

Office de la Propriété Intellectuelle du Canada

Un organisme d'Industrie Canada Canadian Intellectual Property Office

An agency of Industry Canada

CA 2512940 C 2009/05/12

(11)(21) 2 512 940

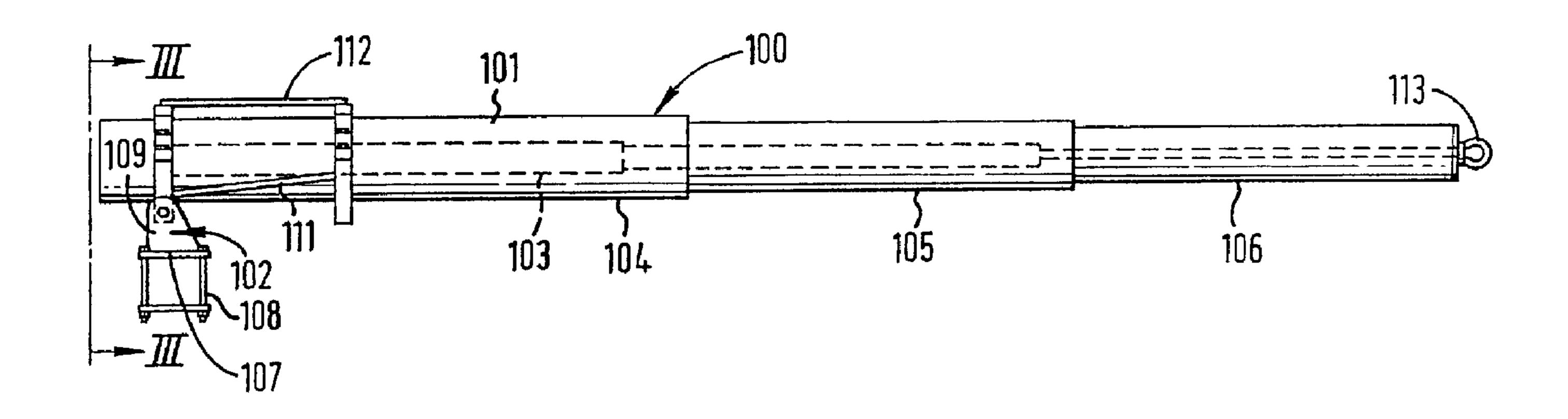
(12) BREVET CANADIEN CANADIAN PATENT

(13) **C**

- (22) Date de dépôt/Filing Date: 1997/11/19
- (41) Mise à la disp. pub./Open to Public Insp.: 1998/07/30
- (45) Date de délivrance/Issue Date: 2009/05/12
- (62) Demande originale/Original Application: 2 279 252
- (30) Priorité/Priority: 1997/01/29 (GB9701790.9)

- (51) Cl.Int./Int.Cl. *E21B 19/16* (2006.01), *B25B 13/50* (2006.01), *B25B 15/00* (2006.01)
- (72) Inventeur/Inventor: AKERLUND, TOR JAN, NO
- (73) Propriétaire/Owner: WEATHERFORD/LAMB, INC., US
- (74) Agent: MARKS & CLERK

- (54) Titre : DISPOSITIF DE POSITIONNEMENT D'UNE CLE A TIGES ET AFFUT DE PERFORATRI DOTE D'UN TEL DISPOSITIF
- (54) Title: APPARATUS FOR POSITIONING A TONG AND DRILLING RIG PROVIDED WITH SUCH AN APPARATUS



(57) Abrégé/Abstract:

An apparatus for positioning a tong comprises a piston and cylinder assembly and a mounting assembly therefor. The mounting assembly is mounted on a support beam in the drilling derrick and the piston and cylinder assembly is pivotally mounted on the mounting assembly. The piston and cylinder assembly can be pivoted between an operative position in which it can be extended and retracted to move a tong towards and away from a string of tubulars, and an inoperative position in which the piston and cylinder assembly extends along an upwardly extending axis with part of the piston and cylinder assembly disposed to either side of the mounting assembly.





