(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
15 April 2004 (15.04.2004)

PCT

(10) International Publication Number
WO 2004/030546 A2

(51) International Patent Classification[7]: A61B 17/02, 1/32

(21) International Application Number:
PCT/US2003/031724

(22) International Filing Date: 2 October 2003 (02.10.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/415,135 2 October 2002 (02.10.2002) US

(71) Applicant *(for all designated States except US)*: **SYNTHES (U.S.A)** [US/US]; 1690 Russell Road, Paoli, PA 19301 (US).

(72) Inventor; and

(75) Inventor/Applicant *(for US only)*: **HAMEL, Ross, J.** [US/US]; 1521 Tanglewood Drive, West Chester, PA 19380 (US).

(74) Agents: **POISSANT, Brian, M.** et al.; Pennie & Edmonds, LLP, 1155 Avenue of the Americas, New York, NY 10036 (US).

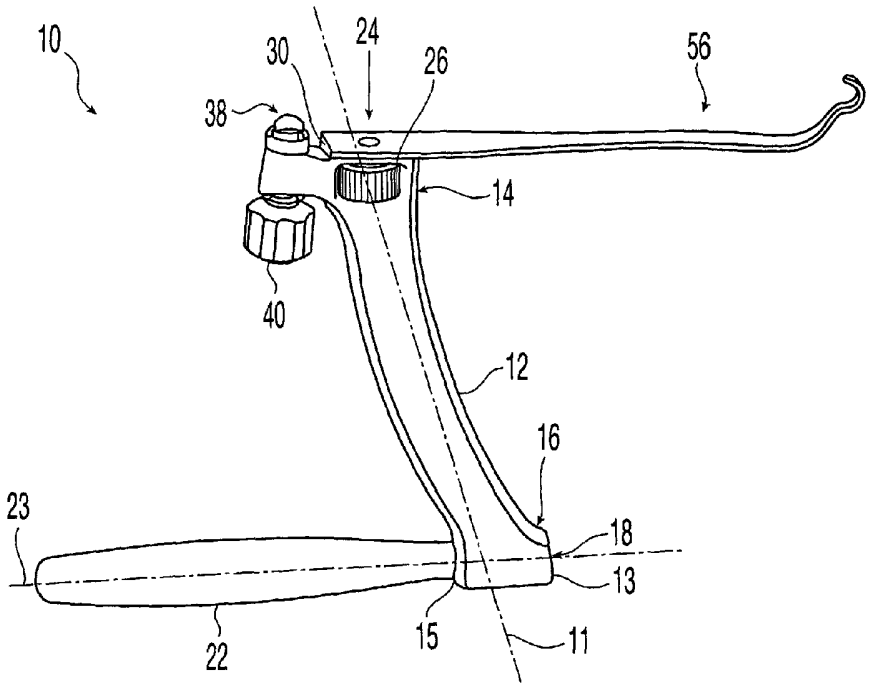
(81) Designated States *(national)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States *(regional)*: ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:
— *without international search report and to be republished upon receipt of that report*

[Continued on next page]

(54) Title: RETRACTOR WITH INTERCHANGEABLE RETRACTOR BLADES



(57) Abstract: The invention relates to a retractor for use during a medical procedure to provide a clear view of the field of the procedure. The retractor preferably comprises a handle having first and second coupling mechanisms, one of which may be used interchangeably with different surgical retractor blades, and the other which may be used to coupled a secondary surgical instrument, such as a light pipe or endoscope, to the handle.

WO 2004/030546 A2

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

RETRACTOR WITH INTERCHANGEABLE RETRACTOR BLADES

Field of the Invention

This invention relates to medical instruments and, more particularly, to retractors with interchangeable retractor blades, including surgical retractors and the like.

Background of the Invention

During a surgical procedure, it typically is a goal to minimize the trauma to the patient and to minimize the damage to the tissue surrounding the surgical site as much as possible. To achieve this goal, surgeons try to keep incisions appropriately sized when performing the surgical procedures. However, it is also necessary that the surgeon performing the surgery still have a clear view of the operating field. Accordingly, retractors are used during surgery to open the incision and provide a clear view of the field of the operation.

Generally, most retractors consist of a handle connected to a blade. The blade can be of a variety of constructions including, for example, a paddle-like design, a curved hook design, or a finger-like configuration. The type of retractor blade used depends on a number of factors including, the size and type of incision, the size of the patient, and the type of surgery to be performed. Oftentimes, a surgeon is required to change the type of retractor being used, during the course of an operation.

Also during surgery, a very clear view of the operating site must be provided. To accomplish this, lights may be disposed on the end of long cables to provide intense illumination of the surgical site. Alternatively, it may be necessary to have an enlarged view of the surgical site on a monitor. To accomplish this, an endoscope-type instrument which includes fiber-optics and a lens may be used to record and display the surgical site on a monitor. However, since the volume of the area being operated may be small, the inclusion of a light cable or endoscope-type instrument in the patient creates problems of interference with the surgical procedure.

Thus, exists a need for a surgical retractor that allows for the interchangeability of the retractor blades with relative ease, while providing reliability and simplicity in design. Also, there is a need for a retractor which provides for the adjustable inclusion of a light cable or endoscope-type instrument, while avoiding interference with the surgical procedure.

