United States Patent [19]

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[11] **3,779,313**

[45] **Dec. 18, 1973**

[54] **RELEASABLE CONNECTING APPARATUS FOR SUBSEA WELLHEAD**

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[21] Appl. No.: **160,407**

[52] **U.S. Cl.** **166/0.6,** 166/208

[51] **Int. Cl.** **E21b 7/12**

[58] **Field of Search** 166/0.5, 208, 181, 166/177, 135

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[57] **ABSTRACT**

The apparatus has inner and outer members nonrotatably telescoped together with a driving ring therebetween which in an extended position of the members is locked to the inner member for rotation therewith, which in a contracted position of the members is freed from the members, and which has lower teeth mating with teeth on a casing hanger whereby when the casing hanger is suspended over its landing shoulder in a subsea wellhead, in order to maintain the apparatus in the extended position, right hand rotation of the string drivingly rotates the casing despite a left hand threaded attachment between the hanger and the outer member when the casing hanger engages the landing shoulder, but when the apparatus contracts to free the drive ring, right hand rotation of the string unscrews the left hand threaded attachment to release the apparatus from the casing hanger for withdrawal of the apparatus.

10 Claims, 6 Drawing Figures

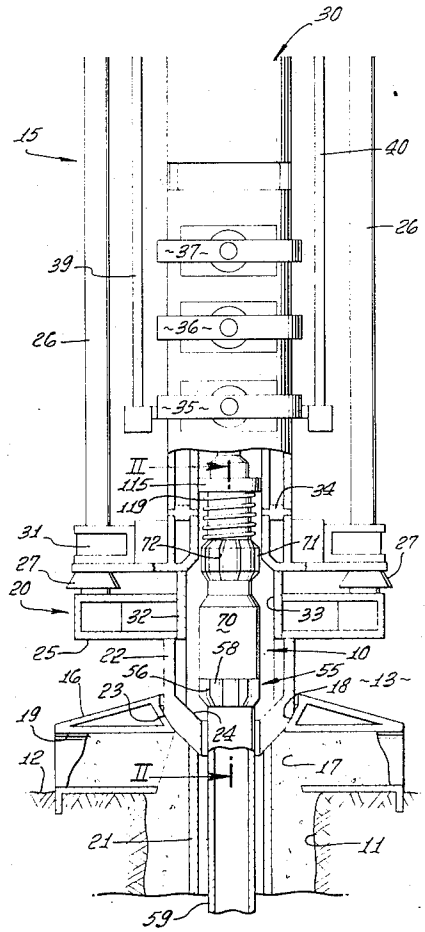

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FIG. 1a.

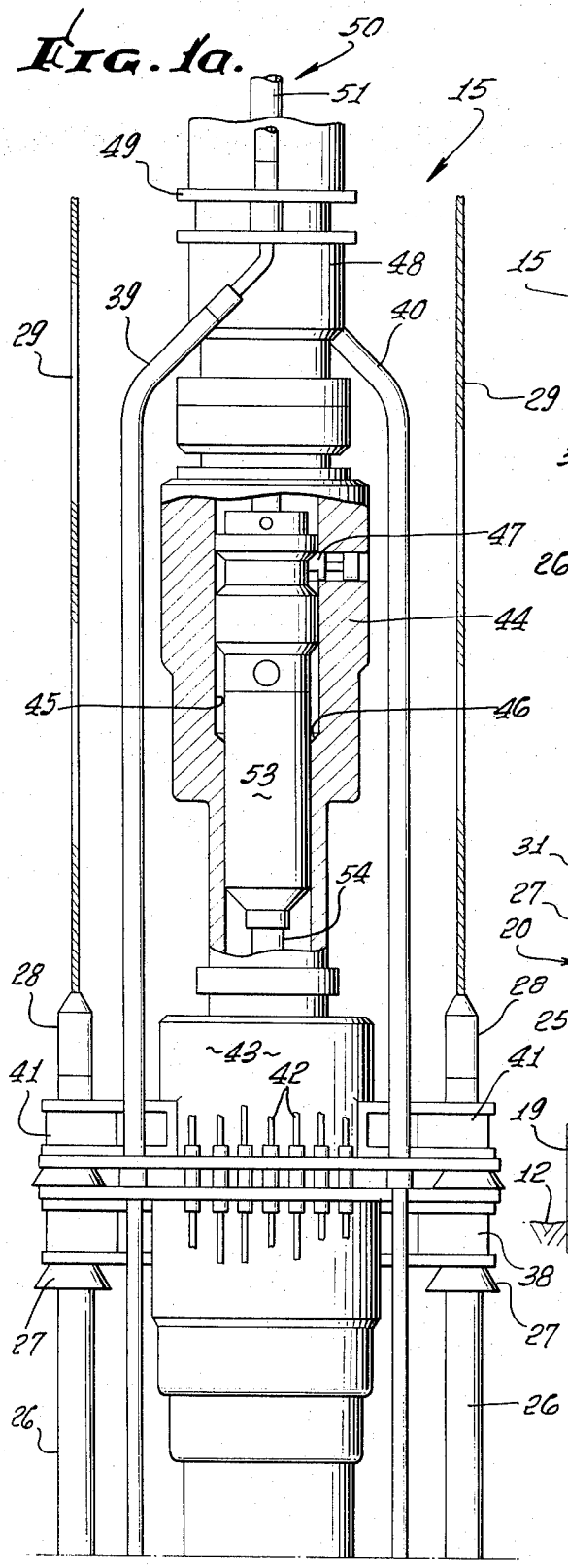

FIG. 1b.

