Oct. 22, 1968 C. J. TRAVLOS 3,406,447

CARTON CUTTER

Filed Oct. 19, 1966

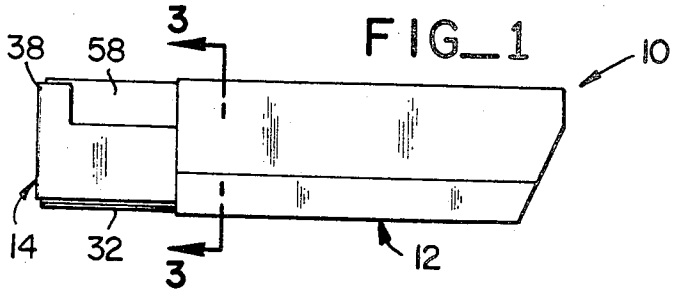


FIG_1

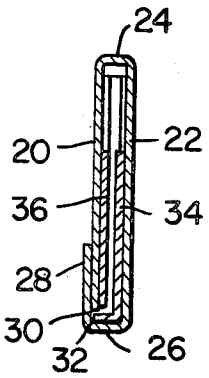


FIG_3

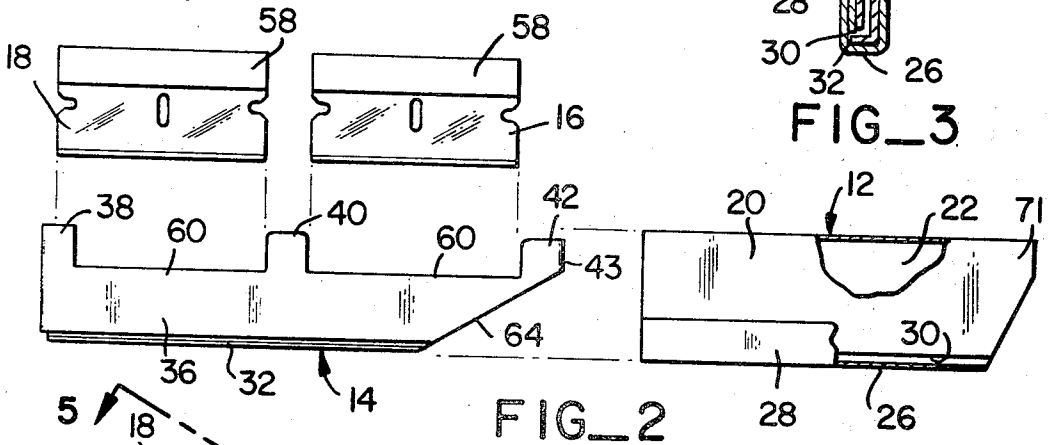


FIG_2

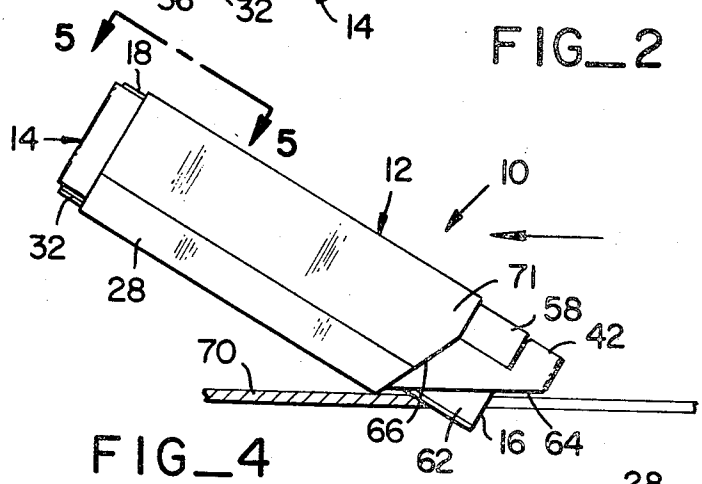


FIG_4

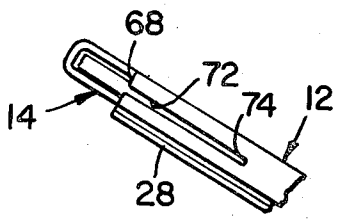


FIG_5

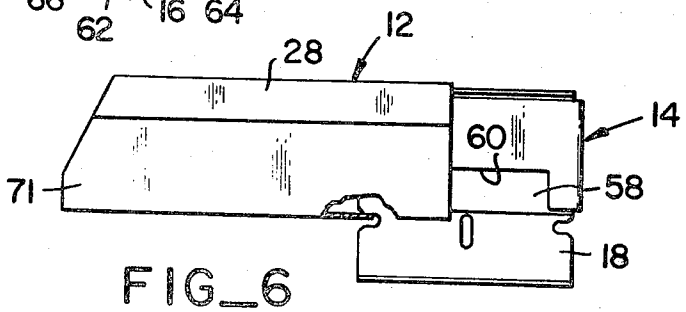


FIG_6

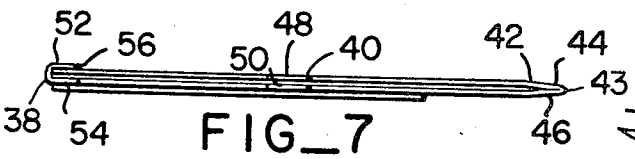


FIG_7

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CARTON CUTTER

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ABSTRACT OF THE DISCLOSURE

A carton cutter having a blade holder receivable within a sheath to position a blade carried by the holder in a cutting position. Means is provided to permit insertion of the holder in the sheath in only one way and the holder has structure for mounting a reserve blade thereon. The holder and sheath also have means which cooperate to permit mounting of a blade in a scraping position.

This invention relates to improvements in cutter devices of the type used for opening cardboard boxes and the like and, more particularly, to a carton cutter using a conventional razor blade.

The present invention resides in a cutter device having a conventional single edge razor blade inserted in and carried by a holder and the blade and holder unit are slideably received within a sheath. The blade holder and sheath have complemental tongue and groove means so that the holder can only go in one way into the sheath. The tongue is on the holder and is normally beneath the cutting edge of the blade. Thus, the blade is protected as the holder slides into and out of the sheath. By restricting the way in which the holder can enter the sheath, provision is made to prevent injury to the hands, since the blade may be in a position to cut the hand if the holder starts into the sheath in the wrong manner. Also, the cutting portion of the blade enters the sheath first by using the tongue and groove means so that the probability of injury is greatly reduced or substantially eliminated.

The holder and sheath can each be of a one piece construction and, to this end, can be formed from bendable sheet material, preferably a suitable rigid metal, such as aluminum or sheet steel. Standard forming techniques, such as stamping, bending and the like, can be utilized to make these components. Thus, the holder and sheath can be made in volume and at minimum cost.

The blade is removably coupled to the holder and has a corner portion projecting outwardly from an angled edge at one end of the holder. This angled edge extends outwardly from the proximal end of the sheath when the holder is in an operative position therewithin so that the corner portion of the blade is in a cutting disposition while the angled edge is disposed to engage a workpiece to be cut and thereby limit the depth to which the corner can extend into or through the workpiece.

