J. PETERSON.

METHOD OF MAKING BAGS, POUCHES, PACKAGES, OR CONTAINERS.

APPLICATION FILED JULY 6, 1914.

1,137,281. Patented Apr. 27, 1915.

Fig. 1.

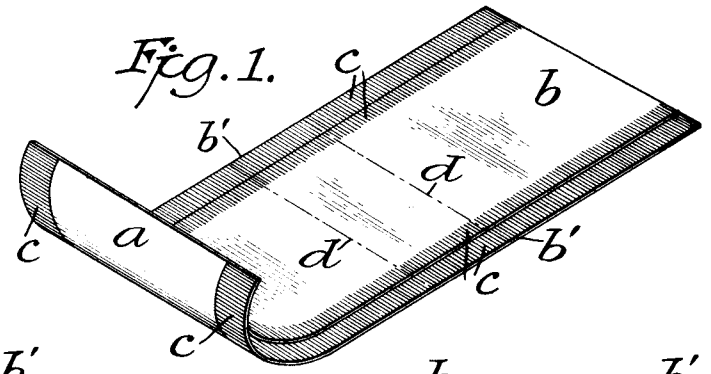




Fig. 2.

Fig. 3.

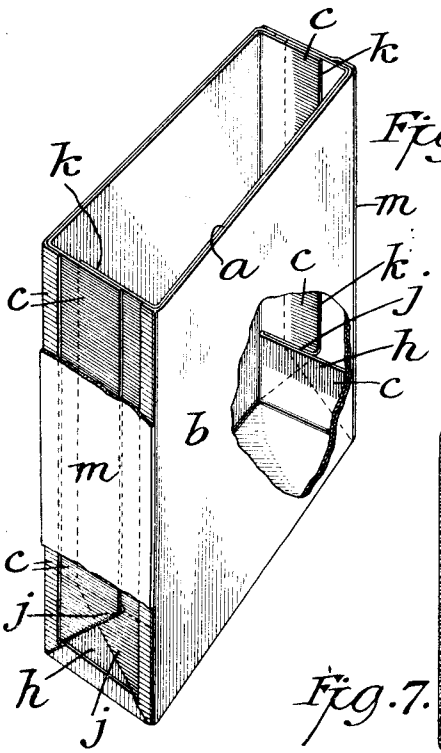
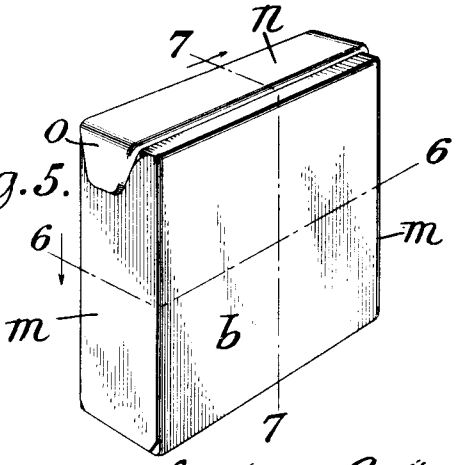


Fig. 5.



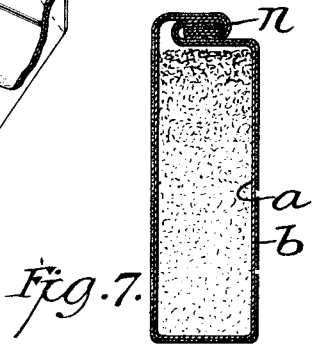


Fig. 7.

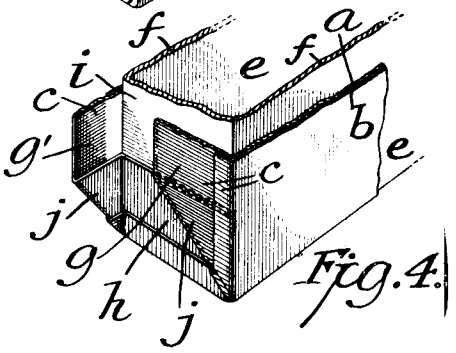
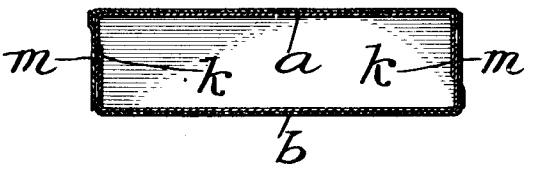


Fig. 4.

