

June 11, 1963

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3,092,903

CARTON CUTTER

Filed July 27, 1962

2 Sheets-Sheet 1

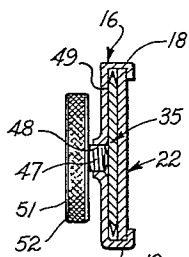


FIG. 2

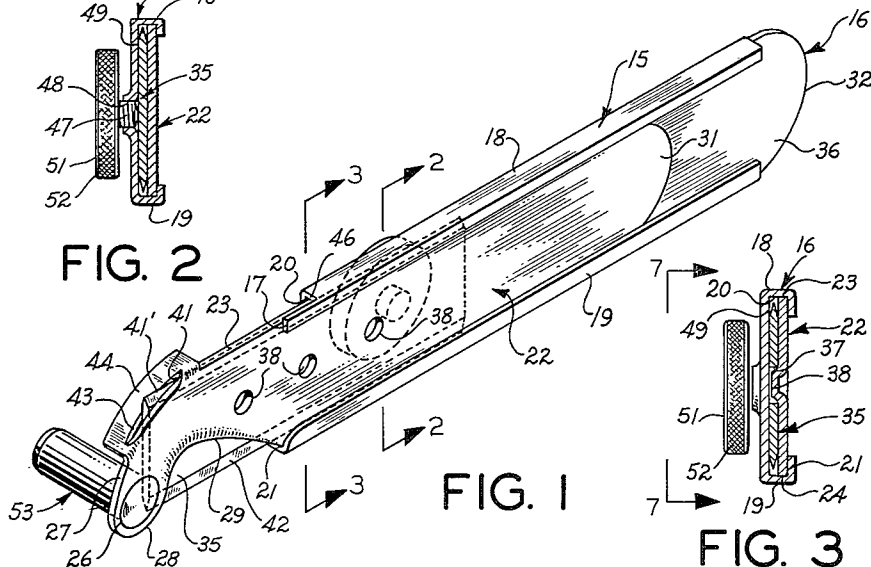


FIG. 1

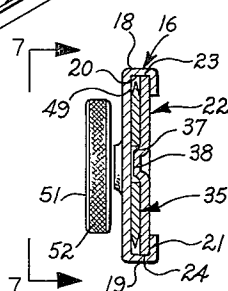


FIG. 3

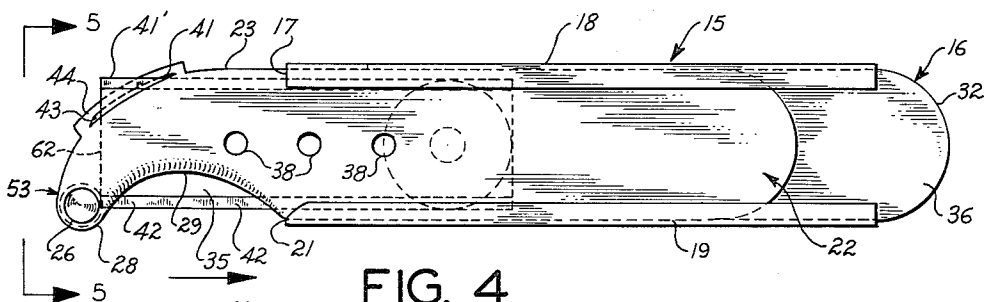


FIG. 4

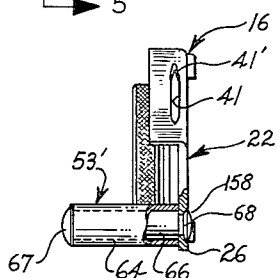


FIG. 5

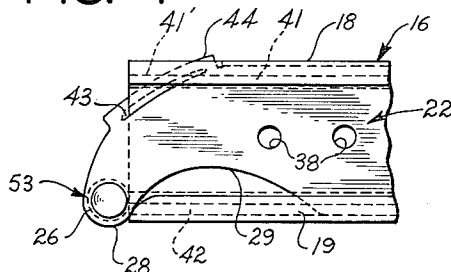


FIG. 6

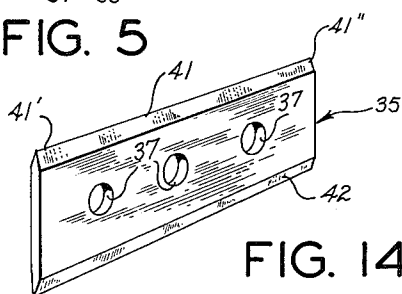


FIG. 14

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2 Sheets-Sheet 2

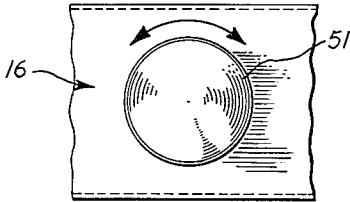


FIG. 7

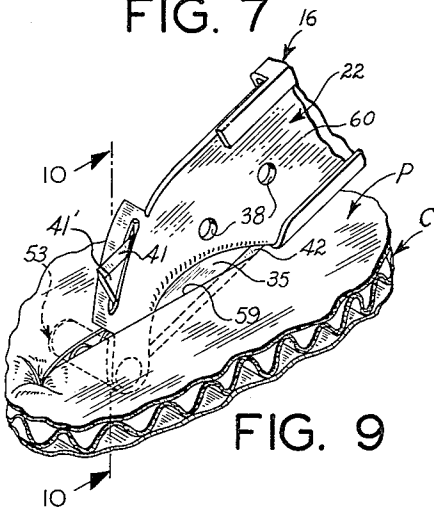


FIG. 9

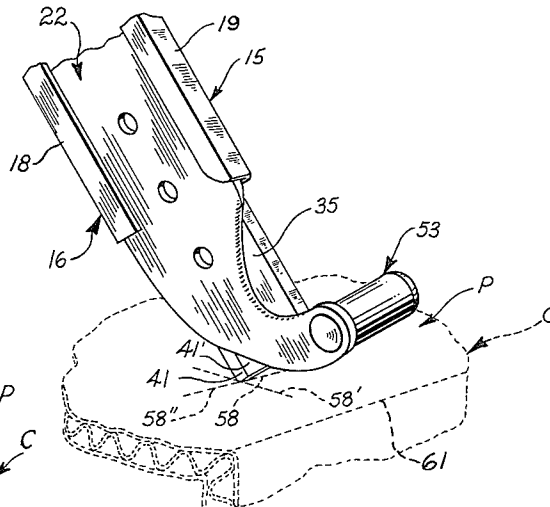


FIG. 8

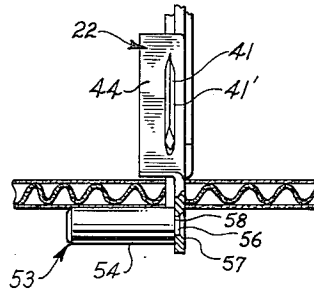


FIG. 10

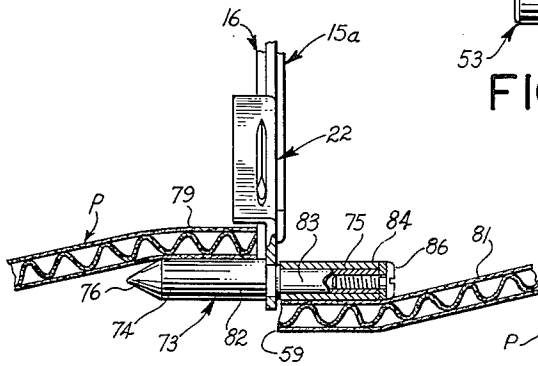


FIG. 12

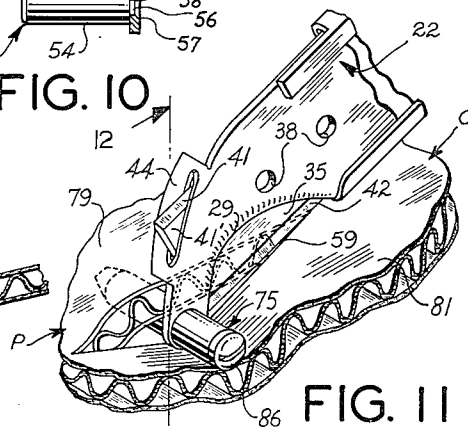


FIG. 11

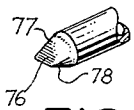


FIG. 13

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1

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## CARTON CUTTER

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12 Claims. (Cl. 30—2)

This invention relates to cutting devices of a type in which a double-edged razor blade, or the like, is employed as the cutting element and in which the sheath may be utilized as a handle for the blade when in use, the blade being supported for linear movement relative to the handle and positionable into an extended position for use of the blade for cutting purposes and into a retracted position wherein the blade edge is protected and concealed.

