April 19, 1938. A. WESSELMAN 2,114,411

APPARATUS FOR THE MANUFACTURE OF PACKAGES

Original Filed March 3, 1934 2 Sheets-Sheet 1

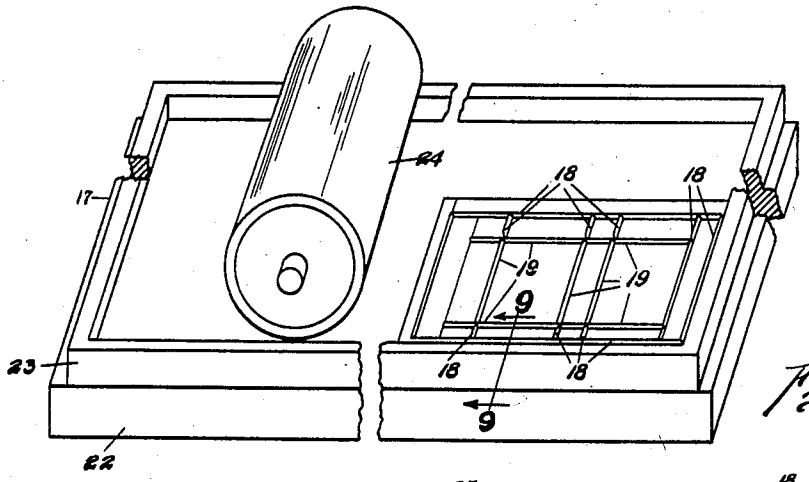



Fig. 1.

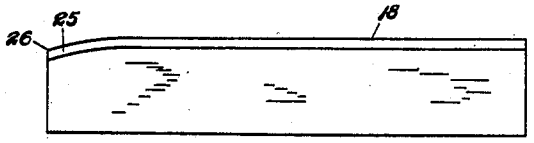



Fig. 2.

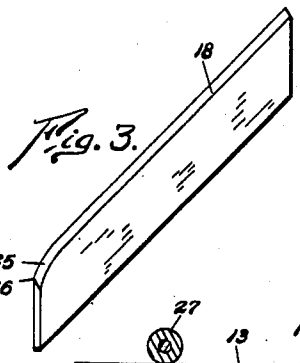



Fig. 3.

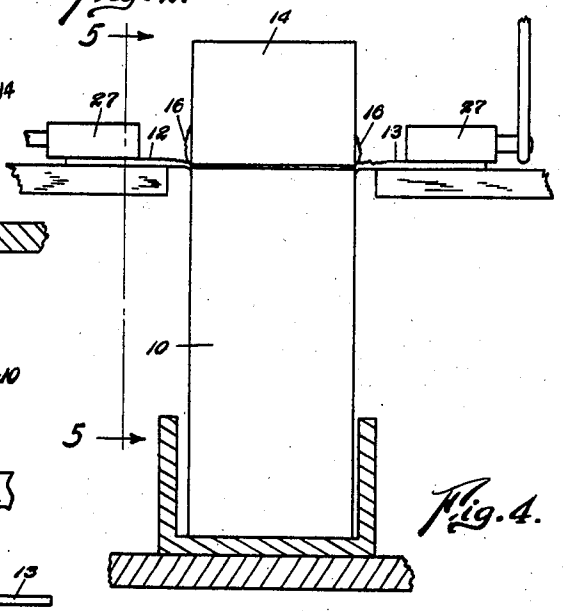



Fig. 4.

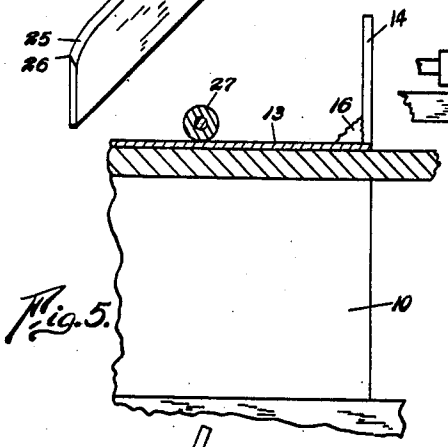



Fig. 5.