Summary of the Invention

The invention relates to a retractor, preferably for use in a surgical procedure, having, in an exemplary embodiment, a primary handle having a distal end and a proximal end. The surgical retractor may also have a first coupling mechanism located at the proximal end of the primary handle, and in addition may also have a second coupling mechanism located at the proximal end of the primary handle. Located at the distal end of the primary handle, in an exemplary embodiment, may be auxiliary handle. The auxiliary handle provides an additional surface for gripping the retractor and aids in further support of the retractor. The distal end of the primary handle may include a bore having a threaded portion which is configured to couple the auxiliary handle.

The first coupling mechanism may be designed to secure interchangeable retractor blades to the handle and the second coupling mechanism may be designed to secure a secondary surgical instrument, such as a light pipe or endoscope-type instrument, to the primary handle at a user desired orientation.

In an exemplary embodiment, the first coupling mechanism is comprised of a rotatable knob disposed within the handle. The knob has a bore which extends axially from approximately the center of the knob to the upper surface of the knob. The bore, preferably threaded, is designed to receive a connector located on the bottom of a retractor blade. In an exemplary embodiment, a shoulder may be located on the upper surface of the primary handle to aid in coupling the retractor blade to the primary handle. The shoulder located on the upper surface of the primary handle abuts the back end of the retractor blade preventing the retractor blade from rotating with respect to the handle, once the blade is coupled to the handle. In an exemplary embodiment, the shoulder may have a protrusion for engaging a notch that may be present at the back end of the retractor blade.

In an exemplary embodiment, the second coupling mechanism is comprised of a knob, an inner sleeve, and a clamping member. The knob has a bore which extends axially from approximately the center of the knob to the upper surface of the knob. The inner sleeve surrounds a portion of the clamping member and has an upper surface configured and dimensioned to operatively interface with the clamping member. In an exemplary embodiment, the clamping member has, near its lower surface, a shaft preferably designed to engage the bore in the knob and has a through-hole near its upper surface for receiving a secondary surgical instrument. In an exemplary embodiment, the knob, the through-hole located in the clamping member, and the upper surface of the inner sleeve operatively interface to clamp the secondary surgical instrument in place.

In an exemplary embodiment, the retractor blade may be substantially straight along its longitudinal length from the distal end to near the proximal end, but may include a transverse concavity. In an exemplary embodiment, the proximal end of the retractor blade may include a notch for engagement with the protrusion located on the retractor handle shoulder. In another exemplary embodiment, the distal end of the retractor blade may be straight. Located adjacent to or at the proximal end of the blade, is a connector which extends downwardly from the blade. The distal end of the blade may have a first curved portion. At the end of the first curved portion, near the tip of the distal end of the blade, may be a second curved portion which has a generally hook-like shape. In yet another exemplary embodiment, the blade may be straight near the distal end. In a further exemplary embodiment, located near the distal end of the blade is an aperture extending from the upper surface of the blade to the lower surface of the blade.

Brief Description of the Drawings

To facilitate an understanding of and for the purpose of illustrating the present invention, exemplary and preferred features and embodiments are disclosed in the accompanying drawings, it being understood, however, that the invention is not limited to the precise arrangements and instrumentalities shown, and wherein similar reference characters denote similar elements throughout the several views, and wherein:

FIG. 1 is a perspective view of a first embodiment of a retractor according to the present invention;

FIG. 2 is a side view of the handle of the retractor of FIG. 1;

FIG. 3 is a cross-sectional view of a portion of the handle of FIG. 2 taken along line 3-3;

FIG. 4 is a cross-sectional view of a portion of the handle of FIG. 2 taken along line 4-4;

FIG. 5 is a side view of a first embodiment of an interchangeable retractor blade according to the present invention;

FIG. 6 is a top view of the interchangeable retractor blade of FIG. 5;

FIG. 7 is a top view of a second embodiment of an interchangeable retractor blade according to the present invention; and

FIG. 8 is a perspective view of a third embodiment of an interchangeable retractor blade according to the present invention.

Detailed Description of the Preferred Embodiments

Referring to the accompanying drawings, preferred embodiments and features of the surgical retractor will be described in detail. It is to be noted however that these descriptions of specific embodiments and features are merely illustrative. It is contemplated that one or more features or elements of the various embodiments may be combined or used singularly, and that modifications of the various embodiments, as well as other embodiments are contemplated and will be apparent to those persons skilled in the art.

Referring initially to FIG. 1, a perspective view of an exemplary first embodiment of a retractor 10 is shown. Retractor 10, preferably, has a primary handle 12 having a longitudinal axis 11, a proximal end 14 and a distal end 16. As shown in FIGS. 1 and 2, handle 12, preferably, is generally arcuate with a generally rectangular cross-sectional shape and is designed to comfortably interface with the operator's fingers and hands. Although handle 12 is shown as being arcuate with a generally rectangular cross-sectional shape, handle 12 may be any shape, preferably a shape that conforms ergonomically and comfortably with an operator's fingers and hands. For example, handle 12 may be rectangular, cylindrical, arcuate with a cylindrical shape, octagonal, arcuate with an octagonal shape, hexagonal, or arcuate with a hexagonal shape. Handle 12 may also be straight instead of the curved, arcuate shape as shown.