ABSTRACT OF THE DISCLOSURE

An apparatus for positioning a tong comprises a piston and cylinder assembly and a mounting assembly therefor. The mounting assembly is mounted on a support beam in the drilling derrick and the piston and cylinder assembly is pivotally mounted on the mounting assembly. The piston and cylinder assembly can be pivoted between an operative position in which it can be extended and retracted to move a tong towards and away from a string of tubulars, and an inoperative position in which the piston and cylinder assembly extends along an upwardly extending axis with part of the piston and cylinder assembly disposed to either side of the mounting assembly.

1

APPARATUS FOR POSITIONING A TONG AND DRILLING RIG PROVIDED WITH SUCH AN APPARATUS

This is a divisional application of Canadian Patent
Application Serial No. 2,279,252 filed on November 19, 1997.

This invention relates to an apparatus for positioning a tong and a drilling rig provided with said apparatus. It should be understood that the expression "the invention" and the like encompasses the subject matter of both the parent and the divisional application.

10

15

20

25

In our PCT Publication No. WO 95/10686 we have described an apparatus for positioning a tong which comprises two rigid members which are each formed by connecting two chains each of which is independently flexible. Whilst this apparatus functions extremely well it is expensive to manufacture and to maintain.

In Figure 4 of PCT Publication No. WO 95/10686 we suggested the use of hydraulic piston and cylinder assemblies as an alternative to the chains. This has not been adopted commercially as the hydraulic pistons and cylinders and associated tong could not readily be moved out of the way to facilitate other operations on the rig floor.

With a view to reducing this problem the present invention provides an apparatus for positioning a tong, which apparatus comprises a piston and cylinder assembly, and a mounting assembly therefore, characterised in that said piston and cylinder assembly can be pivoted between an

operative position in which it can be extended and retracted to move a tong towards and away from a string of tubulars, and an inoperative position in which said piston and cylinder assembly extends along an upwardly extending axis with part of said piston and cylinder assembly disposed to either side of said mounting assembly.

Typically, in use, said mounting assembly will be mounted on a support beam which is from 2 to 3 m above the rig floor.

Preferably, said piston and cylinder assembly comprises a piston and cylinder mounted within a telescopically extendible structure.

Advantageously, said piston and cylinder has two

stages and said telescopically extensible barrel comprises an outer barrel, an intermediate structure and an inner barrel.

Preferably, said mounting assembly comprises a bearer which can be clamped to a structural member in a drilling tower, a carriage pivotally mounted on said bearer and a clamp assembly for securing said piston and cylinder assembly to said mounting assembly.

Advantageously, said apparatus includes a motor, for example a hydraulic motor, actuable to adjust the position of said piston and cylinder assembly with respect to said mounting assembly.

10

20

25

The present invention also provides a drilling floor, a support beam adjacent said drilling floor, the mounting assembly of an apparatus in accordance with the present invention mounted on said support beam, the piston and cylinder assembly of an apparatus in accordance with the present invention mounted on said mounting assembly and a tong attached to the free end of said piston and cylinder assembly.

The present invention also provides an apparatus for positioning a tong, the apparatus comprising a piston and cylinder assembly disposed on a telescopically extendable structure, the tong attached to one end of the piston and cylinder assembly, wherein the telescopically extendable structure is a single cantilevered structure, and a mounting assembly coupled to an opposite end of the piston and cylinder assembly, the telescopically extendable structure being pivotable about horizontal axis.

In another aspect, the invention also provides an apparatus for positioning a tong proximate a tubular at a well center, the apparatus comprising an extendable structure, the tong attached to one end of the extendable structure, an actuating member for extending or retracting the extendable structure relative to the well center, and a mounting assembly coupled to an opposite end of the extendable structure, wherein the mounting assembly is coupled to a support member on a drilling tower.

In another aspect, the invention also provides an apparatus for positioning a tong for making up or breaking out tubulars, the apparatus comprising an extendable structure, the extendable structure having a variable length and the tong capable of making up or breaking out tubulars attached to one end of the extendable structure, a motive assembly for changing the length of the extendable structure, and a support beam for coupling the extendable structure to a drilling tower.

