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(54) **Title:** APPARATUS FOR GRIPPING A DOWN HOLE TUBULAR FOR USE IN A DRILLING MACHINE

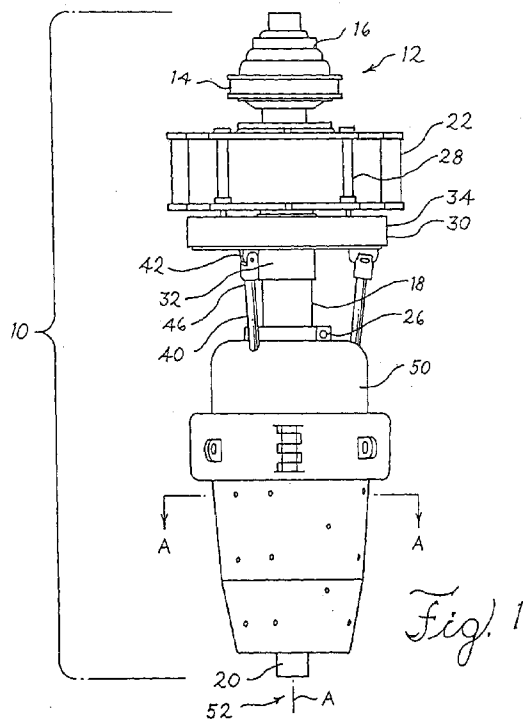

Fig. 1

(57) **Abstract:** An apparatus for gripping a down hole tubular includes a body element defining a central cavity along a longitudinal axis. Disposed within the body element is at least one engaging member. In one aspect, the engaging member has an upper gripping element and a lower gripping element. The gripping elements are designed to be movable with respect to one another. A rod is pivotally attached to the engaging member. The rod moves the engaging member radially inward or outward with respect to the longitudinal axis of the central cavity. In one embodiment, a slewing device is coupled to one end of the body element. The slewing device is moveable with respect to the body element along the longitudinal axis. The rod includes a first end and a second end. The first end is slidably and rotatably connected to the slewing device, such that the first end is radially moveable relative to the longitudinal axis as the slewing device is moved along the longitudinal axis from a first position to a second position. An engaging member is pivotally connected to the second end of the rod.

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APPARATUS FOR GRIPPING A DOWN HOLE TUBULAR FOR USE IN A DRILLING MACHINE

FIELD OF THE INVENTION

[0001] The present invention relates to an apparatus for gripping a down hole tubular, and in particular, an apparatus for gripping a down hole tubular for use in a drilling machine.

BACKROUND OF THE INVENTION

[0002] It is known to grip a down hole tubular, such as drill pipes and casing, for use in oil well drilling machines. In some situations, the device is designed to grip the tubular around the upper end thereof and rotate the down hole tubular in a high speed manner. For example, a plurality of gripping members can be spaced around the periphery of the down hole tubular. In some devices, the gripping members are configured to move axially and radially into engagement with the down hole tubular. In some situations, however, the gripping members may not be moved in a completely synchronous manner, and may tend to bind up on the down hole tubular as they are engaged therewith. In addition, some devices may be configured with latches or other systems that can become loosened or disconnected during operation, or can be difficult to manipulate.

SUMMARY OF THE INVENTION

[0003] The present invention is defined by the following claims, and nothing in this section should be considered to be a limitation on those claims.

[0004] In one embodiment, the apparatus for gripping a down hole tubular includes a body element defining a central cavity along a longitudinal axis. Disposed within the body element is at least one engaging member having an upper gripping element and a lower gripping element. The gripping

elements are designed to be movable with respect to one another. A rod is pivotally attached to the engaging member. The rod moves the engaging member linearly and radially inward or outward with respect to the longitudinal axis of the central cavity.

[0005] In one embodiment, the engaging member includes a guide that is disposed in a track located within the body element to facilitate the radial and linear movement discussed above. One of the lower and upper gripping elements of the engaging member are pivotally connected to a second end of the rod. A biasing member biases the other of the lower and upper gripping elements into engagement with the tubular. In another embodiment, the rod is connected to the upper gripping element, while in another embodiment the rod is connected to the lower gripping element.

[0006] In another aspect, an apparatus for gripping a down hole tubular for support and rotation includes a body element defining a central cavity having a longitudinal axis. A slewing device is coupled to one end of the body element. The slewing device is moveable with respect to the body element along the longitudinal axis. A first end of a rod is slidably and rotatably connected to the slewing device, such that the first end is radially moveable relative to the longitudinal axis as the slewing device is moved along the longitudinal axis from a first position to a second position. An engaging member is pivotally connected to a second end of the rod.

[0007] In another aspect, a method for gripping a down hole tubular includes inserting the down hole tubular within a body element. At least one rod is lowered via a slewing device such that at least one engaging member engages the down hole tubular. During the engagement of the down hole tubular, an upper gripping element and a lower element of the engaging member are displaced with respect to each other to firmly engage and align the down hole tubular. Upon engagement of the down hole tubular, additional operational steps may be performed, such as rotation of the down hole tubular for make-up/break-out operations. Upon completion of such operational steps, the rod is raised via the slewing

device, thereby disengaging the gripping element from the down hole tubular. Finally, the lifting/rotating tool is removed from the down hole tubular.

[0008] In one embodiment, the method may further include biasing the upper gripping member towards or away from the lower gripping member during the engagement process of the down hole tubular. The biasing of the upper gripping member allows for further engagement with the down hole tubular.

[0009] The various embodiments provide significant advantages over other down hole tubular gripping devices. For example and without limitation, the slidable and rotatable connection of the rod with the slewing device provides for the gripping members to be synchronously engaged with the down hole tubular. At the same time, the rods are secured to the slewing device, and do not require any latch devices. Furthermore, the two-piece gripping element allows for the gripping device to engage irregular-shaped down hole tubulars. The biasing element provides for the gripping members to be brought into further engagement with the down hole tubular. The biasing element further provides for the self-alignment of the down hole tubular during the engagement process and eliminates the requirement for an additional alignment mechanism.

[0010] The foregoing paragraphs have been provided by way of a general introduction, and are not intended to limit the scope of the following claims. The various embodiments, together with further advantages, will be best understood by reference to the following detailed description taken in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011] FIG. 1 is a perspective view of a portion of an earth drilling machine including a first embodiment of a tubular engaging apparatus.

[0012] FIG. 2 is a perspective view of the first embodiment of the tubular engaging apparatus shown in FIG. 1 in an engaged position.

[0013] FIG. 3 is a longitudinal sectional view of the first embodiment of the tubular engaging apparatus as shown in FIG. 1.

[0014] FIG. 4 is a cross-sectional view of the first embodiment of the tubular engaging apparatus taken along line 4-4 of FIG. 1.

[0015] FIG. 5 is a longitudinal sectional view of the first embodiment of the tubular engaging apparatus as shown in FIG. 2.

[0016] FIG. 6 is a cross-sectional view of the first embodiment of the tubular engaging apparatus taken along line 6-6 of FIG. 2.

[0017] FIG. 7 is a cross-sectional view of a second embodiment of the tubular engaging apparatus in a disengaged position.

