

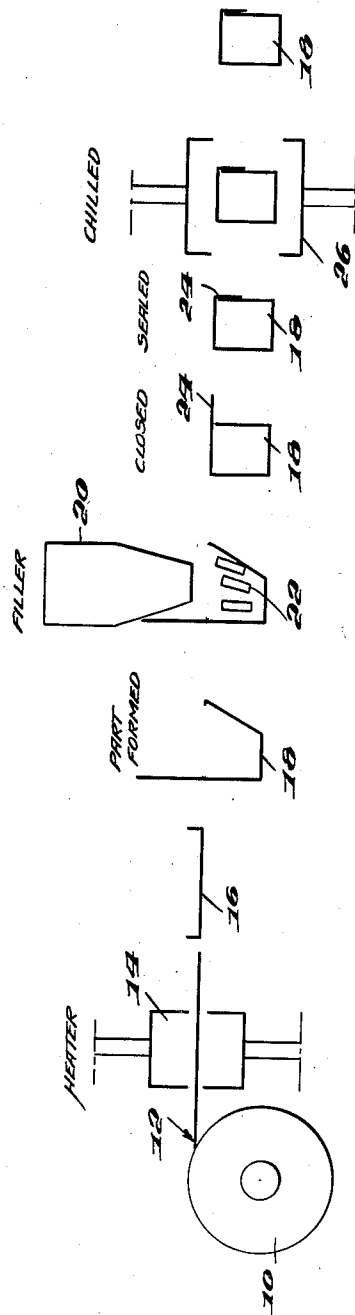
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PROCESS FOR PACKAGING GOODS

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1

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PROCESS FOR PACKAGING GOODS

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2 Claims. (Cl. 53—29)

This invention relates to a process for the continuous packaging of goods. In particular, the invention is directed to the packaging of goods in containers having sufficient stiffness to withstand the mechanical stresses encountered in shipping the goods.

The objects of the invention are to produce a container which can be shaped during its formation, but which is stiff and rigid at normal temperatures. A further object of the invention is to produce a process of shaping and filling a container which is substantially moisture-proof.

These objects are achieved by taking a sheet of material which is normally stiff at ordinary atmospheric temperatures, heating the sheet to render it flexible and foldable, partially folding the sheet into container form, filling the partially formed container with goods, closing and sealing the container, and then chilling the container to room temperature whereby the material returns to a stiff, rigid form.

The invention is especially applicable to packaging shaped, relatively fragile products such as cookies, candies, chocolates, cigarettes and the like. The type of packages formed may be, but are not necessarily limited to packages such as shown in my co-pending applications, now Patents Nos. 2,692,078, 2,643,812, and 2,676,747. The multi-folds at the corners of containers formed as disclosed in the aforesaid applications are particularly advantageous in the formation of a rigid package from relatively thin sheet material, and are in addition substantially impervious to moisture.

The process is diagrammatically illustrated in the flow sheet diagram shown in the drawing.

The sheet materials used for forming the containers are thermoplastic at temperatures above ordinary atmospheric temperatures. Such materials may be thin cardboard, heavy paper, woven fabrics and the like, impregnated with a thermoplastic substance. Such thermoplastic may be as follows: Polyvinylether, polyvinylacetal, polyethylene, polyisobutylene, polystyrene, polyamids, polyvinylchlorides, polyvinylalcohols, mixed polymerizates, esters of polymethacrylic acid, Celluloid, acetylcelloid, silicones and natural and synthetic waxes.

The materials coated are impregnated with the thermoplastic substance and may be further lined with aluminum foil, or a lamination built up of alternate linings of metal foil and the sheet material. In some instances, the thermoplastic substance may in and of itself form a foil-like lining.

Such thermoplastic treated material can be contained in a roll 10, which roll at the container forming operation can be pre-warmed so that the sheet material can be unrolled therefrom. This sheet material is stripped from the roll at 12, and passed through a heater 14 where it is rendered sufficiently limp to permit sharp folding, the

2

material then being cut into container lengths 16. The sheet 16 is then further folded to make a goods retaining body portion of a part-formed container 18, and then passed by a hopper, or other filler mechanism 20 which deposits the goods 22 in the partially formed body portion of the container. The container 18 is then closed, a marginal edge 24 being shown which edge is then sealed, with the application of additional heat if necessary, and the finished container then passed through a cooling box 26 where it is chilled to atmospheric temperature. The completely filled and sealed container is then ready for shipment.

In some aspects of the invention the sheet material need only be heated at those portions where it is to be folded and creased. In special instances different thermoplastic materials may be used on the sheet in accordance with the structural requirements of the container. For example, a higher melting point thermoplastic may be used at those portions of the sheet which are to constitute the corners of the container, while a lower melting point plastic may be used for sealing the lip 24.

Numerous advantages flow from this process. By the use of relatively thin thermoplastic coated sheet material, the weight of the container can be reduced. It has been found that this light-weight container has sufficient stiffness and mechanical strength as to eliminate the need for the usual outer corrugated shipping carton. In other words, a plurality of containers containing crackers, for example, are simply strapped together to form a shipping bundle, and the ordinary corrugated shipping carton is dispensed with. A further advantage lies in the fact that the goods can be placed in the container while the container is partially formed. This has advantage in the use of automatic filling machinery as it gives greater latitude to the clearance the filling machinery has to have with respect to the package. Furthermore, the operation is continuous and quick so that freshly prepared goods can be placed in the container, and the container sealed before the goods have a chance to lose any of their freshness and attendant aroma.

A particular example of an illustrative form of my invention is as follows:

A thin cardboard of a weight of 150 grams per square meter lined with an aluminium foil of a thickness of 0.012 mm. is impregnated with a solution of polyvinylchlorid in an organic solvent so that the coating of the cardboard has a weight of 10 grams per square meter. A partial box form is folded of this material after having heated the sheet to a temperature of 50–60° C. Then crackers are filled in and the sheet is folded at the same temperature of 50–60° C. to the completed box (12 x 7 x 3 cm.). The closing flaps then are sealed between sealing jaws, which are heated to a temperature of about 90° C.

Having now described the means by which the objects of my invention are obtained, I claim:

1. A process of packaging comprising the steps of taking a sheet of non-stretchable material impregnated with a thermoplastic substance, said sheet being stiff at normal temperatures and limp when heated, heating the entire sheet until it is limp, folding said sheet while made limp by heat into the form of a container having its body portion partially shaped only into final goods retaining form; placing goods into the partially shaped body portion of said container, further folding the heated limp sheet to shape the body portion into final goods retaining

form, closing the container, and then cooling said container to stiffen it into a rigid structure.

2. A process as in claim 1, further comprising a sheet impregnated with a first thermoplastic substance for the body of said container, and a second thermoplastic material for closing and sealing said container.

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