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[56]

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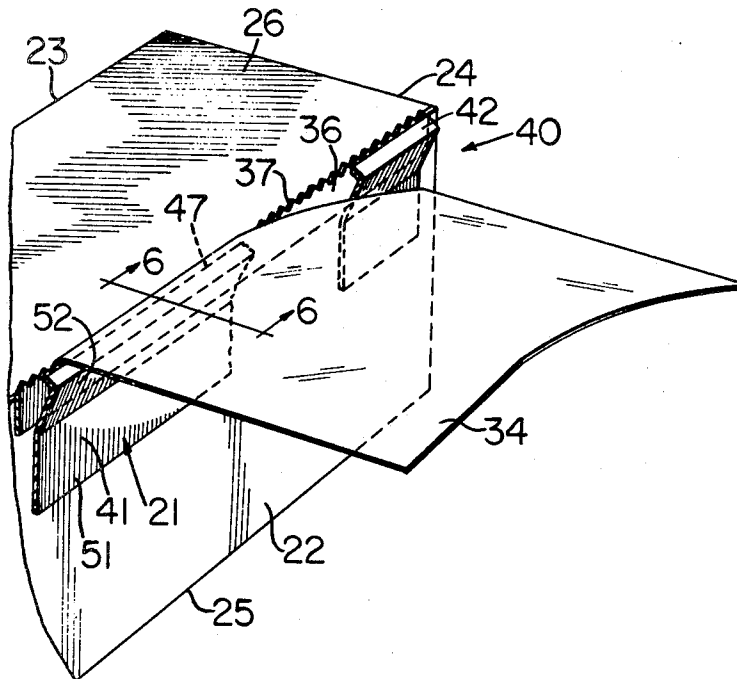
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[54] **PROTECTIVE SHIELD FOR SHEET MATERIAL CUTTER**

9 Claims, 6 Drawing Figs.

[52]	U.S. Cl.....	225/20, 225/48
[51]	Int. Cl.....	B26f 3/02
[50]	Field of Search.....	225/20, 19, 21, 48, 49

ABSTRACT: A protective shield for the cutting edge of a sheet material cutter wherein such shield has a protective portion which is normally resiliently held in a protective position over such cutting edge and is adapted to be engaged by the sheet material and displaced from its protective position during a normal cutting operation and upon completion of the cutting operation is resiliently returned to its protective position.



PROTECTIVE SHIELD FOR SHEET MATERIAL CUTTER

BACKGROUND OF THE INVENTION

Many sheetlike articles such as paper, plastic film, metallic foil, and the like are sold in roll form and dispensed from an associated dispensing carton which has a cutter fastened thereon to enable cutting of the sheet material to any desired length. Many of the commonly used cutters have unshielded cutting edges which are very sharp and often cause injury to a person handling the associated dispensing carton. Various devices have been previously proposed to shield the cutting edges of currently used cutters; however, such previous devices either drastically impair the cutting operation or are substantially ineffective in providing the desired shielding action.

SUMMARY

This invention provides a protective shield for the cutting edge of a cutter used to cut sheet material and such shield has a protective portion which is continuously resiliently held in a protective position over such cutting edge and during a cutting operation is deflected by the sheet material being cut to expose the cutting edge for efficient cutting, and upon completion of the cutting operation the protective portion is resiliently returned to its protective position. Further, this invention provides a cutting device for sheet material having a protective shield of the character mentioned.

Other details, uses, and advantages of this invention will become apparent as the following description of the exemplary embodiment thereof presented in the accompanying drawing proceeds.