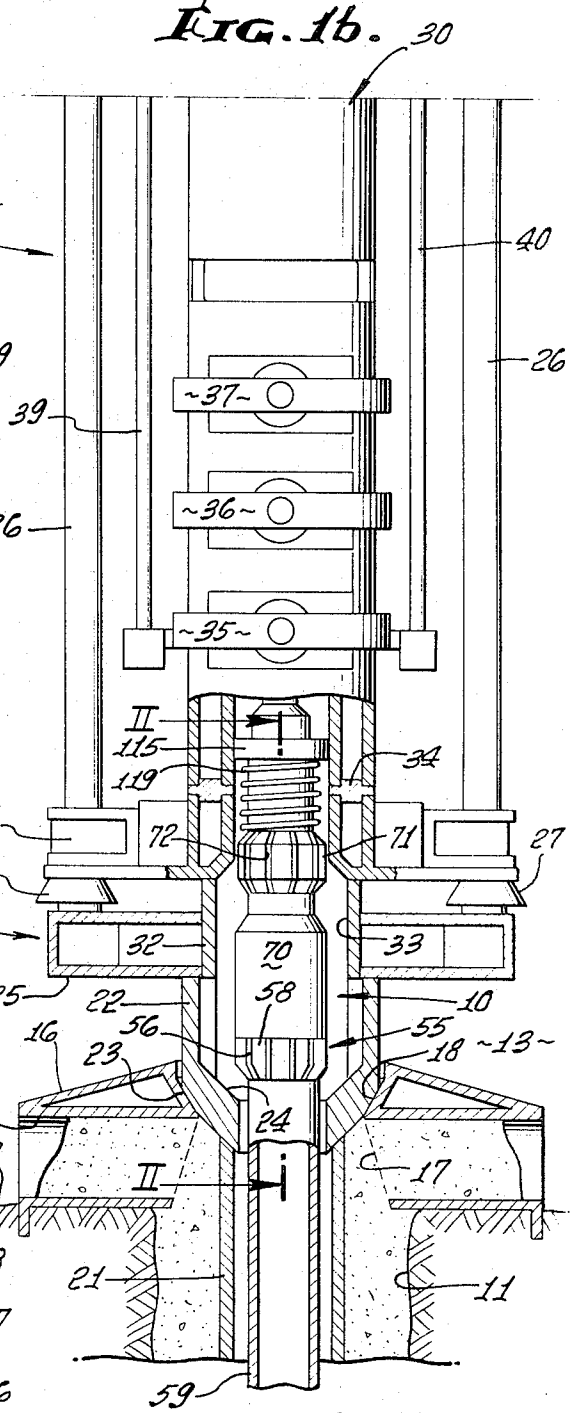

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FIG. 2.

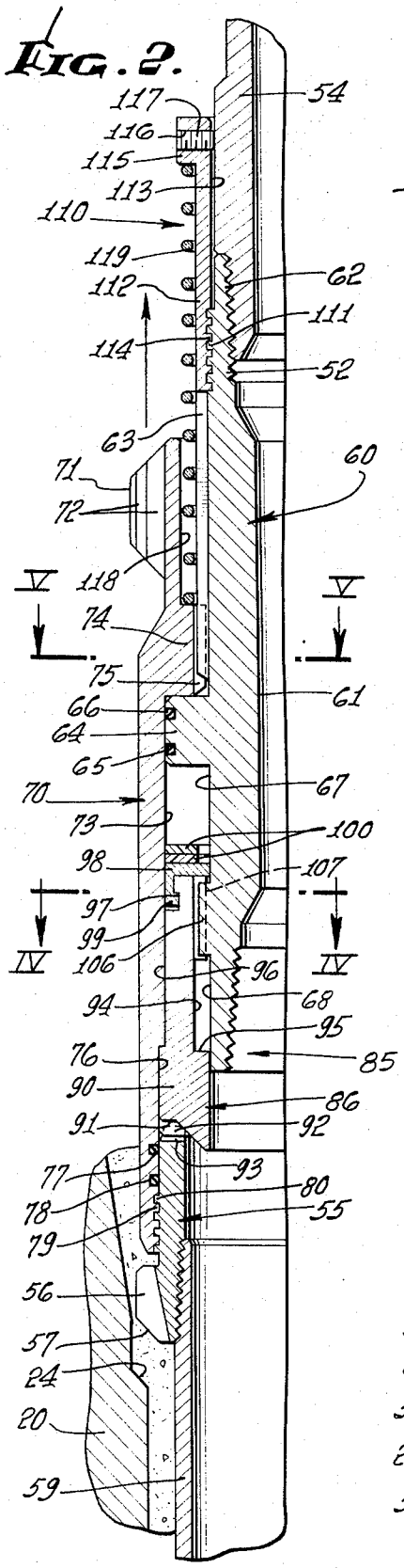


FIG. 3.

