

Nov. 16, 1937.

R. M. BERGSTEIN

2,099,257

CONTAINER

Filed Oct. 4, 1935

2 Sheets-Sheet 1

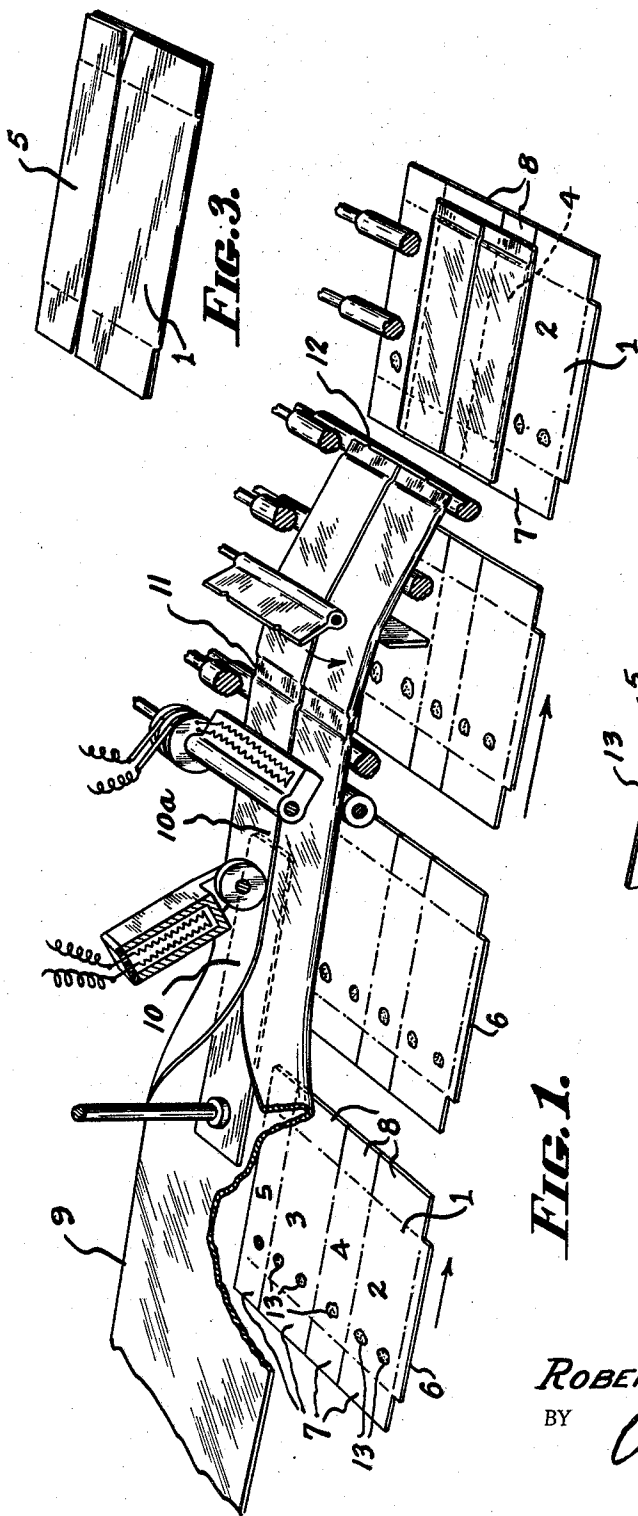


FIG. 1.

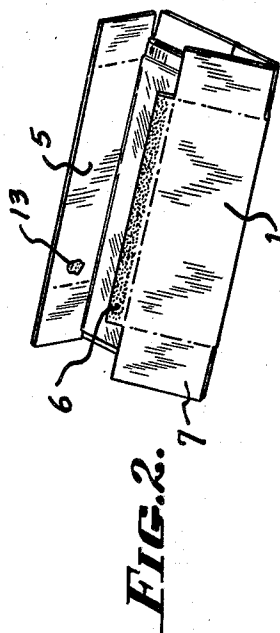


FIG. 2.

