Aug. 25, 1970 L. A. FATTORI ET AL 3,525,152

CARTON OPENING HAND TOOL

Filed May 14, 1968

FIG. 1

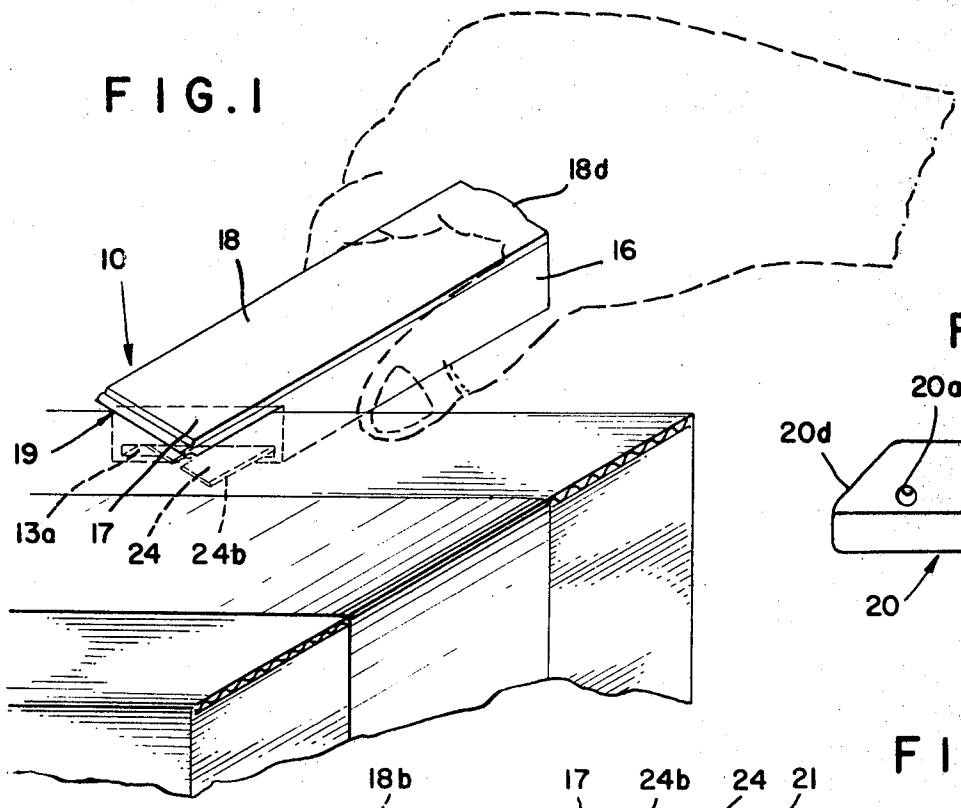



FIG. 5




FIG. 2

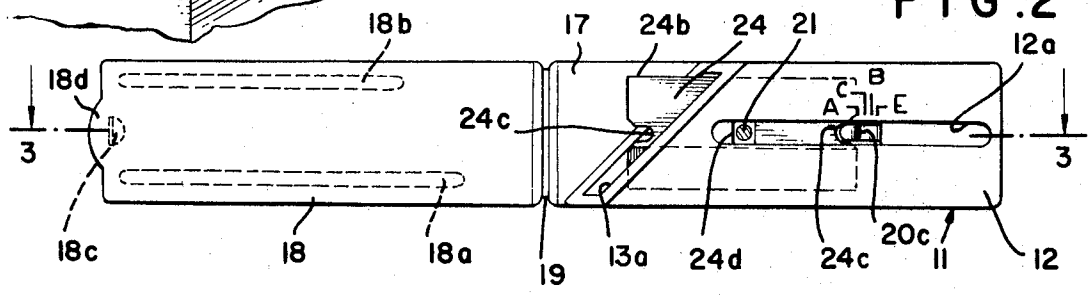
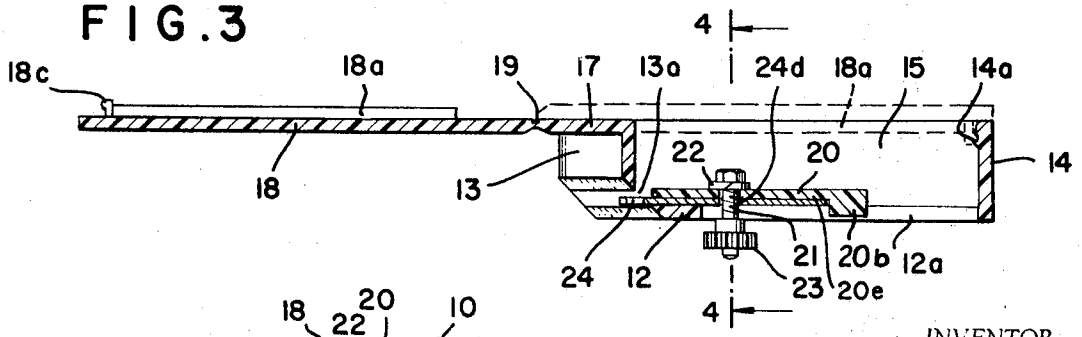