BRIEF DESCRIPTION OF THE DRAWING

The accompanying drawing shows an exemplary embodiment of this invention, in which:

FIG. 1 is a perspective view of a dispensing carton containing a roll of sheet material and having the improved cutting device and protective shield of this invention provided as a part thereof;

FIG. 2 is a fragmentary cross-sectional view taken essentially on the line 2-2 of FIG. 1;

FIG. 3 is a perspective view illustrating the manner of pulling a section of sheet material which is to be severed from within the carton of FIG. 1 and illustrating the manner in which the protective shield is slightly deflected to enable unobstructed pulling of the section from within the carton;

FIG. 4 is a fragmentary cross-sectional view taken essentially on the line 4-4 of FIG. 3;

FIG. 5 is a greatly enlarged fragmentary perspective view of a corner portion of the carton of FIG. 1 and particularly illustrating the manner in which the protective shield is engaged by the sheet material and is displaced from its protective position during a normal cutting operation; and

FIG. 6 is a fragmentary cross-sectional view taken essentially on line 6-6 of FIG. 5.

DESCRIPTION OF ILLUSTRATED EMBODIMENT

Reference is now made to FIG. 1 of the drawing which illustrates an exemplary dispensing carton 20 which has an exemplary embodiment of the protected cutting device of this invention which is designated generally by the reference numeral 21 and provided as a part of the dispensing carton 20. The carton 20 has a front wall 22, a rear wall 23, a pair of oppositely arranged end walls each designated by the same reference numeral 24, a bottom wall 25, and a hinged top wall 26 which is provided with a tuck flap 30 at its swinging end. The flap 30 may be of the type which is initially lightly attached against the lower outside surface of the front wall 22 in a known manner, and to protect the contents of the carton 20 during storage and shipment.

The dispensing carton 20 has a chamber 31 which is adapted to receive a roll 32 of sheet material 33 and such

sheet material may be in the form of plastic film, paper, metallic foil, or any similar material. To dispense the sheet material 33 from within the carton 20 the tuck flap 30 is inserted behind the front wall 22, see FIG. 2, and the free end of the sheet material 33 is extended between the outer surface of the tuck flap 30 and the inside surface of the front wall 22 so that by slightly depressing the forward portion of the top wall 26 it is a simple matter to grasp the terminal end of the sheet material 33, as shown at 35 in FIG. 3, and pull a section 34 of sheet material which is to be severed from within the carton 20.

The protected cutting device 21 of this invention comprises a cutter which is in the form of a substantially planar cutter blade 36 which has a saw-toothed cutting edge 37 defining the top edge thereof. The cutter 36 is fastened to the top edge portion of the front wall 22 in any suitable manner. For example, the cutter 36 may be fastened in position utilizing any suitable adhesive material or may be fastened in position by punching through the planar blade 36 at spaced intervals so that portions of the blade extend through the front wall 22 and are riveted against the inside surface of the front wall 22.

The front wall 22 of the carton 20 is a substantially planar wall which extends vertically. The cutter 36 is fastened substantially coplanar with the supporting front wall 22 and in this example of the invention is merely fastened against the outside surface of the front wall 22; however, it will be appreciated that the front wall 22 may have a top portion thereof which is offset inwardly so that the outside surface of the cutter 36 would be in the same plane as the outside surface of the lower portion of the front wall 22.

A protective shield designated generally by the reference numeral 40 comprises the protecting cutting device 21 and the shield 40 has a supporting portion 41 which is fastened adjacent the cutter 40 and extends roughly coplanar therewith and vertically along the front surface of a front wall 22. In this exemplary embodiment of the invention the supporting portion 41 has its inside surface overlapped against the outside planar surface of the cutter 40.

The shield 40 also has a portion 42 extending transverse its supporting portion 41 and in a protective position over the saw-toothed cutting edge 37. The transverse portion 42 protects a user of the dispensing carton 20 against injury as well as assuring the saw-toothed edge is not snagged against clothing, or the like, to damage such clothing.

The shield 40 is made of a resilient material, as will be described in more detail subsequently, and its transverse portion 42 is normally resiliently held in a protective position over the saw-toothed cutting edge 37 and as illustrated at 44 in FIG. 2 of the drawing. The transverse portion 42 is adapted to be engaged by the sheet material 34 and displaced from its protective position shown at 44 in FIG. 2 to the position illustrated at 45 in FIG. 6 during a normal cutting operation thereby assuring the section 34 of sheet material is easily and efficiently cut in an unobstructed manner. Upon completion of the cutting operation the transverse portion 42 is resiliently restored to its protective position, as previously mentioned.