More particularly, this invention provides a new and improved cutter tool having a housing and a blade holder, in which a double-edged blade is supported for movement with the holder and positionable in the above positions for cutting through a selected layer or top wall of a carton, particularly, those constructed of relatively heavy, corrugated paper in which the flaps are glued or otherwise secured together and which are otherwise relatively difficult to open. The instant tool provides means whereby an opening is first formed in a selected side of the carton after which a roller of the device is inserted in the opening to keep the side portion of the carton held separated from the contents of the carton and in a position relative to the blade of the device so as to cause the blade to cut through the side of the carton in response to a pulling or drawing movement of the handle in a linear direction relative to the panel while pulling slightly away from the carton so as not to touch the material inside the carton. The cutter device of this invention is particularly useful for cutting the carton adjacent to or along the edges of the carton so as to facilitate opening of the carton in a substantially full opening of the panel of the carton.

A great deal of damage is done by present carton cutters due to the excess depth made by the cutter when the raw cutting edge penetrates through the carton wall and into the contents thereof, damaging them to the point where the materials are unsaleable. Frequently, products such as breakfast foods, cake mixes and other edible goods must be disposed of, causing a great loss, mainly due to the carelessness of the stock clerk cutting through the inside packages.

An important purpose of my invention is to substantially eliminate this hazard by supplying a cutter that can protect the contents of the container by applying an outward pull away from the contents rather than a pressure cut made through the wall of the container which can result in such damage. The new and improved cutter greatly eliminates considerable damage and would create a great savings in food, clothing and other similar merchandise.

It is therefore an object of this invention to provide a new and improved carton cutter which comprises a sheath for protecting a blade held in a blade holder thereof which is readily extendible from the sheath for engagement with a surface to be cut and is retractible into the sheath for protecting the cutting edges of the blade and the user, when the blade is not in use.

Another object of this invention is to provide a new and improved carton cutter in which the blade is locked in its extended and retracted positions and in which portions of both cutting edges of a double-edged blade are exposed when the blade is extended for use in cutting through a panel of the carton. One edge of the blade is usable for cutting an initial opening through which a roller of the device may be inserted so as to be coactive with the panel for directing the panel into

2

contact with the opposite cutting edge of the device during the cutting movement.

A further object of this invention is to provide a new and improved cutting device which cuts one panel of a carton while holding the panel of the carton away from the contents thereof to avoid injury thereto during the cutting operation.

Another object of this invention is to provide a new and improved carton cutter of the character described which is economical to manufacture and is capable of mass production.

A general object of this invention is to provide a new and improved carton cutter of the character described which overcomes disadvantages of prior means and methods heretofore intended to accomplish generally similar purposes.

These and other objects of this invention will be more apparent from the following drawings, detailed description and appended claims.

