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(54) **WIRE CUTTING BLOWOUT PREVENTER**

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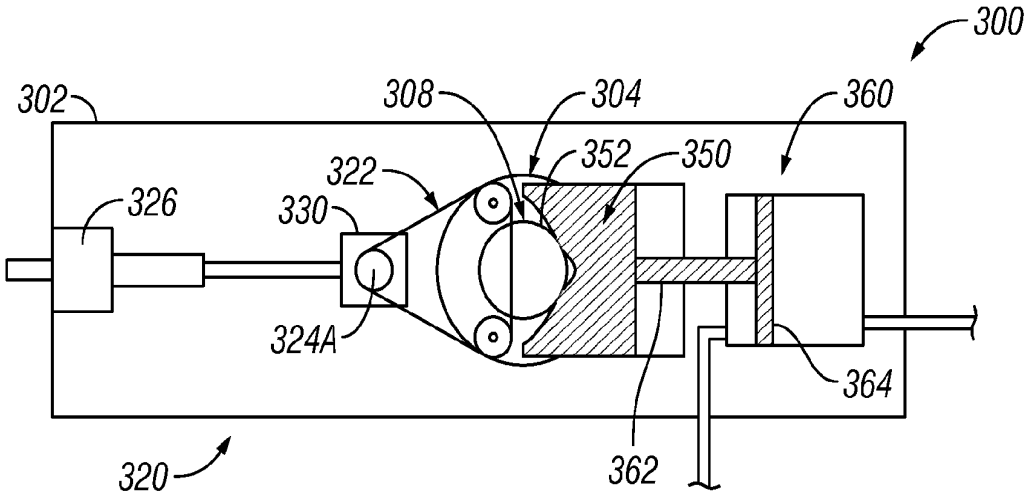
(57) **ABSTRACT**

An apparatus includes a blowout preventer housing comprising a bore extending therethrough and a cavity intersecting the bore and a wire cutting apparatus with a cutting wire. The wire cutting apparatus is movably positionable within the cavity of the blowout preventer housing and is extendable into the bore of the blowout preventer housing.