[0018] FIG. 8 is a fragmentary cross-sectional view of the second embodiment of the tubular engaging apparatus as shown in FIG. 7 in the disengaged position.

[0019] FIG. 9 is a cross-sectional view of the second embodiment of the tubular engaging apparatus as shown in FIG. 7 in an engaged position.

[0020] FIG. 10 is a fragmentary cross-sectional view of the second embodiment of the tubular engaging apparatus as shown in FIG. 9 in the engaged position.

DETAILED DESCRIPTION OF THE PRESENTLY PREFERRED EMBODIMENTS

[0021] Referring to the drawings, FIGS. 1 and 2 show portions of a lifting/rotating tool 10, which is coupled to a top drive assembly 12. The top drive assembly 12 includes a radial piston 14 connected to a rotating means 16. The rotating means 16 can, for example, include hydraulic or electric motors, which can be remotely controlled, and serves to rotate a quill 18. The quill 18 is designed to couple to a down hole tubular 20, such as drill pipes or casings, for make-up/break-out operations. Further included in the top drive assembly 12 is a load beam 22 that supports and is coupled to the rotating means 16. The quill 18 is coupled to the rotating means 16 and rotates in bearing provided in the load beam. Situated

between the rotating means 16 and the load beam 22 is a shrink disc 26. Coupled to the load beam 22 is at least one hydraulic cylinder 28, including in one embodiment four cylinders. One end of the hydraulic cylinder 28 is fixed to the load beam 22 and the other end of the hydraulic cylinder 28 is coupled to a slewing device 30. The hydraulic cylinders 28 may be actuated to displace the slewing device 30, including a non-rotatable sleeve 32 that is disposed on the outer diameter of the quill 18. The hydraulic cylinders 28 are designed to actuate or move the slewing device 30 along a longitudinal axis 52 from a first position 34, as shown in FIG. 1, to a second position 36 shown in FIG. 2. In various embodiments, other actuators, such as screw devices, etc., would also work to move the slewing device. The slewing device 30 includes an upper component 31 that is non-rotatable, and a lower component 33 rotatably coupled to the upper component with an outer peripheral bearing. The lower component 33 rotates with the quill and a body element 50.

[0022] Further attached to the slewing device 30, and in particular the lower component 33, are a series of rods 40, having first 42 and second ends 44, where the second end 44 of the rod 40 is disposed within a body element 50 defining the longitudinal axis 52. It can be appreciated that the lifting/rotating tool 10 may be operated in different orientations. The first ends 42 of the rods 40 are radially moveable relative to the longitudinal axis and are slidably connected within radially extending slots formed in mounting portions connected to the bottomside of the slewing device 30. In operation, the slewing device is moved from the first position 34 to the second position 36, such that the rods 40 are moved from a first position 46 to a second position 48. During this operation, the first end 42 of the rod 40 is displaced to a position closer to the longitudinal axis 52. It can be appreciated that the ability of the rod 40 to be radially moveable with respect to the longitudinal axis 52 and the slewing device 30 eliminates the need for the rod 40 to be configured with two or more linked members to

accommodate for the radial displacement of the rod 40 during the engagement process with the down hole tubular 20.

[0023] In addition, the change of position of the first end 42 of the rod 40 allows for the accommodation of the varying sizes and irregularities of the down hole tubulars 20, such that engaging members 58 pivotally coupled to the second end 44 of the rod 40 can be synchronously engaged with the down hole tubular 20. The second end 44 of the rod 40 pivotally coupled to the engaging member 58 also is disposed within the body element 50. Various embodiments include three or four rods, though other numbers may be provided.

[0024] FIG. 3 is a vertical cross-sectional view of the lifting/rotating tool 10 of FIG. 1. As discussed previously, the quill 18 is designed to be couple the down hole tubular 20. The quill 18 is coupled to the down hole tubular 20 through an adapter 54 and a coupler 56. However, it is not required that the quill 18 be coupled to the down hole tubular 20. The adapter 54 runs along the longitudinal axis 52 and has smaller diameter than the down hole tubular 20, such that a portion of the adapter 54 is disposed within the down hole tubular 20 in the engaged position. Alternatively, the coupler 56 may couple the quill 18 to the down hole tubular 20. The coupling operation occurs within the body element 50.

[0025] The body element 50 also defines an opening 60 along its longitudinal axis 52 to allow a portion of the quill 18 or the adapter 54 to pass therethrough to engage the down hole tubular 20. Often, an in-line blow out preventer (not shown) and one or more saver subs (not shown) will be disposed between the upper end of the body element 50 and the quill 18. The body element 50 defines a central cavity 62 that allows for the insertion of the down hole tubular 20. The inner diameter of the central cavity 62 may decrease as it approaches the bottom of the body element 50. The body element 50 includes in one embodiment an upper housing bell component 35 and a lower housing bowl component 37 joined with a belt clamp 39, which locks the bowl to the bell.

[0026] As best shown in FIGS. 3 and 5, the set of engaging members 58 are disposed within the central cavity 62 of the body element 50. Many embodiments will include three or four engaging members 58, though other numbers may be provided, with the number of engaging members 58 corresponding to the number of rods 40. Each engaging member 58 includes an upper gripping element 64 and a lower gripping element 66. As best shown in FIGS. 4 and 6, a portion the engaging member 58 comprises a guide 68 that engages a track 70. The track 70 is defined by a liner 72 disposed within the body element 50 and is located between the engaging member 58 and the inner surface of the body element 50. The guide 68 portion of the engaging member 58 allows the engaging member 58 to travel linearly in a reciprocal manner from one position to another along the track 70. In one embodiment, the orientation or angle of the rods 40 is substantially parallel to the orientation or angle of the track 70, such that the rods exert a force on the engaging members substantially parallel to the track. Furthermore, the track 70 may converge toward the longitudinal axis 52 of the body element 50 as it approaches the bottom of the body element 50. Thus, as the guide 68 of the engaging member 58 moves downwardly along the track 70 of the liner 72, the engaging member 58 moves radially inwardly as well. Conversely, when the engaging member 58 is raised, the cooperation between the guide 68 and the track 70 moves the engaging member 58 upwardly and radially outwardly. The guide 68 and the track 70 may comprise of a simple channel, L-shape, T-shape, or other shapes and/or combinations thereof. The track 70 can be routed into a frusto-conical liner 72, or the liner 72 can be made up of several pieces, with the junction between the pieces forming the track 70.

[0027] The engaging member 58 defines an engaging portion 74 that is designed to engage the down hole tubular 20. The engaging portion 74 comprises a portion of the upper gripping element 64 and lower gripping element 66. The engaging portions 74 of the elements 64, 66 should be

aligned with each other so as to provide full surface support when the gripping elements 64, 66 are moved with respect to each other during the engagement process. In one embodiment, the engaging portion 74 of the engaging member 58 defines a surface having a shape similar to the down hole tubular 20. For example, if the shape of the down hole tubular 20 is cylindrical, the engaging portions 74 should have a inner semi-circular shape, or concave surface, to maximize the surface area in contact between the engaging member 58 and the down hole tubular 20 when in the engaged position. Additionally, the engaging portion 74 of the engaging member 58 may also have a gripping surface 76 to increase the frictional force between the engaging member 58 and down hole tubular 20 during operation. The gripping surface 76 may consist of horizontal lines, vertical lines, a knurled pattern, or any other pattern and/or combinations thereof. It will be appreciated that the semi-circular shape of the engaging member 58 may also aid in centering the down hole tubular 20 during the engagement process. The centering of the down hole tubular 20 is achieved as the gripping elements 64, 66 simultaneously and synchronously downwardly converge toward the longitudinal axis 52, thereby aligning the down hole tubular 20 with the longitudinal axis 52.