10

In another aspect, the invention also provides a

20 method for connecting a first tubular to a second tubular

proximate a well center, the method comprising the steps of

providing an apparatus for connecting the tubulars, the

apparatus comprising a tong adapted to connect the

tubulars, and an extendable structure for positioning the

25 tong, positioning the apparatus on a drilling tower,

actuating the extendable structure to move the tong toward the well center, engaging the first and second tubulars with the tong, and connecting the first tubular to the second tubular.

In another aspect, the invention also provides an apparatus for positioning a tong for making up or breaking out tubulars, the apparatus comprising an extendable structure, the extendable structure having a variable length and the tong for making up or breaking out tubulars attached to one end of the extendable structure, a motive assembly for changing the length of the extendable structure, and a mounting assembly coupled to an opposite end of the extendable structure, wherein the mounting assembly is adapted to couple the extendable structure to a support beam disposed above a rig floor.

10

15

20

In another aspect, the invention also provides a method of positioning a tong to make up or break out tubulars, the method comprising the steps of providing an extendable structure having a variable length, attaching the tong to the extendable structure, positioning the extendable structure on a drilling tower, moving the tong from a first position to a second position, engaging the tubulars with the tong, and one of making or breaking a connection of the tubulars.

For a better understanding of the present invention reference will now be made, by way of example, to the accompanying drawings, in which:-

Fig. 1 is a side elevation of one embodiment of an apparatus in accordance with the present invention in an operative position;

Fig. 2 is a top plan view of the apparatus shown in Fig. 1;

Fig. 3 is an end view taken on line III-III of Fig. 10 1;

Fig. 4 is a perspective view showing the apparatus connected to a tong with the apparatus in a first inoperative position; and

Fig. 5 is a perspective view showing the arrangement of Fig. 4 with the apparatus in a second inoperative position.

15

20

25

Referring to Fig. 1 to 3 of the drawings there is shown an apparatus for positioning a tong. The apparatus, which is generally identified by the reference numeral 100, comprises a piston and cylinder assembly 101 and a mounting assembly 102.

The piston and cylinder assembly 101 comprises a conventional two stage hydraulic piston and cylinder 103 which is mounted internally of a telescopic structure which comprises an outer barrel 104, an intermediate barrel 105 and an inner barrel 106. The inner barrel 106 is slidably mounted in the intermediate barrel 105 which is, in turn, slidably mounted in the outer barrel 104.

The mounting assembly 102 comprises a bearer 107 which can be secured to a beam by two bolt and plate assemblies 108. The bearer 107 includes two ears 109 which accommodate trunnions 110 which project from either side of a carriage 111.

35 A clamp assembly 112 is bolted to the top of the

carriage 111 and maintains the piston and cylinder assembly 101 in position with respect to the mounting assembly 102.

In use, the mounting assembly 102 is first secured to a convenient support beam in the drilling rig by bolt and plate assemblies 108. If necessary a support beam may be mounted in the drilling rig for this purpose.

The piston and cylinder assembly 101 is then mounted on the carriage 111 and clamped in position.

A tong is then attached to the free end 113 of the piston and cylinder assembly 101 which is moved with respect to the mounting assembly 102 so that, at full extension, the tong is in the desired position with respect to well centre.

10

15

20

25

30

35

In normal use the tong can be moved towards and away from well centre by extending and retracting the hydraulic piston and cylinder 103. The outer barrel 104, intermediate barrel 105 and inner barrel 106 extend and contract with the hydraulic piston and cylinder 103 and provide lateral rigidity to the structure. At full extension the piston and cylinder assembly 101 can be deflected from side to side by a small amount. This movement can readily be accommodated by the two stage hydraulic piston and cylinder 103 although, if desired, the ends thereof could be mounted on, for example, ball and socket joints or resilient mountings.

