Sept. 11, 1951 E. D. ANDREWS 2,567,267

METHOD OF PACKAGING

Filed May 20, 1947 2 Sheets-Sheet 1

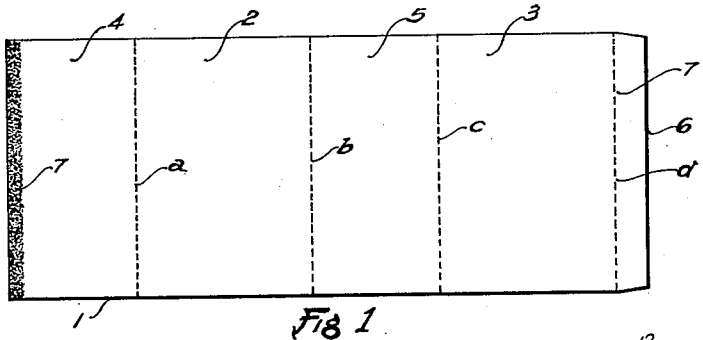


Fig 1

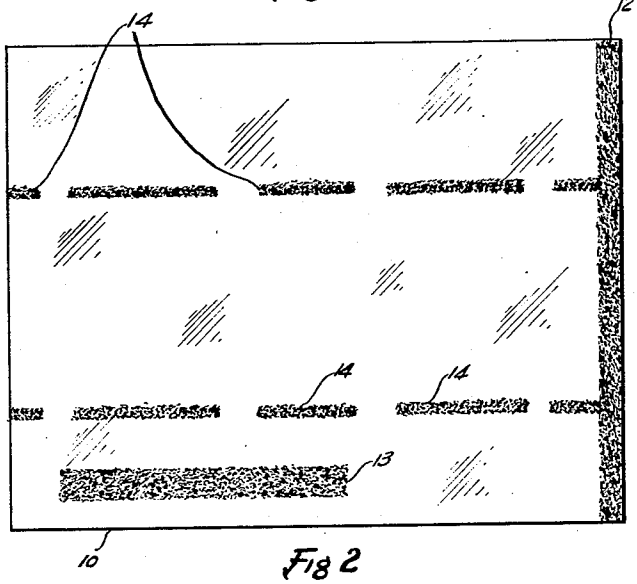


Fig 2

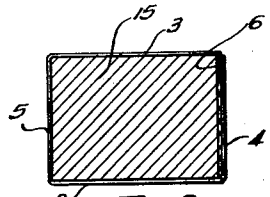


Fig 3

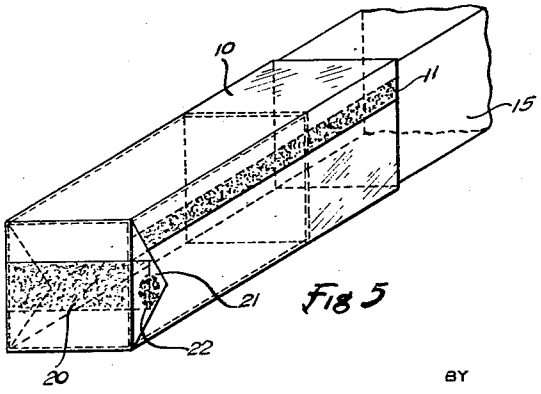


Fig 5

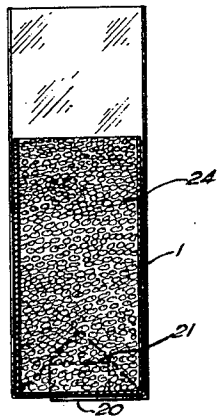


Fig 6

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METHOD OF PACKAGING

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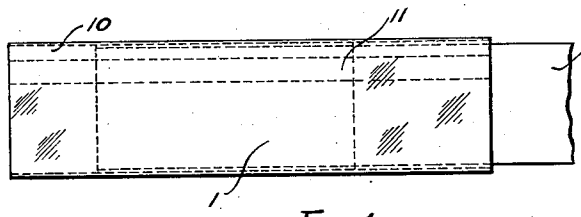


