Sept. 5, 1933. C. J. STAUD ET AL 1,925,509

METHOD OF PACKAGING

Filed Oct. 12, 1931

Fig.1.

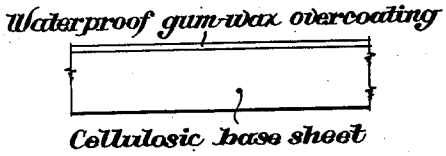


Fig.2.

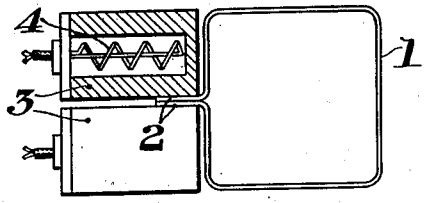


Fig.3.

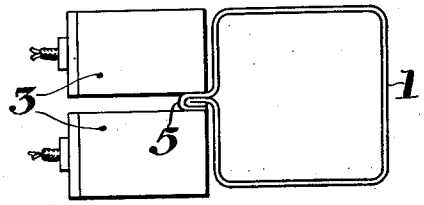


Fig.6.

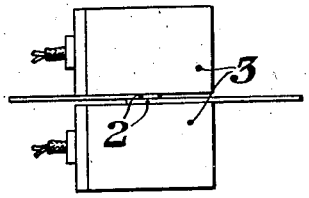


Fig.5.

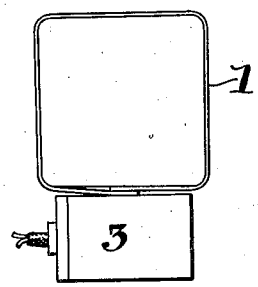


Fig.7.

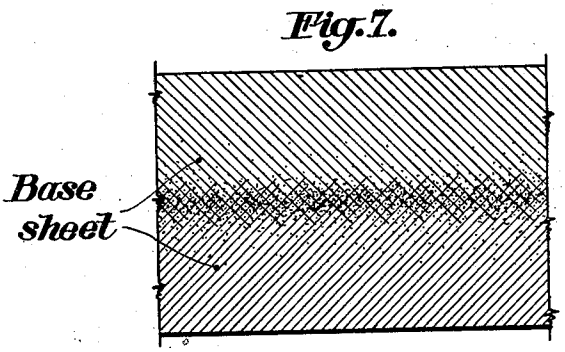


Fig.4.

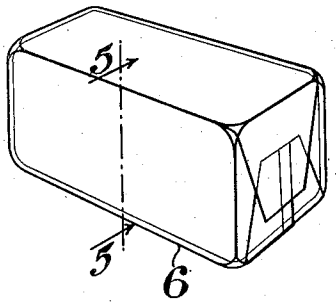
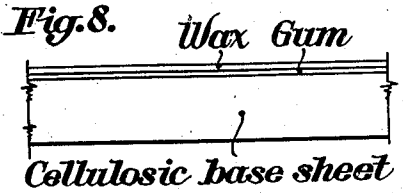


Fig.8.



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1,925,509

METHOD OF PACKAGING

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16 Claims. (Cl. 93—2)

This invention relates to the art of packaging and more particularly to an improved method of making a wide variety of containers including cigar wrappers, food packages and the like. The invention relates specifically to a method of making packages from a new water resistant type of thin cellulosic sheeting having an overcoating of gum and wax, wherein the required seams, joints, and closures are formed in a novel manner.

It is highly important in the manufacture of this type of container that the sides, ends, and other parts thereof should be securely closed and sealed by means of joints capable of withstanding the various strains and stresses to which they are subjected in the ordinary course of filling, packing, and transporting. A good example of this type of container is the common transparent package for displaying nuts, candies and other edibles in drug stores.

This type of package may be formed by folding a sheet of transparent material, such as wax paper, viscose, or the material sold under the name "Cellophane," and consisting primarily of regenerated cellulose, into the desired form and cementing the edges together by treating them with an adhesive and applying heat and pressure. After the contents have been inserted in the package, the opening at the top is sealed in substantially the same manner. It is customary to reinforce the joints by making a double fold before applying the adhesive.