In the drawings:

FIGURE 1 is a perspective view, in elevation of the carton cutter of this invention, shown with its cutting blade in an extended, active position;

FIGURE 2 is a vertical cross sectional view as taken substantially along the line 2—2 of FIGURE 1;

FIGURE 3 is a vertical cross sectional view as taken substantially along the line 3—3 of FIGURE 1;

FIGURE 4 is a side view, in elevation, of the cutting device of FIGURE 1;

FIGURE 5 is an end view, as viewed substantially along the line 5—5 of FIGURE 4;

FIGURE 6 is a fragmentary side view, in elevation of one end of the device illustrated in FIGURE 4, with the cutting blade thereof illustrated in its retracted position;

FIGURE 7 is a fragmentary side view, in elevation, of a locking means thereof;

FIGURE 8 is a fragmentary perspective view, in elevation, showing the forward end of the device in another active position and as used to initiate an opening in a panel of a carton;

FIGURE 9 is a fragmentary perspective view, similar to FIGURE 8, and illustrating the device as being used in its active, cutting operation;

FIGURE 10 is a fragmentary end view, and viewed substantially along the line 10—10 of FIGURE 9;

FIGURE 11 is a fragmentary perspective view, similar to FIGURE 9, and illustrating a second embodiment of this invention in effect, cutting position;

FIGURE 12 is a vertical, cross-sectional view taken substantially on line 12—12 of FIGURE 11;

FIGURE 13 is a fragmentary perspective view, illustrating a portion of FIGURE 12 in greater detail; and

FIGURE 14 is a perspective view, in elevation, illustrating a cutting blade usable in either of the devices of the embodiments illustrated in FIGURES 1 and 11.

Referring in detail to the drawings and more particularly to FIGURES 1—10, inclusive, there is shown by way of illustration, but not of limitation, a first embodiment of this invention, designed and constructed in accordance with this invention and generally designated by the numeral 15. The device 15 generally comprises a housing 16, useful as both a sheath and a handle, having an open end 17 and including a pair of laterally-spaced, outwardly-extending opposed flanges 18 and 19 defining a pair of opposed grooves 20 and 21. The housing 16 may be conveniently formed from a relatively-rigid sheet metal or the like, having the flanges 18 and 19 turned back laterally towards themselves, to form the grooves 20 and 21. A blade holder, generally designated by the numeral 22, is slidably disposed relative to the housing 15 with its opposed longitudinal edges 23 and 24 engaged

in the grooves 20 and 21, respectively, so that the holder 22 is longitudinally movable relative to the housing.

The holder 22 includes a forward end 26 which is arcuate, as indicated 27, to meet the upper edge 23 and is rounded, as at 28, to be coextensive with a cutout 29 interrupting the lower edge 24 for a purpose to be hereinafter described. The opposite end 31 of the holder 22 is preferably curved, as illustrated in the drawings, to be substantially coincident with an edge 32 of curved configuration at an outer end of the housing 16 when the holder 22 is in its retracted position, to be hereinafter described.

By the instant construction, the holder 22 is movable relative to the housing 16 and slidable in the grooves 20 and 21 of the flanges 18 and 19, into a retracted position, illustrated in FIGURE 6, wherein the holder is enclosed in the housing 16 whereby the housing 16 acts as a sheath therefor, and into the extended position illustrated in FIGURES 2, 4, 8 and 9 in which the end 26 extends outwardly of the housing 16 with the cutout portion 29 of the holder 22 exposed.

Means are provided for supporting a cutting blade, generally indicated by the numeral 35, so as to reside between the holder 22 and a relatively-flat wall 36 of the housing and for movement with the holder 22. For this purpose, the cutting blade 35, as illustrated in greater detail in FIGURE 14, is provided with a plurality of preferably oversized and suitably configured transverse apertures 37, three in number illustrated in the drawings, through which a plurality of inwardly-extending projections 38 are extendable. The projections 38 may be in the form of pins secured to or formed integrally with the holder 22 or, as shown, may be laterally stamped integrally therewith so as to index the blade 35 with its opposed cutting edges 41 and 42 substantially coincident with the edges 23 and 24, respectively, and with one of the edges, such as the edge 42 exposed by the cutout 29, while the opposite edge 41 is indexed to extend its corner 41' through a slot 43 formed in a guard member 44 provided adjacent the edge 23 of the holder 22.