In an exemplary embodiment, distal end 16 of primary handle 12, handle 12 may include a bore 18 (not shown). Bore 18 preferably extends transverse to the longitudinal axis of handle 12 and may extend partially through handle 12, from front end 13 to generally the center of handle 12 or from back end 15 to generally the center of handle 12. In another exemplary embodiment, bore 18 may extend completely through handle 12, from front end 13 to back end 15. Bore 18 preferably includes threading for receiving a threaded shaft 20 (not shown) of an auxiliary handle 22. Depending on which side of handle 12 bore 18 is located, or if bore 18 is a through-bore, bore 18 will allow coupling of auxiliary handle 22 to handle 12 at either the front end 13 or the back end 15 of handle 12. Accordingly, depending on the holding surface required and/or the position of the operator, auxiliary handle 22 may be coupled to handle 12 extending in a direction as shown in FIG. 1, or auxiliary handle 22 may be coupled to handle 12 extending in a direction opposite to the direction shown in FIG. 1. It will be appreciated that auxiliary handle 22, in the embodiment, shown may be releasably coupled and uncoupled to handle 12, and further that auxiliary handle 22 may be fixedly coupled to handle 12.

In addition, although auxiliary handle 22 is generally oriented so that longitudinal axis 23 is generally at an angle of about 93° to about 105° with respect to

longitudinal axis 11 of handle 12, it can be appreciated that auxiliary handle 22 can be oriented so that it is generally perpendicular to handle 12.

Turning to FIG. 1, auxiliary handle 22 aids in the further support of retractor 10 by providing the operator an additional surface for gripping retractor 10. Auxiliary handle 22 preferably has a generally cylindrical shape with a larger medial diameter and smaller lateral diameters. This shape provides for comfortable gripping of handle 22. Although handle 22 is shown as generally cylindrical, handle 12 may be any shape, preferably a shape that conforms ergonomically and comfortably with an operator's fingers and hands. For example, handle 12 may be rectangular, cylindrical, octagonal, or hexagonal. Preferably located at a lateral end of auxiliary handle 22, threaded shaft 20 may be integral with auxiliary handle 22 or may be coupled to auxiliary handle 22. Alternative to threaded engagement, other methods of coupling auxiliary handle 22 to handle 12 have been contemplated. For example, handle 22 may be coupled to handle 12 via an interference fit or similar coupling.

Located near proximal end 14 of handle 12 is a coupling mechanism 24 designed to secure interchangeable retractor blades to handle 12. As shown in FIG. 3, in an exemplary embodiment, coupling 24 comprises a knob 26 having an axial bore 28. Knob 26 is preferably rotatably coupled to handle 12 via axle 32. In an exemplary embodiment, axial bore 28 extends from approximately the center of knob 26 to the upper surface of knob 26 where it axially aligns with opening 34 in handle 12. Opening 34 extends from the cavity portion 35 of handle 12 where knob 26 is disposed to an upper surface 36 on handle 12. Axial bore 28 is preferably threaded. Preferably, knob 26 may be knurled or have some other form of texturing on its outside surface to enhance grip. In an exemplary embodiment, a shoulder 30 may also be included on handle 12 to aid in the coupling of an interchangeable retractor blade to handle 12.

Referring to FIGS. 5 and 6, an exemplary interchangeable retractor blade 56 is shown. In an exemplary embodiment, the length of blade 56 may range from about 75 mm to about 150 mm and, preferably, range from about 95 mm to about 125 mm and the width of blade 56 may range from about 8 mm to about 25 mm and, preferably, range from about 10 mm to about 20 mm.

Blade 56 has a longitudinal axis 58, a proximal end 60, and a distal end 62. Located near proximal end 60, on the underside of blade 56, is a shaft 64. Shaft 64 is preferably threaded and is designed to engage axial bore 28 of knob 26 via opening 34 in upper surface 36 of handle 12. In an exemplary embodiment, the back end 63 of blade 56 may be straight to abut shoulder 30. In another exemplary embodiment, blade 56 may

include a notch 65 (shown in FIG. 7) for engagement with a protrusion located on handle 12, as discussed earlier.

The back end 63 cooperates with shoulder 30 to position blade 56 on handle 12. The back end 63 of blade 12 and shoulder 30 on handle 12 may also cooperate to prevent blade 56 from rotating or pivoting on handle 12. Notch 65 on blade 56 and the protrusion on handle 12 also cooperate to position blade 56 on handle 12, and may also prevent blade 56 from rotating or pivoting on handle 12.

The proximal end 60 of blade 56 extends generally perpendicular to proximal end 14 of primary handle 12. The auxiliary handle 22 is preferably arranged so that it extends along an axis 23 that is approximately parallel to the longitudinal axis 58 of blade 56.

Referring to FIGS. 1 and 2, in an exemplary embodiment, located near proximal end 14 of handle 12 is another coupling mechanism 38 designed to secure a secondary surgical instrument, such as a light pipe or endoscope-type instrument, to handle 12. Coupling mechanism 38 and coupling mechanism 24 preferably operate independently of each other. Accordingly, coupling mechanism 38 may be used with a secondary surgical instrument without using coupling mechanism 24 and coupling mechanism 24 may be used with an interchangeable retractor blade without using coupling mechanism 38.

As shown in FIG. 4, in an exemplary embodiment, coupling mechanism 38 extends distally beyond the back end 63 of retractor blade 56. Coupling mechanism 38 comprises knob 40, an inner sleeve 42, and a clamping member 44. Knob 40 includes an axial bore 50 which preferably is threaded and extends from approximately the center of knob 40 to the upper surface of knob 40. Preferably, knob 40 may be knurled or have some other form of texturing on its outside surface to enhance grip. Inner sleeve 42 preferably surrounds a portion of clamping member 44 and has an upper surface 46 which is designed to operatively interface with clamping member 44 to lock a secondary surgical instrument in place, as discussed below. Clamping member 44 preferably includes a through-hole 48 located near its upper end for receiving a secondary surgical instrument and a shaft 52 extending downwardly from its lower end. Shaft 52 is preferably threaded and threadably engages axial bore 50 in knob 40.