Various methods of closing the sides or ends of these containers have been proposed, the most common method being by applying a cement or adhesive to the edge portions and simply pressing them together.

When sealing cellulosic sheeting, the cement generally contains a base, such as pyroxylin, cellulose acetate, and various other ingredients which are dissolved in an appropriate solvent. Another method is to simply bring the edges of the material together and apply heat and pressure, so that a certain amount of fusion of the sheet material itself takes place.

In dealing with a new type of cellulosic material having a water resistant overcoating, it has been proposed to form the seals or joints of containers by simple fusion of the respective overcoating layers of the sheet by application of heat and pressure. A still further method is to treat the desired portions of the coated sheet with a solvent which dissolves the overcoating layers and causes them to run together. Upon application of heat and pressure a joint is produced consisting of the co-mingled portions of the overcoating layers with the result that is held together solely by the adhesive bond of water proofing material.

The present invention is distinguished from the above mentioned packaging operations by the fact that containers are made from a new and improved type of waterproof cellulosic sheeting having a gum-wax moistureproofing overcoating and in the further fact that the joints or seals are produced by a simple and unique method in which reliance is placed, neither upon the use of adhesive, nor upon fusion of the respective waterproof coatings alone. Our invention is particularly characterized by the use of special solvent sealing agents which affect both the waterproofing layer and the adjacent underlying portion of the base sheet, causing them to coalesce to produce a very strong, transparent seal.

The invention therefore has an object to improve upon known methods of making containers by provision of a process in which the use of known adhesives is eliminated. A further object is to provide a method of making packages from a new type of waterproof cellulosic sheeting having a gum-wax water resistant overcoating. A still further object is to provide a method of sealing packages or containers by the use of solvents or solvent sealing agents which effect the base sheet in addition to effecting the waterproofing material. Other objects will appear hereinafter.

These objects are accomplished by the following invention which will now be described with reference to several of its preferred embodiments which are included merely for purposes of illustration and not as a limitation.

Briefly stated, the process comprises folding or otherwise shaping a waterproof sheet of cellulosic material into a package or container of the desired form and then sealing the ends and edges by application of a solvent sealing agent which exerts both a solvent action on the overcoating of the sheet and a swelling or solvent action of the adjacent underlying portions of the base sheet itself. Upon application of pressure preferably with heat, the overcoating material and the dissolved or swollen portions of the base sheet coalesce at the points where they are brought together to produce a strong adhesive seal of great toughness and strength.

Our novel method of packaging or forming containers will be better understood by refer-

ence to the accompanying drawing in which like reference numerals refer to like parts.

Fig. 1 is a cross section through a sheet of cellulosic material having a water resistant gum-wax overcoating, the thickness of both base sheet and overcoating layer being greatly exaggerated and the relative thickness of each layer being out of true proportion in order to more clearly bring out the characteristic features of the material.

Fig. 2 is a sectional view illustrating one method of forming a sealed joint according to the invention.

Fig. 3 is another sectional view illustrating a slightly different type of operation in which the edges of the material are folded over upon themselves to form a reinforced joint.

Fig. 4 is a perspective view of a sealed package made according to the invention.

Fig. 5 is a sectional view along the line 5—5 of Fig. 4 showing one method of forming a lap joint and sealing the package after the contents have been inserted.

Fig. 6 illustrates the general method of forming lap joints, or of building up a laminated structure by this method.

Fig. 7 is a cross sectional view through a sealed joint illustrating the formation of the bond holding the two sheets together and consisting of co-mingled portions of base sheet and moisture-proof coating.

Fig. 8 is a cross section through a sheet of cellulosic material having a water-resistant coating comprising separate layer of gum and wax, the thickness of both base sheet and overcoating being greatly exaggerated for convenience of illustration.