The cutting device can be readily shifted from its operative position to a retracted position with the cutting blade housed within the sheath. Thus, the device can be safely carried in a garment pocket or in the hand when it is not to be used for cutting. From the retracted position, the holder can be shifted into the cutting position as desired.

Means is provided on the holder for retaining a second or reserve blade thereon. This allows the first mentioned blade to be replaced when it becomes dull so as to avoid having to carry a spare blade on the person or to go some distance to a supply area for a replacement.

The holder and sheath also cooperate to define a scraper when the blade is held in an inverted position in the holder at the end of the latter, opposite to the cutting end thereof. The blade partially extends through a slot in the top edge of the sheath and is stabilized thereby so that the blade is held firmly during a scraping operation. In this way, the assembly can be used for scraping windows or other surfaces without requiring additional parts beyond the components normally used to form the cutter. Moreover, as the reserve blade is used as the scraper, the cutter blade is completely housed within the sheath. Thus, the sheath can safely form the handle of the scraper and the cutter blade cannot injure the hand.

The primary object of this invention is to provide a carton cutter having improved safety features while being of a simple and rugged construction so that the cutter will have a long operating life and can be safely used even by an unskilled person without injury.

Another object of the invention is to provide a carton cutter utilizing a conventional razor blade carried by a holder for insertion into a hand-held sheath wherein the holder can be inserted into the sheath in only one way so as to assure that the hands will be protected from injury as the blade and holder are inserted into the sheath.

Another object of this invention is to provide a cutter of the type described which allows the blade to be inverted in the blade holder and the holder partially inserted in the usual manner in the sheath with the blade stabilized by the sheath so that the blade edge will project outwardly from the holder and sheath and thereby define a scraper for use in scraping a surface.

A further object of the present invention is to provide a carton cutter having a blade holder and a sheath each of a one piece construction so that when a conventional razor blade is utilized with the holder, the overall construction is simplified and the number of parts will be kept to a minimum notwithstanding the presence of the aforesaid safety features which guard against injury to the user.