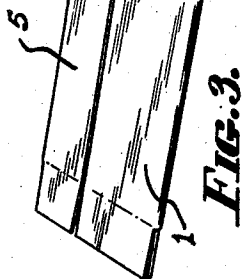


FIG. 3.

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2 Sheets-Sheet 2

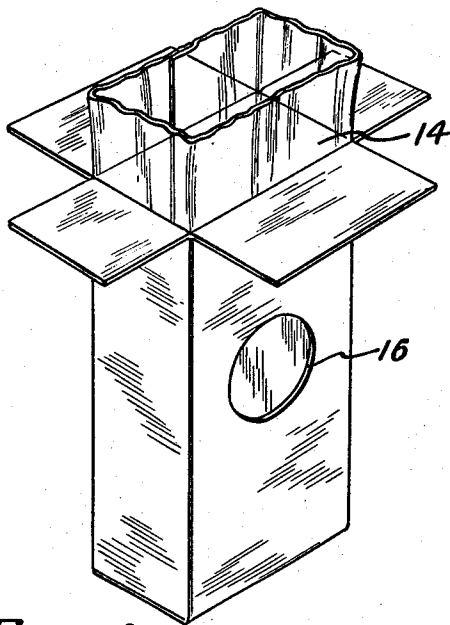


FIG. 4.

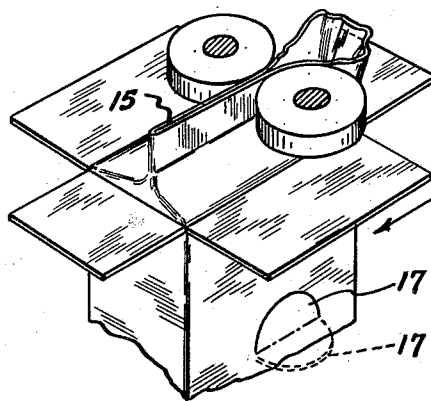


FIG. 5.

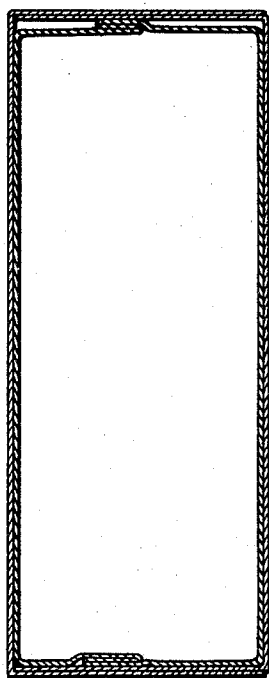


FIG. 6.

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UNITED STATES PATENT OFFICE

2,099,257

CONTAINER

Robert M. Bergstein, Cincinnati, Ohio, assignor
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Application October 4, 1935, Serial No. 43,569

8 Claims. (Cl. 229-14)

My invention relates to provision of cartons with enclosed bags therein, adapted particularly for use where oil or other liquid is to be placed therein, or where air tight packaging is required.

5 In my application filed herewith I disclose and claim a type of bag which is stated to be valuable among other things as a liner or filler for cartons. In the present application I disclose and claim the improvements whereby such bags can
10 be readily placed in cartons, resulting not only in an inexpensive operation in building the original package but in considerable convenience in use.

15 Incident to my improvements as set forth herein, is the continuous production of bag-filled cartons by a mode of procedure which becomes possible among other reasons because of the nature of my novel bag itself. Also incident to my improvement is a novel carton-enclosed bag in
20 which the opening of the carton will serve to open the bag.