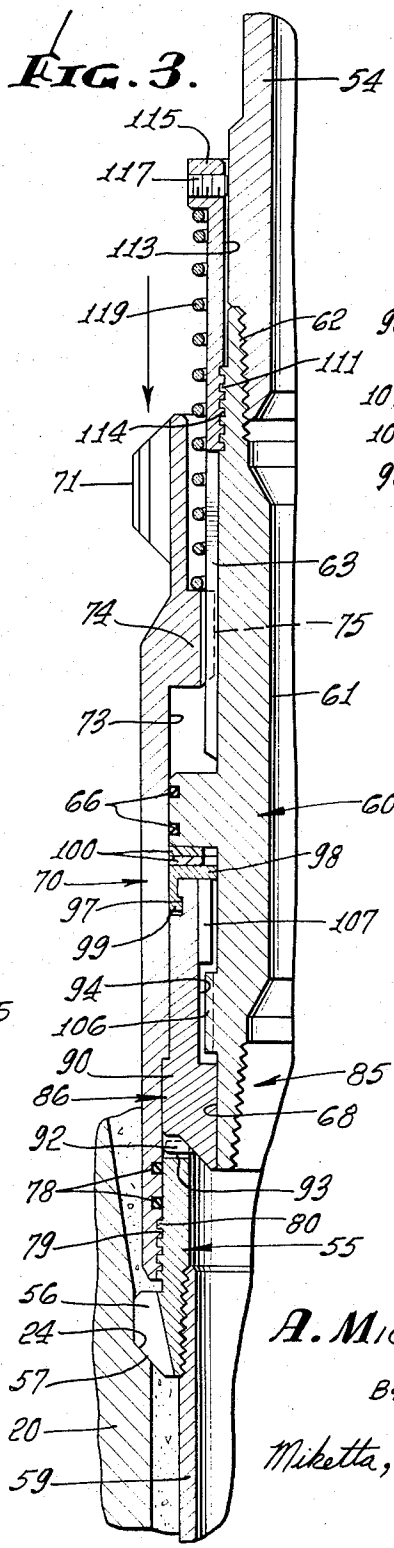


FIG. 4.

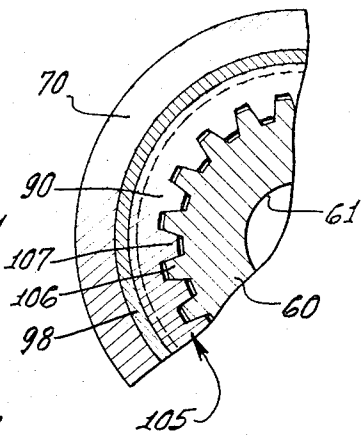
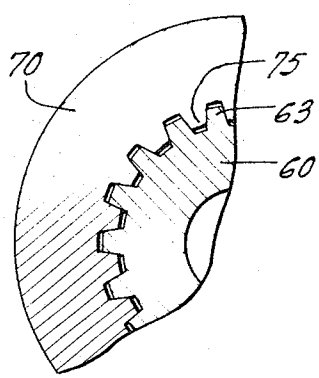


FIG. 5.



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RELEASABLE CONNECTING APPARATUS FOR SUBSEA WELLHEAD

BACKGROUND OF THE INVENTION

This invention relates to subsea oil well tools and more particularly to a releasable connecting apparatus for releasable connecting a casing hanger to a rotatable drill string for rotation therewith and release therefrom by rotation in the same direction.

In oil wells, a casing must often be inserted into the hole after it is drilled, and before production can be started. The purpose of such a casing is to prevent the wellhole from collapsing during production. Such a casing will be smaller in diameter than the drilled wellhole and so after the casing is inserted into the larger wellhole, the space between the casing outside and the drilled hole sides is usually filled with concrete. During the filling of this space with concrete, it is desirable to rotate the casing in the wellhole to evenly distribute the concrete around the casing and uniformly fill the space between the casing and the holes. If this space is not uniformly filled, portions of the casing will not be supported thereby and may burst upon being pressurized to halt the oil production of the well while expensive repairs are made.

The above problems exist in both surface and subsea wells, but in a subsea well, the upper end of the casing is not directly accessible and any tool used to rotate the casing must also hold the casing while it is being lowered into the wellhole and must be releasable once the casing is positioned to permit removal of the tool from the subsea well.

