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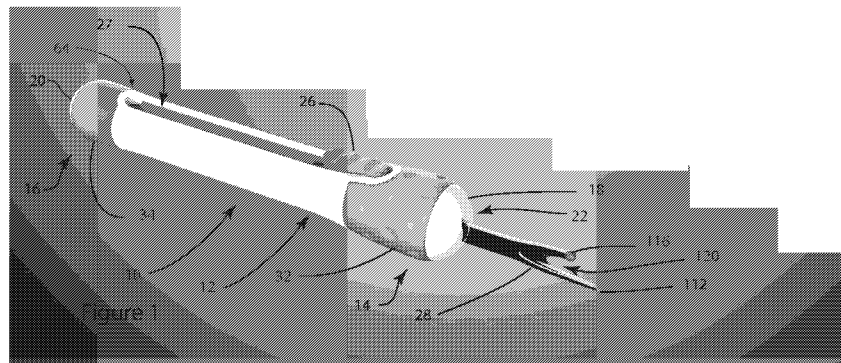
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(54) Title: DUAL RETRACTABLE SEAM RIPPER



(57) Abstract: A dual blade retractable seam ripper is provided. The seam ripper has a generally cylindrical tube and a unitary injection molded slide block structure. The tube has a control slot and two capped ends with blade extension openings, one major and one minor. The unitary structure has a major seam ripping blade and a minor seam ripping blade, each carried by a support. Each blade projects through the corresponding cap opening. One support is attached to a leaf spring cantilevered at the other end. The spring carries a control button which projects through and moves within the slot and a locking pin which extends beyond the spring. Depressions in the tube engage and dis-engage with the locking pin as the button moves and is pressed.



Dual Retractable Seam Ripper

Claim for Priority

5 This Non-Provisional patent application is based on United States Provisional Patent Application Serial No. 62/239,147, filed on October 8, 2015, the priority of which is claimed, and the disclosure of which is incorporated by reference.

Background of the Invention

10 “To err is human” so it is safe to conjecture that seam rippers, in one form or another, have been around almost since the dawn of sewing. Traditionally, these take the form of a fixed blade having a U-shaped cutting-edge recessed at the base of a larger U-shaped thread guide. In the typical case, the blade is fixed to an elongated rod shaped handle and a mating cover detachably mounting upon the handle covers the blade when not in use. Commonly, the detachable mating cover can also mount upon the rearmost end of the handle in the hope, often vain, that it will not be lost. In some cases, the handle
15 is formed to be grasped between the thumb and forefinger. Curiously, a commercially available embodiment of a retractable blade design uses a curved blade rather than the more commonly encountered U-shaped. In other cases, less commonly, a method for shielding the blade in the handle is provided, either by retracting the blade into the handle or by rotating it into a slot formed in the handle. In still another case, a light is provided in the handle to facilitate accuracy.

20 However, what has heretofore been lacking in the retinue of tools available to the tailor or seamstress is a compact ergonomic dual retractable seam ripper.

Summary of the Invention

The present invention is drawn to a dual blade retractable seam ripper. The seam ripper comprises a generally cylindrical tube and a blade holding/slide block/control button/locking portion
25 disposed within the tube.

The tube has two ends and a longitudinally extending control slot formed in and extending a major portion of the length of the tube. Each end of the tube has a cap thereupon. One cap has a major centrally located blade extension opening formed therein. The other cap has a minor centrally located blade extension opening formed therein.

The blade holding/slide block/control button/locking portion has a major seam ripping blade support portion, a minor seam ripping blade support portion, and a control button carried upon a medial portion of a leaf spring. The control button projects through the control slot and is movable therein. The locking portion is selectably engageable as the control button is moved in the control slot and is pressed inwardly. A major seam ripper blade, projectable through the major blade extension opening, is carried by the major seam ripping blade support portion. A minor seam ripping blade, projectable through the minor blade extension opening, is carried by the minor seam ripping blade support portion.

Other aspects and advantages of the present invention are described in the detailed description below and in the claims.

Brief Description of the Drawings

The invention is described in detail below with reference to the appended drawings, wherein like numerals designate similar parts. In the Figures:

Figures 1 and 2 are isometric perspectives of the dual retractable seam ripper of the present invention. In **Figure 1**, the large ripper blade is extended. In **Figure 2**, the small blade is extended.

Figures 3, 4, and 5 are sectional views of the compact ergonomic dual retractable seam ripper of the present invention illustrating the internal mechanism by which either blade may be extended and locked in position by pressing a control button inwardly to disengage the locking mechanism, sliding the block longitudinally in the housing and releasing the control button to allow the blade to be locked in either of the extended positions.

Figure 6 is an exploded isometric perspective providing a sectional view of both halves of the dual retractable seam ripper of the present invention and illustrating features on many of the respective parts wherein the control button and blade holding/slide block are manufactured as one part.

Figure 7 is an exploded isometric perspective providing a sectional view of both halves of the dual retractable seam ripper of the present invention and illustrating features on many of the respective parts wherein the control button and blade holding slide block are manufactured as separate parts.

Figure 8 is an isometric perspective of the dual retractable seam Ripper of the present invention with the blade retracted as in storage.

Figure 9 is a left elevational view of the dual retractable seam ripper of the present invention having the large blade extended.

