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Spellbound Development Group, Inc.

UNITED STATES DISTRICT COURT

CENTRAL DISTRICT OF CALIFORNIA, SOUTHERN DIVISION

SPELLBOUND DEVELOPMENT GROUP, INC., a California corporation

Plaintiff,

v.

PACIFIC HANDY CUTTER, INC., a California corporation; FRONT LINE SALES, INC., a California corporation; STANLEY BLACK & DECKER, INC., a Connecticut corporation, and DOES 1 through 20,

Defendants.

Civil Action No. SACV09-00951 DOC (ANx)

THIRD-AMENDED COMPLAINT FOR PATENT INFRINGEMENT

DEMAND FOR JURY TRIAL

1. Plaintiff, by and through its attorneys of record, allege as follows:

PARTIES

2. Plaintiff SPELLBOUND DEVELOPMENT GROUP, INC., (hereinafter "SPELLBOUND") is a corporation organized and existing under the laws of the State of California, with a place of business at 16902 Millikan Avenue, Irvine, CA 92606.

3. Upon information and belief, Defendant PACIFIC HANDY CUTTER, INC. (hereinafter "PHC"), is a corporation organized and existing under the laws of the State of California, with its principal place of business at 2968 Randolph Avenue, Costa Mesa, CA 92626.

4. Upon information and belief, Defendant FRONT LINE SALES, INC. ("FRONT LINE") is a corporation, organized and existing under the laws of the State of California, with its principal place of business at 1751 Curtiss Court, La Verne, CA 91750.

5. Upon information and belief, Defendant STANLEY BLACK & DECKER, INC. ("STANLEY") is a corporation, organized and existing under the laws of the State of Connecticut, with its principal place of business at 1000 Stanley Drive, New Britain, CT 06053.

6. The true names and capacities, whether individual, corporate, associate, representative or otherwise, of DOES 1 through 20, inclusive, are unknown to Plaintiff, who therefore sues them by such fictitious names. Plaintiff will seek leave to amend this complaint to show the true names and capacities of the Defendants when they are ascertained. Plaintiff is informed and believes, and thereupon alleges, that each of the Defendants named as a DOE, along with the named Defendants, is responsible in some manner for the occurrences herein alleged, and that Plaintiff's damages herein alleged were legally or proximately caused by said Defendants. Wherever it is alleged that any act or omission was also done or committed by any specifically named Defendant or by Defendants generally, Plaintiff intends thereby to allege, and does allege, that the same act or omission was also done and committed by each and every Defendant named as a DOE, and each named Defendant, both separately and in concert or conspiracy with the named Defendants.

7. On information and belief, and at all times mentioned herein, each of

the Defendants named herein as DOES 1 through 20, inclusive, performed, participated in or abetted in some manner the acts alleged herein; proximately caused the damages alleged herein below; and are liable to Plaintiff for the damages and relief sought herein.

JURISDICTION AND VENUE

8. This is an action for patent infringement arising under the patent laws of the United States, *35 U.S.C. §§ 1, et seq.* This Court has subject matter jurisdiction over this action pursuant to *28 U.S.C. §§ 1331* and *1338(a)*.

9. This Court has personal jurisdiction over PHC because PHC resides in this judicial district, conducts business in this judicial district and in the State of California, and has and continues to commit acts of patent infringement and/or has contributed to or induced acts of patent infringement by others in this judicial district (and elsewhere in California and in the United States).

10. This Court has personal jurisdiction over FRONT LINE because FRONT LINE resides in this judicial district, conducts business in this judicial district and in the State of California, and has and continues to commit acts of patent infringement and/or has contributed to or induced acts of patent infringement by others in this judicial district (and elsewhere in California and in the United States).

11. This Court has personal jurisdiction over STANLEY because STANLEY conducts business in this judicial district and in the State of California, and has and continues to commit acts of patent infringement and/or has contributed to or induced acts of patent infringement by others in this judicial district (and elsewhere in California and in the United States).

12. Venue is proper in this judicial district pursuant to 28 U.S.C. §§ 1391(b), 1391(c) and 1400(b) because PHC, FRONT LINE and STANLEY are each subject to personal jurisdiction in this judicial district, have regularly

conducted business in this judicial district, and certain of the acts complained of herein occurred in this judicial district.

THE PATENTS-IN-SUIT

13. SPELLBOUND is the owner of all right, title and interest in and to United States Patent No. 7,356,928 ("the '928 Patent"), entitled "Utility Knife With Safety Guard Having Reduced Play," which was duly and legally issued on April 15, 2008. A true and correct copy of the '928 Patent is attached hereto as **Exhibit A**.

14. SPELLBOUND is the owner of all right, title and interest in and to United States Patent No. 6,718,640 ("the '640 Patent"), entitled "Cutting Tool," which was duly and legally issued on April 13, 2004. A true and correct copy of the '640 Patent is attached hereto as **Exhibit B**.

15. SPELLBOUND is the owner of all right, title and interest in and to United States Patent No. 7,726,029 ("the '029 Patent"), entitled "Safety Cutting Apparatus," which was duly and legally issued on June 1, 2010. A true and correct copy of the '029 Patent is attached hereto as **Exhibit C**.

16. The '928 Patent, the '640 Patent and the '029 Patent each have numerous claims drawn to devices for an improved utility knife having a blade guard that intermittently protects a cutting edge of the knife's blade. Many of these claims are directed to various configurations of the mechanism that enables the blade guard to intermittently protect the blade. The '928 Patent, the '640 Patent and the '029 Patent are collectively referred to herein as the "Patents-In-Suit."

COUNT ONE

INFRINGEMENT OF THE '928 PATENT AGAINST ALL DEFENDANTS

17. Plaintiff re-alleges and incorporates herein the allegations of paragraphs 1-16 as if fully set forth herein.

18. The '928 Patent is valid and enforceable.

19. Upon information and belief, in violation of *35 U.S.C. § 271*, each of the Defendants has infringed, is currently infringing, and will continue to infringe, either directly or by infringement under the doctrine of equivalents, the '928 Patent, by making, using, offering for sale, selling and/or importing into the United States devices, and specifically, at least PHC's RSC-432 knife, which incorporates and infringes the subject matter protected by at least claim 9 of the '928 Patent.

20. Upon information and belief, in violation of *35 U.S.C. § 271*, each of the Defendants also contributes to and/or induces infringement of one or more of the claims of the '928 Patent as set forth above.

21. As a direct and proximate result of each of the Defendants' acts of infringement as alleged herein, Plaintiff has and will continue to suffer damages in an amount according to proof at trial, and thus Plaintiff is entitled to recover damages adequate to compensate it for such infringement, but in no event less than a reasonable royalty.

22. Unless each of the Defendants is enjoined by this Court from continuing their infringement of the '928 Patent, Plaintiff will suffer additional irreparable harm and impairment of the value of its patent rights. Thus, Plaintiff is entitled to an injunction against further infringement.

23. Upon information and belief, at least each of Defendants PHC and FRONT LINE has had actual notice of the existence of the '928 Patent at least as of August 12, 2009, and has had constructive notice of the existence of the '928 Patent at least as of the date of issuance, April 15, 2008.

24. Upon information and belief, at least each of Defendants PHC's and FRONT LINE's infringement has occurred with knowledge of the '928 Patent and is and has been in deliberate and willful in violation of *35 U.S.C. § 284* entitling Plaintiff to increased damages, and making this case exceptional within the meaning of *35 U.S.C. § 285*.

25. Plaintiff does not yet have sufficient knowledge or information to determine whether infringement by the DOE Defendants is willful, but will seek leave of Court to amend this Complaint to so allege if and when it obtains such knowledge and information.

COUNT TWO

INFRINGEMENT OF THE '640 PATENT AGAINST ALL DEFENDANTS

26. Plaintiff re-alleges and incorporates herein the allegations of paragraphs 1-25 as if fully set forth herein.

27. The '640 Patent is valid and enforceable.

28. Upon information and belief, in violation of *35 U.S.C. § 271*, each of the Defendants has infringed, is currently infringing, and will continue to infringe, either directly or by infringement under the doctrine of equivalents, the '640 Patent, by making, using, offering for sale, selling and/or importing into the United States devices, and specifically, at least PHC's RSC-432 knife, which incorporates and infringes the subject matter protected by at least one of claims 3-4 of the '640 Patent.

29. Upon information and belief, in violation of *35 U.S.C. § 271*, each of the Defendants also contributes to and/or induces infringement of one or more of the claims of the '640 Patent as set forth above.

30. As a direct and proximate result of each of the Defendants' acts of infringement as alleged herein, Plaintiff has and will continue to suffer damages in an amount according to proof at trial, and thus Plaintiff is entitled to recover damages adequate to compensate it for such infringement, but in no event less than a reasonable royalty.

31. Unless each of the Defendants is enjoined by this Court from continuing their infringement of the '640 Patent, Plaintiff will suffer additional irreparable harm and impairment of the value of its patent rights. Thus, Plaintiff is entitled to an injunction against further infringement.

32. Upon information and belief, at least Defendant PHC has had actual notice of the existence of the '640 Patent at least as of September 4, 2009, and has had constructive notice of the existence of the '640 Patent at least as of the date of issuance, April 13, 2004.

33. Upon information and belief, at least Defendant FRONT LINE has had actual notice of the existence of the '640 Patent at least as of the service date of this first amended complaint, and has had constructive notice of the existence of the '640 Patent at least as of the date of issuance, April 13, 2004.

34. Upon information and belief, at least each of Defendants PHC's and FRONT LINE's infringement has occurred with knowledge of the '640 Patent and is and has been in deliberate and willful in violation of *35 U.S.C. § 284* entitling Plaintiff to increased damages, and making this case exceptional within the meaning of *35 U.S.C. § 285*.

35. Plaintiff does not yet have sufficient knowledge or information to determine whether infringement by the DOE Defendants is willful, but will seek leave of Court to amend this Complaint to so allege if and when it obtains such knowledge and information.

COUNT THREE

INFRINGEMENT OF THE '029 PATENT AGAINST ALL DEFENDANTS

36. Plaintiff re-alleges and incorporates herein the allegations of paragraphs 1-35 as if fully set forth herein.

37. The '029 Patent is valid and enforceable.

38. Upon information and belief, in violation of *35 U.S.C. § 271*, each of the Defendants has infringed, is currently infringing, and will continue to infringe, either directly or by infringement under the doctrine of equivalents, the '029 Patent, by making, using, offering for sale, selling and/or importing into the United States devices, and specifically, at least PHC's RSC-432 knife, which incorporates and

infringes the subject matter protected by at least one of claims 1-5 and 8 of the '029 Patent.

39. Upon information and belief, in violation of *35 U.S.C. § 271*, each of the Defendants also contributes to and/or induces infringement of one or more of the claims of the '029 Patent as set forth above.

40. As a direct and proximate result of each of the Defendants' acts of infringement as alleged herein, Plaintiff has and will continue to suffer damages in an amount according to proof at trial, and thus Plaintiff is entitled to recover damages adequate to compensate it for such infringement, but in no event less than a reasonable royalty.

41. Unless each of the Defendants is enjoined by this Court from continuing their infringement of the '029 Patent, Plaintiff will suffer additional irreparable harm and impairment of the value of its patent rights. Thus, Plaintiff is entitled to an injunction against further infringement.

42. Upon information and belief, at least Defendants have had actual notice of the existence of the '029 Patent at least as of May 20, 2010, and has had constructive notice of the existence of the '029 Patent at least as of the date of publication of the application, January 28, 2010.

43. Upon information and belief, at least each of Defendants PHC's and FRONT LINE's infringement has occurred with knowledge of the '029 Patent and is and has been in deliberate and willful in violation of *35 U.S.C. § 284* entitling Plaintiff to increased damages, and making this case exceptional within the meaning of *35 U.S.C. § 285*.

44. Plaintiff does not yet have sufficient knowledge or information to determine whether infringement by the DOE Defendants is willful, but will seek leave of Court to amend this Complaint to so allege if and when it obtains such knowledge and information.

PRAYER FOR RELIEF

WHEREFORE, Plaintiff SPELLBOUND, for the Patents-In-Suit, prays for judgment and relief as follows:

A) Judgment that the Patents-In-Suit are valid and enforceable;

B) Judgment that each of the Defendants infringe the Patents-In-Suit and that each of the Defendants' infringement is, and has been, deliberate and willful;

C) Judgment that each of the Defendants, its directors, officers, employees, attorneys, and agents, and all those persons acting in active concert or in participation with them, and their successors and assigns, be enjoined from further acts that infringe, contributorily infringe or induce infringement of the Patents-In-Suit pursuant to *35 U.S.C. § 283*;

D) Judgment that each of the Defendants individually and collectively be ordered to pay damages adequate to compensate SPELLBOUND for that Defendant's infringement of the Patents-In-Suit pursuant to *35 U.S.C. § 284*, together with interest, including pre-judgment interest from the date infringement of the Patents-In-Suit began;

E) Judgment that the Defendants individually and collectively be ordered to pay all costs and expenses incurred by SPELLBOUND associated with this action pursuant to *35 U.S.C. § 284*;

F) Judgment that the Defendants individually and collectively be ordered to pay treble damages pursuant to *35 U.S.C. § 284* as a result of the willful and deliberate nature of their conduct;

G) Judgment that this case is exceptional, and that the Defendants individually and collectively be ordered to pay all of SPELLBOUND's attorney fees associated with this action pursuant to *35 U.S.C. § 285*; and

H) Judgment that SPELLBOUND be granted such other and additional relief as this Court may deem just and proper.

Respectfully submitted,

LAUSON & TARVER LLP

Dated: July 12, 2010 By: /s/ with Permission

Robert J. Lauson, Esq.
Attorneys for Plaintiff
Spellbound Development Group, Inc.

DEMAND FOR JURY TRIAL

Pursuant to *Federal Rule of Civil Procedure, Rule 38,* and *L.R. 38-1*, Plaintiff hereby demands a jury trial on all issues so triable.

Respectfully submitted,

LAUSON & TARVER LLP

Dated: July 12, 2010 By: /s/

Robert J. Lauson, Esq.
Attorneys for Plaintiff
Spellbound Development Group, Inc.

PROOF OF SERVICE

I am over the age of eighteen (18) years, employed in the County of Los Angeles, and not a party to the above-entitled action. My business address is 880 Apollo Street, Suite 301, El Segundo, CA 90245 On September 1, 2010 I served a **THIRD-AMENDED COMPLAINT FOR PATENT INFRINGEMENT**

addressed as follows to:

Dean A. Dickie
MILLER CANFIELD
225 West Washington Street, Suite 2600
Chicago, Illinois 60606

George L. Hampton IV
Colin C. Holley
HAMPTONHOLLEY LLP
2101 East Coast Highway, Suite 260
Corona del Mar, California 92625

☒ **BY MAIL**: I am readily familiar with the Firm's practice of collecting and processing correspondence for mailing. Under that practice, it would be deposited with the United States Postal Service on the same day with a postage thereon fully prepaid at El Segundo, California, in the ordinary course of business. I am aware that, on the motion of the party served, service is presumed invalid if the postal cancellation date or postage meter date is more than one (1) day after the date of deposit for mailing shown on this proof of service.

☐ **BY FEDERAL EXPRESS/OVERNIGHT DELIVERY**: I caused a copy of such document to be sent via overnight delivery to the office(s) of the addressee(s) shown above.

☐ **BY ELECTRONIC MAIL**: I caused a copy of such document to be sent via ELECTRONIC MAIL to the office(s) of the addressee(s) at the e-mail address(es) shown above.

☐ **BY FACSIMILE**: I caused a copy of such document to be sent via facsimile machine to the office(s) of the addressee(s) at the phone number(s) shown above.

☐ **BY PERSONAL SERVICE**

- ☐ FEDERAL COURT: I caused such envelope to be delivered by hand to the offices of the addressee(s).
- ☐ STATE COURT: I caused such envelope to be delivered by hand to the offices of the addressee(s).

☒ **FEDERAL**: I declare, under penalty of perjury that the foregoing is true and that I am employed in the office of a member of the Bar of this Court at whose direction the service was made.

Executed on September 1, 2010, at El Segundo, California.

Steve Allen

Exhibit A

US007356928B2

(12) **United States Patent**
Votolato

(10) **Patent No.: US 7,356,928 B2**
(45) **Date of Patent: Apr. 15, 2008**

(54) **UTILITY KNIFE WITH SAFETY GUARD HAVING REDUCED PLAY**

(75) Inventor: **Earl J. Votolato**, Newport Beach, CA (US)

(73) Assignee: **Earl J. & Kimberly Votolato Trustees of the Votolato Living Trust**, Newport Beach, CA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 396 days.

(21) Appl. No.: **10/936,891**

(22) Filed: **Sep. 8, 2004**

(65) **Prior Publication Data**

US 2006/0048389 A1 Mar. 9, 2006

(51) **Int. Cl.**
B26B 29/00 (2006.01)

(52) **U.S. Cl.** **30/2**; 30/286; 30/293; 30/294; 30/153; 30/320; 30/331

(58) **Field of Classification Search** 30/2, 30/286, 293, 294, 125, 153, 151, 320, 331, 30/330, 340, 332, 162, 317
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

4,757,612	A *	7/1988	Peyrot	30/151
4,980,977	A	1/1991	Matin et al.	
5,241,750	A *	9/1993	Chomiak	30/2
5,878,501	A	3/1999	Owens et al.	
6,070,326	A *	6/2000	Berns	30/2
6,233,832	B1 *	5/2001	Berns	30/162
6,453,559	B1 *	9/2002	Marshall et al.	30/2
6,560,873	B1 *	5/2003	Ortner et al.	30/2
2002/0124412	A1 *	9/2002	Votolato	30/200

OTHER PUBLICATIONS

U.S. Appl. No. 09/804451, filed Sep. 2002, Votolato.
U.S. Appl. No. 10/300382, filed May 2004, Votolato.

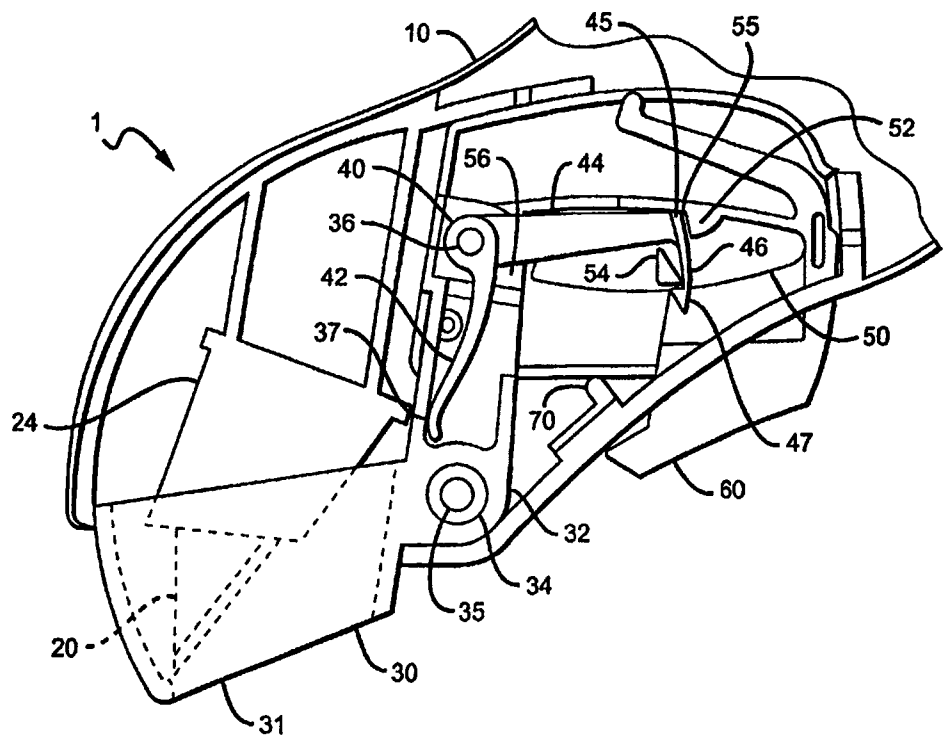
* cited by examiner

Primary Examiner—Timothy V. Eley
(74) *Attorney, Agent, or Firm*—Fish & Associates, PC

(57) **ABSTRACT**

A utility knife has a protective guard that moves from a locked position to an unlocked position. Preferred mechanisms utilize a pawl that cooperates with a stop to reduce movement of the guard while the guard is in a locked position, and a simple latching mechanism that allows the pawl to bypass the stop. The pawl is disposed with respect to other elements of the mechanism such that the blade guard can only pulled back to a retracted position after operation of a trigger or other actuator, and then only for a single use. Both the stop and the catch can advantageously be carried in a fixed special relation to one another by operation of a trigger or other actuator.

