

Aug. 16, 1938.

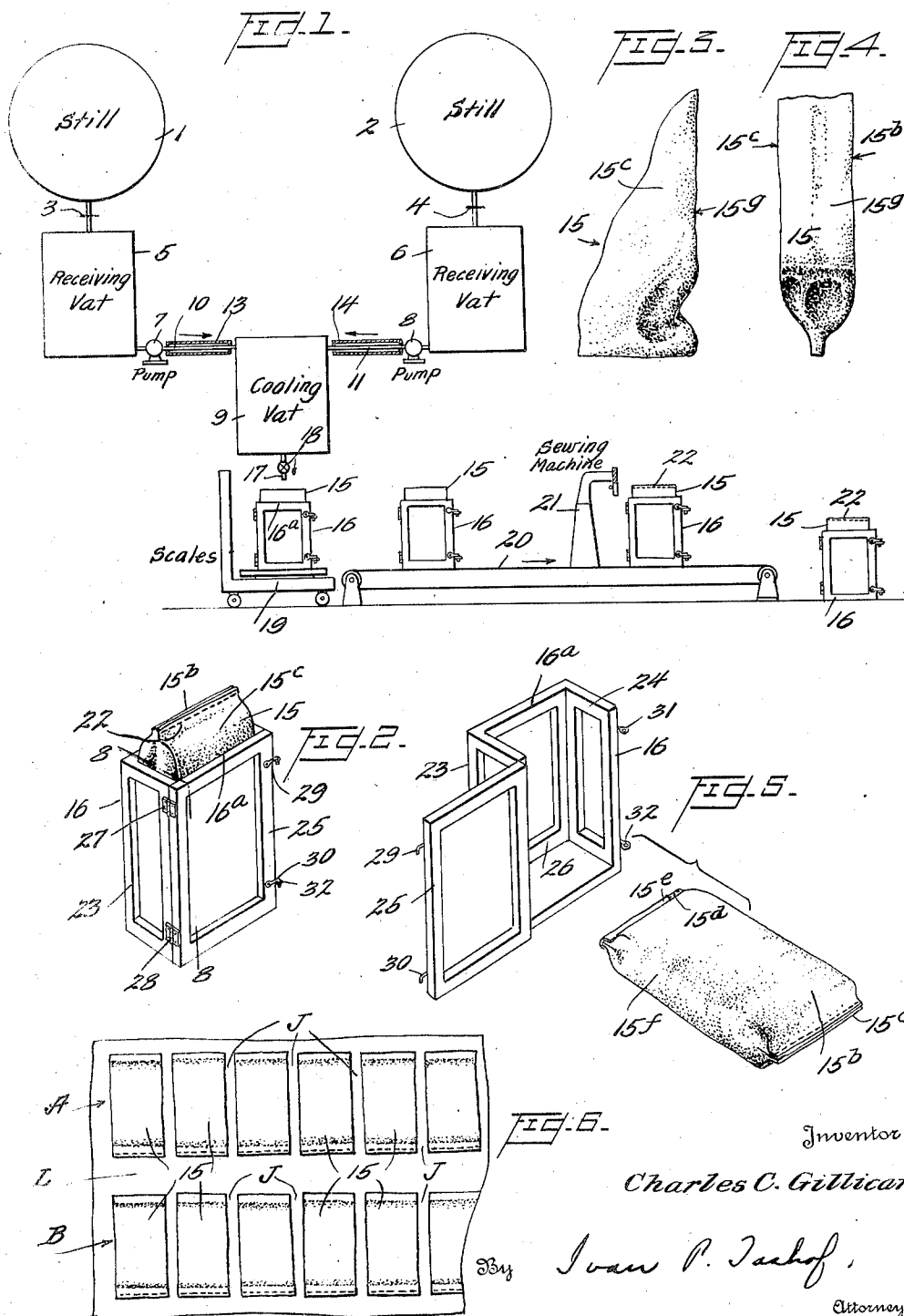
C. C. GILLICAN

2,127,401

METHOD OF PACKAGING ROSIN

Filed Nov. 15, 1937

2 Sheets-Sheet 1



Inventor

Charles C. Gilligan,

By Ivan P. Tachof,

Attorney

Aug. 16, 1938.

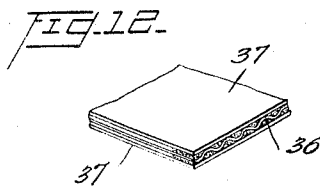
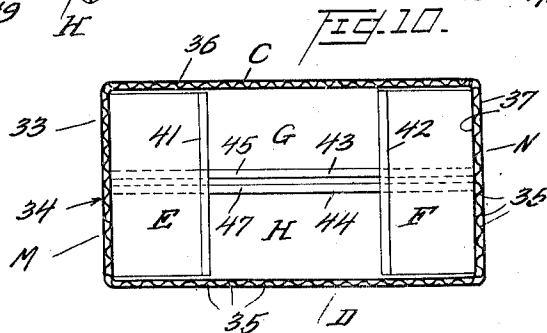
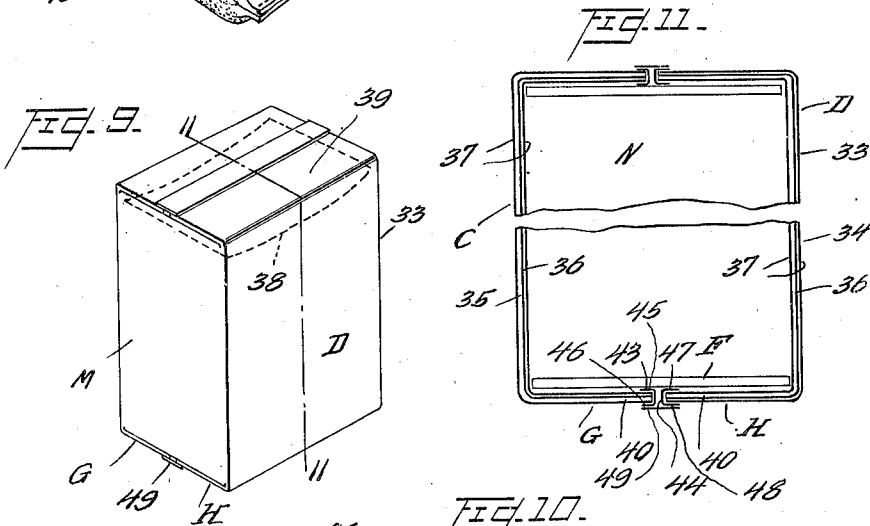
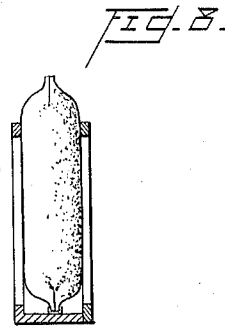
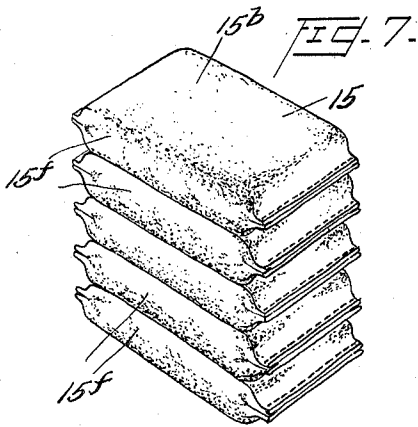
C. C. GILLICAN