In one form of carrying our invention into practice a moisture-proof sheet of cellulose acetate may be prepared according to the method described in the co-pending application of Norman F. Beach and Bruce E. Gramkee, Serial No. 551,491, filed July 17, 1931, in which a mixture of gum and wax is applied to the base sheet to form a water-resistant layer, or the sheeting may be prepared according to the method described in the copending application of Norman F. Beach and James G. McNally, Serial No. 551,490, filed July 17, 1931, in which the water resistant coating consists of separate layers of gum and wax. The sheet is folded or otherwise formed into the desired shape and the edge portions are treated with a solvent sealing agent which will be more particularly described hereinafter. As shown in Fig. 2, these treated edges which are softened by the action of the sealing agent on the overcoating layer and upon the adjacent underlying portions of the base sheet, are then brought together and subjected to heat and pressure between the heated pressure devices 3. The solvent is evaporated off and both moisture resistant overcoating layers and portions of the base sheet material merge or coalesce to form the joint. The pressure devices may be provided with any conventional form of heating unit, such as electrical resistances or steam coils which are generally illustrated in Fig. 2 by the numeral 4.

Another slightly different method of forming the joints is to bring the treated edges of the sheet together and fold the material upon itself to form a reinforced joint 5 illustrated in Fig. 3. As in the previously described method, the edge portions of the material are treated with the solvent sealing agent and the sheet is folded and subjected to heat and pressure between the elements 3.

In Figs. 5 and 6 is shown a method of forming a lap joint. In this case the edges are treated with a solvent sealing agent and brought together as shown and placed in contact with the elements 3, whereupon the solvent is evaporated off and a strong sealed joint is produced. The method illustrated in Fig. 5 may be conveniently used for sealing a package after the contents have been inserted therein.

In Fig. 4 is shown a container 6 in which the contents have been sealed. In this particular type the ends have been sealed by forming a lap joint, but it will be evident that a joint such as that shown in Figs. 2 and 3 may be used for this purpose if desired.

We have experimented with many different solvent sealing compounds and have determined the properties which they must possess in order to be successfully applied to coated or uncoated cellulosic sheeting to produce the desired sealing or bonding effect and to make strong, smooth, transparent joints free from blisters and wrinkles. In the following description and claims we shall refer to these substances as sealing agents or sealing adhesives and intend to include within the scope of these terms all of those materials which produce the results constituting our invention.

We have found that the sealing agent should have a solvent or swelling action on the cellulosic base, since it is the coalescing of limited portions of the base sheets making up the joints that broadly characterizes our invention and makes possible our greatly improved results.

When forming joints or seals with a moisture-proof cellulose sheeting having a gum-wax overcoating, it is desirable that the sealing agent have a solvent action on the coating in order to provide for penetration of this waterproofing layer by the solvent and for the dissolving or swelling of portions of the underlying cellulosic material. If the solvent sealing agent is not inherently a good wax solvent its solvent properties for wax may be enhanced by the addition of certain hydrocarbons, such as gasoline, paraffine, or benzene.

The sealing agent may have either a solvent or a swelling action on the material of the base sheet. In any event, the desired effect is to bring the surface of the cellulose acetate, for example, into a condition whereby portions of the contacting sheets will merge or coalesce and enter into and form a part of the adhesive bond. This result will be accomplished if the sealing agent has a solvent effect on the cellulose acetate, since the surfaces will be softened and partially dissolved, in which condition they will readily flow together upon contact. Evaporation of the solvent under heat and pressure leaves the contacting portions of the respective sheets intimately co-mingled. A somewhat similar action takes place when the sealing compound acts principally as a swelling agent since, upon application of pressure, the swollen portions of the sheets are effectively co-mingled. In the case of swelling, the solvent has a tendency to diffuse into the cellulose acetate base rather than to dissolve it in the ordinary sense of the word, but the ultimate result is the same as far as the co-mingling of the material is concerned.

These agents, when used alone, should preferably not have too great a solvent action on the base sheet for the reason that this will weaken the material and, if excessive, may even give

rise to tearing or perforation. Acetone may be cited as an example of an agent which has too great a solvent power for cellulose acetate sheeting and is for this reason unsuitable for solvent sealing of this material. It will be apparent from the following discussion of several classes of typical solvents or sealing agents that they may vary considerably in their solvent properties with respect to gum or wax, and also with respect to their solvent or swelling action on the material of the base sheets. Some compounds may have a greater solvent power for gum than others. In like manner, they may differ with respect to their solvent or swelling action on the base sheet. It should be noted in this connection that these agents may also vary considerably in the solvent and swelling effect they produce upon different types of cellulosic base sheet materials. For example, when using a cellulose acetate base this effect will vary somewhat with the degree of acetylation of the cellulose and the sealing agent should, accordingly, be selected with reference to the particular type of cellulose acetate dealt with.