20 Claims, 4 Drawing Sheets



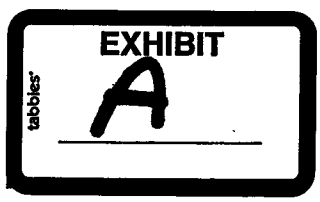
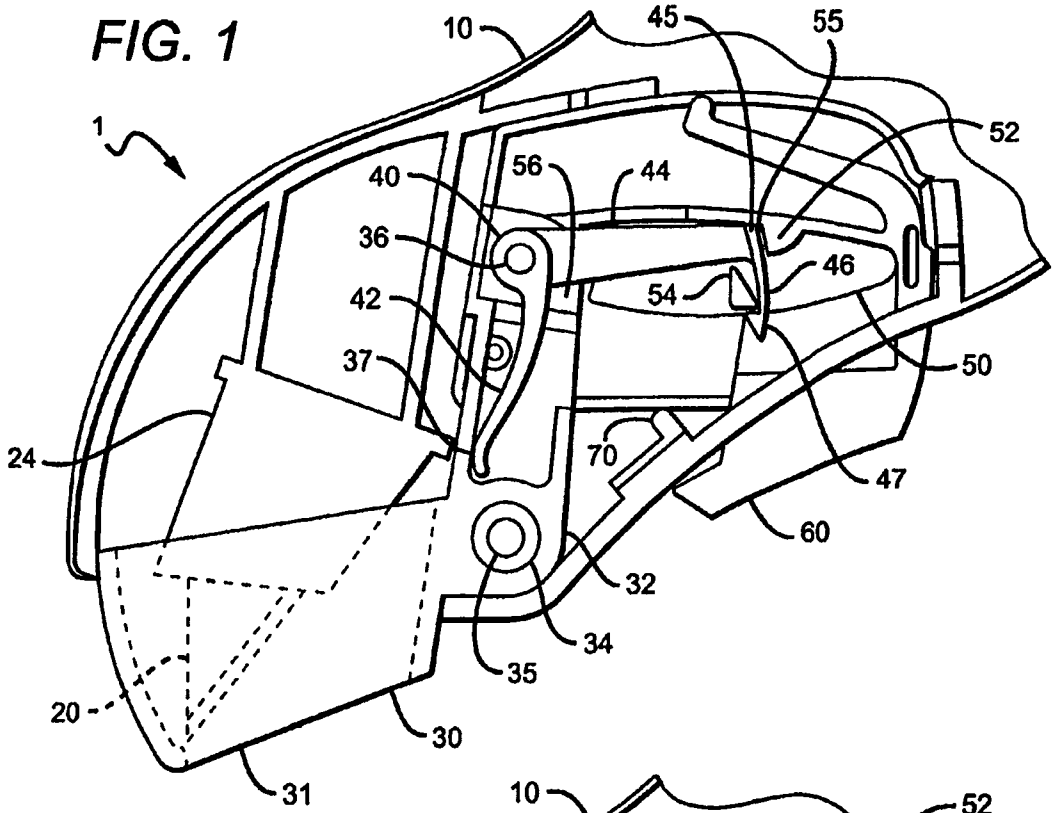


FIG. 1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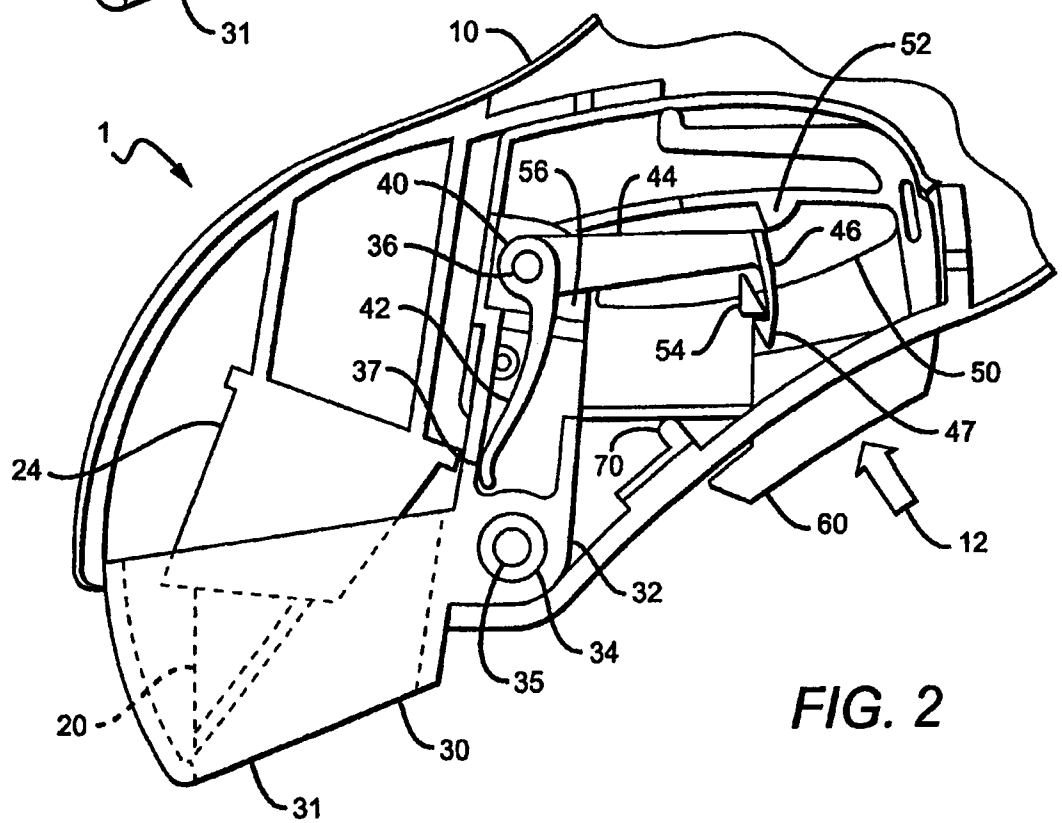
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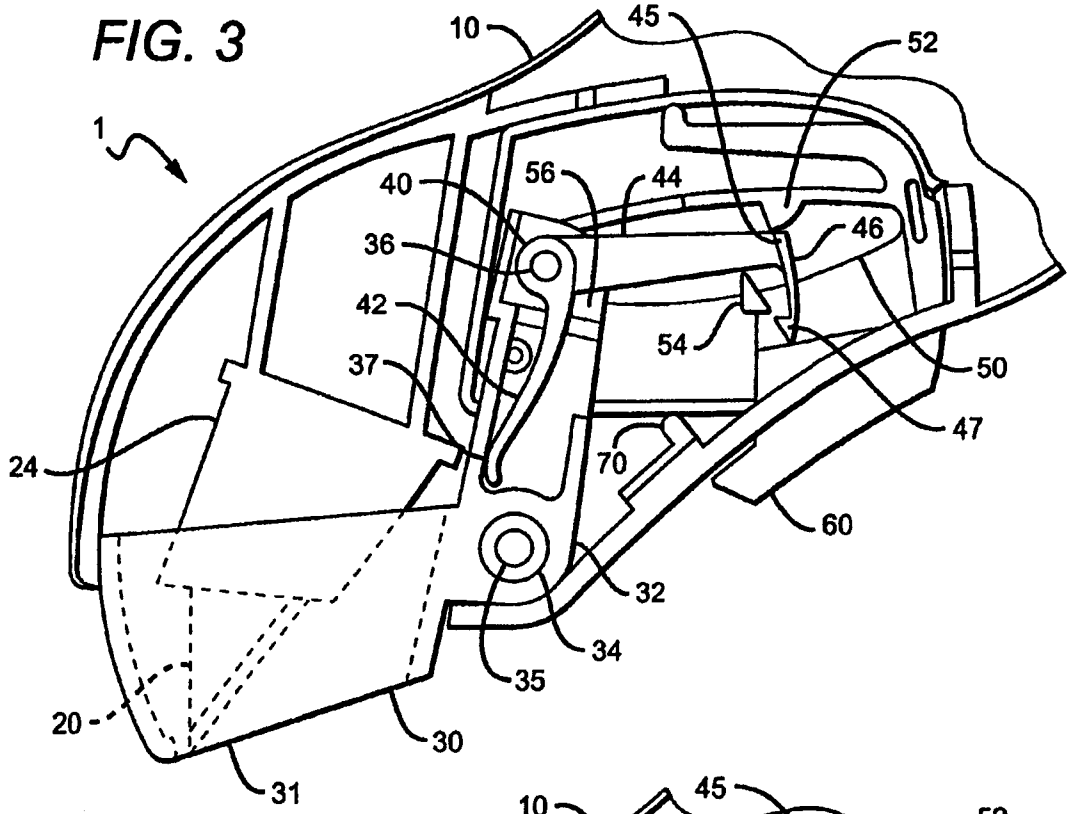
FIG. 2

FIG. 3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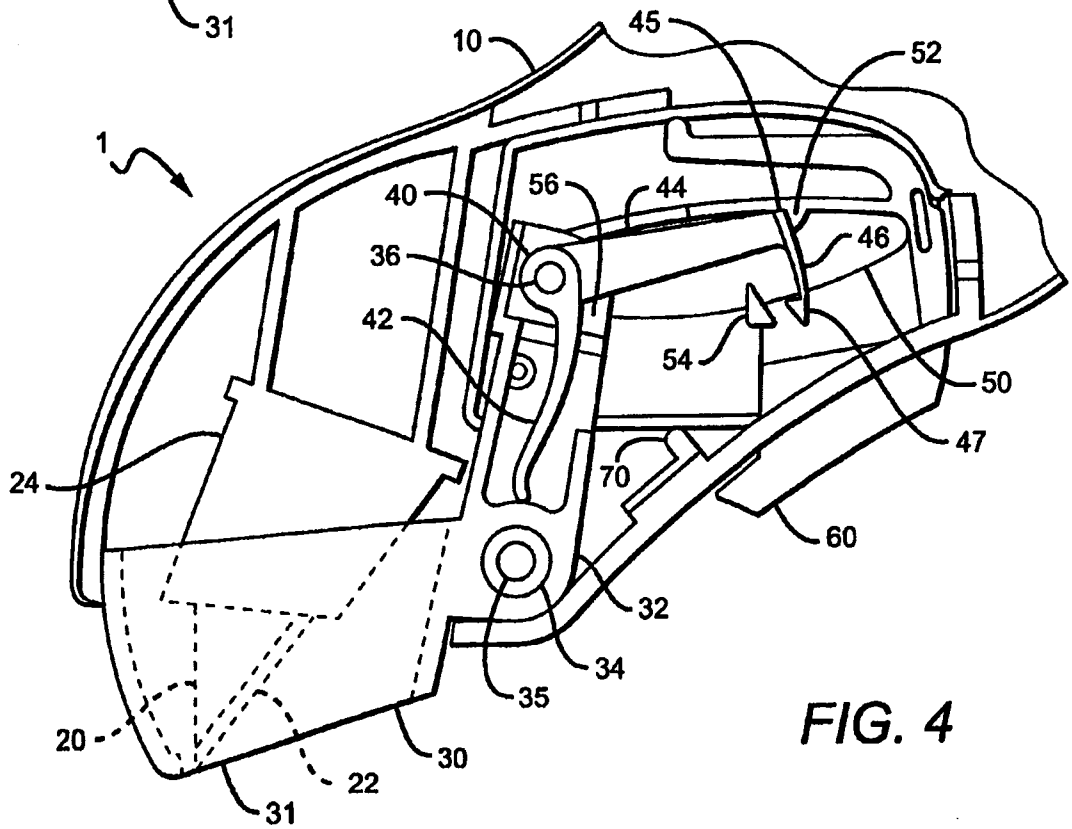
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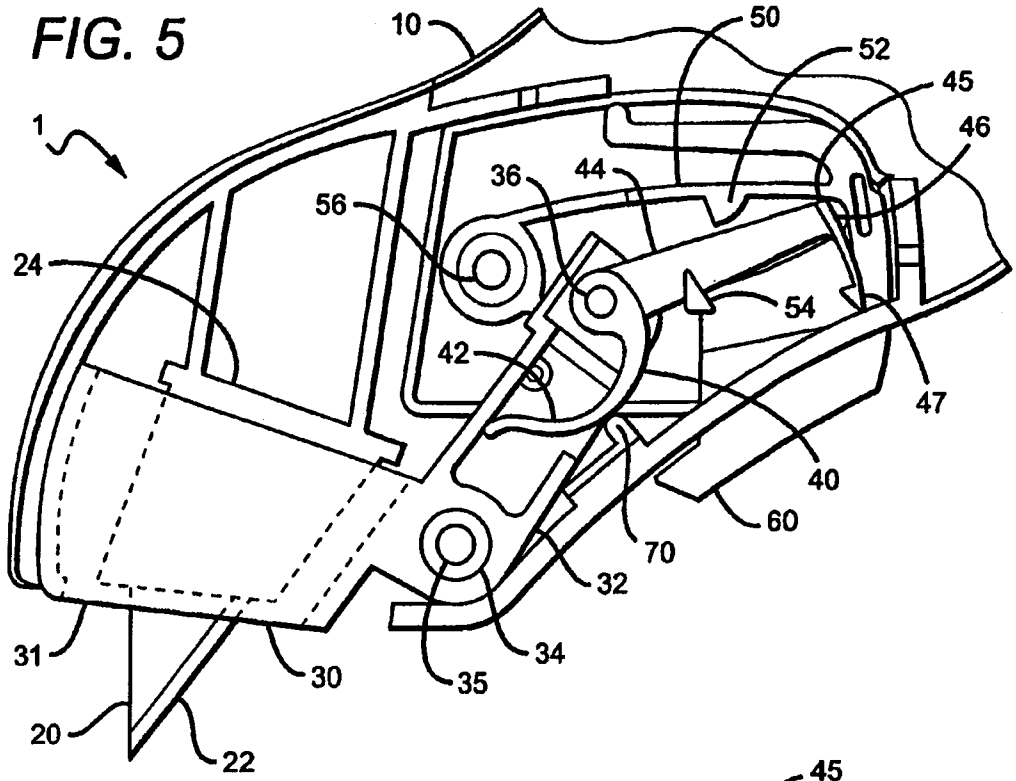
FIG. 4

FIG. 5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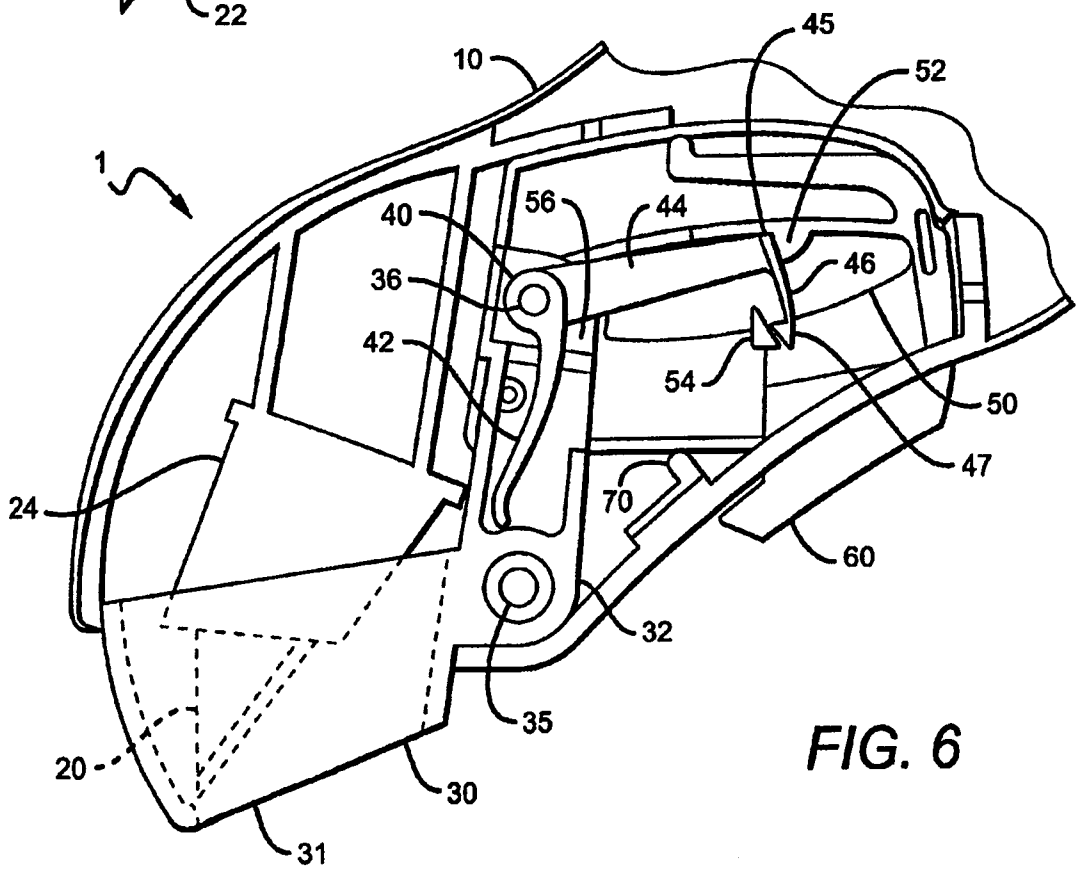
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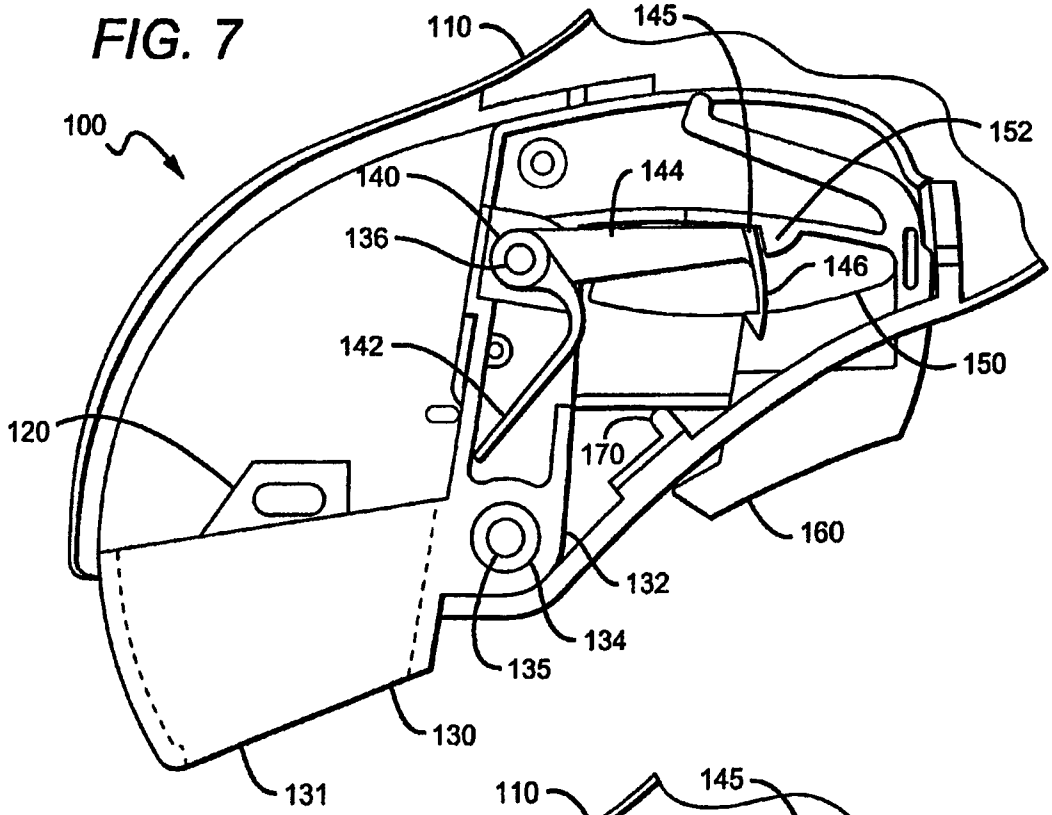
FIG. 6