2,127,401

METHOD OF PACKAGING ROSIN

Filed Nov. 15, 1937

2 Sheets-Sheet 2



Inventor

Charles C. Gillican,

By Ivan P. Tachof,

Attorney

UNITED STATES PATENT OFFICE

2,127,401

METHOD OF PACKAGING ROSIN

Charles Crum Gillican, Homerville, Ga.

Application November 15, 1937, Serial No. 174,677

17 Claims. (Cl. 226-47)

The present invention relates to the packaging of rosin produced from any of the prior art materials and by any of the prior tar methods. The present invention is applicable to gum rosin or to a rosin produced by steam distillation or destructive distillation of wood.

It is customary to package rosin, however produced, in wood or galvanized iron barrels. When wooden barrels are used, it is frequently necessary to seal the space between the staves with a clay composition. When the rosin is removed from the barrels, the latter is contaminated with some of the clay and the presence of this impurity in the rosin is in many cases objectionable. Another disadvantage of packing rosin in barrels is that there is a very substantial loss of rosin. Usually, the barrel will contain about 400 pounds of rosin, and when the rosin is removed from the barrel, about 6 pounds is lost, since this amount of rosin adheres to the staves and head of the barrel.

Another disadvantage of the use of wooden barrels for the packaging of rosin is that a barrel containing about 400 pounds of rosin has a net weight of approximately 80 pounds, making the gross weight of the rosin and the barrel approximately 480 pounds. When these barrels are shipped, the shipper or the customer must pay freight not only on the rosin, but also on the weight of the barrel itself.

While the packaging of rosin in galvanized containers has certain advantages over the packaging of rosin in wooden barrels, there are also certain disadvantages inherent in the use of galvanized iron containers as compared to the use of wooden barrels. It takes about 24 hours, approximately, for the rosin to cool and solidify in wooden barrels, while it takes approximately 36 to 48 hours for the rosin to cool and solidify in galvanized iron containers. From a practical standpoint, this delayed cooling seriously interferes with the economic operation of the rosin plant, and for this reason alone, the packaging of rosin in galvanized containers has not come into general use. Further, comparing the packaging of rosin in galvanized iron containers with the packaging of rosin in wooden barrels, it may be pointed out that the wooden barrels can be handled before the rosin content has completely solidified, whereas the rosin content of the galvanized iron barrels must be allowed to solidify before the iron barrels can be rolled. If complete solidification is not attained, then the iron barrels will on rolling be easily deformed, and this is objectionable.

Another objection to the use of galvanized iron barrels is that the barrel breakage during shipment is much greater than is the case with the wooden barrel. The iron barrel has the further disadvantage of high cost as compared to the wooden barrel. However, the wooden barrel in itself is expensive as compared to the rosin packaging of the present invention.

In accordance with the present invention, the difficulties inherent in the packaging of rosin in wooden barrels or galvanized iron barrels are overcome. The present invention is directed to the packaging of rosin in a paper container and more specifically to the novel method and the final novel package herein disclosed.

In accordance with the present invention, the rosin is introduced into a container having a paper base preferably a stiff paper bag, the rosin being maintained at a temperature enabling the rosin to be easily poured while inhibiting any substantial absorption of the rosin by the container. While the rosin may be maintained at a temperature of between 150° F. to 350° F., the preferred range is between about 240° F. and 280° F. One feature of the present invention is the provision of a flow space in the closed stiff bag whereby any tendency of the bag to crush and wrinkle is eliminated. This is accomplished by introducing the rosin into the bag, stopping the filling of the bag short of the open top end of the bag to provide a flow space for the liquid rosin when the bag is closed. The bag is disposed in a supporting frame, but is removed from the frame before the rosin is cooled and solidified to any substantial extent and is then placed on one of its broad sides, whereby the rosin-content of the bag flows and substantially eliminates any deformations in the bag, thereby minimizing the tendency of the rosin to be absorbed by the bag and to be broken during handling.

It is desired to point out that in practicing the present invention, one of the steps thereof the bags and contents of the bags after they have been closed and removed from the supporting frames adjacent each other with air channels therebetween to allow air currents to pass through the channels and thereby quickly cool the bags, and further to prevent adjacent bags form touching each other. If the bags do touch each other, this induces to some extent absorption of the rosin by the bag, this possibly being due to a local concentration of heat.

One of the objects of the present invention is to package the hot liquid rosin in a relatively stiff

but flexible cellulose container or bag, the rosin contact surfaces of which are substantially free of protruding fibers, said bag being capable of having its shape changed by distribution of the liquid rosin therein, closing said bag while leaving the rosin-content thereof free to change the shape of the bag when the latter is placed in a rosin-flow position, placing the container or bag while the rosin is in a liquid state in a rosin-flow position adapted to change the shape of the bag and to substantially eliminate deformations in the bag to thereby minimize the tendency of the rosin to be absorbed by the bag and to be broken during handling.

The subsidiary objects of the invention appear from the following disclosure and discussion.

The present invention will be disclosed in connection with the following drawings, in which:

Figure 1 is a diagrammatic side view showing the packaging of rosin from the primary cooling vat together with associated auxiliary mechanism.

Figure 2 is a perspective view of the rosin bag assembled with the supporting frame after it has been filled and sewed.