As can be seen in FIGS. 1 and 4, handle 12 surrounds a portion of knob 40 and a portion of inner sleeve 42, which, in turn, surrounds a portion of clamping member 44. Preferably, sleeve 42 and clamping member 44 can rotate with respect to handle 12, but remain coupled to handle 12. In an exemplary embodiment sleeve 42, and clamping member 44 remain coupled to handle 12 via a pin 54, however, other methods of coupling

may be used, such as, for example, snap-fitting. In another exemplary embodiment, handle 12 surrounds a portion of knob 40, a portion of inner sleeve 42, and a portion of clamping member 44, however, handle 12 surrounds these elements via an elongated opening. The elongated opening allows rotation of knob 40, sleeve 42 and clamping member 44 with respect to handle 12 and allows translation of knob 40, sleeve 42 and clamping member 44 with respect to handle 12.

As mentioned earlier, coupling mechanism 38 is designed to secure a secondary surgical instrument, such as a light pipe or endoscope-type instrument, to handle 12. In an exemplary manner of use, the operator of the retractor selects the desired surgical instrument and the instrument is introduced into through-hole 48 in clamping member 44 in a direction generally transverse to the longitudinal axis of handle 12. Clamping member 44 may be rotated to adjust the orientation of the instrument. In the other exemplary embodiment, clamping member 44 may be rotated or translated to further adjust the orientation of the instrument. Once the desired orientation of the instrument is achieved, knob 40 is rotated causing the threads in axial bore 52 to engage the threads on threaded shaft 52 of clamping member 44 to advance the threaded shaft 50 of clamping member 44 into axial bore 50. As threaded shaft 52 advances into axial bore 50, clamping member 44 moves downwardly with respect to inner sleeve 42. Since the surgical instrument passes through through-hole 48, as clamping member 44 moves downwardly with respect to inner sleeve 42, the surgical instrument becomes locked between the upper surface of through-hole 48 and upper surface 46 of inner sleeve 42. Further rotation of knob 40 results in the locking of inner sleeve 42 and clamping member 44 with respect to handle 12 since clamping member 44 moves downwardly with inner sleeve 42 until clamping member 44 abuts inner sleeve 42 which in turn abuts handle 12.

Retractor blade 56 may be configured in many different sizes and shapes. In a first exemplary embodiment shown in FIGS. 5 and 6, blade 56 has a first curved portion 66 having a distal end 68 and a proximal end 70 located at the distal end 62 of blade 56. Curved portion 66 preferably extends at an angle θ from longitudinal axis 58. In an exemplary embodiment, θ is between about 90° and about 150° and, preferably, is between about 110° and about 125°. Located near distal end 68 of curved portion 66 is a second curved portion 72. In an exemplary embodiment, second curved portion 72 has a generally hook-like shape that is semi-circular in shape with a radius of between about 1.5 mm to about 4 mm. Although shown as having a hook-shape, other shapes for curved portion 68 have also been contemplated, including, for example a truncated "C"-shape, and a "L" shape.

Blade 56 is preferably generally straight along longitudinal axis 58 from proximal end 60 to near distal end 62. As can best be seen in FIG. 8, in an exemplary embodiment, blade 56 may have a slight transverse concavity, for aiding in retraction, along its longitudinal length. The radius of the concavity of blade 56 preferably ranges from about 10 mm to about 20 mm radius. Further, in an exemplary embodiment, the width of blade 56 may vary along the longitudinal length of blade 56.

Referring to FIG. 7, an alternate exemplary embodiment of an interchangeable retractor blade 74 is shown. In general, most of the structure of blade 74 is similar or comparable to the structure of blade 56. Accordingly, the equivalent structures of blade 74 have been numbered the same as blade 56 and discussion of the similar components and features is not believed necessary. In this exemplary embodiment, an aperture 76 which extends through blade 74 from the upper surface to the lower surface is included near distal end 62 of blade 74. Aperture 76 preferably is configured and dimensioned to allow an operator to view or access subject matter located behind blade 74.

Turning now to FIG. 8, another exemplary embodiment of an interchangeable blade 78 is shown. In general, most of the structure of blade 78 is similar or comparable to the structure of blade 56. Accordingly, the equivalent structures of blade 78 have been numbered the same as blade 56 and discussion of the similar components and features is not believed necessary. In this particular embodiment, at distal end 62 of blade 78, instead of having first and second curved portions 66 and 72, blade 78 only has a first curved portion 66.

Referring back to FIGS. 1-3, as mentioned earlier, coupling mechanism 24 is designed to secure interchangeable retractor blade 56, 74, 78 to handle 12. In an exemplary manner of use, the operator of the retractor 10 selects a desired interchangeable retractor blade 56, 74, 78. The shaft 64 of the selected retractor blade 56, 74, 78 is introduced to axial bore 28 through opening 34 located on the upper surface 36 of handle 12. Knob 28 is rotated, via its edges, which extend radially outwardly from the sides of handle 12, causing the threads in axial bore 28 to engage the threads on the threaded shaft of retractor blade 56, 74, 78, to advance the threaded shaft of retractor blade 56, 74, 78 into axial bore 28. Preferably, knob 28 is rotated until a lower surface of the retractor blade 56, 74, 78 is flush with upper surface 36 of handle 12. In an exemplary embodiment, shoulder 30, located on upper surface 36 of handle 12, serves to abut the end of the retractor blade 56, 74, 78 preventing the blade from rotating with respect to handle 12 once it is coupled to handle 12. In another exemplary embodiment, shoulder 30 may have a protrusion (not shown) designed to engage a notch located in the retractor blade 56, 74, 78.