One feature of my invention is that it enables me to employ in making carton-enclosed bags, a material which has long been on the market
25 and has long been advocated for wrapping of materials, but which has, to my knowledge, never been used in manufacturing cartons or as a liner of cartons, to any extent, because of its peculiar characteristics, namely: it possesses an
30 exceedingly high degree of static electricity, causing it to cling together or to cling to the standard type of bag-making machine. The material is made from a rubber base, is transparent, and is fusible by means of heat. This material has be-
35 come known on the market by the trade name of "pliofilm." To form such material into a bag of the usual type, and made on standard bag machines, presents a problem, which, so far as I
40 am advised, has never been solved. Also, if a bag were to be formed thereof, it would be impractical to use it where the filling is done rapidly, because of the difficulty of rapid opening of such bags at the point of use.

45 My invention adapts itself to making bags of this material, and due to the arrangement made for causing the bag when in a finished carton, to open when the carton is opened, it is entirely practical in use.

50 This substance when heat is applied thereto as by a hot iron immediately becomes highly cohesive, so that to form seams or closures in a bag made of this material is a very rapid and easy operation using a hot roll or iron. This
55 characteristic of the material lends itself excel-

lently also to the sealing of the bag closed after the contents are placed therein.

Among other features of my invention set forth in my application filed coincidentally herewith Serial No. 43,570 is the coating of a sheet of
5 paper, or Cellophane with rubber latex. The particular material which I have been discussing possesses the properties of this latex film, without having in addition the odor of the film. It is
10 thus more desirable where it can be used, than the latex-coated sheet.

There are other transparent and non-transparent materials suitable for making impermeable
15 wrappers or containers which are heat-fusible, very cohesive under a hot iron or roll, and my invention is well adapted to these materials also. Among other such substances are sheets made on a
20 gelatine base or latex and cellulose base sheets, or thin rubber sheets.

Where in packaging foods it is desired to have
25 light excluded therefrom as well as air, the transparency of this new material is not a disadvantage from the point of view of my present invention because the carton into which the bag is
30 built can be made of light-proof material. For example, the material of the Fish Patent No. 1,552,286 dated September 1st, 1925, wherein a photographically opaque inner ply is built into a
35 piece of board.

Among other things where using latex-coated
40 Cellophane or glassine, or the rubber composition sheet or other transparent sheets which I have been discussing, it is possible to provide a
45 window in a carton by merely forming a hole therein, and the contents within the package can be viewed through the material of the enclosed
50 bag in the carton. Indeed among other things in my new package I can provide a partially cut-out flap in the carton wall which is normally
55 closed as a protection, but which can be lifted back to display the contents of the package when desired and then be closed again.

It is significant of the present improvements wherein a bag is enclosed permanently within
a carton that the carton reinforces the bag when
45 the contents are placed therein, particularly if the bag is slightly larger than the interior of the carton.

Any of the bags described in my application
50 filed herewith, or in the companion case filed Aug. 23, 1935 Serial No. 37,553, and co-pending herewith, can be used in my new improvement. The application Serial No. 37,553, is directed to a
55 seal excellently adapted for my novel bag which is formed of water-soluble adhesive, the application

filed together with this one is directed to the bag itself, and to adhesives which are set by heat and pressure in forming a seal for said bag, and to latex-coated material for use in the bag. The present application is directed to the carton features in connection with the novel bag, and to the use of the transparent or other heat fusible material, particularly the rubber-like transparent material, known among other things as "pliofilm", which in itself possesses to an enhanced degree the properties of a latex film, without some of its disadvantages, and which is peculiarly adapted for use according to my invention because it requires the use of no additional adhesive whatever.

I accomplish my several objects and advantages above set forth, by that certain mode of procedure and the resulting product, which will be described in the following specification and the novelty inherent in this disclosure will be set forth in the appended claims to which reference is hereby made.

In the drawings:—

Fig. 1 is a diagram illustrating the mode of procedure in producing my new container.

Fig. 2 is a perspective showing the container partly folded.

Fig. 3 is a perspective view of the completed article.

Fig. 4 is a perspective of the completed article open and ready for filling.

Fig. 5 is a perspective illustrating a mode of sealing the bag member.

Fig. 6 is a vertical section taken through the package according to my invention.