[0028] In one embodiment, the lower gripping element 66 is pivotally coupled to the second end 44 of the rod 40. The rod 40 can have a cylindrically shaped cross-section, a rectangular cross-section, or another shape or combination thereof. The upper gripping element 64 defines a channel or opening 78 through which the rod 40 passes such that it can be connected to the lower gripping element 66. The upper gripping element 64 and lower gripping element 66 may be of complimentary shapes to allow the two elements to fit together, as shown in FIG. 3, for example with an upper portion of the lower griping element 66 received in recess formed in the upper gripping element 64.. It will be appreciated that such a configuration will require less space within the body element 50.

[0029] Disposed above the upper gripping element 64 is a biasing element 80 which biases the lower gripping element 66 towards the upper gripping element 64 when the gripping elements are not engaged with a tubular 20. As the rods push the lower gripping element 66 downwardly away from the upper gripping element 64, which engages the tubular 20 first, the biasing element further exerts a biasing force against the upper gripping element 64 towards the second end 44 of the rod 40 during the engagement process. Although the upper gripping element 64 and the lower gripping element 66 may not be linked together, or the rod 40 and the upper gripping element 64 linked together, the position of the upper gripping element 64 is dependent on the position of the lower gripping element 66 as a result of the biasing element 80 and the rod 40. The biasing element 80 may consist of a tension spring, a compression or torsion spring, a cantilever spring, an elastic sleeve, and/or some combination thereof. The biasing element 80 is disposed on the rod 40, with a top end of the biasing element engaging a shoulder 41 formed on the rod. A bottom end of the biasing element engages a housing or collar 82 secured to and extending upwardly from the upper gripping element 64, with the biasing element disposed in the housing/collar 82. Alternatively, the biasing element 80 may be disposed within the rod 40. In the latter embodiment, the rod 40 has a hollow portion (not shown) adapted to house the biasing element 80.

[0030] In operation, the rods 40 move downwardly and inwardly, with the collar 82 compressing the biasing element 80, which in turn exerts a force against the upper gripping element 64 towards the second end 44 of the rod 40 and into engagement with the tubular 20. Such a design helps prevent debris from the drilling operation to clog or impede the biasing function of the biasing element 80. Regardless of its location, the biasing element 80 aids the upper gripping element 64 to engage the down hole tubular 20. It can be appreciated that the biasing element 80 also aids the upper gripping element 64 to center the down hole tubular 20 with the

longitudinal axis 52 during operation. The downward and inward movement of the rod also engages the lower gripping element 66 with the tubular 20. In this embodiment, the upper and lower gripping elements 64, 66 move away from each other as they are brought into engagement with the tubular 20.

[0031] In another embodiment, as shown in FIGS. 7-10, the upper gripping element 64 is pivotally coupled to the second end 44 of the rod 40. The lower gripping element 66 is reciprocally coupled to the upper gripping element 64, thereby allowing the lower gripping element 66 to reciprocally move relative to a lower portion 84 of the upper gripping element 64. The lower gripping element 66 defines a channel 86 through which the lower portion 84 of the upper gripping element 64 is inserted. The lower portion 84 of the upper gripping element 64 includes a flange 88 that has a diameter larger than the diameter of the channel 86 of the lower gripping element 66. Thus, the lower gripping element 66 cannot traverse beyond the flange 88 portion of the upper gripping element 64. It will be further appreciated that a biasing element 80 is disposed between the lower portion 84 of the upper gripping element 64 and the lower gripping element 66. The biasing element 80 is disposed around the lower portion 84 of the upper gripping element 64 such that the biasing element 80 is located between a downwardly facing shoulder 90 formed on the lower portion 84 of the upper gripping element 64 and a collar 92 on the lower gripping element 66, as shown in FIGS. 8 and 10.

[0032] In this embodiment, the biasing element 80 biases the lower gripping element 66 away from the second end 44 of the rod 40 and the upper gripping element 64, for example when the gripping elements are in a disengaged position. Again, it can be appreciated that the biasing element 80 can consist of a spring (compression, tension, torsion, leaf, etc.), an elastic material, and/or combinations thereof. Alternatively, the biasing element 80 may be incorporated into the lower portion 84 of the upper gripping element 64 or an inner portion (not shown) of the lower

gripping element 66. Such a configuration will prevent debris and foreign material produced from the drilling operation to impede the functionality of the biasing element 80. As the rod 40 is moved downwardly and inwardly the lower gripping element 66 is first engaged with the tubular 20, by way of the biasing force of the biasing element, with the upper gripping element then being brought into engagement with the tubular 20. In this embodiment, the gripping elements are moved toward each other as they are brought into engagement with the tubular 20.

[0033] In operation, the lifting/rotating tool 10 can be used both to lift and to rotate the down hole tubular 20 by first positioning the lifting/rotating tool 10 over the down hole tubular 20 and positioning the engaging members 58 in a non-engaging position, as shown in FIGS. 3 and 4. Once positioned, the slewing device 30 is raised which in turn raises the rods 40 and engaging members 58. Next, the top head drive assembly 12 is lowered to position the body element 50 over the down hole tubular 20, such that the end of the down hole tubular 20 enters the central cavity 62 between the engaging members 58.

[0034] Once the lifting/rotating tool 10 is in the proper position, the slewing device 30 is then lowered by the at least one hydraulic cylinder 28, which in turn lowers the series of rods 40 and engaging members 58. The first end 42 of the rods 40 are radially and slidably displaced to a position closer to the longitudinal axis 52 of the body element 50, thereby allowing the engaging members 58 to move axially downwardly and radially inwardly to engage the down hole tubular 20. For example as shown in FIG. 7, the lower slewing component 33 is configured with lugs having radically elongated slots that receive a pin that rotatably connects the rods. The pin can move radially inwardly and outwardly, while the rod 40 simultaneously rotates about the axis of the pin. In one embodiment, as shown in FIG. 3, the engaging member 58 is orientated such that the upper gripping element 64 rests on top of the lower gripping element 66 in disengaged position.

[0035] As the hydraulic cylinders 28, or other actuators, are extended, the engaging members 58 are progressively moved radially inwardly, along the track 70 disposed within the liner 72, until the upper gripping element 64 comes into contact with the down hole tubular 20. As the rod continues to move downwardly, the lower gripping element 66 is brought into engagement with the down hole tubular 20. When the lower gripping element 66 is fully engaged with the down hole tubular 20, the biasing element 80 is compressed and exerts a force against the upper gripping element 64 towards the second end of the rod. The biasing element 80 performs at least two functions. First, if necessary, the biasing element 80 displaces the upper gripping element 64 radially inwardly towards the central cavity 62 of the body element 50, thereby further engaging the down hole tubular 20. Second, the biasing element 80 allows the upper gripping element 64 to align the down hole tubular 20 with the longitudinal axis 52.

