US 20180363417A1

(19) **United States**
(12) **Patent Application Publication**
Davis et al.
(10) **Pub. No.: US 2018/0363417 A1**
(43) **Pub. Date: Dec. 20, 2018**

(54) **RECLOSABLE MULTI-ZONE ISOLATION USING A PULL-FORCE LOCK MECHANISM**

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(21) Appl. No.: **15/524,937**

(22) PCT Filed: **Mar. 7, 2016**

(86) PCT No.: **PCT/US2016/021200**

§ 371 (c)(1),
(2) Date: **May 5, 2017**

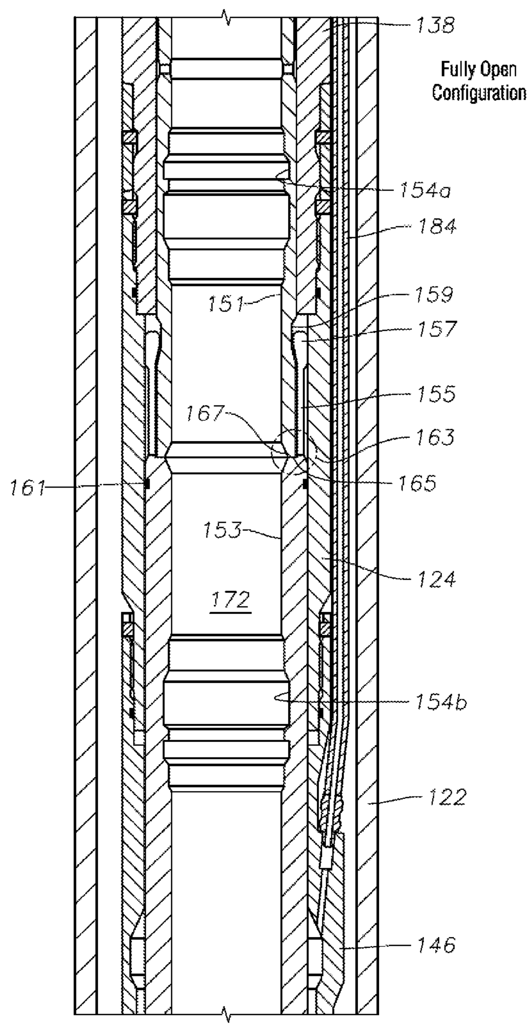
Publication Classification

(51) **Int. Cl.**
E21B 34/14 (2006.01)
E21B 43/14 (2006.01)

(52) **U.S. Cl.**
CPC ***E21B 34/14*** (2013.01); *E21B 2034/007* (2013.01); ***E21B 43/14*** (2013.01)

(57) **ABSTRACT**

A reclosable multi-zone isolation tool including a mandrel assembly with a pull-force lock feature. The tool includes an outer and inner tubular having an annular flow path defined there between, and a central flow path defined by the inner tubular. The annular flow path is in fluid communication with the first zone, while the central flow path is in fluid communication with the second zone. A sleeve is positioned in the annular flow path and moveable between an open and closed position. A mandrel assembly is slidingly positioned within the inner tubular and coupled to the sleeve to actuate the sleeve between the open and closed position only when a push force is applied. If a pull force is applied, the mandrel assembly "locks out," thereby preventing movement of the sleeve.