FIG. 3



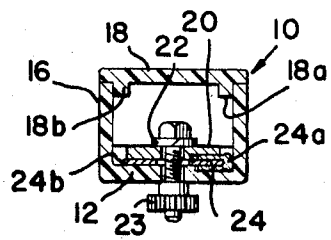




FIG. 4

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# CARTON OPENING HAND TOOL

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U.S. Cl. 30—2 6 Claims

## ABSTRACT OF THE DISCLOSURE

A razor blade holder molded of a resinous plastic serves as a hand tool and has a top wall over-hangingly projecting beyond a beveled end wall providing a reentrant corner to engage and be drawn along the top edges of a corrugated carton. A razor is positioned against a bottom wall of the holder and has an edge projecting through a slit in the beveled end wall for cutting a sidewall of the carton at a spaced distance from the carton top surface determined by the spacing of the slit from said projecting top wall of the tool. The bottom wall has means including indicia for adjusting the depth of cut of the razor to different carton wall thicknesses.

## BACKGROUND OF THE INVENTION

### Field of the invention

This invention relates to a simple hand cutting tool and more particularly is directed to a razor blade holder having guide means positioning the blade for severing tops from corrugated cartons.

### Description of the prior art

It is the practice in supermarkets and other stores to open corrugated shipping cartons by cutting the sidewalls just below the top wall to remove the latter completely or to cut only three of the sidewalls for folding back the top in flap fashion. Thus, there is a need for a simple, inexpensive hand tool to serve as a handle or holder for a single edge razor blade, which provides the cutting edge, to incorporate guide means to facilitate the cutting along a straight line at the proper distance below the carton top to clear the double flaps thereof, and to provide means for adjustably controlling the depth of cut of the blade to meet different carton wall thickness requirements and also limit the depth of cut to insure against damage to the contents which may be a product packed in relatively thin wall, easily slit cardboard boxes.

## SUMMARY OF THE INVENTION

Among the objects of the invention is to provide a hand tool utilizing a conventional single edge razor blade for its cutting edge, which tool shall meet the need as hereinbefore described. The hand tool shall comprise few and simple parts which are relatively inexpensive to manufacture in quantity production of resinous plastic material by injection molding methods and easy to assemble with a standard nut and bolt fastener which also serves as part of a depth of cut adjustment means. The tool comprises a substantially rectangular shaped box of hand grip size and a razor blade retaining and indexing plate fitted to the bottom wall of the box with the razor blade therebetween. One end wall of the box is beveled with respect to the opposite end wall and has a slit formed therein at the bottom of the box through which a corner



of the razor blade extends. A flange extending from the beveled wall at the top of the box provides a reentrant corner for engaging a top edge of a carton to guide the projecting blade along a predetermined path for cutting the carton side walls spaced below the carton top edge. The flange may be triangular in shape to complement the angle of the beveled side wall providing a squared-off edge to which a cover for the box may be integrally hinged. An indexing means on the retaining and indexing plate is visible through a longitudinal slot in the box bottom wall for selective alignment with indicia designating various carton wall thickness whereby the razor blade is adjusted for the desired depth of cut. The hand tool shall be rugged in construction, foolproof in operation, serve as a receptacle for new and used razor blades, and permit full retraction of the blade for safety when not in use.

## BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a perspective view of the carton opening hand tool embodying the invention shown applied to an upper edge of a corrugated carton and cutting a side wall thereof.

FIG. 2 is a bottom plan view of the hand tool shown in FIG. 1, but with the integrally hinged top cover shown spread flat in open position and bolt fastener shown in section.

FIG. 3 is a longitudinal sectional view of the hand tool as seen on line 3—3 in FIG. 2, the hinged top cover being indicated in closed position in broken lines.

