

INJECTOR AND SLIP BOWL SYSTEM

BACKGROUND

Hydrocarbons, such as oil and gas, are commonly obtained from subterranean formations that may be located onshore or offshore. The development of subterranean operations and the processes involved in removing hydrocarbons from a subterranean formation are complex. Typically, subterranean operations involve a number of different steps such as, for example, drilling a wellbore at a desired well site, treating the wellbore to optimize production of hydrocarbons, and performing the necessary steps to produce and process the hydrocarbons from the subterranean formation. Different stages of a subterranean drilling and completion operation often involve the use of tubular members, such as coiled tubing, jointed pipe, or other similar items.

Coiled tubing, jointed pipe, or other similar tubular members generally include cylindrical tubing made of metal or composite. The tubular members may be introduced into an oil or gas wellbore or pipeline through wellhead control equipment to perform various tasks during the exploration, drilling, production, and workover of the well/pipeline. For example, coiled tubing may be inserted by a coiled tubing injector apparatus. Such injectors generally incorporate a pair of opposed endless drive chains which are arranged in a common plane. The drive chains are often referred to as gripper chains because each chain has multiple gripper blocks attached along the chain for handling the tubing as it passes through the injector.

The opposed gripper chains are provided with a predetermined amount of slack which allows the gripper chains to be biased against the tubing as the tubing moves into and out of the wellbore. This biasing is accomplished with an endless roller chain disposed inside each gripper chain. Each roller chain engages sprockets rotatably mounted on a respective linear beam. The linear beams may be moved toward one another so that each roller chain is moved against its corresponding gripper chain such that the tubing facing portion of the gripper chain is moved toward the tubing so that the gripper blocks can engage the tubing and move it through the apparatus. When the gripper chains are in motion, the gripper blocks will engage the tubing along a working length of the linear beam. Each gripper chain has a gripper block that comes into contact with the tubing at the top of the working length of the linear beam as another gripper block on the same gripper chain breaks contact with the tubing at the bottom of the working

length of the linear beam. This continues as the gripper chains force the tubing into or out of the wellbore.

Tubular members introduced into the wellbore may not have a constant cross-section. For example, a variety of outside diameters of tubing may be used in a particular drilling operation, or a pipe joint or connector between two reels of coiled tubing may result in a change in outside diameter of the tubular member directed into the wellbore through the injector. Existing injector systems that accommodate a range of tubing diameters have a number of disadvantages. For example, certain systems utilize two injectors stacked on top of one another to allow the injectors to pass an upset (i.e., a change in diameter) that could not otherwise pass through either injector with the linear beams closed (i.e., with the gripper chains engaging the tubular member). Other injector systems require costly stoppages to make adjustments and modifications to the injector and the tubing.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 shows a system including an injector apparatus in accordance with the present disclosure in position for inserting a tubular member into an adjacent wellhead.

Figure 2 shows a cross-sectional view of the injector apparatus of Figure 1.

Figure 3 is a flowchart depicting a method for moving a tubular member in and out of a well, in accordance with certain embodiments of the present disclosure.

While embodiments of this disclosure have been depicted and described and are defined by reference to example embodiments, such references do not imply a limitation on the disclosure, and no such limitation is to be inferred. The subject matter disclosed is capable of considerable modification, alteration, and equivalents in form and function, as will occur to those skilled in the pertinent art and having the benefit of this disclosure. The depicted and described embodiments of this disclosure are examples only, and not exhaustive of the scope of the disclosure.

DETAILED DESCRIPTION OF THE DISCLOSURE

Illustrative embodiments of the present invention are described in detail herein. In the interest of clarity, not all features of an actual implementation may be described in this specification. It will of course be appreciated that in the development of any such actual embodiment, numerous implementation-specific decisions may be made to achieve the specific implementation goals, which may vary from one implementation to another. Moreover, it will be appreciated that such a development effort might be complex and time-consuming, but would nevertheless be a routine undertaking for those of ordinary skill in the art having the benefit of the present disclosure.