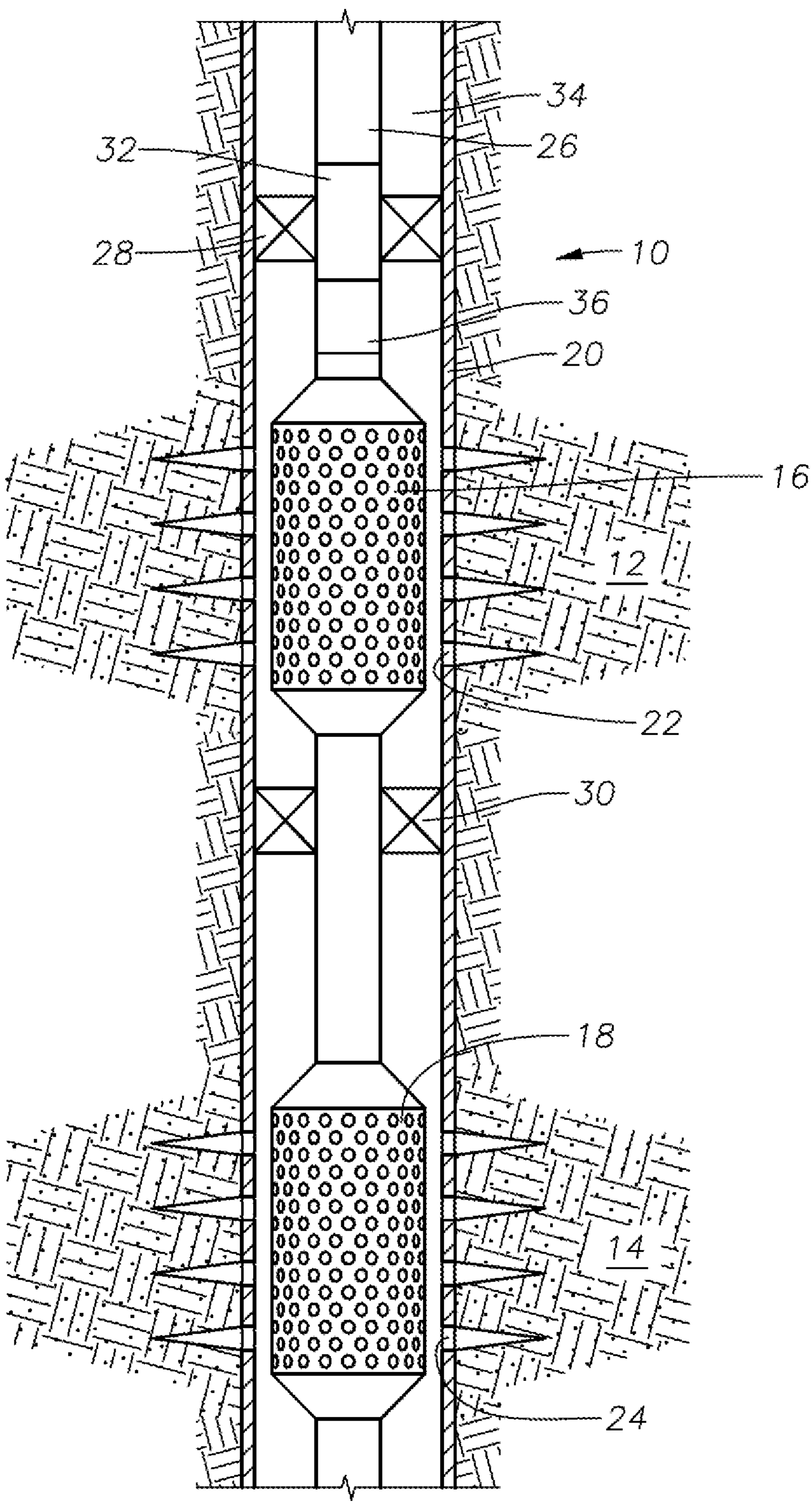


FIG. 1

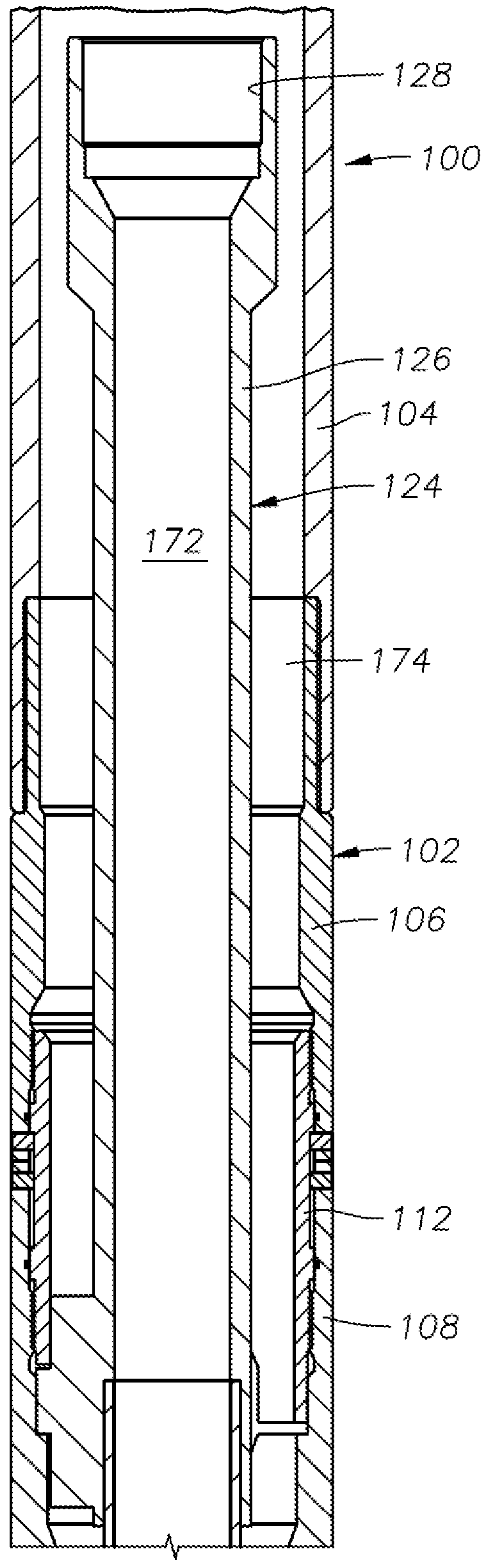

128
100
126
104
124
172
174
102
106
112
108

FIG. 2A

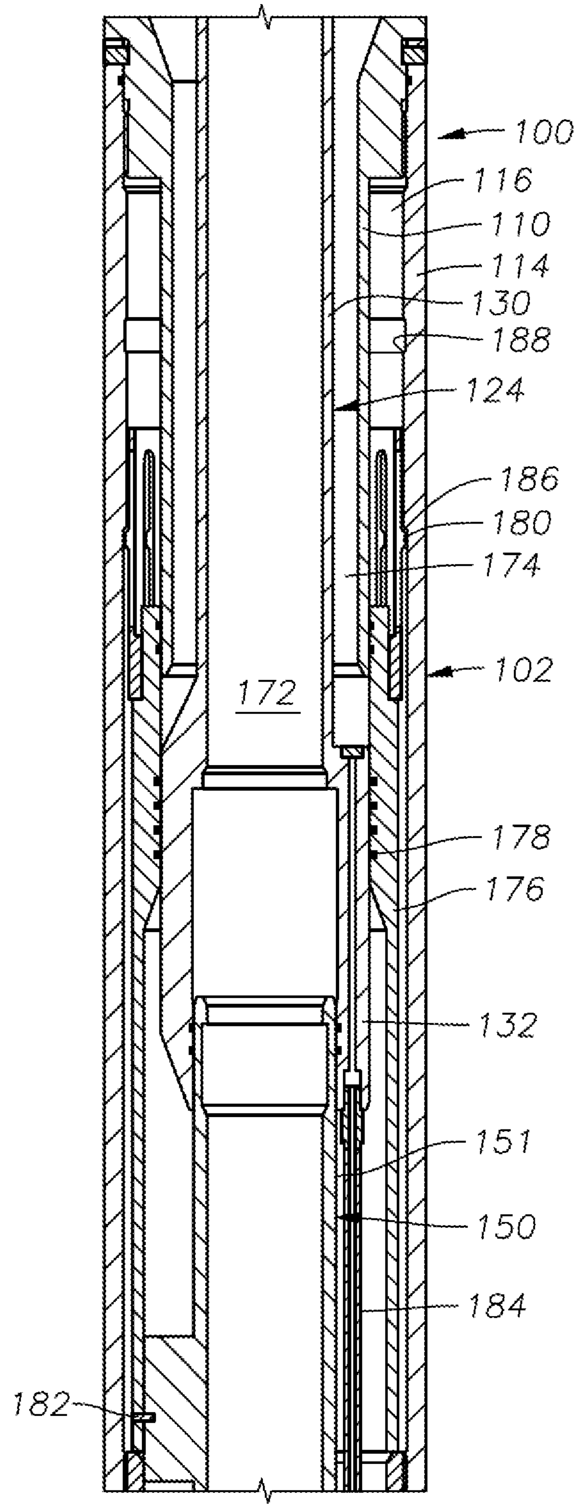

100
116
110
114
130
188
124
186
180
174
102
172
178
176
132
151
150
184
182

FIG. 2B

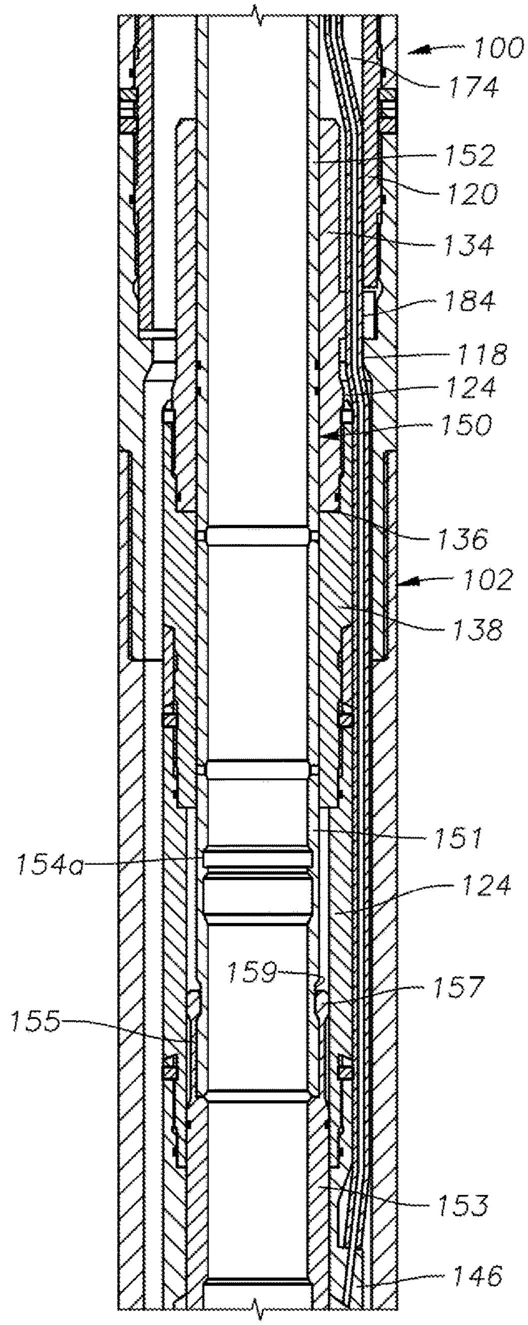

100
174
152
120
134
184
118
124
150
136
102
138
151
154a
124
159
157
155
153
146

FIG. 2C

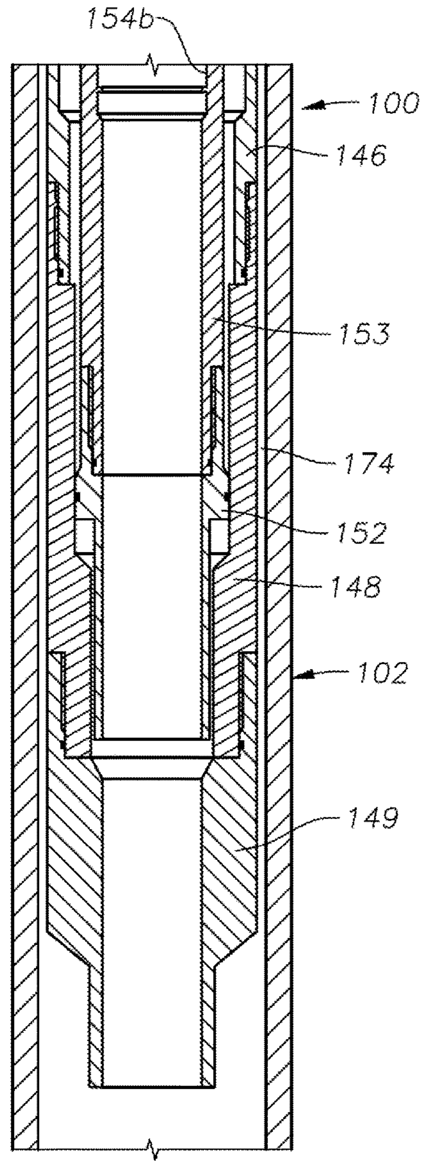

154b
100
146
153
174
152
148
102
149

FIG. 2D

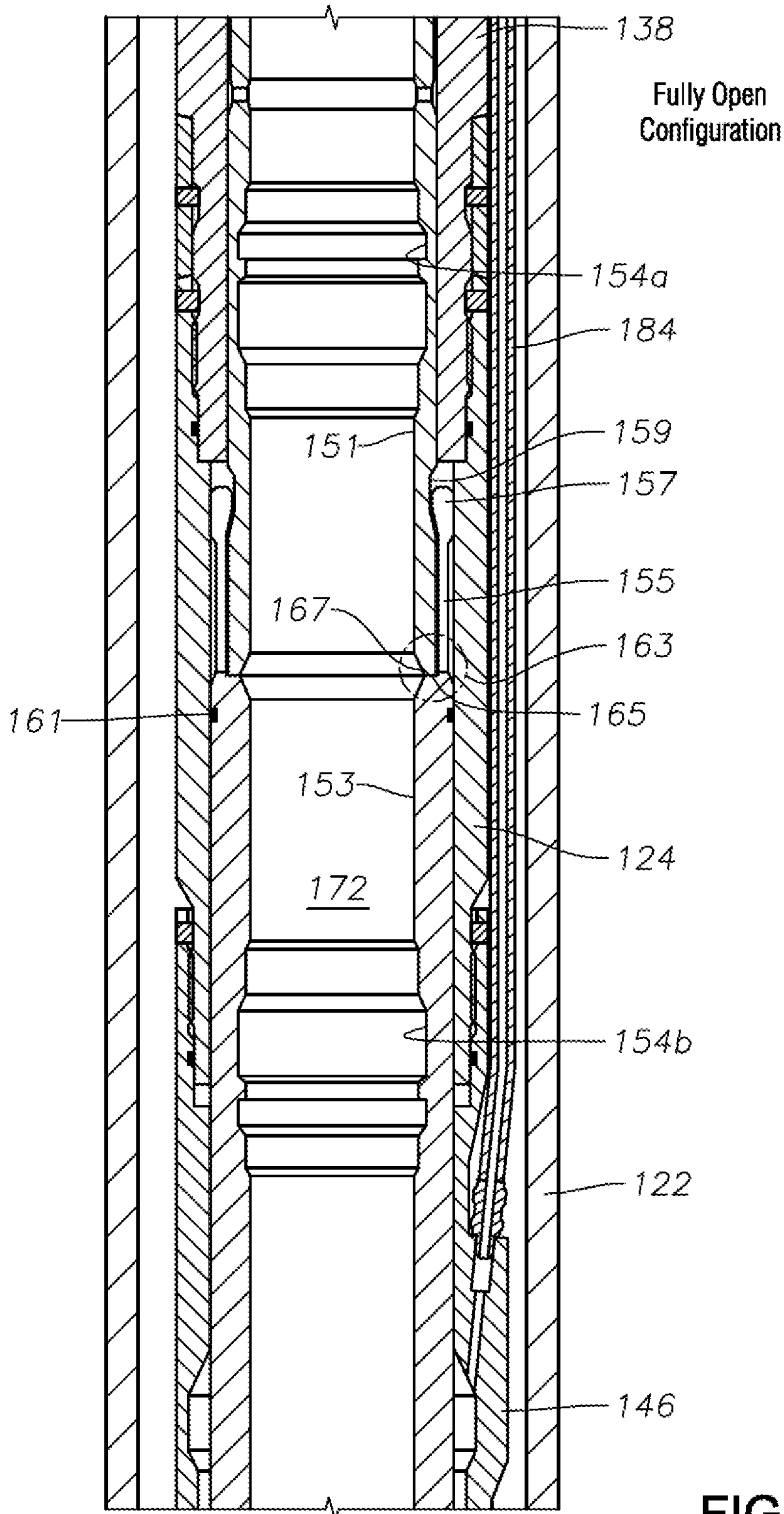

138
Fully Open Configuration
154a
184
159
151
157
155
167
163
161
165
153
124
172
154b
122
146

FIG. 2E

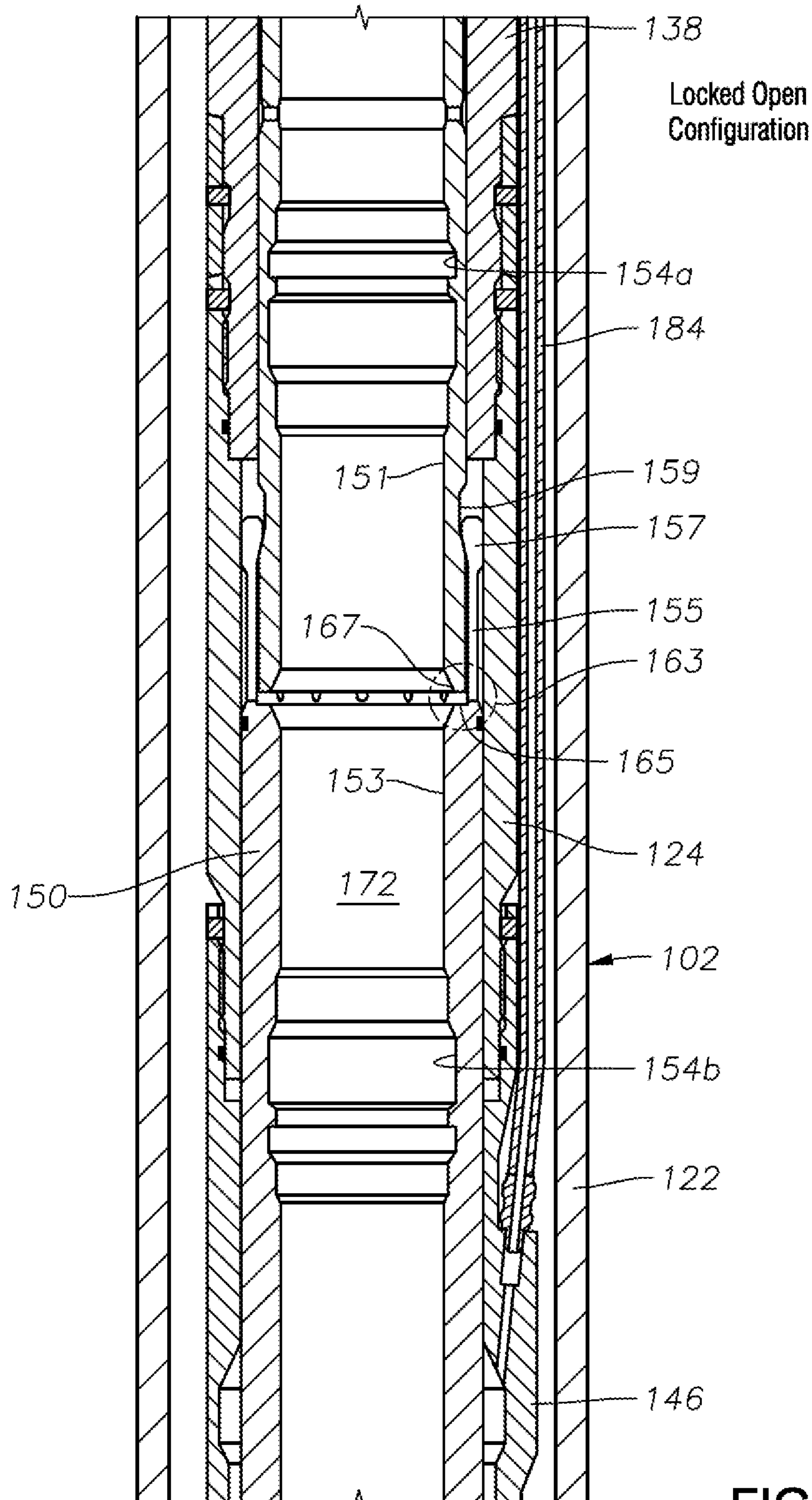

138
Locked Open
Configuration
154a
184
151
159
157
167
155
163
165
153
124
150
172
102
154b
122
146

FIG. 2F

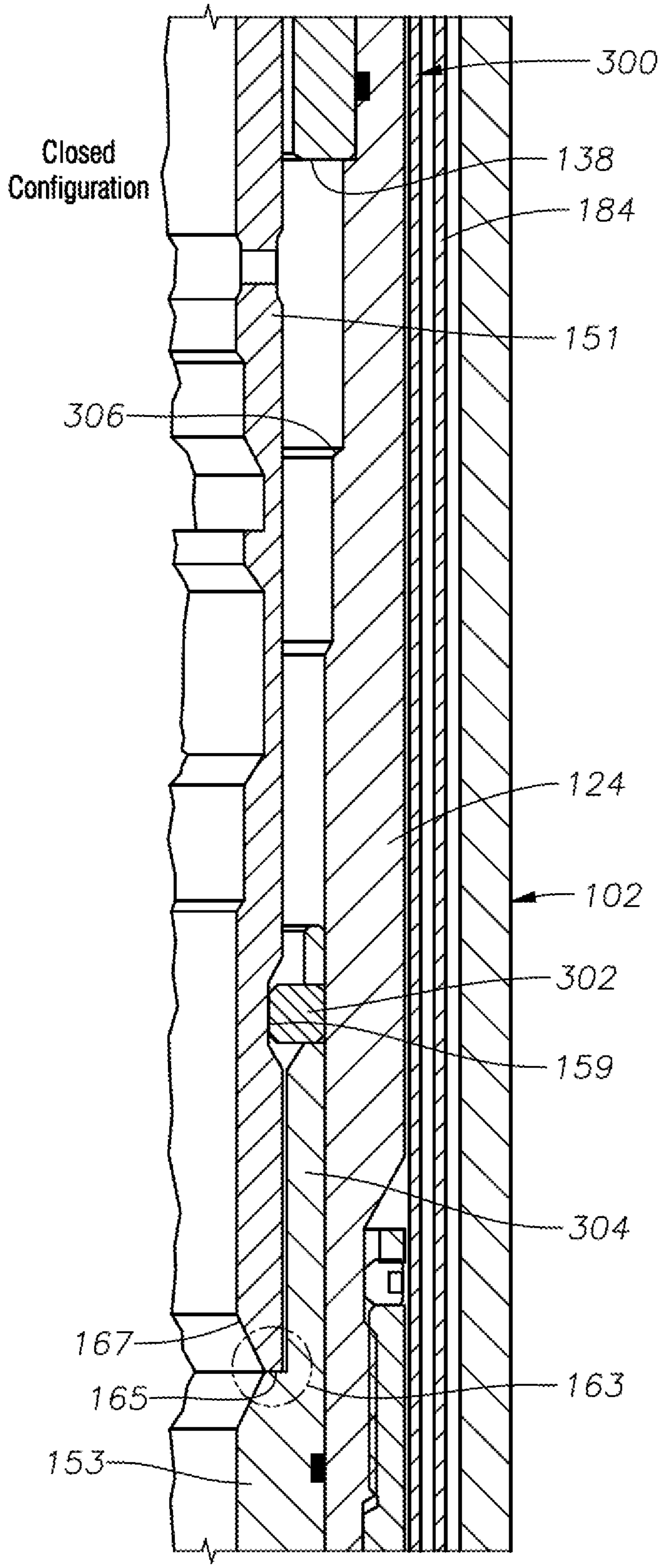

Closed Configuration
300
138
184
151
306
124
102
302
159
304
167
165
163
153

FIG. 3A

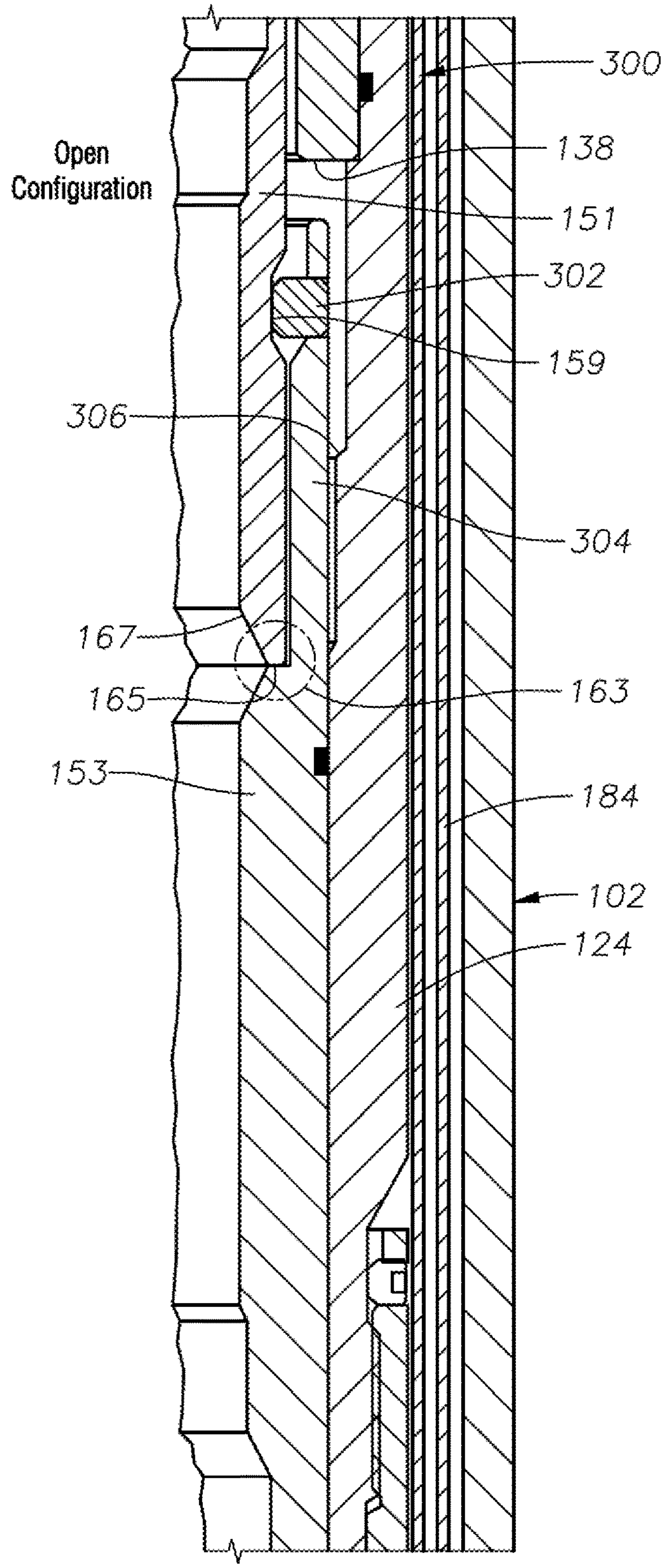
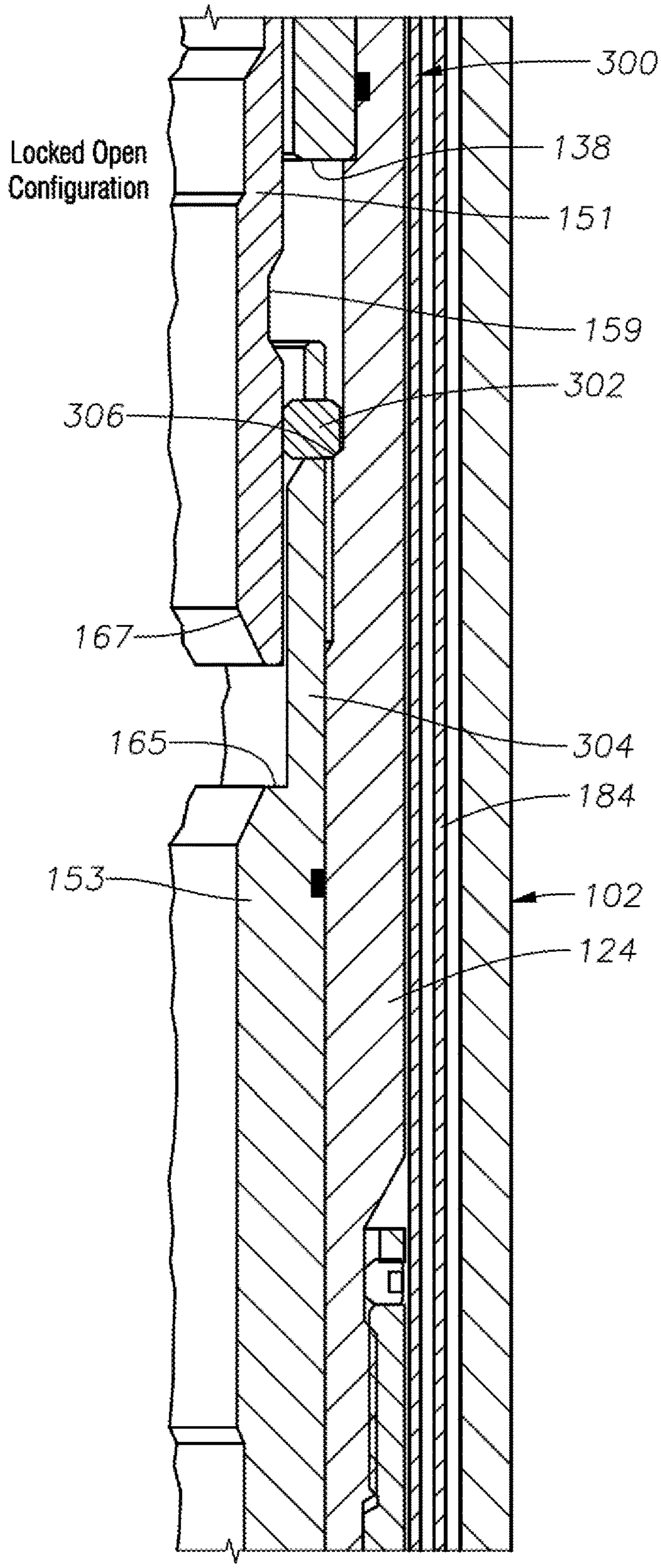

Open Configuration
300
138
151
302
159
306
304
167
163
165
153
184
102
124

FIG. 3B



Locked Open Configuration
300
138
151
159
302
306
167
304
165
184
153
102
124

FIG. 3C

RECLOSABLE MULTI-ZONE ISOLATION USING A PULL-FORCE LOCK MECHANISM

FIELD OF THE DISCLOSURE

[0001] The present disclosure relates generally to subterranean wellbore operations and, more specifically, to reclosable multi-zone isolation tools utilizing a pull-force lock mechanism.

BACKGROUND