When applying the solvent sealing agents to cellulosic sheet material which has a moistureproof overcoating of gum and wax, they should be mixed or dissolved in a diluent such as a liquid aliphatic or aromatic hydrocarbon, in order to insure a solvent action upon the overcoating layer and further provide for the penetration of this layer by the agent. When adding these hydrocarbon diluents to solvent sealing agents, the capacity of the latter for dissolving the base sheet material is considerably reduced.

In some cases this solvent power is reduced to such an extent that the sealing agent merely diffuses into the sheet without exerting any pronounced action thereon.

We have also found that various combinations of solvents may be used effectively, although it will be necessary to select the ingredients entering into the combination with respect to the specific effects to be produced on the material dealt with, both as regards the character of the base sheet and the nature of the gum-wax overcoating.

We have found that alcohols of both the aromatic and aliphatic series containing one or more hydroxyl groups are especially satisfactory, effective sealing agents. Typical examples of such alcohols are methyl, ethyl and n-butyl alcohols, glycerol, benzyl alcohol, and cyclohexanol. In this series, both methyl and ethyl alcohol produce a swelling action on cellulose acetate and, at high temperatures, methyl alcohol has a greater tendency in this direction than does ethyl. In general, it may be said that the amount of swelling produced decreases in the saturated aliphatic alcohols as the molecular weight increases. The compounds have a pronounced solvent action upon the gum ingredient of the overcoating. In the case of polyhydric alcohols of which glycerol is an example, the gum is dissolved and the cellulose acetate base material is somewhat swollen. Both of these classes of compounds may be diluted by the addition of saturated hydrocarbons of the aliphatic series or of toluene or other saturated hydrocarbons of the aromatic series. The use of these diluents tends to increase the solvent power of the sealing agent for the paraffin-wax component of the moistureproof layer, and, apparently, does not seriously impair the solvent power which the agent has for the gum component.

Some types of cellulose acetate, particularly those of low acetyl content, are soluble in hot mixtures of ethyl alcohol and toluene and it is therefore necessary in using a mixed solvent of this character to regulate the ingredients entering into its composition, as well as the temperatures, so that the solvent action will not be carried to an undesirable extent.

With respect to benzyl alcohol, this compound is a solvent for gum, but does not appreciably affect paraffin. It is a solvent for a considerable variety of cellulose acetates, and its use as a sealing agent must be carefully controlled in order that its solvent power does not produce the above-mentioned undesirable effects. The use of benzyl alcohol dissolved in toluene results in a more ready solution of the moistureproof layer and moderates the solution tendency of the benzyl alcohol to more nearly that of high dilatancy or swelling in the cellulose acetate layers.

Cyclohexanol is a solvent for ester gum, a non-solvent for paraffin, and a good swelling agent for cellulose acetate. The addition of toluene to this compound decreases its swelling tendency slightly at moderate concentrations.

As regards the temperature at which these compounds are used, it may be said that in the case of the aliphatic alcohols the temperature may be increased without the formation of blisters as the length of the carbon chain of the alcohol increases.

The control of temperature is something which is governed very largely by the boiling point of the particular compound employed and it has been found that the more satisfactory joints or seals are produced at the lower temperatures, providing they are high enough to provide for proper evaporation of the solvent. High temperatures have a tendency to produce blistering with a resulting unsatisfactory appearance of the finished product.

We have also found that esters of monohydric and polyhydric alcohols can be used effectively to unite moistureproof cellulose acetate sheeting of the general character under consideration. For example, ethyl acetate, monoacetin, and diacetin, are capable of causing this union and their resulting seams are very smooth and free from blisters. It should be noted that the lower boiling esters have a tendency to produce some blistering, whereas those of high boiling point do not, under the same conditions of temperature. Among these esters, ethyl acetate has been found to be a good solvent for ester gum, for example, but is not a solvent for a wax such as paraffin, and, while it dissolves only certain types of cellulose acetate, it is a powerful swelling agent for a great variety of them. Methyl acetate, on the other hand, will dissolve cellulose acetate having a wide range of acetyl content. Propyl and butyl acetates produce swelling of the cellulose acetate base sheet in decreasing amounts. Monoacetin is a solvent for ester gum, a non-solvent for paraffin, and a swelling agent for cellulose acetate. The same statement applies to diacetin. Glycol diacetate has the same properties with respect to gum and wax and is, at the same time, a solvent for a great variety of cellulose acetates having between 36 and 40% acetyl content.