To facilitate a better understanding of the present invention, the following examples of certain embodiments are given. In no way should the following examples be read to limit, or define, the scope of the invention. Embodiments of the present disclosure may be applicable to horizontal, vertical, deviated, or otherwise nonlinear wellbores in any type of subterranean formation. Embodiments may be applicable to injection wells as well as production wells, including hydrocarbon wells. Embodiments may further be applicable to borehole construction for river crossing tunneling and other such tunneling boreholes for near surface construction purposes or borehole u-tube pipelines used for the transportation of fluids such as hydrocarbons.

Devices and methods in accordance with embodiments described herein may be used in one or more of measurement-while-drilling and logging-while-drilling operations.

The terms “couple” or “couples,” as used herein are intended to mean either an indirect or a direct connection. Thus, if a first device couples to a second device, that connection may be through a direct connection or through an indirect mechanical connection via other devices and connections. The term “uphole” as used herein means along the drillstring or the hole from the distal end towards the surface, and “downhole” as used herein means along the drillstring or the hole from the surface towards the distal end.

The present application is directed to methods and systems for performing subterranean operations and particularly, to methods and systems for moving tubular members in and out of a well.

Figure 1 depicts a system including an injector apparatus in accordance with the present disclosure, denoted generally with reference numeral 10. The injector apparatus 10 may be positioned above a wellhead 12 of a wellbore 13. A lubricator or stuffing box 16 may be connected to the upper end of the wellhead 12. A tubular member 18, having a longitudinal central axis 25 and an outer surface 23 may be supplied on a large reel or drum 24. The tubular member 18 may have any suitable length for the particular application. For instance, the tubular member 18 may be several thousand feet in length. Tubular member 18 may be inserted into the wellbore 13 as single tubing, tubing spliced by connectors, or tubing spliced by welding.

The tubular member 18 may have any suitable thickness depending on the particular application. For instance, in certain implementations, the ODs of the tubular member 18 may range from approximately one inch (2.5 cm) to approximately five inches (12.5 cm). As would be appreciated by one of ordinary skill in the art, the injector apparatus 10 may be readily adaptable to larger diameter tubular members. Tubular member 18 may be spooled from the drum 24. In certain implementations, the drum 24 may be supported on a truck (not shown) for mobile operations.

The injector apparatus 10 may be mounted above the wellhead 12. A guide framework 28 may extend from the injector apparatus 10. The tubular member 18 may be supplied from the drum 24 and is run over the guide framework 28. As the tubular member 18 is unspooled from the drum 24, it may be directed to pass adjacent to a measuring device, such as a

wheel 34. Alternatively, the measuring device may be incorporated into the injector apparatus 10.

The tubular member 18 may be made from any suitable material known to those of ordinary skill in the art, having the benefit of the present disclosure. For instance, in certain implementations, the tubular member 18 may be made of a material which is sufficiently flexible and ductile that it can be curved for storage on the drum 24 and also later straightened. While the material may be flexible and ductile and may be capable of bending around a radius of curvature, it runs the risk of being pinched or suffering from premature fatigue failure should the curvature be severe. In certain embodiments in accordance with the present disclosure, the tubular member 18 may comprise a first segment 19, a second segment 20, a third segment 21, and a fourth segment 22. The first segment 19 and third segment 21 may have equal diameters. The second segment 20 and the fourth segment 22 may have larger outer diameters ("OD") than the first segment 19 and third segment 21. As would be appreciated by one of ordinary skill in the art with the benefit of the present disclosure, the difference in OD between the first and third segments 19, 21 and the second and fourth segments 20, 22 may be caused by any number of reasons. For example, a pipe joint in straight tubing or a connector connecting two spools of coiled tubing may cause a difference in diameters in the tubular member 18. The disclosed injector apparatus 10 can be used for injecting, suspending, or extracting any generally elongated body without departing from the scope of the present disclosure.