Fig. 4

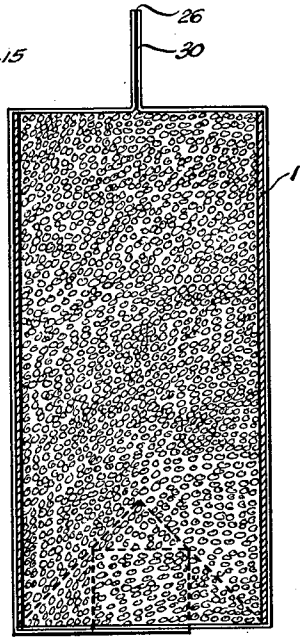


Fig 8

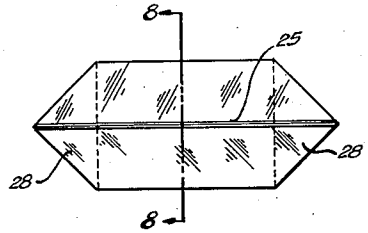


Fig 7

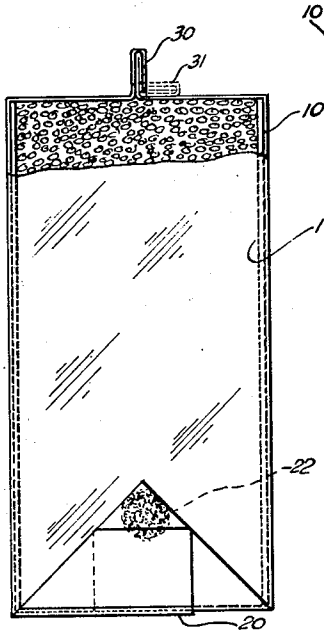


Fig 9

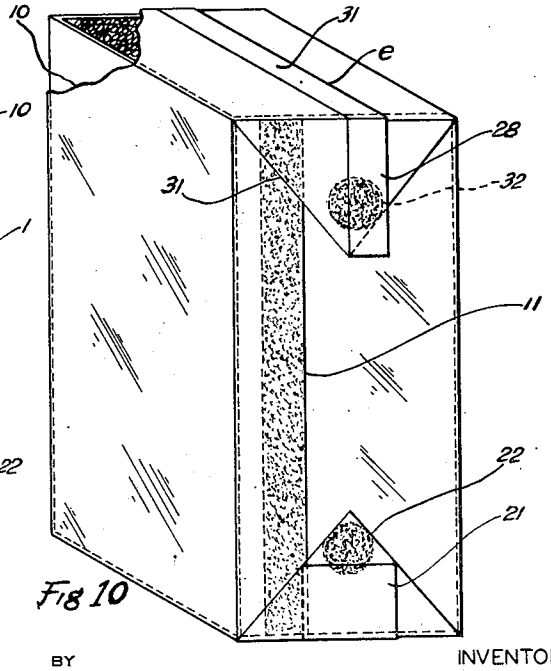


Fig 10

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METHOD OF PACKAGING

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Application May 20, 1947, Serial No. 749,265

6 Claims. (Cl. 93—3)

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The present invention has for its object a new and improved method for packaging materials and especially loose materials such as grains, prepared cereals, frozen foods, other food products, and a wide variety of commodities. The particular field for the invention is the packaging of breakfast cereals in small, moisture-vapor resistant packages which are intended to be used for individual services, such as in dining cars or restaurants, where the customer receives his order as a separate package intended to be opened when served, although the invention is not limited to this use.

The ordinary practice in the serving of commodities of this type for individual service is to package the product in a small six-sided carton with top and bottom closures formed of overlapping sealed flaps which are continuations of the main panels. The product may be contained in an inner, moisture-vapor resistant liner or wrapper which is sealed independently of the closing and sealing of the carton.

The method just described not only requires a multiplicity of machine operations, but the cost of the packaging material, i. e., the carton and the wrapper, oftentimes exceeds the value of the product contained therein.

It is one object of the invention to reduce the cost of these packages by dispensing with top and bottom closures on the package. The omission of the top and bottom closure flaps creates an open ended sleeve which reduces the amount of the material which goes into the complete package.

Surrounding the sleeve is a wrapper of moisture-vapor resistant sheeting which is tightly wrapped about the sleeve and folded and sealed across both open ends of the sleeve. This wrapper is made of any of the well known sheet wrapping materials which are commonly employed. It may be moistureproof cellophane or it may be any of the well known vinyl-vinylidene chloride sheetings or a sheeting of the rubber hydrohalide type or waxed paper. Ordinary adhesives or heat-activated adhesives may be employed to make the various sealed seams, or when certain wrapping materials are employed, they may be welded together by heating without the addition of adhesives.