Although, in an exemplary embodiment, retractor blade 56, 74, 78 is threadably engaged to handle 12, other methods of coupling are contemplated. For example, retractor blade 56 can be coupled to handle 12 via an interference fit or a snap-fit.

Retractor blades 56, 74, 78 may be used in a variety of surgical procedures. One exemplary use of retractor 10 with retractor blade 56 is a maxillofacial procedure involving the mandible. Blade 56, in an exemplary embodiment, may include second curved portion 68 which is shaped to engage the ramus and condylar regions of the lower mandible.

As discussed earlier, in an exemplary embodiment, coupling mechanism 24 and coupling mechanism 38 are independently operable. Thus, primary handle 12 may include coupling mechanism 24, but not coupling mechanism 38. However, in an exemplary use, both coupling mechanisms may be used. Accordingly, in an exemplary use, an operator will use coupling mechanism 24 to couple retractor blade 56, 74, 78 to handle 12 and will use coupling mechanism 38 to couple a secondary surgical instrument to handle 12. Coupling mechanisms 24, 38 are configured and designed on primary handle 12 to permit the retractor blade and the secondary surgical instrument, *i.e.* a light cable or endoscope-type instrument, to interact in a manner such that the retractor blade and the secondary surgical instruments can perform their respective functions while avoiding interference with each other and the surgical procedure. In an exemplary manner of use, an operator selects the desired retractor blade 56, 74, 78 and couples blade 56, 74, 78 to handle 12 via coupling mechanism 24. The operator then selects the desired secondary surgical instrument, such as an endoscope, and couples the endoscope to handle 12 via coupling mechanism 38. Coupling mechanism 38 allows the orientation of the secondary surgical instrument to be adjusted. Accordingly, the operator will adjust the secondary surgical instrument to the desired orientation before locking it in place via coupling mechanism 38. In an exemplary use, retractor blade 56, 74, 78 will be situated generally parallel to the secondary surgical instrument, thereby preventing interference between the retractor blade and the secondary surgical instrument and avoiding interference with the surgical procedure.

The interchangeable retractor blades and handle may be packaged and sold as a kit which may include one or more retractor blades, one or more primary handles 12, one or more auxiliary handles 22, and potentially other accessories.

While various descriptions of the present invention are described above, it should be understood that the various features can be used singly or in combination thereof. Therefore, this invention is not to be limited to the specific preferred embodiments depicted herein. Further, it should be understood that variations and modifications within the spirit

and scope of the invention may occur to those skilled in the art to which the invention pertains. For example, the interchangeable blades of the surgical retractor disclosed herein may not include any curvature at the distal portion thereof, and thus be a straight blade. Accordingly, all expedient modifications readily attainable by one versed in the art from the disclosure set forth herein that are within the scope and spirit of the present invention are to be included as further embodiments of the present invention. The scope of the present invention is accordingly defined as set forth in the appended claims.

The Claims

What is claimed is:

1. A surgical retractor, comprising:
a handle having a longitudinal axis and proximal and distal ends;
a first coupling mechanism adjacent the proximal end of the handle; and
a blade member having a proximal end and a distal end,
wherein the blade member comprises a coupling element, and the coupling element is configured and dimensioned to connect with the first coupling mechanism.

2. The retractor of claim 1, wherein the first coupling mechanism comprises a knob having a bore transverse to the longitudinal axis.

3. The retractor of claim 2, wherein the knob is coupled to the handle by a pin, and at least a part of the pin contacts the bore.

4. The retractor of claim 3, wherein the bore forms an axial bore, the pin forms an axle for the knob, and the knob is rotatable about the axle.

5. The retractor of claim 4, wherein the bore extends from a first outer surface to a second outer surface of the knob.

6. The retractor of claim 2, wherein the bore is configured and dimensioned to engage the coupling element of the blade member.

7. The retractor of claim 6, wherein the coupling element comprises a shaft.

8. The retractor of claim 7, wherein the shaft and the bore comprise mating threads for releasably advancing the shaft within the bore.

9. The retractor of claim 8, wherein the handle comprises an opening, and the opening is configured and dimensioned to receive the knob.

10. The retractor of claim 1, wherein the handle comprises a surface for supporting the blade member.

11. The retractor of claim 10, wherein the surface comprises a curved portion.

12. The retractor of claim 11, wherein the curved portion is concave.

13. The retractor of claim 10, wherein the surface has a contour that is configured and dimensioned to generally correspond with a portion of the blade member.

14. The retractor of claim 1, wherein the blade member has a contour that is configured and dimensioned to generally correspond with a portion of the handle.

15. The retractor of claim 1, wherein the blade member has a longitudinal axis and a contour that defines a transverse concavity along the longitudinal axis of the blade member.

16. The retractor of claim 1, wherein the blade member comprises an aperture adjacent the distal end of the blade.

17. The retractor of claim 16, wherein the aperture is configured and dimensioned to allow a surgical tool to pass through the aperture.