It will be appreciated that when the piston and cylinder assembly 101 is fully retracted the free end 113 will lie immediately adjacent the extremity 114 of the outer barrel 104. For many purposes such retraction would be insufficient and consequently manipulation of tongs by piston and cylinder assemblies has heretofore been deemed untenable. The present invention provides a simple and elegant solution to the problem. In particular, the clamp assembly 112 can simply be slackened, the

piston and cylinder 101 slid on the carriage 111 until the extremity 114 lies adjacent the mounting assembly 102 and the clamp assembly 112 re-tightened. When the piston and cylinder assembly 101 is fully contracted the free end 113 of the piston and cylinder assembly 101 lies closely adjacent the mounting assembly 102 with the tong therebelow. This can clearly be seen in Figure 4. It will be noted that the piston and cylinder assembly 101 lies on an upwardly extending axis and that a major portion of the piston and cylinder assembly 101 lies to the rear of the mounting assembly 102. It will be noted that in this position the tong rests on the workshop floor which simulates the drilling floor.

5

10

15

20

25

30

35

An alternative inoperative position is shown in Figure 5. In this position the tong is suspended from an overhead cable whilst the piston and cylinder assembly 101 again lies along an upwardly extending axis.

For certain operations it may be desirable to remove the tong completely. In such a case the apparatus 100 can simply be parked in the inoperative position shown in Figure 4 or Figure 5. Preferably, a locking device is provided to ensure that the piston and cylinder assembly 101 remains in its parked position.

The apparatus 100 is preferably made of aluminium and is thus comparatively light and easy to handle.

various modifications to the apparatus 100 are envisaged. For example, a small hydraulic motor could be provided to move the piston and cylinder assembly 101 with respect to the mounting assembly 102. If desired, means could be provided to enable the outer barrel 104 to be swivelled with respect to the mounting assembly 102 or the mounting assembly 102 itself to be capable of swivelling movement. This would be useful in a situation where the tongs were required, for example both to make up and break out a pipe string in the well centre

and to make up or break out joints in an adjacent location to one side of the well centre. If desired the piston and cylinder assembly 103 could be pneumatically actuable although this would give this arrangement some "bounce" which might not be desired.

5

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. An apparatus for positioning a tong proximate a tubular at a well center, the apparatus comprising: an extendable structure, the tong attached to one end of the extendable structure;

an actuating member for extending or retracting the extendable structure relative to the well center; and a mounting assembly coupled to an opposite end of the extendable structure, wherein the mounting assembly is coupled to a support member on a drilling tower.

- 2. The apparatus of claim 1, wherein the extendable structure is telescopic.
- 3. The apparatus of claim 2, wherein the extendable structure is pivotable about a vertical axis.
- 4. The apparatus of claim 2, wherein the extendable structure is pivotable about a horizontal axis.
- 5. The apparatus of any one of claims 2 to 4, wherein the telescopically extendable structure comprises an outer barrel and an inner barrel.
- 6. The apparatus of claim 5, wherein the telescopically extendable structure further comprises an intermediate barrel.
- 7. The apparatus of claim 6, wherein at least a portion of the inner barrel is slidably mounted in the intermediate

barrel and at least a portion of the intermediate barrel is slidably mounted in the outer barrel.

- 8. The apparatus of any one of claims 5 to 7, wherein the mounting assembly comprises:
 - a base; and
- a carriage pivotally attached to the base, wherein a portion of the outer barrel is disposed on the carriage.
- 9. The apparatus of claim 8, wherein the tong is movably attached to the inner barrel.
- 10. The apparatus of claim 9, further comprising a clamp assembly for securing the outer barrel to the carriage.
- 11. The apparatus of claim 10, wherein the outer barrel is movable between a first position and a second position relative to the carriage.
- 12. The apparatus of claim 11, wherein the mounting assembly comprises:
 - a base; and
- a carriage pivotally attached to the base, wherein a portion of the extendable structure is disposed on the carriage.
- 13. The apparatus of claim 12, further comprising a clamping assembly for securing the extendable structure to the carriage.
- 14. The apparatus of claim 13, wherein the clamping assembly is releasable connected to the carriage.