FIG. 7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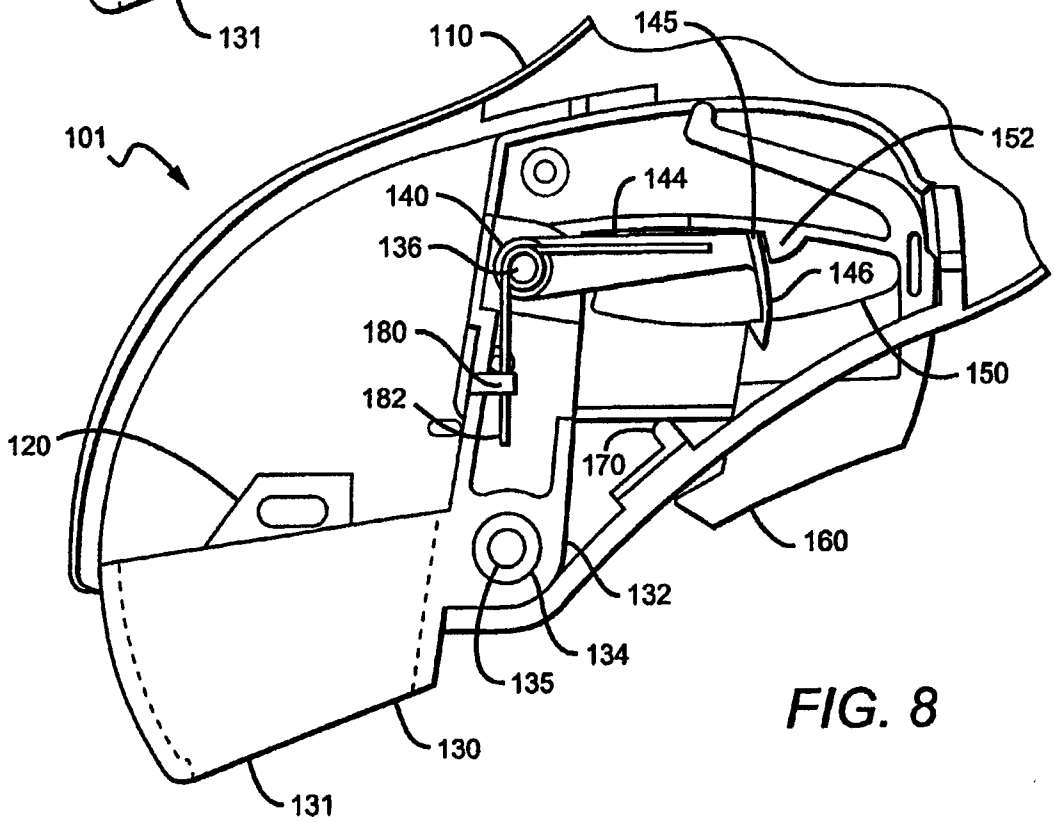
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FIG. 8

UTILITY KNIFE WITH SAFETY GUARD HAVING REDUCED PLAY

FIELD OF THE INVENTION

The field of the invention is utility knives.

BACKGROUND OF THE SUBJECT MATTER

Utility knives typically have a sharp cutting blade that can either (a) be retracted into a housing, or (b) released to an operating disposition by movement of a protective blade guard. In either case problems arise where the blade is left in an unprotected disposition where it can accidentally cause injury to a user.

The problem of accidental injury has been long recognized, with numerous solutions being put forward at various times. U.S. Pat. No. 4,980,977 to Matin et al. (January 1991), for example, describes a knife having a safety guard that guards the blade when not in use, and automatically retracts as the blade is removed from the workpiece. The guard has a manually triggered self-locking release assembly that automatically relocks the guard when retracted. Unfortunately, Matin's locking mechanism is external to the housing housing, which is dangerous because the mechanism is readily subjected to debris that could jam or otherwise interfere with both the locking and unlocking functions. In addition, Matin's safety guard pivots off the blade externally to the housing housing, rather than being retracted into the housing. That operation is dangerous because the pivoted guard can readily interfere with operation of the knife.

U.S. Pat. No. 5,878,501 to Owens et al. (March 1999) uses an internal locking mechanism, but leaves the blade in the "use" position for multiple uses. There is no automatic re-locking mechanism, and withdrawal of the blade into the housing is entirely manual.

More recently the present inventor pioneered utility knives having a mechanism that automatically re-locks the protective blade guarding to prevent more than a single use of the blade. Pending applications include Ser. No. 09/804,451, published in September 2002 as 2003/0131393, and Ser. No. 10/300,382, published in May 2004 as 2004/0093734. These and all other referenced patents and applications are incorporated herein by reference in their entirety.

While providing considerable improvement over the prior art, the preferred embodiments of the utility knives described in the Ser. Nos. 09/804,451 and 10/300,382 applications have more "play" in the blade guard than might be desired in some circumstances. In the Ser. No. 10/300,382 application, for example, a preferred locking mechanism utilizes a pawl that rides in a looped pathway. Two ramped steps on the pathway limit the pawl's travel to a one-way direction, so that once the pawl starts along the pathway, it must finish a complete loop. The mechanism, however, allows some slight backward motion of the pawl, and thus introduces potentially undesirable play in the blade guard.

Thus, there is a need for an improved locking/releasing mechanism that automatically re-locks the protective blade guarding to prevent more than a single use of the blade, while reducing the play in the blade guard.

SUMMARY OF THE INVENTION

The present invention provides methods and apparatus in which a utility knife has a protective guard that moves from a locked position to an unlocked position. Preferred mechanisms utilize a pawl hat cooperates with a stop to reduce movement of the guard while the guard is in a locked position, and a simple latching mechanism that allows the pawl to bypass the stop. The pawl is disposed with respect to other elements of the mechanism such that the blade guard can only pulled back to a retracted position after operation of a trigger or other actuator, and then only for a single use. The guard cannot be retracted a second time until the actuator is released, and then operated anew.

In preferred embodiments pawl has a finger portion that juxtaposes the stop and operates against a pin. Both the stop and the catch can advantageously be carried in a fixed special relation to one another by operation of a trigger or other actuator.

"Play" of the protective guard is limited by the distance between the joint and the stop in the locked position, which distance is preferably less than 5 mm, more preferably less than 3 mm, still more preferably less than 2 mm, and most preferably less than 1 mm.

Various objects, features, aspects and advantages of the present invention will become more apparent from the following detailed description of preferred embodiments of the invention, along with the accompanying drawings in which like numerals represent like components.

BRIEF DESCRIPTION OF THE FIGURES

FIG. **1** is a side view of a portion of an opened utility knife case, with the blade guard in the deployed (protecting) position, and the pawl in a locked position.

FIG. **2** is a side view of the opened utility knife case of FIG. **1**, showing the trigger in a depressed (actuated) position, and the pawl in an unlocked position.

FIG. **3** is a side view of the opened utility knife case of FIG. **1**, showing the pawl in an unlocked position, and the blade guard moving away from the deployed position.

FIG. **4** is a side view of the opened utility knife case of FIG. **1**, showing the pawl reverted to the locked position upon slight movement of the blade guard.

FIG. **5** is a side view of the opened utility knife case of FIG. **1**, showing the blade guard in a retracted position, with the blade exposed.

FIG. **6** is a side view of the opened utility knife case of FIG. **1**, showing the blade guard reverted back to a deployed position, and the pawl in a locked position.

FIGS. **7**, **8** are side views of an alternative opened utility knife case, with components removed to show the pawl and pawl spring.

Various objects, features, aspects and advantages of the present invention will become more apparent from the following detailed description of preferred embodiments of the invention, along with the accompanying drawings in which like numerals represent like components.

DETAILED DESCRIPTION

In FIG. **1** a utility knife **1** generally comprises a housing **10** (only the front portion of which is shown), a blade **20**, a blade guard **30**, a pawl **40**, a carriage that carries a stop **52** and a catch **54**, and a trigger **60**.

Housing **10** is preferably sized and dimensioned to fit comfortably in the hand of a user. Housing **10** can be made of any suitable material, including metals, alloys, and plastics, and can have a hollowed out section (not shown) for storing spare blades. Housing **10** is preferably ambidextrous, but alternatively can include contours that would tend to make the device more acceptable to right or left handed use.

The reader will note that housing **10** includes numerous structural elements that are not labeled.

Blade **20** is preferably triangular shaped at one or both ends, and has at least one cutting edge **22**. Blade **20** is preferably made of non-rusting alloy, but can also be made of other materials, including for example various plastics. Blade **20** is shown here as being held by blade holder **24**.

Blade guard **30** generally guards the blade **20** when the guard is in a fully deployed position (as show), and allows use of the blade when the guard is in the retracted position (see FIG. **5**). To that end blade guard **30** has a slit along one edge **31** through which at least a portion of the edge **22** of blade **20** can extend. Guard **30** is continuous with guard arm **32**, and pivots about pivot **34**. The pin **35** for pivot **34** is preferably fixed to or extending from the housing **10**. Guard arm **32** also carries a pin or pin portion **36** about which the pawl **40** pivots. Blade guard **30** is preferably made of transparent or at least translucent plastic, so that the user can see the blade being protected. Alternatively, blade guard **30** can be made of metal or any other suitable material or materials.

Pawl **40** has a first pawl arm **42** that pushes against the guard arm **32** at area **37**, and thereby biases the blade guard **30** into the deployed position shown in the Figure. To that end first pawl arm **42** is should have some degree of springiness, whether inherently or through addition of an additional spring (not shown). Pawl **40** also has a second pawl arm **44** that cooperates with stop **52** to prevent guard arm **32** from pivoting about pin **35**, and thereby prevents the blade guard **30** from retracting. Second pawl arm **44** has a joint **45** (which could also be called an elbow), and extending from the joint **45** is a finger **46** (which is also referred to herein as a latch) that cooperates with catch **54** in a latching motion. It is the finger **46** and in part the joint **45** that actually juxtapose the stop **52**. Pawl **40** is preferably constructed of a single, continuous piece of metal alloy, or plastic.

Carriage **50** pivots about pin **56**, which is attached to or extending from housing **10**. The pivoting motion is controlled by depression and release of trigger **60**. Stop **52** and catch **54** are each preferably attached to or extending from the carriage **50**, with their respective positions fixed at a distance of less than 2 cm., depending on the width of second pawl arm **44**. Carriage **50**, stop **52**, and catch **54** can be made from any suitable material or materials, and can be shaped as shown or can have any other suitable shapes.

Trigger **60** is shown on the underside of the housing **10**, and is positioned relatively forward so that the trigger is easily operated by the users forefinger. All other suitable positions are contemplated, including positions on the top or side of the housing **10**. Those skilled in the art will also appreciate that the trigger **60** is merely emblematic of a more general actuator, which could take the form of a push button, a slider, and so forth. Trigger **60** is preferably constructed from metal or plastic.

In FIG. **1** the utility knife **1** is shown with the blade guard **30** in the deployed (protecting) position, and the pawl **40** in a locked position. Locking is accomplished by the approximate juxtaposition of joint **45** and finger **36** against stop **52**. In this position the maximum distance between finger **36** and stop **52** determines the play (slight movement) that blade guard **30** can undergo. As such it is beneficial if the distance **55** is less than 5 mm, more preferably less than 3 mm, even more preferably less than 2 mm, and most preferably less than 1 mm.

In FIG. **2** the trigger **60** has been depressed (squeezed) against the housing **10** in the direction of arrow **12**, with the effect that the carriage **50** has rotated upwards (from the point of view of the drawing). That motion has disengaged the finger **46** from the stop **52**, which will subsequently allow the second pawl arm **44** to move to the right past the stop **52**. The pawl is thus in an unlocked position in this Figure.

In FIG. **3** the blade guard **30** has been pushed back slightly, enough to displace the joint **47** and finger **46** past the stop **45**, but not enough for the blade **22** to protrude through the slit **31** in the blade guard **30**. If, from this position the pressure against the blade guard **30** is removed, so that the blade guard **30** reverts back to the fully deployed position of FIG. **1**, then the pawl arm **44** at joint **45** and finger **46** would re-lock against the stop **52**. That situation is shown in FIG. **4**.

In FIG. **5** the blade guard **30** has been pushed back to its greatest extent, as limited by the guard arm **32** striking rest **70** attached to or formed as part of the housing **10**. In this position the blade **20** extends through slot **31** to a maximal extent, which in preferred embodiments exposes the cutting edge **22** of the blade **20** to depth of at least 8 mm, more preferably at least 9 mm, still more preferably at least 10 mm, and most preferably almost 11 mm. Movement of the blade guard **30** is presumably caused by the user pushing the guard **30** against a cardboard box or other surface being cut (not shown), with the blade guard **30** being retracted and the blade **20** being forced into the box material.

In FIG. **6** the pressure on the blade guard **30** has been removed, and the guard **30** has returned to its fully deployed position. This presumably occurs because the user has made the needed cut, and removed the blade **20** from the surface being cut. Since the blade guard **30** is continuous with guard arm **32**, pivoting about pin **35**, the portion of guard arm **32** containing pin **36** is also returned to its native position, which carries joint **45** and finger **46** back to engage stop **52**.

In this position the blade guard **30** cannot be retracted because there is nothing to disengage the joint **45** and finger **46** from the stop **52**. To disengage and restart the cycle, the trigger **60** must be released, which would carry the hooked end **47** of finger **46** to where it would latch against catch **54**. This brings us full cycle back to FIG. **1**. Of course, the trigger **60** need not be operated during the entire cutting cycle, and can be release as soon as the latching mechanism is unlocked.

In an alternative embodiment of FIGS. **7** and **8**, a utility knife **100** generally comprises a housing **100** (only the front portion of which is shown), a blade **120**, a blade guard **130**, a pawl **140**, a carriage that carries a stop **152** and a catch **154**, and a trigger **160**. Except as noted below, all of the components are substantially similar to those in FIGS. **1-6**, with component numbering of FIG. **7** being higher by **100** relative to those of FIGS. **1-6**.

Pawl **140** has a first pawl arm **142** that pushes against the guard arm **132** at area **137**, and thereby biases the blade guard **130** into the deployed position shown in FIG. **7**. To that end first pawl arm **142** is should have some degree of springiness, whether inherently or through addition of an additional spring (not shown). Pawl **140** also has a second pawl arm **144** that cooperates with stop **152** to prevent guard arm **132** from pivoting about pin **135**, and thereby prevents the blade guard **130** from retracting. Second pawl arm **144** has a joint **145** (which could also be called an elbow), and extending from the joint **145** is a finger **146** (which could be utilized as a latch, but which is not necessarily utilized in this embodiment). It is the finger **146** and in part the joint **145** that actually juxtapose the stop **152**. Pawl **140** is preferably constructed of a single, continuous piece of metal alloy, or

plastic. In FIG. **7**, the latch and catch are embodied not by the finger **146**, but by a catch **180** operating on spring **182**. As will be appreciated, spring **182** exerts a force on the pawl **140** during at least some portion of the operation of the blade guard **130**.

It should therefore be appreciated that the two embodiments shown in the Figures are merely exemplary, and only depict one of many possible embodiments corresponding to the disclosed subject matter. What is contemplated herein is the entire class of embodiments of utility knives where a blade guard automatically re-locks after each use, and in which a pawl is used in conjunction with a stop and a catch to limit the play in the blade guard.

Thus, several specific embodiments and applications of utility knives have been described. It should be apparent, however, to those skilled in the art that many more modifications besides those already described are possible without departing from the inventive concepts herein. The inventive subject matter, therefore, is not to be restricted except in the spirit of the appended claims. Moreover, in interpreting both the specification and the claims, all terms should be interpreted in the broadest possible manner consistent with the context. In particular, the terms "comprises" and "comprising" should be interpreted as referring to elements, components, or steps in a non-exclusive manner, indicating that the referenced elements, components, or steps may be present, or utilized, or combined with other elements, components, or steps that are not expressly referenced.

I claim:

1. An improved utility knife having a body, a blade, and a blade guard coupled to the body, the blade guard disposed to intermittently protect a cutting edge of the blade, the improvement comprising:

the blade guard being shorter than, and pivotally coupled to the body;

a pawl coupled to the blade guard; and

the pawl having a first portion that operates against a stop to prevent the blade guard from exposing the cutting edge, and a second portion that operates against a catch to bypass the stop.

2. The utility knife of claim **1** wherein the pawl hinges on the blade guard.

3. The utility knife of claim **1** wherein the first portion is located at a joint of the pawl.

4. The utility knife of claim **1** wherein the second portion comprises a finger located at an end of the pawl.

5. The utility knife of claim **1** wherein an arm of the pawl biases the blade guard into a deployed position.

6. The utility knife of claim **1** wherein a first arm of the pawl biases the blade guard into a deployed position, and a second arm of the pawl cooperates with the stop and the catch to lock and unlock the blade guard.

7. The utility knife of claim **1** wherein the stop is disposed in a fixed special relation to a pin.

8. The utility knife of claim **1** wherein the stop and the catch are carried on a member that can be pivoted by operation of an actuator.

9. The utility knife of claim **1** wherein the catch acts upon a spring that exerts a force on the pawl.

10. The utility knife of claim **1** wherein the actuator comprises a trigger mounted on an underside of the body.

11. The utility knife of claim **10** wherein the first portion is maintained within 5 mm of the stop prior to release of an actuator.

12. The utility knife of claim **1** wherein the first portion is maintained within 5 mm of the stop prior to release of an actuator.

13. The utility knife of claim **1** wherein the first portion is maintained within 3 mm of the stop prior to release of an actuator.

14. The utility knife of claim **1** wherein the first portion is maintained within 2 mm of the stop prior to release of an actuator.

15. The utility knife of claim **1** wherein the first portion is maintained within 1 mm of the stop prior to release of an actuator.

16. The utility knife of claim **1** wherein the pawl hinges on the blade guard, the first portion is located at a joint of the pawl, and the second portion comprises a finger located at an end of the pawl.

17. The utility knife of claim **1** wherein the stop is disposed in a fixed special relation to a pin, and the stop and the catch are carried on a member that can be pivoted by operation of an actuator.

18. The utility knife of claim **1** wherein the pawl is disposed with respect to the stop and the catch such that the pawl locks the blade guard in a protective position, releases the blade guard to an operating position upon operation of an actuator, and automatically re-locks the blade guard to prevent more than a single use of the blade until further operation of the actuator.

19. The utility knife of claim **18** wherein movement of the blade guard allows the cutting edge of the blade to be exposed to a depth of at least 8 mm.

20. The utility knife of claim **18** wherein movement of the blade guard allows the cutting edge of the blade to be exposed to a depth of at least 10 mm.