Figure 2 depicts a close-up cross-sectional view of the injector apparatus 10 of Figure 1. Referring to Figure 2, the details of the injector apparatus (denoted by reference numeral 10 in Figure 1) will now be discussed. Injector apparatus (denoted by reference numeral 10 in Figure 1) may include a support structure 202. The support structure 202 may have a shape and size that is suitable for the particular application. The support structure 202 may have a number of components including, but not limited to, an i-beam or plate as the fabricated structural member. The injector apparatus (denoted by reference numeral 10 in Figure 1) also may include an injector 204 located at an upper portion thereof, above the support structure 202. In certain embodiments, the injector 204 may include a base 206 located proximate to the support structure 202 and a carriage 208 extending upward from the base 206 and coupled thereto. In certain implementations, the carriage 208 may be pivotally attached to the base 206. In certain embodiments, the injector 204 may further include a gripper chain system 210 mounted in the carriage 208. The gripper chain system 210 may further comprise

one or more gripper chains 212 and one or more linear beams 214 supporting the gripper chains 212.

In certain embodiments, gripper chains 212 may engage the tubular member 18 along a working length of the linear beams 214 and a corresponding working length of the gripper chain 212. The term “working length,” as used herein, refers to the length of chain or gripper block that grips and/or uses a compressive force to engage a tubular member as it moves through the injector 204. Thus, gripper chain 212 may first contact the tubular member 18 at an upper end of the working length of the linear beam 214, and the contact between the tubular member 18 and gripper chains 212 may break as the tubular member (denoted by reference numeral 18 in Figure 1) passes a lower end of the working length of the linear beam 214. The gripper chains 212 may comprise a roller chain 216 and a plurality of gripper blocks 218. Gripper blocks 218 may engage the tubular member 18 and may move it through the injector 204. Any suitable gripper blocks known to those of ordinary skill in the art may be used without departing from the scope of the present disclosure. In certain embodiments in accordance with the present disclosure, the tubular member 18 may be directed downhole through the injector 204. As the tubular member 18 is directed downhole through the injector 204, the gripper blocks 218 may contact an outer surface (denoted by reference numeral 23 in Figure 1) of the tubular member 18 along the longitudinal central axis (denoted by reference numeral 25 in Figure 1) thereof.

In certain embodiments, the injector 204 may also comprise one or more sprockets (not shown) to drive the gripper chain 212 and a mechanical device (not shown) to provide motive force. The mechanical device may be a hydraulic or electric motor. The injector 204 may also include an actuator (not shown) that may be used to move the linear beams 214 towards and away from the tubular member 18.

The injector apparatus (denoted by reference numeral 10 in Figure 1) also may include a lifting means 220 for moving the injector 204 vertically with respect to the base 206. In certain implementations, the lifting means 220 may include, but is not limited to, a set of hydraulic cylinders 220A and 220B. Each of the hydraulic cylinders 220A, 220B may be coupled to the injector 204 and the support structure 202. The hydraulic cylinders 220A, 220B may be operable to move the injector 204. The hydraulic cylinders 220A, 220B may apply external force to lift the injector 204 vertically with respect to the base 202. As would be appreciated by one of ordinary skill in the art with the benefit of the present disclosure, the

hydraulic cylinders 220A, 220B may include one or more cylinder rods (not shown). While two hydraulic cylinders are depicted in the example of Figure 2, it should be understood that any suitable number of hydraulic cylinders may be utilized. Furthermore, as would be appreciated by those of ordinary skill in the art, with the benefit of this disclosure, the example of hydraulic cylinders should not be seen as limiting. Specifically, alternative lifting means of applying external force to lift the injector 204 may be utilized without departing from the scope of the present disclosure. Such alternative means may include, but are not limited to, electric actuators, chain actuators, and draw works.