Other objects of this invention will become apparent as the following specification progresses, reference being had to the accompanying drawing wherein:

FIG. 1 is a side elevational view of the cutting device with the blade in a retracted position;

FIG. 2 is a view of the cutting device with the parts thereof separated from each other;

FIG. 3 is a cross sectional view taken along line 3—3 of FIG. 1;

FIG. 4 is a side elevational view of the cutting device showing its use in cutting a carton or sheet;

FIG. 5 is a fragmentary end elevational view looking in the direction of line 5—5 of FIG. 4;

FIG. 6 is a side elevational view of the cutting device when the blade thereof is arranged as a scraper; and

FIG. 7 is an end elevational view of the blade holder forming a part of the assembly.

A preferred embodiment of cutting device **10**, shown in FIGS. 1–4, includes a sheath **12**, a blade holder **14** and a blade **16**. A reserve blade **18** also is included and is thereby used to replace blade **16** when the latter becomes dull. Device **10** is useable without blade **18** but this blade is included in the general discussion of the invention since provision is made on holder **14** for it.

Sheath **12** is shown in cross section in FIG. 3 and is of a one piece construction. It can be formed from an initially flat sheet of bendable material, preferably a suitable metal such as aluminum or sheet steel. Techniques for bending the material are well known. Sheath **12** has a pair of sides **20** and **22** interconnected by a first, normally uppermost bight **24**. A second, normally lowermost bight **26** is integral with side **22** and interconnects the latter with an extension **28** disposed adjacent to and extending along a portion of the outer face of side **20**. Bight **26** is spaced from the lower edge **30** of side **20** to form a groove extending longitudinal of sheath **12** and bounded at its upper extremity by lower edge **30** of side **20**.

The purpose of the groove is to receive a lateral projection **32** on holder **14**. Projection **32** is integral with one side **34** of holder **14** and the opposite side **36** of the holder **14** extends almost to projection **32** (FIG. 3).

Holder **14** is also of a one piece construction and in addition to sides **34** and **36**, it includes spaced projections **38**, **40** and **42** on these sides. Holder **14** is formed by folding a flat sheet of bendable material along a line defining edge **43** after sides **34** and **36**, projections **38**, **40** and **42**, and projection **32** have been formed, such as by a stamping process.

As shown in FIG. 7, projection **42** includes a pair of sections **44** and **46** which are interconnected at edge **43**. Projection **40** includes a pair of spaced sections **48** and **50** and post **38** includes sections **52** and **54**. These sections are integral with respective sides **34** and **36** to simplify the construction of holder **14**. Side **52** is not coplanar with side **22** but is slightly displaced therefrom to form a shoulder **56** which serves as a stop in a manner to be described.

Sides **34** and **36** are spaced apart (FIGS. 3 and 7) so that blades **16** and **18** can be inserted therein and carried by holder **14**. Each blade has a guard **58** which bears against the upper edges **60** of sides **34** and **36** when the blade portion is between the sides. In this way, the blade edge is protected and is not forced against either the upper face of projection **32** or the upper face of bight **26**. The blades are easily removable from holder **14** and distances between posts **38** and **40** and between posts **40** and **42** are such that the blades are firmly held in the holder without any substantial movement longitudinally of the sides of the holder.

When blade **16** is in place within holder **14**, a corner portion **62** will project beyond the end edges **64** of sides **34** and **36** as shown in FIG. 4. This corner portion will project outwardly from the end edges **66** of sides **20** and **22** of sheath **12** when holder **14** is in its operative position in the sheath. Holder **14** is in its operative position when shoulder **56** engages the adjacent end face **68** (FIG. 5) of sheath **12** to stop and inhibit further inward movement of the holder. The operative position of the blade is shown in FIG. 4 with edge **64** either in engagement with or in proximity to one face of workpiece **70**.

In use, holder **14** is separated from sheath **12** and blades **16** and **18** are inserted in the holder. Then the holder is moved into the sheath into its operative position and it is clear that the holder can only go in one way because of the aforesaid tongue and groove feature.

When device **10** is to be put into use, it will be oriented in the position shown in FIG. 4. Corner portion **62** will

be forced into workpiece **70** and then the device is drawn along a desired path to sever the workpiece. The blade is stabilized since the reactive force on the blade exerted by workpieces **70** during the cutting action is in a direction to force the blade against projection **42**. Also, the forward end of sheet **12** in the vicinity of portion **71** thereof holds the blade against lateral movement and thereby gives added support to the blade.