18. The retractor of claim 17, wherein the surgical tool is a trochar.

19. The retractor of claim 17, wherein the surgical tool is a cannula.

20. The retractor of claim 17, wherein the surgical tool is an implant diver.

21. The retractor of claim 19, wherein the implant diver is a screw driver.

22. The retractor of claim 17, wherein the surgical tool is a drill.

23. The retractor of claim 17, wherein the surgical tool is a syringe.

24. The retractor of claim 16, wherein the aperture is configured and dimensioned to allow an orthopedic implant to pass through the aperture.

25. The retractor of claim 24, wherein the implant is a fastener.

26. The retractor of claim 24, wherein the implant is a screw.

27. The retractor of claim 24, wherein the implant is a bone void filler material.

28. The retractor of claim 1, wherein the distal end of the blade member comprises a structure for stabilizing the retractor blade against bone.

29. The retractor of claim 1, wherein the distal end of the blade member comprises a hook-shape.

30. The retractor of claim 29, wherein the hook-shape comprises a "C"-shape.

31. The retractor of claim 29, wherein the hook-shape comprises a "L"-shape.

32. The retractor of claim 1, further comprising a second coupling mechanism located on the handle for coupling a secondary surgical instrument to the handle.

33. The retractor of claim 32, wherein the secondary surgical instrument comprises an endoscope.

34. The retractor of claim 32, wherein the endoscope is positioned to provide a view of the distal end of the retractor blade.

35. The retractor of claim 32, further comprising an endoscope secured to the handle and positioned to provide a stabilized view of the distal end of the retractor blade.

36. The retractor of claim 1, wherein the second coupling mechanism comprises a coupling member.

37. The retractor of claim 36, wherein the coupling member is located near the proximal end of the handle.

38. The retractor of claim 36, wherein the coupling member is configured and dimension to be received within the handle.

39. The retractor of claim 38, wherein the coupling member is telescopically received within the handle.

40. The retractor of claim 38, wherein the coupling member does not contact the handle.

41. The retractor of claim 40, wherein the coupling member contacts a secondary member.

42. The retractor of claim 41, wherein the secondary member contacts the handle.

43. The retractor of claim 41, wherein the coupling member and the secondary member are operatively associated to fixate the secondary surgical instrument with respect to the handle.

44. The retractor of claim 43, wherein the coupling member is configured and dimensioned to translate with respect to the secondary member.

45. The retractor of claim 44, wherein the coupling member comprises a recess having an inner surface adapted to receive a portion of the secondary surgical instrument.

46. The retractor of claim 45, wherein the recess comprises a surface adapted to secure the portion of the secondary surgical instrument against the coupling member.

47. The retractor of claim 36, wherein the second coupling mechanism comprises a knob for controlling movement of the coupling mechanism with respect to the handle.

48. The retractor of claim 47, wherein the knob is connected to the handle.

49. The retractor of claim 48, wherein the knob comprises a flange member for securing the knob to the handle.

50. The retractor of claim 47, wherein the knob has a bore, and the bore is configured and dimensioned to connect with the coupling member.

51. The retractor of claim 50, wherein the bore and the coupling member are operatively associated to provide controlled relative movement between the knob and the coupling member.

52. The retractor of claim 51, wherein the bore and the coupling member have mating threads.

53. A retractor kit comprising:

one or more primary handles having a proximal end and a distal end;

one or more blade members each having a proximal end, a distal end, and a shaft portion proximate the proximal end of the blade;

each primary handle having a first coupling mechanism located proximate the proximal end of the handle for coupling the blade to the handle, the coupling mechanism designed and configured to releasably couple with the shaft portion of the blade; and

one or more auxiliary handles, each auxiliary handle designed and configured to couple proximate the distal end of at least one of the primary handles.