BRIEF DESCRIPTION OF THE INVENTION

Therefore it is the primary object of this invention to provide a novel releasable connecting apparatus for use in a subsea well to releasably connect a casing or other oil well tool.

Other and additional objects of this invention are to provide such a releasable connecting apparatus which rotates and releases in the same direction, to provide such an apparatus which is usable in a subsea well, to provide such an apparatus which rotates a casing or other oil well tool as long as the casing is suspended thereby and which releases the casing when the casing is supported by other means, and to provide such an apparatus which is inexpensive to manufacture, easy to assemble, dependable to operate and generally better than other apparatus for accomplishing this result.

Generally, the apparatus, according to this invention, for releasably connecting an oil well tool to a string or the like, to rotate this tool in a well prior to landing thereof and which is locked against release of said tool until the tool is landed in the well, includes inner and outer tubular members mounted together in non-rotative telescoping relationship with the inner member being connected to the string and with the outer member being threadably connected to the oil well tool for release therefrom upon relative rotation therebetween, and means for preventing relative rotation between the outer member and the tool when the members are relatively extended and for allowing relative rotation therebetween when said members are telescoped inwardly due to lowering of the tubing string and inner member on the landing of the tool. The means may be a torque transmitting means including a drive ring mounted about the inner member and having a lower surface for drivingly engaging the tool, and including spline means between the ring and the inner member for non-rotatably holding in a first axial postion and for being disengaged in a second axial position caused by landing of the tool. A running tool may be provided for maintaining the tool above its landing position for rotation thereof.

Generally the method, according to this invention for releasing an oil well tool from the end of a string run into a subsea well includes the steps of connecting the oil well tool to a first portion of a coupling member mounted to and driven by a string for release by relative rotation therebetween, locking the tool against relative rotation with said first portion by interlocking the tool and string by a movable second portion of the coupling, moving the second portion to unlock the tool and first portion by setting the tubing string down upon said coupling when the tool is landed in the well, and rotating the first portion relative the landed tool to release the tool from the coupling member.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1*a* and 1*b* together, are a side elevational view, partially in section, of a subsea well and wellhead, with a string therein having the releasable connecting apparatus according to this invention, and with the casing hanger of the string shown suspended over its landing shoulder by latch dogs extending from the wellhead to engage a casing running tool.

FIG. 2 is an enlarged fragmentary side cross-sectional view taken along the plane II—II of FIG. 1 showing the apparatus in the extended position and the casing hanger secured thereto suspended over its landing shoulder for rotation of the casing in the wellhole.

FIG. 3 is a view similar to FIG. 2 but showing the apparatus in the contracted position after the casing hanger has landed on its landing shoulder for rotation of the apparatus to release the casing hanger therefrom.

FIG. 4 is a fragmentary cross-sectional view taken along the plane IV—IV of FIG. 2 showing the splining of the drive ring between the inner and outer members.

FIG. 5 is a fragmentary cross-sectional view taken along the plane V—V of FIG. 2 showing the splining of the inner and outer members of the releasable connecting apparatus, according to this invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to the drawings and particularly to FIG. 1, the releasable connecting apparatus according to this invention is generally denoted by the number **10**. The apparatus **10** is for use with a subsea wellhole **11** drilled in the ocean floor **12** beneath the ocean **13** from a ship or barge (not shown) at the surface of the ocean **13**, as is conventional.

The wellhole **11** has located thereover a conventional wellhead **15** which typically includes a drilling template **16** having a central bore **17** with an upper cup shaped shoulder **18**, and lateral passages **19** therethrough to the ocean **13** which have already been filled with concrete. The drilling template **16** has thereover, a guide post frame **20** with a downwardly extending cylindrical outer casing **21** joined at the upper end to an intermediate portion **22** having an outer bowl shaped surface **23** for seating on the shoulder **18** of the template, and having an inner shoulder **24** for receiving a casing hanger

thereon. The intermediate portion 22 is joined to an upper rectangular shaped portion 25. The upper portion 25 has vertically extending guide posts 26 with conical guides 27 therearound and with cable anchors 28 on the upper ends thereof for anchoring cables 29 from the ship (not shown) on the surface of the ocean 13.

A Christmas tree unit 30 has lower guide 31 with a lower tubular protrusion 32 and with central bore 33. The unit 30 also has a seal 34 seated on the upper end of the guide 31 and with a string of blow-out preventers 35, 36 and 37 mounted thereover and under an upper guide 38. The lower blow-out preventer 35 has a fluid supply line 39 and a fluid return line 40 extending therefrom. This unit 30 is lowered from the ship down the cables 27 and onto the guide post 26 to be centered by the conical guides 27 while the lower tubular protrusion 31 extends into thhe central bore of the guide post frame 20.

The upper end of the upper guide 38 has located thereover a pair of lower guide arms 41 which together with the guide 38, mount blow-out preventer fluid control lines 42 which control the opening and closing of the blowout preventers 35, 36 and 37 from the ship on the surface of ocean 13.