When the cutting action is finished and device **10** is to be put away until it is again needed, holder **14** is retracted into the position shown in FIG. 1 and device **10** can be put into a garment pocket or merely held in one hand. This is accomplished by shifting the holder in the sheath until blade **16** is completely housed therewithin. Since sides **34** and **36** frictionally engage the inner faces of sides **20** and **22**, the holder will be retained in its retracted position. Blade **16** is completely concealed in this condition and only the guard **58** of blade **18** is exposed. When the device is again to be used, holder **14** is merely moved in the opposite direction until shoulder **56** again engages the end face of side **22**.

To use the assembly as a scraper, holder **14** is pulled partially out of the sheath until blade **18** can be removed. This blade is then inverted so that guard **58** thereof is received within post **38**. As shown in FIG. 7, sections **52** and **54** which define post **38** are spaced apart sufficiently to receive the guard. The outer longitudinal edge of the guard then engages edges **60** between projections **38** and **40**.

Bight **24** of sheath **12** is provided with a slot **72** therein (FIG. 5) and blade **18** is movable into this slot in the manner shown in FIG. 6 when the blade is inverted and the holder moved further into the sheath. Holder **14** is forced into the sheath until the innermost end edge of blade **18** engages the inner end **74** of slot **72**. When this occurs, the blade is in a position for scraping a surface. Sheath **12** then becomes the handle of the scraper and the sheath can safely be held because blade **16** is completely concealed therewithin.

Blade **16** could be used as well as blade **18** for the scraping function since the blades are substantially identical in all respects. Reserve blade **18** has been described as the scraper since its presence simplifies the assembly of the scraper.

When device **10** is used either as a cutter or a scraper, the fingers of the hand are always protected against being cut. When used as a cutter, only the blade corner portion **62** is exposed and the hand grips only the sheath at a location considerably spaced from corner portion **62**. Also, when used as a scraper the device cannot injure the hand since the sheath is gripped at a location considerably spaced from the blade.

Cutter **10** is constructed so that holder **14** can be held in one hand as it is retracted. The sheath can be in the palm of the hand and the index finger can engage the cutting end of the holder to force blade **16** into the sheath. The cutter then assumes the configuration shown in FIG. 1. This feature permits the other hand of the user to be free and to be used for other functions.

The reserve blade saves considerable time and allows replacement of a dull blade without having to go to a supply room for this purpose. This is especially important where device **10** is used in a super market or the like and would require the user to walk a considerable distance away to get a replacement blade and then return to the area where the device is to be used.

Blades **16** and **18** can be interchanged when blade **16** becomes dull. Thus, holder **14** provides a convenient receptacle for the dull blade until it can be replaced by a new reserve blade. The used blade, therefore, does not have to be put in the pocket or carried to be a waste basket or the like.

Sheath **12** is configured to give support to the blade when it is used either for cutting (FIG. 4) or for scraping (FIG. 6). The angled forward end of the sheath

prevents any lateral movement of the guard of blade **16** and thereby stabilizes corner portion **72** of the blade during the cutting process. Moreover, the portion of sheath **12** on opposite sides of slot **72** provides the necessary support to prevent any lateral movement of the blade during a scraping operation. In either case, the blade is held firmly and the cutting or scraping operation is quickly performed.

Projection **32** always keeps blade **16** and its guard **58** in the same positions with respect to each other. The blade cutting edge cannot engage the inner surface of bight **26**. Thus, there is no tendency for the sheath to cause sticking of the blade within the sheath such as might occur if the blade edge were to engage the inner surface of bight **26**. Any tendency for the blade to be separated from its guard while cutting a carton is offset by projection **32** since it blocks any downward movement of the blade away from the guard. Prior cutters do not utilize a protecting structure similar to projection **32** and the blades of the prior devices become dull quite rapidly because they engage adjacent inner surfaces of corresponding tubular holders.

The one piece construction of each of the sheath and the blade holder minimizes the cost of producing device **10**. These parts can be formed from rugged, long-wearing materials and can be formed from sheet material by inexperienced forming techniques. Thus, device **10** will have a relatively long life and will require only that the blades be replaced when they become dull.

While one embodiment of this invention has been shown and described, it will be apparent that other adaptations and modifications can be made without departing from the true spirit and scope of the invention.