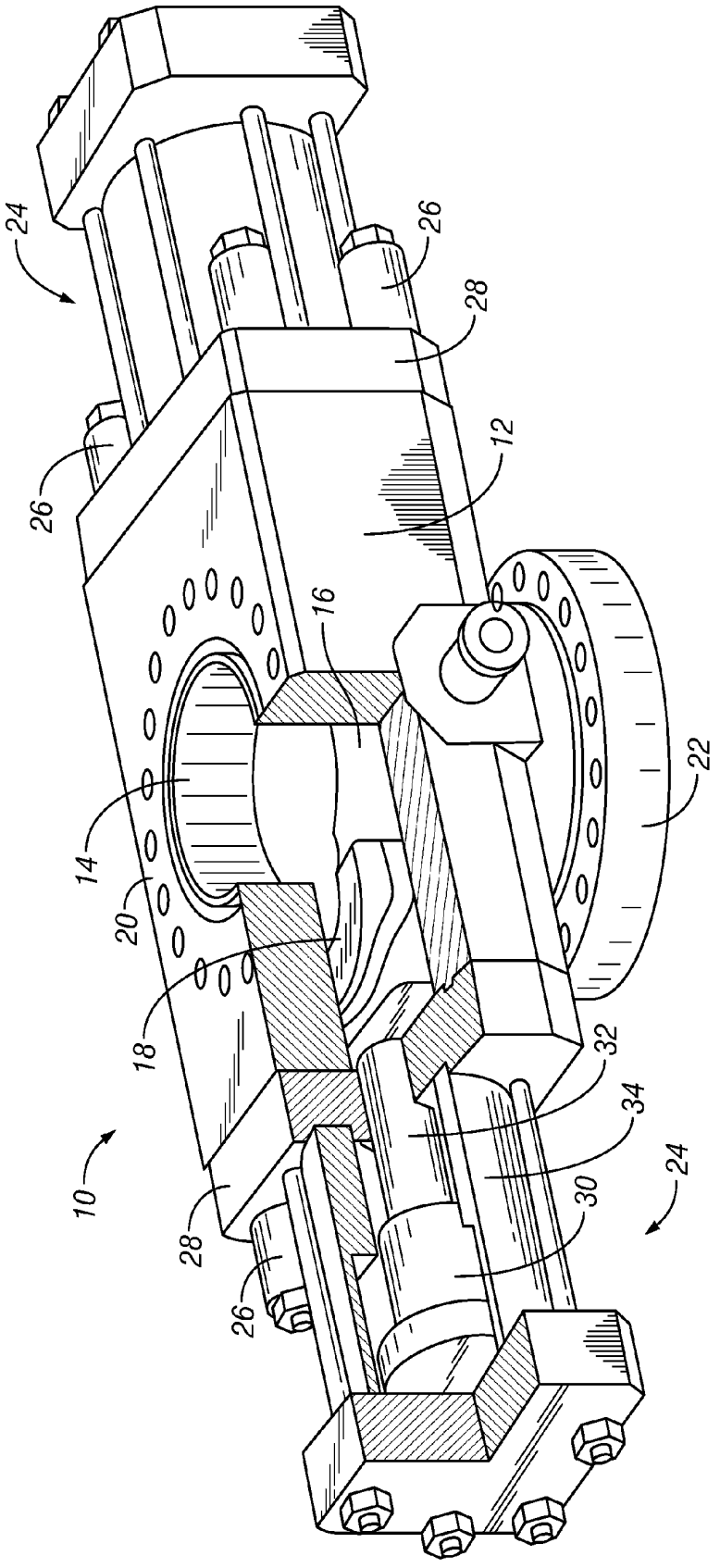


FIG. 1

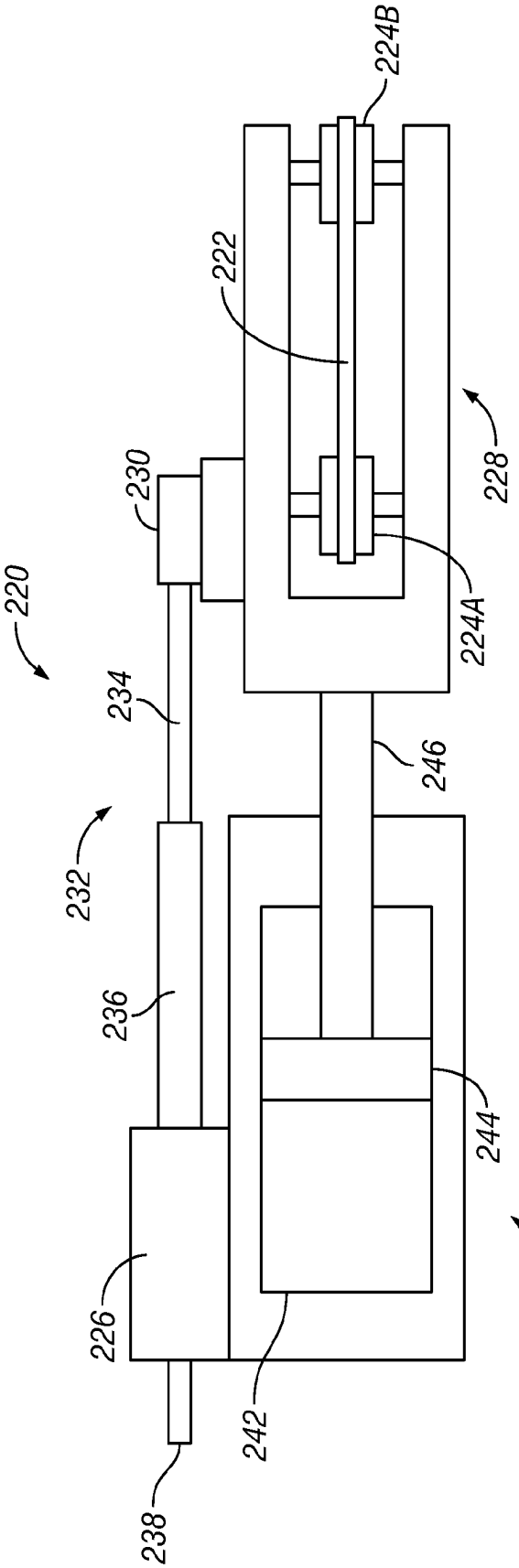


FIG. 2

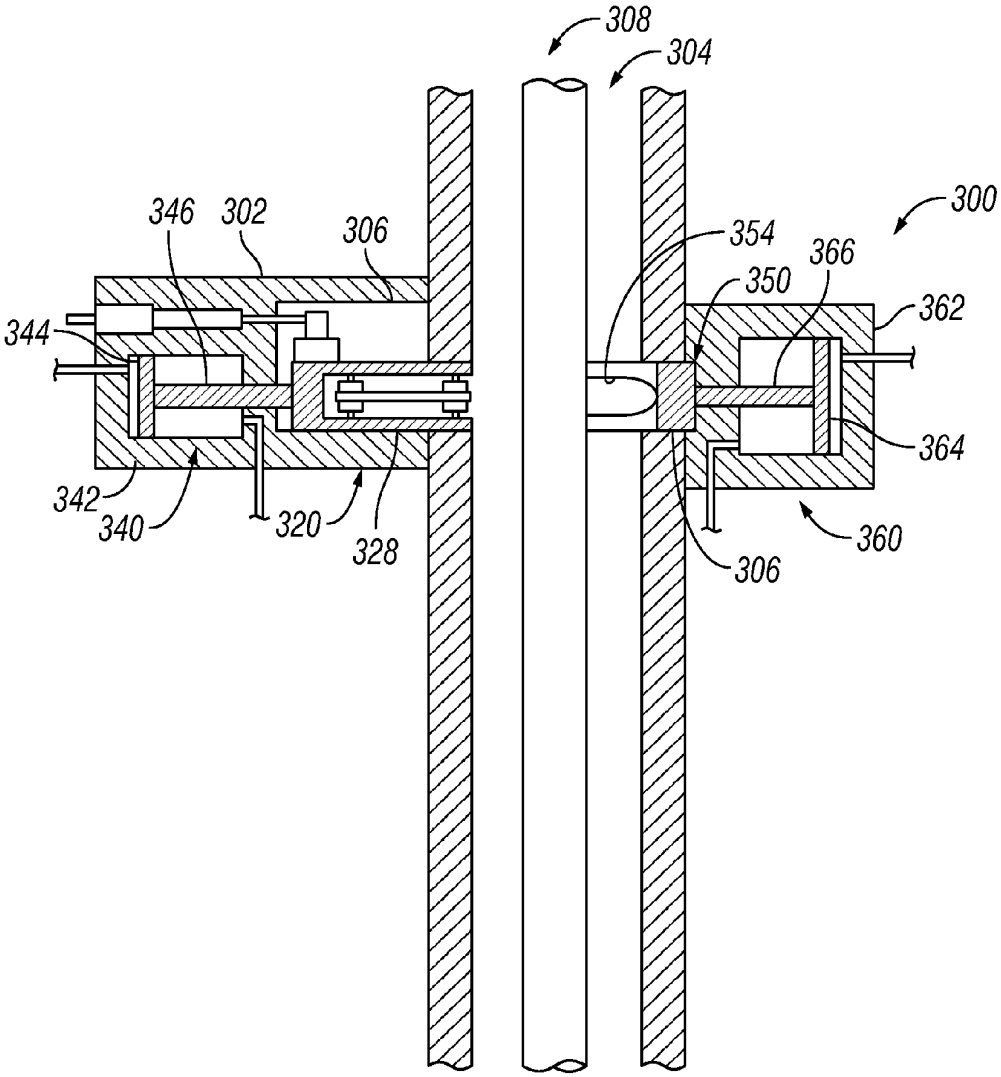

308
304
300
346
302
306
354
366
350
362
344
364
342
340
320
328
360
306

FIG. 3

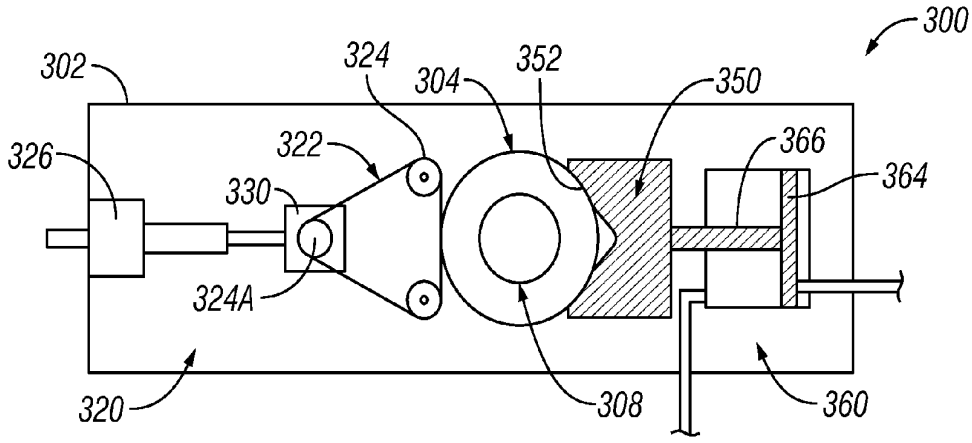

300
302
324
304
352
350
326
322
366
364
330
324A
320
308
360

FIG. 4

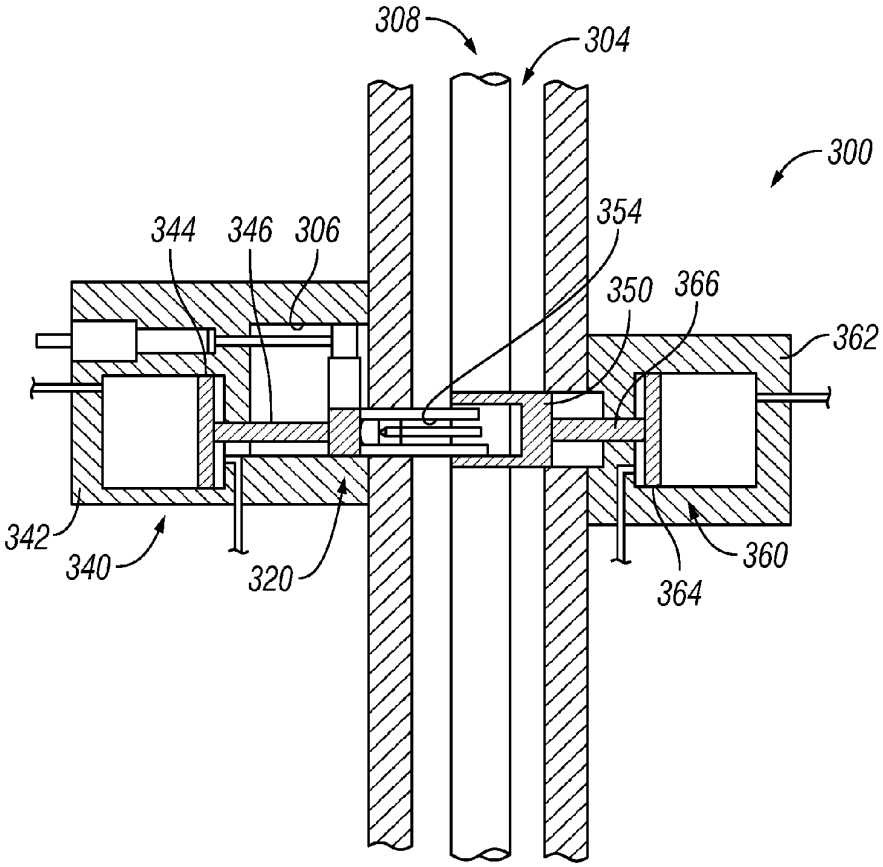

308
304
300
344
346
306
354
350
366
362
342
340
320
360
364

FIG. 5

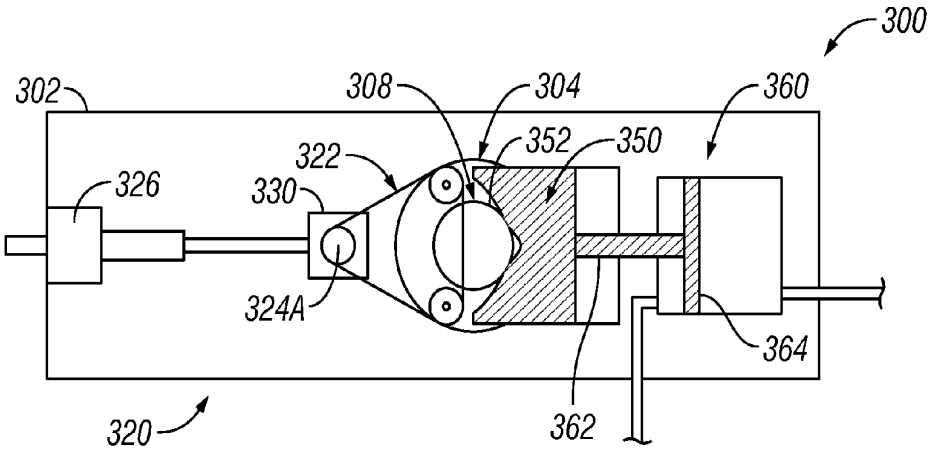

300
302
308
304
360
352
350
322
326
330
324A
364
320
362

FIG. 6

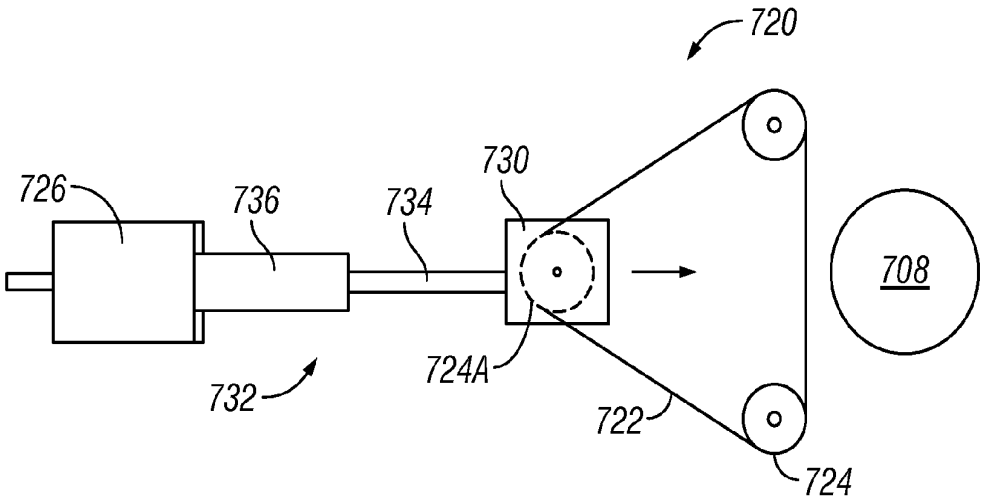

720
726
736
734
730
708
732
724A
722
724

FIG. 7

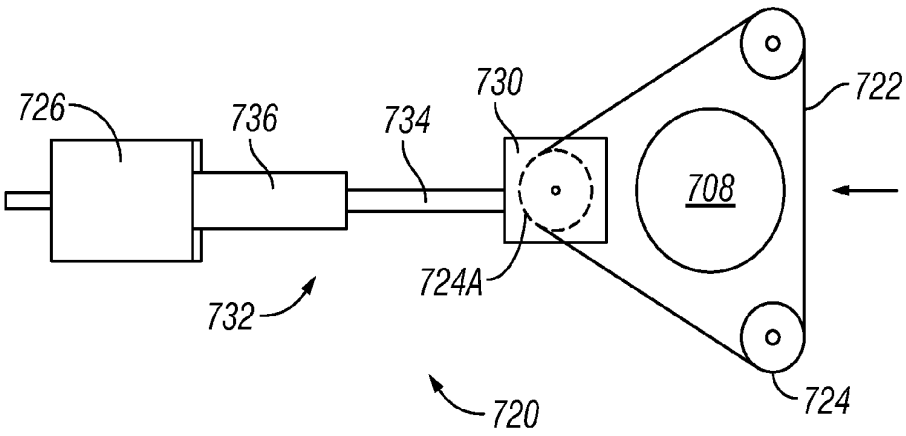

726
736
734
730
722
708
724A
732
720
724

FIG. 8

WIRE CUTTING BLOWOUT PREVENTER

BACKGROUND

[0001] This section is intended to introduce the reader to various aspects of art that may be related to various aspects of the present invention, which are described and/or claimed below. This discussion