By employing as the main element of the package a sleeve which is open at the ends and applying an outer wrapping of the various types specified, which are completely or partially transparent, the contents of the package are exposed to view, which is an added sales attraction.

The wrapper is tightly applied so that it serves to reinforce the sleeve. The sealing operations at the top and the bottom of the finished package also act as a very substantial reinforcement, with the result that there is obtained a package

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which is not easily distorted and will hold its shape against any of the forces to which it will ordinarily be subjected. One of the objections to prior packages of this general type has been that the finished container is loose and wobbly and will easily get out of shape, and if the wrapper is on the outside of the sleeve, distortion of the sleeve will often split or puncture the wrapper. If the wrapper is on the inside of the sleeve, it offers no reinforcement to the package, and a package of this type has the added objection that the filled wrapper may slip out of its jacket. In the present invention these objections are overcome by the manner of applying and sealing the wrapper.

The form of package shown herein has the further advantage that it may be made, filled and sealed upon existing machines after they have been modified to provide for the different order of steps. Carton machines are in extensive use in which the order of steps is the formation of the wrapper or liner as a four-sided bag with one closed end, the application of the outer cardboard or strawboard jacket, forming the closure on one end of the jacket, filling and forming the closure on the liner, and then the final closure on the jacket.

In carrying out the instant process, these operations are altered in the following particulars: (*a*) The four-sided cardboard or strawboard sleeve is first formed, and as this sleeve has no closures at top or bottom, the carton end closing and sealing mechanisms are no longer required. (*b*) The outer transparent wrapper is then applied and sealed along one edge, and one end of the wrapper folded over an open end of the sleeve which now becomes the bottom of the package. (*c*) The package is now removed from the mandrel on which the operations just described were performed, and in its upright position is filled with the commodity. (*d*) The filled package now goes to the mechanism which forms the top closure from that portion of the wrapper which projects above the sleeve. It will thus be seen that the number of mechanical operations required to turn out a filled and sealed package are substantially reduced over the older practices, thereby reducing costs in this particular as well as in the matter of material savings.

In the following description and in the accompanying drawings, the best known form of the invention is disclosed, but it will be appreciated that changes and modifications may be adopted without departing from the invention as set forth in the appended claims. The machinery for performing the various steps is not shown, as machines of this type are old and well known.

In the drawings the several steps of the process are shown in their proper sequence from the initial stock to the filled and sealed package.

Fig. 1 is a plan view of the blank from which the inner sleeve is formed.

Fig. 2 is a plan view of the blank which makes up the outer wrapper.

Fig. 3 shows the formation of the sleeve about the form or mandrel. The mandrel is a part of any standard carton-forming machine.

Fig. 4 is a side elevation of the mandrel with the outer wrapper applied about the inner sleeve.

Fig. 5 is an isometric perspective view showing the lower portion of the wrapper folded and sealed over the outer end of the mandrel, which operation forms the lower closed end of the package.

Fig. 6 is a cross-section through the partially completed package now removed from the mandrel and filled with the commodity.

Fig. 7 is a top plan view of the package showing the first step in the making of the closure for the top of the package.

Fig. 8 is a cross-section on the line 8—8 of Fig. 7.

Fig. 9 shows the preferred operation of sealing the mouth of the filled package.

Fig. 10 is an isometric perspective view of the completed, sealed package.

The blank for the sleeve is indicated at 1 in Fig. 1 and is in the form of a rectangular strip of a strawboard, chipboard or cardboard divided by the transverse parallel folding score lines *a*, *b*, *c* and *d* into the front and rear panels 2 and 3, the side panels 4 and 5, and the glue flap 6. On the end of the strip remote from the panel 4, a glue band 7 is applied which seals the flap 6 to the panel 4 when the sleeve is formed.

The blank for the wrapper is indicated at 10. This is preferably cut from a sheet of a transparent wrapping material of any of the various types indicated above.

The wrapper blank is slightly wider than the periphery of the sleeve so as to provide an overlapping seam 11 when the wrapper is applied about the sleeve. A band of adhesive 12 is applied on one edge of the blank to form the seam 11 and segregated areas 14 of adhesive may be placed on the blank to adhere the wrapper to the inner sleeve so as to prevent subsequent separation of the wrapper and the sleeve, if this is found to be desirable. A strip of adhesive 13 is applied near the lower edge of the blank to form the sealed closure for the bottom of the package.