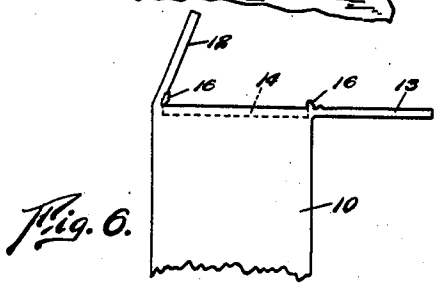



Fig. 6.

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APPARATUS FOR THE MANUFACTURE OF PACKAGES

Original Filed March 3, 1934 2 Sheets-Sheet 2

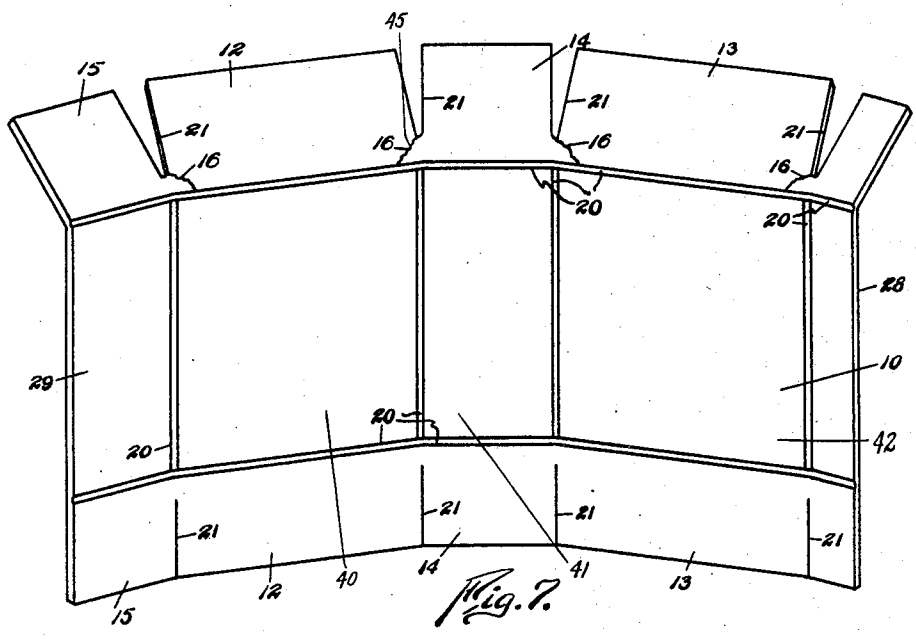



Fig. 7.

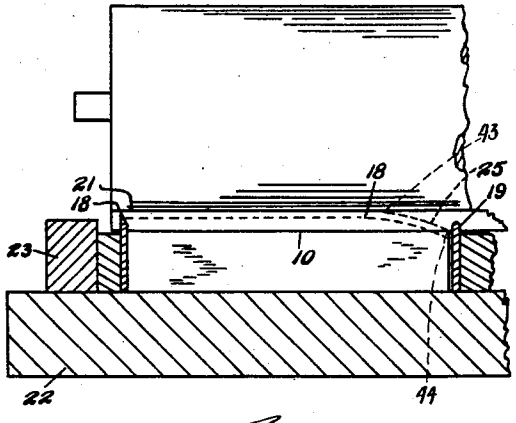



Fig. 9.

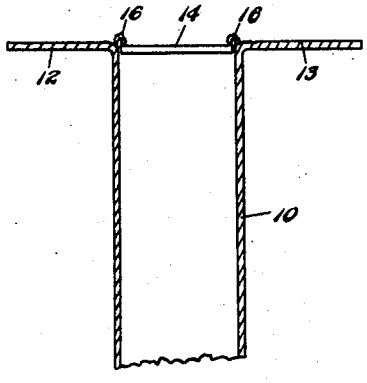



Fig. 8.

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Patented Apr. 19, 1938

2,114,411

# UNITED STATES PATENT OFFICE

2,114,411

## APPARATUS FOR THE MANUFACTURE OF PACKAGES

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Original application March 3, 1934, Serial No. 713,902. Divided and this application December 7, 1936, Serial No. 114,526

1 Claim. (Cl. 93—58)

This is a division of application Serial 713,902, filed March 3, 1934.

An object of the invention is to provide apparatus or means for simply and expeditiously providing blanks from which packages are to be formed as explained in said parent application for patent.