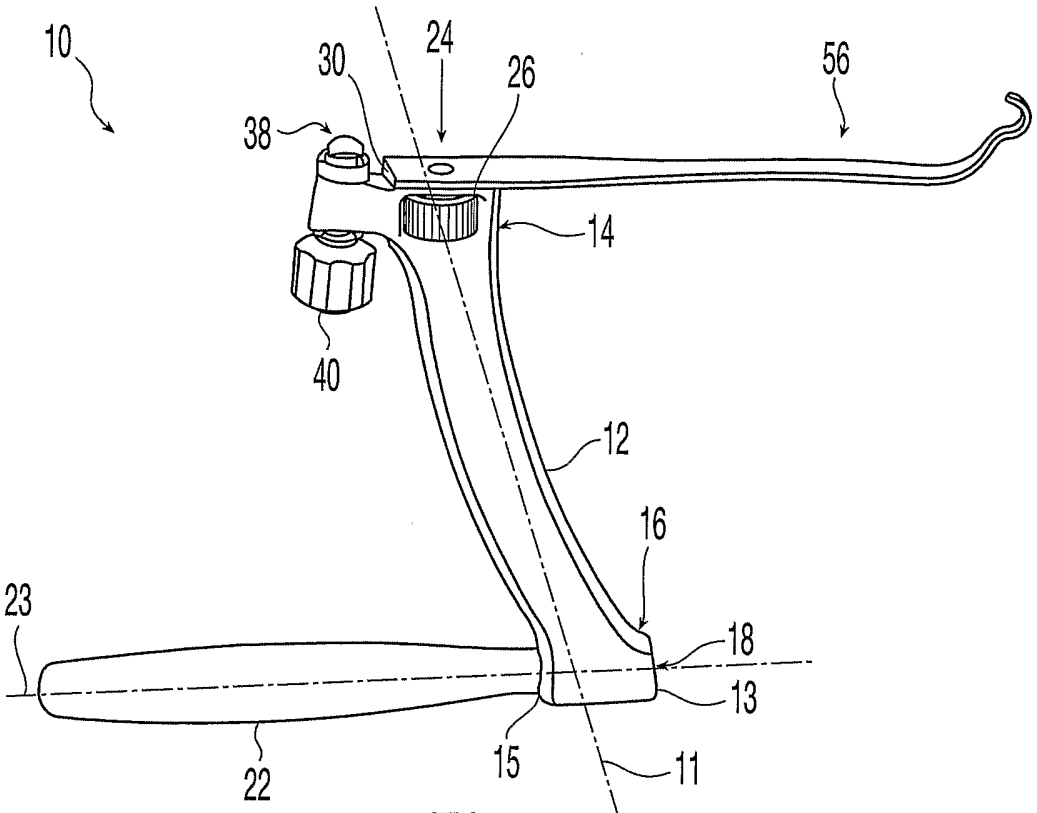

10
30
24
26
56
38
14
40
12
16
23
18
13
22
15
11

Fig. 1

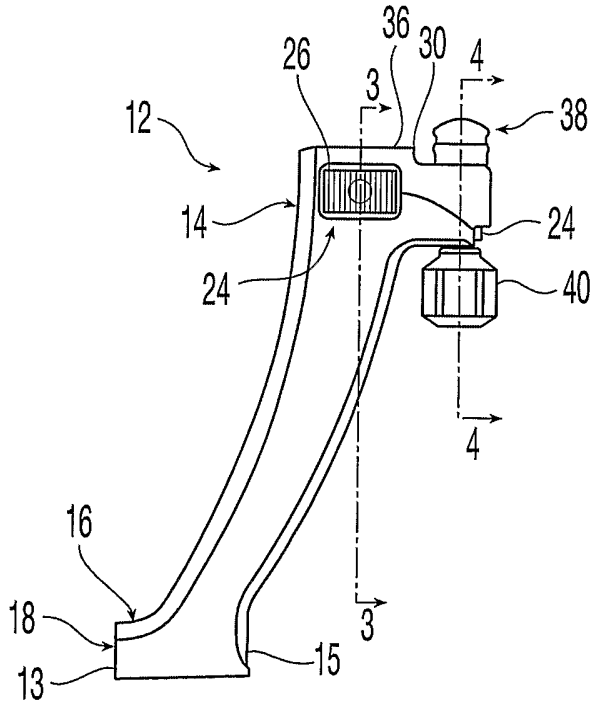

36
30
4
26
3
12
38
14
24
24
40
4
16
18
3
13
15

Fig. 2

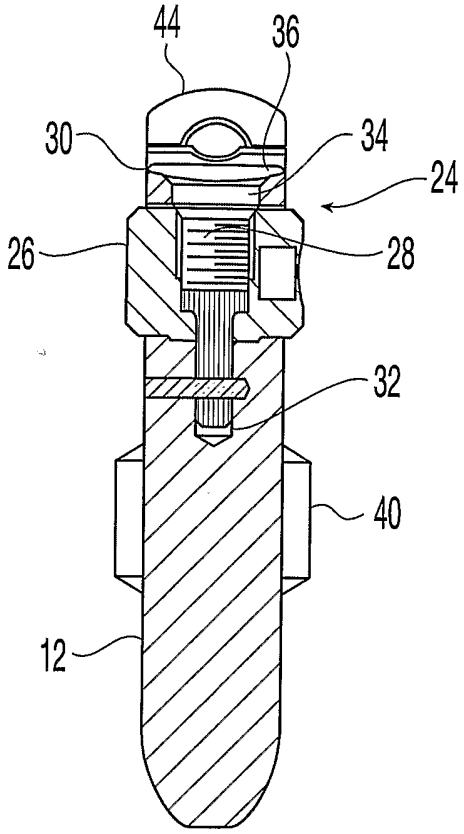


Fig. 3