The wrapper is also considerably longer than the depth of the sleeve so as to provide for the upper and lower closures, as will be described.

As the first operation, the sleeve blank 1 is formed about the mandrel 15 and the flap 6 adhesively secured to the edge portion of the side panel 4. The wrapper blank 10 is then applied over the sleeve on the mandrel and the longitudinal seam 11 formed. It will be noted that when the wrapper is applied, the sleeve is somewhat off center with respect to the blank so as to allow a shorter overhanging portion which extends beyond the mandrel to form the sealed bottom end of the finished package.

The next operation, which is performed while the partially finished package is still on the mandrel, is the folding and sealing of the overhanging portion of the wrapper. This is done by folding the two long sides of the wrapper together to make the overlapping seam 20 which is adhesively sealed by the adhesive band 13, and then the triangular side flaps or tabs 21 are folded and attached to the surface of the wrapper by adhesive as indicated at 22. It is preferred to fold

the side flaps against the side panels 4 and 5. The transverse seam 20 and the adhesion of the side flaps to the wrapper make the bottom of the package quite rigid so that it retains its squared-up condition.

The partially completed package is then removed from the mandrel and placed on a conveyor belt with the open end up and the belt conveys the package to the usual loading mechanism at which the package is filled as indicated at 24.

From the filling station the package is taken to the final closing mechanism. While any type of closure may be used at this point, it is preferred to spread the extending portions of the wrapper outwardly which brings the wrapper together along the line 25 forming the two parallel upstanding flaps 26 and the triangular tabs 28 which project over the side panels. It is preferred to seal the flaps 26 in face to face relationship as shown at 30, and then fold the sealed seam upon itself as shown in dotted lines in Fig. 9. This operation makes a double-folded seam 31 which lies across the top of the package but is not attached to the underlying surface of the wrapper. The triangular side flaps or tabs 28 are then folded against and adhesively sealed to the wrapping material as shown at 32 in Fig. 10. Again it is preferred to fold the side flaps against the side panels. This completes the package forming and sealing operations. The adhesion of the flaps 26 to the wrapper and the seam 31 hold this end of the package rigidly.

It will be seen that a very stout package has been formed from comparatively fragile materials. The inner sleeve has no especial rigidity in itself, but after the wrapper is applied and after the seams are formed and the side flaps folded, sealed and adhered to the wrapper, the complete package is very rigid and cannot be easily collapsed. The contents of the package are visible to the user and the package may be readily opened by inserting a knife under the turned-down, folded seam 31, as indicated by the arrow *e* in Fig. 10.

Where the terms "top" and "bottom" are employed, these are to be considered relatively. In the packaging of loose materials, the package is filled after one end is closed. While it is preferred to employ an adhesive at the several points where the wrapping material is joined to itself, the seals may be made by welding the material together. The four-sided package is preferred, but other shapes may be adopted. The transverse seams at the top and bottom are preferably formed as shown in each case, but this is not essential and the type of fold and seam may be varied. A fairly rigid construction can be obtained at either end of the package by folding the several side flaps against the end surfaces of the package and attaching them to the wrapper at this point rather than against the sides of the package. This construction is not so desirable because it impairs the visibility of the contents. Other modifications in details of the process will suggest themselves to those skilled in this art.

The package which is made by the process is not claimed herein but is made the subject matter of a separate and divisional application hereof, Serial No. 62,881 filed December 1, 1948 now Patent No. 2,527,692, dated October 31, 1950.

What is claimed is:

1. The method of packaging commodities comprising forming a four-sided inner sleeve

from a relatively stiff material with open ends at the top and bottom of the sleeve, folding a sheet of transparent, moisture-vapor resistant wrapping material about the four sides of the sleeve with the edges of the sheet in contact and with portions of the sheet projecting beyond the top and bottom of the sleeve, sealing the contacting edges of the sheet, closing the bottom of the sleeve by folding the lower projecting portion of the sheet transversely across the open bottom of the sleeve to form an overlapping seam and side flaps, sealing the overlapping seam, turning the side flaps against the sides of the sleeve and attaching them to the surface of the wrapping material, filling the sleeve, and then closing the top of the sleeve by folding the other projecting portion of the wrapping material transversely across the top of the sleeve to form an overlapping seam and side flaps, sealing the same, turning the side flaps against the sides of the sleeve and attaching them to the surface of the wrapping material.

