

June 16, 1964

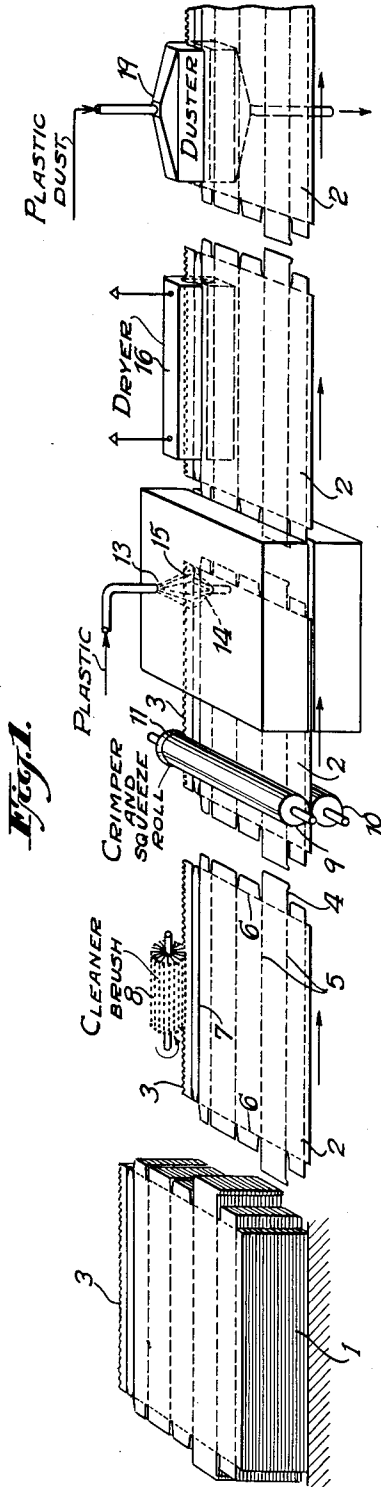
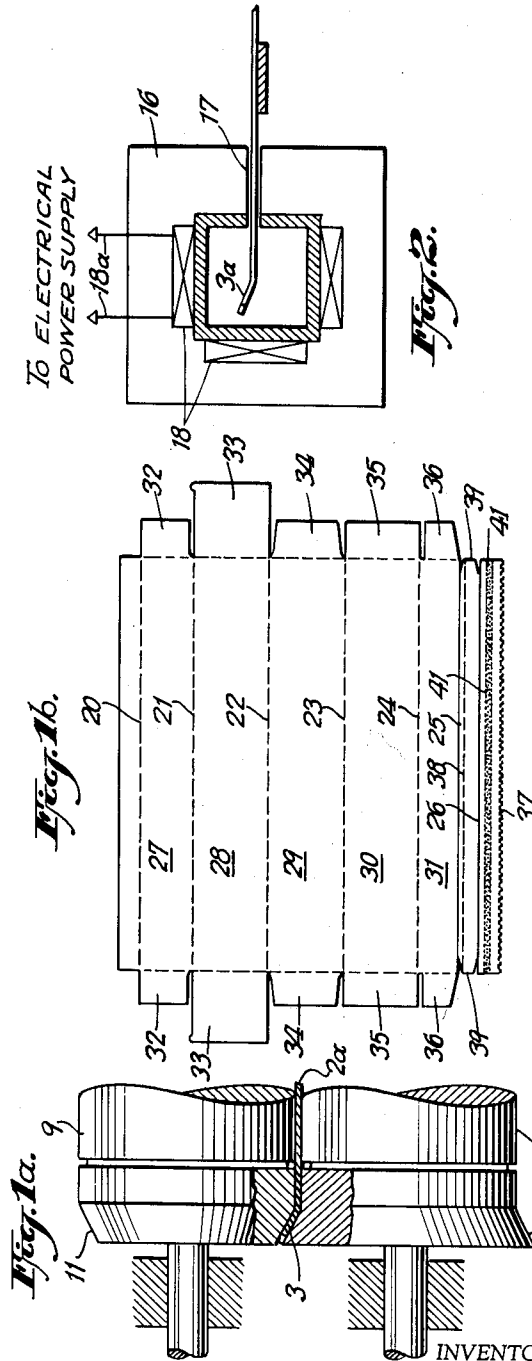
W. W. FINN ETAL

3,137,424

DISPENSING CARTON FOR WRAPPING MATERIAL IN THE FORM
OF SHEETS AND FILMS, AND METHOD OF MAKING SAME

Filed March 27, 1962

2 Sheets-Sheet 1



TO ELECTRICAL
POWER SUPPLY

Fig. 1b.

