June 1, 1948. M. R. FIELDS 2,442,646

SIFTER ENVELOPE

Original Filed Jan. 6, 1944

Fig. 1

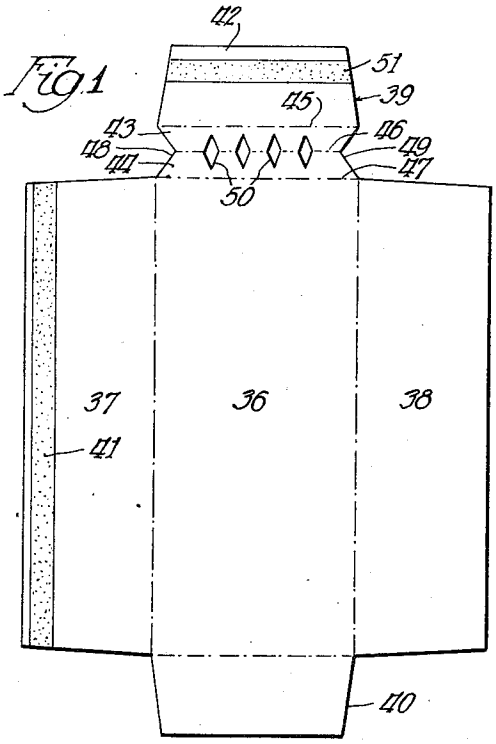


Fig. 2.

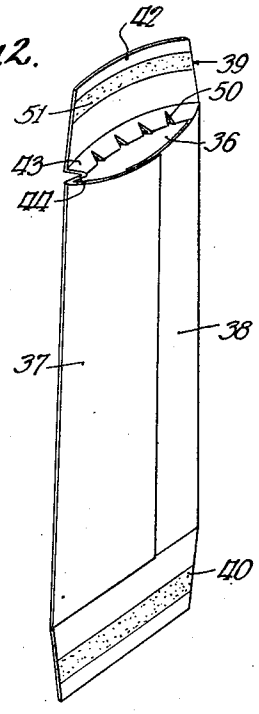


Fig. 4

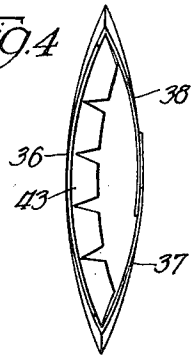


Fig. 8

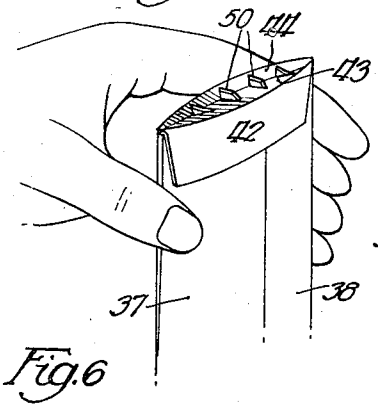


Fig. 3

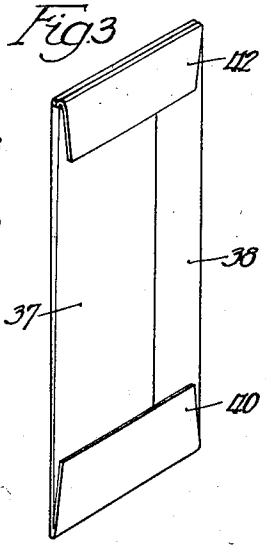


Fig. 5

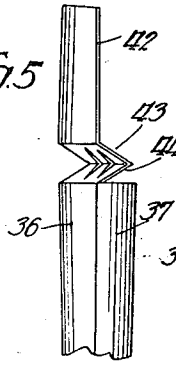


Fig. 6

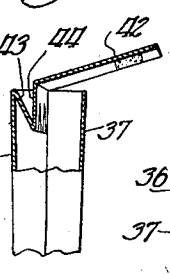
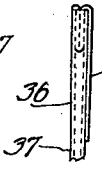


Fig. 7



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Patented June 1, 1948

2,442,646

UNITED STATES PATENT OFFICE

2,442,646

SIFTER ENVELOPE

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Original application January 6, 1944, Serial No. 517,212. Divided and this application June 7, 1944, Serial No. 539,151

7 Claims. (Cl. 229—68)

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This invention relates to the packaging of powdered or similar pharmaceutical preparations in a manner in which the preparation may be conveniently dispensed by sifting directly from the package. The envelope herein described is designed particularly for the packaging of certain sulfa drugs in granular form which are employed in surgery by being sprinkled or sifted into the incision or into open wounds for control of infection.