2. The method of packaging commodities comprising forming an inner sleeve from a relatively stiff material with open ends at the top and bottom of the sleeve, folding a sheet of transparent, moisture-vapor resistant wrapping material about the sleeve with the edges of the sheet in contact and with portions of the sheet projecting beyond the top and bottom of the sleeve, closing the bottom of the sleeve by folding the lower projecting portion of the wrapping material transversely across the open bottom of the sleeve to form an overlapping seam and side flaps, sealing the overlapping seam, turning the side flaps against the sleeve and attaching them to the surface of the wrapping material, and then closing the top of the sleeve by folding the other projecting portion of the wrapping material transversely across the open top of the sleeve to form an overlapping seam and side flaps, sealing the overlapping seam, turning the side flaps and attaching them to the surface of the wrapping material.

3. The method of packaging commodities comprising wrapping a strip of relatively stiff material about the end portion of a mandrel and connecting the edges of the strip to form a sleeve with open ends, enveloping the sleeve while on the mandrel with a sheet of wrapping material with the edges of the sheet in contact and portions of the sheet projecting beyond both ends of the sleeve, joining the edges of the sheet, closing the bottom of the sleeve by folding the projecting portion of the wrapping material which extends beyond the mandrel against the end of the mandrel and across one end of the sleeve to form an overlapping seam with side flaps, sealing the seam, turning the flaps against the sides of the mandrel and attaching them to the wrapping material, removing the package from the mandrel, filling the sleeve, and closing the top of the sleeve by folding the other projecting portion of the wrapping material to form a transverse seam and side flaps, sealing the seam and turning the side flaps against the sides of the package and attaching them to the surface of the wrapping material.

4. The method of packaging commodities comprising forming a four-sided inner sleeve from a relatively stiff material with open ends at the top and bottom of the sleeve, folding a sheet of wrapping material about the four sides of the sleeve with the edges of the sheet in contact and

with portions of the sheet projecting beyond the top and bottom of the sleeve, sealing the contacting edges of the sheet, closing the bottom of the sleeve by folding the lower projecting portion of the sheet transversely across the open bottom of the sleeve to form an overlapping seam and side flaps, sealing the overlapping seam, turning the side flaps and attaching them to the surface of the wrapping material, filling the sleeve, and then closing the top of the package by folding the other projecting portion of the wrapping material transversely across the top of the sleeve to form an overlapping seam and side flaps, sealing the seam, turning the side flaps and attaching them to the surface of the wrapping material.

5. The method of packaging commodities comprising forming an inner sleeve from a relatively stiff material with open ends at the top and bottom of the sleeve, folding a sheet of wrapipng material about the sleeve with the edges of the sheet in contact and with portions of the sheet projecting beyond the top and bottom of the sleeve, closing the bottom of the sleeve by folding the lower projecting portion of the wrapping material transversely across the open bottom of the sleeve to form an overlapping seam and side flaps, sealing the overlapping seam, turning the side flaps and attaching them to the surface of the wrapping material, and then closing the top of the package by folding the other projecting portion of the wrapping material transversely across the open top of the sleeve to form an overlapping seam and side flaps, sealing the overlapping seam, turning the side flaps and attaching them to the surface of the wrapping material.

6. The method of packaging commodities comprising wrapping a strip of relatively stiff material about the end portion of a mandrel and connecting the edges of the strip to form a sleeve with open ends, enveloping the sleeve while on the mandrel with a sheet of wrapping material with the edges of the sheet in contact and portions of the sheet projecting beyond both ends of the sleeve, joining the edges of the sheet, closing the bottom of the sleeve by folding the projecting portion of the wrapping material which extends beyond the mandrel against the end of the mandrel and across one end of the sleeve to form an overlapping seam with side flaps, sealing the seam, turning the flaps and attaching them to the wrapping material, removing the package from the mandrel, filling the space bounded by the sleeve and the wrapping material at the bottom of the sleeve, and closing the top of the package by folding the other projecting portion of the wrapping material across the open top of the sleeve to form a transverse seam and side flaps, sealing the seam and turning the side flaps and attaching them to the surface of the wrapping material.

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