[0036] Once the engaging members 58 fully engage the down hole tubular 20, as shown in FIGS. 5 and 6, a high torque connection is established between the lifting/rotating tool 10 and the down hole tubular 20. Upon activation of the rotating means 16, sufficient torque is transmitted via the engaging members 58 to the down hole tubular 20 for drilling. If it should be necessary to suppress a threatened blow out during tubular handling operations, the engaging members 58 can be raised and the lifting/rotating tool 10 can be rotated and lowered to couple the quill 18 with the down hole tubular 20. Then the drilling fluid under pressure can be passed via the quill 18 into the down hole tubular 20.

[0037] Once the make-up/break-out operations are completed, the hydraulic cylinders 28 are actuated to raise the engaging members 58 via the rods 40. The lifting/rotating tool 10 is then removed from the down hole tubular 20, and may repeat the process with the next down hole tubular (not shown).

[0038] In another embodiment, as shown in FIGS. 7-10, the second end 44 of the rod 40 is pivotally coupled to the upper gripping element 64. In operation, the hydraulic cylinders 28 are extended to lower the slewing device 30, and in turn, the rods 40. As a result of the lowering of the slewing device 30 and the rods 20, the engaging members 58 are progressively lowered until the gripping surface 76 of the engaging members 58 comes into contact with the down hole tubular 20. Prior to engagement with the down hole tubular 20, the lower gripping element 66 is in a position farther away from the upper portion of the upper gripping element 64 than when in the engaged position. As the engaging member 58 engages the down hole tubular 20, the lower gripping element 66 begins to traverse along the lower portion 84 of the upper gripping element 64 towards the upper portion of the upper gripping element 64. As the lower gripping element 66 becomes engaged with the down hole tubular 20, as shown in FIG. 10, the upper gripping element 64 continues to travel in a downward and a radially inward direction with respect to the lower gripping element 66. As the upper gripping element 64 is displaced with respect to the engaged lower gripping element 66, the biasing element 80 is compressed. The compression of the biasing element 80 biases the lower gripping element 66 into engagement with the tubular 20. As discussed above, once the engaging member 58 has fully engaged the down hole tubular 20, additional operations, including drilling and make-up/break-out procedures, may commence.

[0039] Alternative to the down hole tubular 20 as shown in FIGS. 3 and 5, the down hole tubular 20 may have a tool joint 96 as shown in FIG. 9, to which the engaging member 58 may engage. In this embodiment, as illustrated in FIG. 9, the upper gripping element 64 engages the tool joint 96 of the down hole tubular 20 and the lower gripping element 66 engages a portion under the tool joint 96. The processes discussed above may be performed with the tool joint 96. This engagement configuration increases

the amount of torque capable of being transmitted to the down hole tubular 20.

[0040] While the invention has been illustrated and described in detail in the drawings and foregoing description, the same is to be considered as illustrative and not restrictive in character, it being understood that only exemplary embodiments have been shown and described and do not limit the scope of the invention in any manner. The illustrative embodiments are not exclusive of each other or of other embodiments not recited herein. Accordingly, the invention also provides embodiments that comprise combinations of one or more of the illustrative embodiments described above. Modifications and variations of the invention as herein set forth can be made without departing from the spirit and scope thereof, and, therefore, only such limitations should be imposed as are indicated by the appended claims.

WHAT IS CLAIMED IS:

1. An apparatus for gripping a down hole tubular for support and rotation, said apparatus comprising:

a body element defining a central cavity having a longitudinal axis;

at least one engaging member comprising an upper gripping element and a lower gripping element disposed within said cavity of said body element, wherein said upper gripping element is moveable relative to said lower gripping element; and

at least one rod comprising a first end and second end, wherein said second end of said at least one rod is pivotably secured to said at least one engaging member, wherein said at least one rod is moveable between at least first and second positions, wherein said at least one engaging member is radially moveable inwardly from an non-engaging position to an engaging position relative to said longitudinal axis as said at least one rod is moved between said first and second positions.

2. The apparatus of Claim 1, wherein said at least one engaging member comprises a guide portion.

3. The apparatus of Claim 2, wherein said body element comprises a track, wherein said guide portion of said at least one engaging member is disposed within said track.

4. The apparatus of Claim 1, wherein said second end of said at least one rod is pivotably engaged to said upper gripping element.

5. The apparatus of Claim 4, wherein said lower gripping element is reciprocably coupled to said upper gripping element.

6. The apparatus of Claim 5 further comprising a biasing element disposed between said upper and lower gripping elements.

7. The apparatus of Claim 1, wherein said second end of said at least one rod is pivotably secured to said lower gripping element.

8. The apparatus of Claim 7, wherein said upper gripping element has an opening extending therethrough, where said at least one rod is disposed through said opening of said upper gripping element.

9. The apparatus of claim 8, wherein said upper gripping element is movable from a first position to a second position relative to said rod as said at least one engaging member is moved from said non-engaging position to said engaging position, wherein said upper gripping element is disposed further from said first end of said at least one rod when in said first position than said second position.

10. The apparatus of Claim 9, further comprising a biasing element biasing said upper gripping element towards said lower gripping element.

11. The apparatus of Claim 1, wherein said body element defines a upper end configured for engagement with a top head drive unit, said upper end defining a central passageway into said central cavity.

12. The apparatus of Claim 11, wherein said upper end engages a coupler.

13. The apparatus of Claim 12, wherein said coupler is shaped and configured to mate with a down hole tubular in said central cavity.

14. An apparatus for gripping a down hole tubular for support and rotation, said apparatus comprising:

a body element defining a central cavity having a longitudinal axis, adapted to receive said down hole tubular, said body element comprising an upper portion and a lower portion;

at least one gripping member disposed within said body element for gripping said down hole tubular; and

a belt securing said upper portion of said body element to said lower portion of said body element.

15. The apparatus of Claim 14 further comprising at least one rod comprising a first end and second end, said at least one rod being disposed through said upper portion of said body element, wherein said second end of said at least one rod is pivotably secured said at least one gripping member.

16. The apparatus of Claim 15 wherein said at least one gripping member further comprises an upper gripping element and a lower gripping element, wherein said upper gripping element is moveable relative to said lower gripping element.

17. The apparatus of claim 15 wherein said belt further comprises a hinge mechanism to allow for the removal of said upper portion from said lower portion of said body element.

18. An apparatus for gripping a down hole tubular for support and rotation, said apparatus comprising:

a body element defining a central cavity having a longitudinal axis;

a slewing device coupled to one end of said body element, said slewing device moveable with respect to said body element along said longitudinal axis;

at least one rod comprising a first end and second end, wherein said first end of said at least one rod is slidably and rotatably connected to said slewing device, wherein said first end of said at least one rod is radially moveable relative to said longitudinal axis as said slewing device is moved along said longitudinal axis from a first position to a second position; and

at least one engaging member pivotally connected to said second end of said at least one rod.