The injector apparatus (denoted by reference numeral 10 in Figure 1) also may include a slip bowl assembly 222 coupled to the support structure 202. The slip bowl assembly 222 may be located below the injector base 206. The slip bowl assembly 222 may engage and release the tubular member 18 along its longitudinal central axis (denoted by reference numeral 25 in Figure 1). The slip bowl assembly 222 may include any suitable slip bowl, including one or more conventional slip bowls, operable to engage or release the tubular member 18 and adapted for the load transfer features described herein. Each slip bowl assembly 222 may be configured to engage tubular member 18 with a bite biased along the longitudinal central axis 25. In certain implementations, the slip bowl assembly 222 may be moveably coupled to the support structure 202. The slip bowl assembly 222 may also be oriented in a position that is inverted from that shown in Figure 1. Furthermore, more than one slip bowl assembly 222 may be used in this embodiment, wherein the two bowls are oriented in opposition to one another. The slip bowl assembly 222 may be oriented in any suitable manner without departing from the scope of the present disclosure.

Operation of the injector apparatus (denoted by reference numeral 10 in Figure 1) in accordance with an illustrative embodiment of the present disclosure will now be discussed in conjunction with Figures 2 and 3. Figure 3 is a flowchart depicting illustrative method steps associated with a method for moving a tubular member in and out of a well, in accordance with an illustrative embodiment of the present disclosure. Although a number of steps are depicted in Figure 3, as would be appreciated by those of ordinary skill in the art, having the benefit of the present disclosure, additional steps may be implemented or one or more of the recited steps may be eliminated or modified without departing from the scope of the present disclosure.

First, at step 302, tubular member 18 is directed downhole through the injector 204. The gripper chains 212 and gripper blocks 218 engage the first segment (denoted by reference

numeral 19 in Figure 1) of the tubular member 18 until the gripper blocks 218 of the injector 204 encounter the second segment (denoted by reference numeral 20 in Figure 1) of the tubular member 18. At step 304, after the injector 204 encounters the second segment (denoted by reference numeral 20 in Figure 1), the slip bowl assembly 222 engages the first segment (denoted by reference numeral 19 in Figure 1) of the tubular member 18. Specifically, the slip bowl assembly 222 imparts at least a minimum threshold of compressive force on a portion of the tubular member 18 and may substantially prevent the tubular member 18 from moving upward and/or downward along the longitudinal central axis (denoted by reference numeral 25 in Figure 1) of the tubular member 18. At this step, the first segment (denoted by reference numeral 19 in Figure 1) of the tubular member 18 may be engaged by the slips (not shown) of the slip bowl assembly 222 and is under compression.

Next, at step 306, the linear beams 214 of the injector 204 are moved away from one another, causing the gripper chains 212 and gripper blocks 218 to disengage the tubular member 18. At step 308, the lifting means 220 is actuated to move the injector 204 vertically with respect to the base 202 until the injector 204 is positioned above the second segment (denoted by reference numeral 20 in Figure 1) of the tubular member 18, thus bypassing an upset in the tubular member 18. At step 310, the linear beams 214 of the injector 204 are moved toward one another, causing the gripper chains 212 and gripper blocks 218 to engage the third segment (denoted by reference numeral 21 in Figure 1) of the tubular member 18. Next, at step 312, the slip bowl assembly 222 releases the first segment (denoted by reference numeral 19 in Figure 1) of the tubular member 18, allowing the tubular member 18 to once again move upward and/or downward along a longitudinal central axis (denoted by reference numeral 25 in Figure 1) of the tubular member 18. Finally, at step 314, the tubular member 18 continues to be directed downhole through the injector 204 until the injector 204 encounters the fourth segment (denoted by reference numeral 22 in Figure 1) of the tubular member 18. Once the injector 204 encounters the fourth segment (denoted by reference numeral 22 in Figure 1), the fourth segment (denoted by reference numeral 22 in Figure 1) of the tubular member 18 is engaged by the slips (not shown) of the slip bowl assembly 222 and is under compression, as discussed above with respect to step 304. As would be appreciated by those of ordinary skill in the art, with the benefit of this disclosure, steps 304 through 314 may be repeated multiple times without departing from the scope of this disclosure.