FIG. 4 is a sectional view taken on line 4—4 in FIG. 3 but with the cover closed, and

FIG. 5 is a bottom plan view view of the retaining and indexing plate removed from the assembly showing details of the razor blade facing side thereof.

## DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring in detail to the drawing, **10** denotes a carton opening hand tool constructed to embody the invention seen to comprise a box **11** of hand grip size containing a retaining and indexing plate **20** for a single edge razor blade **24** adjustably fastened therein by screw **21**, lock washer **22** and thumb nut **23**.

Box **11** has a bottom wall **12**, a beveled end wall **13**, a long side wall **15** paralleling a short side wall **16**, and an end wall **14** perpendicular to side walls **15**, **16**. A flange **17** extends from the upper end of beveled end wall **13** forming a reentrant corner therewith spaced a predetermined distance from a slit **13***a* in wall **13** adjacent bottom wall **12**. A longitudinally extending slot **12***a* is provided in bottom wall **12** centralized with respect to side walls **15**, **16**.

Bottom wall **12** and retaining and indexing plate **20** are herein shown constructed to accommodate therebetween single edge razor blade **24** of conventional construction, that is, having a reinforced edge portion **24***a* opposite the cutting edge **24***b*, a recess **24***c* at the center of each of the side edges and a center slot **24***d*. Bottom wall **12** has its interior surface stepped to provide a depression into which razor edge portion **24***a* fits. The plate **20** fits between side walls **15**, **16** and is formed with an opening **20***a* centralized to align with bottom wall slot **12***a* and razor slot **24***d* for receiving screw **21** therethrough. A boss **20***b*, located at an end edge of plate **20** adjacent end wall **14**, extends from a razor blade facing side **20***e* into bottom wall slot **12***a*. Boss **20***b* aligns with and is spaced from opening **20***a* and is sized and shaped to engage the recess **24***c* on the inner side edge of razor blade **24** when

in assembly in box **11**. The opposite end edge of plate **20**, that is, the end edge adjacent beveled end wall **13**, is formed with a corresponding beveled corner **20***d* beyond which a corner of razor blade cutting edge **24***b* projects through slit **13***a* in wall **13**.

The surface of boss **20***b* visible in slot **12***a* may be provided with an index means such as line **20***c* or an arrow head for selectively aligning plate **20** and razor blade **24** carried thereby with a scale located along an edge of slot **12***a* and having lines designated A, B, C and E, respectively, which letters correspond to conventional wall thickness designations of corrugated cartons. Alignment of index line **20***c* with the desired designation on the scale sets the projecting razor blade **24** for the proper depth of cut.

Box **11** and plate **20** may be injection molded of any suitable resinous plastic. For the illustrated embodiment, box **11** may be made of linear polyethylene, polypropylene, or the like material having tough foldable tear resistant properties satisfying the requirements for an integral hinge or pivot. Although box **11** in a crude form may be left open or fashioned with any suitable cover, to combine the advantage of more economical production cost with desirability of a hinged cover, box **11** has a cover **18** integrally hinged along foldable web **19** to flange **17**, the latter being substantially triangular in shape to complement beveled end wall **13** and dispose foldable web **19** in parallel relation to end wall **14**. To provide a snug fit for cover **18** on box **11**, a long rib **18***a* and short rib **18***b* extends longitudinally along the interior surface of cover **18** and are positioned to abut long side wall **15** and short side wall **16**, respectively, when cover **18** is closed. An integral latch **18***c* extends from cover **18** and engages an undercut **14***a* formed in end wall **14** releasably retaining cover **18** in closed position. To facilitate opening, cover **18** has a finger lift tab **18***d* protruding slightly beyond end wall **14**. In molding box **11**, slit **13***a* may be fashioned simply by beveling the edge between bottom wall **12** and beveled end wall **13** as is clear from FIGS. 2 and 3.

The operation and practical utility of carton opening hand tool **10** will now be apparent. Assembly is readily accomplished by placing a single edge razor blade **24** in open box **11** so that reinforced edge **24***a* lies in the depression formed therefor in bottom wall **12**. Retaining and indexing plate **20** is then placed over razor blade **24** so that boss **20***b*, facing downwardly, lies in slot **12***a* and engages the recess **24***c* in the side edge of razor blade **24** adjacent end wall **14** and opening **20***a* aligns with razor blade slot **24***d*. Bolt **21** with lock washer **22** thereon is then inserted through opening **20***a* and razor blade slot **24***d* to project through bottom wall slot **12***a* and have thumb nut **23** threaded thereon. Hinged cover **18** may then be folded over and snapped into closed position.