- 15. The apparatus of claim 14, wherein the extendable structure comprises an outer barrel and an inner barrel.
- 16. The apparatus of claim 15, wherein the extendable structure further comprises an intermediate barrel.
- 17. The apparatus of claim 16, wherein at least a portion of the inner barrel is slidably mounted in the intermediate barrel and at least a portion of the intermediate barrel is slidably mounted in the outer barrel.
- 18. The apparatus of claim 14, wherein the extendable structure is pivotable about a vertical axis.
- 19. The apparatus of claim 14, wherein the extendable structure is pivotable about a horizontal axis.
- 20. The apparatus of any one of claims 1 to 19, further comprising a motor actuable to adjust the position of the extendable structure with respect to said mounting assembly.
- 21. The apparatus of any one of claims 1 to 20, wherein the actuating member comprises a piston and cylinder assembly.
- 22. The apparatus of claim 21, wherein the piston and cylinder assembly is at least partially disposed on the extendable structure.
- 23. The apparatus of claim 21, wherein the piston and cylinder assembly is used to move the extendably structure horizontally.

- 24. The apparatus of any one of claims 1 to 23, wherein the tong is movably attached to the extendable structure.
- 25. The apparatus of any one of claims 1 to 24, wherein a center mass of the tong is substantially aligned with an axis of the extendable structure.
- 26. The apparatus of any one of claims 1 to 25, wherein the mounting assembly is clamped to the support member.
- 27. The apparatus of any one of claims 1 to 25, wherein the mounting assembly is selectively attached to the support member.
- 28. An apparatus for positioning a tong for making up or breaking out tubulars, the apparatus comprising:

an extendable structure, the extendable structure having a variable length and the tong capable of making up or breaking out tubulars attached to one end of the extendable structure;

- a motive assembly for changing the length of the extendable structure; and
- a support beam for coupling the extendable structure to a drilling tower.
- 29. The apparatus of claim 28, wherein the tong is movably attached.
- 30. The apparatus of claim 28 or 29, wherein the motive assembly comprise a piston and cylinder assembly.
- 31. The apparatus of any one of claims 28 to 30, wherein the extendable structure is movable in at least two planes.

- 32. The apparatus of any one of claims 28 to 31, wherein the extendable structure is telescopic.
- 33. The apparatus of any one of claims 28 to 32, wherein a center of mass of the tong is substantially aligned with an axis of the extendable structure.
- 34. The apparatus of any one of claims 28 to 33, further comprising a mounting assembly for mounting the extendable structure to the support beam.
- 35. The apparatus of claim 34, wherein the extendable structure is slidable along the mounting assembly between a first position and a second position.
- 36. The apparatus of claim 35, wherein the extendable structure is movable in at least two planes.
- 37. The apparatus of any one of claims 28 to 36, wherein the extendable structure is clamped to the support beam.
- 38. The apparatus of claim 37, wherein the extendable structure is clamped using at least one bolt.
- 39. The apparatus of any one of claims 28 to 38, wherein the support beam is disposed on the drilling tower.
- 40. A method for connecting a first tubular to a second tubular proximate a well center, the method comprising the steps of:

providing an apparatus for connecting the tubulars, the apparatus comprising:

a tong adapted to connect the tubulars; and an extendable structure for positioning the tong; positioning the apparatus on a drilling tower; actuating the extendable structure to move the tong toward the well center;

engaging the first and second tubulars with the tong; and connecting the first tubular to the second tubular.

- 41. The method of claim 40, further comprising attaching a support member on the drilling tower.
- 42. The method of claim 41, further comprising coupling the extendable structure to the support member.
- 43. The method of any one of claims 40 to 42, wherein connecting the first tubular to the second tubular comprises rotating the first tubular relative to the second tubular.
- 44. An apparatus for positioning a tong for making up or breaking out tubulars, the apparatus comprising:

an extendable structure, the extendable structure having a variable length and the tong for making up or breaking out tubulars attached to one end of the extendable structure;

a motive assembly for changing the length of the extendable structure; and

a mounting assembly coupled to an opposite end of the extendable structure, wherein the mounting assembly is adapted to couple the extendable structure to a support beam disposed above a rig floor.

