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TEAR STRIP CARTON

Filed June 11, 1963

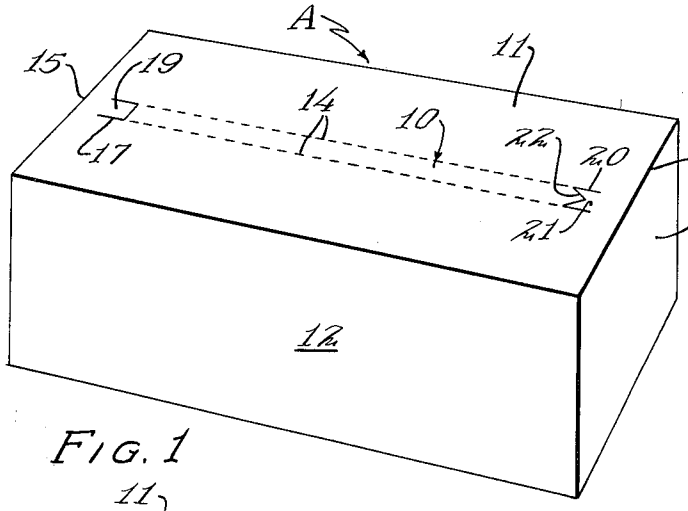


FIG. 1

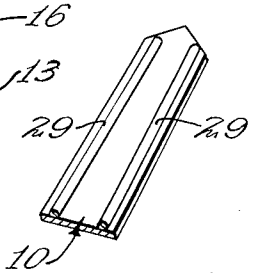


FIG. 4

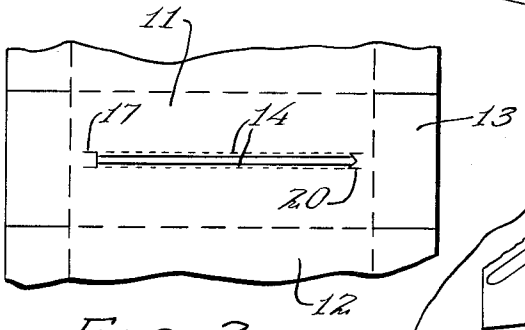


FIG. 2

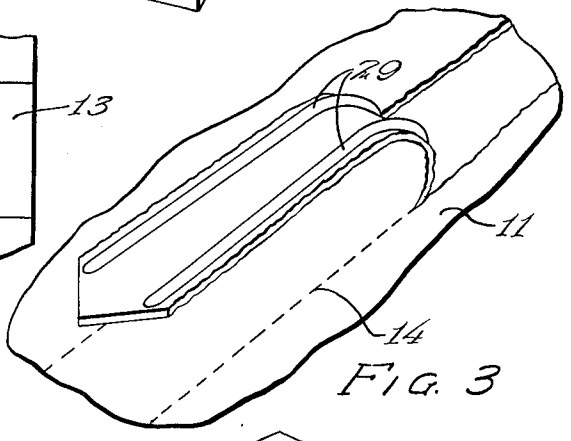


FIG. 3

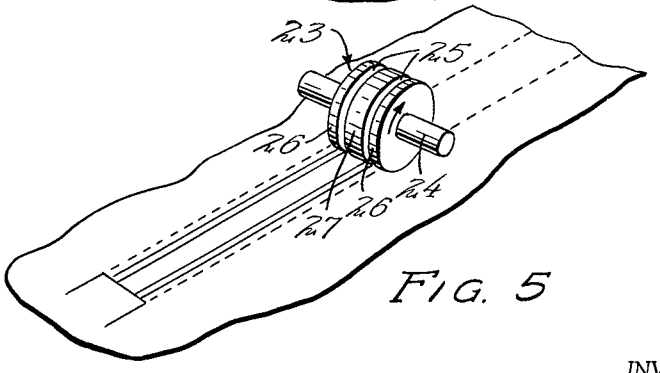


FIG. 5

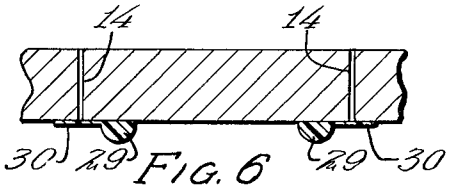


FIG. 6

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TEAR STRIP CARTON

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This invention relates to an improvement in tear strip cartons and deals particularly with a tear strip which will operate more reliably than certain tear strips which have been produced in the past.