Referring back to Figure 1, in certain embodiments in accordance with the present disclosures, the tubular member 18 (i.e., tools, tool joints, etc.) can be disassembled,

disconnected, and/or removed, or additional tools may be added, below the injector apparatus 10 in order to install or remove a tubular member that is not able to pass through the injector apparatus 10 in the opened position. This may be performed one or more times during the course of a single job. This operation is well known to those of ordinary skill in the art having the benefit of the present disclosure and will therefore, not be discussed in detail herein.

In accordance with certain embodiments of the present disclosure, during normal operations, the injector apparatus 10 may be used to pass an upset that could not otherwise pass through a prior art injector. In certain embodiments, the second segment 20 of the tubular member 18 may have a larger diameter than the first segment 19 and third segment 21 of the tubular member 18. Accordingly, the injector apparatus 10 disclosed herein may be particularly beneficial in instances where tubular members having different size diameters are utilized or in situations where a single, connected tubular member has differing diameters. Further, utilizing a slip bowl assembly and a lifting means, as described herein, provides a method of using only one injector to accommodate tubular members of various sizes.

In certain implementations, the injector apparatus 10 in accordance with the present disclosure may provide safety advantages over prior art injectors. For example, one particular type of prior art injector apparatus utilizes two injectors stacked on top of one another. The stacked or dual injector system would use two injectors, only one of which would be closed at a given time. This type of dual injector system allows for a change of ODs (e.g., different tools, tool joints, etc.) to be run into the wellbore. However, stacked or dual injector systems may have many disadvantages, including, but not limited to, heavier, taller rig ups, extended rig up time, operational complexity, higher capital cost, and higher maintenance cost. In contrast, an injector apparatus 10 in accordance with the present disclosure reduces rig time, costs, and operational complexity. Specifically, the injector apparatus 10 disclosed herein may provide for significant cost savings because the slip bowl assembly may cost as little as less than one tenth the cost of a second injector.

Accordingly, an improved injector apparatus is disclosed which may accommodate tubular members of differing diameters. The slip bowl assembly 222 of Figure 2 engages the tubular member 18 when a second segment 20 is encountered and the injector 204 of Figure 2 is lifted above the second segment 20 in order to avoid the upset. In this manner, the improved injector apparatus 10 disclosed herein may conform rapidly to changing geometries of tubing to

reduce the number of stoppages for adjustments and modifications required in prior art tubing injector apparatuses.

Although the figures depict embodiments of the present disclosure in a particular orientation, it should be understood by those skilled in the art that embodiments of the present disclosure are well suited for use in a variety of orientations. Further, it should be understood by those skilled in the art that the use of directional terms such as up, down, above, below, upper, lower, upward, downward and the like are used in relation to the illustrative embodiments as they are depicted in the figures, the upward direction being toward the top of the corresponding figure and the downward direction being toward the bottom of the corresponding figure.

An embodiment of the present disclosure is an injector apparatus for moving a tubular member in and out of a well. The injector apparatus includes a support structure and an injector located above the support structure. The injector includes a base, a carriage extending upward from the base and coupled to the base, and a gripper chain system mounted in the carriage. The gripper chain system includes one or more gripper chains and one or more linear beams supporting the one or more gripper chains. The injector apparatus further includes one or more hydraulic cylinders coupled to the support structure, wherein the one or more hydraulic cylinders are operable to move the injector. The injector apparatus further includes a slip bowl assembly coupled to the support structure and located below the injector base.