Figure 10 is a top or plan view of the dual retractable seam ripper of the present invention with the large blade extended.

5 Detailed Description of the Preferred Embodiment

The invention is described in detail below with reference to several embodiments and numerous examples. Such discussion is for purposes of illustration only. Modifications to particular examples within the scope of the present invention, set forth in the appended claims, will be readily apparent to one of skill in the art. Terminology used herein is given its ordinary meaning consistent with the
10 exemplary definitions set forth immediately below.

In **Figures 1 and 2**, dual blade retractable seam ripper **10** comprises slotted, generally cylindrical tube **12** with each end **14, 16** having a generally hemispherical cap **18, 20** with major and minor centrally located blade extension openings **22, 24** formed therein. Control button **26** projects through control slot **27** and is movable therealong. In **Figure 1**, major seam ripper blade **28** projects through major blade
15 extension opening **22** formed in generally hemispherical cap **18**. In **Figure 2**, minor seam ripping blade **30** projects through minor blade extension opening **24** in generally hemispherical cap **20**. To facilitate easy use of the dual retractable seam ripper of the present invention, thermoplastic elastomer cushions **32, 34** are overmolded around each end of generally cylindrical tube **12** so that ends **14, 16** are enlarged and bulbous having a somewhat greater diameter than tube **12**. In **Figures 3, 4, and 5**, unitary blade
20 holding/slide block **36** and control button **26** are combined in one injection molded piece with base **40** of integrally formed spring **48** being attached to upper surface **44** of blade holding/slide block **36** with leaf **46** of integrally formed spring **48** projecting upwardly from major blade retention portion **50** of blade holding/slide block **36** into control slot **27** while carrying locking pin **52** beneath medial portion **54**
25 of leaf **46** with cantilevered end **56** of leaf **46** floating above minor blade retention portion **58** of blade holding/slide block **36** when control button **26** is in its upwardly extended position but bearing against minor blade retention portion **58** of blade holding/slide block **36** when control button **26** is pressed inwardly. In **Figure 3**, right blade locking depression **60** and left blade locking depression **62** are visible above minor seam ripper blade **30** and major seam ripping blade **28** adjacent left and right ends **64, 66**
30 of control slot **27**. As illustrated in **Figure 4**, when unitary blade holding/slide block **36** is positioned adjacent left end **64** of control slot **27**, major seam ripper blade **28** projects through major blade

extension opening **22** in generally hemispherical cap **18** while in **Figure 5**, minor seam ripper blade **30** projects through minor blade extension opening **24** in generally hemispherical cap **20**. In each of **Figures 4** and **5**, central blade locking depression **68** is visible above the retracted seam ripping blade. In **Figure 3**, locking pin **52** engaging central locking depression **68** holds unitary blade holding/slide block **36** along with both major seam ripping blade **28** and minor seam ripping blade **30** within generally cylindrical tube **12** that, while in **Figure 4**, locking pin **52** engages left locking depression **62**, holding major seam ripping blade **28** extended, while similarly in **Figure 5**, locking pin **52** engages right locking depression **60**, holding minor seam ripping blade **30** extended. Unitary blade holding/slide block **36** has medial relief **70** formed in blade holding/slide block **36** to accommodate locking pin **52** when control button **26** is depressed to dislodge locking pin **52** from locking depressions **60**, **62**, and **68** while, when moving between locking depressions, downwardly projecting cantilever leaf end **56** bears against minor blade retention portion **58** of blade holding/slide block **36** to guard against excessive deflection thereof.

Figure 6 is an exploded isometric view of dual blade retractable seam ripper **10** having unitary blade holding/slide block and control button **36** with major seam ripping blade **28** projecting from left end **104** of unitary blade holding/slide block and control button **36** and minor seam ripping blade **30** projecting from right end **106** of unitary blade holding/slide block and control button **36**. Longitudinally extending left guide slot **74** formed in left lateral surface **76** of unitary blade holding/slide block and control button **36** is depicted while similar longitudinally extending right guide slot **75** is concealed behind unitary blade holding/slide block and control button **36**. Right-hand generally cylindrical tube half **86** has right-hand longitudinally extending guide rail **78** formed medially therein and extending through a major portion of the length of right-hand generally cylindrical tube half **86**. Locking depressions **60**, **62** and **68** are visible adjacent right control slot recess **80** while right major blade extension opening recess **82** and minor blade extension opening recess **84** are visible at the respective ends of right-hand generally cylindrical tube half **86**. Left hand generally cylindrical tube half **92** bears corresponding structure not visible except for left control slot recess **81**. Also depicted are thermoplastic elastomer over-molded major cushion **32** disposable over right and left major cushion depressions **88**, **90** in right-hand generally cylindrical tube half **86** and left hand generally cylindrical tube half **92**, along with minor cushion **34** disposable over right and left minor cushion depressions **94**, **96** in right-hand generally cylindrical tube half **86** and left hand generally cylindrical tube half **92**. Notches **98**, **100** in major and minor cushions **32**, **34** align with opposed ends of control slot **27**.