is believed to be helpful in providing the reader with background information to facilitate a better understanding of the various aspects of the present invention. Accordingly, it should be understood that these statements are to be read in this light, and not as admissions of prior art.

[0002] Blowout preventers (BOPs) are used extensively throughout the oil and gas industry. Typical blowout preventers are used as a large specialized valve or similar mechanical device that seal, control, and monitor oil and gas wells. The two categories of blowout preventers that are most prevalent are ram blowout preventers and annular blowout preventers. Blowout preventer stacks frequently utilize both types, typically with at least one annular blowout preventer stacked above several ram blowout preventers. The ram units in ram blowout preventers allow for both the shearing of the drill pipe and the sealing of the blowout preventer. A blowout preventer stack may be secured to a wellhead and may provide a safe means for sealing the well in the event of a system failure.

[0003] In a typical ram blowout preventer, a ram bonnet assembly may be bolted to the main body using a number of high tensile bolts or studs. These bolts are required to hold the bonnet in position to enable the sealing arrangements to work effectively. During normal operation, the blowout preventers may be subject to pressures up to 20,000 psi, or even higher. To be able to operate against and to contain fluids at such pressures, blowout preventers are becoming larger and stronger. Blowout preventer stacks, including related devices, 30 feet or more in height are increasingly common. Further, ram-type blowout preventers may require interchangeable parts to be used with pipe having different sizes and strengths. Such requirements, if not impractical, may require the presence of personnel at locations that can be hazardous, and may be limited due to particular size or equipment restrictions.