Fig. 6.



Witnesses:
A. R. Appleman
W. A. Hawkins.

Inventor,
Jonathan Peterson,
By his Attorneys
Meyers, Cushman & Rea

UNITED STATES PATENT OFFICE.

JONATHAN PETERSON, OF BROOKLYN, NEW YORK.

METHOD OF MAKING BAGS, POUCHES, PACKAGES, OR CONTAINERS.

1,137,281. Specification of Letters Patent. Patented Apr. 27, 1915.

Application filed July 6, 1914. Serial No. 849,270.

To all whom it may concern:

Be it known that I, JONATHAN PETERSON, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented new and useful Improvements in Methods of Making Bags, Pouches, Packages, or Containers, of which the following is a specification.

My present invention relates to an improved method of making bags, pouches, packages or containers, and to a novel construction of blank from which such articles may be made.

The invention is especially adapted for use in the manufacture of lined and sealed bags, pouches, packages or containers usually employed for packing and shipping manufactured products of a perishable nature or such as are affected by atmospheric conditions, as for instance various kinds of tobacco products, including chewing and smoking tobacco, snuff and the like and also tea, coffee, spices and similar products, it being necessary that packages containing these classes of goods be made not only from air and moisture proof material, but that the joints or seams of the packages be securely closed or sealed against the entrance of air and moisture.

The method now universally employed in manufacturing bags and similar containers is to first form the blank, (which latter is usually of special form or shape), then an adhesive substance, such as glue or paste is applied to a face of the blank, and the blank is then folded to bag form with the adhesively coated portions overlapping an uncoated portion of the blank, the sealing operation being affected by adhesion while the adhesive substance is still in a wet or moist state. This method requires the adhesive substance to be applied to the blank at substantially the time the bag or container is formed and sealed, and also requires the folding, forming and sealing operations to be carried on while the adhesive on the blank is in a wet or moist condition. It is well understood in the art that adhesively coated blanks are difficult to work up into bag, pouch or container form, because the wet paste or glue, immediately it is applied to the blank, causes the latter to curl and wrinkle at the portions containing the wet adhesive, thus drawing the blank out of shape and making the folding operation not only more difficult, but requiring the provision of separate means for supporting the blank and also materially increasing the number of cast-offs or faulty receptacles.

The prime object of the present invention is to provide an improved blank and an improved method of making receptacles therefrom, which entirely eliminates the objections and difficulties above referred to, and the practice of which improved method results in a better made and more substantial container with a minimum number of cast-offs.

Briefly and generally stated the invention consists, so far as the method is concerned, in first forming a blank, which may consist of a simple strip cut from a continuous web, or which may have a special form and construction to suit the requirements, then applying, while in a fluid state, to opposite faces of the blank along the opposite longitudinal edges thereof, zones of an adhesive substance, which substance is non-adhesive when in a dry state, but which has the property of cohering, when dry, with a like dry substance when brought into contact therewith, then folding the blank into the form of a container by causing portions of the blank having such zones to overlap like portions, and then subjecting the said overlapped portions to pressure causing them to unite by the cohesive attraction of the adhesive substance, as distinguished from uniting by adhesion through the medium of a moist or wet adhesive.

In order to enable others skilled in the art to understand, practice and use my said invention, I will now proceed to describe the same in detail, reference being made for this purpose to the accompanying drawing, wherein:

Figure 1, is a perspective view of a blank made according to the invention, the said blank having one end turned back so as to show how the dry sealing substance is applied to both faces of the blank. Fig. 2, is a transverse sectional view of the blank shown in Fig. 1. Fig. 3, is a perspective view of a bag or pouch made according to the invention, certain parts being broken away to more clearly show the interior construction. Fig. 4, is an enlarged sectional view showing one manner of folding the blank to form the lower corner-joints and

end-seams or joints of the bag or pouch. Fig. 5, is a perspective view of a complete package made in accordance with the invention. Fig. 6, is a horizontal section taken on the line 6—6 of Fig. 5. Fig. 7, is a vertical section taken on the line 7—7 of Fig. 5.