Figure 3 is a side view more or less diagrammatically illustrating the deformation occurring in the bag when rosin is introduced into the same.

Figure 4 is an end view illustrating the deformation occurring in the bag when the latter is positioned in the supporting frame and rosin is introduced into the bag.

Figure 5 is a combined perspective view of the supporting frame after the latter has been opened and the rosin bag removed from the supporting frame for subsequent cooling and solidification.

Figure 6 is a diagrammatic view showing the manner in which the bags are assembled for cooling.

Figure 7 shows a stack of bags in storage.

Figure 8 is a longitudinal cross sectional view on the line 8-8 of Fig. 2.

Figure 9 is a perspective view of a carton used for packaging rosin.

Figure 10 is a horizontal section through the carton looking in the direction of the carton bottom.

Figure 11 is a vertical section on the line 11-11 of Fig. 10.

Figure 12 is a detail view showing the corrugation pockets sealed to prevent rosin running into the pockets.

Referring to the drawings, and more specifically to Figure 1, rosin is distilled in stills 1 and 2, said stills being preferably heated by direct flame.

When the material being distilled, as for example, an oleo resin, reaches a predetermined temperature, approximately 210° F. the turpentine and the water present starts to distill over. The turpentine and water is condensed usually by means of a worm condenser immersed in a cooling bath, and the condensate is then passed into a gravity separating tank where the water and turpentine separates into two layers, the water being the bottom layer and the turpentine being the upper layer. The distillation in stills 1 and 2 is continued until practically all of the water present in the material undergoing distillation is distilled off. Additional water is added when the same is necessary. There remains after distillation in the stills 1 and 2 molten rosin. It may be stated that usually after about 30 minutes, most of the original water present in the oleo resin has been removed. The still temperature at the beginning of the distillation step is around ap-

proximately 210° to 215° F. depending upon the character of the resin being distilled. This temperature is gradually increased until after about 30 minutes has elapsed, the temperature of distillation is between approximately 220° and 230° F. when treating virgin oleo resin, and approximately 230° to 250° F. when treating old oleo resin. As stated, about one-half hour after the start of distillation, water is introduced into stills 1 and 2, the function of the water being to facilitate the distillation of the turpentine from the oleo resin. As the distilling step progresses, the distillation temperature is increased until towards the end of the distillation the temperature varies approximately between 290° to 350° F., the preferable upper temperature being about 315° F. For some purposes, it is quite desirable to have a high melting point rosin and in order to produce the same, it is necessary to substantially eliminate turpentine and water, and this may be attained by heating to approximately 350° F.

While the distillation is desirably carried out under atmospheric pressure, it may be carried out under super-atmospheric pressure, or even under a vacuum, and if a vacuum is used, high melting point rosins may be produced at lower temperatures.

In operating stills 1 and 2, about 4000 pounds of oleo resin is charged in each still. The period of distillation averages about two and one-half (2½) hours, thereafter the tail gates 3 and 4 are opened and the rosin is allowed to pass to receiving vats 5 and 6, said vats preferably containing straining means, although the straining means may be extraneous of the vats. From the vats 5 and 6, the rosin is pumped by means of pumps 7 and 8 to a cooling vat 9. The conduits 10 and 11 for conveying the rosin to the cooling vats are provided with steam jackets 13 and 14 to facilitate the flow of the rosin.

From the cooling vat 9 the rosin passes to a paper bag 15, said paper bag being supported in a frame 16, the bag being adapted to receive the liquid rosin from the conduit 17 provided with a valve 18. The supporting frame 16 carrying the bag 15 is positioned on scales 19 so that when the bag has received its proper amount of rosin, which usually varies between 90 and 100 pounds, the supporting frame and bag can be removed from the scales to the adjacent conveyor 20. It is to be noted that the upper portion 15a of the bag projects above the top edges 16a of the supporting frame 16. The open end top portion of each bag travels along the conveyor 20 and passes under a stationary sewing machine head 21 which sews the walls 15b and 15c together adjacent the end edges of the bag. The bag just before it passes under the sewing machine head 21 is open at its top end, and the operator abuts the broad side walls 15b and 15c together adjacent their upper end portion so as to facilitate the passage of the so abutted end portion of the bag through the sewing machine head. The bag is thereby sealed by virtue of a sewed seam 22. The bag is then removed from the supporting frame 16 and cooled, as will be more specifically hereinafter pointed out.

The bag 15, which may be used in carrying out the present invention, is preferably formed of relatively stiff paper or an analogous material having substantially little elasticity or yield. Since the bag will carry a substantial charge of rosin, it is preferred that the bag be formed of multi-ply material, and the bag which has given most satisfactory results is a four (4) or five

(5) ply pager bag manufactured by Bagpak Inc. of New York city, under the item Nos. 4-210 and H-237, said bag being made of kraft paper. The item number specified refers to the four (4) ply Bagpak bag.

The bag 15 is sewed together at its lower end by stitching 15d and may be provided at its bottom end with a reinforcing strip 15e, said strip being folded over the lower bag end and secured to the side walls by paste, or the like. The strip extends above and below the stitching at the lower end of the bag.

While, as stated, it is preferred to use bags formed of flexible multi-ply material, such as kraft paper, these bags being a commercial article now on the market, it is recognized that if the paper or composite paper is strong enough, that a single ply material may be used. Other materials similar to paper may be used, provided said materials have the characteristics typified by the paper of the present invention. The bags utilized are gusseted, and these gussets project inwardly when the bag is in a flat state, but upon opening of the bag, unfold and form the narrow side walls 15f and 15g, the broad side walls being identified by the numerals 15b and 15c.

As hereinbefore stated, the bag 15 is placed in the supporting frame 16 and the bag and supporting frame is placed on the scale 19 to receive the liquid rosin from the conduit 17. The frame 16 comprises open side members 23 and 24 and open front and rear members 25 and 26. These openings in the frame members are highly desirable as the liquid rosin in the bag 15 is thereby subjected to cooling by virtue of partial contact with the air during the time the bag is on the scales 19 and is passing on the conveyor for the purpose of sewing, and just prior to the time the bag is removed from the supporting frame 16 to allow for further cooling and solidification.