In producing my novel structure it is highly advantageous to follow the process which I will primarily outline, and which can be followed by the use of automatic machinery of which various forms will be adaptable. I have produced a machine for carrying out the method which will be described and the novel features of which will be set forth in a companion application.

I will describe a practice with reference to an ordinary carton, i. e. a four-walled tubular structure made in flat form, with closing flaps at both ends, and which is shipped flat and when used is opened, the flaps closed at the bottom, the contents introduced and the flaps then closed at the top. The form illustrated will be one wherein the closing flaps are adhesively secured in closed position. This is of course, but one style, as interlocking flaps or tuck-in styles of flaps can be employed.

I will also describe my invention as using as an example the heat-fusible rubber material "pliofilm" or some other sheet material which can be used for wrapping and is itself heat-fusible, it being understood, however, that if material were used for the bag element of the combination which requires provisions either for adhesive coating in strips, which will be at the inside face thereof, these strips to be used for sealing the ends and seams of the bag material, or a complete coating of a protective material, portions of which would be used to form joints, whether on the side or the end of the tube thereof; this would be merely an additional step, which step has already been described in my co-pending cases to which reference has been made above.

The practice as described starts with one or more continuous strips or rolls of either fusible transparent or non-transparent material, or a non-fusible material having a fusible coating applied to the inner surface of the tube material and

with carton blanks which have previously been prepared, cut and scored, printed or unprinted. I have illustrated such blank as 1, having side walls 2 and 3, end walls 4 and 5, and glue flap 6, and closing flaps 7, for one end and 8 for the other end. These blanks are fed one by one along a conveyor.

The sheet 9 of material is caused to pass over a forming plate, over which it is folded to form a lap 10.

A hot roll which bears on the lapped-over portions serves to fuse them into an impermeable sealed seam 10, and to make a tube of the material.

The tube is caused to move along, as by feed rollers, until it comes to a point where a heated iron is pressed across it at spaced intervals, causing the end portions of the tube material to become permanently combined; where a non-fusible material is used and a fusible coating is applied to restricted or pre-determined internal areas, namely: what is to be the end of the tube, the sealing by means of a heated iron operation is synchronized and coordinated with the pre-determined coated surfaces. Where the entire internal surface is coated with said fusible material, such synchronization is not essential, as the iron will fuse the material wherever contact is made.

The tube is still drawn along by feed rollers until it comes to a fly knife of suitable construction, which cuts the tube adjacent the transverse sealed portion. It may be advantageous with some materials to cut across the material incompletely to facilitate further feeding. This transverse cut is illustrated at 12.

It can be noted that so far provision has been made for forming a continuous tube, with sections of desired length, having their one end sealed shut, but still clinging together for feeding purposes. In the illustrated example the bags formed of the tube sections are combined with the carton.

As each carton blank is fed along it is passed through glue wheels which apply adhesive to the under side of the glue flap, and also applies adhesive preferably as illustrated in the form of spots or small areas 13, near the trailing end of the blanks on upper side, or inside walls of carton, on the two side walls 2 and 3, and on the two end walls 4 and 5. Instead of spots, lines of adhesive could be employed, although the limited adhesive spots are preferred.

Suitable feed rolls engage the tube material close to the point where it is to be applied to the carton blank. This feed will be more rapid than the delivery from the knife, which may, if desired, be followed by a feed device causing the tube to move at its previous speed. The pull of the more rapid feed will serve to break apart the connecting portions left by the nicks in the knife, and supply individual bags with their sealed end foremost to the carton blanks. Since the blanks must necessarily be spaced in feeding, for accuracy in operations, and since the original tube is formed continuously, this pick-up in the speed of movement in the bags will compensate for the spacing of the carton blanks.

The delivery of the bag being synchronized with the movement of the carton, it will be deposited upon the walls 3 and 4, the length of the bag being slightly larger in dimension will overlap score lines, separating wall panels and adjacent panels. The bag can thereafter be retained in position on moving carton by means of rolls holding same down, and, in addition

thereto, spots of adhesive, causing the bag to cling to the carton.