In Fig. 1, I have illustrated a preferred form of blank from which the bags or pouches may be made, but I do not wish to be understood as limiting myself to the particular form of blank shown, as obviously, other forms may be employed without departing from the spirit of the invention. In the form shown, the blank comprises a flexible metallized or composite foil sheet consisting of a thin sheet of tin foil (*a*), having a backing sheet (*b*) of flexible and preferably non-extensible material having great tensile strength, and by preference, I employ for this purpose, a thin sheet of long-fibered rope paper that is soft in texture but has great tensile strength.

The tin foil sheet (*a*) and its backing sheet (*b*) are cohesively united together face to face by means of a yieldable binding medium preferably consisting of a thin film of rubber compound applied to adjacent faces of the foil sheet (*a*) and backing sheet (*b*), said compound being lightly or thinly applied over the entire contacting surfaces of the sheets while in a fluid or semi-fluid state. These surface coatings are then either naturally or artificially dried, after which the two sheets are brought together, with their dry coated faces contacting, and subjected to sufficient pressure to cause them to unite by the cohesive action of the coatings. The result is that the two sheets are intimately united throughout their contacting faces, the backing sheet (*b*) constituting a support for the relatively frail foil sheet (*a*). If desired, the two sheets may be more firmly united by subjecting them to the combined or successive actions of heat and pressure to vulcanize the rubber compound and thus bring about an intimate union of the superposed sheets throughout their contacting faces.

In order that the blank may be readily worked, shaped or folded into bag or pouch form, it is highly desirable that the foil sheet, as well as its backing and interposed film of rubber, be very thin and flexible so that the resultant composite sheet, in its finished state, will likewise be very thin, soft and flexible, and at the same time possess great tensile strength. The interposed film of rubber compound, being in itself soft and flexible, does not in any way stiffen the resultant composite sheet, but to the contrary, it has a tendency to, and actually does, lend further softness and flexibility to the finished article or the pouch or bag made therefrom. Since the film is applied while in a fluid or semi-fluid state, the compound enters slightly the pores or interstices of the fibrous backing sheet and effects a firm union between the parts. Furthermore, as the film of rubber compound has a great affinity for tin foil, the resulting cohesion between the coated layers will render them practically inseparable when once united, thus preventing peeling or flaking of the foil sheet from its backing, which is a most serious objection present in other composite foil sheets of known construction, such for instance, as those wherein the foil is attached to a backing sheet by separated stripes of ordinary glue. The interposed film of rubber compound, which I employ in the manufacture of my improved composite sheet or blank, also seems to take care of the unequal expansion and contraction of the foil and backing sheets respectively, which expansion and contraction results from atmospheric changes and the film also permits of the composite sheet being readily bent or folded, as in the manufacture of bags and pouches, without breaking through.

In the form of blank or wrapper illustrated in Figs. 1 and 2 of the accompanying drawing, the foil sheet (*a*) is made wider than the backing sheet (*b*), the said backing sheet being arranged centrally and longitudinally of the foil sheet so as to leave exposed or unbacked lap portions (*b'*) of the foil sheet along the opposite longitudinal edges of the blank or wrapper and which exposed or unbacked lap portions are arranged and adapted to overlap one another in the finished pouch or package in order to make an air and moisture proof joint, this being brought about by reason of the fact that the overlapping and joined portions of the blank or wrapper are arranged foil to foil, all as will presently appear.