The main objects of the invention are to provide an envelope of the character indicated which may be manufactured by more or less conventional envelope-making machinery and thereby produced in large numbers at a high rate of speed; to provide such an envelope which may be easily opened by the person about to use it immediately before sifting material from the package into the incision or wound; to provide a sifter type of envelope which may be easily and quickly filled and assembled; and, in general, it is the object of the invention to provide an improved envelope of the character indicated.

Other objects and advantages of the improved envelope will be understood by reference to the following specification and accompanying drawings, wherein there is disclosed an envelope embodying a selected form of the invention, together with the method of opening the envelope for dispensing the contents thereof.

This application is a division of my co-pending application, Ser. No. 517,212, filed January 6, 1944, now matured into Patent No. 2,410,438.

In the drawings:

Fig. 1 is a plan of the blank from which there is formed an envelope;

Fig. 2 is a perspective illustrating the blank of Fig. 1 partially folded to form the envelope;

Fig. 3 is a perspective illustrating the finished envelope in its closed condition;

Fig. 4 is a plan of the upper or sifter end of the envelope in the partially folded condition illustrated in Fig. 2;

Figs. 5, 6 and 7 are side elevations, Fig. 6 being partially in section, illustrating successive steps in the closing of the sifter end of the envelope.

Fig. 8 is a perspective illustrating the method of opening the sifter end of the envelope for dispensing purposes.

The envelope is formed from a blank having the form illustrated in Fig. 1 and which comprises a main panel **36**, side flaps **37** and **38** extending from the side edges of said main panel, and top and bottom flaps **39** and **40** respectively

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extending from the top and bottom ends of the said main panel **36**. The flap **37** is provided with a stripe **41** of adhesive extending longitudinally thereof adjacent but spaced inwardly from the free side edge thereof, and it is folded inwardly over the main panel **36** and over the side flap **38** which is initially folded inwardly over the panel **36**. The flaps **37** and **38** are thus adhesively united to form the second side wall of the envelope, the main panel **36** forming the first wall.

The upper end flap **39** embodies an outer end portion **42** and inner portions **43** and **44**. The portion **42** is connected to the portion **43** by a suitable fold line **45**, and the portions **43** and **44** are similarly connected to each other by a fold line **46**, the portion **44** being connected to the end of the panel **36** by a fold line **47**. The sections **43** and **44** have their ends notched, as indicated at **48** and **49** respectively and they are provided with a plurality of suitably spaced diamond-shaped openings **50**, which have their major dimension extending transversely of the intermediate fold line **46**, and their minor dimension parallel to and in alignment with said fold line **46**.

After the side flaps **37** and **38** are folded into the wall-forming position illustrated in Fig. 2, the top end flap **39** is folded through the steps illustrated in Figs. 2 to 7 inclusive to form a sifter end closure and to close the upper end of the envelope. The upper end flap sections **43** and **44** are folded into face-to-face engagement or to a position approaching such face-to-face engagement, as clearly shown in Figs. 2 and 5; then the side edges of the partially formed envelope are pressed toward each other so as to cause the side walls thereof to bulge and separate as shown in Figs. 2 and 4. When the envelope is thus caused to open, it will be observed that the inwardly notched ends **48** and **49** of the flap sections **43** and **44** cause the ends of the folded sections to lie within the open end of the envelope, and the V-shaped notches in each section **43** and **44** serve to facilitate curving of the folded flap portions **43** and **44** into conformity with the curvature of the wall **36**.

The next step in the folding of the sifter end of the envelope is to fold the flap portion **42** downwardly over the upper end of the wall formed by the flaps **37** and **38**, thereby incidentally turning the folded sections **43** and **44** downwardly into the open end of the envelope, as shown in Fig. 6. Upon completion of the downward folding of the flap section **42**, the upper end of the envelope may again be flattened or closed, the sections **43** and **44** being then brought into

face to face engagement with each other and with the respective walls of the envelope so that the said sifter end is effectively closed. The flap section 42 may be adhesively secured in closed position by the provision of a suitable stripe 51 of adhesive on the inside surface of the flap section 42.