[0002] It is common to encounter hydrocarbon wells that traverse more than one separate subterranean hydrocarbon bearing zone. In such wells, the separate zones may have similar or different characteristics. For example, the separate zones may have significantly different formation pressures. Even with the different pressures regimes, it may nonetheless be desirable to complete each of the zones prior to producing the well. In such cases, it may be desirable to isolate certain of the zones from other zones after completion.

[0003] For example, when multiple productive zones that have significantly different formation pressures are completed in a single well, hydrocarbons from a high pressure zone may migrate to a lower pressure zone during production. It has been found, however, that this migration of hydrocarbons from one zone to another may decrease the ultimate recovery from the well. One way to overcome this fluid loss from a high pressure zone into a lower pressure zone during production and to maximize the ultimate recovery from the well is to initially produce only the high pressure zone and delay production from the lower pressure zone. Once the formation pressure of the high pressure zone has decreased to that of the lower pressure zone, the two zones can be produced together without any loss of reserves. It has been found, however, that from an economic perspective, delaying production from the lower pressure zone while only producing from the high pressure zone may be undesirable.

BRIEF DESCRIPTION OF THE DRAWINGS

[0004] FIG. **1** shows a multi zone isolation apparatus/tool positioned along a cased wellbore, according to certain illustrative embodiments of the present disclosure;

[0005] FIGS. **2A-2D** show various views of a multi-zone isolation tool in various sleeve positions, according to certain illustrative embodiments of the present disclosure; and