Figure 7 is an exploded isometric view of dual blade retractable seam ripper **10** having discrete blade holding/slide block **136** with longitudinally extending guide slot **174** visible and control button/spring **102** with major seam ripping blade **28** projecting from left end **104** of blade holding/slide block **136** and minor seam ripping blade **30** projecting from right end of blade holding/slide block **106**.
5 Control button/spring **102** comprises support base **140** connected to first leaf **146** of spring **102** with base **140** nesting in support base recess **144** in blade holding/slide block **136** and is retained therein by shoulders **143, 145** as well as laterally extending locking pin **152** engaging shoulders **108, 110** formed in generally cylindrical tube **12** adjacent control slot **27** when assembled; while control button **26** rides upon medial portion of leaf **154** having laterally extending locking pin **152** projecting therebeneath with
10 medial relief **170** being formed in blade holding/slide block **136** to accommodate locking pin **152** when control button **26** is depressed to dislodge locking pin **152** from locking depressions **60, 62, and 68** while downwardly projecting cantilever leaf end **156** bears against minor blade retention portion **58** of blade holding/slide block **136**. Each retractable ripping blade **28, 30** comprises tapered lower projection **112, 114** and balled upper projection **116, 118** with U-shaped cutting-edge **120, 122** disposed therebetween.

Figure 8 illustrates dual ripper **10** of the present invention with control button **26** in the medial position whereby major seam ripping blade **28** and minor seam ripping blade **30** are both retracted within slotted tube **12**. Dimples **158** patterned over the surface of major thermoplastic elastomer cushion **32** provides a distinctive appearance while ribs **160** on control button **26** ease manipulation thereof. Note that provision of thermoplastic elastomer cushions **32, 34** provide that each end **14, 16** of
20 dual blade retractable ripper **10** is substantially greater in maximum diameter than slotted generally cylindrical tube **12** easing use thereof by decreasing the likelihood that dual ripper **10** will slip out of the hand during use.

Figures 9 and 10 illustrate dual ripper **10** of the present invention with control button **26** in the leftmost position whereby major seam ripping blade **28** extends beyond generally hemispherical end **18**
25 and is locked in position as described hereinabove while minor seam ripping blade **30** is retracted entirely within tube **12**. Note that no cap is necessary to shield either of blades **28** or **30** and thus there is no cap to be lost.

While the invention has been described in detail, modifications within the scope of the invention will be readily apparent to those of skill in the art. In view of the foregoing discussion,
30 relevant knowledge in the art and references discussed above in connection with the Background and Detailed Description, the disclosures of which are all incorporated herein by reference, further

description is deemed unnecessary. In addition, it should be understood that aspects of the invention and portions of various embodiments may be combined or interchanged either in whole or in part. Furthermore, those of ordinary skill in the art will appreciate that the foregoing description is by way of example only, and is not intended to limit the invention.

As my invention, I claim:

1. A dual blade retractable seam ripper comprising a generally cylindrical tube having two ends, each end having a generally hemispherical cap thereupon, one said generally hemispherical cap having a major centrally located blade extension opening formed therein, the other having a minor centrally located blade extension opening formed therein; a longitudinally extending control slot being formed in the generally cylindrical tube extending a major portion of the length of said tube, a unitary blade holding/slide block/control button/leaf spring/locking pin being combined in a unitary injection molded structure disposed within said tube, said blade holding/slide block/control button/leaf spring/locking pin having a major seam ripping blade support portion and a minor seam ripping blade support portion, one end of said leaf spring being attached to said one of said seam ripping blade support portions, a control button being carried upon a medial portion of said leaf spring, and the other end portion of said leaf spring being cantilevered, said locking pin being formed beneath said leaf spring proximate said control button, said locking pin extending laterally beyond said leaf spring, said control button projecting through said control slot and movable therein; three locking depressions being formed in the interior surface of said generally cylindrical tube and selectably engageable with said locking pin as said control button is moved in said control slot, and dis-engageable therefrom when said control button is pressed inwardly against the action of said leaf spring; a major seam ripper blade carried by said major seam ripping blade support portion and projectable through said major blade extension opening formed in said one generally hemispherical cap and a minor seam ripping blade being carried by said minor seam ripping blade support portion and projectable through said minor blade extension opening in said other generally hemispherical cap.
2. The dual blade retractable seam ripper of claim 1 wherein thermoplastic elastomer cushions are overmolded around each end of said generally cylindrical tube.
3. The dual blade retractable seam ripper of claim 2 wherein a longitudinally extending guide rail is disposed along the interior of said generally cylindrical tube and a guide slot engageable with said guide rail is formed in said slide block.
4. The dual blade retractable seam ripper of claim 1 wherein a longitudinally extending guide rail is disposed along the interior of said generally cylindrical tube and a guide slot engageable with said guide rail is formed in said slide block.

5. The dual blade retractable seam ripper of claim 4, wherein said locking depressions are disposed such that when said locking pin is in engagement with one of said locking depressions, said major seam ripping blade projects through said major centrally located blade extension opening, when said locking pin is in engagement with the second of said locking depressions, both said seam ripping blades are
5 withdrawn within said generally cylindrical tube, and when said locking pin is in engagement with the third of said locking depressions, said minor seam ripping blade projects through said minor centrally located blade extension opening.

6. The dual blade retractable seam ripper of claim 5 wherein thermoplastic elastomer cushions are overmolded around each end of said generally cylindrical tube.