As illustrated in Figs. 1 and 2, the blank has applied to the opposite faces thereof, along the opposite longitudinal edges, zones (*c*) of a binding medium, preferably consisting of a rubber compound and preferably applied in the form of continuous stripes. These zones or stripes are applied to the blank while the substance is in a fluid or semi-fluid state and the substance is then dried either naturally or artificially, such drying occurring through evaporation of the hydro-carbon solvent usually contained in the compound. The compound may be dried by an air-blast directed thereagainst as the sheet is moving from the applying means to a take-up roll or spool, or it may occur through natural exposure to the atmosphere. When dried, these zones or stripes are non-adhesive, but have cohesive properties and when such coated portions of the blank are brought into overlapping engagement and pressure applied thereto, the portions will unite by cohesion. The peculiarity of the blank is, that while the coated portions will

cohere or unite when brought into contact with similarly coated portions, they will not adhere or cohere with an ordinary uncoated sheet of foil or paper when brought into contact therewith, even when subjected to ordinary pressure, but will readily cohere when brought into contact with similarly coated surfaces even when light pressure is applied to the contacting portions. I prefer to make the coating stripes or zones wider on one face of the blank than on the other so that when the blank is folded to bag or pouch form, there will be exposed coated portions adjacent the seams or joints over which may be applied a strengthening or binding strip as will presently appear.

It will be apparent from the foregoing, that these finished blanks, having the coated zones or stripes referred to and which zones or stripes are normally dry and non-adhesive when the blank is in finished form, may be fed into any folding or forming mechanism adapted for the purpose, and bags or pouches formed therefrom by manipulating the blank so as to bring the coated portions of the blank into overlapping engagement with similarly coated portions of the blank, whereby firm and secure seams and joints may be made. These finished blanks, being normally dry, they will retain their flat form, notwithstanding the presence of the exposed coated portions, as there is no tendency for the blank to curl or buckle after the coatings have become dry. Therefore the blanks may be readily worked up into bag or pouch form without the usual troubles encountered when a blank having wet glue is being operated upon. Obviously the blank material may be prepared at any time or place properly equipped, which material may be stored and made up into bags or pouches at any convenient time thereafter.

I prefer to make the composite blank in the form of a traveling continuous web and apply the zones or stripes of coating thereto while the rubber compound is in a liquid state and while the web is moving. The zones or stripes are dried either naturally or artificially during the travel of the web which is rolled upon a reel as formed with an interposed web of paper or other material to prevent the coated portions from contacting. The separate blanks may then be cut from the web as desired, and in practice, I have found it most convenient to mount the reel of blank-material adjacent the bag or pouch-forming mechanism and cut or sever bag or pouch lengths therefrom and feed such lengths directly into the forming mechanism. This operation obviates the necessity of applying an adhesive material to the blank at the time the blank is to be folded to bag or pouch form and also obviates the difficulties usually encountered in manipulating a blank that has portions provided with wet or moist adhesive material.

I believe I am the first to provide, as an article of manufacture, a strip or blank from which bags or pouches may be formed and which consists of a sheet or strip having applied to the opposite faces thereof along the opposite longitudinal edges, zones or stripes of a substance which is not adhesive when in a dry state, but which has the property of cohering, when in such dry state, with a like substance when brought into contact therewith and subjected to pressure. A strip or blank of this character has many advantages, as hereinbefore pointed out, and may be formed into bags or pouches at any reasonable time after its manufacture, since the rubber compound employed does not appear to lose its cohesive properties with age.

In making the form of pouch or bag illustrated in Figs. 3 to 7 inclusive, of the accompanying drawing, from a blank such, for instance, as shown in Figs. 1 and 2, or from a plain sheet having the zones or stripes as illustrated in these figures, the blank is first bent or folded transversely of its length along the parallel dotted lines (*d*, *d*) of Fig. 1, this being accomplished by bringing the face of the blank up against the end of a form block or hollow shell (*e*), as illustrated in Fig. 4, (which block or shell, it will be understood, has a shape corresponding in shape and size to the interior dimensions of the bag or pouch to be formed), and then folding the free end portions of the blank flat against the opposite faces (*f*) of the block or shell, as more clearly shown in Fig. 3 wherein one manner of folding the blank to form the bottom and ends of the package is illustrated.