19. The apparatus of Claim 18, wherein said first end of said at least one rod is further from said longitudinal axis when in said first position than when in said second position.

20. The apparatus of Claim 19, wherein said at least one engaging member comprises an upper gripping element and a lower gripping element, said at least one engaging member having a non-engaging and engaging position, wherein said non-engaging position corresponds with said first position of said at least one rod, and said engaging position corresponds with said second position of said at least one rod.

21. A method for gripping a down hole tubular for support and rotation, said method comprising:

providing a body element defining a central cavity and at least one rod, having first and second ends, said second end pivotably secured to an engaging member, wherein said engaging member comprises a upper gripping element and a lower gripping element, disposed within said body element;

inserting said down hole tubular within said body element;

lowering said at least one rod to lower said engaging member;

displacing said upper gripping element and said lower gripping element; and

engaging said down hole tubular with said engaging member.

22. The method of Claim 21, wherein said displacing said upper gripping element and said lower gripping element further comprises biasing said upper gripping member towards said lower gripping member.

23. The method of Claim 21, wherein said displacing said upper gripping element and said lower gripping element further comprises biasing said lower gripping member away from said upper gripping member.

24. A method for gripping a down hole tubular for support and rotation, said method comprising:

providing a body element defining a central cavity having a longitudinal axis and at least one rod, having first and second ends,

said first end slidably coupled to a slewing device, and said second end pivotably coupled to an engaging member, wherein said at least one rod is disposed within said body element;

inserting said down hole tubular within said body element;

lowering said slewing device from a first position to a second position;

radially displacing said first end of said at least one rod from a position farther from said longitudinal axis when said slewing device is in said first position, to a position closer to said longitudinal axis when said slewing device is in said second position;

lowering said at least one rod; and

engaging said down hole tubular with said engaging member when said slewing device is in said second position.

25. An apparatus for gripping a down hole tubular for support and rotation, said apparatus comprising:

a body element defining a central cavity having a longitudinal axis;

at least one engaging member comprising an upper gripping element and a lower gripping element disposed within said cavity of said body element, wherein said upper gripping element is moveable relative to said lower gripping element; and

at least one rod comprising a first end and second end, wherein said second end of said at least one rod is pivotably secured to said at least

one engaging member, wherein said at least one rod is moveable between at least first and second positions, wherein said at least one engaging member is radially moveable inwardly from an non-engaging position to an engaging position relative to said longitudinal axis as said at least one rod is moved between said first and second positions.

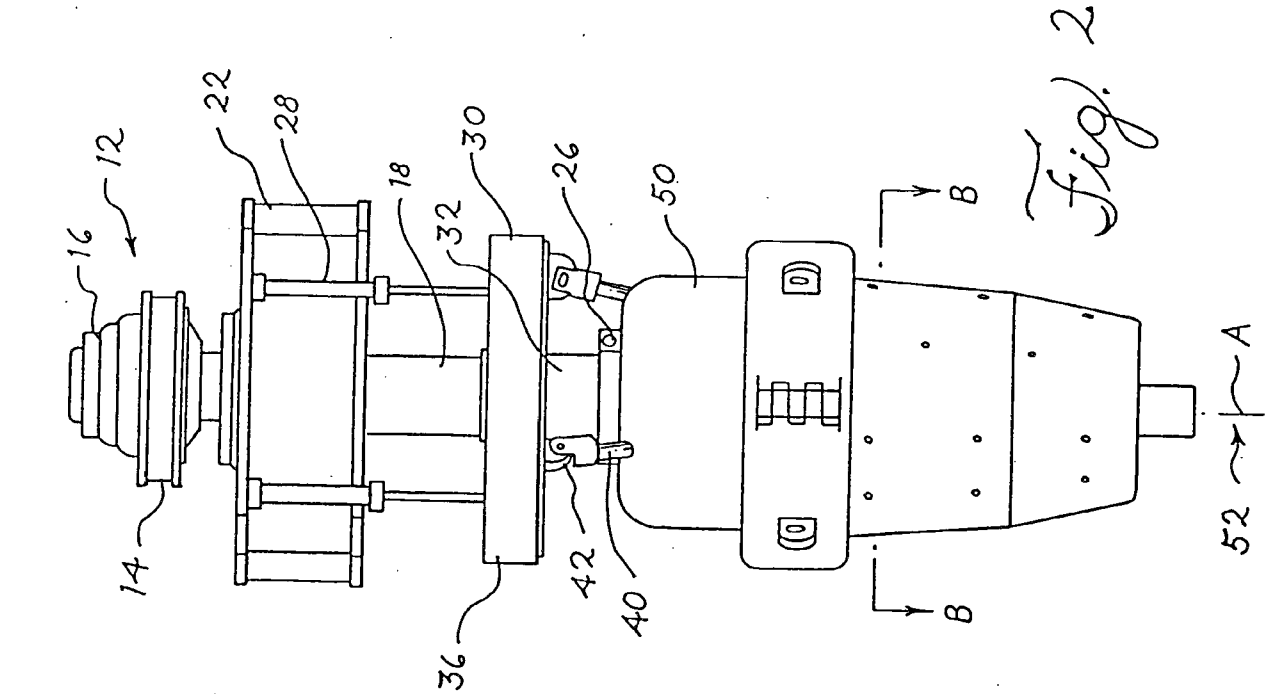
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Fig. 2

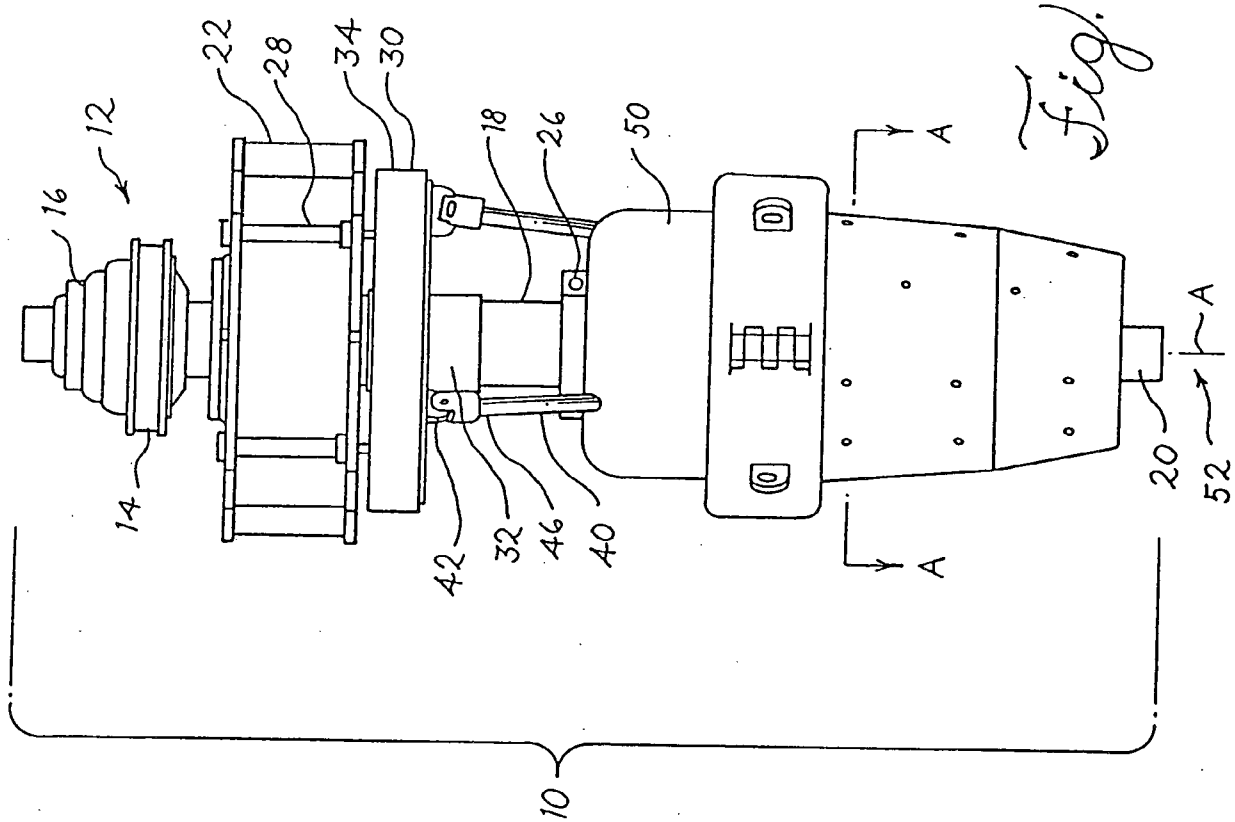
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Fig. 1

