


Fig. 8.



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UNITED STATES PATENT OFFICE

2,325,942

DISPENSING ENVELOPE

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Application May 22, 1942, Serial No. 444,069

4 Claims. (Cl. 206—63.2)

The purpose of the present invention is to provide a dispensing package for powders, finely divided granular materials and the like, such as seed, medicinal agents for local application, etc., which is simple in construction from the standpoint of quantity production, will hold the powder against leakage and contamination, and readily may be put into operation for dispensing the powder.

More particularly, an object of my invention is to provide a dispensing package for a medicinal agent such as sulfanilamide in powder or granular form which is adapted for emergency or surgical use and readily may be put into operation to apply the powder to a wound while avoiding contamination or infection.

A specific object of the present invention is to provide a dispensing envelope having apertures or dispensing openings in or adjacent the line of fold of the filling flap of the envelope, said flap being an integral part of the blank from which the envelope is made, and said apertures being covered by a second flap which also is integral with the blank from which the envelope is formed by folding.

The envelope is made of paper or equivalent material of suitable stiffness and strength, imperviousness to moisture, bacteria, etc., and preferably is capable of withstanding sterilizing treatment such as heating to a temperature of about 150° C. for 1½ hours or longer.

Other features of the invention, which will be more fully described and illustrated hereinafter in connection with the accompanying drawings, are the provision of means whereby the outer protecting flap of the envelope readily may be opened, and means whereby it may be detached from the envelope so as not to obstruct the sifting of the powder from the sifting openings.

As will be apparent, a primary purpose of the invention is to avoid any contamination of the wound to which the powder is applied and it will be appreciated that the handling of a medicinal powder, e. g. the application of sulfanilamide to a wound, under the conditions normally existing in connection with such wounds, e. g. industrial or automobile accidents or war casualties, requires that the dispensing package shall be so constructed that it may be handled, opened and the powder sifted into the wound without contact of the powder or the sifting openings of the package with the hands of the person applying the medicine to the wound.

For a more detailed description of specific embodiments of the invention reference is made to the accompanying drawings, in which,

Fig. 1 is a plan view of the unitary blank from which the envelope is formed,

Fig. 2 is a plan view of the blank with the left hand portion folded over on to the central portion,

Fig. 3 is a plan view with both the right and left hand portions of the blank folded over the central portion,

Fig. 4 is a plan view with the end flaps folded to closed position.

Fig. 5 is a view of the reverse side of the envelope to that shown in Fig. 4,

Fig. 6 is a plan view of a modified form of envelope blank,

Fig. 7 is a plan view of the blank of Fig. 6 fully folded to closed position, and

Fig. 8 is a plan view showing an envelope in accordance with the invention enclosed in an outer protecting envelope.

Referring to Figs. 1–5, inclusive, the envelope blank comprises a central portion 1 which carries the bottom flap 2, a left hand portion 3 which carries the dispensing flap 4 and a right hand portion 5 which carries the protecting flap 6. A row of apertures 7 of a suitable size for dispensing the finely divided material which the envelope is to contain is provided at or near the folding line of flap 4. The apertures may be of any suitable shape, e. g. circular, and preferably are centered on the folding line of the flap 4 although they may be positioned wholly in the flap 4 adjacent the folding line or wholly in the top edge of portion 3 adjacent the folding line. The upper edge of portion 1 may be cut away at 8 so as to clear the apertures 7 when these apertures extend into the flap 4. Portion 5 may be provided with suitable sealing means such as the two strips of adhesive 9, 9, preferably positioned adjacent to the line of fold between portions 1 and 5 and to the free edge of portion 5, respectively, for securing portion 5 to portion 3 when the latter are folded together as shown in Fig. 3. Both portions 3 and 5 are extended downwardly so as to provide the short flaps 10, 10 continuous with flap 2 which, together with flap 2, serve to seal the bottom end of the envelope. This provision of flaps 10, 10 integral with the sealing flap 2 gives the effect of folding the tubular body, formed by portions 1, 3 and 5, upon itself and thus effectively seals the bottom of the envelope.