The blank, as shown in Figs. 1 and 2, being wider than the width of the form block or shell, the operations just described of folding the free portions of the blank flat against the opposite faces (*f*) of the form, will leave the unbacked or marginal foil lap portions (*g*, *g'*) projecting outward beyond the end wall (*i*) of the form and in the planes of the opposite faces (*f*) thereof, while the intermediate foil portions (*h*) at the bottom of the bag or pouch will project, during this operation, at right angles to the folded portions (*g*, *g'*) and in the plane of the bottom end of the form. The intermediate foil portions (*h*) at opposite ends of the form are then folded up against the end walls (*i*) as shown in Fig. 4, and the two foil lap portions (*g*, *g'*), (at each end of the form), are then folded inward parallel with the ends (*i*) in such a way, as more clearly illustrated in Fig. 4, as to form triangular gusset-folds (*j*), as shown in said figure, the apex of each of the triangular folds pointing toward a corner of the form

at the bottom end thereof. When the two foil portions (g, g') are folded inward against an end of the form, as illustrated in Fig. 4, they are brought into overlapping engagement with each other, the said portions meeting foil to foil, to provide thoroughly sealed foil joints or seams at the ends of the package, it being understood that the contacting and folded or overlapping portions of the blank have the zones or stripes of dry rubber compound applied thereto, which zones or stripes, when the said portions are brought into overlapping contact with one another, serve to firmly unite the portions by cohesion and form closed air and moisture-proof joints, not only along their longitudinal edges, but also, along the folded portions at the bottom ends of the pouch.

As will be understood from the foregoing, the pouch or package is preferably made over or upon a form (e) which may be either solid or hollow and when formed as above set forth, the said form with the pouch or package thereon, may be subjected to pressure to firmly unite the seams and joints; and the pouch or package may then be subjected to heat in order to vulcanize the rubber compound between the said overlapping portions of the blank and between the two layers (a) and (b) from which the blank is made. The form or shell (e) may be a separate carrier element about which the blank may be folded and when such an element is employed, it may be placed with the bag thereon, into a suitable oven and subjected to vulcanizing heat.

In making the pouch or wrapper from a composite foil sheet, I prefer to arrange the blank so that the foil side thereof will be upon the inside of the pouch or package and the backing sheet upon the outside, and in this way, I am able to produce a pouch or package that will be lined throughout with foil and all joints of which will be made foil to foil.

I do not wish to be understood as limiting myself to the particular manner of folding the blank as herein shown and described, as I am aware that the blank may be otherwise folded and substantially the same or equivalent foil to foil joints secured, the showing here made being only by way of example.

In order to protect and give proper strength and durability to the foil joints (k) and folded foil portions of the blank at the opposite ends of the bag or pouch, I prefer to apply to each end thereof over the exposed coated portions, a protecting and strengthening strip (m) of soft, flexible material, such as paper, said strips having been previously coated with a thin coating of rubber compound applied in a fluid state, which compound is allowed to dry. The said strips are applied to the exposed and similarly coated ends of the bag or pouch, by pressure, and further by heat, if desired, the said strips overlying not only the exposed foil portions (g, g') of the blank, but also overlying the marginal edges of the backing strip (b), which are also provided with a stripe of the compound, as more clearly shown in Figs. 3 and 4. These protecting strips will give the necessary strength to the bag or pouch along the seams or joints and folded portions thereof and will enable them to withstand the strains imparted thereto by reason of the bulging of the ends due to the pouch or bag becoming flattened when carried in the pocket. After it has been filled, the pouch is closed by bringing together or collapsing the opposite side walls at the open end thereof which will cause an outward bulging of the opposite end walls. This collapsing of the open end of the pouch will bring the opposite foil faces (when a composite foil sheet is used) in facial contact in order to make a close foil to foil joint at the open end of the pouch or bag, and the flattened end is then folded or lapped upon itself in superposed folds as shown in Fig. 7 and the projecting ends (o) of the folded portions are then bent or folded down flat against the ends of the bag or pouch, as shown in Fig. 5. The foil of the composite sheet or blank, (when such a blank is used), renders the material somewhat ductile and when folded and creased in the manner illustrated and described, this ductile property of the material will tend to hold the folds intact and thus exclude the atmosphere from the interior of the package and also prevent the contents of the package from losing its flavor and aroma. When it is desired to remove some of the contents from the package, as for instance, a chew or a pipe full of tobacco, the folded over portion at the top thereof is unfolded and the package opened up. After removing a portion of the contents, the opened end is folded as before except that additional folds (n) are made as often as permitted by removal of portions of the contents and in this way, the contents will retain the original flavor, aroma and moisture for a considerable period of time after the package has been opened for the first time, because the continued folding over of the open end of the package, as the contents are from time to time removed, will maintain a close air and moisture-proof joint.