* * * * *

Exhibit B

US006718640B1

(12) **United States Patent**
John

(10) **Patent No.: US 6,718,640 B1**
(45) **Date of Patent: Apr. 13, 2004**

(54) **CUTTING TOOL**

(75) Inventor: **Roger Bernard John**, Llanelli (GB)

(73) Assignee: **Moving Edge Limited**, Barry Vale of Glamorgan (GB)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

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(86) PCT No.: **PCT/GB00/01493**

§ 371 (c)(1),
(2), (4) Date: **Oct. 30, 2001**

(87) PCT Pub. No.: **WO00/64646**

PCT Pub. Date: **Nov. 2, 2000**

(30) **Foreign Application Priority Data**

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(51) **Int. Cl.**[7] **B26B 1/00**; B26B 1/08; B26B 1/10

(52) **U.S. Cl.** **30/162**; 30/151; 30/320; 30/335; 30/351

(58) **Field of Search** 30/2, 162, 151, 30/351, 320, 30, 335, 336, 169

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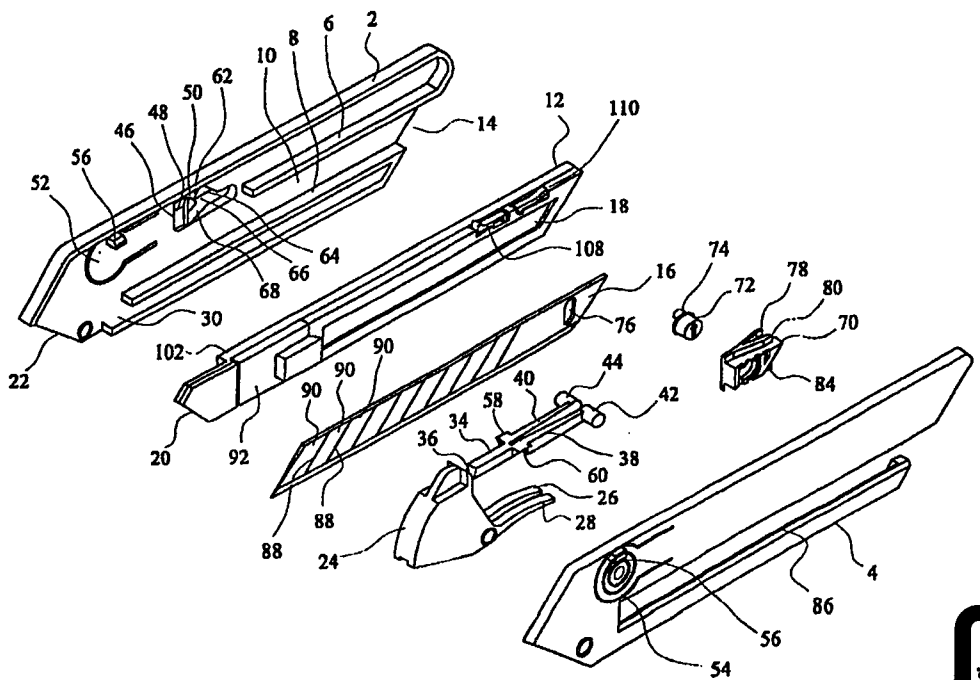
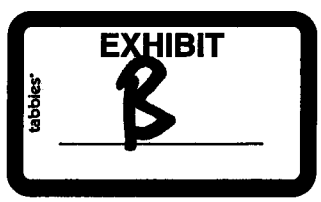
Primary Examiner—Douglas D. Watts
(74) *Attorney, Agent, or Firm*—Edwin D. Schindler

(57) **ABSTRACT**

A cutting tool having a blade and a member which is biassed toward a safety position, in which the member forms a guard for the blade, but which may be displaced for exposing the blade by bringing the tool into cutting contact with a workpiece. The cutting tool includes a locking mechanism having a trigger which must be moved from a first position to a second position to release the guard member from its safety position and which is arranged, so that each time the guard member is released from its safety position, it is displaced through a predetermined distance and then returns to its safety position. The guard member will become locked in place regardless of the position of the trigger.

24 Claims, 7 Drawing Sheets





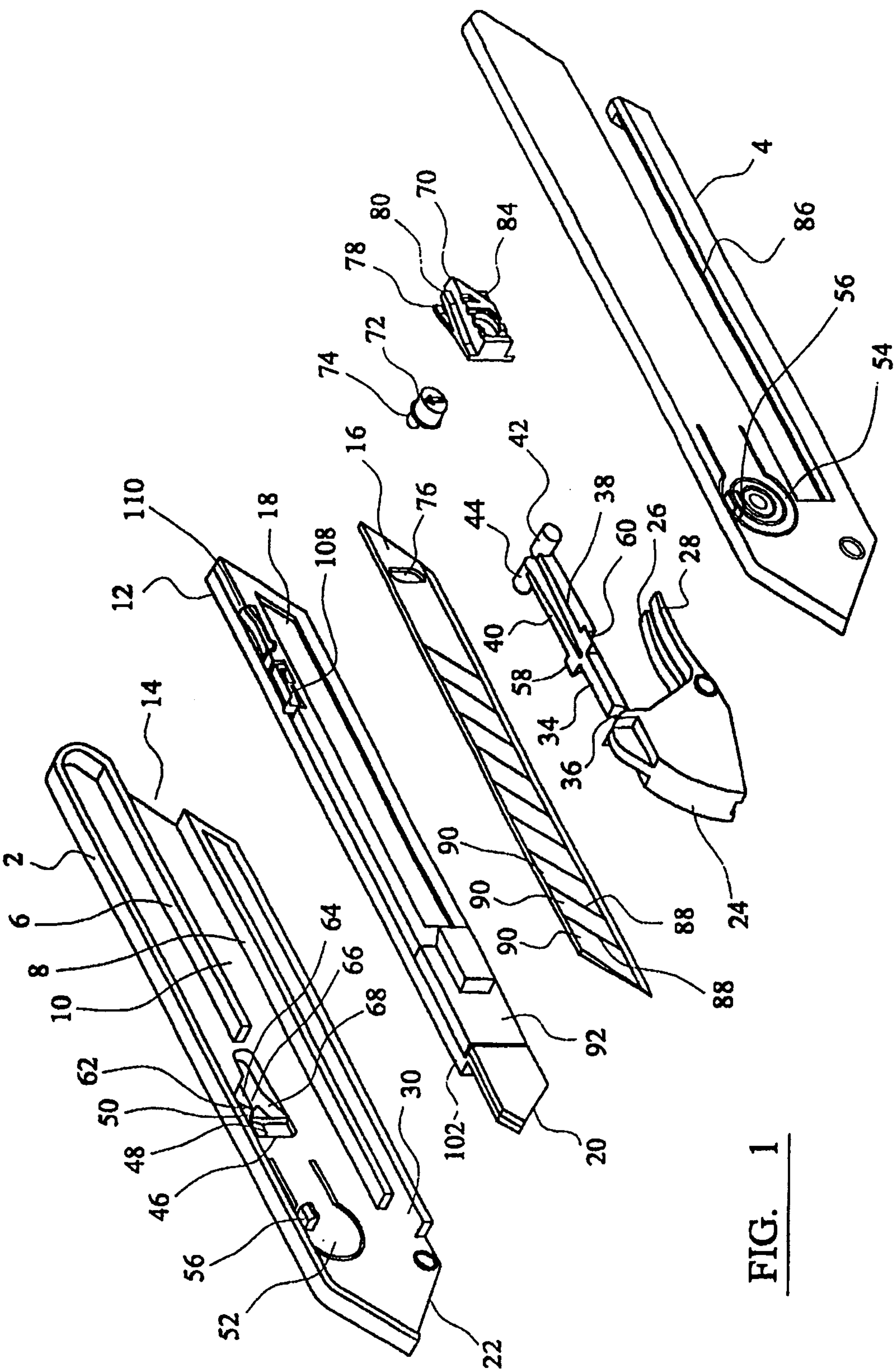

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FIG. 1

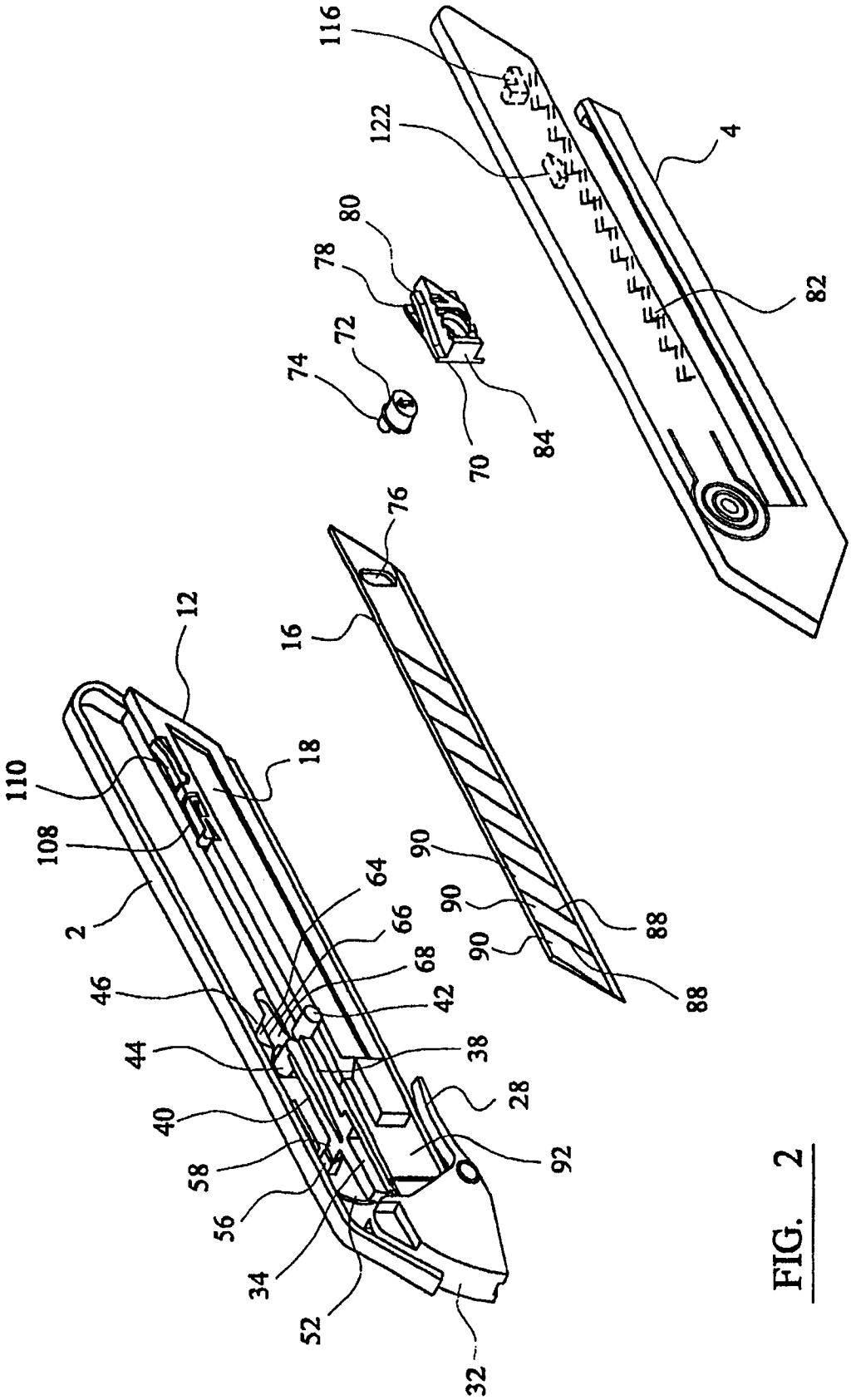
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FIG. 2

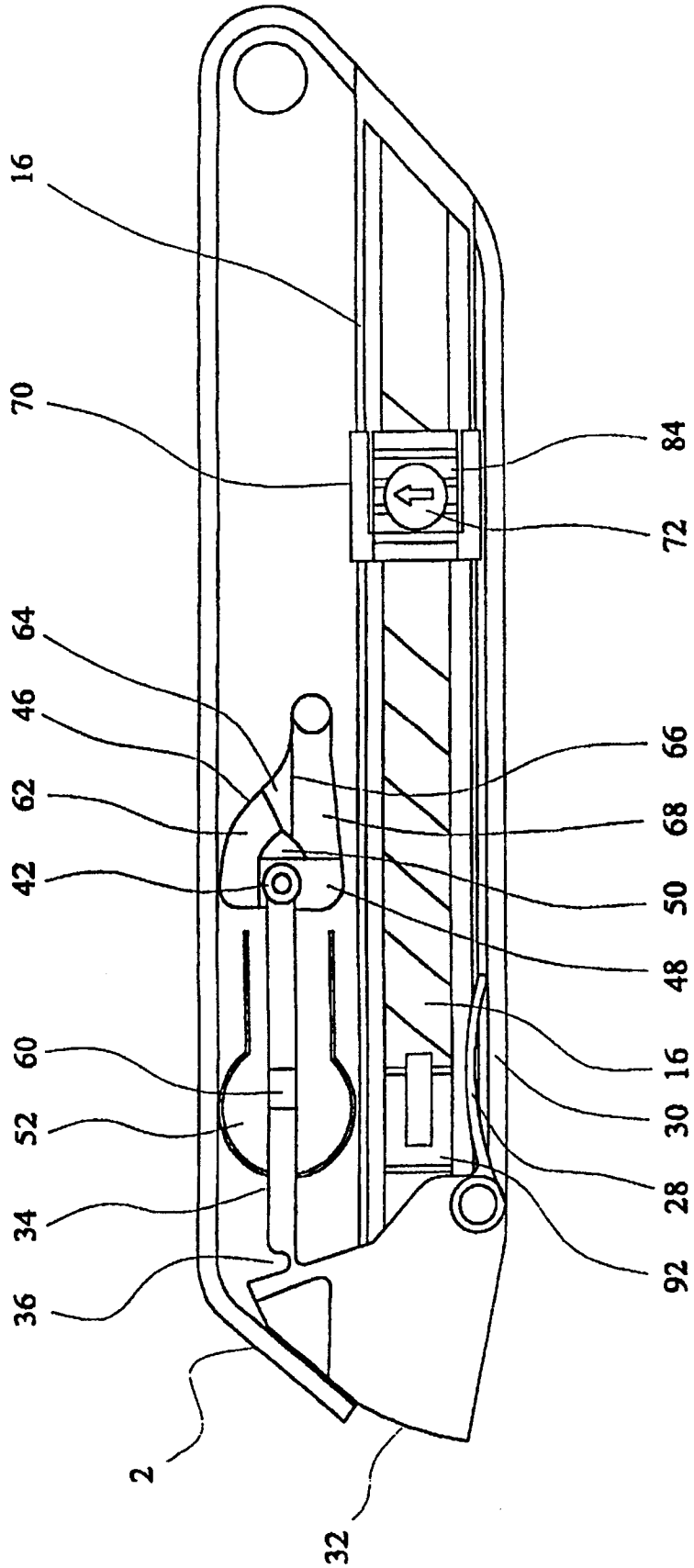

FIG. 3

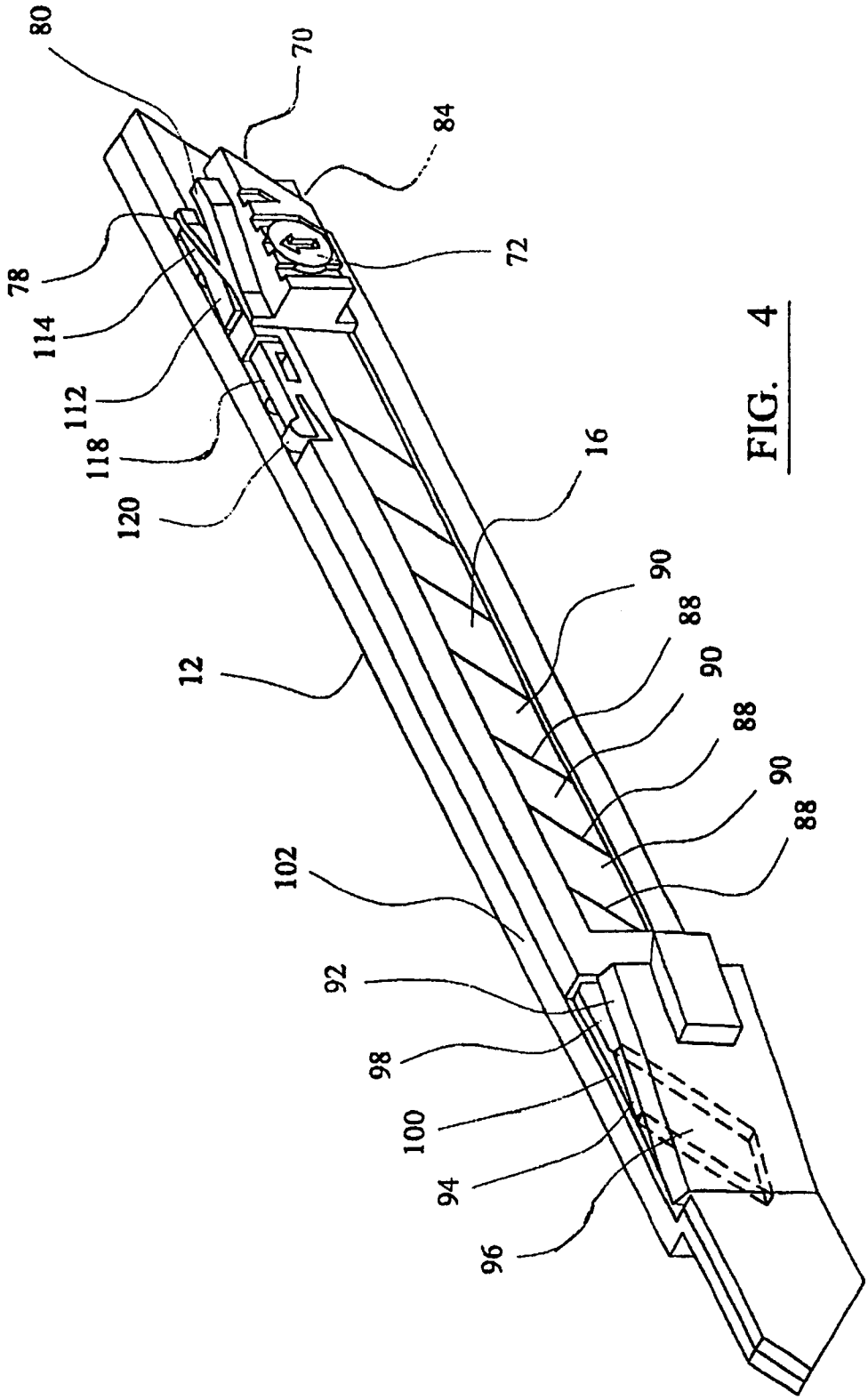
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FIG. 4