[0006] FIGS. **3A-3C** are partial views of a multi-zone isolation tool using a lug extension, according to certain alternative embodiments of the present disclosure.

DESCRIPTION OF ILLUSTRATIVE EMBODIMENTS

[0007] Illustrative embodiments and related methods of the present disclosure are described below as they might be employed in reclosable multi-zone isolation apparatuses that employ a pull-force lock mechanism. In the interest of clarity, not all features of an actual implementation or method are described in this specification. It will of course be appreciated that in the development of any such actual embodiment, numerous implementation-specific decisions must be made to achieve the developers' specific goals, such as compliance with system-related and business-related constraints, which will vary from one implementation to another. Moreover, it will be appreciated that such a development effort might be complex and time-consuming, but would nevertheless be a routine undertaking for those of ordinary skill in the art having the benefit of this disclosure. Further aspects and advantages of the various embodiments and related methods of the disclosure will become apparent from consideration of the following description and drawings.

[0008] As described herein, illustrative embodiments and methods of the present disclosure are directed to reclosable multi-zone isolation tools having a mandrel assembly with a pull-force lock feature. In general, the tool includes an outer and inner tubular having an annular flow path defined there between, and a central flow path defined by the inner tubular. The annular flow path is in fluid communication with an upper zone, while the central flow path is in fluid communication with a lower zone. A sleeve is positioned in the annular flow path and axially moveable between an open and closed position. A mandrel assembly is slidingly positioned within the inner tubular and coupled to the sleeve to thereby actuate the sleeve between an open and closed position only when a push force is applied. The mandrel assembly includes an upper mandrel component and a lower mandrel component. If a push force is applied to either the upper or lower mandrel components, the sleeve may be actuated. A "push force" is defined herein as any force that urges one component to move toward another component. However, if a pull force is applied to either the upper or lower mandrel component, the mandrel assembly "locks out," thereby preventing movement of the sleeve. A "pull force" is defined herein as any force acting on the upper or lower mandrel components which urges one component away from the other.

[0009] Using the pull force lockout feature of the present disclosure, any differential pressure between the upper annulus and the inner string will only function the sleeve in one direction (for example, the open position). Therefore, during the well life, if the annulus pressure (upper zone) exceeds the inner string pressure (lower zone), the tool will not close itself. Rather, it requires mechanical intervention to close. Accordingly, by preventing unintentional reclosing of the sleeve, a more reliable isolation tool is provided.