BRIEF DESCRIPTION OF THE DRAWINGS

[0004] For a detailed description of embodiments of the subject disclosure, reference will now be made to the accompanying drawings in which:

[0005] FIG. **1** shows a sectional view of a blowout preventer;

[0006] FIG. **2** shows a wire cutting apparatus for use within a blowout preventer in accordance with one or more embodiments of the present disclosure;

[0007] FIG. **3** shows a side cross-sectional view of a wire cutting apparatus in a retracted position in a blowout preventer in accordance with one or more embodiments of the present disclosure;

[0008] FIG. **4** shows an above schematic view of a wire cutting apparatus in a retracted position in a blowout preventer in accordance with one or more embodiments of the present disclosure;

[0009] FIG. **5** shows a side cross-sectional view of a wire cutting apparatus in an extended position in a blowout preventer in accordance with one or more embodiments of the present disclosure;

[0010] FIG. **6** shows an above schematic view of a wire cutting apparatus in an extended position in a blowout preventer in accordance with one or more embodiments of the present disclosure;

[0011] FIG. **7** shows an above schematic view of a wire cutting apparatus in a push-type configuration to cut a tubular member in accordance with one or more embodiments of the present disclosure; and

[0012] FIG. **8** shows an above schematic view of a wire cutting apparatus in a pull-type configuration to cut a tubular member in accordance with one or more embodiments of the present disclosure.

DETAILED DESCRIPTION

[0013] The following discussion is directed to various embodiments of the invention. The drawing figures are not necessarily to scale. Certain features of the embodiments may be shown exaggerated in scale or in somewhat schematic form and some details of conventional elements may not be shown in the interest of clarity and conciseness. The embodiments disclosed should not be interpreted, or otherwise used, as limiting the scope of the disclosure, including the claims. It is to be fully recognized that the different teachings of the embodiments discussed below may be employed separately or in any suitable combination to produce desired results. In addition, one skilled in the art will understand that the following description has broad application, and the discussion of any embodiment is meant only to be an illustration of that embodiment, and not intended to intimate that the scope of the disclosure, including the claims, is limited to that embodiment.

[0014] Certain terms are used throughout the following description and claims to refer to particular features or components. As one skilled in the art will appreciate, different persons may refer to the same feature or component by different names. This document does not intend to distinguish between components or features that differ in name but are the same structure or function.

[0015] In the following discussion and in the claims, the terms "including" and "comprising" are used in an open-ended fashion, and thus should be interpreted to mean "including, but not limited to . . . ." Also, the term "couple" or "couples" is intended to mean either an indirect or direct connection. In addition, the terms "axial" and "axially" generally mean along or parallel to a central axis (e.g., central axis of a body or a port), while the terms "radial" and "radially" generally mean perpendicular to the central axis. For instance, an axial distance refers to a distance measured along or parallel to the central axis, and a radial distance means a distance measured perpendicular to the central axis. The use of "top," "bottom," "above," "below," and variations of these terms is made for convenience, but does not require any particular orientation of the components.

[0016] Referring now to FIG. **1**, a sectional view of a blowout preventer **10** is shown. The blowout preventer **10** includes a housing **12**, such as a hollow body, with a bore **14** that enables passage of fluid or a tubular member through the blowout preventer **10**. The housing **12** further includes one or more cavities **16**, such as cavities **16** opposed from each other with respect to the bore **14**, with a ram **18** movably

positioned within each cavity **16**. The blowout preventer **10** may be coupled to other equipment that facilitates natural resource production. For instance, production equipment or other components may be attached to the top of the blowout preventer **10** using a connection **20** (which may be facilitated in the form of fasteners), and the blowout preventer **10** may be attached to a wellhead or spool using the flange **22** and additional fasteners.

[0017] One or more bonnet assemblies **24** are secured to the housing **12** and include various components that facilitate control of the rams **18** positioned in the blowout preventer **10**. The bonnet assemblies **24** are coupled to the housing **12** by using one or more fasteners **26** to secure the bonnets **28** of the bonnet assemblies **24** to the housing **12**. The rams **18** are then actuated and moved through the cavities **16**, into and out of the bore **14**, by operating and moving a piston **30** and a rod **32** coupled thereto within a housing **34** of the bonnet assemblies **24**. In operation, a force (e.g., from hydraulic pressure) may be applied to the pistons **30** to drive the rods **32**, which in turn drives the rams **18** coupled thereto into the bore **14** of the blowout preventer **10**. The rams **18** cooperate with one another when driven together to seal the bore **14** and inhibit flow through the blowout preventer **10**. In another embodiment, the rams **18** may be shear rams such that, when driven towards each other, shear a tubular member present within the bore **14** of the housing **12** of the blowout preventer **10**.

[0018] Referring now to FIG. **2**, a wire cutting apparatus **220** for use within a blowout preventer in accordance with one or more embodiments of the present disclosure is shown. The wire cutting apparatus **220** may be included in a housing of a blowout preventer to cut and shear a tubular member that is positioned within the bore of the blowout preventer. This may involve moving, extending, and retracting the wire cutting apparatus **220** into and out of the bore of the blowout preventer such that the wire cutting apparatus **220** may cut an object (e.g., tubular member) present within the bore of the blowout preventer. The use of a wire cutting apparatus **220** within a blowout preventer may enable the blowout preventer to operating at lower pressures and forces, thereby reducing the size and equipment requirements.

[0019] The wire cutting apparatus **220** in this embodiment includes a cutting wire **222** that is supported by pulleys **224**. An example of a cutting wire **222** may include a diamond impregnated wire, though other types of cutting wire may be used without departing from the scope of the present disclosure. A motor **226** may then be coupled to the pulleys **224** to drive the cutting wire **222**. The pulleys **224** may include a drive pulley **224**A and one or more support pulleys **224**B. The motor **226** may be operatively coupled to the drive pulley **224**A to drive the drive pulley **224**A and the cutting wire **222** supported by the pulleys **224**.

[0020] The wire cutting apparatus **220** may have a frame **228** with the pulleys **224** supported by the frame **228**. In particular, one or more axles of the pulleys **224** may be connected to the frame **228** such that the pulleys **224** are rotatably coupled to the frame **228**. One or more gears may be used with the wire cutting apparatus **220**, such as to control a speed of the cutting wire **222**, as desired. For example, as shown, a gearbox **230** may be included with the wire cutting apparatus **220** with the gearbox **230** coupled between the motor **226** and the drive pulley **224**A. The gearbox **230** may enable the motor **226** to control the speed at which the drive pulley **224**A rotates, and hence, control the speed at which the cutting wire **222** rotates through the wire cutting apparatus **220**.