The manner in which the protective shield 40 is displaced to expose the cutting edge 37 will be readily apparent from FIGS. 5 and 6 of the drawings. In particular, it will be seen that once the section 34 of sheet material 33 is pulled to a substantially horizontal position to enable severing against the cutting edge 37 the sheet material 33 engages the terminal edge 47 of the transverse portion 42 whereby the shield 30 is easily displaced to the position shown at 45.

The shield 40 of this exemplary embodiment of the invention has a substantially L-shaped cross-sectional configuration comprised of a comparatively long leg portion defining the supporting portion 41 and a shorter leg portion defining the transverse protective portion 42. The supporting portion 41 of the substantially L-shaped shield 40 is suitably attached adjacent its outer, i.e., lower in this instance, edge as indicated at 51 and this enables easy movement of the inner edge portion 52 of the supporting portion 41 and hence movement of the transverse portion 42 toward and away from its protective position.

The protective shield 40 may be made of a resilient plasticlike material which has sufficient toughness to prevent damage by the cutting edge 37 to the transverse portion 42; yet, the shield 40 has sufficient rigidity to maintain its substantially L-shaped configuration.

Any suitable manufacturing technique may be employed to make the one-piece shield 40 with its supporting portion 41 and protective transverse portion 42. For example, the shield may be made by extruding an elongated piece of plastic material through an associated die head and then cutting such elongated piece to the desired lengths. Another technique may be to provide rectilinear score means in an elongated flat strip or ribbon of plastic material causing permanent deformation of such strip to thereby define a substantially L-shaped cross-sectional configuration therein. The elongated L-shaped strip could then be cut to the desired lengths.

Still another technique which may be employed is to provide a plurality of forming rolls which are adapted to suitably engage and define the substantially L-shaped configuration in an elongated strip or ribbon of plastic material. With the strip of plastic still held by the forming rolls in its L-shaped configuration, the now L-shaped strip may be subjected to heat to provide a permanent set therein. The heated strip is then suitably cooled whereupon the substantially L-shaped cross-sectional configuration is permanently retained in the L-shaped strip. The elongated L-shaped strip may then be cut to the desired lengths to provide the protective shield 40 for each particular carton such as the carton 20.

The protective shield 40 is preferably fastened to the front wall 22 so that the outer edge 51 of its supporting portion 41 is arranged beneath the lower edge of the cutter 36. Further, by making the shield 40 of a resilient plastic material, it will be appreciated that the upper edge portion 52 of the supporting portion 41, and hence the transverse protective portion 42, may be moved from the position of FIG. 2 through an angle indicated at 55 to the position of FIG. 6 in a simple and comparatively easy manner, merely by pulling the section 34 to be severed substantially horizontally and against the cutting edge 37. Once the severing action is complete the normal resilient character of the shield 40 restores its transverse portion 42 to its original protective position indicated at 44. The shield 40 may be attached to the front wall 22 in any suitable manner. For example, the shield 40 may be stapled, adhesively fastened, etc. directly against the front wall 22.

The cutter and the shield need not be attached to the front wall of the carton. They may be attached instead to the free end of the flap connected to the top wall, and that flap folded onto itself and tucked into the carton adjacent the front wall so that the cutter protrudes beyond the top wall and the top edge of the front wall. Alternatively, the cutter and shield may be attached to a flat element, such as a section of paperboard, which is independent of the carton and may be inserted into the carton adjacent the front wall so that the cutter protrudes in a similar manner. Also, the sheet material need not be withdrawn from the carton between the front wall and the flap attached to the top wall, but may be withdrawn through an appropriate opening in either the top wall or the front wall. The shield should be attached to the side of its supporting wall opposite the side toward the opening through which the sheet material is withdrawn, thereby allowing the transverse portion of the shield to be displaced from its protective position by engagement with the sheet material being withdrawn.

Although any suitable plastic material may be utilized to define the shield 40 one material which has been used successfully is a plastic film sold under the trade name of Mylar by the E. I. DuPont de Nemours Company of Wilmington, Del. Mylar is a highly durable, transparent, water repellent film of polyethylene terephthalate resin.