[0010] Referring initially to FIG. **1**, an illustrative multi zone isolation apparatus/tool of the present disclosure is disposed within a cased wellbore that is generally designated **10**. Wellbore **10** is illustrated intersecting two separate hydrocarbon bearing zones, upper zone **12** and lower zone **14**. For purposes of description, only two zones are shown but it is understood that the present disclosure has application to isolate any number of zones within a well. As mentioned, while wellbore **10** is illustrated as a vertical cased well with two producing zones, illustrative embodiments of the present disclosure are applicable to horizontal and inclined wellbores with more than two producing zones and in uncased wells.

[0011] A completion string disposed within wellbore **10** includes upper and lower sand screen assemblies **16**, **18** that are located proximate to zones **12**, **14**, respectively. Wellbore **10** includes a casing string **20** that has been perforated at locations **22**, **24** to provide fluid flow paths into casing **20** from zones **12**, **14**, respectively. The completion string includes production tubing **26**, packers **28**, **30** and a cross-over sub **32** to enable fluid flow between the interior of the completion string and annulus **34**.

[0012] The completion string also includes multi zone isolation tool **36**, according to certain illustrative embodiments of the present disclosure. As explained in greater detail below, tool **36** functions to connect lower sand screen assembly **18** and production tubing **26** via a first flow path. Tool **36** also functions to selectively isolate and connect upper sand screen assembly **16** to annulus **34** via a second flow path. Thus, tool **36** selectively isolates zone **12** and zone **14** and allows zones **12**, **14** to be independently produced.

[0013] Referring next to FIGS. **2A-2D**, therein is depicted a multi zone isolation tool according to certain illustrative embodiments of the present disclosure, generally designated **100**. Tool **100** includes a substantially tubular outer housing assembly **102** that is formed from a plurality of housing members that are securably and sealingly coupled together by threading, set screws or similar technique. In certain illustrative embodiments, housing assembly **102** includes an upper housing member **104**, a first upper intermediate housing member **106**, a second upper intermediate housing member **108** having a housing extension **110**, a housing coupling **112**, a sleeve housing member **114** that forms a substantially annular pocket **116** with housing extension **110**, a lower intermediate housing member **118**, a housing coupling **120** and a lower housing member **122**. As will be understood by those ordinarily skilled in the art having the benefit of this disclosure, although a particular arrangement of housing members is depicted and described, other arrangements of housing members are possible and are considered within the scope of the present disclosure.

[0014] Disposed within housing assembly **102** is an inner tubular assembly **124** that is formed from a plurality of tubular members that are securably and sealingly coupled together by threading, set screws or similar technique. In the illustrated embodiment, tubular assembly **124** includes an upper tubular member **126** having a polished bore receptacle **128**, a first upper intermediate tubular member **130** having a radially expanded region **132**, a second upper intermediate tubular member **134** having a lower shoulder **136**, a first intermediate tubular member **138**, a second intermediate tubular member **140**, a first lower intermediate tubular member **142** having a profile **144**, a second lower intermediate tubular member **146**, a third lower tubular member **148**, and a fourth lower tubular member **149**. An intermediate lower mandrel **152** engages the lower end of mandrel component **153** as shown in FIG. **2D**. As mentioned above, those same ordinarily skilled persons will understand that, although a particular arrangement of tubular members is depicted and described, other arrangements of tubular members are possible and are considered within the scope of the present disclosure. For example, in certain embodiments, the same or other components may jointly make up the inner or outer tubular assemblies.

[0015] Slidably disposed within tubular assembly **124** is a mandrel assembly **150** that is formed by an upper mandrel component **151** and a lower mandrel component **153**. As will be described in more detail below, mandrel assembly **150** is coupled to sleeve **176** via pin **182** to thereby shift sleeve **176** between the open and closed positions. Upper mandrel component **151** slidingly engages lower mandrel component **153**. In the illustrated embodiment, mandrel assembly **150** includes profiles **154***a,b* which may be utilized to mechanically shift mandrel assembly **150** using an intervention tool. Together, tubular assembly **124** and mandrel **150** define a central flow path **172** that extends between the upper and lower ends of tool **100**. As previously described with reference to FIG. **1**, central flow path **172** is in fluid communication with lower sand screen assembly **18** and therefore lower zone **14**.

[0016] Together, housing assembly **102** and tubular assembly **124** define a substantially annular flow path **174**. As previously described with reference to FIG. **1**, annular flow path **174** is in fluid communication with upper sand screen assembly **16** and therefore upper zone **12**. Disposed within annular flow path **174** is a sleeve **176** that has a plurality of seals **178** disposed on the inner surface thereof. Sleeve **176** is axially moveable between an open and closed positioned (FIG. **2B** shows the closed position whereby flow path **174** does not allow fluid communication). In certain illustrative embodiments, sleeve **176** is threadably coupled to a collet assembly **180**. Near its lower end, sleeve **176** is securably coupled to mandrel **150** via a threaded connector held in position by a pin **182** that extends through one of three radially expanded sections of mandrel **150** (only one being visible in the figures). Each of the radially expanded sections extends approximately thirty degrees in the circumferential direction such that the flow of fluid through annular flow path **174** is not prevented or substantially obstructed by the radially expanded sections. Also disposed within annular flow path **174** is an equalization pathway depicted as control line **184** that extends between tubular member **130** and tubular member **146**.

[0017] As previously described, mandrel assembly **150** includes upper mandrel component **151** and lower mandrel component **153**. Mandrel assembly **150** is operable to move if a push force is applied to upper mandrel component **151** or lower mandrel component **153**. However, once sleeve **176** is in the open position, if a pull force is applied to lower mandrel component **153**, a pull force mechanism will lock out mandrel assembly **150** from further movement. The pull force on lower mandrel component **153** may often be caused by high annulus pressure (in annular flow path **174**) relative to the pressure in central flow path **172**. In such cases, the pressure differential may apply a pulling force to lower mandrel component **153**; however, the lock out feature of the present disclosure prevents such unwanted movement.

[0018] The operation of tool **100** will now be described with reference to FIGS. **2A-2F**. Tool **100** is initially run into the wellbore as part of the completion string with housing assembly **102** preferably forming a portion of the tubular string that extends to the surface. The completion string is then positioned at the desired location, such as that depicted in FIG. **1**. Initially, tool **100** is in its closed position as depicted in FIGS. **2A-2D** wherein sleeve **176** is in its lower position with seals **178** engaging an outer sealing surface of inner tubular member **130** such that fluid flow through annular flow path **174** is prevented. In this configuration, treatment or other operations requiring fluid flow and pressure fluctuations downhole of tool **100** are performed through central flow path **172**. Even though pressure fluctuations are occurring in central flow path **172** and therefore to the lower area of mandrel **150**, operation of tool **100** is prevented because of the pressure equalization of control line **184**. Specifically, annular flow path **174** and central flow path **172** are in fluid communication with one another above tool **100**. The pressure in annular flow path **174** above sleeve **176** is communicated across mandrel assembly **150** via control line **184** that serves as a pathway to equalize pressure across mandrel assembly **150**.

[0019] After treatment or other operations to the lower zone or zones are complete, the lower zones may be plugged off and a tubing string may be stabbed into polished bore receptacle **128** of inner tubular assembly **124**. Here, for example, the lower zones may be plugged off by a ball valve installed in the tubing string below the tool; however, any kind of valve or plug installed below the tool that prevents fluid and pressure communication to the lower zones can be used. Nevertheless, in this configuration, annular flow path **174** and central flow path **172** are no longer in fluid communication with one another above tool **100**. Now, increased pressure within central flow path **172** is communicated to the lower end of lower mandrel component **153**, thus resulting in a push force being applied that forces lower mandrel component **153** up against upper mandrel component **151**. As can be seen in FIG. **2**E most clearly, upper mandrel component **151** slidingly engages the inner surface of lower mandrel component **153**. Lower mandrel component **153** includes one or more collet fingers **155** extending therefrom having a collet head **157** thereon. Collet head(s) **157** rests within groove(s) **159** on the outer surface of upper mandrel component **151**. A seal **161** seals between lower mandrel component **153** and inner tubular **124** to prevent fluid pressure from central flow path **172** from reaching collet finger(s) **155**.