[0021] As discussed above, the motor **226** may be used to drive the pulleys **224** and the cutting wire **222** though the cutting wire **222**, the pulleys **224**, and the frame **228** move with respect to the motor **226** (e.g., the cutting wire **222** may extend into and out of a bore of a blowout preventer while the motor **226** remains relatively stationary). The wire cutting apparatus **220** may include one or more components or mechanisms to enable this type of movement between the motor **226** and the cutting wire **222**. In this embodiment, a telescoping assembly **232** may be used to operatively couple the motor **226** to the pulleys **224**, and more specifically the drive pulley **224**A. The telescoping assembly **232** may include an inner shaft **234** and an outer shaft **236** (or more shafts as necessary), with the telescoping assembly **232** extending between the motor **226** and the gearbox **230**. This may enable the motor **226** to be operatively coupled to and drive the drive pulley **224**A through the telescoping assembly **232** and the gearbox **230** as the cutting wire **222**, pulleys **224**, and the frame **228** move with respect to the motor **226**. The present disclosure also contemplates other components, mechanisms, and assemblies included within the scope of the present disclosure that may also be used to enable such movement between the motor and the cutting wire, if necessary.

[0022] The wire cutting apparatus **220**, or a blowout preventer including the wire cutting apparatus **220**, may include a drive assembly **240** to move, extend, and retract the wire cutting apparatus **220** into and out of the bore of the blowout preventer. In FIG. **2**, the drive assembly **240** includes a housing **242** (e.g., such as a bonnet housing of a blowout preventer) with a piston **244** movably positioned within the housing **242**. A rod **246** may then be coupled and extend between the piston **244** and the wire cutting apparatus **220**, or more particularly the frame **228** of the wire cutting apparatus **220** in this embodiment, to enable the piston **244** to move the wire cutting apparatus **220** within a blowout preventer. For example, pressure (e.g., hydraulic pressure) may be selectively introduced on either side of the piston **244** to selectively move the piston **244**, and hence the wire cutting apparatus **220**. The present disclosure also contemplates other types of drive assemblies that may be used to move the wire cutting apparatus **220** within a blowout preventer that are included within the scope of the present disclosure.

[0023] In accordance with one or more embodiments, as the wire cutting apparatus **220** may be included within a blowout preventer, and the blowout preventer may be used subsea, the wire cutting apparatus **220** may include multiple sources to power the wire cutting apparatus **220**. For example, as shown in FIG. **2**, a remotely-operated vehicle (ROV) drive coupling **238** may be included with the wire cutting apparatus **220**. In this embodiment, the ROV drive coupling **238** may be operatively coupled to the motor **226** to enable an ROV to supplement or provide power to the motor **226**. This may enable additional or alternative power sources to drive the cutting wire **222** of the wire cutting apparatus **220**. Accordingly, in one or more embodiments, the wire cutting apparatus **220** may be able to operate independent of a blowout preventer control system, without power from the surface of the blowout preventer control system, and/or electrical power. In one or more such

embodiments, the wire cutting apparatus **220** may not include electrical components or electronics.

[0024] Referring now to FIGS. **3-6**, a blowout preventer **300** including a wire cutting apparatus **320** in accordance with one or more embodiments of the present disclosure is shown. FIG. **3** shows a side cross-sectional view of the blowout preventer **300** in a retracted position, and FIG. **4** shows an above view of the blowout preventer **300** in the retracted position. Further, FIG. **5** shows a side cross-sectional view of the blowout preventer **300** in an extended position, and FIG. **6** shows an above view of the blowout preventer **300** in the extended position.

[0025] The blowout preventer **300** includes a housing **302**, in which the housing **302** includes a bore **304** extending through the housing **302** and one or more cavities **306** in the housing **302** that intersect with the bore **304**. The wire cutting apparatus **320** may be movably positioned within the housing **302**, such as within the cavity **306**, of the blowout preventer **300**. The wire cutting apparatus **320** may then move (e.g., extend and retract) into and out of the bore **304** of the housing **302** of the blowout preventer **300**. As such, if an object, such as a tubular member **308**, is included within the bore **304** of the blowout preventer **300**, the wire cutting apparatus **320** may be used to cut or shear the tubular member **308**.

[0026] As discussed above, the wire cutting apparatus **320** includes a wire **322** supported by pulleys **324** with a motor **326** to drive the cutting wire **322** using the pulleys **324**. The wire cutting apparatus **320** may have a frame **328** with the pulleys **324** supported by the frame **328**, and a gearbox **330** may be coupled between the motor **326** and the pulleys **324** to enable the motor **226** to control the speed at which the pulleys **324** (e.g., drive pulley **324**A) rotates, and hence, control the speed at which the cutting wire **322** rotate through the wire cutting apparatus **320**.

[0027] To facilitate the cutting motion of the wire cutting apparatus **320** within the blowout preventer **300**, one or more components, such as a support block **350**, may be included to support the object (e.g., tubular member **308**) included within the bore **304** of the blowout preventer **300**. The support block **350** is shown as positioned opposite the wire cutting apparatus **320** with respect to the bore **304** of the housing **302** of the blowout preventer **300**. In one or more embodiments, the support block **350** may be movably positioned within the housing **302**, such as within a cavity **306**, of the blowout preventer **300**. The support block **350** may then move (e.g., extend and retract) into and out of the bore **304** of the housing **302** of the blowout preventer **300**. In particular, the support block **350** may extend and retract into and out of the bore **304** along with the wire cutting apparatus **320**.