Numerous other plastic materials may also be utilized to make the shield 40 and include polyeurathane, polypropylene, high molecular nylons 66 and 610, polycarbonates, cellulose acetate, and styrene (ABS).

While a present exemplary embodiment of this invention has been illustrated and described, it will be recognized that

this invention may be otherwise variously embodied and practiced within the scope of the following claims.

We claim:

1. A substantially L-shaped shield for the cutting edge of a cutter used to cut sheet material, said shield being made of a resilient material and comprising a supporting portion defined by a comparatively long planar leg thereof which is adapted to be fastened adjacent said cutter and a portion extending transverse said supporting portion and being defined by the shorter leg thereof, said transverse portion extending in a protective position over the terminal end of said cutting edge, said transverse portion being adapted to be engaged by said sheet material and displaced from its protective position during a normal cutting operation using said cutting edge by deflecting said supporting portion away from said cutting edge and upon completion of the cutting operation said sheet material is moved out of engagement with said transverse portion whereupon the resilient character of said supporting portion restores said transverse portion to its protective position.

2. A shield as set forth in claim 1 said supporting portion is attached to an associated support therefor adjacent its outer edge to provide a comparatively long lever arm which enables easier flexing movement thereof and hence easier movement of said transverse portion from its protective position.

3. A shield as set forth in claim 2 in which said resilient material comprises a resilient plastic material, said plastic material having sufficient toughness to prevent damage by said cutting edge to said transverse portion and sufficient rigidity to maintain said substantially L-shaped configuration.

4. In combination: a dispensing carton having a chamber which is adapted to receive a roll of sheet material and having a front wall, a rear wall, and a top wall hinged to the top edge of said rear wall and including a tuck flap at its swinging end which is arranged behind said front wall during dispensing of said sheet material, said sheet material being easily dispensed from said carton by slightly depressing the forward portion of said top wall, enabling easy grasping of the free end of said sheet material and pulling a desired length thereof between said front wall and said tuck flap; a cutter mounted on and defining the upper edge portion of said front wall, said cutter having an exposed cutting edge; and a substantially L-shaped shield for said cutting edge, said shield being made of a resilient material and having a supporting portion defined by a comparatively long planar leg thereof which is fastened to said front wall and a portion extending transverse said supporting portion and being defined by the shorter leg thereof, said transverse portion extending in a protective position over the terminal end of said cutting edge; said transverse portion being adapted to be engaged by said sheet material during said pulling of a desired length and displaced from its protective position by deflecting said supporting portion away from said front wall enabling said sheet material to be pulled against said cutting edge and cut, and upon completion of the cutting operation said sheet material is moved out of engagement with said transverse portion whereupon the resilient character of said supporting portion restores said transverse portion to its protective position.

5. A combination as set forth in claim 4 in which, said cutter comprises a substantially planar cutter blade fastened substantially coplanar with said front wall, said L-shaped shield having said supporting portion and said transverse portion made as one integral part, and said supporting portion being normally supported by said front wall in a position substantially coplanar with said cutter blade with said transverse portion extending over said cutting edge in said protective position.

6. A combination as set forth in claim 5 in which said long leg portion is attached to said front wall beneath the edge of said cutter blade which is arranged opposite said cutting edge to provide a comparatively long lever arm which enables easier flexing movement of said long leg portion and hence easier movement of said transverse portion from its protective position.

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7. A combination as set forth in claim 6 in which, said cutting edge of said cutter comprises a saw-toothed cutting edge and said shield is made of a resilient plastic material having sufficient toughness to prevent damage by said saw-toothed cutting edge to said transverse portion and sufficient rigidity to maintain said substantially L-shaped configuration.

8. A combination as set forth in claim 6 in which said shield

is made from an elongated flat strip of resilient plastic material which is permanently deformed to define said L-shaped cross-sectional configuration.

9. A combination as set forth in claim 8 in which said cutter and said shield are fastened to said front wall independently of each other.

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