[0020] Therefore, as the push force is applied to the lower end of lower mandrel component **153**, lower mandrel component **153** is urged up against upper mandrel component **151** at a push force transfer point **163**. Push force transfer point **163** is the intersecting point of the upper and lower mandrel components **151**,**153**. Push force transfer point **163** includes a shoulder **165** on lower mandrel component **153**, and the end surface **167** of upper mandrel component **151**. At push force transfer point **163**, a push force may be transferred from lower mandrel component **153** to upper mandrel component **151** and vice versa.

[0021] As the push force continues to be applied to upper mandrel component **151**, a predetermined force value is reached whereby the collet fingers of collet assembly **180** are radially retracted to pass through a downwardly facing shoulder **186** of housing assembly **102**, and sleeve **176** and mandrel assembly **150** shift in the uphole direction to the positions depicted in FIG. **2**E, whereby sleeve **176** is in the fully open position. Here, collet assembly **180** reengages with housing assembly **102** in annular recess **188**. Sleeve **176** is in its upper position partially disposed within annular pocket **116** of housing assembly **102** with seals **178** engaging an outer sealing surface of housing extension **110**. In this configuration, fluid communication between annular flow path **174** and the upper zone is allowed, enabling, for example, production from the upper zone into annular flow path **174**. Importantly, in this configuration, seals **178** are protected from fluid flow or any abrasive materials therein as seals **178** are sealingly engaged with the outer sealing surface of housing extension **110** and out of the flow path. As such, seals **178** are not susceptible to damage during production from the upper zone or other fluid flow operations there through.

[0022] FIG. **2**F shows mandrel assembly **150** in the lock open, or "locked out," position. As previously described, if there is a pressure differential between annular flow path **174** and central flow path **172** after opening of sleeve **176**, a pull force may be applied to lower mandrel component **153**. If a pull force is applied to lower mandrel component **153**, collet head **157** of fingers **155** will be forced out from groove **159**, where collect head **157** will become wedged between inner tubular **124** and upper mandrel component **151**, thus applying a "brake" to further movement of mandrel assembly **150**. Thus, in this embodiment, collet fingers **155** serve as the pull force lock mechanism. For example, when tool **100** is in the open position, if pressure in annular flow path **174** is greater than the pressure in central flow path **172**, a resulting pull force is created which moves lower mandrel component **153** downwardly away from upper mandrel component **151**. Once in the locked out position, sleeve **176** is prevented from undesired shifting between the open and closed positions. Moreover, in the locked out position, only a small fraction of the load is transferred to collet assembly **180**, thus allowing much greater annulus pressures to be withstood without re-closing sleeve **176**.

[0023] When it is desired to return tool **100** from the open position to the closed position in certain illustrative methods, a shifting tool (e.g., lock mandrel and plug) may be run downhole on a conveyance (e.g., wireline) and positioned within tool **100**. The lock mandrel and plug is operable to engage either profile **154***a* of the upper mandrel component **151** or profile **154***b* of lower mandrel component **153**. Once engaged, the shifting tool may be moved axially to apply the push force, also moving mandrel assembly **150**, to reclose and/or reopen sleeve **176**.

[0024] FIGS. **3**A-**3**D are sectional partial views of tool **300**, according to certain illustrative embodiments of the present disclosure. Tool **300** is similar to tool **100** previously described, using like numerals, and may therefore be understood with reference thereto. However, instead of collet fingers, multi-zone isolation tool **300** includes a lower mandrel component **153** having a lug extension **302** thereon which surrounds upper mandrel component **151**. Here, an extended portion **304** includes a lug **302** that rests within groove **159** of upper mandrel component **151**. FIG. **3**A shows tool **300** in the closed configuration. To open tool **300** (FIG. **3**B), the same push force is applied as described above in relation to tool **100**. Here, again push force transfer point **163** includes a shoulder **165** on lower mandrel component **153**, and the end surface **167** of upper mandrel component **151**.

[0025] When a pull force is applied to lower mandrel components **151**,**153**, lug **302** is forced out of groove **159** (FIG. **3**C), whereby it becomes wedged between upper mandrel component **151** and inner tubular **124** at shoulder **306**, thereby locking out mandrel assembly **150**. Thus, in this example, lug **302** and extension **304** act as the pull force lock mechanism. A shifting tool as previously described may be used to actuate sleeve **176** back to the closed position.

[0026] The foregoing disclosure may repeat reference numerals and/or letters in the various examples. This repetition is for the purpose of simplicity and clarity and does not in itself dictate a relationship between the various embodiments and/or configurations discussed. Further, spatially relative terms, such as "beneath," "below," "lower," "above," "upper" and the like, may be used herein for ease of description to describe one element or feature's relationship to another element(s) or feature(s) as illustrated in the figures. The spatially relative terms are intended to encompass different orientations of the apparatus in use or operation in addition to the orientation depicted in the figures. For example, if the apparatus in the figures is turned over, elements described as being "below" or "beneath" other elements or features would then be oriented "above" the other elements or features. Thus, the illustrative term "below" can encompass both an orientation of above and below. The apparatus may be otherwise oriented (rotated **90** degrees or at other orientations) and the spatially relative descriptors used herein may likewise be interpreted accordingly.

[0027] Embodiments of the present disclosure described herein further relate to any one or more of the following paragraphs:

[0028] 1. An apparatus for isolating a first zone from a second zone in a subterranean wellbore, the apparatus comprising an outer tubular; an inner tubular positioned within the outer tubular, thereby forming an annular flow path there between that is in fluid communication with the first zone, wherein the inner tubular defines a central flow path therein that is in fluid communication with the second zone; a sleeve positioned in the annular flow path to control fluid flow there through, the sleeve being axially moveable relative to the outer and inner tubular between a closed position and an open position; and a mandrel assembly slidingly positioned within the inner tubular and coupled to the sleeve, the mandrel being operable to shift the sleeve between the open and closed position, the mandrel assembly comprising an upper mandrel component and a lower mandrel component slidingly engaging the upper mandrel component, wherein the lower mandrel component is operable to move the sleeve if a push force is applied to the lower mandrel component, but the mandrel assembly becomes locked out if a pull force is applied to the lower mandrel component.

[0029] 2. An apparatus as defined in paragraph 1, wherein the upper mandrel component slidingly engages an inner surface of the lower mandrel component.

[0030] 3. An apparatus as defined in paragraphs 1 or 2, wherein the upper mandrel component slidingly engages an inner surface of the lower mandrel component; the upper mandrel component comprises a groove on an outer surface of the upper mandrel component; and the lower mandrel component comprises a collet finger positioned between the inner tubular and the upper mandrel component, the collet finger having a collet head which mates within the groove.

[0031] 4. An apparatus as defined in any of paragraphs 1-3, wherein the upper mandrel component slidingly engages an inner surface of the lower mandrel component; the upper mandrel component comprises a groove on an outer surface of the upper mandrel component; and the lower mandrel component comprises an extended portion positioned between the inner tubular and the upper mandrel component, the extended portion having a lug which mates within the groove.

[0032] 5. An apparatus as defined in any of paragraphs 1-4, wherein the mandrel assembly further comprises a push force transfer point, the push force transfer point comprising a lower mandrel component shoulder; and an upper mandrel component end surface which mates with the shoulder.

[0033] 6. An apparatus as defined in any of paragraphs 1-5, wherein the lower mandrel component comprises a collet assembly surrounding the upper mandrel component, the collet assembly being operable to lock the mandrel assembly in response to the pull force applied to the lower mandrel component.