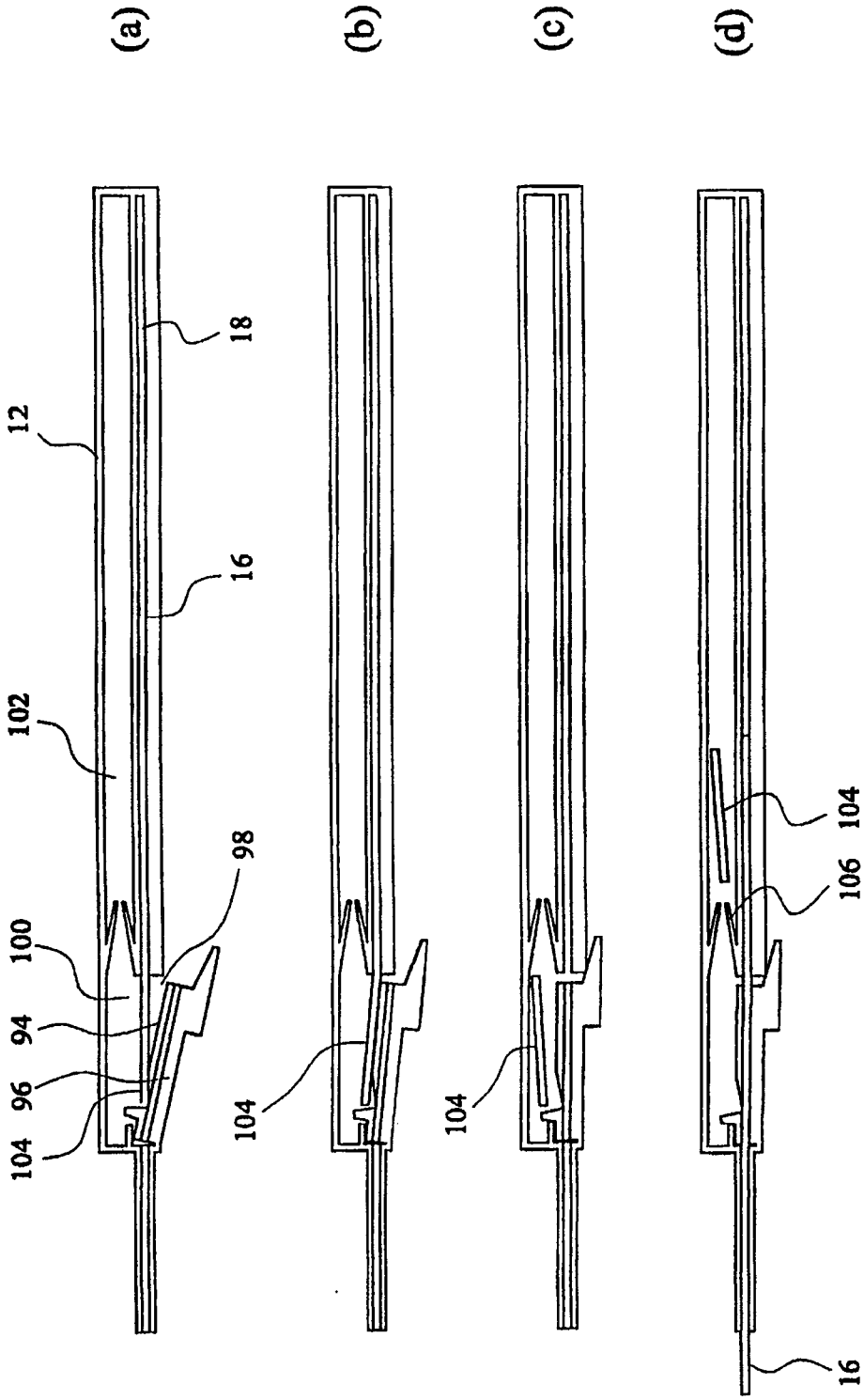

FIG. 5

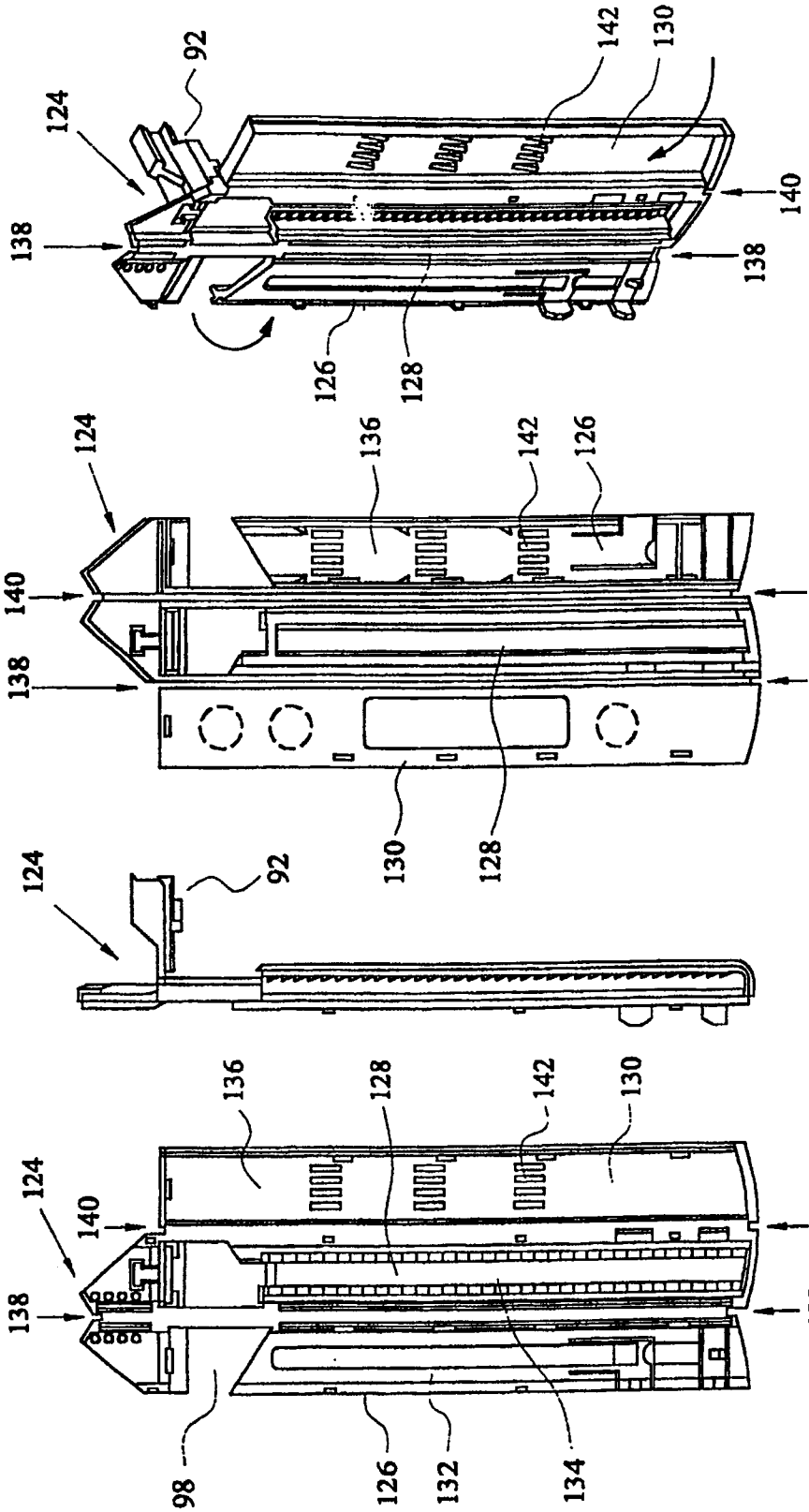
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FIG. 9
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FIG. 6

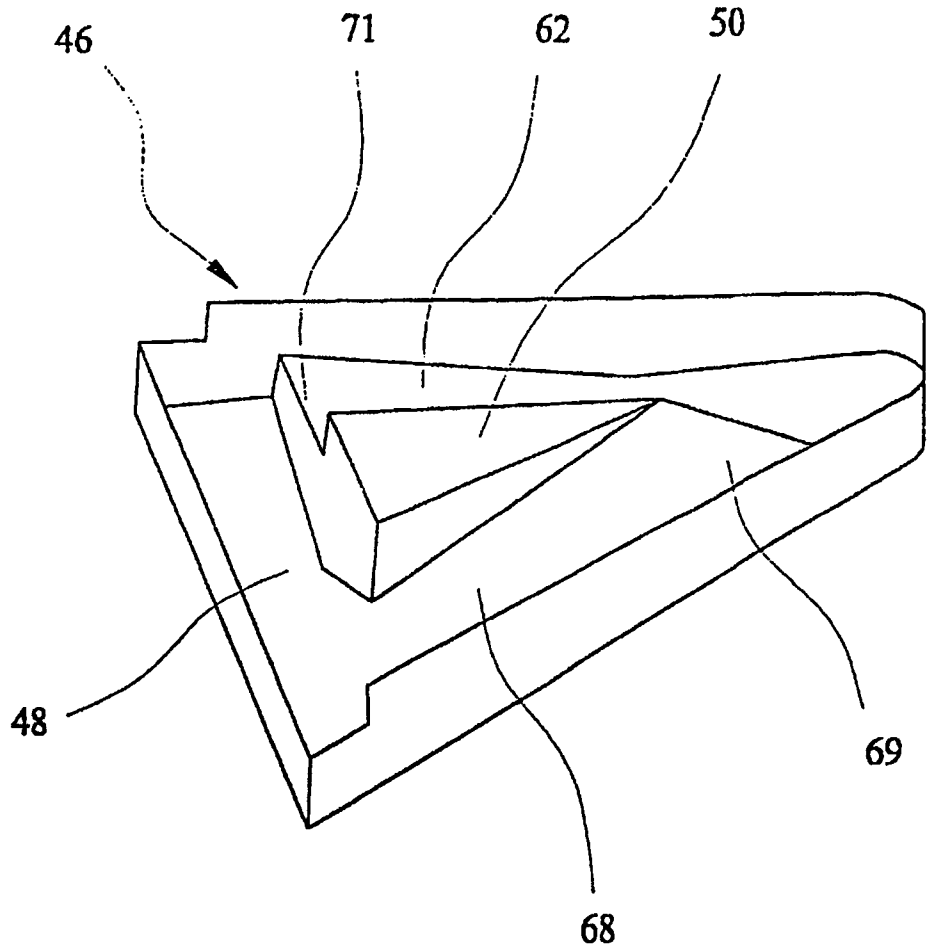

FIG. 10

CUTTING TOOL

BACKGROUND OF THE INVENTION

1. Technical Field of the Invention

The present invention relates to a cutting tool.

2. Description of the Prior Art

The majority of existing cutting tools comprise an elongate handle and a blade portion having a cutting edge extending axially from the handle.

When using such a tool to perform a cutting operation, it is usual for a person to grip the handle of the tool and to draw the blade of the tool towards himself or sideways through a workpiece.

However, as the blade of the tool is released from the workpiece at the end of a cut, the person holding the tool often finds it difficult to maintain control of the tool, thus creating a serious safety hazard both to himself and to those around him.

An arrangement has been proposed wherein a tool is provided with a member which is biassed towards a safety position in which the member forms a guard for the blade of the tool, but which may be displaced to expose the blade by bringing the tool into cutting contact with a workpiece. The tool is further provided with a latch which must be released by depressing a trigger to allow the guard member to be displaced. Thus, inadvertent exposure of the blade is prevented.

However, in order to overcome the safety hazard described above, the trigger must be released before the end of a cut to allow the latch to re-engage the guard member as soon as the tool is released from a workpiece: we have found that there is a tendency for persons using such tools not to release the trigger in sufficient time to prevent accidental cuts from occurring.

We have now devised an arrangement which overcomes the above-mentioned limitations of existing cutting tools.

SUMMARY OF THE INVENTION

According to a first aspect of the present invention, there is provided a cutting tool having a blade and a member which is biassed towards a safety position in which the member forms a guard for the blade, but which may be displaced to expose the blade by bringing the tool into cutting contact with a workpiece, and a locking mechanism having a trigger which must be moved from a first position to a second position to release the guard member from its safety position and arranged such that each time the guard member is released from its safety position, is displaced through a predetermined distance, and then returns to its safety position, the guard member will become locked in place regardless of the position of the trigger.

Thus, as the blade of the tool is released from a workpiece at the end of a cut, the guard member is re-deployed and locked in place without the operator having to release the trigger.

Preferably the guard member is pivotally mounted to the tool.

Preferably the locking action of the cutting tool is provided by a strut which is pivotally joined to the guard member, the distal end of the strut being arranged to follow a loop. Most preferably the strut is arranged to pivot in a vertical plane.

Preferably a lug at the distal end of the strut slidably locates within a looped recess. Preferably the recess comprises a guide-channel which extends substantially perpendicularly to the axis of the longitudinal axis of the strut and within which the lug prevents substantial axial movement of the strut. Preferably as the trigger is displaced from said first position to said second position, the strut is displaced such that lug slides out of one end of the channel.

Preferably the locking mechanism is arranged such that the guard member cannot be released from said safety position unless the tool is in contact with the workpiece.

Preferably the blade is provided in a replaceable cartridge.

Cutting tools are also known in which a blade is mounted to a sliding blade-carriage for advancing and retracting the blade in predetermined increments. For example, it is known to form a blade with a number of lines of weakness defining successive blade sections which may be detached, one at a time, from the end of the blade to maintain a sharp edge to the blade. The blade-carriage may therefore be arranged to be advanced in increments equal to the width of each blade segment.

However, in many circumstances, it would be desirable for the blade to be advanced both in predetermined increments, for example as successive sections of the blade are detached, but also for the position of blade to be adjusted by a much finer degree, to control the depth of cut.

We have now devised an arrangement which provides both coarse and fine adjustment of the blade position.

According to a second aspect of the present invention, there is provided a cutting tool having a blade and a sliding blade-carriage formed with an elongate projection which extends substantially perpendicularly through a slot formed in the blade, the projection being rotatable about an axis parallel to its longitudinal axis and the slot being of substantially the same diameter as the projection and extending substantially perpendicularly to the axis of movement of the carriage, so that as the projection is rotated, the blade is correspondingly advanced or withdrawn relative to the carriage.

Thus the carriage may be slid to-and-fro to provide coarse adjustment of the blade position and the elongate projection may be rotated to provide fine adjustment of the blade position.

Preferably the blade is provided in a replaceable cartridge to which the blade-carrier is preferably mounted.

As mentioned above, it is known to provide a cutting tool with a blade formed with a number of lines of weakness defining successive blade sections.

However, in order to detach successive blade sections from the end of the blade it is typically necessary to press the end of the blade sideways against a hard surface to snap the blade along a line of weakness. The blade must therefore be exposed as the end section is detached and, should the cutting tool slip, injury may result. There is also the possibility that the detached blade portion may contaminate a product or cause injury as it is disposed of.

We have now devised an arrangement which overcomes these limitations of existing cutting tools.

According to a third aspect of the present invention, there is provided a cutting tool having a passageway for receiving a elongate blade formed with one or more lines of weakness defining successive blade sections, a portion of the tool being displaceable to detach a distal section of the blade from the remainder of the blade such that the detached blade section is retained within a containment region of the tool.

Preferably the displaceable portion comprises a portion of the passageway formed by opposed first and second walls

pivotally mounted such that they may be displaced to one side of the passageway to allow an end section of the blade to be introduced into the gap thus formed, and then brought back into line with the passageway to detach the end section from the remainder of the blade.

Preferably the portion of the passageway formed by the first and second walls is arranged to pivot away from the passageway about the forward edge of the portion.

Preferably, the detached end section of the blade is pressed through an opening into the containment region.

Preferably the passageway is provided in a replaceable blade-cartridge, which may also provide the containment region for receiving detached blade sections.

Preferably the tool or, where the tool comprises a replaceable blade-cartridge, the blade-cartridge, is formed from a blank comprising three collinear elongate portions arranged to be folded together along their adjoining edges such that the passageway for receiving an elongate blade is formed between the opposed faces of two adjacent portions of the blank, and the containment region is formed between the opposed faces of one of the two adjacent portions and a face of the remaining portion.

Preferably the blank is arranged for two adjacent portions of the blank to be folded together, to form the passageway between their opposed faces, and for the portions on opposite sides of the blank to then be folded together, to form the containment region between their opposed faces.

Preferably the blank is formed from a plastics material having fold lines formed by compressed regions of the blank.

Preferably the opposed faces of the two portions which form the containment region are each formed with a plurality of projections for inhibiting movement of detached blade sections within the containment region.

It is known to provide a cutting tool with a replaceable cartridge from which a blade may be extended and retracted. However, such cartridges present a serious safety hazard where it is possible for the blade of the cartridge to be exposed when the cartridge is outside of the tool.

We have now devised an arrangement which overcomes this problem.

According to a fourth aspect of the present invention, there is provided a cutting tool comprising a replaceable blade-cartridge within which a blade is carried such that the blade may be slid from an exposed position to a retracted position and comprising means for preventing the cartridge from being removed from the tool whilst the blade is in its exposed position and means which lock the blade in its retracted position as the cartridge is removed from the tool.

Preferably the tool comprises a blade-carrier and the means for preventing the cartridge from being removed from the tool whilst the blade is in its exposed position comprises a pivoting catch having a first portion which engages a part of the tool body when the blade is in its exposed position, and a second portion which is displaced by the blade-carrier when the blade is in its retracted position to disengage the first portion from said part of the tool body.

Preferably the tool comprises a blade-carrier and the means which lock the blade in its retracted position as the cartridge is removed from the tool comprises a pivoting catch having a first portion which engages the blade-carrier when the blade is in its retracted position and the cartridge is outside of the tool, and a second portion which is displaced by a part of the tool body when the blade is inserted into the tool to disengage the first portion from the blade-carrier.

The arrangement thus significantly reduces the risk of the blade being exposed when the cartridge is outside of the tool.

BRIEF DESCRIPTION OF THE DRAWING FIGURES

Embodiments of the present invention will now be described by way of examples only and with reference to the accompanying drawings, in which:

FIG. **1** is a exploded view of the various parts which form a cutting tool in accordance with the present invention;

FIG. **2** is a view of a partially assembled cutting tool;

FIG. **3** is a side elevation of a partially assembled cutting tool;

FIG. **4** is a view of a blade-cartridge in accordance with the present invention;

FIG. **5** is a series of sectional plan views showing the sequence of operations for detaching a blade section; and

FIGS. **6** to **9** are respectively a top plan view, a side view, a bottom plan view and a perspective view of a blank from which a blade cartridge is formed; and

FIG. **10** is a perspective view of a recessed portion of a tool in accordance with the present invention.

DETAILED DESCRIPTION OF THE DRAWING FIGURES

Referring to FIGS. **1** to **3** of the drawings, a cutting tool is shown to comprise a pair of opposed cover plates **2,4**, which when brought together provide a handle for the device.

Projections **6,8** formed on the inner surface of each of the cover plates **2,4** provide a passageway **10** which extends longitudinally through the handle for receiving a replaceable blade-cartridge **12**, which may be slid into the passageway **10** via an opening **14** formed between the cover plates **2,4** at the rear of the handle.

A blade **16** is contained within the cartridge **12** in a passageway **18** which is closed at its rear end but is formed with an opening **20** at its forward end, through which a limited portion of the blade **16** may be extended, so that, when the cartridge **12** is inserted into the handle, the extended portion will project through an opening **22** at the forward end of the handle.

A guard member **24** is arranged to be pivotally mounted at the forward end of the handle to conceal the extended blade portion of a cartridge **12** inserted into the handle.

The guard member **24** may be spring biassed or, as shown in the drawings, may be formed with a pair of resilient arms **26,28** which, in the assembled device, extend rearwardly into the handle and bear upon the base wall **30** of the handle to bias the guard member **24** such that a portion **32** of the guard member normally projects through the opening **22** at the forward end of the handle, but may be displaced into the handle by pressing the guard member **24** against a workpiece.

A strut **34** is pivotally joined by a thin membrane **36** or may be hinged to the top of the guard member **24** and is bifurcated to provide a pair of resilient arms **38,40**, each of which is formed at its distal end with a respective lug **42,44**.

The lugs **42,44** are positioned to locate within respective profiled recesses **46** formed in the inner surfaces of the opposed cover plates **2,4**.

A guide-channel **48** at the forward end of each profiled recess **46** decreases in depth both upwardly and downwardly

away from its midpoint, thereby forming a trough into which a lug **42,44** is normally biassed by its respective arm **38,40**. In this position, a buttress **50**, to the rear of each lug **42,44**, prevents the projecting portion **32** of the guard member **24** from being displaced into the handle.

A pair of triggers for releasing the guard member are provided in the form of respective tongues **52,54** formed in the two cover plates **2,4**. By providing triggers on the opposite sides of the handle, the tool may be operated by either left or right-handed persons.

Each tongue **52,54** is formed on its inner surface with a projection **56**, which aligns with a corresponding tapered projection **58,60** formed on a respective side of the strut **34**. Thus, by pressing upon either of the tongues **52,54**, the strut **34** may be deflected upwards to release the guard member **24**. With the lugs **42,44** clear of their respective buttresses **50** the projecting portion **32** of the guard member **24** may be displaced into the handle by pressing the guard member **24** against a workpiece.

By displacing the projecting portion **32** of the guard member **24** into the handle, the lugs **42,44** are driven backwards along upper guide-channels **62** of their respective recesses **46**. The depth of each recess **46** increases towards the rear of its upper guide-channel **62**, across a region **64**. An abrupt increase in the depth of each recess **46** at the lower edge **66** of the region **64** defines a lower guide-channel **68** into which the lugs **42,44** are driven by the recoil action of the resilient arms **38,40**.

The abrupt increase in the depth of each recess **46** between its upper and lower guide-channels **62,68** ensures oneway travel of the lugs **42,44** around the circuits formed by their respective guide-channels **48,62,68**.