The edge 41 preferably, but not necessarily, extends the length of the blade 35, as does the cutting edge 42, so that the blade 35 may be reversed with an opposite corner 41' of the edge 41 extending through the slot 43 in the event that the corner 41' is injured or broken off for any reason. By virtue of the length-wise formation of the edges 41 and 42, the edge 42 is also usable to extend through the cutout 29 when the blade 35 is mounted in reversed relationship to that illustrated in the drawing.

The flange 44 forming the guard is preferably arcuate in configuration so as to complement the curved edge 27 of the guard and the open end 17 of the housing is preferably recessed as indicated at 46 so that, when the holder 22 is retracted within the housing 16, the flange guard 44 is also enclosed by the flange 18 of the housing as best seen in FIGURE 6. The flange 19, at the same time, encloses the cutting edge 42 extending through the cutout 29 when the holder 22 is in its retracted position to prevent inadvertent injury to the user from the edges 42 and 41 or the edge corner 41' from chipping, breaking off, or receiving any such injury thereto.

Means are preferably provided for locking the cutting blade 35 and the blade holder 22 relative to the housing 16 in each of its positions. Such locking means, as illustrated, includes a screw member 47 extendible through a threaded aperture 48 formed in the relatively flat wall 36 of the housing 16 and engageable, as seen in FIGURE 2, with the blade 35 to press against the blade 35 which, in turn, applies pressure to the holder 22 to thereby lock the holder and the blade 35 relative to the housing 16. The screw 47 is preferably provided with a finger-engaging knob 51 which is preferably knurled or otherwise roughened on its outer surface 52 to facilitate rotation thereof.

In accordance with the invention, roller means, generally indicated by the numeral 53, is provided and secured in transverse relationship to the end 26 of the holder 22 for facilitating cutting of a panel of a carton to be cut, such as a carton indicated in the broken lines, at C in FIGURE 8, and by solid lines in FIGURES 9 and 10. As illustrated more clearly in FIGURE 10, the roller 53 may be conveniently formed from a cylindrical rod 54 having a reduced end 56 which is riveted, or upset, as indicated by numeral 57 to be secured within an aperture 158 formed in the end 26 of the holder 22. Optionally, the roller 53 may be fixed to be rotatable about its longitudinal axis. The roller 53 is extendible to ride beneath a panel of the carton to be cut by insertion of the roller to ride on the underside of the panel to separate the panel from a flap secured to the underside, or from the contents of the carton to avoid injury thereto.

In use, the panel, indicated by the letter P is primarily provided with a cross cut, indicated by the numeral 58 in the FIGURE 8, by use of the corner 41' of the cutting edge 41 of the blade 35 at the forward end of the holder extending outwardly of the housing 16. First one edge 58' is cut by a corner 41', after which a cross cut 58'' is formed by the same blade corner, after which the roller 53 may be conveniently extended through the cross cut so as to be positioned to underlie the panel P, as more clearly illustrated in FIGURE 9. Thusly, as the device 15 is drawn linearly relative to the panel P, edge 42 is positioned to cut through the panel P of a carton to make a linear cut 59 extending therethrough. If desired, the cut 59 may be continued at least around the corner of the carton after which the panel may be conveniently folded back to expose the contents of the carton.

It will be noted that, in the instant embodiment 15, the roller 53 extends transversely from one side of the device whereby the opposite side, indicated by the numeral 60 is relatively-flat and a cut can be made extended adjacent to a corner edge of the carton referred to by the numeral 61 in FIGURE 8. The blade 35 may be additionally indexed relative to the holder 22 by abutment of an end edge 62 with the roller 53, as seen in FIGURES 1, 4, and 6. When the cut 59 is complete, the holder 22 may be easily and readily retracted within the housing 16 to sheath the holder 22 and the blade 35, for storage thereof when not in use.