[0034] 7. An apparatus as defined in any of paragraphs 1-6, wherein the lower mandrel component comprises an extended portion having a lug thereon, the extended portion surrounding the upper mandrel component and operable to lock the mandrel assembly in response to the pull force applied to the lower mandrel component.

[0035] 8. An apparatus as defined in any of paragraphs 1-7, further comprising a pull force lock mechanism forming part of the lower mandrel component.

[0036] 9. An apparatus as defined in any of paragraphs 1-8, wherein the outer tubular comprises an extension that forms an annular pocket; and the sleeve comprises at least one seal on an inner surface thereof such that, in the closed position, the seal engages an outer surface of the inner tubular and, in the open position, the seal engages an outer surface of the extension of the outer tubular.

[0037] 10. An apparatus as defined in any of paragraphs 1-9, further comprising a collet assembly coupled to the sleeve, the collect assembly selectively preventing shifting of the sleeve relative to the outer tubular when the sleeve is in the open and closed position.

[0038] 11. An apparatus as defined in any of paragraphs 1-10, further comprising an equalization pathway positioned within the annular flow path to selectively prevent actuation of the sleeve between the open and closed positions.

[0039] 12. A method for isolating a first zone from a second zone in a subterranean wellbore, the method comprising disposing a multi-zone isolation tool within the wellbore in a closed position, the tool having an inner tubular defining a central flow path and an outer tubular defining an annular flow path with the inner tubular, the annular flow path in fluid communication with the first zone, the central flow path in fluid communication with the second zone, wherein a mandrel assembly includes an upper mandrel component that slidingly engages a lower mandrel component; applying a push force to the upper or lower mandrel components; in response to the push force, shifting a sleeve coupled to the mandrel assembly between the closed position, whereby the annular flow path is blocked, to an open position whereby the annular flow path is opened; and locking out the mandrel assembly if a pull force is applied to the lower mandrel component.

[0040] 13. A method as defined in paragraph 12, wherein locking out the mandrel assembly comprises applying the pull force to the lower mandrel component; and causing a collet finger of the lower mandrel component to wedge between the upper mandrel component and the inner tubular.

[0041] 14. A method as defined in paragraphs 12 or 13, wherein locking out the mandrel assembly comprises applying the pull force to the lower mandrel component; and causing a lug extension of the lower mandrel component to wedge between the upper mandrel component and the inner tubular.

[0042] 15. A method as defined in any of paragraphs 12-14, wherein locking out the mandrel assembly comprises applying the pull force to the lower mandrel component; and causing a pull force lock mechanism to activate.

[0043] 16. A method as defined in any of paragraphs 12-15, wherein the activation comprises causing the pull force lock mechanism to wedge between the upper mandrel component and the inner tubular.

[0044] 17. A method for isolating a first zone from a second zone in a subterranean wellbore, the method comprising disposing an apparatus into the wellbore and performing a downhole multi-zonal operation using the apparatus, wherein the apparatus is defined as in any of paragraphs 1-11.

[0045] Although various embodiments and methods have been shown and described, the present disclosure is not limited to such embodiments and methods and will be understood to include all modifications and variations as would be apparent to one skilled in the art. Therefore, it should be understood that this disclosure is not intended to be limited to the particular forms disclosed. Rather, the intention is to cover all modifications, equivalents and alternatives falling within the spirit and scope of the disclosure as defined by the appended claims.

1. An apparatus for isolating a first zone from a second zone in a subterranean wellbore, the apparatus comprising:
an outer tubular;
an inner tubular positioned within the outer tubular, thereby forming an annular flow path there between that is in fluid communication with the first zone, wherein the inner tubular defines a central flow path therein that is in fluid communication with the second zone;
a sleeve positioned in the annular flow path to control fluid flow there through, the sleeve being axially moveable relative to the outer and inner tubular between a closed position and an open position; and
a mandrel assembly slidingly positioned within the inner tubular and coupled to the sleeve, the mandrel being operable to shift the sleeve between the open and closed position, the mandrel assembly comprising an upper mandrel component and a lower mandrel component slidingly engaging the upper mandrel component,
wherein the lower mandrel component is operable to move the sleeve if a push force is applied to the lower mandrel component, but the mandrel assembly becomes locked out if a pull force is applied to the lower mandrel component.

2. An apparatus as defined in claim 1, wherein the upper mandrel component slidingly engages an inner surface of the lower mandrel component.

3. An apparatus as defined in claim 1, wherein:
the upper mandrel component slidingly engages an inner surface of the lower mandrel component;
the upper mandrel component comprises a groove on an outer surface of the upper mandrel component; and
the lower mandrel component comprises a collet finger positioned between the inner tubular and the upper mandrel component, the collet finger having a collet head which mates within the groove.

4. An apparatus as defined in claim 1, wherein:
the upper mandrel component slidingly engages an inner surface of the lower mandrel component;
the upper mandrel component comprises a groove on an outer surface of the upper mandrel component; and
the lower mandrel component comprises an extended portion positioned between the inner tubular and the upper mandrel component, the extended portion having a lug which mates within the groove.

5. An apparatus as defined in 3, wherein the mandrel assembly further comprises a push force transfer point, the push force transfer point comprising:
a lower mandrel component shoulder; and
an upper mandrel component end surface which mates with the shoulder.

6. An apparatus as defined in claim 1, wherein the lower mandrel component comprises a collet assembly surrounding the upper mandrel component, the collet assembly being operable to lock the mandrel assembly in response to the pull force applied to the lower mandrel component.

7. An apparatus as defined in claim 1, wherein the lower mandrel component comprises an extended portion having a lug thereon, the extended portion surrounding the upper mandrel component and operable to lock the mandrel assembly in response to the pull force applied to the lower mandrel component.

8. An apparatus as defined in claim 1, further comprising a pull force lock mechanism forming part of the lower mandrel component.

9. An apparatus as defined in claim 1, wherein:
the outer tubular comprises an extension that forms an annular pocket; and
the sleeve comprises at least one seal on an inner surface thereof such that, in the closed position, the seal engages an outer surface of the inner tubular and, in the open position, the seal engages an outer surface of the extension of the outer tubular.

10. An apparatus as defined in claim 1, further comprising a collet assembly coupled to the sleeve, the collect assembly selectively preventing shifting of the sleeve relative to the outer tubular when the sleeve is in the open and closed position.

11. An apparatus as defined in claim 1, further comprising an equalization pathway positioned within the annular flow path to selectively prevent actuation of the sleeve between the open and closed positions.

12. A method for isolating a first zone from a second zone in a subterranean wellbore, the method comprising:
disposing a multi-zone isolation tool within the wellbore in a closed position, the tool having an inner tubular defining a central flow path and an outer tubular defining an annular flow path with the inner tubular, the annular flow path in fluid communication with the first zone, the central flow path in fluid communication with the second zone,
wherein a mandrel assembly includes an upper mandrel component that slidingly engages a lower mandrel component;
applying a push force to the upper or lower mandrel components;
in response to the push force, shifting a sleeve coupled to the mandrel assembly between the closed position, whereby the annular flow path is blocked, to an open position whereby the annular flow path is opened; and
locking out the mandrel assembly if a pull force is applied to the lower mandrel component.

13. A method as defined in claim 12, wherein locking out the mandrel assembly comprises:
applying the pull force to the lower mandrel component; and
causing a collet finger of the lower mandrel component to wedge between the upper mandrel component and the inner tubular.

14. A method as defined in claim 12, wherein locking out the mandrel assembly comprises:
applying the pull force to the lower mandrel component; and

causing a lug extension of the lower mandrel component to wedge between the upper mandrel component and the inner tubular.

15. A method as defined in claim **12**, wherein locking out the mandrel assembly comprises:

applying the pull force to the lower mandrel component; and

causing a pull force lock mechanism to activate.

16. A method as defined in claim **15**, wherein the activation comprises causing the pull force lock mechanism to wedge between the upper mandrel component and the inner tubular.

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