What is claimed is:

1. A carton cutter comprising: a sheath having a pair of open ends and formed from an initially flat, bendable sheet, said sheath being provided with a pair of spaced sides, a first bight interconnecting proximal longitudinal edges of the sides, and a second bight connected to the opposite longitudinal edge of one of the sides and being spaced from the opposite longitudinal edge of the other side to form a longitudinal groove; a blade holder formed from an initially flat sheet of bendable material and including a pair of spaced sides, one of the sides having a lateral tongue secured thereto, said holder being movable into said sheath through one of said open ends thereof with the tongue being received within the groove to place said holder in a predetermined orientation relative to the sheath as the holder is inserted thereinto, whereby the holder is capable of being inserted in only one way into the sheath; a stop on one end of the holder for engaging end face of the sheath at said one open end when the holder is disposed in an operative position therewithin, the opposite end of the holder having an angularly disposed end edge projecting outwardly from the opposite open end of the sheath, said edge adapted to engage a workpiece to be cut; a pair of blades, each blade having a guard thereon defining a shoulder, said blades being inserted in the holder between its sides with the shoulders formed by said guards engaging the normally uppermost edges of the holders, one of the blades having a corner portion extending outwardly from said angularly disposed end edge of the holder whereby the corner portion is in a cutting disposition when the holder is in its operative position, said first bight of the sheath having a slot extendng longitudinally thereof at said first open end, said holder having means for mounting the other blade in an inverted position with the blade edge thereof spaced outwardly from the holder, said holder being movable partially into said sheath to move said other blade into said slot to stabilize the blade, whereby the other blade defines a scraper, said one blade being disposed completely within the sheath when the other blade defines said scraper, whereby the sheath can safely be used as the handle for said scraper.

2. A surface scraper comprising: a sheath having an open end; a blade holder slidably received within said sheath and movable into an operative position with one end of the holder extending outwardly from said open end of the sheath; a blade; means mounting said blade on said holder adjacent to said one end thereof with the blade edge spaced laterally from the holder, said sheath having slot means thereon for receiving a portion of said blade as the holder is moved into said operative position, whereby the blade is stabilized and forms a scraper with the sheath defining the handle therefor.

3. A carton cutter comprising: a sheath having an open end, formed from an initially flat sheet of bendable material, and provided with a longitudinal groove communicating with the interior thereof; a blade holder slidably received within said sheath and movable in one direction into an operative position with an end edge thereof projecting outwardly from said open end of the sheath, said holder being formed from an initially flat sheet of bendable material and having a lateral tongue receivable within said groove for restricting the holder to a predetermined orientation relative to the sheath as the holder is inserted thereinto; a blade removably mounted in said blade holder and having a portion extending outwardly from said end edge and thereby being in a cutting position when the holder is in said operative position; and stop means preventing further movement of said holder in said one direction after said holder has moved into said operative position.

4. A carton cutter comprising: a sheath having an open end; a blade holder slidably received within said sheath and movable in one direction into an operative position with an end edge thereof projecting outwardly from said open end of the sheath; a blade removably mounted in said blade holder and having a portion extending outwardly from said end edge and thereby being in a cutting disposition when the holder is in said operative position; means on the sheath and on the holder for restricting the holder to a predetermined orientation relative to the sheath as the holder is moved thereinto; and stop means preventing further movement of said holder in said one direction after said holder has moved into said operative position, said holder being provided with means for mounting the blade in an inverted position with the cutting edge of the blade spaced outwardly from the holder, said sheath having a slot for receiving a part of the blade when the latter is in said inverted position and the holder is partially inserted in the sheath, whereby the blade is disposed for scraping a surface.

5. A carton cutter comprising: a sheath having an open end; a blade holder slidably received within said sheath and movable in one direction into an operative position with one end thereof projecting outwardly from said open end of the sheath, said holder including an initially elongate, flat sheet of bendable material, said sheet being bent about said one end of the holder to form a pair of sides, the first of said sides being longer at the opposite end of the holder than the second of said sides to define a projection, said projection being bent at said opposite end of the holder and extending toward said second side and along the same toward said one end of the holder to present a stop for preventing further movement of the holder in said one direction after the holder has moved into said operative position; means on said holder for removably mounting a blade thereon with the blade having a portion extending outwardly from said holder and into a cutting location when the holder is in said operative position; and means interiorly of the sheath and including a lateral extension on one of the sides of the holder for permitting insertion of the holder in the sheath only when each side of the holder is in proximity to a respective side of the sheath.

6. A carton cutter as set forth in claim 5, wherein said permitting means includes tongue and groove structure.

7. A carton cutter as set forth in claim 5, wherein said holder is provided with a second projection on said one end thereof, said second projection defining a portion of said blade mounting means and being disposed to space a blade from said one end of the holder.

8. A carton cutter as set forth in claim 5, wherein said sheath has a second open end for receiving the holder, said blade mounting means being disposed on the holder adjacent to said one end thereof, said projection having an extremity engageable with the sheath at said second open end when the holder is in said operative position.

9. A carton cutter as set forth in claim 5, wherein is included means on the holder for retaining a second blade thereon in spaced relationship to a blade positioned on the holder by said blade mounting means.

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