[0028] As shown, the support block **350** may include in this embodiment a concave-profiled face to facilitate supporting the tubular member **308** by the support block **350**. In this embodiment, the support block **350** is shown as including a "V" profiled type face **352** such that this profile centralizes and/or stabilizes the tubular member **308** against the support block **350**. Further, the support block **350** may include an opening **354** or channel formed therein. This opening **354** may then enable the wire cutting apparatus **320** to be received, at least partially, within and correspond to the support block **350**, as shown particularly in FIG. **5**, to enable the wire cutting apparatus **320** to fully cut across the tubular member **308**.

[0029] As discussed above, the wire cutting apparatus **320**, or the blowout preventer **300** including the wire cutting apparatus **320**, may include a drive assembly **340** to move, extend, and retract the wire cutting apparatus **320** into and out of the bore **304** of the blowout preventer **300**. In this embodiment, the drive assembly **340** includes a housing **342** with a piston **344** movably positioned within the housing **342**, and a rod **346** coupled and extending between the piston **344** and the wire cutting apparatus **320**.

[0030] Similarly, the support block **350**, or the blowout preventer **300** including the support block **350**, may include a drive assembly **360** to move, extend, and retract the support block **350** into and out of the bore **304** of the blowout preventer **300**. In FIGS. **3-6**, the drive assembly **360** includes a housing **362** (e.g., such as a bonnet housing of the blowout preventer **300**) with a piston **364** movably positioned within the housing **362**. A rod **366** may then be coupled and extend between the piston **364** and the support block **350** to enable the piston **364** to move the support block **350** within the blowout preventer **300**.

[0031] In one embodiment, as the support block **350** may extend and retract into and out of the bore **304** along with the wire cutting apparatus **320**, the drive assembly **360** of the support block **350** and the drive assembly **340** of the wire cutting apparatus **320** may be linked to each other, in operation with each other, and/or on the same drive circuit to similarly control the movements of the support block **350** and the wire cutting apparatus **320**. For example, in the embodiment shown here, the hydraulic pressure used to drive the drive assembly **360** may also be used to drive the drive assembly **340**. Further, the present disclosure also contemplates other types of drive assemblies that may be used to move the support block **350** within a blowout preventer that are included within the scope of the present disclosure.

[0032] In one or more embodiments, a wire cutting apparatus may include a tensioning mechanism, such as to maintain a predetermined tension upon the cutting wire. For example, a tensioning mechanism may involve selectively controlling movement of one or more pulleys with respect to each other to maintain a predetermined tension upon the cutting wire across the pulleys. This may facilitate keeping the cutting wire taut, particularly when cutting an object with the cutting wire.

[0033] Further, in one or more embodiments, the wire cutting apparatus and/or the support block may be movable at or with a predetermined constant force within the blowout preventer. For example, when the wire cutting apparatus **320** and the support block **350** are extending into the bore **304** of the blowout preventer **300** to cut the tubular member **308**, the movement of the wire cutting apparatus **320** and/or the support block **350** may be controlled to apply a predetermined constant force upon the tubular member **308**. This may facilitate the cutting motion of the wire cutting apparatus **320** and prevent potential jamming or stalling of the wire cutting apparatus **320**.

[0034] Furthermore, in one or more embodiments, the wire cutting apparatus and/or the support block may be protected, such as from contents included within the bore of the blowout preventer, when not in use and positioned within the bore of the blowout preventer. For example, a flap may be used to cover and/or seal the opening through which the wire cutting apparatus **320** and/or the support block **350** protrude when extending into the bore **304** of the blowout

preventer **300**. The flap may enable the wire cutting apparatus **320** and/or the support block **350** to extend into the bore **304** of the blowout preventer **300**, such as by having the flap rotate out of the way. The flap may then rotate back to protect the openings and prevent content from the bore **304** flowing back into the cavities **306** of the blowout preventer **300**. The flap may be biased to close over the openings and then may move out of the way of the wire cutting apparatus **320** and/or the support block **350** when engaged. Alternatively, the flap may be separately controlled to move as the wire cutting apparatus **320** and/or the support block **350** move into and out of the bore **304** of the blowout preventer **300**.

[0035] In one or more embodiments, the wire cutting apparatus and/or the support block may be used to seal the bore of the blowout preventer. For example, after the tubular member **308** is cut with the wire cutting apparatus **320**, the support block **350** may move and extend across the bore **304**. By extending out and across the bore **304**, the support block **350** may be able to seal the bore **304**, such as to prevent fluid from passing through the bore **304** after the tubular member **308** is cut. This may enable the blowout preventer **300** to not only be capable of shearing the tubular member **308** positioned therein, but also capable of sealing the bore **304** within the blowout preventer **300** after the tubular member **308** has been cut.

[0036] Referring now to FIGS. **7** and **8**, multiple schematic above views of a wire cutting apparatus **720** to cut a tubular member **708** in accordance with one or more embodiments of the present disclosure are shown. In particular, FIG. **7** shows an embodiment of the wire cutting apparatus **720** in a push-type configuration to cut the tubular member **708**, and FIG. **8** shows an embodiment of the wire cutting apparatus **720** in a pull-type configuration to cut the tubular member **708**.

[0037] As with the above, the wire cutting apparatus **720** may include a wire **722** supported by pulleys **724** with a motor **726** to drive the cutting wire **722** using the pulleys **724**. A gearbox **730** may be coupled between the motor **726** and the drive pulley **724**A to control the speed at which the cutting wire **722** rotates through the wire cutting apparatus **720**. Further, a telescoping assembly **732** including an inner shaft **734** and an outer shaft **736** (or more shafts as necessary) may extend between the motor **726** and the gearbox **730**.