Razor blade **24** is selectively positioned either to be fully retracted when not in use or to project through slot **13***a* by slightly loosening thumb nut **23** and moving the latter along slot **12***a*. Selection of a desired depth of cut may be aided by aligning index line **20***c* with the appropriate carton wall thickness letter designation on the scale provided on bottom wall **12** adjacent slot **12***a*. Thumb nut **23** is then tightened to lock plate **20** and razor blade **24** in the selected position.

With razor blade **24** set for the desired depth of cut, hand tool **10** may be grasped in the right hand as indicated in FIG. 1 and the reentrant corner between flange **17** and beveled end wall **13** placed against a top edge of the carton to guide the projecting edge of razor blade **24** in cutting the carton side wall in a straight line at a spaced distance below the top edge as tool **10** is drawn therealong.

To replace razor blade **24**, top cover **18** is readily opened by inserting a finger nail under lift tab **18***d* and thumb nut **23** removed from bolt **21** thereby releasing plate **20** for access to razor blade **24**. Tool **10** is then reassembled with a new razor blade **24** in the manner hereinbefore described.



We claim:

**1**. A carton opening hand tool comprising an elongated hand grip sized box defining a chamber in part formed by a movable top wall, a bottom wall for receiving a razor blade thereagainst spaced from said top wall and a beveled end wall extending between said top wall and said bottom wall, said end wall being formed with a slit adjacent said bottom wall for projection of a corner of the razor blade therethrough, a flange extending from said end wall at a spaced distance above said slit formed in said end wall providing a reentrant corner to engage and be drawn along a top of a carton thereby determining the cutting depth of the razor blade projecting through said slit, said top wall being movable between an open and closed position, said bottom wall only being formed with an elongtaed slot in alignment with a central slot in the razor blade, and means extending through the central slot in the razor blade and through said elongated slot for releasably positioning the razor blade along said slot for varying the extent projection of the blade through said slit.

**2**. A tool according to claim **1**, wherein a retaining plate overlies said razor blade for movement longitudinally therewith, said plate being formed with an opening and having a boss extending beyond said blade and into said slot formed in said bottom wall.

**3**. A tool according to claim **2**, wherein said releasable positioning means comprises a bolt extending through said opening in said plate and through said slot in said razor blade and said longitudinal slot in the bottom plate and a thumb nut terminating said bolt for releasably securing said razor blade and plate assembly in a selected position along said slot.

**4**. A carton opening hand tool comprising a hand grip sized box having a bottom wall sized to receive a razor blade thereagainst and a beveled end wall, the latter having a slit adjacent said bottom wall for projection of a corner of the razor blade therethrough, a flange extending from said end wall at a spaced distance above said slit providing a reentrant corner to engage and be drawn along a top edge of a corrugated carton thereby determining the cutting path of the razor blade projecting through said slit on the carton side wall, a retaining plate overlying said razor blade for movement longitudinally therewith, said plate being formed with an opening and having a boss extending beyond said blade and into said slot in said bottom wall, and means extending through a slot in the razor blade and through said longitudinal slot for releasably positioning the razor blade along the slot for varying the extent of projection of the blade.

**5**. A tool according to claim **4**, wherein index means is provided on said boss, a scale along an edge of said slot for selective alignment with said index means for adjusting the extent of projection of the razor blade through said slit to control the depth of cut, said releasable position means comprising a bolt extending through said opening in said plate and through said slot in said razor blade and said longitudinal slot in the bottom plate and a thumb nut terminating said bolt for releasably securing said razor blade and plate assembly in a selected position along said slot.

**6**. A carton opening hand tool comprising an elongated hand grip sized box defining a chamber in part formed by a movable top wall, a bottom wall for receiving a razor blade thereagainst spaced from said top wall and a beveled end wall extending between said top wall and said bottom wall, said end wall being formed with a slit adjacent said bottom wall for projection of a corner of the razor blade therethrough, and a flange extending from said end wall at a spaced distance above said slit formed in said end wall providing a reentrant corner to engage and be drawn along a top of a carton thereby determining the cutting depth of the razor blade projecting through said slit, said box being molded

of an elastomeric resinous material and said flange being connected by an integral hinge to said top wall for the box, said top wall having an integral latch adjacent the edge opposite said hinge for releasable snap-in engagement with an undercut in a wall of said box.


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