As seen in FIGURE 5, the roller means 53 may be rotatably mounted to minimize friction with the underside of the carton panel P. For this purpose, the roller means illustrated in FIGURE 5, and indicated by the numeral 53' may include a sleeve 64 rotatable on the shank 66 which is enlarged at one end 67 and reduced at an opposite end 68, the reduced end being secured, by riveting, or the like, in the aperture 58 extending through the end 26 on the holder.

Referring in detail to the FIGURES 11-13, inclusive, a second embodiment is illustrated and designed and constructed in accordance with this invention. In the instant embodiment, parts similar to parts of the first embodiment are referred to by like numbers. A particular feature of the second embodiment, is the provision of roller means 73 which includes rollers 74 and 75 extending transversely in opposite directions from the holder 22. An additional feature of the roller 73 of this embodiment is the provision of a substantially pointed end 76 which may be used, either as a screw driver, or to facilitate entry of the roller 74 through the cross cut like 58. The end 76 is substantially triangular, having opposed angular relatively flat sides 77 and 78, as best seen in FIGURE 13.

Also, as seen in FIGURES 11 and 12, the device 15a of the second embodiment is usable to laterally separate opposed sides 79 and 81 of the panel P to facilitate cutting of the carton panel P. The roller 73 is adapted to ride on the underside of panel P, similarly to the ac-

5

tion described with the roller 53 of the first embodiment, to elevate the side 79 a substantial distance relative to the portion 81 which is simultaneously pressed downwardly by the roller 75 of roller means 73 when the device 15a is held with its housing 16 in a substantially vertical position and drawn forwardly linearly through the panel to extend a cut like 59.

As illustrated in FIGURE 12, the roller means 73 preferably provides a cylindrical shank 82, carrying an outer sharpened end 76 and a reduced shank portion 83 having a sleeve 84 rotatably disposed thereon to form the roller 75.

The sleeve 84 is rotatably supported on the reduced shank 83 by a fastener in the form of a screw 86 extending threadedly through and secured within the reduced shank 83 and so as to be removable therefrom.

The holder 22 is extendible relative to the housing 16 so as to selectively have the cutout 29 and its blade portion blade 35 exposed outwardly to expose the cutting edge 42 thereof spanning the cutout 29 and to expose the corner 41' or is retractable into its retracted position wherein the cutout and the blade edges are sheathed in the housing 16, similarly to the first embodiment. The holder 22 of the second embodiment is similarly held or locked in its extended or retracted position by a lock means, similarly to the lock means 51 of the first embodiment, so that the device 15a can be easily and readily manipulated without inadvertent collapsing or longitudinal movement of the holder 22 relative to the housing 16.

While the instant invention has been shown and described herein in what is conceived to be the most practical and preferred embodiment, it is recognized that departures may be made therefrom in the scope of the invention, which is therefore not to be limited to the details disclosed herein, but is to be afforded the full scope of the claims.

What is claimed as new and desired to secure by Letters Patent is:

1. A carton cutter comprising:
  - a pair of plates adapted to receive a double-edged cutter blade therebetween, one of said plates being supported on the other for movement relative thereto and positionable into an extended position with one of its ends extending outwardly of the other of said plates and into a retracted position with said one plate aligned with the other;
  - means defining a cutout on said extendible portion of said one plate adjacent to its outwardly extendible end;
  - means removably supporting the double-edged blade between said plates and for movement with said one of said plates;
  - means indexing said blade on said one movable plate so that one of its edges is exposed by said cutout; and
  - roller means on said extendible end of said one plate and extending transversely therefrom and laterally outwardly beyond the blade edge of said one plate, said roller means being extendible below the wall of the carton so as to lift the wall into angular relationship to the exposed cutting edge of the blade for cutting the wall while said cutter is moved relatively to the carton.
2. A cutting device as defined in claim 1, including locking means for locking said one movable plate relative to said other plate in its extended and retracted positions.
3. A cutter device comprising:
  - a pair of plates adapted to receive a double-edged cutter blade therebetween;
  - one of said plates being supported on the other for linear movement relative thereto and positionable into an extended position with one of its ends extending outwardly of the other plate and into a re-