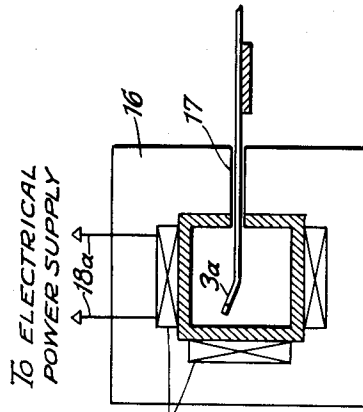


Fig. 2.

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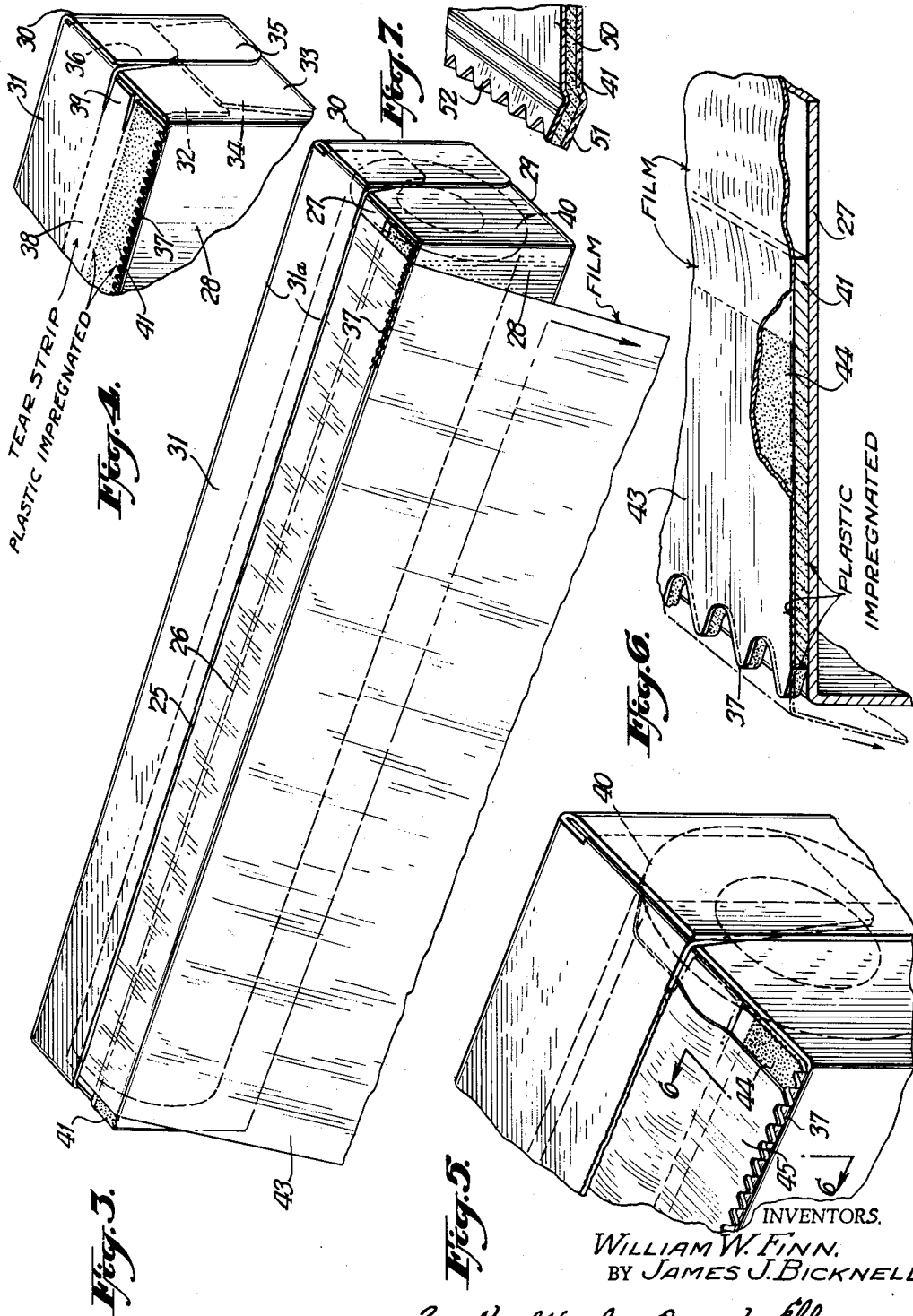
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DISPENSING CARTON FOR WRAPPING MATERIAL IN THE FORM OF SHEETS AND FILMS, AND METHOD OF MAKING SAME