The usual practice of forming the tubular carton then takes place by folding the wall 2 and glue flap 6 of the carton, and then turning the end wall 5 over the edge thereof to overlap the glue flap 6. This operation also brings the spots of glue on the side wall 2 and the end wall 5 against the bag, so that it is adhesively secured to all four walls, at what will be the top end of the carton. It may be desirable to have a spot or so near the advancing end, to assist in holding the bag down on the carton during the folding step. Ordinarily the length of the bag will be such that its open end does not project beyond the closing flaps 7 at the trailing end of the carton.

With the very flexible, light material it is a decided advantage to apply the sealed end to the carton in advance, because this is the least flimsy portion of the bag. With other material it will be subject to the wishes of the operator whether the cross seams be cut off ahead or behind the moving tube.

As so far described I have produced a carton of the usual type with a bag sealed in a simple seam into a tube lengthwise of the carton, with its end sealed shut, and with adhesive holding the material of the bag to the carton walls near the mouth thereof. I prefer that the bag be a little oversize, i. e. larger than the inside of the carton, and have so illustrated it. This will permit the bag to find support throughout in the carton. To this end it may also be desirable to lay the closed seam further over the ultimate bottom-closing flaps of the carton than I have illustrated, so as to result in ultimate bottom support for the contents of the bag if this is necessary.

While I have shown a single seam lapped seam tube; it is equally as easy to use two strips of paper and fold one of them over the other at each side of the tube former, which is a well known way of making a lapped seam tube.

The carton is then ready for shipment, and looks on the outside like any other carton.

In use the carton will be opened, and can then be fed along in a carton sealing and filling machine. The act of opening the carton will automatically distend the bag, i. e., to open it, since the bag is held to the four walls of the carton near its end away from the sealed end. The operation of a sealing and filling machine is to glue and close the bottom flaps first. This operation will result in folding under any portion of the bag that projects into the flap area at the bottom of the carton. The contents can then be placed in the bag lined carton in the usual way.

Oil, milk, cream or the like can be introduced from a suitable filling spout. Or in packaging foods, carbon dioxide gas can be fed into the carton from a suitable spout dropped down in the bag, which will drive out the air, after which the contents are introduced.

In any event, the carton filled with material as at 14, whether by machine or by hand, is in a condition when filled, of the open ends of the bag standing out along with the closing flaps, of whatever nature they may be. By passing the filled carton through a sealing device which presses hot rollers to the projecting ends of the bag, a like seal 15 can be formed across the top end thereof, to that which was originally formed at the bottom. Thereupon the closing

flaps of the carton can be secured in the usual manner depending on their nature.

While I have described my method according to progressive feeding of blanks for cartons, and a sheet of material to form a tube with a seal across its one end, it will be evident that the operations need not be continuous but the tube can be formed up by hand, the transverse seal and cutting by hand, and the application to a carton blank prior to folding by hand. The adaptation of the procedure to continuous feed of paper-like material in a strip, and usual folder and gluer operations in carton formation, is but a feature of the process.

As illustrated, I may form a window in the carton blank, as at 16, through which the contents of the carton can be viewed, when the bag is of transparent material. Also I may form the opening in the carton as a half-circle cut out, thus forming a flap 17, which can be bent out, as desired to disclose the contents of the package for inspection.

In packaging light and air sensitive materials, such as coffee, I will use the Fish light-impermeable board, preferably. I will also fill the bag only part way, folding in the remainder, so that gases developing during shipment and prior to delivery will not burst the bag or the carton, but merely distend the bag. I prefer to use the carbon dioxide method of packing. Thus, for the first time, so far as I am advised, I have provided a package of coffee which is non-oxidizing, air tight, moisture proof, light proof and burst proof, and a product which has never been produced before except in special metal containers with vacuum packing, which is undesirable since it results in the loss of aromatic substances upon opening the container.