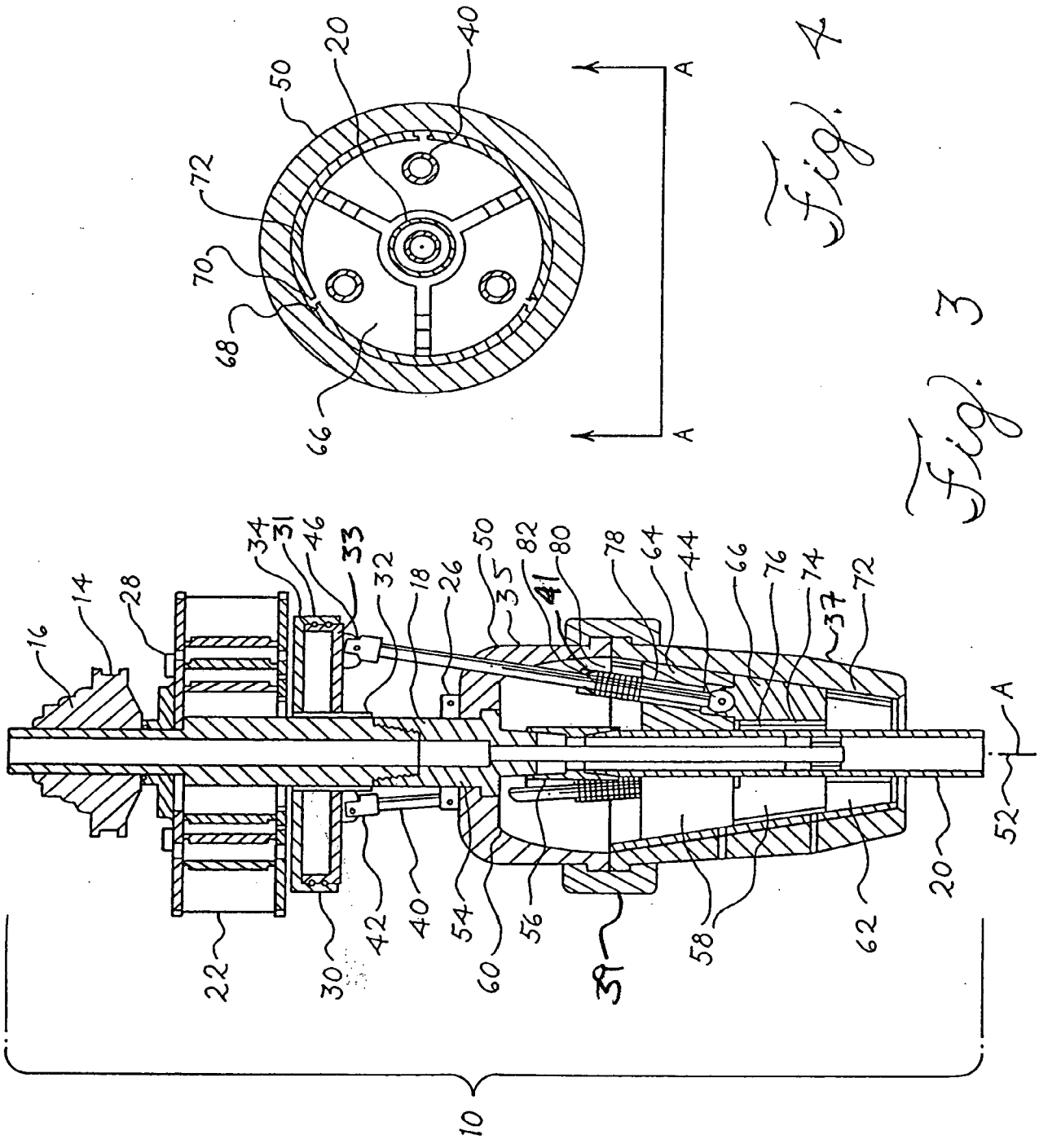
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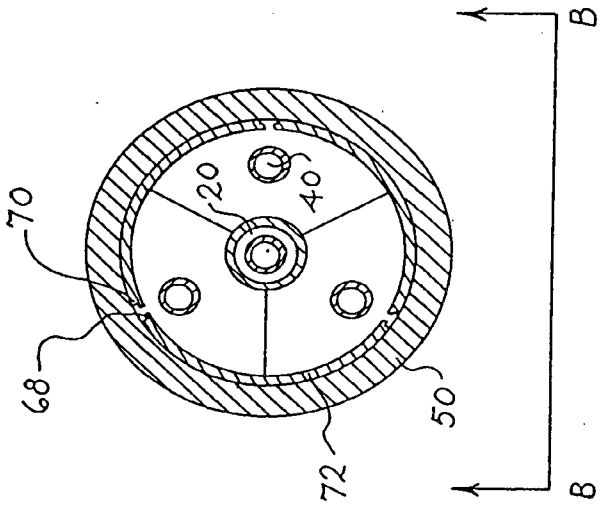
Fig. 4