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This invention pertains to cartons for packaging and dispensing rolls of foil or sheet stock, and more especially to an improved tear edge or tear strip herefor for dispensing the materials in desired lengths, and to methods of making the same.

It is known to provide dispensing cartons for packaging rolls of thin sheet material, such as aluminum or other metal foil, waxed paper, plastic film and the like, with a tear edge or tear strip for progressively dispensing the roll stock and severing preselected length over the tear edge.

In cartons of this type as heretofore constructed, the tear edge has generally comprised a metal strip appropriately mounted on the carton exterior in such manner as to provide a projecting tear edge, usually serrated or burred for facilitating the severing of withdrawn sections of the rolled sheet material. The provision of a metal tear strip of this character adds to the expense of the carton to the extent of the cost of making the same, burring or serrating the edge and attaching to the carton. Even in quantity production, the added expense is an appreciable item in the over-all cost of the carton.

To minimize or eliminate this expense, it has also been proposed to substitute a tear strip of cardboard or, alternatively, to provide the carton itself with a serrated tear edge at the strip withdrawal opening, but neither of these expedients has proved satisfactory owing to the inherent weakness of the cardboard tear edge which distorts or breaks under the force of the strip severing operation and is soon rendered useless for such purposes.

In accordance with the present invention, we have effectively overcome the above-mentioned disadvantages of the aforesaid and other prior constructions in an extremely economical manner in the process of forming the carton blank from cardboard or other sheet stock of fibrous organic material. According to the present invention, the sheet stock is subjected to a die stamping and cutting operation such as appropriately to crease, score and cut a carton blank for formation into a carton and also to provide the same with a serrated edge, such that when the blank is formed into a carton, the serrated edge will be appropriately positioned to form a tear edge for the sheet material to be packaged therein. The blank as thus stamped and cut is brushed to remove loose particles and fed between a pair of squeeze rolls which are chamfered at one end in complementary fashion for setting the serrated edge of the blank at a slight angle. The serrated edge as thus set is next coated on both sides with a thermosetting resin varnish by a rolling or spraying application.

For this operation any of the various thermosetting resins in a suitable solvent may be employed, such as a thermosetting polyester, polyurethane, epoxy, epoxy-phenol or phenolic resin dissolved in a suitable solvent such as a ketone, alcohol or ester. The preferred resin is an epoxy resin, Class II, formed by reacting bisphenol-epi-chlorohydrin with a vinyl-phenol complex, the preferred solvent being methyl-ethyl-ketone, in the proportions of about 10% by volume of the solvent to the resin content. The blank is then passed through a drying oven for removing the solvent from the resin varnish and also for curing the resin to the thermoset condition. As the

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blank emerges from the drying and curing oven, the resin coated edge is dusted with powder as by means of an "Oxydrie" spray for preventing the stacked blanks from sticking together.

A tear edge produced as above or by equivalent procedures incorporating such a resin in the thermoset state, is extremely strong, rigid and permanent, being unaffected by moisture, and is extremely effective for severing any of the various rolled sheet materials employed for protecting comestibles and the like, such as aluminium foil, waxed paper or any of the plastic film materials such as the polyester resin sheet, sold as "Mylar," or that sold as "Saran Wrap" being a copolymer of vinylidene chloride and vinyl chloride, or polyethylene or other plastic sheet materials.

A further novel aspect of the carton embodying the resin incorporating tear edge of the present invention as applied to the packaging of rolls of such plastic materials, is that as the plastic stock is withdrawn from the carton and in frictional engagement across the tear edge, the strip adheres to the resin coated tear edge by electrostatic attraction, so that upon severing a withdrawn section, the severed end remaining integral with the material of the roll, adheres to the tear edge and thus is prevented from slipping back into the carton.