Additional sealing agents are the keto alcohols, a typical example of which is diacetone alcohol. This compound is a solvent for ester gum, a non-solvent for paraffin, and dissolves a wide variety of cellulose acetates. Benzoin has the same properties with respect to gum and wax and it is a solvent for cellulose acetate at relatively high

temperatures. This material, which is a solid at ordinary temperatures and melts at 137° C., may be applied either in a melted condition or by solution in toluene or cyclohexanol, the volatile material being preferably evaporated before the application of heat and pressure. As in the case of the alcohols discussed above, when toluene or cyclohexanol is employed as a diluent, there is introduced an ingredient which exerts a solvent action on the paraffin component of the moistureproof layer.

We have also found that aromatic ketones, acyl aromatic ketones, and polymethylene ketones, all of which are relatively high boiling compounds may be used as sealing agents with highly satisfactory results, and the production of strong, smooth seams. Among these may be mentioned cyclohexanone, acetophenone, and benzophenone, all of which are solvents for cellulose acetate and ester gum but nonsolvents for paraffin. With regard to the use of benzophenone, if this compound is applied in benzene solution, and the latter evaporated it will behave more as a swelling agent than as a solvent, due to the diluent effect of the benzene. Cyclohexanone and acetophenone are both liquids and may be used directly without the addition of other ingredients. Benzophenone is a solid at ordinary temperature, having a melting point of 48° C. and is preferably applied in solution in an appropriate solvent such as benzene.

The joints produced by the use of this compound are extremely strong, and are found to be smoother than those produced with either of the other two compounds.

Other organic compounds of the type of the ether esters of the aromatic or aliphatic acids, also find use as sealing agents. A typical example of such compounds is ethoxy ethyl phthalate, a solid having a melting point of approximately 28.5° C. This is a powerful swelling agent for cellulose acetate and dissolves ester gum but is a non-solvent with respect to paraffin. This compound may best be applied from solution in benzene, the latter being allowed to evaporate and leaving a thin film of ether-ester on the surface of the moisture-proof sheets. The sheets are then superimposed, and heat and pressure is applied. It should be noted, however, that butoxy ethyl phthalate is of limited compatability with cellulose acetate. Methoxy ethyl phthalate is in about the same category as ethoxy ethyl phthalate.

Mixed ether alcohols have also been found to be effective when applied to moistureproof sheeting according to the principles of our invention. For example, methoxy ethyl alcohol is a solvent for a wide variety of cellulose acetates, a solvent for ester gum, and a non-solvent for paraffin. The ethoxy derivative is a strong swelling agent for cellulose acetate and at elevated temperatures this compound has a solvent action thereon. Butoxy ethyl alcohol exertes a mild swelling effect but is not a solvent for any cellulose acetates, so far as at present known. Further, certain of the monoalkyl derivatives of the polyhydric alcohols may be used. For example, both monoethyl and monobutyl ethers of ethylene glycol all gave good results.

We have also found that esters of the ether alcohols are suitable as sealing agents. Both methoxy and ethoxy ethyl acetates are solvents for cellulose acetate, and ester gum, but nonsolvents for paraffin. The butoxy derivative is a swelling agent for a variety of celluose acetates and, in some cases, is probably a solvent therefor.

With regard to the use of diluents with the above-mentioned compounds, this is governed largely by the amount of wax present in the moistureproof overcoating of the cellulosic sheet. If the overcoating has a relatively large amount of wax or consists of a wax layer laid over a gum layer, a sufficient proportion of diluent should be used to give the sealing agent solvent properties with respect to the wax in order that it may penetrate the overcoating and exert its characteristic solvent or swelling action on the adjacent underlying portions of the base sheet. While we prefer to use toluene for the purpose of dissolving the wax, we may employ benzol, xylol, cyclohexane, decane, octane, ethylene chloride, trichlorethylene, carbon tetrachloride and other chlorinated or unchlorinated aliphatic or aromatic hydrocarbons.