A coupling 43 is provided through the lower guide arms 41 to mount the upper blow-out preventer 37 to the lower end of a hanger supporting tool 44. The hanger supporting tool 44 has a two diameter central bore 45 with the lower portion thereof generally the same diameter as the bore 32 and the upper portion of a greater diameter to provide a landing shoulder 46 therebetween. The hanger supporting tool 44 has a hydraulically operated latch dog 47 near the upper end thereof. The upper end of the tool 44 is joined to the lower end of riser 48 from the ship (not shown). A bracket 49 is located around the riser 48 for mounting the fluid lines 39 and 40 to the riser 48.

Extending down the center of the riser 48 and the wellhead apparatus 15 is a rotatable string 50 including pipes 51 with right hand threads 52 for connecting together. The lower end of the lowermost pipe 51 of the string 50 is threaded into a casing running tool 53 for receiving the latch dog 47 to temporarily axially locate the casing running tool 53 as is more fully explained in my copending U.S. Pat. application Ser. No. 160,399, filed July 7, 1971 and entitled CASING RUNNING TOOL FOR SUBSEA WELL, filed concurrently herewith. A short length of pipe 54 is threaded into the lower end of the casing running tool 53 and has its lower end threaded into the apparatus 10, according to this invention.

The apparatus 10 has releasably secured thereto as will be more fully explained later, a casing hanger 55 having a circumferential rib 56 provided a shoulder 57 for landing on the cup shaped shoulder 24 of the guide post frame 20. The casing hanger 55 also has a plurality of grooves 58 in the rib 56 for permitting fluid to pass between the hanger 55 and the guide post frame 20. The casing hanger 55 supports a depending inner casing 59 therefrom to extend down into the wellhole 11 for receiving concrete between the casing 59 and the wellhole 11 to fill the space therebetween. In order to insure that concrete fills the space between the casing 59 and the wellhole 11, it is desirable to rotate the casing 59 while the concrete is being poured into this space. When the concrete has set, the apparatus 10 of this invention will release the casing hanger 55 to permit removal of the apparatus 10 and the string 51, leaving the casing 59 in the wellhole 11.

Generally, the apparatus 10, according to this invention, for releasably connecting an oil well tool to a string 51 or the like, to rotate the tool 55 in a well 11 prior to the landing thereof, and which is locked against release of the tool 55 until the tool 55 is landed in the well 11, includes an inner tubular member 60 and an outer tubular member 70 mounted together in non-rotative telescoped relation for movement between an extended position and a contracted position, with the inner number 60 attached to the lowermost pipe 54 and the outer member 70 rotatably releasable attached to the tool 55, and includes means 85 for preventing relative rotation of the tool 55 until the tool 55 has landed and then for permitting relative rotation to release the tool 55, and said means 85 having a drive ring 90 between the members 60 and 70 and spline means 105 between the inner member 60 and the drive ring 90 for driving the ring 90 with the inner member 60 in the extended position and for releasing the drive ring 90 in the contracted position whereupon the outer member 70 rotates relative the hanger 55. Biasing means 110 including a spring 119 between the members 60 and 70 may be provided for cushioning inward telescoping movement of the members 60 and 70.

Referring now to FIG. 2 wherein the apparatus 10 is shown in the extended position, and to FIG. 3 wherein the apparatus 10 is shown in the contracted position, the inner tubular member 60 has an outside diameter essentially equal to the outside diameter of the short pipe 54. The inner tubular member 60 has a central bore 61 having right hand internal threads 62 sized to mate with the threads of the pipe 54 for threadably attaching the apparatus 10 into the string 50. The upper end of the member 60 has exterior vertical splines 63 extending downwardly to end midway of the member 60 in an external, circumferential rib 64. The rib 64 has a pair of O-ring grooves 65 in the outer surface thereof, in which are located O-ring seals 66. The external surface of the member 60 has an external groove 67 therein directly below the rib 64. The member 60 is completed by provision of a circumferential external notch 68 in the lower end thereof. The inner tubular member 60 is for being telescoped into an outer tubular member 70.

The outer tubular member 70 of the apparatus 10 is of a diameter slightly less than the central bore 33 and 45 of the wellhead 15 to pass therethrough. The member 70 has an upper circumferential external lip 71, with passages 72 therethrough, for engaging the sides of bores 33 and 45 as the apparatus 10 passes therethrough to centrally locate the apparatus 10. The member 70 has a central bore 73 sized to receive the rib 64 of the member 60 snuggly therein and has an inwardly extending rib 74 with inner splines 75 which as shown in FIG. 5 mate with the splines 63 of the inner tubular member 60 for non-rotatably telescoping the members 60 and 70 together. The lower shoulder of the rib 74 engages the upper shoulder of the rib 64 in the extended position as seen in FIG. 2 to prevent the members 60 and 70 from sliding apart. The outer member 70 has an inner lower notch 76 with a pair of O-ring grooves 77 therein containing O-ring 78. The lower end of the inner tubular member 70 has left hand internal threads 79 for threadably mating with left hand exter-

nal threads 80 on the upper end of the inner casing hanger 55 for mounting the hanger 55 and the casing 59 carried thereby to the apparatus 10.