Fig. 3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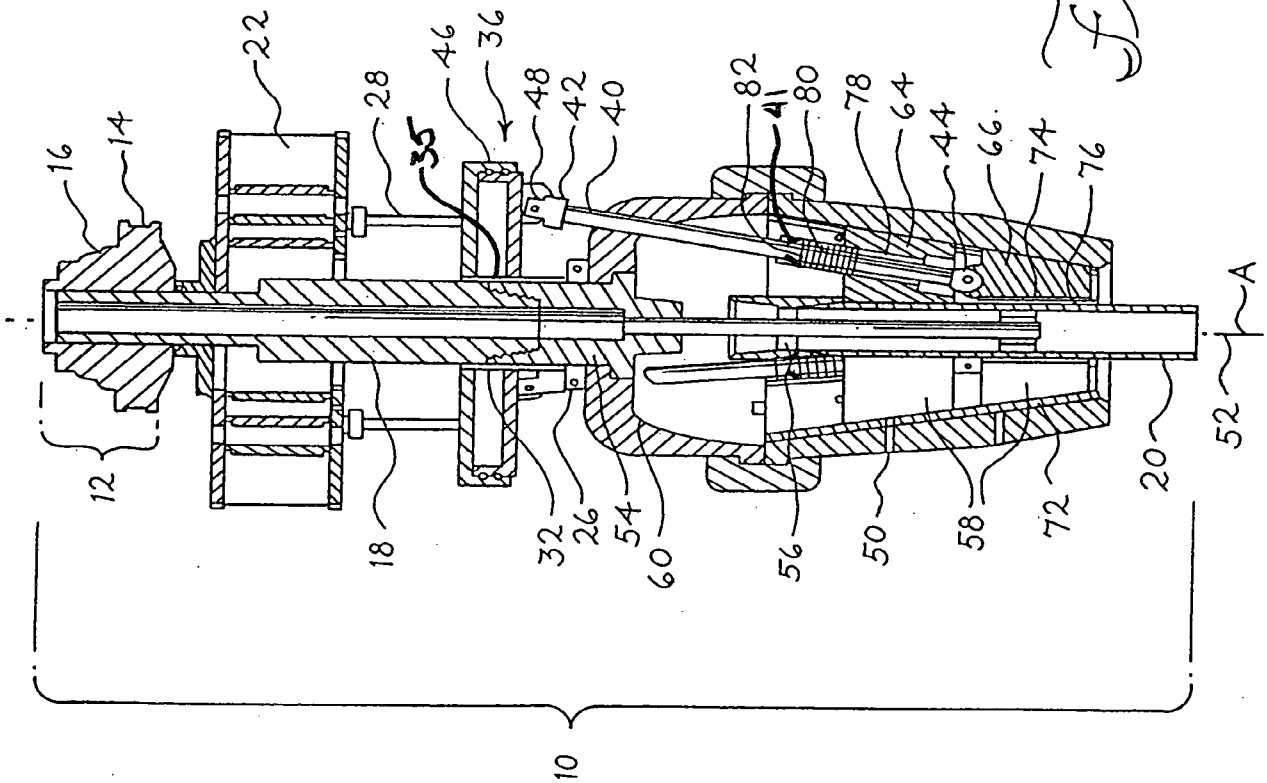
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Fig. 5