It will, of course, be apparent in dealing with sealing agents which are solids at ordinary temperatures that they are preferably brought to a liquid state before application, either by dissolving in a suitable solvent, or by heating them to their melting temperatures.

As further illustrating the application of our process to the solvent sealing of moistureproof cellulosic sheeting we include typical examples of sealing operations carried out according to our invention, although it is to be understood that we are not limited to the particular details therein described.

Example I

A tubular container similar to that shown in Fig. 1 is formed by folding a sheet of cellulose acetate having a thickness of the order of .001 inch and having a moisture-proof overcoating of gum and wax to the proper shape and applying to its edge portions a solution made up by dissolving 5–10% benzophenone in benzene. The edges of the sheets are then brought together in the form of a joint and inserted between the elements 3 of Fig. 2 which are heated to a temperature of 120 to 145 degrees centrigrade. An excellent smooth joint, free from blisters is thus produced.

Example II

A container was made up from the same material as that used in Example I, and the joint formed in the same manner, except that benzyl alcohol was used as the solvent.

Example III

A package was made up from moisture-proof cellulosic sheeting and a joint produced by lapping the edge portions of the sheet one over the other after the application of a solution comprising 10% of ethoxyethyl phthalate in benzene. Light pressure and a temperature of about 145 degrees centrigrade were applied and a clear transparent joint free of wrinkles and blisters was produced.

As will be apparent from consideration of the compounds described above, the conditions of operation involved in their application will vary considerably. The control of temperature within certain limits is important.

Although no hard and fast rule can be laid down, it may be said that the most satisfactory joints or seals are produced when the sealing temperature is kept below the boiling point of the solvent and that in general the lower the

boiling point of the solvent, the lower should be the temperature required to produce a clear, transparent seal free from blistering. As a rule the higher the temperature, the greater will be the tendency to blister with a given solvent sealing agent, although in many cases a strong seal or joint may be produced, even where blistering does occur, and where this defect is not important, exact control of temperature will not be required. For most purposes we have found a temperature range of 120° to 145° C. to be satisfactory, although temperatures considerably below 100° C., in some cases as low as 50° C. or lower, may be employed. Temperatures as high as 190° and in some cases higher, give fairly satisfactory results in the case of the higher boiling solvents and where blistering is not a serious disadvantage. In any event, the temperature should not be high enough to produce an undesirable softening of the cellulose acetate sheet itself, since this will cause stretching and consequent weakening of the sheet.

The pressure used to form the joints may also be varied to meet the particular requirements of the material dealt with. The principal requirement with respect to pressure is that it should provide a close, uniform contact of the treated surfaces of the sheets so that the respective moistureproof overcoatings and the softened portions of the base material will coalesce to form a substantially uniform bond therebetween, but should not be high enough to cause wrinkling or other undesirable deformation of the package.

The time of contact may be varied in accordance with the temperature employed and the volatility of the sealing agent, it, of course, being apparent that the time required will be shorter in dealing with volatile compounds than with those which are less volatile.

The requirements with respect to temperature, pressure and time of contact are largely matters of selection and will be apparent to those skilled in the art to which this invention relates. It will also be evident that many changes may be made in the details of carrying out our invention without departing from its spirit or scope. As a general rule, we prefer to use rather dilute solutions for our solvent sealing compositions, since we have found that evaporation is more rapid and a more satisfactory thin film of adhesive material is deposited than is the case with solutions of high concentration. We prefer a 5–10% solution for most types of joints, although we may employ more dilute solutions than 5% and, on the other hand, may use solutions containing much higher percentages, especially if it is desirable to deposit as relatively thick film of adhesive agent.

The seams and closures produced according to the process of our invention are much stronger and more durable than those heretofore known because of the fact that portions of cellulose acetate or other cellulosic material of which the base sheet may be composed merge with the gum-wax overcoating with the result that the joints are formed both by the adhesive quality of the waterproofing layer and the commingling of the underlying portions of the base material itself.