The apparatus 10 is provided with means 85 for preventing relative rotation of the outer member 70 and the tool 55 when the members 60 and 70 are in the extended position and for permitting relative rotation therebetween when the members 60 and 70 are telescoped into the contracted position. In the preferred embodiment of this invention, the means 85 include torque transmitting means 86 for normally engaging the tool 55 with the inner member 60 in rotative drive relation and for releasing the tool 55 from said rotative drive relation upon relative axial movement of the members 60 and 70 due to the landing of the tool 55.

In the apparatus 10, the torque transmitting means 86 includes a drive ring 90 having a lower surface 91 with a plurality of downwardly protruding teeth 92 for mating with teeth 93 formed in the upper surface of the inner casing hanger 55 to non-rotatively secure the two together. The drive ring 90 also has an inner upper notch 94 providing an upwardly facing shoulder 95, and an outer upper notch 96 sized to mate with the lower notch 76 of the outer member 70 to locate the drive ring therein. Adjacent the upper end of the ring 90 is a circumferential upper groove 97. A retainer ring 98 has a lower flange 99 which mates with the groove 97 to hold the ring on the upper end of the drive ring 90. Above the retainer ring 98 are located two ring bearings 100 made of teflon or other suitable bearing material for separating the ring 90 from the rib 64 of the inner member 60 when the members 60 and 70 are in the contracted position as shown in FIG. 3.

The apparatus 10 is provided with spline means 105 between the ring 90 and the inner member 60 for holding them in non-rotational relation in the extended position of the apparatus 10 and for disengaging them in the contracted position due to the landing of the tool 55, to permit relative rotation between the ring 90 and the inner member 60. The spline means 105 as best seen in FIGS. 2, 3 and 4, includes radially outwardly extending splines 106 on the inner member just below the groove 67 and radially inwardly extending mating splines 107 in the drive ring 90 adjacent the upper end thereof. The splines 107 are of such a length that when the members 60 and 70 are in the extended position of FIG. 2 that the splines 107 mate with splines 106 to be locked together and where the members 60 and 70 are in the contracted position of FIG. 3, the splines 107 are spaced above the splines 106 in the groove 67 to free the ring 90 from the members 60 and 70.

The apparatus 10 may be completed by the provision of biasing means 110 for biasing the members 60 and 70 to the extended position. The provision of a biasing means 110 is primarily for attaching the apparatus 10 to the hanger 55 at the surface on the ship (not shown) as the weight of the hanger 55 and casing 59, supported by the apparatus 10, will bias the apparatus 10 to the extended position once the apparatus 10 is positioned in the riser 48. The biasing means 110, of the illustrative embodiment, includes the provision of external threads 111 on the upper end of member 60 above the splines 63. An extension 112 has a central bore 113 slightly larger than the pipe 52 and the outer diameter of the inner member 60. The extension 112 has internal threads 114 on the lower end thereof mating with the threads 111 adjacent the upper end of member 60. The extension 112 has an upper outwardly extending shoulder 115 with a radial threaded hole 116 for set screw 117 to lock the extension 112 to the short pipe 54 extending upwardly from the inner member 60. The outer tubular member 70 is provided with an upper inner notch 118 to provide a space for receiving the lower end of spring 119, the upper end of which seats against the shoulder 115 to bias the inner and outer members 60 and 70 to the extended position of FIG. 2. The biasing of the spring 119 must be overcome for the members 60 and 70 to move to the contracted position of FIG. 3.

The apparatus 10 is assembled by sliding the bearings 100 and the drive ring 90 over the lower end of the inner member 60 before the retainer ring 98 is snapped around the drive ring 90 for engaging the splines 107 and preventing the drive ring 90 from dropping from the inner member 60. The O-rings 66 are inserted into the O-ring grooves 65 and the outer tubular member 70 telescoped down over the inner tubular member 60 and the drive ring 90 therearound. The spring 119 is inserted into the notch 118 and the extension 112 is threaded onto the inner tubular member 60 to bias the members to the extended position and prevent the outer tubular member 70 from sliding upwardly off the inner tubular member 60. The assembly of the apparatus 10 is completed by the insertion of O-rings 78 in O-ring grooves 77.