Adhesive may be applied to the flap 2 and also to flaps 10, 10 if desired for holding these flaps

in closed and sealed position. Flap 6 is shown provided with a spot of adhesive 11 which preferably is of the permanently plastic or so-called releasing type for holding this flap in closed position. This spot 11 may be circular or of any other suitable shape but preferably does not extend to the edge of flap 6 and thus leaves the edge free to be grasped between the thumb and finger for pulling this flap open. The spot of adhesive 11 or its equivalent may be positioned to contact the surface of portion 3 of the blank below the edge of the flap 4 or it may be positioned to adhere to flap 4 provided the latter is fastened down sufficiently securely that it will not be pulled open when flap 6 is opened.

To facilitate manufacture of the envelope the fold lines of the blank may be in the form of the usual creases or scores to facilitate folding. The flap 4 may be provided with a layer of adhesive or the adhesive may be applied as the envelope is formed, as is well known in this art. Finally, the flap 6 may be weakened along or adjacent its line of fold 12 to facilitate tearing it off so that it will not obstruct the movement of the material which is sifted from the openings 7.

Figs. 6 and 7 show a modification of the envelope of Figs. 1–5 in which the flaps 10, 10 are omitted, these being not necessary for producing a sufficiently tight envelope in most instances. This modification also illustrates the flap 6' as being of less length than flap 4 in which case it must, of course, be stuck to the flap 4 by a spot of adhesive or the equivalent instead of being stuck to the wall of the envelope beyond the boundary of flap 4 as illustrated in Figs. 1 to 5. This modification of the envelope also shows a line of severance 13 so disposed as to provide for severance of the upper edge of portion 5 along with flap 6' and thus to clear apertures 7 when they extend beyond the fold line of flap 4 into portion 3.

Figs. 6 and 7 illustrate still a further modification of the envelope shown in Figs. 1 to 5 in that the sifting openings 7 are spaced from the side edges of the envelope and the flap 4 is held in closed position by two spots of adhesive 14 positioned laterally of said openings. The purpose of this arrangement is to avoid the possibility of obstructing the openings in the event that the adhesive should be stronger than the paper and should split the paper of the flap 6' or the flap 4 and pull a sliver thereof when flap 6' is pulled open as might occur in the embodiment illustrated in Figs. 1 to 5. In the modification illustrated in Fig. 6, if a sliver of paper should be pulled toward the folding line 12 when flap 6' is pulled open it would not be likely to obstruct the openings 7 due to the lateral spacing of the glue spots 14 from the openings 7.

In the modification illustrated in Figs. 6 and 7 it has been found to be advantageous to color the flaps 4 and 6' differently so that the free edge of the flap 6' readily may be seen and so that there may be no fumbling or delay in, for instance, trying to raise the edge of the flap 4 which is firmly held to the outer surface of portion 1 of the envelope.

It will be understood that the location of the line of severance for flap 6 or 6' will depend upon the location of the apertures 7. If they are centered in the fold line of flap 4 then portion 1 should be cut away at 8 and the line of severance should be located as shown in Fig. 6 in order to clear the openings on both sides of the fold line. If the apertures are wholly in the flap 4 then the line of severance may be at the fold line, and if the apertures are wholly in portion 3 below the fold line then the upper edge of portion 1 need not be cut away but the line of severance in portion 5 should be sufficiently below the fold line to clear the apertures.

Fig. 8 shows the envelope A of the invention enclosed within an outer protecting envelope B which may serve to protect the inner envelope from moisture or contamination. This outer protective envelope may be made of paper or equivalent material and waterproofed if desired and may be of any desired construction, that is, the bottom may be sealed by folding the walls of the envelope along with the bottom closing flap as described in connection with Figs. 1 to 5 inclusive, and the top may be similarly closed. The outer envelope may be designed to be opened by simply tearing off the end but I prefer to use an envelope of the easily openable type. Most of such envelopes, however, are not completely sealed and I have provided an outer envelope construction which is of the easily openable type and is at the same time completely sealed.