[0038] In the above embodiments, and in FIG. **7**, the wire cutting apparatus **720** may be used in the push-type configuration to cut the tubular member **708**, in which the wire cutting apparatus **720** is pushed (e.g., extended) into the bore of the blowout preventer to contact and cut the tubular member **708**. In another embodiment, and in FIG. **8**, the wire cutting apparatus **720** may be used in the pull-type configuration to cut the tubular member **708**, in which the wire cutting apparatus **720** is pulled (e.g., retracted) from or out of the bore of the blowout preventer to contact and cut the tubular member **708**. In such an embodiment, the cutting wire **722** may be positioned within the bore of the blowout preventer to have the tubular member **708** received into a loop formed by the cutting wire **722**. Then, once desired, the wire cutting apparatus **720** may be retracted out of the bore of the blowout preventer to have the cutting wire **722** contact and cut the tubular member **708**. Accordingly, a blowout preventer in accordance with the present disclosure may employ either of these types of configurations without departing from the scope of the present disclosure.

[0039] As mentioned above, a blowout preventer in accordance with the present disclosure may be able to operate at lower pressures and with lower forces, such as due to the use of a wire cutting apparatus. This may reduce the size and equipment requirements necessary for the use of a blowout preventer, in particular in a subsea environment where higher pressures and higher forces are often necessary for the shearing of tubular members.

[0040] Although the present invention has been described with respect to specific details, it is not intended that such details should be regarded as limitations on the scope of the invention, except to the extent that they are included in the accompanying claims.

What is claimed is:

1. An apparatus, comprising:
- a blowout preventer housing comprising a bore extending therethrough and a cavity intersecting the bore; and
- a wire cutting apparatus comprising a cutting wire with the wire cutting apparatus movably positionable within the cavity of the blowout preventer housing and extendable into the bore of the blowout preventer housing.

2. The apparatus of claim **1**, wherein the wire cutting apparatus comprises:
- pulleys to support the cutting wire; and
- a motor to drive the cutting wire using the pulleys;
- wherein the cutting wire is configured to cut a tubular member positioned within the bore of the blowout preventer housing.

3. The apparatus of claim **2**, wherein the wire cutting apparatus further comprises:
- a frame with the pulleys supported by the frame, the pulleys including a drive pulley and a support pulley, wherein the motor is configured to drive the drive pulley; and
- a gearbox located between the drive pulley and the motor to control a speed of the cutting wire.

4. The apparatus of claim **3**, wherein the wire cutting apparatus further comprises a telescoping assembly to operatively couple the motor to the drive pulley.

5. The apparatus of claim **2**, wherein the wire cutting apparatus further comprises a tensioning mechanism to maintain a predetermined tension upon the cutting wire across the pulleys.

6. The apparatus of claim **2**, wherein the cutting wire comprises diamond impregnated wire.

7. The apparatus of claim **2**, wherein the motor comprises an ROV drive coupling for an ROV to provide power to the motor.

8. The apparatus of claim **1**, wherein the wire cutting apparatus is extendable into the bore of the blowout preventer housing at a predetermined constant force.

9. The apparatus of claim **1**, further comprising a flap to protect the wire cutting apparatus within the cavity of the blowout preventer housing from contents within the bore of the blowout preventer housing.

10. The apparatus of claim **1**, further comprising:
- a support block positioned opposite the wire cutting apparatus with respect to the bore of the blowout preventer housing; and
- the support block movably positionable within the cavity of the blowout preventer housing and extendable into the bore of the blowout preventer housing.

11. The apparatus of claim **1**, further comprising:

a bonnet housing coupleable to the blowout prevent housing;

a piston movably positionable within the bonnet housing; and

a rod coupleable between the wire cutting apparatus and the piston such that movement of the piston moves the wire cutting apparatus within the blowout preventer housing.

12. An apparatus, comprising:

a blowout preventer housing comprising a bore extending through the blowout preventer housing;

a wire cutting apparatus comprising a cutting wire with the wire cutting apparatus movably positionable within the blowout preventer housing and extendable into the bore of the blowout preventer housing; and

a wire cutting apparatus drive assembly to move the wire cutting apparatus within the blowout preventer housing.

13. The apparatus of claim **12**, wherein the wire cutting apparatus drive assembly comprises:

a housing;

a piston movably positionable within the housing;

a rod coupleable between the wire cutting apparatus and the piston such that movement of the piston moves the wire cutting apparatus within the blowout preventer housing.

14. The apparatus of claim **12**, further comprising:

a support block movably positionable within the blowout preventer housing and extendable into the bore of the blowout preventer housing; and

a support block drive assembly to move the support block within the blowout preventer housing.

15. The apparatus of claim **14**, wherein the support block positioned opposite the wire cutting apparatus with respect to the bore of the blowout preventer housing.

16. The apparatus of claim **12**, wherein the wire cutting apparatus comprises:

pulleys to support the cutting wire; and

a motor to drive the cutting wire using the pulleys;

wherein the cutting wire is configured to cut a tubular member positioned within the bore of the blowout preventer housing.

17. The apparatus of claim **16**, wherein the wire cutting apparatus further comprises:

a frame with the pulleys supported by the frame, the pulleys including a drive pulley and a support pulley, wherein the motor is configured to drive the drive pulley; and

a gearbox located between the drive pulley and the motor to control a speed of the cutting wire.

18. The apparatus of claim **17**, wherein the wire cutting apparatus further comprises a telescoping assembly to operatively couple the motor to the drive pulley.

19. The apparatus of claim **16**, wherein the wire cutting apparatus further comprises a tensioning mechanism to maintain a predetermined tension upon the cutting wire across the pulleys, and wherein the wire cutting apparatus is extendable into the bore of the blowout preventer housing at a predetermined constant force.

20. The apparatus of claim **16**, wherein the motor comprises an ROV drive coupling for an ROV to provide power to the motor.

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