The assembled apparatus 10 is attached to the inner casing hanger 55 on the ship while the casing hanger 55 is held at the upper end of the riser 48, to locate the casing 59 depending therefrom in the riser 48. The apparatus 10 has the lower end thereof placed on the upper end of the hanger 55 and the left hand threads 79 and 80 threaded together until interference begins between the teeth 92 and 93. When the interference begins between the teeth 92 and 93, the inner tubular member 60 is pressed downwardly into the contracted position, permitting the inner and outer tubular members 60 and 70 to rotate relative to the hanger 55 and the drive ring 90, secured thereto by the interlocking of teeth. When the outer tubular member 70 is threaded onto the casing hanger 55, the spring 119 is permitted to return the apparatus 10 to the extended position of FIG. 2 which locks the inner tubular member 60 to the drive ring 90 locked to the hanger 55.

The short pipe 54 has the lower end thereof threaded into the upper end of the inner tubular member 60. The set screw 117 is turned until it engages the pipe surface to lock the pipe 54 to the member 60. The upper end of the short pipe 54 has the casing running tool 53 threaded thereon. The upper end of the casing running tool 53 has threaded therein the lowermost pipe 51 of the rotatable string 50. These tools are now ready to be lowered into the riser 48 and into the wellhead 15 to locate the inner casing 59 in the wellhole 11.

Initially, the string 50 is lowered until, as seen in FIG. 1, the groove in the casing running tool 53 is aligned with the latch dog 47. The latch dog 47 is extended into the groove in the tool 53 to hold the string 50 in a first axial position. In the first axial position, the shoulder 57 of the inner casing hanger 55 is spaced a distance above the landing shoulder 24 of the guide post frame 20, to maintain the apparatus 10 in the extended position of FIG. 2. The inner casing 59 extends into the wellhole 11, ready for receiving concrete therearound. The concrete is pumped down both the supply line 39 into the

central bore of the blowout preventor **35**, through the passages **72** of the apparatus **10** and through the grooves **58** in the hanger **55** to pass into the hole **11** around the casing **59**.

In order to assure a uniform filling of the space between the casing **59** and the wellhole **11** with concrete, the string **51** is rotated, rotating the apparatus **10** in a right hand direction. Such right hand rotation of the apparatus **10** would unscrew the left hand threads **79** and **80** between the outer tubular member **70** and the hangar **55**, except that, as seen in FIG. **2**, the splines **106** and **107** are interlocked to rotate the drive ring **90** which is locked by teeth **92** and **93** to the hanger **55** to prevent such relative rotation. The rotation of the strings **51** is continued until the space is uniformly filled with concrete, whereupon the string **50** is raised slightly and the latch dogs **47** are released. The string **50** is now lowered until the shoulder **57** of the hanger **55** seats on the shoulder **24** of the guide post frame **20** where the hanger **55** will be left to hang the inner casing **59** in the well hole **11** permanently.

To release the apparatus **10** from the hanger **55** after being landed, the string **50** is allowed to lower until the shoulder of the running tool **53** seats on the shoulder **46** of the hanger supporting tool **44** whereby the weight of the string **50** moves the apparatus **10** from the extended position of FIG. **2** to the contracted position of FIG. **3** against the biasing of spring **119**. This movement slides the inner member **60** relative the outer member **70** and the drive ring **90** to move the splines **107** upwardly out of meshing engagement with the splines **106** and into the groove **67** to release the drive ring **90** from the inner member **60**. This movement also slides the rib **64** down onto the bearing rings **100**, but maintains the driving connection between the splines **63** and **75** of the inner and outer tubular members **60** and **70**. Continued right hand rotation of the string **50** rotates the inner and outer members **60** and **70** relative the hanger **55** and the released drive ring **90** to unscrew the left hand threads **79** and **80** and separate the hanger **55** from the apparatus **10**. Once the apparatus **10** is unscrewed, it is raised with the drill string **51** up the riser **48**, leaving the hanger **55** and the concrete surrounded inner casing **57** in the wellhole **11**. The wellhole **11** is now ready to receive production tools which will pump the oil therefrom.

Thus, the releasable connecting apparatus, according to this invention, is located in a pipe string for a subsea well to secure a tool therebelow for rotation in one direction before landing and for release of the tool by rotation in the same direction upon landing in the wellhead.

I claim:

1. An apparatus for releasably connecting an oil well tool to a tubing string or the like to rotate said tool in a well prior to landing thereof and which is locked against release of said tool until said tool is landed at the well, said apparatus comprising:

inner and outer tubular members mounted together in non-rotative telescoping relation normally biased into relatively extended positions thereof, said inner member being connected to a tubing string and said outer member being threadably connected to an oil well tool and threadably releasable therefrom upon relative rotation therebetween;

means for preventing said relative rotation between said outer member and said tool when said members are relatively extended and for allowing said relative rotation therebetween when said members are telescoped inwardly of each other due to lowering of said tubing string and inner member on the landing of said tool and outer member so as to cause said outer member to be threadedly released from said tool upon said relative rotation.