- 45. The apparatus of claim 44, wherein the support beam is selectively attached to a drilling tower.
- 46. The apparatus of claim 44, wherein the mounting assembly is clamped to the support beam.
- 47. The apparatus of any one of claims 44 to 46, wherein the support beam is a convenient beam support.
- 48. The apparatus of any one of claims 44 to 47, wherein the support beam is located between 2 meters and 3 meters above the rig floor.
- 49. The apparatus of any one of claims 44 to 48, wherein the tong is movably attached.
- 50. The apparatus of any one of claims 44 to 49, wherein the motive assembly comprise a piston and cylinder assembly.
- 51. The apparatus of any one of claims 44 to 50, wherein the mounting assembly is coupled to the support beam such that the extendable structure can position the tong proximate a connection of the tubulars.
- 52. A method of positioning a tong to make up or break out tubulars, the method comprising the steps of:

providing an extendable structure having a variable length;

attaching the tong to the extendable structure;

positioning the extendable structure on a drilling tower;

moving the tong from a first position to a second

position;

engaging the tubulars with the tong; and one of making or breaking a connection of the tubulars.

- 53. The method of claim 52, wherein positioning the extendable structure on the drilling tower comprises coupling the extendable structure to a support member on the drilling tower.
- 54. The method of claim 52 or 53, further comprising attaching a support member on the drilling tower, and coupling the extendable structure to the support member.
- 55. The method of any one of claims 52 to 54, further comprising providing a mounting assembly for coupling the extendable structure to the support member.
- 56. The method of any one of claims 52 to 55, wherein the extendable structure is telescopic.
- 57. The method of any one of claims 52 to 56, wherein moving the tong from the first position to the second position comprises varying the length of the extendable structure.
- 58. An apparatus for positioning a tong proximate a tubular at a well center, comprising:

an extendable structure, the tong attached to one end of the extendable structure;

an actuating member for extending or retracting the extendable structure relative to the well center, the extendable structure and the actuating member having substantially parallel longitudinal axes; and

a mounting assembly coupled to an opposite end of the extendable structure, wherein the mounting assembly includes a bearer and the bearer is coupled to a single location of a support member on a drilling tower.

- 59. The apparatus of claim 58, wherein the extendable structure is telescopic.
- 60. The apparatus of claim 58 or 59, wherein the extendable structure is pivotable about a vertical axis.
- 61. The apparatus of claim 58 or 59, wherein the extendable structure is pivotable about a horizontal axis.
- 62. The apparatus of any one of claims 58 to 61, wherein the extendable structure comprises an outer barrel and an inner barrel.
- 63. The apparatus of claim 62, wherein the mounting assembly further comprises:
- a carriage pivotally attached to the bearer, wherein a portion of the outer barrel is disposed on the carriage.
- 64. The apparatus of claim 62 or 63, wherein the extendable structure further comprises an intermediate barrel.
- 65. The apparatus of claim 64, wherein at least a portion of the inner barrel is slidably mounted in the intermediate barrel and at least a portion of the intermediate barrel is slidably mounted in the outer barrel.

- 66. The apparatus of claim 65, wherein a first end of the actuating member is coupled to the outer barrel and a second end is coupled to the inner barrel.
- 67. The apparatus of any one of claims 62 to 66, wherein the tong is movably attached to the inner barrel.
- 68. The apparatus of claim 67, further comprising a clamp assembly for securing the outer barrel to the carriage.
- 69. The apparatus of claim 68, wherein the outer barrel is movable between a first position and a second position relative to the carriage.
- 70. The apparatus of any one of claims 62 to 66, wherein the tong is movably attached to the extendable structure.
- 71. The apparatus of claim 70, further comprising a clamping assembly for securing the extendable structure to the carriage.
- 72. The apparatus of claim 71, wherein the clamping assembly is releasable connected to the carriage.
- 73. The apparatus of any one of claims 58 to 72, further comprising a motor actuable to adjust the position of the extendable structure with respect to said mounting assembly.
- 74. The apparatus of any one of claims 58 to 73, wherein the actuating member comprises a piston and cylinder assembly.