The carton blank in preferably so creased and scored, as hereinafter described more in detail, as to provide end flaps and interposed, substantially rectangular, side wall, base and cover panels together with an additional side wall, overlap panel along the longitudinal extremity of which the resin incorporating tear edge is formed. The blank may be formed into a substantially rectangular box by bending along the crease lines and lapping and sealing the base and side wall end flaps leaving the cover panel and thereto attached overlap panel free. The roll of sheet material may then be placed in the carton and the overlap panel bearing at its outer extremity the tear edge, thereupon be sealed at its base against the lower edge of the contiguous side wall panel, in such manner that the tear edge projects slightly below or outwardly from the base, thus to seal the carton closed with the roll housed therein. Alternatively, the end flaps at one end of the blank may be left unsealed and the overlap panel sealed in the manner aforesaid prior to loading with the roll of sheet stock, which may be inserted via end loading through the open flaps which may thereupon be lapped and sealed.

In accordance with a further feature of the invention, the overlap panel is scored along a pair of lines spaced from its tear edge to provide a tear strip for opening the carton and freeing the cover so that the end of the roll may be withdrawn across the tear edge sealed as aforesaid to the base of the side wall, thus to permit severing of withdrawn sections of the roll as aforesaid.

The invention thus provides an extremely simple and economical method of forming a roll packaging and dispensing carton from a single blank of sheet stock embodying a strong, rigid and permanent, thermoset resin incorporating tear edge, and which thus requires no separate formation and attachment of a metal or other tear strip, as in various heretofore known constructions. Also it eliminates the weak and ineffective tear edge constructions of other types of cartons heretofore proposed.

Having thus described the invention in general terms, reference will now be had to the accompanying drawings for a more detailed description, wherein:

FIGURE 1 is a more or less diagrammatic showing in perspective, of the preferred method of producing carton blanks having a tear edge in accordance with the invention; FIGURE 1a is an enlarged fragmentary view in elevation of the aforesaid chamfered squeeze rolls also shown in FIG. 1, between which the blanks are fed for setting serrated tear at an angle. FIGURE 1b is a view

in end elevation of the oven shown in FIG. 1 for drying and curing the resin coated serrated tearing edge of the carton blank;

FIGURE 2 is a plan view of a carton blank as produced in accordance with the method and apparatus of FIG. 1;

FIGURE 3 is a perspective view showing the carton blank of FIG. 2 as formed into a substantially rectangular carton and containing a roll of the sheet material to be dispensed; this view also illustrating the carton with the tear strip removed and manner in which the sheet material is withdrawn and flexed over the tear edge for severing;

FIGURE 4 is a fragmentary, perspective view of the right end portion of the carton assembly of FIG. 3, but showing the carton as sealed by the tear strip prior to its removal;

FIGURE 5 is a fragmentary, perspective view of the right-hand portion of FIG. 3 following the severing of a withdrawn sheet section at the tear edge, and illustrating the manner in which the residual strip edge of a plastic sheet material, such as Mylar, adheres by electrostatic attraction to the resin coated portion of the tear edge, thus to prevent the strip end from slipping back into the roll of sheet stock; FIGURE 6 is a fragmentary, sectional detail as taken at 6-6 of FIG. 5; and FIGURE 7 is a fragmentary, perspective detail showing the preferred embodiment of the tear edge construction as set at an angle to the balance of the carton in the manner aforesaid.

Referring to FIG. 1, there is shown at the left a stack 1 of carton blanks as delivered from a die stamping, creasing and scoring machine, for cutting each blank from cardboard sheet stock to the shape shown at 2, one longitudinal edge of which is serrated, as at 3, and the opposite ends of which are cut to provide end flaps, as at 4, the blank being also longitudinally and transversely creased, as at 5, 6, and scored, as at 7, as explained more in detail below.

The blanks 2 are fed successively from the stack 1, longitudinally past a brushing station wherein a rotating brush 8, disposed as shown, brushes the serrated edge 3, of the blank and thereby removes all dust particles therefrom. The blanks are fed thence past a crimping station, between a pair of crimping squeeze rolls 9, 10, the upper ends of which are shown in FIG. 1, are positioned to engage the serrated edge 3 of the blanks 2, these ends being chamfered in complementary fashion, as shown at 11, 12 of FIG. 1a, for imparting an angular set to the serrated edge 3 of the blanks as compared to the remaining planar position thereof, as shown by portion 3a, FIG. 2, of the blank with reference to portion 2a thereof. This crimping step may be omitted if desired.