The adhesive employed in the construction of the envelope is applied in spaced relation to the edges of the various flaps so that when the flaps are folded to their closed positions, adhesive will not be squeezed out beyond the edges of the flaps, the outside of the envelope being thereby maintained clean.

The envelope may be filled with the desired quantity of sulfanilamide, or other pharmaceutical preparation or material, through the remaining open bottom end of the envelope whereupon the open bottom end may be closed by folding the lower end flap 40 over the open end to the position illustrated in Fig. 3. The flap 40 may be adhesively secured in its closed position as indicated.

The envelope formed as above described may be made of a suitable grade of paper, preferably a strong, fine-grain paper which is not excessively porous. The envelope may then be enclosed in another container or envelope as shown in said Patent No. 2,410,438, and the entire package is then preferably subjected to a sterilizing treatment which may consist of a dry heat treatment for a period of about two hours at a temperature of around 285° F.

A surgeon about to employ the contents of the envelope, may grasp the envelope at a point spaced substantially from the sifter end and by pressing together the edges of the envelope near its sifter end, the walls thereof may be caused to bulge and the sifter end distended, as shown in Fig. 8, to thereby open the diamond-shaped dispensing openings, whereupon the contents of the envelope may be dispensed as required.

It will be apparent that the described envelope structure may conveniently be employed by members of the armed forces under battle conditions. In the case of wounds received under such conditions, the wounded person, if not wholly incapacitated, may easily open the described envelope structure and sift the contents of the envelope into his wounds before sufficient time for serious infection has elapsed. Accordingly, many otherwise serious infections may be prevented in their inception.

The described structure is capable of some modification without departing from the principles of the structure and such modifications are accordingly intended to be covered by some of the appended claims.

I claim:

1. A sifter envelope comprising a flattened tubular body, a flap extending from one end of one of the flat walls of the body, there being a fold line at the connection of said flap to said wall end, said flap having a pair of transversely extending, relatively spaced fold lines co-operating with said first-mentioned fold line to, in effect, divide said flap into an outer end section and a pair of sections intermediate said end section and the wall from which the flap extends, said pair of sections being foldable on the intervening fold line into face-to-face engagement with each other and being provided with notches extending inwardly of the respective sections from said intervening fold line, said notched sections, when folded into said face-to-face engagement, being also folded into the envelope and the outer end section of the flap being folded over and adhesively secured to the outside of the other wall of the envelope, said outer and intermediate flap sections constituting a closure for the adjacent end of said envelope when in collapsed, flattened condition and said infolded notched sections, while remaining within the envelope, being adapted to be at least partially unfolded relative to each other as an incident to distension of the envelope by the application of pressure on the opposite edges thereof, the notches in said sections then constituting sifter openings for dispensing the contents of the envelope.

2. A sifter envelope comprising a flattened tubular body, a flap extending from one end of one of the flat walls of the body, there being a fold line at the connection of said flap to said wall end, said flap having a pair of transversely extending, relatively spaced fold lines co-operating with said first-mentioned fold line to, in effect, divide said flap into an outer end section and a pair of sections intermediate said end section and the wall from which the flap extends, said pair of sections being foldable on the intervening fold line into face-to-face engagement with each other and being provided with notches extending inwardly of the respective sections from said intervening fold line, said pair of sections also having end edges extending diagonally outwardly in diverging relation to each other from a point on said intervening fold line to the fold line defining the other edges of said pair of sections, said notched sections when folded into said face-to-face engagement, being also folded into the envelope and the outer end section of the flap being folded over and adhesively secured to the outside of the other wall of the envelope, the notches in said pair of sections serving to permit curving of said sections in their normal planes in conformity with the curvature imparted to the flap-carrying wall of the envelope as an incident to the application of pressure on the opposite edges thereof for distending the envelope to facilitate folding of said pair of sections into the envelope, the diagonal ends of said pair of sections serving to cause said ends to enter freely into the distended envelope when said sections are folded thereinto, said outer and intermediate flap sections constituting a closure for the adjacent end of said envelope when in collapsed, flattened condition, and said infolded notched sections, while remaining within the envelope, being adapted to be at least partially unfolded relative to each other as an incident to distension of the envelope by the application of pressure on the opposite edges thereof, the notches in said sections then constituting sifter openings for dispensing the contents of the envelope.