For packaging of milk and cream I have provided a very inexpensive package, which can be protected against light, although inspection may be provided, which is very inexpensive compared to glass bottles.

For packaging oil, I provide a package which is inexpensively made, and which once used can be thrown away.

I have provided a package and a procedure of making it which is adapted to any heat-fusible sheet material including the ploffilm material, ideally useful for all kinds of packaging and ideally suitable for forming impermeably sealed seams and closures through which neither liquid, moisture vapor nor air can penetrate. By forming the printing on the carton, upside down with relation to its position when filling it, and then reversing its position so as to have the printing right side up, it will be practical to have a very full bottom for the bag in its final position, because only the projecting lips need be sealed in the final operation and the free portion of the bag pushed into the open end of the carton before finally closing the flaps thereof. In this way it can be assured absolutely that the contents are nowhere supported independently by the bag.

For some purposes it will be desirable to use merely a paper tube instead of a carton for housing the bag, thereby protecting its sides and facilitating opening it. It may be desired to use other methods of manufacture, so far as the container features themselves are concerned, such as introducing the tube into the carton after it is made, or sealing both ends thereof as part of the operation of filling or sealing the one end

of the tube after it is in place on the carton blank, before closing the blank.

As heretofore stated, I have not referred to all of the possible materials which can be used according to my invention, but I wish to stress the fusible material such as plicofilm or gelatine or latex or resin coated papers or Cellophane, because its use is particularly valuable with relation thereto. In certain aspects of my invention the plain tubular end sealed structure of my co-pending application is not necessarily employed, as the sealing by heat is so effective and so quickly accomplished that ordinary bag forms can be employed with some of the heat fusible materials where they are such as can be manipulated to make an ordinary bag.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. A flat container construction in knocked-down form, designed to be squared up into box form, comprising an outer receptacle element and an inner element, the outer element being a tubular blank having closing flaps attached to the walls thereof by hinge lines, said inner element constituting an open-ended flat bag having no re-entrant angles and made of flexible material impervious on the inside at least, the closed end of the bag extending beyond the hinge lines adjacent to the flaps but unsecured to the flaps at one end of the outer receptacle, the walls of said flexible bag being adhesively secured to at least a plurality of the walls of the outer structure in such a manner as to cause the flexible bag to be pulled open upon squaring up the whole structure, the open end of the bag projecting beyond the hinge line thereof and unsecured to the closing flaps at the other end of the outer structure.

2. A flat container construction in knocked down form designed to be squared up into box form, comprising an outer receptacle element and an inner element, the outer element being a tubular blank having closing flaps attached to the walls by hinge lines, the inner element constituting an open-ended flat bag made of flexible material and relatively impervious, the closed end of the bag unsecured to the flaps at the one end of the outer receptacle element, the walls of the flexible bag being adhesively secured to at least a plurality of the walls of the outer structure in such manner as to cause the flexible bag to be pulled open upon squaring up the whole structure, the open end of the bag projecting beyond the hinge line of the flaps at the other end of the outer receptacle element and unsecured to said flaps sufficiently to permit the bag to be closed independently of said flaps.

3. A flat container construction in knocked-down form designed to be squared up into box form, comprising an outer receptacle element and an inner element, the outer element being a tubular blank having closing flaps attached to the walls by hinge lines, the inner element constituting an open-ended flat bag made of flexible material and relatively impervious, the closed end of the bag unsecured to the flaps at the one end of the outer receptacle element, the walls of the flexible bag being adhesively secured to at least a plurality of the walls of the outer structure in such manner as to cause the flexible bag to be pulled open upon squaring up the whole structure, the open end of the bag projecting beyond the hinge line of the flaps at the other end of the outer receptacle element and unsecured to said

flaps sufficiently to permit the bag to be closed independently of said flaps, the walls at the mouth of the flat bag being prepared for heat sealing about the contents thereof.