The blanks are fed next to a coating station, where a coating of resin varnish of the character aforesaid, is sprayed as at 13, 14, or otherwise applied, to the upper and lower surfaces of the blank 2 along the serrated edge 3 thereof, in such manner as to apply the resin varnish along the marginal upper and lower edges thereof, as at 15. The blanks are fed thence past a resin drying and curing station at which is disposed a drying tunnel 16, FIGS. 1 and 1b, provided with a slotted opening along one side, as at 17, for passage of the blank 2, with the resin coated portion 3a thereof disposed within the oven as shown in FIG. 1b. The oven is provided with electrical resistance heating units, as at 18, supplied with power over leads 18a. During passage through the oven, the solvent in the resin coating is volatilized, and also the resin is cured to the permanently thermoset state.

The blanks are fed next to a dusting station where a plastic dust is sprayed onto the upper and lower resin coated portions of the blanks, as by means of dusting units as at 19, to prevent the blanks from sticking together in subsequent stacking.

Referring now to FIG. 2, which is a plan view of one of the carton blanks 2 after processing as in FIG. 1, the

blank which is of roughly rectangular form as shown, is creased along parallel lines, as at 20 to 24, inc., and is scored, i.e., cut halfway through, along parallel lines, as at 25, 26. The crease lines 21-24, inc., divide the blank into five substantially rectangular panels 27-31, inc., which in the assembled carton, as explained below, comprise respectively the front wall, base, rear wall, cover and overlap panels thereof. These panels terminate at their opposite ends, respectively, in end flaps as at 32-36, inc.

The overlap panel terminates at its extremity in the resin treated tear edge 37. The score cuts 25, 26, bound a tear strip 38, which during the blanking operation, is cut to form chamfered end tabs, as at 39, for ease of grasping to remove the tear strip.

Referring now to FIGS. 3-5 along with FIG. 2, in assembling the carton, the blank is bent at right angles along the crease lines 21-24, into substantially rectangular, tubular shape, with the overlap panel 31 overlapping the front wall panel 27 as shown. If now the carton is to be arranged for top loading, the end flaps 32, 34, 36, are turned in under the base end flap 33 at each end, and sealed thereto in the manner illustrated in FIG. 4, the end flaps 35 of the cover 30 being left free. With the carton thus assembled, the cover 30 having the thereto attached overlap panel 31, is raised and the roll of plastic sheet material 40 or of other material, is placed in the carton. The carton is thereupon closed by gluing the base 41 of the overlap panel 31 to the base of the front wall panel 27, in such manner that the resin incorporating tear edge 37, preferably projects slightly beyond the carton in the embodiment shown in FIGS. 3-5.

Alternatively, if the carton is to be arranged for end loading, the end flaps are left unsealed at one end, and the carton otherwise closed by overlapping and gluing the end flaps at the opposite ends as above described. Also the base 41 of the overlap panel 31 is glued to the base of the front wall panel 27 in the manner described above. The roll of sheet material 40 is now slipped into the open end of the carton, and the end flaps at that end thereupon lapped and glued as heretofore described.

For opening the carton, a tab 39 of the tear strip 38 is gripped and the tear strip thus removed, leaving the portion 41 of the overlap panel which carries the tear edge 37, firmly glued to the base of the front wall panel 27. Removal of the tear strip releases the cover 30 and the upper portion 31a, FIG. 3, of the overlap panel which thus becomes part of the cover, so that the cover may be raised and the end of the roll 40 gripped, for withdrawing the sheet material from the roll, which is drawn down across the tear edge 37 in the manner illustrated at 43, FIG. 3, to a desired length and thereupon severed by pulling against the serrated teeth of the tear edge 37.

As above stated, if the sheet material of the roll 40 is made of a plastic material, such as Mylar, it will adhere by electrostatic attraction to the resin coated portion 44, FIG. 5, of the tear edge, as it is drawn thereacross, so that upon severing the length 43 of the sheet material, the remaining end portion 45 which extends back to the roll 40, will adhere to the resin of the tear edge and thus prevent the sheet material from slipping back onto the roll.