As the guard member **24** is released from the workpiece and pivots forwards under the recoil action of the arms **26,28**, the lugs **42,44** are drawn forwards along the lower guide-channels **68** of their respective recesses **46**. A gradual decrease, followed by an abrupt increase in the depth of each recess **46**, towards the forward end of its lower guide-channel **68**, ensures that, when the guard member **24** is fully re-deployed, the lugs **42,44** are prevented from returning along the lower guide-channels **68** of their respective recesses **46**. The guard member **24** is thus locked in place regardless of whether pressure on the tongues **52,54** has been released.

If pressure is maintained on one or both of the tongues **52,54**, whilst the tool is removed from a workpiece, then as that pressure is released, the lugs **42,44** slide upwards into the troughs formed in the guide-channels **48** at the forward ends of their respective recesses **46**, under the recoil action of the resilient arms **38,40**.

Alternatively, the projections **56** formed on the inner surfaces of the tongues **42,54** and the tapered projections **58,60** of the strut **34** may be arranged such that by pressing upon either of the tongues **52,54**, the strut will be deflected downwards (rather than upwards) out of the trough in its respective forward recess **48**, to release the guard member **24**.

In this embodiment, each recess **46** is profiled as shown in FIG. **10** such that by subsequently displacing the projecting portion **32** of the guard member **24** into the handle, by pressing the tool against a workpiece, the lugs **42,44** are driven backwards along the lower guide-channels **68** of their respective recesses **46**.

Each of the lower guide-channels **68** decreases in depth towards the rear of its respective recess **46**, with an abrupt increase **69** in the depth at the rear of each channel **68** forcing the lugs **42,44** to follow the upper guide-channels **62** of their respective recesses **46** when the tool is released from the surface of a workpiece. The upper guide-channels **62** decrease in depth towards the front of their respective recesses **46**, with an abrupt increase **71** in depth at the front of each channel **62** preventing the lugs **42,44** from entering the upper guide-channels **62** when the guard member is fully deployed.

A carriage **70** is mounted to one side of the cartridge **12** by means of a retaining portion (not shown) which locates within the passageway **18**. The carriage **70** is provided with a rotatable cylindrical core **72** from which an eccentric axial projection **74** extends across the passageway **18** and though a slot **76** formed in the blade **16**. The slot **76** is of substantially the same diameter as the axial projection **74** and extends substantially perpendicularly to the axis of movement of the blade **16**, so that as the cylindrical core **72** of the carriage **70** is rotated, the blade **16** is correspondingly advanced or withdrawn by a small distance relative to the carriage **70**.

The carriage **70** comprises a resilient portion **78** which, when the cartridge **12** is inserted into the handle, biases a catch **80** into engagement with a corresponding pawl **82** formed in the inner surface of the cover plate **4**. A button **84** extends through an elongate slot **86** formed along one side of the cover plate **4** to allow the carriage **70** to be slid backwards and forwards along the cartridge **12** to move the blade **16**.

The catch **80** and the opposed indentations which form the pawl **82** are shaped to provide a ratchet action which requires the button **84** to be pressed inwards to allow the blade **16** to be withdrawn into the cartridge **12**.

The blade **12** is formed with a number of lines of weakness **88** which define successive blade sections **90**, and the cartridge **12** of the present invention provides a convenient means for detaching a blunted section from the forward end of the blade **16** to expose a fresh blade section.

As shown in FIG. **4**, with the cartridge **12** removed from the handle and with the blade **16** withdrawn, a portion **92** of the passageway **18** formed by opposed walls **94** and **96** may be pivoted outwards from the cartridge **12** to provide a gap **98**. The displacement of the wall **94** also forms an opening **100** leading to a containment region **102** in the rear of the cartridge **12**.

By advancing the blade **16** into the gap **98**, as shown in FIG. **5***a*, so that its end section **104** overlies the opening **100** and then pressing the displaced portion **92** of the cartridge **12** back into its normal position, as shown in FIGS. **5***b* and **5***c*, the end section **104** is detached from the remainder of the blade by the wall **94**, with the spent section **104** being pressed through the opening **100** and into the containment region **102**. The remainder of the blade **16** may then be re-introduced between the walls **94** and **96**, as shown in FIG. **5***d*.

Barbs **106** formed on the interior wall of the containment region **102** serve to hold spent blade sections away from the opening **100**.

The cartridge **12** is further provided with a pair of pivoting safety catches **108,110**. The rearmost catch **110** comprises a downwardly projecting portion **112**, which is deflected upwards by the retaining portion of the carriage **70**, when the carriage **70** is fully retracted, to retract an upwardly projecting portion **114** of the catch. A recess **116** is formed in the cover plate **4** into which the upwardly projecting portion **114** may extend, when the cartridge **12** is inserted into the handle and the carriage **70** is slid forwards, so that there is no

possibility of the cartridge **12** being removed from the handle whilst the blade **16** is exposed.

The foremost catch **108** comprises a downwardly projecting portion **118** which, when the cartridge **12** is removed from the handle acts as a stop against which the retaining portion of the carriage **70** abuts, to prevent the carriage **70** from sliding forwards to expose the blade **16**. The catch **108** also comprises and an upwardly projecting portion **120** which, when the cartridge **12** is inserted into the handle, is depressed by a corresponding projection **122** formed in the cover plate **4**, thereby raising the downwardly projecting portion **118** of the catch to allow the carriage **70** to slide along the cartridge **12**.

The cartridge **12** is formed from a blank **124** comprising a single piece of injection-moulded plastics material as shown in FIGS. **6** to **9**. The blank comprises three collinear portions **126,128,130** and is formed into a cartridge by first folding faces **132** and **134** of portions **126** and **128** towards one another, to form a passageway therebetween for receiving a blade, and then folding face **136** of portion **130** towards face **138** of portion. **126**, to form a containment region therebetween for receiving detached blade sections though an aperture formed between the passageway and the containment region by a gap **98** in portion **126**.

To allow the portions **126,128** and **130** to be readily folded together, a pair of fold-lines **138,140** are preferably pre-formed along the adjoining edges of the portions by compressing those regions of the blank between respective rollers.

When the blank is folded as described above, a plurality of rearwardly inclined projections **142** formed on face **136** of portion **126** and the opposed face **136** of portion **130** prevent detached blade portions, having already fallen away from the aperture formed by gap **98**, from returning towards the aperture.

The cutting tool thus described comprises a number of features which make it significantly safer to use than existing tools.

What is claimed is:

1. A cutting tool comprising a blade and a member which is biassed towards a safety position in which the member forms a guard for the blade, but which may be displaced to expose the blade by bringing the tool into cutting contact with a workpiece, and a locking mechanism having a trigger which must be moved from a first position to a second position to release the guard member from its safety position and arranged such that each time the guard member is released from its safety position, the guard member is displaced through a predetermined distance, and then returns to its safety position, the guard member will become locked in place regardless of the position of the trigger.

2. A cutting tool as claimed in claim **1**, wherein the guard member is pivotally mounted to the tool.

3. A cutting tool as claimed in claim **1**, wherein the locking action of the cutting tool is provided by a strut which is pivotally joined to the guard member, the distal end of the strut being arranged to follow a loop.

4. A cutting tool as claimed in claim **3**, wherein the strut is arranged to pivot in a vertical plane.

5. A cutting tool as claimed in claim **3**, wherein a lug at the distal end of the strut slidably locates within a looped recess.

6. A cutting tool as claimed in claim **5**, wherein the recess comprises a guide-channel which extends substantially perpendicularly to the axis of the longitudinal axis of the strut and within which the lug prevents substantial axial movement of the strut.

7. A cutting tool as claimed in claim **6**, arranged such that as the trigger is displaced from said first position to said second position, the strut is displaced such that the lug slides out of one end of the channel.

8. A cutting tool as claimed in claim **1**, wherein the locking mechanism is arranged such that the guard member cannot be released from said safety position unless the tool is in contact with the workplace.

9. A cutting tool as claimed in claim **1**, wherein the blade is provided in a replaceable cartridge.

10. A cutting tool comprising a blade and a sliding blade-carriage formed with an elongate projection which extends substantially perpendicularly through a slot formed in the blade, the projection being rotatable about an axis parallel to its longitudinal axis and the slot being of substantially the same diameter as the projection and extending substantially perpendicularly to the axis of movement of the carriage, so that as the projection is rotated, the blade is correspondingly advanced or withdrawn relative to the carriage.

11. A cutting tool as claimed in claim **10**, wherein the blade is provided in a replaceable cartridge.

12. A cutting tool as claimed in claim **11**, wherein the blade-carrier is mounted to the replaceable cartridge.

13. A cutting tool, comprising:

a passageway for receiving an elongate cutting blade formed with at least one line of weakness defining successive blade sections;

a displaceable portion having a first wall and a second wall with said first wall and said second wall being opposed to one another and forming a portion of said passageway, said first wall and said second wall being pivotally mounted for displacement to one said of said passageway for forming a gap in said passageway, enabling an end section of said elongate cutting blade to be introduced into said gap, said displaceable portion being then returnable into line with said passageway for detaching said end section of said elongate cutting blade from a remainder of said elongate cutting blade; and,

a containment region for retaining said end section of said elongate cutting blade following said detaching of said end section.

14. A cutting tool as claimed in claim **13**, wherein the portion of the passageway formed by the first and second walls is arranged to pivot away from the passageway about the forward edge of the portion.

15. A cutting tool as claimed in claim **13**, wherein the detached end section of the blade is pressed through an opening into the containment region.

16. A cutting tool as claimed in claim **13**, wherein the passageway is provided in a replaceable blade-cartridge.

17. A cutting tool as claimed in claim **16**, wherein the replaceable blade carriage also provides the containment region for receiving detached blade sections.

18. A cutting tool as claimed in claim **13**, wherein the tool or, where the tool comprises a replaceable blade-cartridge, the blade-cartridge, is formed from a blank comprising three collinear elongate portions arranged to be folded together along their adjoining edges such that the passageway for receiving an elongate blade is formed between the opposed faces of two adjacent portions of the blank, and the containment region is formed between the opposed faces of one of the two adjacent portions and a face of the remaining portion.

19. A cutting tool as claimed in claim **18**, wherein the blank is arranged for two adjacent portions of the blank to

be folded together, to form the passageway between their opposed faces, and for the portions on opposite sides of the blank to then be folded together, to form the containment region between their opposed faces.

20. A cutting tool as claimed in claim **18**, wherein the blank is formed from a plastic material having fold lines formed by compressed regions of the blank.

21. A cutting tool as claimed in claim **18**, wherein the opposed faces of the two portions which form the containment region are each formed with a plurality of projections for inhibiting movement of detached blade sections within the containment region.

22. A cutting tool comprising a replaceable blade-carriage within which a blade is carried such that the blade may be slid from an exposed position to a retracted position and comprising means for preventing the cartridge from being removed from the tool while the blade is in its exposed position and means for locking the blade in its retracted position as the cartridge is removed from the tool.

23. A cutting tool as claimed in claim **22**, comprising a blade-carrier and wherein the means for preventing the cartridge from being removed from the tool while the blade is in its exposed position comprise a pivoting catch having a first portion which engages a part of the tool body when the blade is in its exposed position, and a second portion which is displaced by the blade-carrier when the blade is in its retracted position to disengage the first portion from said part of the tool body.

24. A cutting tool as claimed in claim **22**, comprising a blade-carrier and wherein the means which lock the blade in its retracted position as the cartridge is removed from the tool comprise a pivoting catch having a first portion which engages the blade-carrier when the blade is in its retracted position and the cartridge is outside of the tool, and a second position which is displaced by a part of the tool body when the blade is inserted into the tool to disengage the first portion from the blade-carrier.

* * * * *

Exhibit C

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(12) **United States Patent**
Votolato

(10) **Patent No.: US 7,726,029 B2**
(45) **Date of Patent: Jun. 1, 2010**

(54) **SAFETY CUTTING APPARATUS**

(76) Inventor: **Earl Votolato**, P.O. Box 1639, Newport Beach, CA (US) 92659

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **12/582,108**

(22) Filed: **Oct. 20, 2009**

(65) **Prior Publication Data**

US 2010/0018061 A1 Jan. 28, 2010

Related U.S. Application Data

(60) Division of application No. 12/383,677, filed on Mar. 27, 2009, which is a continuation of application No. 10/300,382, filed on Nov. 19, 2002, now Pat. No. 7,509,742.

(51) **Int. Cl.**
B26B 3/06 (2006.01)
B26B 29/02 (2006.01)

(52) **U.S. Cl.** **30/151**; 30/286

(58) **Field of Classification Search** 30/2, 30/151, 161, 162, 288, 286, 294, 320, 329, 30/340

See application file for complete search history.

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(74) *Attorney, Agent, or Firm*—Robert J. Lauson; Lauson & Tarver LLP

(57) **ABSTRACT**

A cutting apparatus has a unidirectionally-locking blade cover that automatically snaps back over the exposed blade after each cut, and a dependent, index finger operated unlocking trigger.

8 Claims, 7 Drawing Sheets

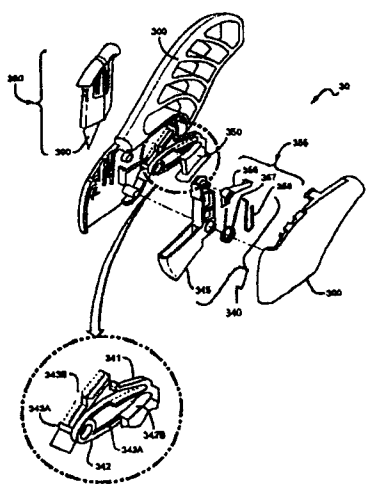

EXHIBIT C

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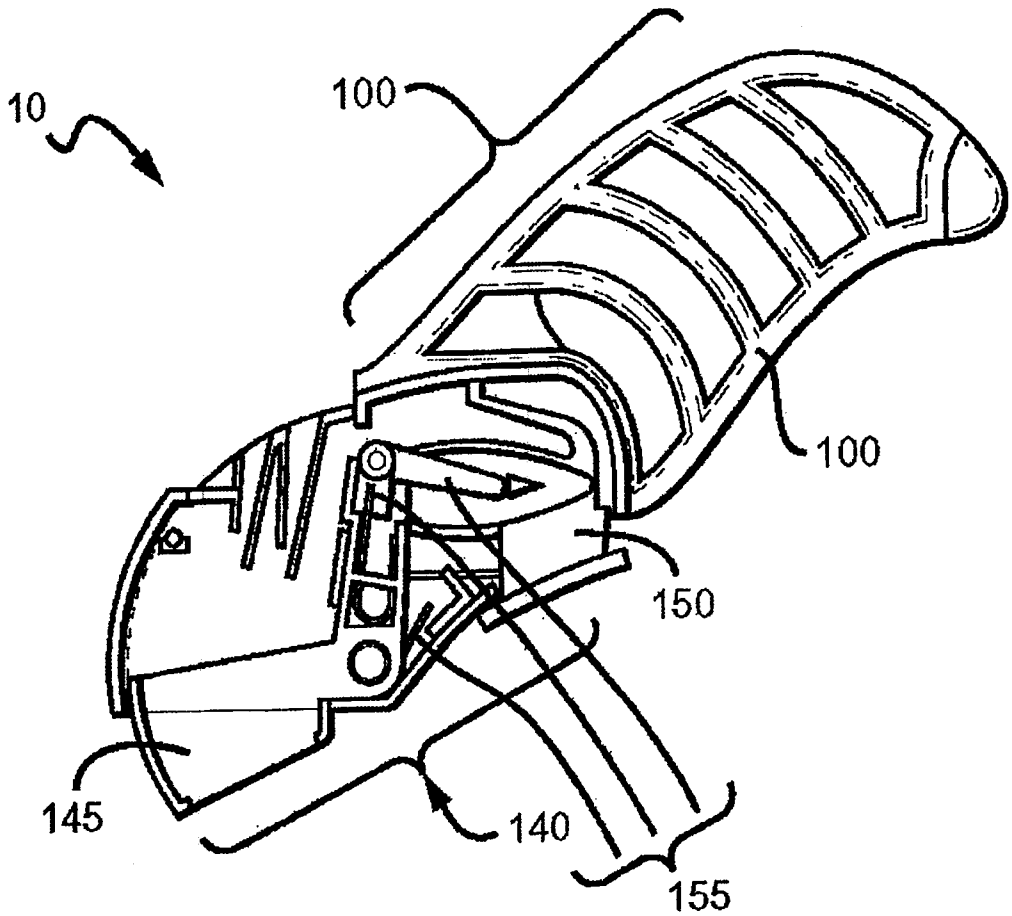


FIG. 1A

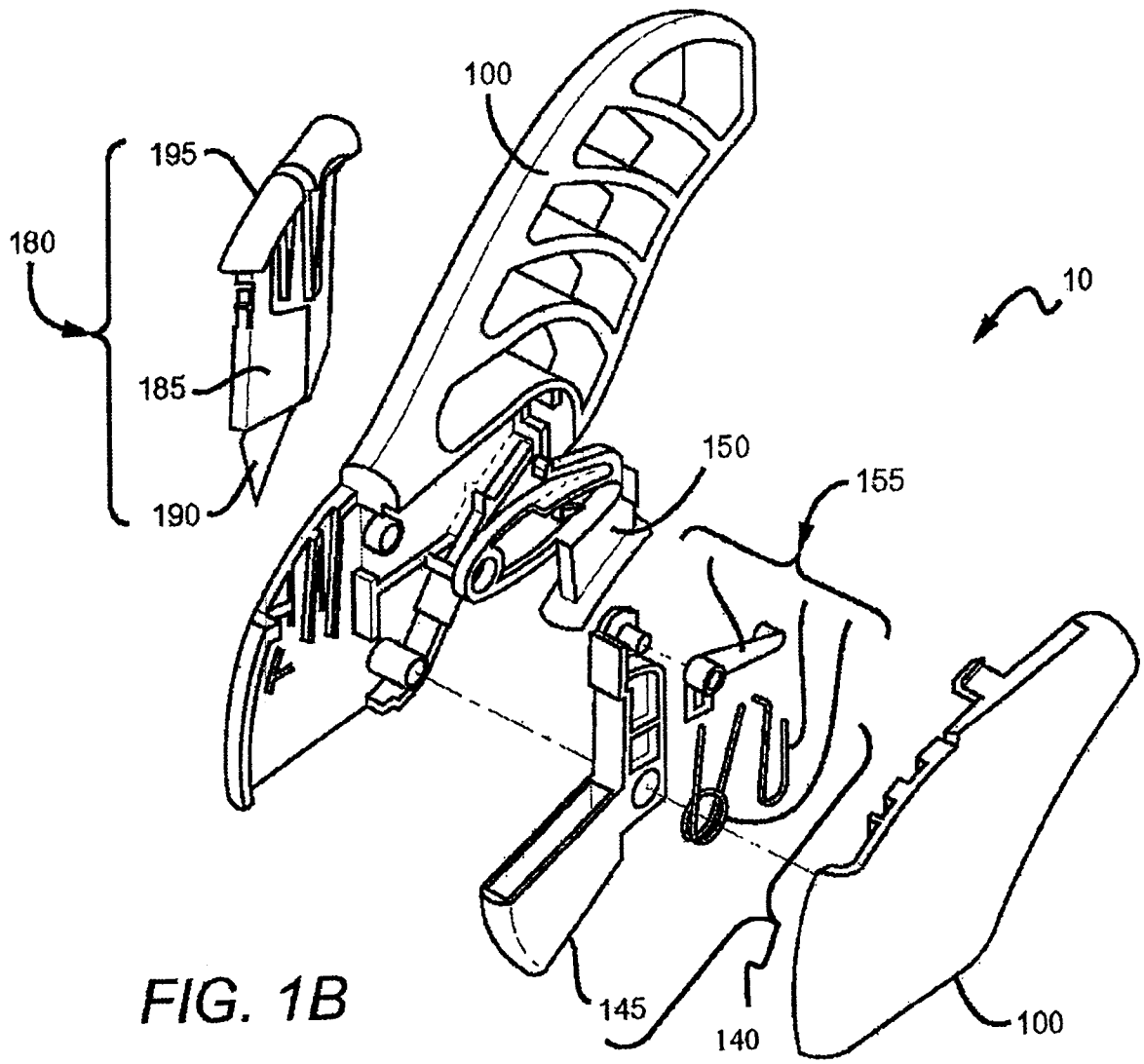
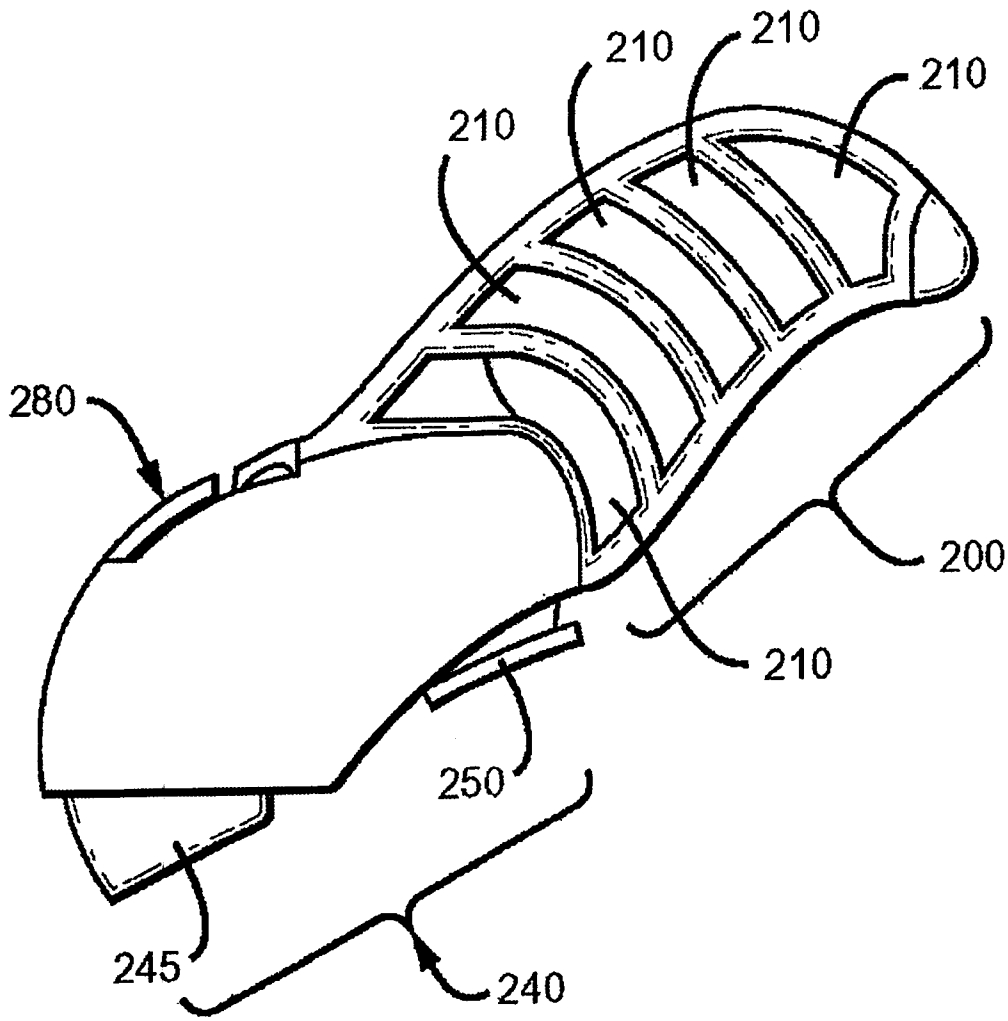