Referring to Fig. 8 it will be seen that the upper end of the envelope is closed by folding over the walls of the envelope at the folding line 15' along with the flap 15 and that the flap 15 is secured in closed position by a strip 16 of material similar to blotting paper the internal strength of which is such that when its opposite faces are glued to the inside of the flap 14 and the front wall 17 of the envelope B, respectively, and the flap 15 is pulled open, the strip 16 will split, part of it remaining glued to the flap 15 and part of it remaining glued to the front wall 17 of the envelope. The front wall 17 of the envelope is cut away at 18 leaving the ears 19, 19, the intermediate portion 20 of the envelope constituting the throat. The strip 16 is so dimensioned and positioned that its one surface clears the throat portion 20 of the front wall 17 but extends over the ears 19, 19 thereby effectively sealing the end of the envelope when the flap 15 is in closed position. When the flap 15 is pulled open that part of the strip 16 which adheres to the flap 15 and the ears 19, 19, continues to bind the ears 19, 19, but the throat portion 20 of the envelope between the ears 19, 19 is opened for the removal of the inner envelope A. As will be apparent, the inner envelope A should be and is somewhat narrower than the outer envelope B, i. e. it is of such a width that it readily may be withdrawn from the envelope B through the throat 20.

In operation it will be seen that the complete package illustrated in Fig. 8 may be held in the left hand, the flap 15 pulled open by the fingers of the right hand and the inner envelope A extracted by means of a pair of sterile tweezers or it may simply be dropped out by inverting the package. The outer surface of envelope B is not sterile and this operation may be performed by one whose hands are not sterile but the sterile inner envelope will thus be delivered to the person (doctor, surgeon or nurse) whose hands are sterile, in a sterile condition. The doctor may then hold envelope A in his left hand while the fingers of his right hand are used to open flap 6 or 6' and, if desired, tear it off, along the line of severance 13. Envelope A, thus having been opened, is ready for use for dispensing the contained material through the apertures 7 without contamination. At the same time the sterile technique of the surgeon, doctor or nurse is not broken, i. e. his or her hands will not be contami-

nated by their contact with the sterile inner envelope and they will not have touched the outer envelope. The package of Fig. 8 having the inner and outer envelopes is more particularly designed for surgical use in which two persons normally will handle the package, one whose hands are not sterile and the other whose hands are sterile.

The envelope illustrated in Figs. 1 to 7 may be used alone without the outer envelope B of Fig. 8. This envelope is designed more particularly for emergency use in which only one person whose hands may not be sterile will handle the envelope, i. e. pull open the outer flap **6** or **6'** and apply the powder directly.

It is understood, of course, that envelopes A and B are of a suitable size for use as described above, i. e. of such width that the opposite edges fit between the thumb and finger so that the envelope A may be squeezed edgewise to bulge the sides and open the apertures **7** for discharging the contents of the envelope and envelope B may be squeezed to open the throat **20** to permit the discharge or withdrawal of envelope A.

I claim:

1. A single compartment dispensing envelope of substantially rectangular shape permanently closed at three edges, the fourth edge of said envelope being closed by two integral flaps, one folding over the other, the inner of said flaps having dispensing openings overlying the folding line thereof, the front wall of said envelope being cut away to clear said openings and the rear wall of said envelope being weakened along a line of severance below said openings to facilitate the removal of the outer flap and that portion of the rear wall of the envelope overlying said openings.

2. A single compartment envelope for containing and dispensing a medicinal powder comprising a tubular portion, means for permanently sealing one end of said tubular portion, an inner integral flap adapted to close the other end of said tubular portion, said inner flap being provided adjacent its line of fold with at least one dispensing opening and an outer integral flap adapted to fold over and close said dispensing opening, said outer flap being held in closed position by adhesive means all of which is laterally spaced from longitudinal alinement with said dispensing opening.

3. An envelope as defined in claim 2 in which the inner flap is provided with a group of dispensing openings positioned at substantial distances from the side edges of the envelope and the outer flap is secured in closed position by separated spots of adhesive positioned laterally of said group of openings between said group of openings and the side edges of the envelope.

4. An envelope having a single compartment formed by a front wall and a rear wall, said front wall consisting of a single layer of sheet material and said rear wall consisting of two overlying layers of sheet material with their contacting faces adhesively attached to each other, said layers being integral parts of a unitary piece of the sheet material, an integral extension on the lower end of at least one of said three layers reversely folded and attached to a wall of the envelope to close the lower end of the compartment, an integral inner flap on the inner of said layers forming the rear wall of the envelope adapted to be folded over and to be permanently attached to the front wall of the envelope to close the upper end of the compartment, an integral outer flap on the other of said layers forming the rear wall of the envelope adapted to be folded over the inner flap and to be releasably secured in closed position, and dispensing openings in the sheet material centered on the fold line of the inner flap.

WILLIAM ERIC DRAKE.