As shown specifically in Figures 2 and 5, the front member 25 of the supporting frame 16 is in reality a hinged door hinged respectively at 27 and 28. The front member 25 is further provided with fastening means for preventing said member from being opened until the proper opening time arrives. As shown, the door member 25 is provided with hooks 29 and 30 adapted to fit into the eyes 31 and 32 fastened upon the side wall 24. The bags which have been found most satisfactory to carry out the present invention are about 36 inches long and are provided with an inturned gusset, the total inturn on each side of the broad side walls of the bag being about 1 7/8 of an inch, this inturned gusset being adapted to form narrow side walls of approximately three (3) inches when the bag is opened preparatory to filling with rosin.

The bag 15 is placed in the supporting frame 16, the latter being on the scale 19, and about one foot of the bag protrudes from the frame top edges 16a. The valve 18 is then opened and the liquid or molten rosin passes into the bag, and the latter is filled to about the level of the top edges 16a of the container 16. In practice, the bag is actually filled with liquid rosin to about an inch or two inches above the top edges 16a. If the bag is filled too full, there is a tendency for the rosin to lick that portion of the broad sides 15b and 15c of the bag, which is above the top edges 16a of the supporting frame 16. This introduces difficulties in sewing, as if the abutting faces of the side walls have rosin along the portion which is to be sewed, the sewing is extremely difficult and the closure is not properly

made. Of course, this difficulty can be overcome by waiting until the rosin has cooled and solidified and then peeling the rosin off from the sides 15b and 15c adjacent the portion which is to be sewed.

Further, it is quite desirable to fill the bag 15 to just above the top edges 16a of the frame 16, since if the bag 15 is filled to a higher point than the top edges 16a there is a tendency for the bag to give away on one side and allow the rosin to spill. As previously pointed out, the abutting side walls at or adjacent the top edges thereof are sewed together and the filling of the bag to the point indicated facilitates the sewing of these abutting sides. It is further desirable that after the bag is sewed, there be a considerable space between the top surface of the rosin and the sewed end of the bag so that the rosin may flow for the purpose hereinafter pointed out.

It is highly desirable that the sewed bag 15 with its rosin content be removed from the supporting frame 16 as soon as possible, as it is not desired in the preferred form of the invention to allow the rosin to cool and solidify to any substantial extent in the supporting frame. It may be pointed out that when the bag 15 is filled with rosin, while the bag is in the supporting frame 16, the weight of the rosin causes the bag to crush and wrinkle, as shown in Figures 3 and 4, and this is objectionable, since it is undesirable that the rosin solidify with the bag in this wrinkled, creased and deformed shape. If the rosin does solidify with the bag in the deformed state, above referred to, there is a tendency during the handling of the bag, for the lower crushed portion of the bag and the rosin therein to break off, due to an irregular formed rosin body and to the formation of easy lines of cleavage. From this standpoint, it is quite necessary that the creased and deformed bag and rosin content be converted into a regular formation. Another reason for removing the creases and deformation in the bag and rosin content, is that the bags possessing such deformities do not stack well. Further, if the bag and its contents are allowed to cool and solidify into a crushed and deformed state adjacent the bottom end of the bag, there is a very substantial tendency for the rosin to soak through the bag, and this is highly objectionable, as it makes it difficult for the bag to be removed from the rosin adjacent the portions where the rosin has soaked through the bag.

It may be further pointed out that the paper bag acts as an insulator for the rosin, and if the rosin does not soak through the bag, the bag with its rosin content may be exposed to the sun's rays and for a substantial length of time there is no softening of the rosin content of the bag. On the other hand, if the rosin is absorbed by the bag, the insulating qualities of the bag are greatly diminished and the ability of the rosin to withstand softening when exposed to the sun's rays is materially decreased. It may be further pointed out that when the rosin soaks through the bag, there is a material loss of rosin.

It has been ascertained that in order to remove the creases and cause the rosin and bag to assume the normal contour, such as shown in Figure 5, that the bag must be removed quite promptly from the supporting frame 16. In other words, the rosin when it is initially passed into the bag 15, has a sufficiently high temperature to maintain the rosin in a liquid state. While some cooling occurs during the time the rosin

passes from the scales 19, then along the conveyor belt 20, where it is sewed and is finally removed from the conveyor 20, it is highly undesirable that the rosin content cool and solidify to such an extent as to prevent removal of the creases and deformation of the crushed lower portion of the bag. The supporting frame 16 together with the bag 15, after the bag has been filled with rosin and the abutting sides of the bag have been sewn together adjacent its top portion, is removed as an entity from the conveyor 20 and taken to a convenient cooling yard or shed. Immediately thereafter the front door 25 of the supporting frame is opened and the bag 15 is removed from the supporting frame and placed on any even medium which will absorb heat. Since the rosin is in a liquid state and the pressure of the rosin is evenly distributed throughout the container, the deformed lower portion of the bag assumes a rounded contour, such as shown in Figures 5 and 7, and moreover, the creases are removed. Further, the distribution of the rosin produces a flat package facilitating easy storage by using a minimum of space. The flat shaped package facilitates the stacking of the packages preparatory to shipment, and further during shipment prevents the package from moving around, and in this way reduces breakage to a minimum. These bags stack readily in a box car or a truck.

Successive packages 15 are laid side to side with a small space between the narrow side walls of successive packages to allow for complete cooling and solidification of the rosin content of the bag. The manner of assembling the bags for cooling on a medium which will absorb heat, such as a concrete floor, is diagrammatically illustrated in Figure 6. A series of bags are disposed in row A and another series of bags are disposed in row B, with a lane L between the rows of bags, this lane being for the purpose of allowing workmen to pass between successive rows of bags. It is to be noted that the bags are not laid on the cooling floor with the narrow sides of any two bags touching, because this does exert a tendency for the rosin to be absorbed by the bag sides even if poured at a temperature at which it would not ordinarily be absorbed by the bag material. In other words, by assembling the bags with an air passage adjacent successive narrow bag sides, air currents are allowed to circulate between the successive bags and assist in cooling the rosin content of each bag. While the spacing of the successive bags about one inch apart has given satisfactory results, it is obvious that this spacing distance indicated by J in Figure 6, may be substantially increased without departing from this phase of the present invention.