Considerable difficulty is experienced in producing a carton having a removable tear strip area in cutting the perforations so that the tear strip may be easily removed while at the same time preventing the weakening of the carton so that it will open accidentally. This is particularly true where the tear strip occurs in the center of a panel. For example, many cartons have been produced for dispensing tissues which have an elongated removable area in the center of the top panel. If the perforations are proportioned in such a manner as to make the tear strip easily removable, the tear strip area is oftentimes accidentally fractured by pressure against the panel. If the perforations are proportioned to provide strength to the panel, difficulty is experienced in removing the tear strip.

A feature of the present invention resides in the reinforcement of the tear strip area by a coating of thermoplastic adhesive material. Many adhesives have been produced which are applied to an area in a molten form, and which quickly harden to a non-tacky state. This material, when hardened, remains somewhat flexible and resilient. As a result, the adhesive greatly increases the resistance of the paperboard to tearing. Accordingly, by providing a coated area extending longitudinally of the tear strip, the tear strip is reinforced against breaking off as the strip is removed, and the perforations may be proportioned in such a manner that while an increased pulling force is required to open the strip, it will not break off intermediate its ends as it would normally do if perforated in this manner. Furthermore, the reinforcing of the tear strip permits perforations to be used which do not weaken the carton panel sufficiently so that the tear strip will accidentally open and at the same time, the tear strip will not break off as it is removed.

A feature of the present invention resides in the reinforcing of a tear strip and the like by preferably coating a pair of beads of thermoplastic adhesive material longitudinally of the tear strip and between the weakened lines forming the tear strip. By concentrating the adhesive into spaced beads, the tear strip is reinforced along the edges where it starts to break off, preventing the start of such a tear.

A further feature of the present invention resides in the provision of a tear strip reinforcing means, where in preferred form, an extremely thin layer of the adhesive is applied over the perforated areas. The coating applied in this area is not intended to fill up the perforations, but are only intended to adhere any loose fibers in the perforated area from dropping free when the tear strip is removed. After a conventional tear strip is removed along a pair of perforated lines, there are usually quite a number of small particles of paperboard which will drop into the carton. While these particles are not big enough to cause any great difficulty, at the same time it is highly preferable that they be avoided as they are immediately noticed on the top of the white tissues after the tear strip has been removed. The very thin coating of adhesive does not detract from the operation of opening the carton, and does seem to adhere the loose particles either to the tear strip or to the carton panel before the tear strip is opened.

These and other objects and novel features of the present invention will be more clearly and fully set forth in the following specification and claims.

In the drawings forming a part of the specification;

FIGURE 1 is a perspective view of a carton showing the tear strip before it is opened.

FIGURE 2 is a plan view of a portion of the blank showing the tear strip therein.

FIGURE 3 is an enlarged perspective view of a portion of the carton top panel during the opening operation.

FIGURE 4 is a perspective view showing a section of the tear strip after it has been removed.

FIGURE 5 illustrates diagrammatically the manner in which the adhesive is applied.

FIGURE 6 is a greatly enlarged sectional view showing the thin coating overlying the perforated area.

The carton may be of any conventional form. In the particular arrangement illustrated, the tear strip **10** is formed in the top panel **11** of a rectangular carton A, the carton including four rectangularly arranged walls including the top panel, side wall panel, such as **12**, and a bottom panel which does not appear in the drawings. Flaps hinged to the ends of the wall panels form end closures such as **13**.