4. A flat container construction in knocked-down form designed to be squared up into box form, comprising an outer receptacle element and an inner element, the outer element being a tubular blank having closing flaps attached to the walls by hinge lines, the inner element constituting an open-ended flat bag made of flexible material and relatively impervious, the closed end of the bag unsecured to the flaps at the one end of the outer receptacle element, the walls of the flexible bag being adhesively secured to at least a plurality of the walls of the outer structure in such manner as to cause the flexible bag to be pulled open upon squaring up the whole structure, the open end of the bag projecting beyond the hinge line of the flaps at the other end of the outer receptacle element and unsecured to said flaps sufficiently to permit the bag to be closed independently of said flaps, the interior of the bag at least constituting an unbroken layer of heat-fusible material.

5. A flat container construction in knocked-down form designed to be squared up into box form, comprising an outer receptacle element and an inner receptacle element, the outer element being tubular and having closing flaps attached to the walls thereof by hinge lines, said inner element also tubular in flat form without re-entrant angle, and made of flexible material which on the inside at least is heat-fusible, the seam forming said tubular structure having no intervening material except fused portions of the said heat-fusible material, said inner element unsecured to the closing flaps of said outer receptacle element, but adhesively secured to at least two walls of the said outer receptacle element so that when the structure is squared up the said inner element will be pulled open.

6. A flat container construction in knocked-down form, designed to be squared up into box form, comprising an outer receptacle element and an inner element, the outer element being a tubular blank having closing flaps attached to the walls thereof by hinge lines, said inner element constituting an open-ended flat bag having no re-entrant angles and made of flexible material impervious on the inside at least, the closed end of the bag extending beyond the hinge lines adjacent to the flaps but unsecured to the flaps at one end of the outer receptacle, the walls of said flexible bag being adhesively secured to at least a plurality of the walls of the outer structure in such a manner as to cause the flexible bag to be pulled open upon squaring up the whole structure, the open end of the bag projecting beyond the hinge line thereof and unsecured to the closing flaps at the other end of the outer structure, a portion at least of the said flat bag being formed entirely of transparent heat-sealable material, the outer receptacle element having a hole therein to expose said transparent portion, thus constituting a window.

7. A flat container construction in knocked-down form, designed to be squared up into box form, comprising an outer receptacle element and an inner element, the outer element being a tubular blank having closing flaps attached to the walls thereof by hinge lines, said inner element constituting an open ended flat bag having no re-entrant angles and made of flexible material impervious on the inside at least, the closed end of

the bag extending beyond the hinge lines adjacent to the flaps but unsecured to the flaps at one end of the outer receptacle, the walls of said flexible bag being adhesively secured to at least a plurality of the walls of the outer structure in such a manner as to cause the flexible bag to be pulled open upon squaring up the whole structure, the open end of the bag projecting beyond the hinge line thereof and unsecured to the closing flaps at the other end of the outer structure, a portion at least of the said flat bag being formed entirely of transparent heat-sealable material, the outer receptacle element having a hole therein to expose said transparent portion, thus constituting a window, said hole covered by a partially cut-out panel normally closing it but openable to reveal the said window.

8. A flat container construction in knocked-down form, designed to be squared up into box form, comprising an outer receptacle element and an inner element, the outer element being a tubular blank having closing flaps attached to the

walls thereof by hinge lines, said inner element constituting an open ended flat bag having no re-entrant angles and made of flexible material impervious on the inside at least, the closed end of the bag extending beyond the hinge lines adjacent to the flaps but unsecured to the flaps at one end of the outer receptacle, the walls of said flexible bag being adhesively secured to at least a plurality of the walls of the outer structure in such a manner as to cause the flexible bag to be pulled open upon squaring up the whole structure, the open end of the bag projecting beyond the hinge line thereof and unsecured to the closing flaps at the other end of the outer structure, the adhesive securing of the said flexible bag to the outer receptacle element being applied to at least two opposite walls of said outer element adjacent the open end of the bag over an area sufficient to maintain the walls of the bag in substantial parallelism with the said two opposite walls of the said outer structure.

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