It is highly desirable in carrying out the present invention that the temperature of the rosin be sufficient to enable the rosin to be easily pourable and insufficient to cause the rosin to be absorbed by the bag 15 to any substantial extent. Since fairly pure rosin, that is rosin that does not have much turpentine or water left therein, has a softening point of around 158° F., it is desirable that the rosin should not be cooled lower than about 150° F. In other words, the rosin, in order to carry out the present invention, must run and even if a minor proportion of the rosin is solid, there will be a mixture of solid and liquid which is pourable. When operating with a fairly pure rosin, the rosin or resin would ordinarily be delivered to the receiving vats 5 and 6 at a temperature varying between 290° and 325° F. Under

some circumstances, the temperature may be somewhat higher or somewhat lower. The rosin after passage to the cooling vat 9 is preferably allowed to cool to a temperature which will inhibit or minimize the absorption of the rosin by the bag material as heretofore stated.

If the rosin is one that necessitates a high distillation temperature, and said distillation temperature is in the neighborhood of 350° F. or is carried to such a figure during the latter part of the distillation, the resulting rosin may be packaged in bags according to the present invention. However, there will be some tendency for the rosin to be absorbed by the paper bags and if this tendency, depending on the quality of the paper bags and the chemical and physical characteristics of the rosin, is slight, then there will not be a substantial objection to employing as the higher temperature limit, 350° F. However, employing a four (4) or five (5) ply paper container made of kraft paper, it has been ascertained that it is preferable to cool the rosin to between 240° and about 275° F. Working with this temperature range and with the kraft paper bag, it has been ascertained that the use of this temperature inhibited any substantial absorption of the rosin by the paper. This temperature range is the preferred temperature range at which the present invention may be carried out, although as above indicated, the invention, in its broadest aspect, may be carried out with rosin having a temperature of between 150° and 350° F. It is exceedingly difficult to express the limits of the invention in terms of actual temperature and moreover it is not necessary. This aspect of the invention resides in correlating the temperature at which the rosin is poured with the absorption characteristics of the bag material, so that at the temperature utilized, there is no substantial absorption of the rosin by and through the bag. This is the difficulty that must be overcome and the criterion has been set forth by which the desired inhibition of absorption by the paper bag is attained.

It may be stated that for a given bag material, the higher the rosin is poured into the paper bag above the temperature of 275° or 280° F. the greater the absorption of the rosin by the bag and the greater the tendency of the paper bag to stick to the solidified rosin, this introducing some difficulty in the removal of the paper bag from the solidified rosin.

In actual operation, the pouring operation is probably started at 260° F. or 275° F. and inasmuch as the cooling vat has about 2500 to 3000 pounds of rosin present, the filling of the respective bags is finished at approximately a temperature of about the softening point of the rosin. In other words, the filling operation is started at the maximum temperature compatible with the character of the bag employed and the temperature decreases as successive bags are filled, the lower temperature being, as stated, in the neighborhood of the softening point of the rosin, or just a little below. There is an advantage in utilizing lower temperatures of pouring, as the colder the rosin is poured, the higher the poundage content of the bag for a given volume. There is also the advantage that the bags will cool and solidify more quickly.

It may be pointed out that the bag of the present invention has substantially symmetrical end portions, thus greatly facilitating stacking and transportation of the bags. In order to produce this symmetrical package the original bag is a

sharp end bag having the abutting end portions of the large side members sewed together as indicated in Figure 8, the latter figure showing the bag after it has been filled with rosin. It is recognized that the present invention may be practiced by using a flat bottom bag, but since rosin is a rather heavy commodity, and since it is desirable to pack it in packages weighing from 90 to 100 pounds a piece, the element of security so necessary in a package of this kind is to a material extent absent in the square bottom bag. In other words, a square bottom bag is not as sturdy and reliable as a gusseted bag, and in addition has the disadvantage of forming an unsymmetrical bag, introducing difficulties in storing and transportation.

Occasionally from the bags 15 when laid on one of the large flat sides, there is a minute seepage of rosin from the sewn end of the bag. This seepage can be eliminated by contacting the sewn end of the bag with a minute quantity of water, just sufficient to cool the rosin. This solidifies the rosin and seals up any open crevices.

Instead of packaging the rosin in bags, the rosin may be packaged in a carton 33, such as shown in Figure 9, this carton being made of corrugated board 34 provided with corrugations 35, said carton having 100% kraft liners 36 and outer cover boards 37. The carton is first inserted in a supporting frame similar to frame 16 except that the side walls of the supporting frame is constructed to prevent the carton walls from bulging outwardly. The supporting frame may have solid walls although as hereinafter pointed out semi-open walls may be used, the walls preventing the bulging out while at the same time facilitating cooling. It is desirable that the side walls of the supporting frame function to prevent the side walls of the carton from bulging out because the carton 33 should preferably remain in the supporting frame until the rosin solidifies. As stated, if the supporting frame has completely open side walls then there will be a tendency for the rosin as it solidifies to bulge out the walls of the carton. Similarly, if the carton 33 with its rosin content is removed from the supporting frame prior to the substantially complete solidification of the rosin, the sides of the carton will bulge out due to the action of the liquid rosin.

The carton 33 is allowed to remain in its supporting frame for a period of from approximately 12 to 18 hours, depending on the temperature of the atmosphere. The above figure is simply illustrative, and is not by way of limitation, as obviously the time of cooling and solidification of the rosin will depend on the characteristics of the rosin, the temperature of the cooling medium, and to some extent the conductive characteristics of the carton material. After the carton 33, the latter containing a charge of about 100 pounds, has completely cooled and solidified, the top portion of the carton is closed and the carton is ready for shipment.

The carton which has been found most satisfactory to carry out the present invention is the one that is manufactured by the Mengel Company, Inc. of Louisville, Kentucky, which has a bursting resistance limit of 200 pounds per square inch, said carton comprising a corrugated board 35 of about $\frac{1}{2}$ of an inch in thickness. The inner kraft liner 36 is approximately $\frac{1}{4}$ of an inch thick, and the outer cover board 37 is about $\frac{3}{4}$ of an inch thick. These specifications are merely given as illustrative of the characteristics of a

suitable carton and are not to be taken by the way of limitation. It is obvious that the thickness of the corrugated sheet itself, the inner kraft liner, and the outer board may be varied. These three (3) elements are securely glued together to form the composite carton.