10 7. The dual blade retractable seam ripper of claim 6 wherein each retractable ripping blade comprises a tapered lower projection and a blunted upper projection with a U-shaped cutting-edge disposed therebetween.

8. A dual blade retractable seam ripper comprising a generally cylindrical tube having two ends, each end having a generally hemispherical cap thereupon, one said generally hemispherical cap having a
15 major centrally located blade extension opening formed therein, the other having a minor centrally located blade extension opening formed therein; a longitudinally extending control slot being formed in the generally cylindrical tube extending a major portion of the length of said tube, a unitary blade holding/slide block and a unitary control button/leaf spring/locking pin, each being a unitary injection molded structure disposed within said tube, said blade holding/slide block having a major seam ripping
20 blade support portion and a minor seam ripping blade support portion, one end of said leaf spring being disposed upon one of said seam ripping blade support portions, a control button being carried upon a medial portion of said leaf spring, and the other end portion of said leaf spring being cantilevered, said locking pin being formed beneath said leaf spring proximate said control button, said locking pin extending laterally beyond said leaf spring, said control button projecting through said control slot and
25 movable therein; three locking depressions being formed in the interior surface of said generally cylindrical tube and selectably engageable with said locking pin as said control button is moved in said control slot, and dis-engageable therefrom when said control button is pressed inwardly against the action of said leaf spring; a major seam ripper blade being carried by said major seam ripping blade support portion and projectable through said major blade extension opening formed in said one
30 generally hemispherical cap and a minor seam ripping blade being carried by said minor seam ripping

blade support portion and projectable through said minor blade extension opening in said other generally hemispherical cap.

9. The dual blade retractable seam ripper of claim 8 wherein thermoplastic elastomer cushions are overmolded around each end of said generally cylindrical tube.

5 10. The dual blade retractable seam ripper of claim 9 wherein a longitudinally extending guide rail is disposed along the interior of said generally cylindrical tube and a guide slot engageable with said guide rail is formed in said slide block.

11. The dual blade retractable seam ripper of claim 8 wherein a longitudinally extending guide rail is disposed along the interior of said generally cylindrical tube and a guide slot engageable with said guide
10 rail is formed in said slide block.

12. The dual blade retractable seam ripper of claim 11, wherein said locking depressions are disposed such that when said locking pin is in engagement with one of said locking depressions, said major seam ripping blade projects through said major centrally located blade extension opening, when said locking pin is in engagement with the second of said locking depressions, both said seam ripping
15 blades are withdrawn within said generally cylindrical tube, and when said locking pin is in engagement with the third of said locking depressions, said minor seam ripping blade projects through said minor centrally located blade extension opening.

13. The dual blade retractable seam ripper of claim 12 wherein thermoplastic elastomer cushions are overmolded around each end of said generally cylindrical tube.

20 14. The dual blade retractable seam ripper of claim 13 wherein each retractable ripping blade comprises a tapered lower projection and a blunted upper projection with a U-shaped cutting-edge disposed therebetween.

15. A dual blade retractable seam ripper comprising a generally cylindrical tube having two ends, each end having a cap thereupon, one said cap having a major centrally located blade extension
25 opening formed therein, the other having a minor centrally located blade extension opening formed therein; a longitudinally extending control slot being formed in the generally cylindrical tube extending a major portion of the length of said tube, a blade holding/slide block/control button/locking portion being disposed within said tube, said blade holding/slide block/control button/locking portion having a major seam ripping blade support portion and a minor seam ripping blade support portion, a control
30 button being carried upon a medial portion of a leaf spring, said control button projecting through said

control slot and movable therein; said locking portion being selectably engageable as said control button is moved in said control slot, and when said control button is pressed inwardly; a major seam ripping blade carried by said major seam ripping blade support portion and projectable through said major blade extension opening formed in said one cap and a minor seam ripping blade being carried by said
5 minor seam ripping blade support portion and projectable through said minor blade extension opening in said other cap.