Optionally, the one or more hydraulic cylinders include two hydraulic cylinders. Optionally, the one or more hydraulic cylinders are coupled to the injector. Optionally, the slip bowl assembly includes one or more slip bowls. Optionally, the gripper chains include a roller chain and a plurality of gripper blocks.

Another embodiment of the present disclosure is an injector and slip bowl system for moving a tubular member in and out of a well. The system includes an injector apparatus. The injector apparatus includes a support structure and an injector located above the support structure. The injector includes a base, a carriage extending upward from the base and coupled to the base, and a gripper chain system mounted in the carriage. The gripper chain system includes one or more gripper chains and one or more linear beams supporting the one or more gripper chains. The injector apparatus further includes a lifting means coupled to the support structure and a slip bowl assembly coupled to the support structure and located below the base.

Optionally, the lifting means is selected from a group consisting of one or more hydraulic cylinders, an electric actuator, a chain actuator, and draw works. Optionally, the gripper chains include a roller chain and a plurality of gripper blocks. Optionally, the slip bowl assembly includes one or more slip bowls. Optionally, the gripper chains engage and release the tubular member along a longitudinal central axis of the tubular member. Optionally, the gripper blocks engage and release the tubular member along a longitudinal central axis of the tubular member. Optionally, the slip bowl assembly engages and releases the tubular member along a longitudinal central axis of the tubular member. Optionally, the tubular member is directed downhole through the injector.

Another embodiment of the present disclosure is a method for moving a tubular member in and out of a well. The method includes directing the tubular member downhole through an injector. The tubular member includes a first segment, a second segment, and a third segment, and the second segment has a larger diameter than the first segment and third segment. The injector comprises a base, a carriage extending upward from the base and coupled to the base, a gripper chain system mounted in the carriage and including one or more gripper chains and one or more linear beams supporting the one or more gripper chains, a lifting means coupled to the support structure, and a slip bowl assembly coupled to the support structure and located below the base. The gripper chains engage the first segment of the tubular member until the injector encounters the second segment. The method further includes engaging the slip bowl assembly, wherein the slip bowl assembly imparts a compressive force on the first segment of the tubular member. The method further includes moving the linear beams of the injector away from one another, wherein the movement of the linear beams disengages the tubular member from the gripper chains. The method further includes actuating the lifting means to move the injector vertically with respect to a base of the injector until the injector is positioned above the second segment of the tubular member. The method further includes moving the one or more linear beams of the injector toward one another, wherein the movement of the linear beams causes the gripper chains to engage the third segment of the tubular member. Finally, the method includes disengaging the slip bowl assembly from the first segment of the tubular member.

Optionally, the lifting means is selected from a group consisting of one or more hydraulic cylinders, an electric actuator, a chain actuator, and draw works. Optionally, the first segment and the third segment have equal diameters. Optionally, the gripper chains include a roller chain and a plurality of gripper blocks. Optionally, the gripper blocks of the gripper chains

engage the tubular member. Optionally, the tubular member further includes a fourth segment with a diameter greater than the first or third segments, and the method further includes the step of directing the tubular member downhole through an injector until the injector encounters the fourth segment of the tubular member. Optionally, the tubular member is disassembled below the injector apparatus.

The present invention is therefore well-adapted to carry out the objects and attain the ends mentioned, as well as those that are inherent therein. While the invention has been depicted, described and is defined by references to examples of the invention, such a reference does not imply a limitation on the invention, and no such limitation is to be inferred. The invention is capable of considerable modification, alteration and equivalents in form and function, as will occur to those ordinarily skilled in the art having the benefit of this disclosure. The depicted and described examples are not exhaustive of the invention. Consequently, the invention is intended to be limited only by the spirit and scope of the appended claims, giving full cognizance to equivalents in all respects.