FIG. 1B

FIG. 2



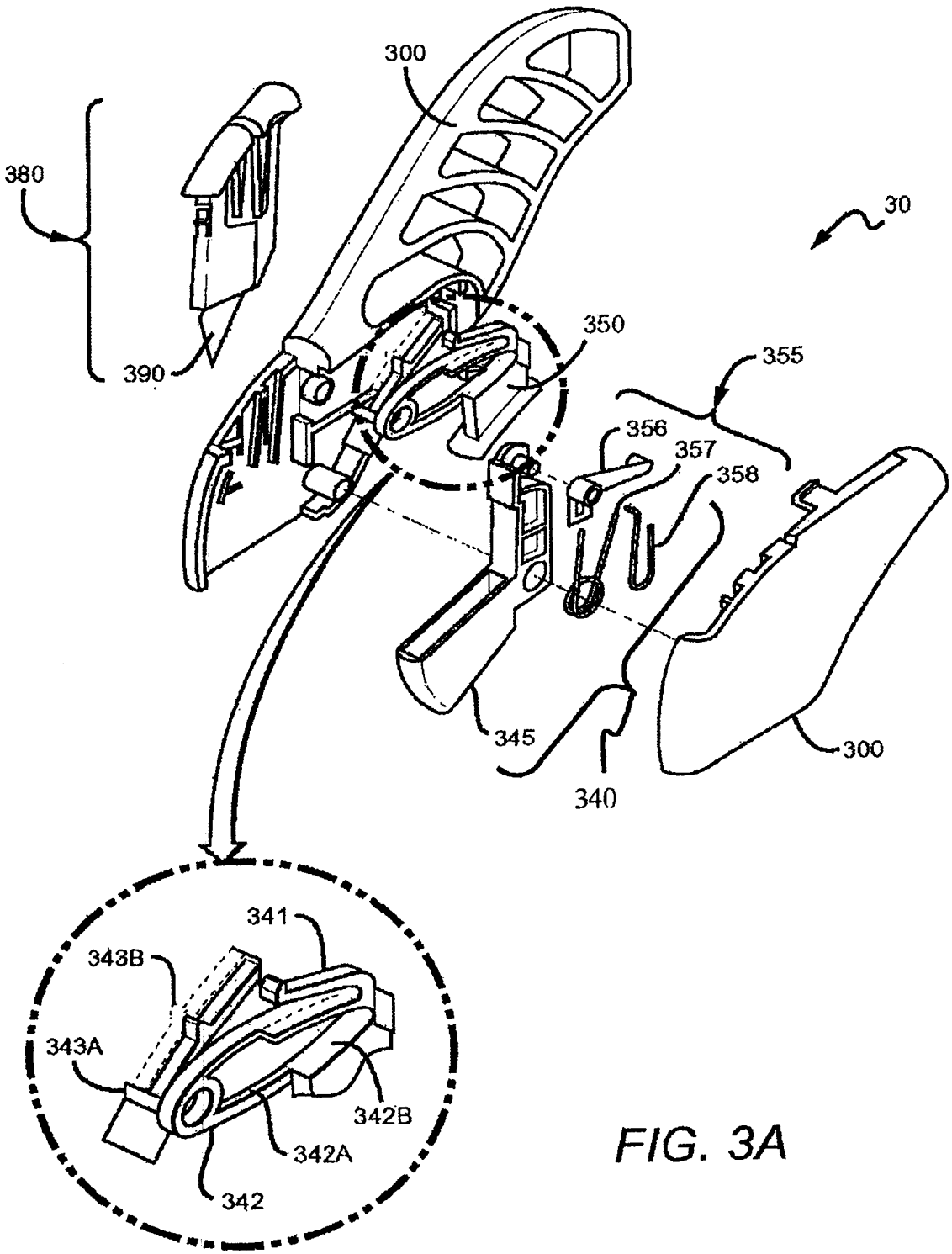

300
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FIG. 3A

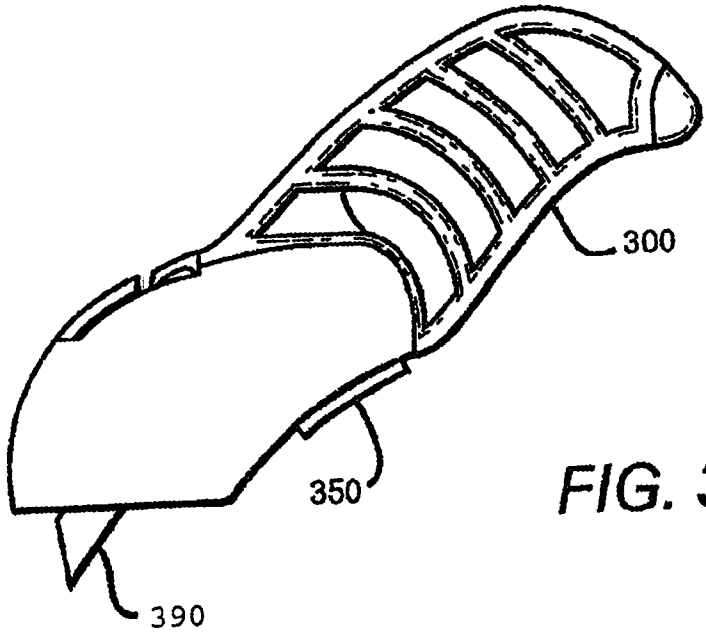

FIG. 3B

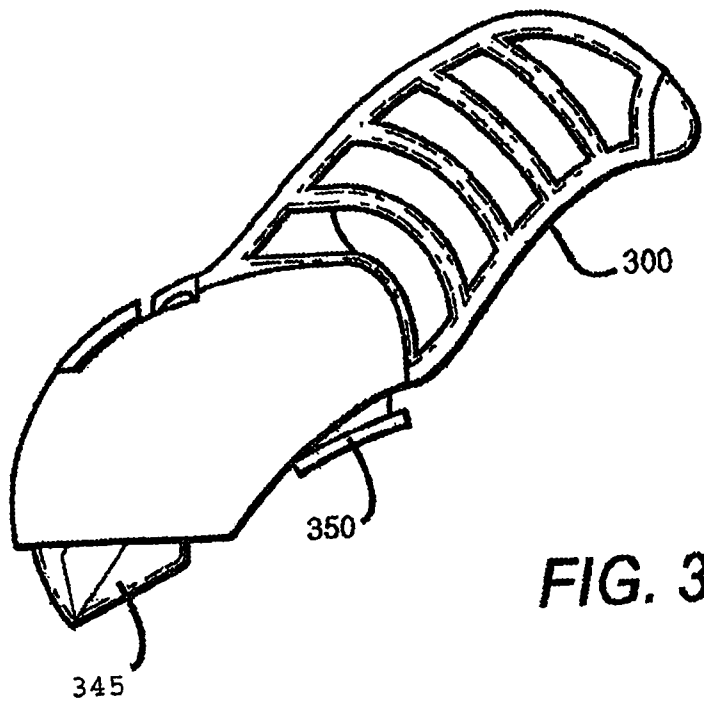

FIG. 3C

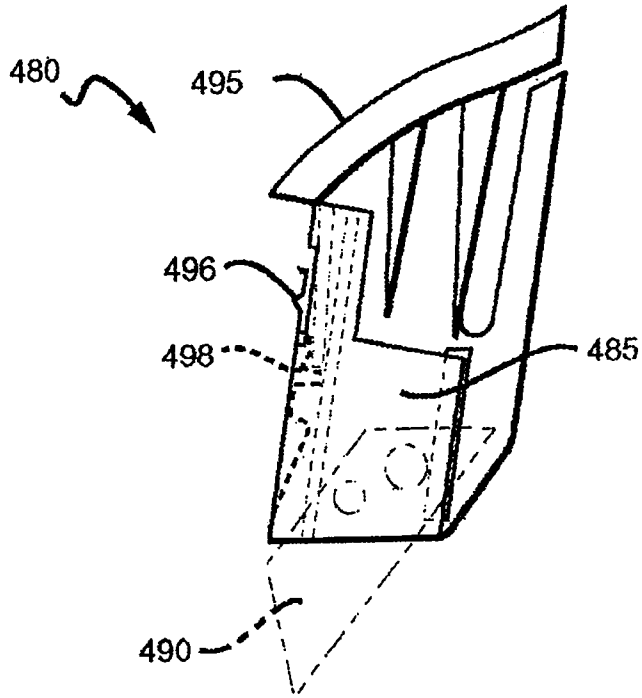

FIG. 4A

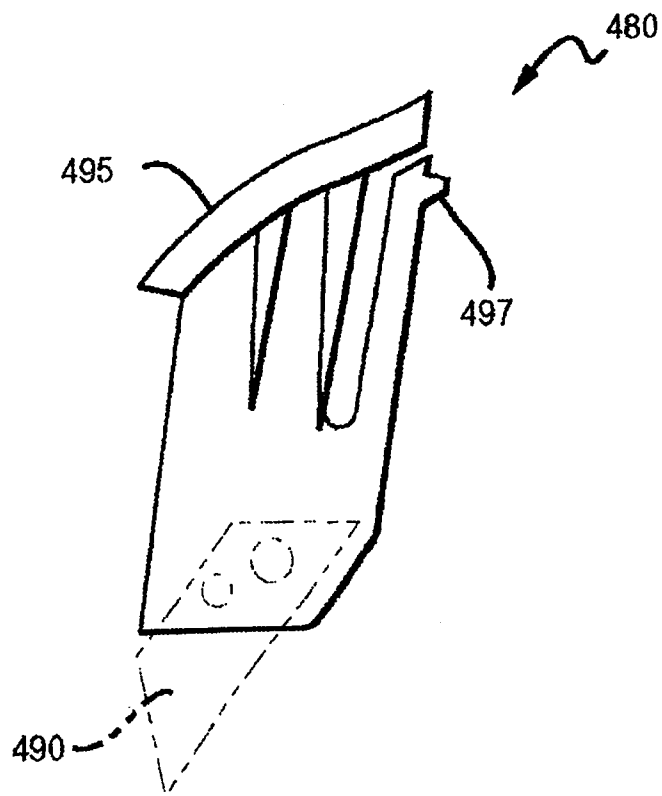

FIG. 4B

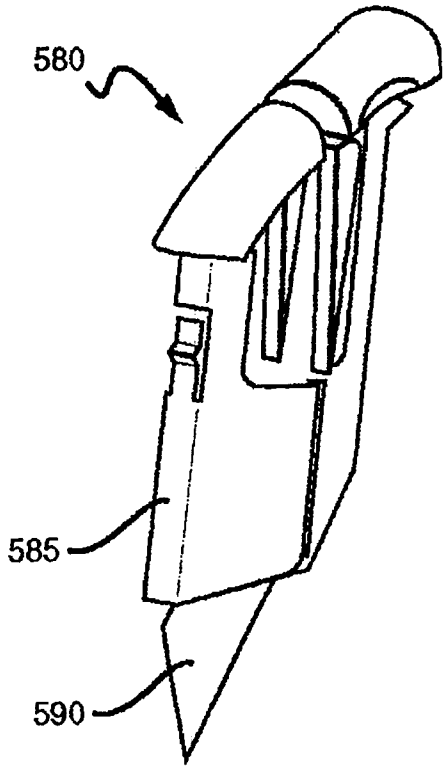

FIG. 5A

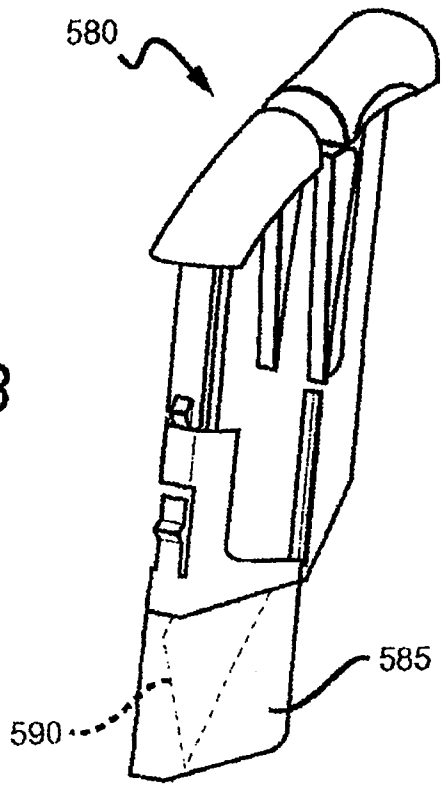

FIG. 5B

SAFETY CUTTING APPARATUS

This application is a divisional of U.S. patent application having Ser. No. 12/383,677 filed on Mar. 27, 2009, which is continuation of U.S. patent application having Ser. No. 10/300,382 filed on Nov. 19, 2002, now issued U.S. Pat. No. 7,509,742 on Mar. 31, 2009. These and all other extrinsic materials discussed herein are incorporated by reference in their entirety. Where a definition or use of a term in an incorporated reference is inconsistent or contrary to the definition of that term provided herein, the definition of that term provided herein applies and the definition of that term in the reference does not apply.

FIELD OF THE INVENTION

The field of the invention is cutting devices and apparatus, knives and utility knives.

BACKGROUND OF THE SUBJECT MATTER

Industries that utilize cutting devices and apparatus in everyday and/or routine activities, such as opening boxes and bags, cutting and sizing cardboard, rope, heavy paper, fabric, plastic bags and the like and any other activity or task that requires the use of a cutting device or apparatus requires or mandates that the cutting device or apparatus meet certain minimum safety criteria, and ultimately, wants a cutting device or apparatus that maximizes safety features for the operator, while allowing the operator to easily perform the desired tasks with the cutting device or apparatus.

There are many reasons that industries want safer cutting devices and safer conditions for employees, including a) minimizes workplace accidents, b) minimizes lost time on the job of employees, c) acts as a possible marketing tool for the employer to potential employees, d) reduces risk from an insurance standpoint and could contribute to lower insurance premiums or additional coverage and e) reduces liability-based legal actions and arbitrations.

There have been many attempts to manufacture a safer utility knife or cutting device. U.S. Pat. No. 5,878,501 issued to Owens et al. on Mar. 9, 1999 describes one such attempt to create a safer utility knife. The Owens utility knife comprises a blade cover that shields the operator from an exposed blade edge when the utility knife is not in use. The operator exposes the cutting surface of the blade by depressing two buttons on the side of the utility knife that are connected to the blade cover. Once the buttons are depressed, they can be pulled back away from the blade, thus pulling back the blade cover and exposing the cutting surface of the blade. However, once the cutting surface of the blade is exposed, only a conscious movement by the operator of depressing the buttons and pulling them towards the cutting surface can pull the blade cover over the cutting surface of the blade protecting the operator from further exposure to the cutting surface.

In U.S. patent application Ser. No. 09/804,451 filed on Mar. 12, 2001, which is commonly assigned and is incorporated herein by reference in its entirety, Votoloto improved on the Owens utility knife by providing a blade cover that can be pulled back from the cutting surface of the blade by using a trigger lever. If the trigger lever is depressed too quickly, such as what might occur in a panic situation, an intercept member causes disengagement of the blade cover from the trigger lever, thus causing the blade cover to return to a position where the cutting surface of the blade is covered by the blade cover. While the Votolato utility knife is an advancement in safety for utility knives and cutting tools, there are still

aspects of that knife that could be improved. For example, there is no automatic function that closes the blade cover over the cutting surface in non-panic-type of situations, such as completion of a cutting job.

In addition to safety requirements, companies that utilize cutting devices and apparatus also would like to see certain ergonomic, sanitary and aesthetic features incorporated into the cutting device or apparatus, as mentioned previously herein. With respect to the sanitary requirement, industries that rely on the cutting device to be sanitary are the food service, food preparation and food sales industries, along with any other industries or companies where utility knives could contact food or food preparation surfaces. Another requirement or focus would be to eliminate loose razor blade contamination of food, food stuff, food preparation areas, food processing batches, pharmaceutical batches, chemical batches and other products that are easily contaminated by loose razor blades and razor blade pieces.

Therefore, there is a need for a cutting device or apparatus that a) is safe to use by the operator, b) reduces workplace accidents and the risk of workplace accidents, c) is ergonomically safe and effective, d) is sanitary for use around and in preparing consumer products, e) is aesthetically pleasing in an environment, such that it will be regularly used, and f) eliminates or greatly minimizes contamination of consumer products by loose blades and loose blade pieces.

SUMMARY OF THE INVENTION

A cutting apparatus has been produced that eliminates the common occurrence of raw razor blades contaminating everything from food and food products to garbage cans to shelves in retail stores. Furthermore, the cutting apparatus comprises a guard assembly that, when activated, opens the blade cover and allows only one cut to be made with the exposed blade before the unidirectionally-locking blade cover snaps back over the exposed blade and locks into a closed position, thus preventing laceration-related accidents. In addition, if the operator continues to activate the guard assembly (squeezing, pulling and/or depressing the trigger and/or releasing the trigger and continuing to hold it in the released position during and after the cut has been made) after one cut has been made with the exposed blade, the unidirectionally-locking blade cover will still snap back over the exposed blade, despite the position of the trigger. Once the blade cover snaps back over the exposed blade and locks into the closed position, the locking device is activated and acts to hold the blade cover securely over the blade until the blade assembly is further activated by releasing the trigger from the depressed position and depressing or pulling the trigger once again.