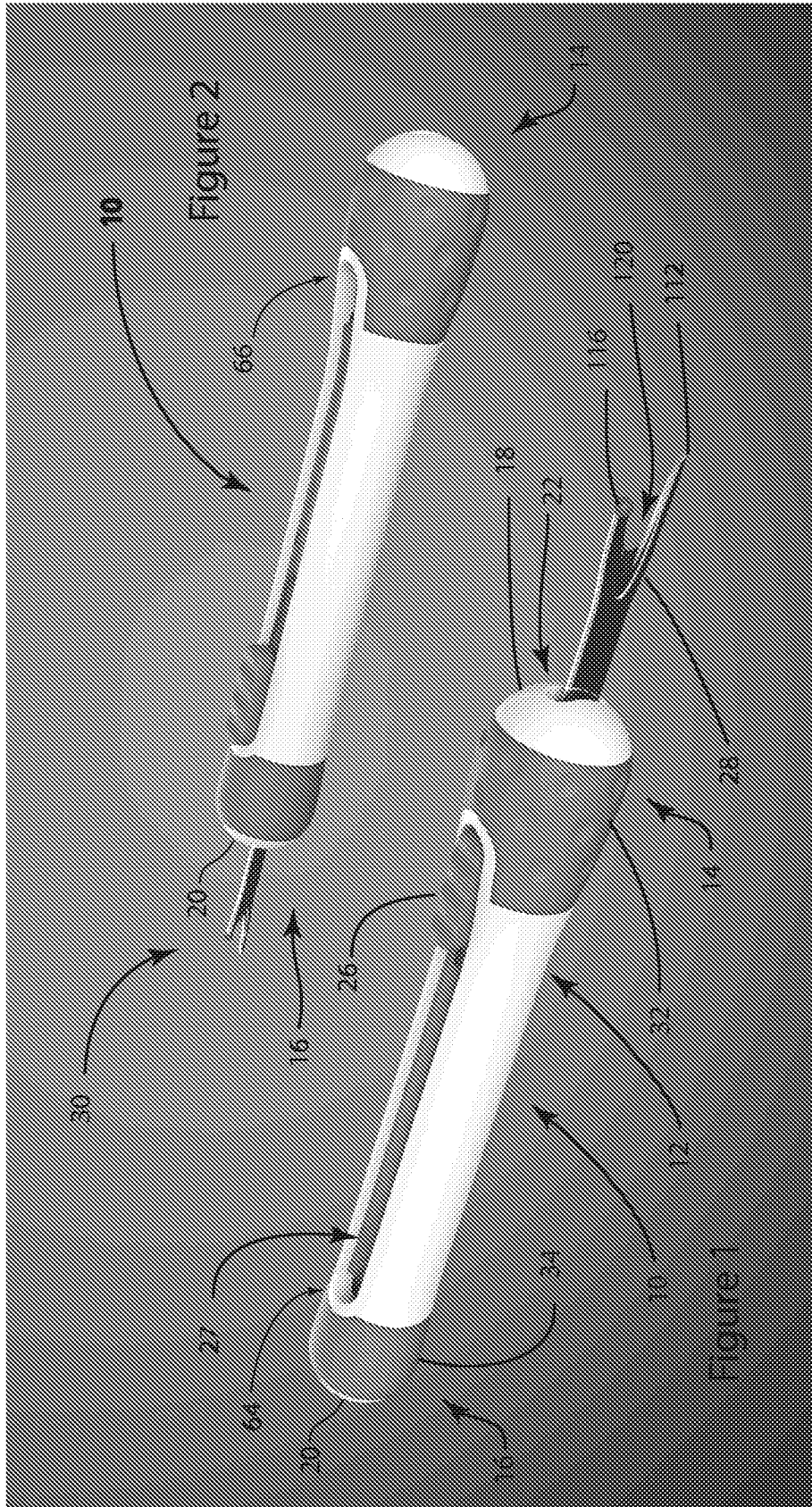
16. The dual blade retractable seam ripper of claim 15 wherein thermoplastic elastomer cushions are overmolded around each end of said generally cylindrical tube.

17. The dual blade retractable seam ripper of claim 16 wherein a longitudinally extending guide rail
10 is disposed along the interior of said tube and a guide slot engageable with said guide rail is formed in said slide block.

18. The dual blade retractable seam ripper of claim 15 wherein a longitudinally extending guide rail is disposed along the interior of said generally cylindrical tube and a guide slot engageable with said guide rail is formed in said slide blade holding/slide block/control button/locking portion.

19. The dual blade retractable seam ripper of claim 18 wherein thermoplastic elastomer cushions
15 are overmolded around each end of said generally cylindrical tube.

20. The dual blade retractable seam ripper of claim 19 wherein each retractable ripping blade comprises a tapered lower projection and a blunted upper projection with a U-shaped cutting-edge disposed therebetween.