Although we have selected cellulose acetate as illustrating one type of thin sheeting material which may be treated satisfactorily according to our invention, we do not intend to be limited thereby, since our process is equally applicable to other types of sheeting such as that produced from various other cellulose esters, including cellulose acetate-propionate, cellulose butyrate, cellulose acetate-stearate, and other mixed or simple esters of cellulose.

Our invention is broadly applicable to the manufacture of a wide variety of packaging or wrapping devices such as protective covers for cigarette packages, cigar wrappers, food containers, display cartons, "window" boxes, and many other articles requiring strong yet transparent closures. It may also be employed to build up a laminated structure comprised of a plurality of superimposed sheets or for applying a backing sheet of a given cellulosic material to another sheet of a different type and for many other purposes which will be apparent to those skilled in the art.

What we claim as our invention and desire to secure by Letters Patent of the United States is:

1. The method of making a container which comprises forming a thin sheet of cellulosic material having an overcoating of gum and wax into the desired shape, applying an organic solvent sealing agent to those edges of the material which are to be joined in order to soften the overcoating and the adjacent underlying portions of the cellulosic material, and pressing the treated edges together to join them and form the container.

2. The method of making a container which comprises forming a thin sheet of cellulosic material having an overcoating of gum and wax into the desired shape, applying an organic solvent sealing agent containing a wax solvent to those edges of the material which are to be joined in order to soften the overcoating and the adjacent underlying portions of the cellulosic material, and pressing the treated edges together to join them and form the container.

3. The method of making a container which comprises forming a thin sheet of cellulosic material having a gum-wax overcoating into the desired shape, applying an organic solvent sealing agent containing a wax solvent to the edges of the material to dissolve the overcoating and the adjacent underlying portions of the cellulosic material and pressing the treated edges together at a temperature sufficient to evaporate off the solvent mixture and to seal the sides and ends of the container.

4. The process of claim 3 wherein the solvent sealing agent is an oxygenated organic compound of the group consisting of the alcohols, the aromatic ketones, and organic esters.

5. The process of claim 3 wherein the solvent sealing agent is an aromatic alcohol.

6. The process of claim 3 wherein the solvent sealing agent is benzyl alcohol.

7. The process of claim 3 wherein the solvent sealing agent is an aromatic ketone.

8. The process of claim 3 wherein the solvent sealing agent is benzophenone.

9. The process of claim 3 wherein the solvent sealing agent is an organic ester.

10. The process of claim 3 wherein the solvent sealing agent is a mixed organic ester.

11. The process of claim 3 wherein the solvent sealing agent is a mixed ether-ester of an aromatic acid.

12. The process of claim 3 wherein the solvent sealing agent is a mixed ether ester of phthalic acid.

13. The process of claim 3 wherein the solvent sealing agent is ethoxy ethyl phthalate.

14. The method of making a sealed container which comprises forming a thin sheet of cellulose

acetate having a moistureproof gum-wax overcoating into the desired shape and in such manner that the edges of the sheet are brought together with their respective overcoating layers in close proximity, applying a solvent sealing agent comprising a solution of benzophenone in benzene to said edges to dissolve the gum-wax coatings and adjacent portions of the cellulose acetate, and thereafter pressing them together at a temperature of 100°–190° C. to evaporate off the solvent.

15. The method of packaging articles of commerce which comprises wrapping them in a thin sheet of cellulosic material having a moistureproof gum-wax overcoating and sealing the package by treating the edges of the sheet with solvent sealing agent which is an oxygenated organic compound selected from the group consisting of the alcohols, aromatic ketones, and organic esters.

16. The method of making a sealed container which comprises forming a thin sheet of cellulose acetate having a moistureproof gum-wax overcoating into the desired shape and in such manner that the edges of the sheets are brought together with their respective overcoating layers in close proximity, applying a solvent sealing agent comprising a solution of ethoxy ethyl phthalate in benzene to said edges to dissolve the gum-wax coatings and adjacent portions of the cellulose acetate and pressing them together at a temperature of 100–190° C. to evaporate off the solvent.

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