2. An apparatus for releasably connecting an oil well tool to a tubing string or the like to rotate said tool in a well prior to landing thereof and which is locked against release of said tool until said tool is landed at the well, said apparatus comprising:

a first member having means thereon for connecting to tubing to be supported and rotated thereby;

a second member mounted to said first member for limited axial movement relative thereto and to be rotated thereby and having means thereon for releasably connecting to said tool, said last named means being releasable from said tool upon relative rotation therebetween;

torque transmitting means for normally engaging said tool with said first member in rotative drive relation and for releasing said tool from said rotative drive relation upon relative axial movement between said first member and said second member due to landing of said tool.

3. The apparatus of claim **2** wherein said torque transmitting means comprises:

a drive ring mounted about said first member for limited axial movement thereon and having a lower surface provided with means for drivingly engaging said tool;

spline means provided between said ring and first member for holding them in non-rotational relation only for a first axial position of said ring relative to said first member and being disengaged in a second axial position for said ring relative to said first member caused by the landing of said tool.

4. The apparatus of claim **3** wherein:

means are provided for normally biasing said first and second members into a relatively extended relation by which said drive ring is biased into said first axial position.

5. An oil well tool coupling and running tool assembly for rotating an oil well tool in a subsea well while supporting the weight of the tubing and providing for automatic release of the coupling upon subsequent landing of the tool, said assembly comprising:

a running tool having a landing surface and being rotatably connected to a tubing string to support the same when landed at a well;

a coupling member connected to said tubing below said running tool and releasably coupling to an oil well tool to be rotated and landed in a well, said coupling having a landing surface thereon;

a first landing shoulder means at the subsea well for receiving said running tool and supporting the same during rotation of said tubing to rotate said tool in the well, said first landing shoulder means being selectively movable to allow passage of said running tool thereby;

a second landing shoulder means at said well below said first landing shoulder for receiving and supporting said running tool when it is lowered past said first landing shoulder;

a third landing shoulder means at said well below said second landing shoulder a distance less than the

spacing of the landing surface on said coupling member below the landing surface on said running tool; and

means associated with said coupling member for allowing release of said oil well tool from said coupling upon relative rotation therebetween only when said coupling is landed on said third landing shoulder.

6. An oil well tool coupling and running tool assembly as in claim **5** wherein:

said coupling member comprises inner and outer telescoping members normally in protracted relation when said running tool is landed on said first landing shoulder and retracted relative to each other when said coupling member is landed on said third landing shoulder and said running tool is landed on said second landing shoulder.

7. An oil well tool coupling and running tool assembly as in claim **6** wherein said means associated with said coupling member comprises a latching means for latching said oil well tool to said tubing to be rotated thereby when said coupling members are in protracted position and releases said oil well tool from said tubing when said members are in said retracted position to allow release of said oil well tool from said coupling by relative rotation therebetween.

8. An oil tool coupling comprising:

a body member with means for connecting to tubing for rotation thereby in a given direction;

a tubular member mounted to said body member for limited axial and non-rotative movement relative thereto having means for connecting to an oil well tool which is disconnected by rotation of said tubular member in said given direction relative to said tool; unthreaded drive ring means for releasably engaging said body member and said tool to rotate together and for disengaging from said tool on landing of said tool in a well and consequent relative axial movement between said body member and tubular member to allow release of said tubular member from said tool upon further rotation of said tubing in said given direction.

9. A casing hanger connecting tool adapted to be mounted on the end of a tubing string run from a floating vessel to a remote subsea well for rotating an associated casing in the subsea well prior to landing of the casing hanger at the well and which is automatically rendered releasable from said casing hanger upon such landing, said connecting tool comprising:

a tubular body having means at an upper end thereof for mounting said body on a tubing string;

an outer sleeve member and means for mounting the same on said body for non-rotative and limited axial movement relative thereto, said sleeve member having a lower end provided with means for connecting to or disconnecting from the casing hanger upon relative rotation therebetween;

a torque transmitting ring for engaging between said body and casing hanger to rotate said casing hanger in response to rotation of said body by said tubing string without turning said sleeve member relative to said casing hanger; and

means for mounting said torque transmitting ring on said body for limited axial movement between a first position in which said ring is locked against relative rotation with said body and a second position in which said ring is free to rotate relative to said body, said ring being moved relative to said body into said second position by said casing hanger as said tool is lowered on landing said casing hanger in the well, selective rotation of said tubing string thereafter causing release of said sleeve member and said tool from said casing hanger.

10. A method of releasing an oil well tool from the end of a tubing string run into a subsea well comprising the steps of:

rotatively threading the oil well tool to a first portion of a coupling rotatably driven by a tubing string through a non-rotatable telescoping interconnection therebetween;

locking said oil well tool against relative rotation with said first portion by interlocking said tool and the tubing string by an unthreaded second portion of the coupling which is rotatable with respect to said first portion;

axially displacing said tubing string relative to said second portion to unlock said tool and first portion by the setting of the tubing string down upon said coupling when said tool is landed in said well; and

rotating said tubing string and first portion relative to said landed tool to rotatively unthread and release the tool form the coupling.

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