It has been discovered that when the liquid rosin is put into the carton, there is a substantial tendency for the rosin to soak into the container material, and the higher the temperature of the liquid rosin, the greater the tendency of the rosin to be absorbed by the carton material, and particularly for it to be absorbed through the kraft liner or equivalent paper material. In order to minimize this tendency, it has been found highly desirable to coat the liner with a medium functioning to inhibit or to minimize the absorption of rosin by the carton material. As an example of a suitable coating material for the inner surface of the carton, mention may be made of ordinary sodium silicate, or water glass. It is obvious that having once ascertained that it is desirable to coat or impregnate the inner surface layer of the carton, that other coating materials will suggest themselves to those skilled in the art, and, therefore, it is not wished to be limited to the use of sodium silicate as the coating material. Equivalent chemical compounds or compositions well known in the art may be substituted therefor. It is only necessary that the composition function to prevent the rosin from being absorbed by the container material.

The previous discussion of the temperature at which the liquid rosin is poured and the effect of the temperature of the rosin upon the container material is equally applicable to the packaging of the rosin in the carton, even though the inner walls of the carton have been treated with an absorption inhibiting agent. Satisfactory results have been obtained when the rosin was poured in at a temperature of between 240° and 275° F. As the temperature is increased beyond 275°, there is a tendency for the rosin to be absorbed by the carton material.

While the above is true, it is recognized that with a different kind of carton material and with rosin of different characteristics, that the temperature of pouring may run as high as 350° F. The lower temperature limit at which the rosin may be poured is in the neighborhood of the softening point of rosin or a little below. Therefore, the approximate lower pouring temperature is about 150° F.

The temperature of pouring has an influence on the symmetrical solidification of the rosin block. Due to the fact that the rosin cools in the carton in layers, when the rosin is finally cooled, there is a cup in the top surface of the rosin and the higher the temperature at which the rosin is poured the greater the tendency for the upper surface layer of the rosin block to cup. It is preferred from this standpoint to keep the temperature of pouring less than about 280° F. as this reduces the amount of cupping. The lower limit will be governed by practical considerations and it will suffice to state that the lower the temperature of pouring the less will be the tendency to cup and if the temperature of pouring could be reduced, considering practical operation, to approximately at or near the softening point of the rosin, there would be substantially no cupping of the upper surface layer of the rosin. Therefore, from the standpoint of cupping, the lower the temperature of pouring, the less the cupping.

When the packages are stacked one upon the other, there is an air space between the top cover member 38 of the carton and the cupped surface 38 of the rosin, and there is a tendency for the cover 38 to be crushed. Therefore, in accordance with the present invention, this tendency to cupping and the tendency of the packaged rosin to create difficulties in stacking, may be controlled by controlling the pouring temperature of the liquid rosin, the lower the pouring temperature the less the cupping and the less difficulty there will be experienced in packing.

The carton utilized in carrying out the present invention is provided with side walls M and N and front and rear walls C and D. The bottom member of the carton is formed by turning over the flaps E and F, which are integrally formed at the lower bottom end of the side walls M and N. Thereafter, the flaps G and H, which are integrally formed with the side walls C and D, are turned over and the flaps then assume the position shown in Figure 10. It is to be noted that the bottom members E, F, G and H are composite members comprising a layer of corrugated board between two outer layers of board, the constituent elements of the composite board being of approximately the thickness hereinbefore described in connection with the side walls. It has been discovered that when rosin is introduced into the carton that there is a substantial tendency for the rosin to run through the inner edges of the members E, F, G and H into the corrugation pockets 40. It has been discovered that the loss of the rosin caused by the flowing of the rosin into the corrugation pockets can be eliminated by sealing the edges of the members E, F, G and H with sealing strips 41, 42, 43 and 44, these sealing strips being made of heavy paper. The strips 43 and 44 covering the edges of the members G and H extend laterally a short distance to form upper and lower facing members 45, 46, 47 and 48 respectively, as shown in Figure 10.

Any ordinary paste can be used for sealing the strips 43 and 44. The sealing strips for members E and F are constructed and applied in an identical sealing manner to the strips 43 and 44.

Instead of using sealing strips 41, 42, 43 and 44, the same result can be accomplished by applying to the edge members, as by dipping or the like, a chemical agent which will close the corrugation pockets. For example, a heavy solution of sodium silicate may be applied. The chemical agent will run back into each corrugation pocket for a short distance, as for example one-half inch, and fill the corrugation pocket. It is, of course, necessary that the filling agent for the corrugation be one that will not be melted at the temperature at which the rosin is poured. Sodium silicate admirably fulfills this purpose, as it has an exceedingly high melting point, much above that of the rosin.

Another method of closing the corrugation pockets and preventing loss of rosin is to flatten the corrugations by pressure, said pressure being sufficient to cause the flattened corrugations and the inner and outer corrugation liners to become a substantially unitary member, incapable of being opened by the pressure of the liquid rosin in the carton. It may be stated that the carton is 18 inches in height, and the cross sectional dimensions are 9 inches and 18 inches.

The outer bottom members G and H of the carton after they have been treated and brought

to their closed position, are fixed in place by a sealing strip of paper 49 or any other material which has sufficient strength to keep the bottom members G and H in the sealed position when the material has the liquid rosin or solidified rosin therein. After the bottom members of the carton have been treated as specified, the carton is placed in its supporting frame and is ready for receiving the liquid or molten rosin.

One advantage inherent in the packaging of the rosin in a carton of the character herein described is that the cartons lend themselves to easy storage and shipment, in that they are symmetrical and stack well.

It may be pointed out that while it is advantageous to package the rosin in bags and cartons, that the carton will withstand more wear and rough handling than the bags.

Instead of using a solid supporting frame, the pouring and cooling and solidification steps may be carried out while the carton is in a frame in which the side, front, rear and bottom members are provided with apertures for air circulation to assist in the cooling. In the more specific aspect, the members may be provided with heavy reinforced meshed wire, the wire having sufficient strength to prevent the carton sides from bulging out upon the introduction of rosin into the carton, said mesh sides simultaneously affording contact with the cooler atmospheric air in order to facilitate cooling and solidification.

While in the preferred form of the invention a relatively stiff paper bag is used, or a carton is used, said materials being physically and chemically non-reactive with the rosin or resin at a temperature varying between 150° F. and 350° F. and preferably between 250° F. and 280° F., it is within the province of the present invention to use any container which has a paper base, that is, in which the essential constituent is paper, or a paper pulp. It is recognized that there may be admixed with the paper pulp other constituents, but these constituents must also be inert relative to the liquid or molten rosin. Of course, the paper container or other container must not char at the temperature of the molten rosin or in any manner have its tensile strength reduced by contact with molten rosin. There should be substantially no chemical interaction with the molten rosin.