CLAIMS

What is claimed is:

1. An injector apparatus for moving a tubular member in and out of a well comprising:
 - a support structure;
 - an injector located above the support structure and comprising:
 - a base;
 - a carriage extending upward from the base and coupled to the base; and
 - a gripper chain system mounted in the carriage and comprising one or more gripper chains and one or more linear beams supporting the one or more gripper chains;
 - one or more hydraulic cylinders coupled to the support structure, wherein the one or more hydraulic cylinders are operable to move the injector;
 - a slip bowl assembly coupled to the support structure and located below the injector base.
2. The apparatus of claim 1, wherein the one or more hydraulic cylinders comprise two hydraulic cylinders.
3. The apparatus of claim 1, wherein the one or more hydraulic cylinders are coupled to the injector.
4. The apparatus of claim 1, wherein the slip bowl assembly comprises one or more slip bowls.
5. The apparatus of claim 1, wherein the gripper chains comprise a roller chain and a plurality of gripper blocks.

6. An injector and slip bowl system for moving a tubular member in and out of a well comprising:
 - an injector apparatus comprising:
 - a support structure;
 - an injector located above the support structure and comprising:
 - a base;
 - a carriage extending upward from the base and coupled to the base;
 - a gripper chain system mounted in the carriage and comprising one or more gripper chains and one or more linear beams supporting the one or more gripper chains;
 - a lifting means coupled to the support structure; and
 - a slip bowl assembly coupled to the support structure and located below the base.
7. The system of claim 6, wherein the lifting means is selected from a group consisting of one or more hydraulic cylinders, an electric actuator, a chain actuator, and draw works.
8. The system of claim 6, wherein the gripper chains comprise a roller chain and a plurality of gripper blocks.
9. The system of claim 6, wherein the slip bowl assembly comprises one or more slip bowls.
10. The system of claim 6, wherein the gripper chains engage and release the tubular member along a longitudinal central axis of the tubular member.
11. The system of claim 8, wherein the gripper blocks engage and release the tubular member along a longitudinal central axis of the tubular member.
12. The system of claim 6, wherein the slip bowl assembly engages and releases the tubular member along a longitudinal central axis of the tubular member.
13. The system of claim 6, wherein the tubular member is directed downhole through the injector.

14. A method for moving a tubular member in and out of a well comprising:

directing the tubular member downhole through an injector;

wherein the tubular member comprises a first segment, a second segment, and a third segment, and wherein the second segment has a larger diameter than the first segment and third segment;

wherein the injector comprises a base, a carriage extending upward from the base and coupled to the base, a gripper chain system mounted in the carriage and comprising one or more gripper chains and one or more linear beams supporting the one or more gripper chains, a lifting means coupled to the support structure, and a slip bowl assembly coupled to the support structure and located below the base;

wherein the gripper chains engage the first segment of the tubular member until the injector encounters the second segment;

engaging the slip bowl assembly, wherein the slip bowl assembly imparts a compressive force on the first segment of the tubular member;

moving the linear beams of the injector away from one another;

wherein the movement of the linear beams disengages the tubular member from the gripper chains;

actuating the lifting means to move the injector vertically with respect to a base of the injector until the injector is positioned above the second segment of the tubular member;

moving the one or more linear beams of the injector toward one another;

wherein the movement of the linear beams causes the gripper chains to engage the third segment of the tubular member; and

disengaging the slip bowl assembly from the first segment of the tubular member.

15. The method of claim 14, wherein the lifting means is selected from a group consisting of one or more hydraulic cylinders, an electric actuator, a chain actuator, and draw works.
16. The method of claim 14, wherein the first segment and the third segment have equal diameters.
17. The method of claim 14, wherein the gripper chains comprise a roller chain and a plurality of gripper blocks.
18. The method of claim 17, wherein the gripper blocks of the gripper chains engage the tubular member.
19. The method of claim 14, wherein the tubular member further comprises a fourth segment with a diameter greater than the first or third segments, and further comprising the step of directing the tubular member downhole through an injector until the injector encounters the fourth segment of the tubular member.
20. The method of claim 14, wherein the tubular member is disassembled below the injector apparatus.