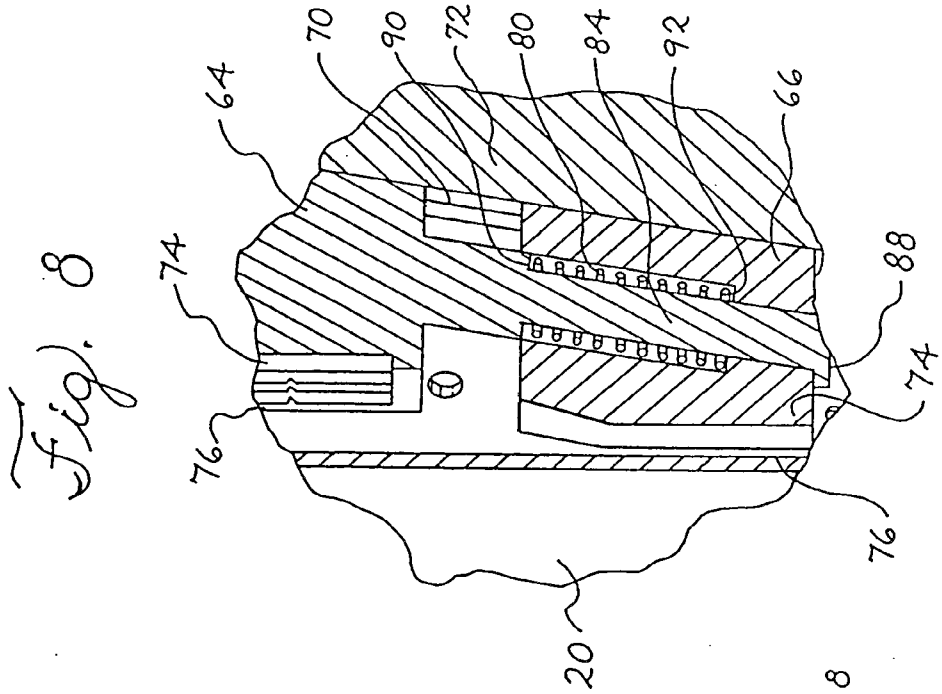

Fig. 8

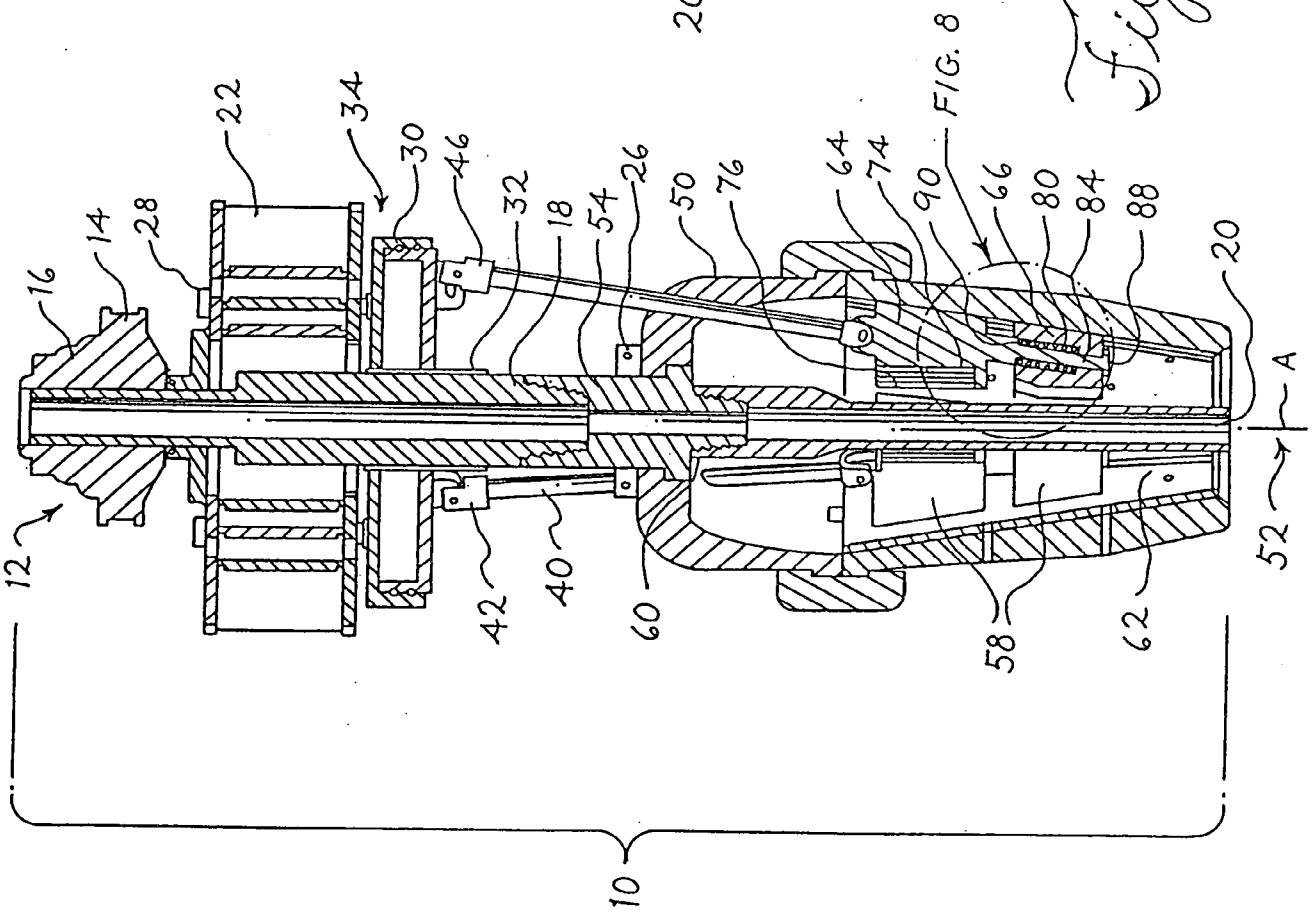

Fig. 7

FIG. 8

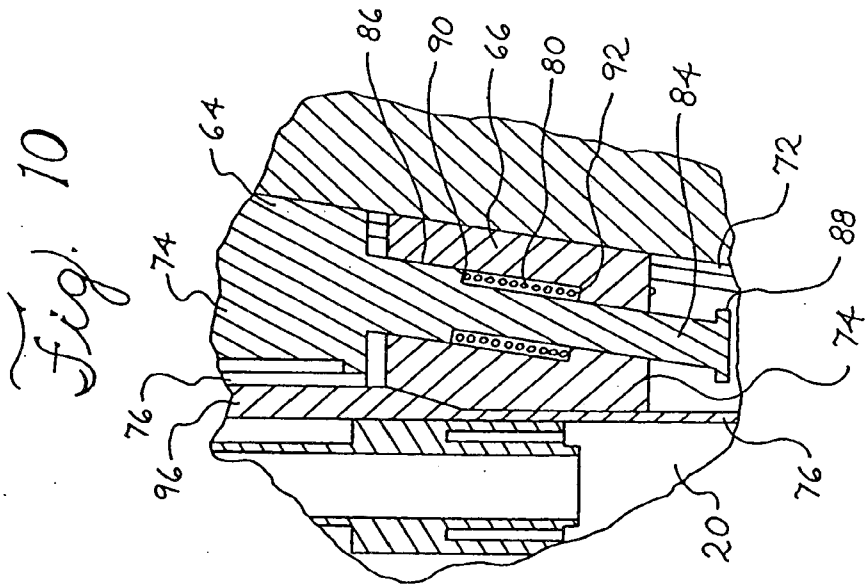
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Fig. 10

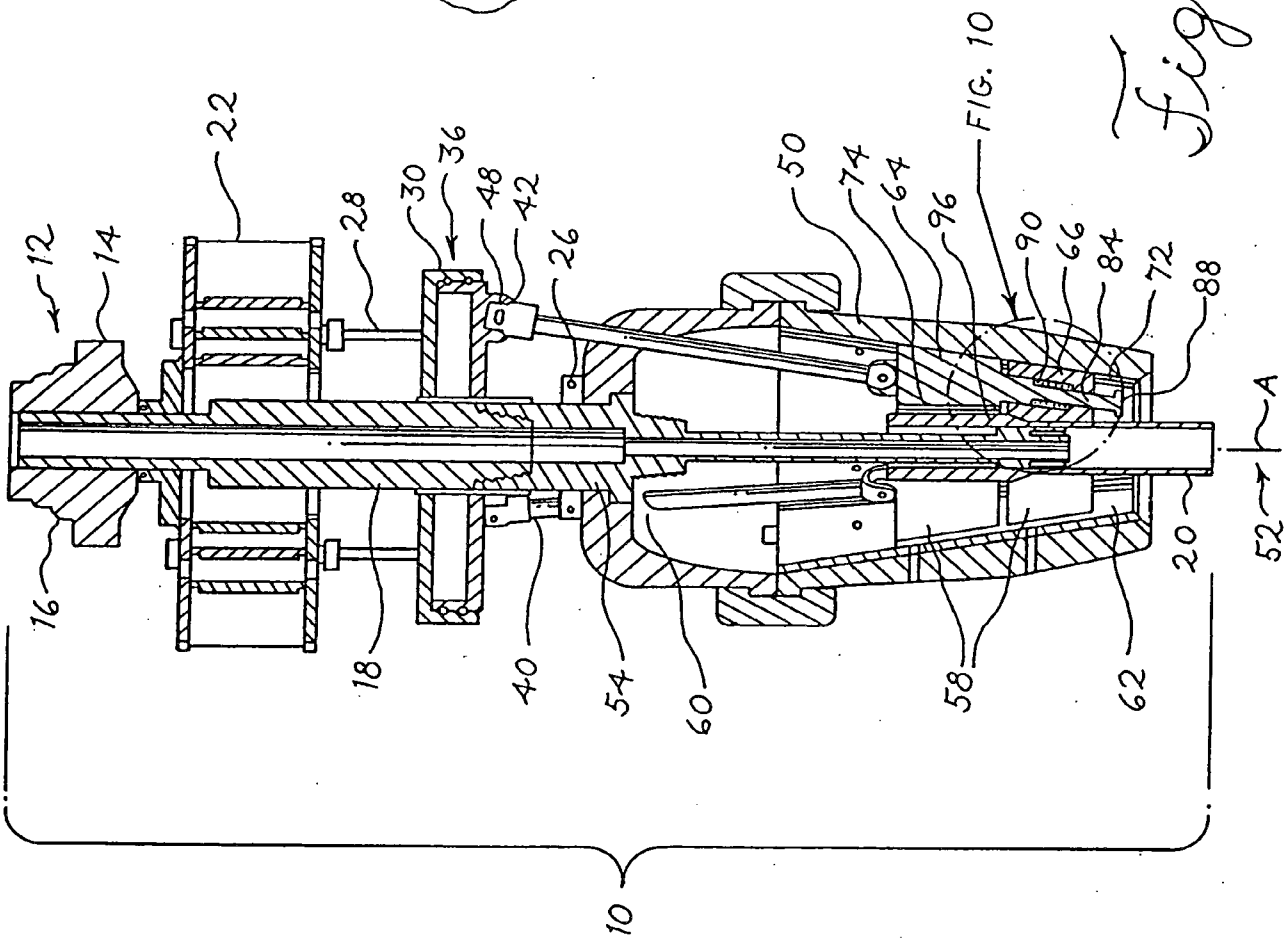
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FIG. 10
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Fig. 9