As described herein, a cutting apparatus comprises a) a handle assembly; b) a guard assembly coupled to the handle assembly, wherein the guard assembly comprises a unidirectionally-locking blade cover, a trigger and a locking device; and c) a removable blade assembly coupled to the handle assembly, wherein the blade assembly comprises a blade guard, a blade and a holder apparatus.

Also as described herein, a method of using a safety cutting apparatus comprises a) providing a surface; b) providing the safety cutting apparatus described herein; c) releasing the

trigger; d) applying the blade to the surface; and e) cutting the surface, wherein cutting comprises making only one continuous cut in the surface.

BRIEF DESCRIPTION OF THE FIGURES

FIG. 1A-1B are contemplated embodiments of the safety cutting apparatus.

FIG. 2 shows a contemplated embodiment of the safety cutting apparatus.

FIG. 3A-3C shows contemplated embodiments of the safety cutting apparatus.

FIG. 4A-4B shows contemplated embodiments of the blade assembly.

FIG. 5A-5B shows contemplated embodiments of the blade assembly.

DETAILED DESCRIPTION

A cutting apparatus has been produced that eliminates the common occurrence of raw razor blades contaminating everything from food and food products to garbage cans to shelves in retail stores. Furthermore, the cutting apparatus comprises a guard assembly that, when activated, opens the blade cover and allows only one cut to be made with the exposed blade before the unidirectionally-locking blade cover snaps back over the exposed blade and locks into place, thus preventing laceration-related accidents. In addition, if the operator continues to activate the guard assembly after one cut has been made with the exposed blade, the unidirectionally-locking blade cover will still snap back and lock into place over the exposed blade, despite the position of the trigger. As used herein, the phrase "if the operator continues to activate" means that if the operator is releasing, squeezing, depressing and/or pulling the trigger or releasing the trigger and continuing to hold it in the released position during and after the cut has been made, the unidirectionally-locking blade cover will still snap back and lock into place over the exposed blade, despite the position of the trigger. Once the blade cover snaps back over the exposed blade, the locking device is activated and acts to hold the blade cover securely over the blade until the blade assembly is further activated by releasing the trigger from the depressed position and depressing, releasing, squeezing or pulling the trigger once again.

As described herein, a contemplated cutting apparatus **10** is shown in FIGS. 1A-1B and comprises a) a handle assembly **100**; b) a guard assembly **140** coupled to the handle assembly **100**, wherein the guard assembly **140** comprises a unidirectionally-locking blade cover **145**, a trigger **150** and a locking device **155**; and c) a removable blade assembly **180** coupled to the handle assembly **100**, wherein the blade assembly **180** comprises a blade guard **185**, a blade **190** and a holder apparatus **195**.

The handle assembly **200** of the cutting apparatus, as shown in FIG. **2**, is designed to a) comfortably and ergonomically fit the hand of the operator for ease of use, b) couple with the blade assembly **280** and c) couple with the guard assembly **240**, where the blade cover **245** and trigger **250** are shown. The handle assembly **200** can be designed as shown to have venting openings **210** or "pass-throughs" throughout the handle allowing for the hand holding it to "breath", thus resulting in a cooling effect on the hand holding it. The vents **210** in the handle assembly **200** also contribute to the light weight of the knife. In other contemplated embodiments, the handle assembly **200** may comprise a solid handle—i.e. without vents **210** or pass-throughs. In this case, a removable gripper cover (not shown) comprising a breathable material

may cover the handle. For example, the breathable material may comprise holes or pores that allow the material to stay dry during long periods of use. Furthermore, the gripper cover can be removable and either disposable or washable, so that the handle stays clean during use by several operators over a period of time or during prolonged use by one user. In these embodiments, the removable gripper cover would slip onto the distal end of the handle assembly away from the blade assembly and cover the portion of the handle assembly up to the trigger and trigger opening.

Also, as contemplated and as shown in FIGS. 3A-3C, the cutting apparatus **30** comprises a guard assembly **340** coupled to the handle assembly **300**, wherein the guard assembly **340** comprises a unidirectionally-locking blade cover **345**, a trigger **350** and a locking device **355** which comprises a pawl **356**. In some contemplated embodiments, the blade assembly **380** is covered by a movable, spring-loaded unidirectionally-locking blade cover **345**. A locking device **355** contained within the handle assembly **300** locks the blade cover **345** over the blade **390**. As mentioned, releasing by squeezing, pulling and/or depressing a trigger **350** on the exterior of the handle assembly **300** unlocks the blade cover **345** and allows only one cut to be made in a material or on a surface (not shown). This safety feature is activated by a) releasing—squeezing, pulling and/or depressing—the trigger **350** on the exterior of the handle assembly **300**, thus deactivating the locking device **355**; b) pressing the unidirectionally-locking blade cover **345** against a surface in order to make a cut into a surface or material; and c) exposing the blade **390** by rotating the blade cover **345** back into the handle assembly **300**. The exposed is shown in FIG. 3B. Once the cut is made and the operator pulls the blade **390** out of the material or surface, pressure is removed from the blade cover **345** and the blade cover **345** rotates back over the blade **390** and locks. The locked blade cover **345** over the blade **390** is shown in FIG. 3C. In order to make another cut, the trigger **350** must be released—depressed, pulled and/or squeezed again. Therefore, as used herein, the "unidirectionally-locking" blade cover **345** is defined, in that the blade cover **345** only locks in place in one direction, and that direction is when the blade cover **345** is covering the blade **390**. When the blade cover **345** is unlocked and the blade **390** is exposed, the blade cover **345** is not locked into place exposing the blade **390**, but is instead held into an open position (exposing the blade **390**) by the pressure exerted on the blade cover **345** by the surface or material being cut.

As mentioned and as shown in FIG. 3A, the guard assembly **340** comprises three active parts—the trigger **350**, a locking device **355** which comprises a pawl **356**, and the blade cover **345**. In one contemplated embodiment, two springs and/or spring-like devices, one spring **357** for the blade cover and one spring **358** for the pawl, activate these parts (a "spring and pawl assembly"). The trigger **350** is activated via its own integral, molded spring arm **342**, which includes components **341**, **342A** and **342B**. The handle assembly **300** provides the pivots and stops **343A**, **343B** necessary for mounting and limiting the travel of the active parts and springs. The blade cover **345** and the trigger **350** pivot on the handle assembly **300**; the pawl **356** and its spring **358** pivot on the blade cover **345**. The pawl **356** links rotary motion from the blade cover **345** to the trigger **350**. The configuration and material of the pawl **356** allow it to flex sideways and spring back even though it is rigid in all other directions. A portion of the pawl **356** rides in a looped pathway on the trigger **350**. Two ramped steps on the pathway limit the pawl's **356** travel to one direction. This forces it, once it starts along the pathway, to finish

a complete loop. This one-direction travel is what allows locking of the blade cover **345** to be accomplished independent of the trigger position.

Normally, the trigger **350** rests where the pawl **356** cannot enter the pathway. Because the pawl **356** cannot enter the pathway, or move anywhere else within the handle assembly **300**, the blade cover **345** cannot move from covering the blade **390**. Releasing the trigger **350** positions the pathway where the pawl **356** can enter it, which allows the blade cover **345** to rotate, thus exposing the blade **390** when pressure is exerted on the blade cover **345** from the surface and/or material to be cut (not shown). If the trigger **350** is released at this point, before the blade cover **345** is moved at all, the blade cover **345** relocks. If however, the blade cover **345** is pressed against a surface and/or material to make a cut, the blade cover **345** is rotated into the handle assembly **300** exposing the blade **390**. As the blade cover **345** rotates, it moves the pawl **356** and causes the pawl **356** to travel along the pathway. As it does, it flexes laterally to ride up and over the ramped steps, and springs back once past the ramped steps.

After the pawl **356** travels over the first step, it cannot retrace its path and enters the return segment of the pathway. Now, when pressure is taken off the blade cover **345**, its return spring rotates it back over the blade **390**. This rotation causes the pawl **356** to continue over a second step. If the trigger **350** has already been released, the pawl **356** simply returns to the locked starting position. However, if the trigger **350** has not been released, the pawl **356** could return to the unlocked starting position. To prevent this, the pathway is configured to hold the pawl **356** against the second step, which also keeps it from retracing its path. As a result, the blade cover **345** is locked, and remains so until the trigger **350** is completely released and squeezed again.

The blade assembly **480** is shown in FIG. **4**A and is completely removable from the handle assembly (not shown) and comprises a blade guard **485**, a blade **490** and a holder apparatus **495**. Furthermore, the blade assembly **480** is designed to hold only one blade **490** at a time. The blade **490** is fixedly coupled to the holder apparatus **495**, and therefore, moves only when the holder apparatus **495** moves. The blade assembly **480** is disposable in relation to the cutting apparatus (not shown) and is safe to handle by the operator prior to coupling to, during coupling to and upon removal from the handle assembly (not shown). The blade guard **485** is designed to effectively cover and lock over either the cutting surface of or the entire blade **490** until the blade assembly **480** is coupled to the handle assembly (not shown). As the blade assembly **480** is being coupled to the handle assembly, the blade guard **485** retracts from covering the cutting surface of or the entire blade **490** and locks into place by coupling with a latch **496**. The latch **496** holds the blade guard **485** in place and away from the cutting surface of the blade **490** until the blade assembly **480** is removed from the handle assembly. The blade guard **485** effectively eliminates all the injuries and contamination-related issues caused from raw blade handling and also from someone reaching down into a trash receptacle and getting cut by an exposed blade. And as mentioned earlier, the herein-described blade assembly and ultimately the cutting apparatus eliminates loose razor blade contamination of food, food stuff, food preparation areas, food processing batches, pharmaceutical batches, chemical batches and other products that are easily contaminated by loose razor blades and razor blade pieces.

In some embodiments, and as shown in FIG. **4**B, however, the blade assembly **480** is not removable from the handle assembly (not shown), but is instead fixed into the handle assembly, such that when the blade life expires and/or the blade **490** dulls, the entire cutting apparatus (not shown) can be disposed of by the operator. In these embodiments, the entire cutting apparatus becomes the blade assembly—meaning that the entire cutting apparatus is removable and disposable. In those embodiments where the blade assembly **480** is not removable from the handle assembly, there will not be a blade guard **485** coupled to the blade assembly **480**, since there is no assembly step or removal step of the blade assembly to and from the handle assembly.

As an example of one contemplated embodiment and as shown in FIGS. **4**A and **4**B, the holder apparatus **495** of the blade assembly **480** provides spring snaps that 1) latch (latch **496**) the blade guard **485** over the blade **490** when the blade assembly **480** is out of the handle assembly (not shown), and 2) latch (latch **497**) the blade assembly **480** into the handle assembly. The blade guard **485** incorporates an additional latch **498** that latches the shield into the handle assembly independent of the latch **497** for the handle assembly. This additional latch **498** is to insure, as described below, that the blade guard **485** recovers the blade **490** as the blade assembly **480** is being removed from the handle assembly. A stop tab on the blade guard **485** travels in a track on the holder apparatus **495** of the blade assembly **480** and prevents the blade guard **485** from being pulled off of or detached from the blade assembly **480** in part or altogether.

When the blade assembly **480** is first inserted into the handle assembly, the blade assembly **480** travels freely until stops on the blade guard **485** hit the handle assembly and latch **498** engages. As more pressure is applied to the blade assembly **480**, latch **496** is over-ridden and the holder apparatus **495** of the blade assembly **480** continues to slide into the handle assembly uncovering the blade **490** as it does. When the blade assembly **480** reaches the limit of its travel, latch **497** engages locking the blade assembly **480** into the handle assembly.

To remove the blade assembly **480**, the user operates latch **497** and pulls the holder apparatus **495** of the blade assembly **480** out of the handle assembly (not shown). Because the blade guard **485** is still latched by latch **496**, the holder apparatus **495** moves independent of the blade guard **485**, recovering the blade **490**. When the stop tab reaches the end of its travel, latch **496** re-latches and latch **498** is over-ridden allowing the entire blade assembly **480**, with the blade **490** now recovered by the blade guard **485**, to be pulled free of the handle assembly.

FIGS. **5**A and **5**B show another contemplated blade assembly **580** where in FIG. **5**A the blade guard **585** is locked in the open position exposing the blade **590** and in FIG. **5**B the blade guard **585** is covering the blade **590** in the closed position. In FIG. **5**B the blade **590** is shown as dotted lines to indicate that its covered by the blade guard **585**.

In contemplated embodiments, the blade assembly will, in part or in total, be a bright florescent color to aid in finding them should the assembly be left on shelves or fall into product. In other embodiments, the blade assembly may be suitably marked with any color that will make the assembly readily visible to the naked eye when the assembly is on a shelf, in a consumer product or in a trash can. This prominent color marking or treatment results in the drastic reduction and/or elimination of the blade assemblies contaminating food, retail shelves, and other products. Prominent color marking and/or color treatment will also result in fewer injuries to consumers and the high legal and medical costs associated with those injuries.

In some contemplated embodiments, the blade may be set into the blade cartridge such that the blade is exposed at differing potential cutting depths. For example, in some instances, the blade may be exposed only a few millimeters,

in order to cut thin surfaces. In other instances, the blade may be exposed at least a centimeter or more in order to cut corrugated cardboard surfaces or other thick surfaces. In these instances, the color coding of the blade cartridge may be set such that different colors indicate different blade cutting depths. For example, fluorescent green may indicate a cutting depth of 4 mm, while cherry red indicates a cutting depth of 1 cm, and so forth. In other instances, the number of stripes or dots on the blade cartridge may indicate cutting depth of the blade. For example, a fluorescent green blade cartridge with 4 bright orange dots may mean a cutting depth of 4 mm (1 mm corresponding for each dot, 1 stripe every 1 cm), while a cherry red blade cartridge with one bright yellow stripe means 1 cm cutting depth. This stripe and dot color coding will help those who are color blind or who otherwise have trouble distinguishing one color.

In a contemplated embodiment, the blade comprises metal while the remaining components of the cutting apparatus comprise an organic or inorganic-based material, such as a particular kind of plastic, composite material or other suitable material. However, it is contemplated that every component of the cutting apparatus may comprise metal, a metal-based material, an organic-based material, an inorganic-based material, an organometallic-based material, a composite material and/or a combination thereof. Materials contemplated herein may further comprise polymers and/or monomers. It is contemplated that suitable materials are those materials that can be used to form a cutting apparatus capable of cutting or slicing into a layer or layers of matter, such as paper, cardboard, plastic, metal sheeting, wood, glass, drywall and the like.

As used herein, the term "metal" means those elements that are in the d-block and f-block of the Periodic Chart of the Elements, along with those elements that have metal-like properties, such as silicon and germanium. As used herein, the phrase "d-block" means those elements that have electrons filling the 3d, 4d, 5d, and 6d orbitals surrounding the nucleus of the element. As used herein, the phrase "f-block" means those elements that have electrons filling the 4f and 5f orbitals surrounding the nucleus of the element, including the lanthanides and the actinides. Preferred metals include titanium, silicon, cobalt, copper, nickel, zinc, vanadium, aluminum, chromium, platinum, gold, silver, steel and stainless steel. More preferred metals include titanium, silicon, copper, aluminum, nickel, platinum, gold, silver and tungsten. Most preferred metals include titanium, aluminum, silicon, copper and nickel. The term "metal" also includes alloys, metal/metal composites, metal ceramic composites, metal polymer composites, as well as other metal composites.

As used herein, the term "monomer" refers to any chemical compound that is capable of forming a covalent bond with itself or a chemically different compound in a repetitive manner. The repetitive bond formation between monomers may lead to a linear, branched, super-branched, or three-dimensional product. Furthermore, monomers may themselves comprise repetitive building blocks, and when polymerized the polymers formed from such monomers are then termed "blockpolymers". Monomers may belong to various chemical classes of molecules including organic, organometallic or inorganic molecules. The molecular weight of monomers may vary greatly between about 40 Dalton and 20000 Dalton. However, especially when monomers comprise repetitive building blocks, monomers may have even higher molecular weights. Monomers may also include additional groups, such as groups used for crosslinking.

As used herein, the term "crosslinking" refers to a process in which at least two molecules, or two portions of a long molecule, are joined together by a chemical interaction. Such interactions may occur in many different ways including formation of a covalent bond, formation of hydrogen bonds, hydrophobic, hydrophilic, ionic or electrostatic interaction. Furthermore, molecular interaction may also be characterized by an at least temporary physical connection between a molecule and itself or between two or more molecules.

Contemplated polymers may also comprise a wide range of functional or structural moieties, including aromatic systems, and halogenated groups. Furthermore, appropriate polymers may have many configurations, including a homopolymer, and a heteropolymer. Moreover, alternative polymers may have various forms, such as linear, branched, super-branched, or three-dimensional.

There are several benefits and advantages to using the cutting apparatus described herein, including but not limited to:

- inexpensive to manufacture due to minimal use of material and parts
- built in safety mechanisms that allow for one single cut or slice into a material
- eliminates loose razor blades and associated medical, insurance, financial and time losses because of razor blade-related accidents
- minimizes many of the lacerations associated with the knives and cutting devices on the market today, especially the lacerations that result from the cutting device slipping off of the surface and into the operator's leg, arm, abdomen, etc.
- ergonomically sound in that the cutting apparatus is lightweight and easy to handle based on design modifications

In some additional embodiments of the cutting apparatus, the apparatus comprises a tape piercing member that is located on the distal end of the handle assembly. The tape piercing member is designed to break or pierce tape found holding box flaps or other surface areas closed on most boxed items or otherwise contained items. This tape piercing member is a safe and easy way to cut open a box without having to use the blade. The tape piercing member is also used to eliminate the damage to the contents of the box or container caused by a blade opening the box or container with the contents being cut by the blade.

Thus, several specific embodiments and applications of the cutting apparatus have been disclosed. It should be apparent, however, to those skilled in the art that many more modifications besides those already described are possible without departing from the inventive concepts herein. The inventive subject matter, therefore, is not to be restricted except in the spirit of the appended claims. Moreover, in interpreting both the specification and the claims, all terms should be interpreted in the broadest possible manner consistent with the context. In particular, the terms "comprises" and "comprising" should be interpreted as referring to elements, components, or steps in a non-exclusive manner, indicating that the referenced elements, components, or steps may be present, or utilized, or combined with other elements, components, or steps that are not expressly referenced.

The invention claimed is:

1. A cutting apparatus comprising:
   - a handle;
   - a blade at least partially disposed within the handle;
   - a blade cover configured to move between a locked safety position covering the blade and an unlocked operating position where the blade can be uncovered;
   - a pawl coupled to the blade cover, the pawl configured to engage a stop when the blade cover is in the locked safety position;

a trigger coupled to the handle and configured, upon actuation, to disengage the pawl from the stop allowing movement of the blade cover to uncover the blade; and

the trigger comprising a trigger pathway in which at least a portion of the pawl travels as the blade cover covers or uncovers the blade.

2. The apparatus of claim 1, wherein the travel of the at least a portion of the pawl along the trigger pathway allows locking the blade cover independently of the trigger position after actuation.

3. The apparatus of claim 1, wherein the trigger pathway is configured to allow the pawl to return to a locked position when the trigger has not been released.

4. The apparatus of claim 1, wherein the blade cover is pivotally coupled to the handle.

5. The apparatus of claim 4, wherein rotation of the blade cover cause the travel of the at least a portion of the pawl along the trigger pathway.

6. The apparatus of claim 1, wherein the trigger pathway comprises a looped trigger pathway.

7. The apparatus of claim 1, wherein the trigger comprises the stop.

8. The apparatus of claim 1, further comprising a return spring coupled to the blade cover and configured to return the blade cover back over the blade when pressure is taken off of the blade cover.

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