3. An envelope having side walls and an end closure provided with sifter holes, said end closure being folded upon itself within the envelope, said holes being of diamond shape and extending into both folds of the end closure so as to be closed as an incident to the folded condition of said end closure, the envelope being such that its said walls normally tend to assume a face to face relationship whereby said end closure is normally held in said folded condition, said end closure being distendable as an incident to the application of pressure on the edges of the envelope to distend the same, whereby said sifter holes are opened, the width of said folded end closure being gradually reduced from its outer end to its fold to thereby provide beveled ends for facili-

tating insertion of the folded end closure into the envelope and said distension thereof.

4. An envelope having side walls and an end closure, provided with a dispensing hole, said end closures being folded upon itself within the envelope so as to close said hole, the walls of the envelope being distendable as an incident to the application of pressure on the edges of the envelope whereby to also unfold said closure and to open said dispensing hole, the width of said folded end closure being gradually reduced from its outer end to its fold to thereby provide bevelled ends for facilitating initial insertion of the folded end closure into the envelope.

5. A sifter envelope, comprising a flattened tubular body, a flap extending from one end of one of the flat walls of the body, there being a fold line at the connection of said flap to said wall end, said flap having a pair of transversely extending, relatively spaced fold lines cooperating with said first mentioned fold line to, in effect, divide said flap into an outer end section and a pair of sections intermediate said end section and the wall from which the flap extends, said pair of sections being foldable on the intervening fold line into face to face engagement with each other, at least one of said intermediate sections having a dispensing opening therein, said intermediate sections, when folded into said face to face engagement, being also folded into the envelope and the outer end section of the flap being folded over and adhesively secured to the outside of the other wall of the envelope, and said outer and intermediate flap sections constituting a closure for the adjacent end of said envelope when in collapsed, flattened condition, and said infolded sections, while remaining within the envelope, being adapted to at least partially unfold relative to each other as an incident to distension of the envelope by the application of pressure on the opposite edges thereof, thereby to permit the contents of the envelope to be dispensed through said dispensing opening.

6. A sifter envelope, comprising a flattened tubular body, a flap extending from one end of one of the flat walls of the body, there being a fold line at the connection of said flap to said wall end, said flap having a pair of transversely extending, relatively spaced fold lines cooperating with said first mentioned fold line to, in effect, divide said flap into an outer end section and a pair of sections intermediate said end section and the wall from which the flap extends, said pair of sections being foldable on the intervening fold line into face to face engagement with each other, and having end edges extending diagonally outwardly in diverging relation to each other from said intervening fold line, at least one of said intermediate sections having a dispensing opening therein, said intermediate sections, when folded into said face to face engagement, being also folded into the envelope and the outer end section of the flap being folded over and adhesively secured to the outside of the other wall of the envelope, the diagonal ends of said pair of sections serving to cause said pair of sections to enter freely into the distended envelope when said sections are folded thereinto, and said outer and intermediate flap sections constituting a closure for the adjacent end of said envelope when in collapsed, flattened condition, and said infolded sections, while remaining within the envelope, being adapted to at least partially unfold relative to each other as an incident to distension of the envelope by the application of pressure on the opposite edges thereof, thereby to permit the contents of the envelope to be dispensed through said dispensing opening.

7. An envelope having side walls and an end closure provided with a row of sifter holes, said end closure being connected to said side walls and folded upon itself within the envelope along a line longitudinally traversing said row of holes so as to cause the holes to extend into both folds of said end closure, said holes being normally closed as an incident to the folded condition of said end closure when the envelope is substantially in flattened condition, the folds of said end closure being distendable and said holes being openable as an incident to the application of pressure on the edges of the envelope to distend the walls of the same, the extension of said holes into both folds of the end closure serving to reduce the transverse dimensions of said folds between the portions of the openings in the respective folds and the connections between said folds and the respective side walls of the envelope, thereby facilitating conformation of said folds to said walls when distended and opening of said closure.

MACK R. FIELDS.

REFERENCES CITED

The following references are of record in the file of this patent:

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