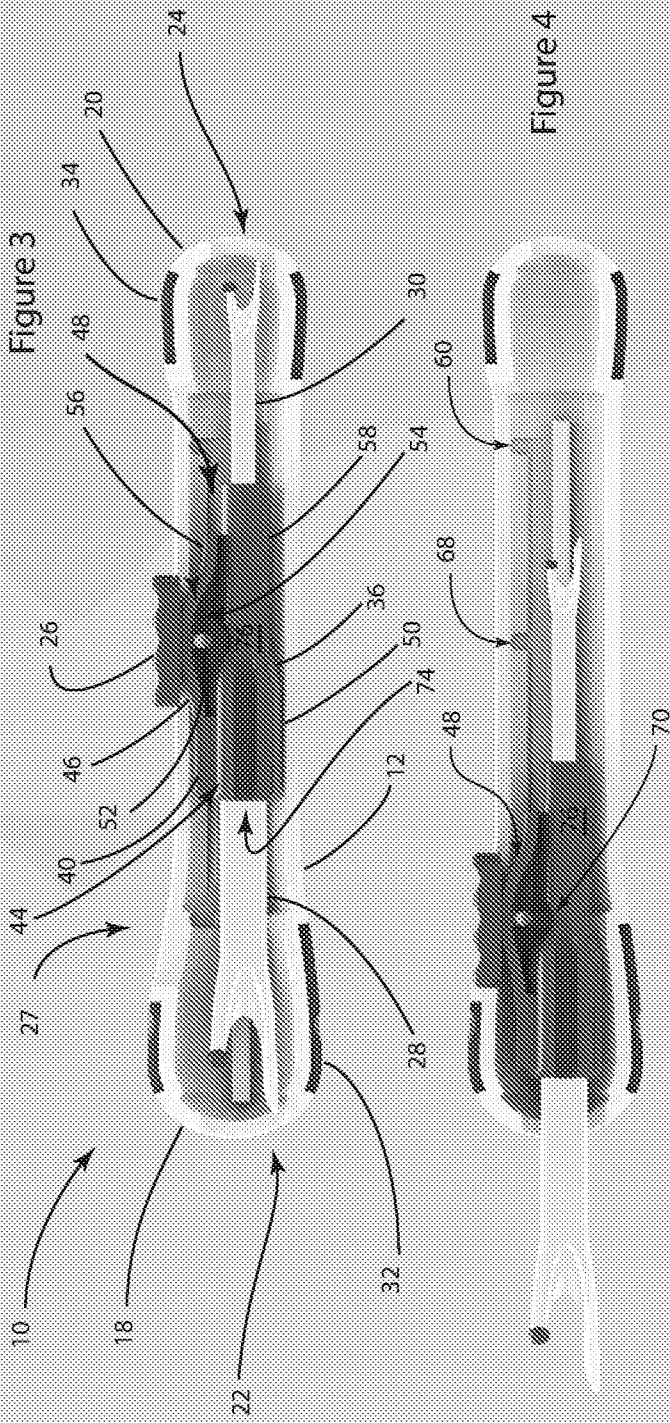


Figure 3

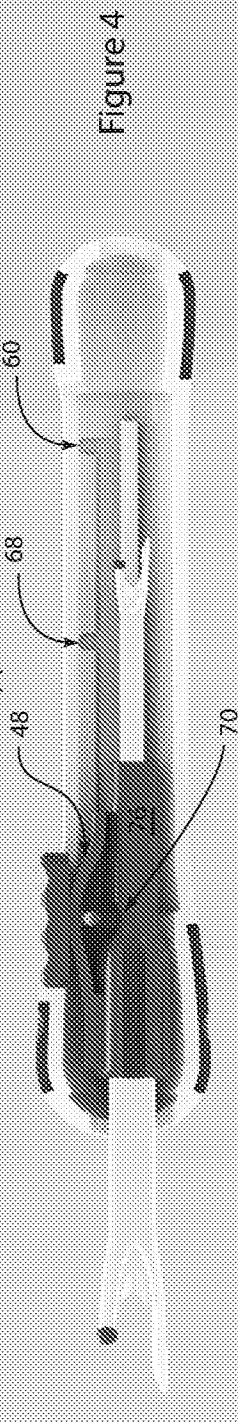


Figure 4

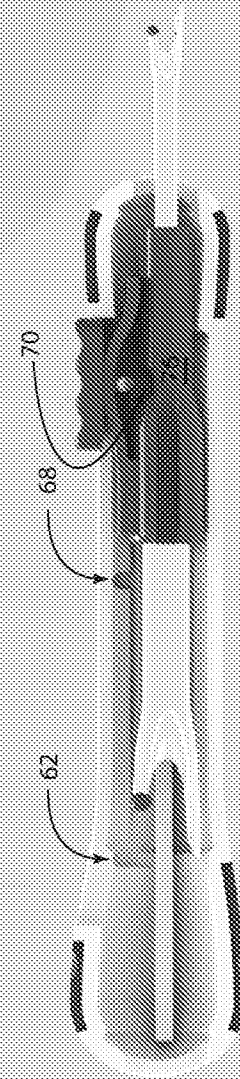