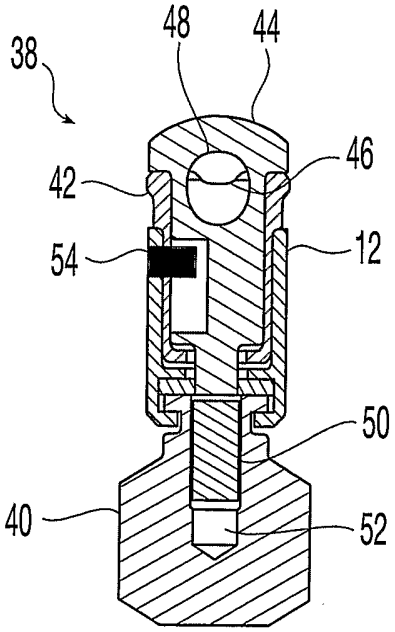


Fig. 4

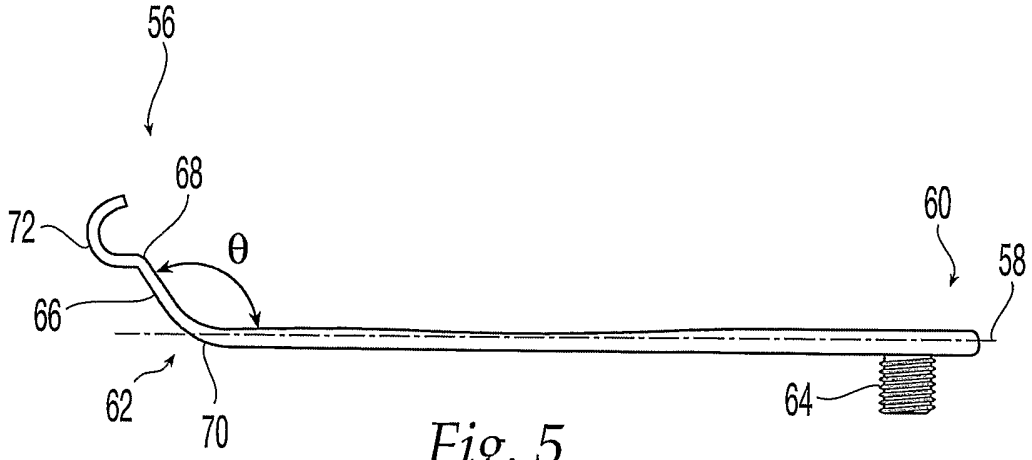


Fig. 5

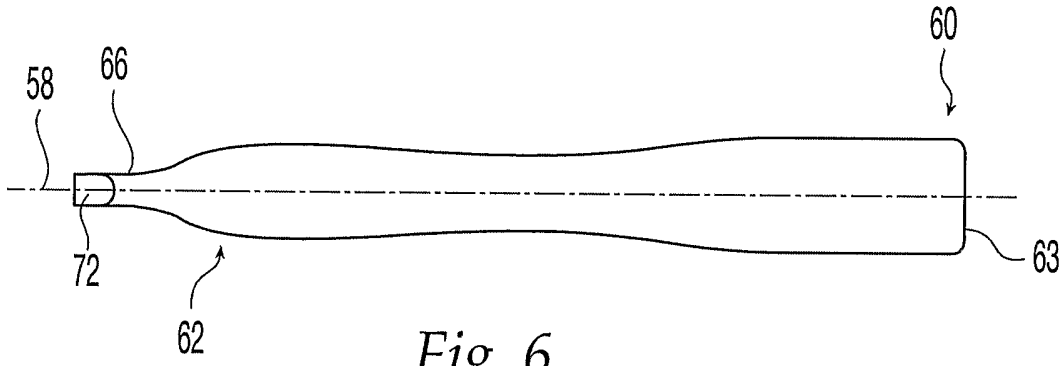


Fig. 6

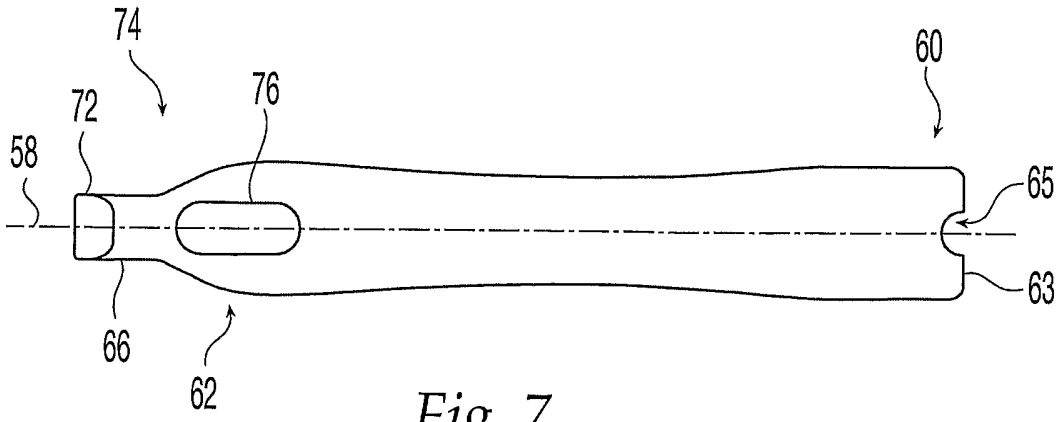


Fig. 7

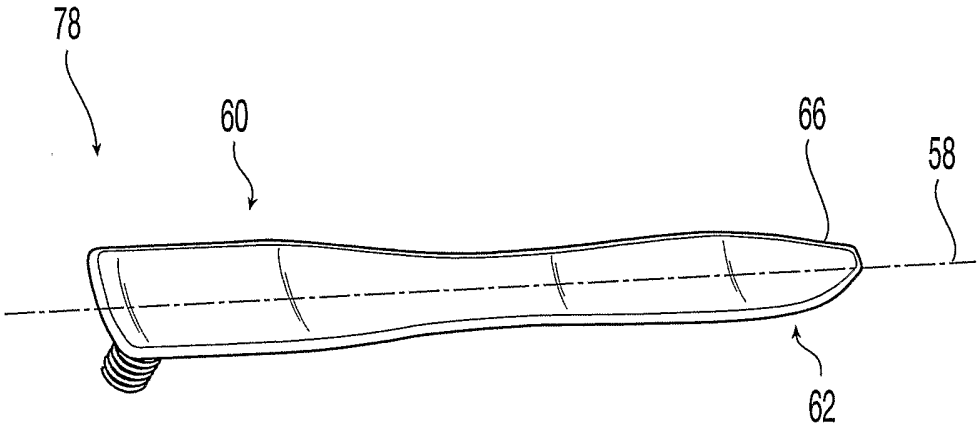


Fig. 8