It may be pointed out that in carrying out the present invention, there is produced a package free of absorption areas, said package being symmetrical, whereby stacking and shipping is facilitated.

That form of the invention in which the rosin is packaged in a carton such as herein described, is set forth in copending application Serial No. 182,584.

The method of packaging rosin comprising introducing hot liquid rosin into a cellulose base container, correlating the temperature at which the rosin is poured into the container with the absorption characteristics of the container material, maintaining the temperature of the rosin within such a range as to facilitate pouring while inhibiting any substantial absorption of the rosin by and through the container to thereby inhibit the tendency of the container to stick to the rosin, is broadly claimed in applicant's co-pending application Serial Number 220,600. In said application there is also claimed the novel package comprising a relatively stiff but flexible multiply container having as its essential constituent a cellulose base relatively non-absorptive to rosin

at a temperature varying between 150° and 350° F., the container having present in situ solidified rosin, and being characterized by the property of being free from wrinkle areas adapted to cause absorption of rosin by the container and exhibiting little tendency to stick to the solidified rosin.

I claim:

1. The method of packaging rosin comprising disposing a relatively stiff paper bag having broad and narrow sides and provided with a closed bottom end and an open top end in a supporting frame, said bag having a tendency to crush and wrinkle at its lower end due to the weight of the rosin, introducing rosin in said bag, stopping the filling of the bag short of the open top end to provide a flow space for the liquid rosin when the bag and its rosin content after closing is removed from the supporting frame and placed in a flow position, closing the open end of the bag, removing the bag and rosin-content from the supporting frame before the rosin has cooled and solidified to any substantial extent, placing the bag on one of its broad sides whereby the rosin content of the bag flows and substantially eliminates the deformations present in the bag, thereby minimizing the tendency of the rosin to be absorbed by the bag and to be broken during handling, and cooling and solidifying the rosin content of the bag.

2. The method of packaging rosin comprising disposing a relatively stiff paper bag having broad and narrow sides and provided with a closed bottom end and an open top end in a supporting frame provided with top edges, said bag having a tendency to crush and wrinkle at its lower end due to the weight of the rosin, introducing rosin in said bag, stopping the filling of the bag just above the top edges of the supporting frame and short of the open upper end of the bag, whereby tendency of the bag to give away on one of its sides is inhibited and a flow space is provided for the liquid rosin-content of the bag when the bag and rosin-content after closing of the bag is removed from the supporting frame, closing the open end of the bag, removing the bag and rosin-content from the supporting frame before the rosin has cooled and solidified to any substantial extent, placing the bag on one of its broad sides, whereby the rosin-content of the bag flows and substantially eliminates deformations present in the bag, thereby minimizing tendency of the rosin to be absorbed by the bag and to be broken during handling, and cooling and solidifying the rosin content of the bag.

3. The method of packaging rosin comprising introducing hot liquid rosin into a container provided with an open portion to receive the rosin, said container being capable of having its shape changed by distribution of the liquid rosin therein, closing said container while leaving therein a flow space for the liquid rosin, placing the container while the rosin is in a liquid state in a rosin-flow position adapted to cause the rosin to flow to said flow-space, induce a change in the shape of the container and substantially eliminate deformations in the container to thereby minimize the tendency of the rosin to be absorbed by the container and to be broken during handling, and cooling and solidifying the rosin-content of the container.

4. The method of packaging rosin comprising introducing hot liquid rosin into a relatively stiff but flexible multi-ply container provided with an open portion to receive the rosin, said container being capable of having its shape changed

by distribution of the liquid rosin therein, closing said container while leaving therein a flow space for the liquid rosin, placing the container while the rosin is in a liquid state in a rosin-flow position adapted to cause the rosin to flow to said flow-space, induce a change in the shape of the container and substantially eliminate deformations in the container to thereby minimize the tendency of the rosin to be absorbed by the container and to be broken during handling, and cooling and solidifying the rosin-content of the container.

5. The method of packaging rosin comprising introducing hot liquid rosin into a relatively stiff but flexible bag having broad sides and provided with an open portion to receive the rosin, said bag being capable of having its shape changed when placed on one of its broad sides by a distribution of the liquid rosin therein, closing said bag while leaving the rosin-content thereof free to change the shape of the bag when the latter is placed on one of its broad sides, placing the bag on one of its sides to substantially eliminate deformations in the bag and thereby minimize the tendency of the rosin to be absorbed by the bag and to be broken during handling, and cooling and solidifying the rosin-content of the bag.

6. The method of packaging rosin comprising introducing hot liquid rosin into a relatively stiff but flexible bag provided with an open portion to receive the rosin, said bag being capable of having its shape changed when placed on one of its broad sides by a distribution of the liquid rosin therein, the bag being disposed in a supporting frame, closing said bag while leaving the rosin-content thereof free to change the shape of the bag when the latter is placed on one of its broad sides, removing the bag from the supporting frame while the rosin is in a flow-state, placing the bag on one of its broad sides to substantially eliminate deformations in the bag to thereby minimize the tendency of the rosin to stick to the bag and to be broken during handling, and cooling and solidifying the rosin-content of the bag.

7. The method of packaging rosin comprising introducing hot liquid rosin into a relatively stiff but flexible container provided with an open portion to receive the rosin, said container being capable of flattening out by the distribution of the liquid rosin therein, closing said container while leaving therein a flow-space for the liquid rosin, flattening out said container to distribute the rosin-content thereof and substantially eliminating deformations in the container to thereby minimize the tendency of the rosin to be absorbed by the container, and to be broken during handling, and cooling and solidifying the rosin-content of the container.

8. The method of packaging rosin comprising introducing hot liquid rosin into a relatively stiff but flexible multi-ply cellulose base container, said container being capable of having its shape changed by a distribution of the liquid rosin therein, correlating the temperature at which the rosin is poured into the container with the absorption characteristics of the container material, maintaining the temperature of the rosin within such a range as to facilitate pouring while inhibiting any substantial absorption of the rosin by and through the container to thereby inhibit the tendency of the container to stick to the rosin, closing said container while leaving the rosin-content thereof free to change the shape of the container when the latter is placed in a rosin-

flow position, placing the container while the rosin is in a liquid state in a rosin-flow position adapted to induce a change in the shape of the container and to substantially eliminate deformations in the container to thereby minimize the tendency of the rosin to be absorbed by the container and to be broken during handling, and cooling and solidifying the rosin-content of the container.