Figure 5

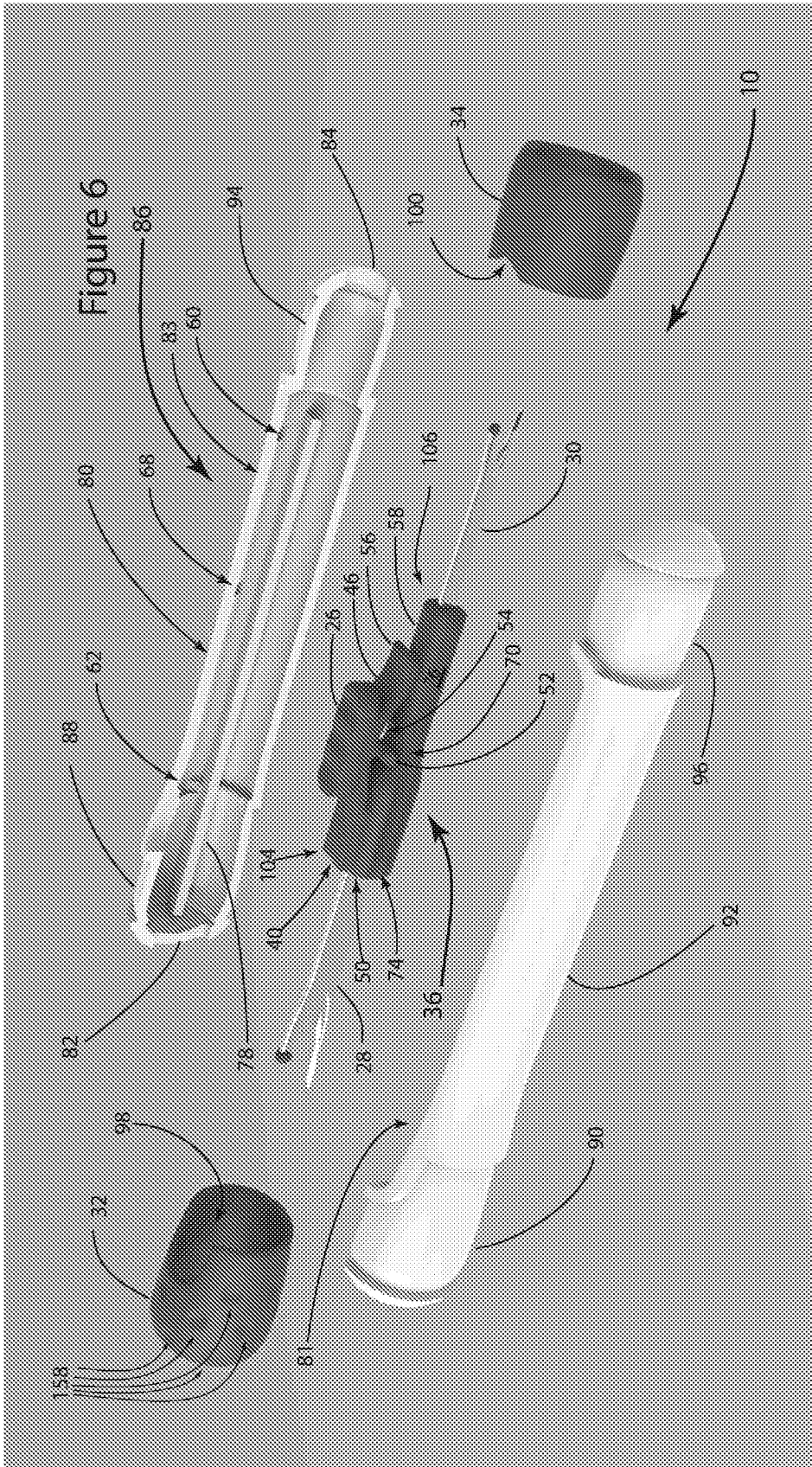


Figure 7

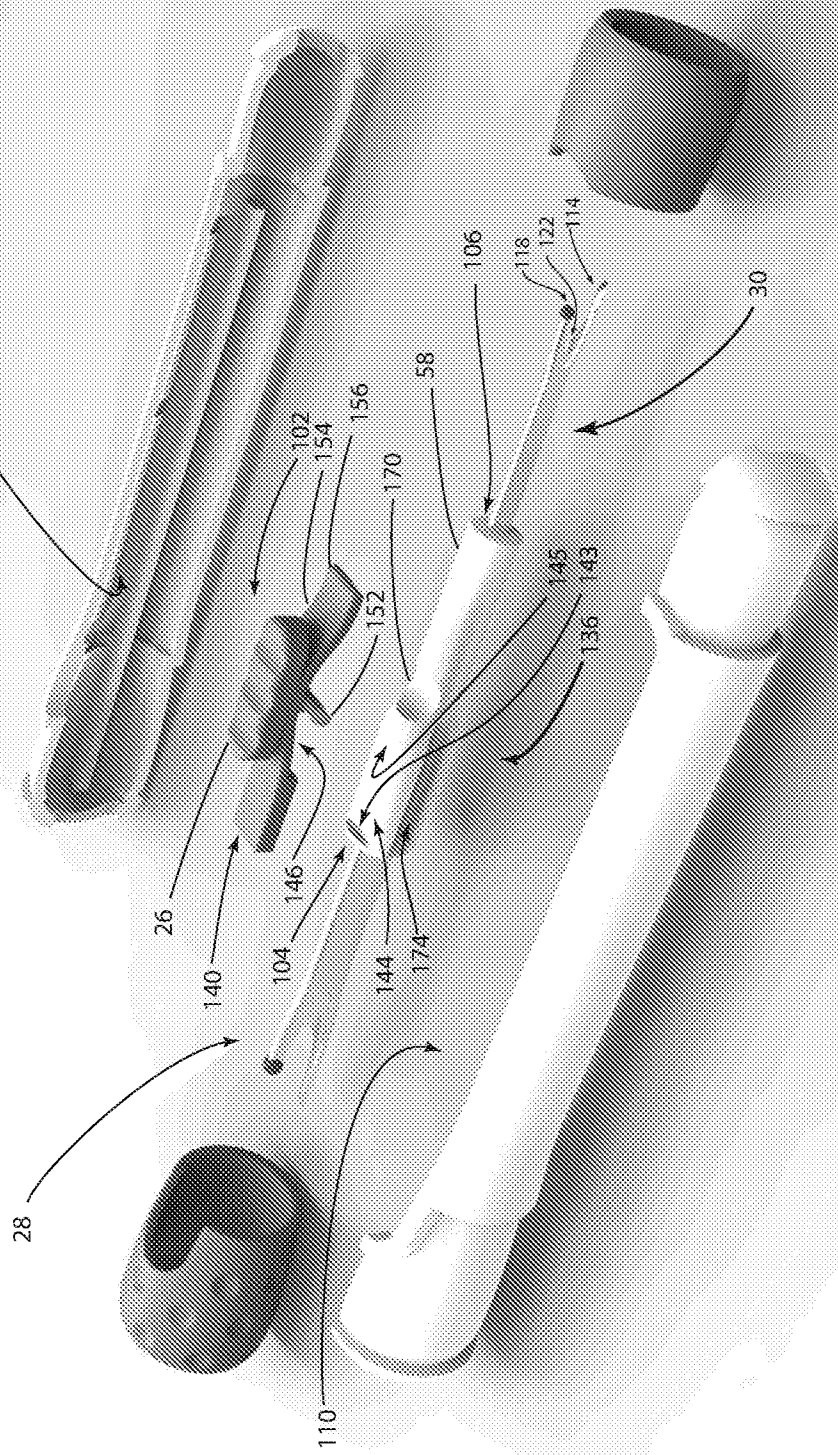
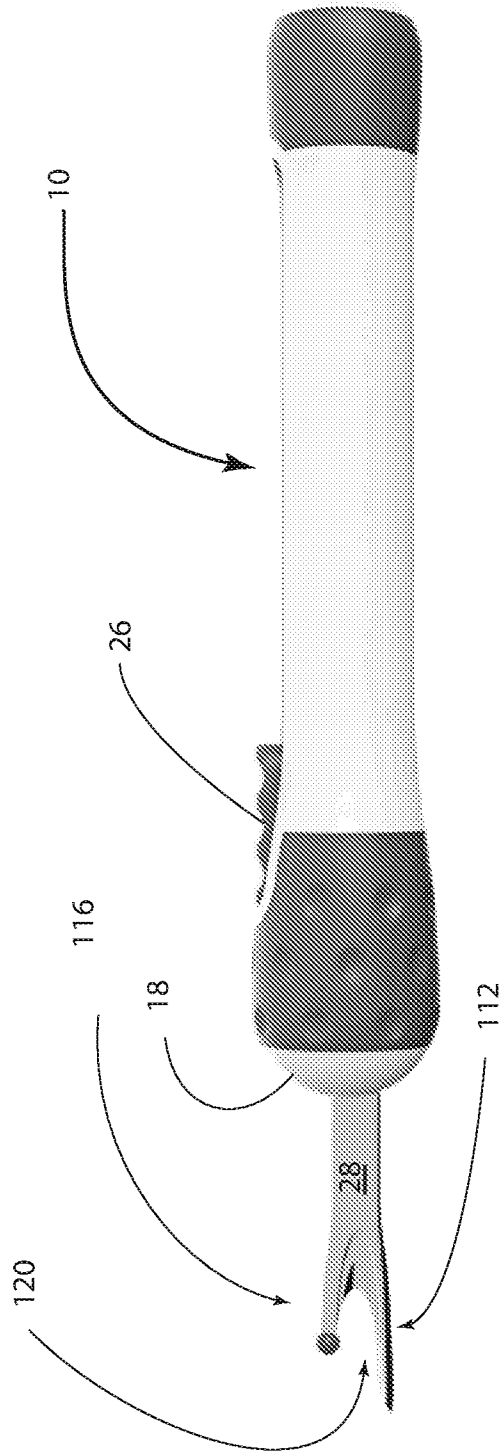