Referring to the preferred tear edge construction of FIG. 7, the resin coated portion 50, is bent up as shown at 51, in the manner above described, so that the plane of the teeth 52, extends at an angle to the supporting strip 41 to facilitate ease of severing the sheet stock from the roll 40. With this construction, the teeth 52 need not project beneath the base of the carton.

What is claimed is:

1. The method of producing a carton blank for packaging thin sheet stock in roll form, said blank having a reinforced serrated tear edge for dispensing said stock, said method comprising: die cutting said blank with a serrated edge, applying a heavy coating of a thermosetting synthetic resin varnish, and treating said edge at elevated

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temperature to remove volatiles therefrom and to cure said resin to the thermoset condition.

2. The method of producing a cardboard carton blank having a reinforced tearing edge, for packaging and dispensing thin sheet material in roll form, said method comprising: die cutting said blank from cardboard base stock, to impart a serrated edge to said blank, removing dust particles from said edge and bending said edge at an angle to said base stock, thereupon applying to the upper and lower surfaces of said edge, heavy coatings of a thermosetting synthetic resin varnish, and treating the so-coated edge at elevated temperature sufficient to remove volatiles from said resin coating and to cure the resin to the thermoset condition, thereby permanently to set said edge at said angle to the remainder of said blank, and to provide a strong and sharply pointed tearing edge for said blank.

3. In combination: a roll of electrically insulative plastic sheet material, a container housing the same, said container having an opening for progressively withdrawing said material from said roll, and said container exteriorly mounting along said opening in the direction of said withdrawal, a supporting strip of electrically insulative material, impregnated and coated with a hardened plastic, providing a rigid tearing edge for severing preselected lengths of said material withdrawn from said roll, and for electrostatically adhering thereto the severed end of said material integral with the material of said roll.

4. In combination: a roll of plastic sheet material, a cardboard container housing the same, said container having an opening for progressively withdrawing said material from said roll, and said container exteriorly mounting along said opening in the direction of said withdrawal, a strip of cardboard, having a serrated edge, impregnated and coated with a hardened plastic, providing a rigid tearing edge for severing preselected lengths of said material as withdrawn and for electrostatically adhering thereto the severed end of said material integral with the material of said roll.

5. A container for housing and dispensing sheet material in roll form comprising a front wall panel, an overlap panel, a supporting strip depending from one edge of said overlap panel and adapted to overlap said front wall panel, the overlap portions of said front wall panel and said supporting strip being adhered one to the other, said overlap panel having an opening for progressively withdrawing said material from said roll, said supporting strip having a tear edge of fibrous, organic sheet material, incorporating a hardened plastic, providing a rigid tearing edge for severing preselected lengths of said material as withdrawn.

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6. A container for housing and dispensing sheet material in roll form comprising a front wall panel, an overlap panel, a supporting strip depending from one edge of said overlap panel and adapted to overlap said front wall panel, the overlap portions of said front wall panel and said supporting strip being adhered one to the other, said overlap panel being provided with a tear strip for providing an elongated opening into said container, the terminal portion of said supporting strip incorporating a hardened plastic, for providing a tear edge for severing lengths of said sheet material as dispensed through said elongated opening.

7. A container for housing and dispensing sheet material in roll form comprising a front wall panel, an overlap panel, a supporting strip depending from one edge of said overlap panel and adapted to overlap said front wall panel, the overlap portions of said front wall panel and said supporting strip being adhered one to the other, said overlap panel being provided with a tear strip for providing an elongated opening into said container, said supporting strip having a longitudinally extending serrated edge, incorporating a thermoset synthetic resin providing a rigid tearing edge for severing preselected lengths of said material as withdrawn through said elongated opening.

8. A container for housing and dispensing sheet material in roll form comprising a front wall panel, an overlap panel, a supporting strip depending from one edge of said overlap panel and adapted to overlap said front wall panel, the overlap portions of said front wall panel and said supporting strip being adhered one to the other, said overlap panel being provided with a tear strip for providing an elongated opening into said container, said supporting strip having a longitudinally extending serrated edge, incorporating a thermoset synthetic resin providing a rigid tearing edge for severing preselected lengths of said material as withdrawn through said elongated opening and for electrostatically adhering thereto the severed end of said material integral with the material of said roll.

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