9. The method of packaging rosin comprising introducing hot liquid rosin into a relatively stiff but flexible cellulose base bag, said bag being disposed in a supporting frame and being capable of having its shape changed by a distribution of the liquid rosin therein, correlating the temperature at which the rosin is poured into the bag with the absorption characteristics of the bag material, maintaining the temperature of the rosin within such a range as to facilitate pouring while inhibiting any substantial absorption of the rosin by and through the bag to thereby inhibit the tendency of the bag to stick to the rosin, closing said bag while leaving the rosin-content thereof free to change the shape of the bag when the latter is placed in a rosin-flow position, removing the bag from the supporting frame while the rosin is in a flow state, placing the bag while the rosin is in a liquid state in a rosin-flow position adapted to induce a change in the shape of the bag and to substantially eliminate deformations in the bag to thereby minimize the tendency of the rosin to be absorbed by the bag and to be broken during handling, and cooling and solidifying the rosin-content of the bag.

10. The method of packing rosin comprising introducing hot liquid rosin into a cellulose base container, capable of having its shape changed by a distribution of the liquid rosin therein, correlating the temperature at which the rosin is poured into the container with the absorption characteristics of the container material, maintaining the temperature of the rosin within such a range as to facilitate pouring while inhibiting any substantial absorption of the rosin by and through the container to thereby inhibit the tendency of the container to stick to the rosin, closing the container, flattening out the container to distribute the rosin-content thereof, and substantially eliminate deformations in the container, and cooling and solidifying the rosin-content thereof.

11. The method of packaging rosin comprising introducing hot liquid rosin into a relatively stiff but flexible cellulose base bag, said bag being capable of having its shape changed when placed on one of its broad sides by a distribution of the liquid rosin therein, correlating the temperature at which the rosin is poured into the bag with the absorption characteristics of the bag material, maintaining the temperature of the rosin within such a range as to facilitate pouring while inhibiting any substantial absorption of the rosin by and through the bag to thereby inhibit the tendency of the bag to stick to the rosin, closing said bag while leaving the rosin-content thereof free to change the shape of the bag when the latter is placed on one of its broad sides, placing the bag on one of its broad sides to substantially eliminate deformations in the bag, and cooling and solidifying the rosin-content of the bag.

12. The method of packaging rosin comprising introducing hot liquid rosin into a relatively stiff but flexible multi-play container provided with an open portion to receive the rosin, said container being capable of having its shape changed by distribution of liquid rosin therein, correlating

the temperature at which the rosin is poured into the container with the absorption characteristics of the container material, maintaining the temperature of the rosin within such a range as to facilitate pouring while inhibiting any substantial absorption of the rosin by and through the container to thereby inhibit the tendency of the container to stick to the rosin, closing said container while leaving therein a flow space for the liquid rosin, placing the container while the rosin is in a liquid state in a rosin-flow position adapted to cause the rosin to flow to said flow-space, induce a change in the shape of the container and substantially eliminate deformations in the container, and cooling and solidifying the rosin-content of the container.

13. The method of packaging rosin comprising introducing hot liquid rosin into a relatively stiff but flexible cellulose base bag, said bag being capable of having its shape changed by a distribution of the liquid rosin therein, correlating the temperature at which the rosin is poured into the bag with the absorption characteristics of the bag material, maintaining the temperature of the rosin within such a range as to facilitate pouring while inhibiting any substantial absorption of the rosin by and through the bag to thereby inhibit the tendency of the bag to stick to the rosin, closing said bag while leaving the rosin-content thereof free to change the shape of the bag when the latter is placed in a rosin-flow position, placing the bag while the rosin is in a liquid state in a rosin-flow position adapted to induce a change in the shape of the bag and to substantially eliminate deformations in the bag to thereby minimize the tendency of the rosin to be absorbed by the bag and to be broken during handling, and cooling and solidifying the rosin-content of the bag.

14. The method of packaging rosin comprising introducing hot liquid rosin into a relatively stiff but flexible container having broad and narrow sides and provided with a closed bottom and an opening adapted to receive the rosin, said container being capable of having its shape changed when placed on one of its broad sides by a distribution of liquid rosin therein, closing said container while leaving the rosin-content thereof free to change the shape of the container when the latter is placed on one of its broad sides, placing the container on one of said broad sides to substantially eliminate deformations in the container and thereby minimize the tendency of the rosin to be absorbed by the container and to be broken during handling, and cooling and solidifying the rosin-content of the container.

15. The method of packaging rosin comprising introducing hot liquid rosin into a relatively stiff but flexible container having broad and narrow sides and provided with a closed bottom and an opening adapted to receive the rosin, said container being capable of having its shape changed when placed on one of its broad sides by a distribution of liquid rosin therein, correlating the temperature at which the rosin is poured into the container with the absorption characteristics of the container material, maintaining the temperature of the rosin within such a range as to facilitate pouring while inhibiting any substantial absorption of the rosin by and through the container to thereby inhibit any tendency of the container to stick to the rosin, said temperature not exceeding 350° F., closing said container while leaving the rosin-content thereof free to change the shape of the container when the latter is placed on one of its broad sides, placing the con-

tainer on one of said broad sides to substantially eliminate deformations in the container and thereby minimize the tendency of the rosin to be absorbed by the container and to be broken during handling, and cooling and solidifying the rosin-content of the container.

16. The method of packaging comprising introducing hot liquid resin material into an open container sufficiently flexible to have its shape changed by the flow of the hot liquid material in the container, closing said container while leaving a flow space therein for the hot liquid resinous material, placing said container in a resin-flow position before the contents of the container have cooled and solidified to any substantial extent, said position being adapted to cause the resin material to flow towards said flow space, change the shape of the container and substantially elimi-

nate any deformations present in the container, and cooling and solidifying the resin-content of the container.

17. The method of packaging comprising introducing hot liquid resin material into an open container capable of having its shape changed by the distribution of liquid resin therein, closing said container while leaving the resin-content thereof free to change the shape of the container when the latter is placed in a resin-flow position, placing said container while the resin is in a resin-flow state in a resin-flow position adapted to induce a change in the shape of the container, and substantially eliminate any deformations present in the container, and cooling and solidifying the resin-content of the container.

CHARLES CRUM GILICAN.