Figure 9



Figure 10



INTERNATIONAL SEARCH REPORT

International application No.

PCT/US2016/056112

A. CLASSIFICATION OF SUBJECT MATTER IPC(8) - A41H 31/00; B26B 1/08; B26B 5/00; B26B 29/02 (2016.01) CPC - A41H 31/005; B26B 1/08; B26B 5/001; B26B 5/003; B26B 5/006 (2016.11) According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) IPC - A41H 31/00; B26B 1/08; B26B 5/00; B26B 29/02 CPC - A41H 31/005; B26B 1/08; B26B 5/001; B26B 5/003; B26B 5/006; Y10S 30/08 Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched USPC - 26/11; 26/27; 30/125; 30/152; 30/162; 30/287; 30/294 ECLA - A41H 31/00B; B26B 5/00A (keyword delimited) Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) Orbit, Google Patents, Google Scholar, Google, YouTube. Search terms used: seam ripper, dual, spring, unitary, injection mole, rail, overmold		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5,093,994 A (KARAS) 10 March 1992 (10.03.1992) entire document	1-20
Y	US 8,713,766 B2 (WIMAN) 06 May 2014 (06.05.2014) entire document	1-20
Y	US 8,701,293 B2 (SULLIVAN) 22 April 2014 (22.04.2014) entire document	1-14
Y	US 2008/0235954 A1 (RADLE) 02 October 2008 (02.10.2008) entire document	2, 3, 6, 7, 9, 10, 13, 14, 16, 17, 19, 20
Y	US 7,322,110 B2 (HERNANDEZ et al) 29 January 2008 (29.01.2008) entire document	3-7, 10-14, 17-20
A	US 5,230,152 A (KENNEDY) 27 July 1993 (27.07.1993) entire document	1-20
A	US 3,863,339 A (REANEY et al) 04 February 1975 (04.02.1975) entire document	1-20
<input type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/> See patent family annex.		
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Date of the actual completion of the international search 23 November 2016		Date of mailing of the international search report 20 DEC 2016
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, VA 22313-1450 Facsimile No. 571-273-8300		Authorized officer Blaine R. Copenheaver PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774