6

tracted position with said one plate aligned with the other;

means defining a cutout on the portion of said movable plate adjacent its outwardly extendible end;

a blade means supported on said one of said plates so that one of its cutting edges is exposed by said cutout and a corner of an opposite cutting edge is exposed;

and roller means on said extendible end of said one plate and extending transversely therefrom and laterally outwardly beyond the edge of said one movable plate, said roller being extendible beneath the wall of the article to be cut so as to ride on the underside thereof and direct the wall into angular relationship to the exposed cutting edge of the blade means for cutting the wall in response to moving the device.

4. A cutter device as defined in claim 3, including guard means on said one plate and extending transversely from said one plate to span the other and so as to surround said corner of said blade means.

5. A carton cutter comprising:

a housing having an open end, said housing having a pair of laterally-spaced, outwardly-extending flanges;

a knife blade holder slidably disposed on said flanges of said housing and extendible through said open end, said holder being positionable into an extended position with one end of said knife blade holder extending outwardly through said open end and into a retracted position with said knife holder enclosed by said housing;

a double-edged knife blade located between said housing and said blade holder and supported by said blade holder for movement with said holder into said extended and retracted positions;

means defining a cutout on said blade holder adjacent said one end of said holder so as to expose a portion of one of the edges of said knife blade when in said extended position; and

roller means on said one end of said blade holder and extending transversely therefrom for supporting the underside of a relatively-flat portion of a carton away from the contents of a carton and for directing said blade portion exposed by said cutout to cut the portion of the carton.

6. A carton cutter as defined in claim 5, including means defining a slot on said extendible portion of said holder and adapted to receive a corner of the blade opposite to said one edge extending through said cutout so as to expose said corner of the blade.

7. A carton cutter as defined in claim 6, including guard means adjacent said one end of said holder and extending transversely from said holder so as to surround said slot.

8. A carton cutter as defined in claim 5, including locking means for locking said holder relative to said housing in each of its extended and retracted positions.

9. A carton cutter comprising:

a housing having an open end and a pair of laterally-spaced, outwardly-extending flanges defining opposed longitudinal grooves;

a knife-blade holder slidably disposed in said grooves and extendible through said open end, said holder being positionable into an extended position with one end portion of said holder extending outwardly through said open end and into a retracted position with longitudinal edges of said holder enclosed throughout the length of said grooves;

a knife blade having a pair of opposed longitudinally sharpened edges and a plurality of longitudinally aligned spaced apertures extending therethrough;

laterally-projecting lug means on said holder and complementary in spaced relationship to said apertures of said blade so as to extend therethrough whereby said

7

knife blade is supported in juxtaposition to said holder and movable with said holder into said extended and retracted positions;  
 means defining a cutout on said holder adjacent its extending end portion and intersecting one longitudinal edge of said holder;  
 means indexing said knife blade relative to said holder so one of its cutting edges is exposed by said cutout; and  
 a pair of roller means, each fixed to said one end portion of said holder and extending transversely therefrom in opposite directions and on an axis extending laterally outwardly relative to said end of said holders, one of said rollers being adapted to ride on the underside of a wall of a container on one side of the blade so as to lift the wall with said wall in angular relation to said cutting edge exposed through said cutout and the other said rollers being adapted to

8

press downwardly on the opposite portion of said carton wall on the opposite side of said knife blade.

10. A carton cutter as defined in claim 9, including means defining a slot on said extendible end portion of said holder and adapted to receive a corner portion of said blade opposite to said one edge located in said cutout so as to expose a corner of the blade.

11. A carton cutter as defined in claim 9, including guard means adjacent said one end portion of said holder and extending transversely from said holder so as to surround said slot and the corner portion of the blade extending therethrough.

12. A carton cutter as defined in claim 9, including locking means for locking said holder relative to said housing in each of said extended and retracted positions.

No references cited.