The pouch or package made in accordance with the present invention will be found sufficiently soft and pliable to be conveniently and comfortably carried in the pocket; it is light in weight, yet sufficiently strong and durable to withstand the wear and tear to which bags and pouches of this class are usually subjected; it will conform to the pocket; it is air and moisture-proof,

thus affording ample protection to its contents from atmospheric influences and from the heat of the body, and it is simple and comparatively cheap to manufacture. For these reasons, pouches or packages made according to this invention are admirably adapted for use as containers for products of merchandise of a perishable nature and such products as are affected by atmospheric influences.

What I claim is:

1. The method herein described of making a bag or container from a flexible blank, which consists in applying, while in a fluid state, to opposite faces of the blank, along the longitudinal edges thereof, zones of an adhesive substance which is non-adhesive when in a dry state, but which has the property of cohering when dry, and at ordinary temperature with a like substance when brought into contact therewith, then folding the blank into the form of a container by causing portions of the blank having such zones to overlap like portions, and then subjecting the said overlapped portions to pressure and without requiring the application of heat to cause them to unite by the cohesive attraction of the adhesive substance.

2. The herein described method of making a bag or pouch from a flexible sheet, which consists in forming a blank from such a sheet, applying to the opposite edges of said blank a liquid coating of a substance which is cohesive but non-adhesive when in a dry state, permitting the said coatings to become dry, then folding the blank into the form of a container so that said edges overlap with the coated surfaces adjacent each other, and then uniting said edges by pressing the coated portions together to cause them to join by the cohesive attraction of said coatings and without necessarily applying heat.

3. As a new article of manufacture, a blank for forming containers, comprising a strip of foldable material having coated zones on oppositely disposed faces at opposite edges thereof, said zones consisting of a substance which is non-adhesive when dry but which has cohesive properties at ordinary temperatures, the faces of the blank between the coated zones being free from such coatings.

4. As a new article of manufacture, a blank for forming bags or containers, comprising a strip of foldable material having coated zones on opposite faces thereof along opposite longitudinal edges, said zones consisting of a substance which is non-adhesive when in a dry state, but which is cohesive when in such state and at ordinary temperature.

5. As a new article of manufacture, a blank for forming bags or pouches, comprising a strip of flexible material having coated zones on opposite faces thereof along opposite longitudinal edges, said zones consisting of a substance which is non-adhesive when in a dry state, but which is cohesive when in such state, and the zones on one face of the blank being wider than those on the other face.

6. As a new article of manufacture, a blank for forming bags or pouches, comprising a strip of tin-foil having a backing sheet of thin non-extensible material of less width than the foil sheet arranged substantially centrally and longitudinally thereof and facially united thereto throughout substantially its entire area by means of a thin film of rubber compound, and said blank having coated zones on opposite faces thereof along opposite longitudinal edges, said zones consisting of a substance which is non-adhesive when in a dry state but which is cohesive when in such state.

7. As a new article of manufacture, a blank for forming bags or pouches, comprising a strip of tin-foil having a backing sheet of thin non-extensible material of less width than the foil sheet arranged substantially centrally and longitudinally thereof and facially united thereto throughout substantially its entire area by means of a thin film of rubber compound, and said blank having coated zones on opposite faces thereof along opposite longitudinal edges, said zones consisting of a substance which is non-adhesive when in a dry state but which is cohesive when in such state, and the zones on the backed face of the blank being wider than those on the opposite face.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

JONATHAN PETERSON.

Witnesses:

J. GRANVILLE MEYERS,

L. A. HAMMERSLEY.