The foregoing and other objects are attained by the means described herein and disclosed in the accompanying drawings, in which:

Fig. 1 is a fragmental perspective view disclosing the simple means and a step in the method for manufacturing the new carton or package.

Fig. 2 is a detail view showing in elevation a novel gusset-forming cutter or blade.

Fig. 3 is a perspective view of the cutter or blade shown in Fig. 2.

Fig. 4 is a fragmental cross-sectional view of one form of conventional gluing and filling machine that may be used in practicing the invention.

Fig. 5 is a fragmental cross-sectional view taken on line 5—5 of Fig. 4.

Fig. 6 is a fragmental end view of the improved carton or package showing the gussets at the flap corners.

Fig. 7 is a perspective view of a scored and slitted blank from which the improved package is made.

Fig. 8 is a fragmental vertical cross-sectional view of a partly closed carton, showing the sealing effect of the gussets.

Fig. 9 is a fragmental cross-sectional view taken on line 9—9 of Fig. 1.

In the packaging of food products and the like, it is particularly desirable to employ a container designed and constructed to exclude moisture and foreign substances with which the container may come into contact, and to maintain within the container the original freshness, aroma, and wholesomeness of the packaged product. Heretofore, this has been accomplished to a satisfactory extent by the use of relatively expensive containers. Some of the containers have been of metal, while others have been of the double or lined box construction commonly employed in the packaging of products such as breakfast foods and the like. The lined box construction requires the use of an inner waterproof container generally having a paraffine coating, or impregnated with paraffine, whereby to provide a substantially sealed container which in turn is placed within an outer container. The outer container is not sealed against moisture, air, and dust, except that the flaps thereof are glued in place with no particular degree of care, the package being considered complete so long as it holds together.

Packages of the kind just described are obviously more expensive to manufacture than were the single walled boxes or cartons used previously. Moreover, they require the installation of additional folding and assembling machines, and double the amount of stock which is necessary for production of a carton.

In the attempt to produce a single walled container equal in effectiveness to the double container, it was necessary first of all to treat paper and cardboard to render it substantially impervious to moisture, air, vermin, etc. This has been accomplished, and no difficulty is experienced in procuring cardboard and heavy paper so treated. Practical problems, however, have interfered with the satisfactory commercial use of cardboard or paper containers so treated, because the producer and packer have been unable to provide an effective sealing of the joints or corners at the time of closing the carton or container upon the contents thereof. The various difficulties above related have been effectively overcome by the practice of the invention disclosed herein.

With reference to the drawings accompanying this description, the character 10 indicates any kind of a paper or cardboard box that has been treated with any of the common preparations for rendering the material thereof impervious to moisture, air, vermin and other extraneous elements that might otherwise enter the box or container. The box or container includes the side walls 29, 40, 41, 42, glue flap 28 and various side flaps 12 and 13, and end flaps 14 and 15 which would be folded upon one another and secured together by means of glue or the like, as is common practice at the present time in closing cartons or containers of the general form illustrated. This closing of the ends of containers is performed by machinery or mechanical means at a rapid rate, with the result that complete closing of the containers at each of the eight corners thereof is rarely, if ever, accomplished with the use of carton blanks such as were commonly used prior to the present invention. However, the provision of what I term "gussets", one at each of the eight corners of the blank, as indicated at 16 of Figs. 5 and 7, effectively seals each of the eight corners when the flaps are folded down and glued or otherwise secured in place. The gussets, in effect, plug the corners of the container where the flaps

meet when folded over to close the top and bottom thereof.

The manner of forming the gussets may be as follows. Referring to Figs. 1 and 9, 17 indicates part of any ordinary press or carton blank forming machine, which carries knife elements and scoring elements 18 and 19, respectively, properly arranged to blank out the carton of Fig. 7 and to provide the various scores 20 and slits 21. The machine in general may be of any approved type, and it ordinarily includes a reciprocating bed 22 adapted to carry one or more frames 23 in which are clamped a series of carton blanking units comprising the scoring means and cutters above referred to. In practice, a large sheet of cardboard or paper is fed onto the frame to overlie the elements 18 and 19, and this sheet moves, with the bed and frame, beneath a pressure means 24 which forces the sheet against the cutters and scoring elements to provide the blank disclosed in Fig. 7.