- 75. The apparatus of claim 74, wherein the piston and cylinder assembly is at least partially disposed on the extendable structure.
- 76. The apparatus of claim 73 or 75, wherein the piston and cylinder assembly is used to move the extendable structure horizontally.
- 77. The apparatus of any one of claims 58 to 76, wherein a center of mass of the tong is substantially aligned with an axis of the extendable structure.
- 78. The apparatus of any one of claims 58 to 77, wherein the mounting assembly is clamped to the support member.
- 79. The apparatus of any one of claims 58 to 77, wherein the mounting assembly is selectively attached to the support member.
- 80. The apparatus of any one of claims 58 to 79, wherein the support member is a beam of the drilling tower.
- 81. An apparatus for positioning a tong for making up or breaking out tubulars, comprising:

an extendable structure, the extendable structure having a variable length and the tong capable of making up or breaking out tubulars attached to one end of the extendable structure;

- a motive assembly having an extendable member for changing the length of the extendable structure; and
- a mounting assembly for coupling the extendable structure to at most one location on a drilling tower.

- 82. The apparatus of claim 80, wherein the tong is movably attached.
- 83. The apparatus of claim 80 or 81, wherein the motive assembly comprise a piston and cylinder assembly.
- 84. The apparatus of claim 80, 81 or 82, wherein the extendable structure is movable in at least two planes.
- 85. The apparatus of any one of claims 81 to 84, wherein the extendable structure is slidable along the mounting assembly between a first position and a second position.
- 86. The apparatus of any one of claims 81 to 85, wherein the extendable structure is telescopic.
- 87. The apparatus of any one of claims 81 to 86, wherein a center of mass of the tong is substantially aligned with an axis of the extendable structure.
- 88. The apparatus of any one of claims 81 to 87, wherein the single location is a location on a support beam.
- 89. The apparatus of claim 88, wherein the extendable structure is clamped to the support beam.
- 90. The apparatus of claim 89, wherein the extendable structure is clamped using at least one bolt.
- 91. A method for connecting a first tubular to a second tubular proximate a well center, the method comprising: providing an apparatus for connecting the tubulars, the apparatus comprising:

a tong adapted to connect the tubulars; an extendable structure for positioning the tong; an extendable actuating member for extending or retracting the extendable structure; and

a mounting assembly having a bearer adapted to couple the apparatus to a single location on a drilling tower; positioning the apparatus on a drilling tower; actuating the extendable structure to move the tong toward the well center;

engaging the first and second tubulars with the tong; and connecting the first tubular to the second tubular.

- 92. The method of claim 91, further comprising attaching a support member on the drilling tower.
- 93. The method of claim 92, wherein the apparatus is coupled to the support member.
- 94. The method of claim 91, 92 or 93, wherein connecting the first tubular to the second tubular comprises rotating the first tubular relative to the second tubular.
- 95. The method of any one of claims 91 to 94, wherein actuating the extendable structure comprises extending the actuating member, thereby extending the extendable structure.
- 96. An apparatus for positioning a tong for making up or breaking out tubulars, comprising:

an extendable structure, the extendable structure having a variable length and the tong for making up or breaking out tubulars attached to one end of the extendable structure;

a motive assembly for changing the length of the extendable structure, the motive assembly and the extendable structure having substantially parallel axis; and

a mounting assembly coupled to an opposite end of the extendable structure, wherein the mounting assembly is adapted to couple the extendable structure to a single location of a support beam disposed above a rig floor.

- 97. The apparatus of claim 96, wherein the support beam is selectively attached to a drilling tower.
- 98. The apparatus of claim 96 or 97, wherein the mounting assembly is clamped to the support beam.
- 99. The apparatus of claim 96, 97 or 98, wherein the support beam is a convenient beam support.
- 100. The apparatus of any one of claims 96 to 99, wherein the support beam is located between 2 meters and 3 meters above the rig floor.
- 101. The apparatus of any one of claims 96 to 100, wherein the tong is movably attached.
- 102. The apparatus of any one of claims 96 to 101, wherein the motive assembly comprise a piston and cylinder assembly.