The tear strip **10** is formed, in the particular arrangement illustrated, by a pair of parallel perforated lines **14** which terminate short of the ends **15** and **16** of the top panel **11**. A generally U-shaped cut **17** defines a small tab **19** which may be flexed downwardly at one end of the tear strip **10** so that the adjoining end of the tear strip may be engaged by the finger. A generally M-shaped cut **20** extends across the tear strip **10** at the other end of the perforated line, the sides of the cut generally forming continuations of the perforated lines in the same manner as the sides of the U-shaped cut **17**. The cut line **20** thus defines a notched tab **21** which is so arranged that the center converging cut lines **22** produce a pointed end on the tear strip.

FIGURE 5 of the drawings diagrammatically illustrates a glue roller **23** mounted upon a rotatable shaft **24** and to which melted adhesive is applied from a glue pot not illustrated in the drawings. The glue roller **23** is provided with a pair of spaced grooves **25**, and the ends of the roller **23** indicated by the numeral **26** are preferably of slightly less diameter than the center portion **27** of the roller. As a result, when the adhesive is applied to the surface of the roller **23**, and the excess adhesive is removed by a suitable doctor blade, there is a thin layer of adhesive on the outer ends **26** of the roller, and beads of adhesive filling the grooves **25**, while the center portion **27** of the roller is preferably scraped clean of adhesive. This results in the arrangement illustrated in FIGURE 6 which shows a pair of relatively thick beads **29** of adhesive applied to the inner surface of the tear strip inwardly of the perforated lines **14**, and results in a very thin coating **30** over the perforated area. This coating **30** is usually so thin that it is difficult to see with the naked eye, and does not fill the perforations or act to resist the opening of the carton and merely serves to adhere any loose particles of fibrous material which result from the cutting operation as the perforations are formed. As a matter of fact, similar results have been obtained by heating the adhesive sufficiently to form a vapor, and permitting the vapor to be directed against the lines of perforation.

Numerous hot melt adhesives are available on the market, these adhesives normally being used for sealing cartons where a waterproof adhesive must be used or where the surfaces of the cartons are waxed or otherwise

coated. In this case, the primary purpose of the adhesive is not to act as an adhesive, as it is permitted to cool below the tacky state before it is permitted to come into contact with another surface.

It has been found that the beads of adhesive materially strengthen the tear strip and prevent it from tearing off intermediate the ends of the perforated lines. In tests made with cartons made of a predetermined paperboard and having perforations of a particular type, the tear strip would break off intermediate its ends in virtually every test, making it necessary for the tear strip to be removed in two or three parts. When the beads of adhesive were applied, the same cartons could be opened with no difficulty, and the beads of adhesive prevented the tear strip from breaking off intermediate its ends.

In accordance with the patent statutes, we have described the principles of construction and operation of our improvement in Tear Strip Cartons, and while we have endeavored to set forth the best embodiment thereof, we desire to have it understood that changes may be made within the scope of the following claims without departing from the spirit of our invention.

We claim:

1. A carton tear strip for use in a paperboard carton, the tear strip including a pair of substantially parallel weakened lines of separation, and a means of strengthening the tear strip area comprising a pair of beads of thermoplastic adhesive material extending in spaced parallel relation longitudinally of said tear strip and between said weakened lines, said weakened lines comprising perforations, and a relatively thin coating of said thermoplastic adhesive material underlying the area of said weakened lines.

2. A carton tear strip for use in a paperboard carton, the tear strip including a pair of substantially parallel weakened lines of separation, and a means of strengthening the tear strip area comprising a bead of flexible thermoplastic adhesive extending longitudinally of said tear strip between said weakened lines, and a relatively thin layer of adhesive underlying said weakened lines of separation.

3. A carton tear strip for use in combination with a paperboard sheet cut and creased to provide a paperboard carton, the tear strip including a pair of substantially parallel weakened lines of separation, and strengthening means adhered to the surface of the paperboard comprising a bead of flexible thermoplastic adhesive extending longitudinally of the tear strip between said weakened lines.

4. A carton tear strip for use in combination with a paperboard sheet cut and creased to provide a paperboard carton, the tear strip including a pair of substantially parallel weakened lines of separation, and strengthening means adhered to the surface of the paperboard comprising a pair of parallel beads of flexible thermoplastic adhesive extending longitudinally of the tear strip between said weakened lines, the two beads being located adjacent to said weakened lines of separation.

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