Particular attention is directed to the transverse cutters or blades 18 which provide the slits 21 of Fig. 7. It will be noted that each blade is ground or shaped at one end, as at 25, to slope toward the major axis of the blade, so that any slit 21 formed by the blade will be incomplete at the adjacent longitudinal score 20, especially as regards the interior surface of the blank. The exterior surface will be entered by the inclined portion 25 of the blade, to an extent that varies in depth from approximately zero to the thickness of the cardboard. In other words, the extreme sharpened end or corner 26 of the blade is adapted to enter the outer surface of the blank at the adjacent longitudinal score 20, or may stop short of cutting or slitting contact with the blank, whereby the portion of the blade adjacent the end 26 thereof, produces a channel or groove which progressively extends deeper into the blank as the groove or channel extends in alignment with the slit and toward the free ends of the flaps such as 12, 13, 14 and 15 and the groove or channel then merges with that portion of the cut or slit that severs or divides the free ends of adjacent flaps. The carton body comprising walls 29, 40, 41, 42, and 28, when formed and secured as is common practice, provides a hollow receptacle having the indicated flaps disposed at and attached to the peripheries of the opposite ends of the carton body. With the foregoing in mind, and by referring to Fig. 7, it will be evident that outward bending of the side flaps 12 and 13 away from the observer of Fig. 7 will result in partial tearing of the material of the blank such as will form the gussets 16. The tearing action, in view of the varying depth of the slit 21 from a point of severance of the flaps, as indicated at 43 of Fig. 9 to approximately little, zero or no severance of such flaps, as indicated at 44 of Fig. 9, causes the tearing of the stock, incident to turning down of the side flaps, so that the material forming each gusset tapers off or gradually becomes thinner in cross section as it approaches the line of tear or separation of the flaps and which line is indicated at 45 of Fig. 7. This act ordinarily is performed during the flap gluing operation of Fig. 4, wherein conventional gluing means or glue rolls are indicated at 27. The carton may also be filled simultaneously with the said gluing operation if desired.

When the glued side flaps are finally folded inwardly upon the inwardly disposed end flaps 14 and 15, as suggested by Figs. 6 and 8, the various gussets 16 are naturally cramped at the corners whereby to effectively plug or seal the corners against entry of moisture, air, etc. The cardboard or paper stock for the cartons or containers is invariably made up of thin layers of paper, wherefore the gussets when formed are constituted of a definite amount of stock determined by the shape of the blade ends 25 and the depth of the cut with which such blades enter the stock. The blades therefore must be properly adjusted, as to height, within the frame 23 of Fig. 1, or else the compressive force of roll 24 should be varied to secure the result above set forth.

The various steps of the method of forming the cartons is as follows: After setting up the machine of Fig. 1 to effect the proper scoring, cutting and blanking out operations, the table with a sheet of cardboard thereon is reciprocated relative to the compression means 24, whereby to produce the various scores and incomplete slits shown in Fig. 7. The blank thus formed is then glued along its extended glue flap 28 and shaped into a rectangular open ended tube with said flap glued to the wall 29. Thereafter, the bottom-forming flaps are bent along their score lines, providing gussets as explained, and secured to one another to close the bottom of the container. The next operation is the filling and gluing operation of Fig. 4, which has been explained. Upon closing the top of the filled container by turning inwardly the end flaps 14 and 15 and the side flaps 12 and 13, the gussets at the corners or meeting points of said flaps are securely cramped between the flaps to effectively seal and plug said corners. The gussets obviously are bound to provide a tight seal because they are thin and more flexible than the carton stock, thereby insuring the formation of plugs which do not materially resist the closing force of the folded-over flaps.

Upon completion of the carton or package, a coating of suitable lacquer or other elastic adhesive and cohesive substance may be sprayed, brushed or otherwise applied to the various joints, if desired. A coating of lacquer and/or nitro-cellulose base material solution is found suitable for this purpose.

What is claimed is:

A device of the class described comprising the combination of a frame including cutting and scoring means for blanking out cartons with scored lines along lines of fold of the blank, and for cutting slits between adjacent carton flaps, the cutting means for cutting slits between adjacent flaps having cutting edges that progressively recede from the plane in which a blank is disposed when exposed to said frame, said receding edges being disposed so as to be adjacent the scored lines setting off the flaps from the carton body, and means for pressing sheet material against the cutting and scoring means of the frame.

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