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(54) WELLBORE TOOL FOR FILLING, CIRCULATING AND BACKFLOWING FLUIDS

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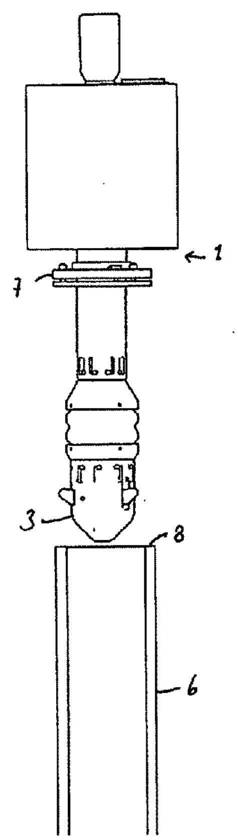
(57) **ABSTRACT**

The present invention relates to a tool (**1**) for filling, circulating and backflowing fluids in a pipeline being run into or out of a wellbore, the tool (**1**) including an elongate, telescopically acting body (**2**), a sealing element (**14**) arranged for sealing between the tool (**1**) and the pipeline (**6**) when the tool is being run into the pipeline, and a valve means (**19**) arranged for being closed when the tool is being pulled out of the pipeline (**6**), the tool (**1**) further being provided with a through channel. The invention is characterized in that the elongate, telescopically acting body (**2**) comprises a running head (**3**) at the lower end thereof, the valve means (**19**) being installed in the running head (**3**) and including a hydraulically actuatable ball valve adapted for being operable to an open position when running head (**3**) is run into the upper end of the pipeline (**6**), the hydraulic actuatable ball valve being adapted for closing when the running head (**3**) is pulled out of the pipeline (**6**), one or more sensors (**9**), adapted for measuring how far into the pipeline (**6**) the running head (**3**) is located, being positioned along the elongate, telescopically acting body (**2**).



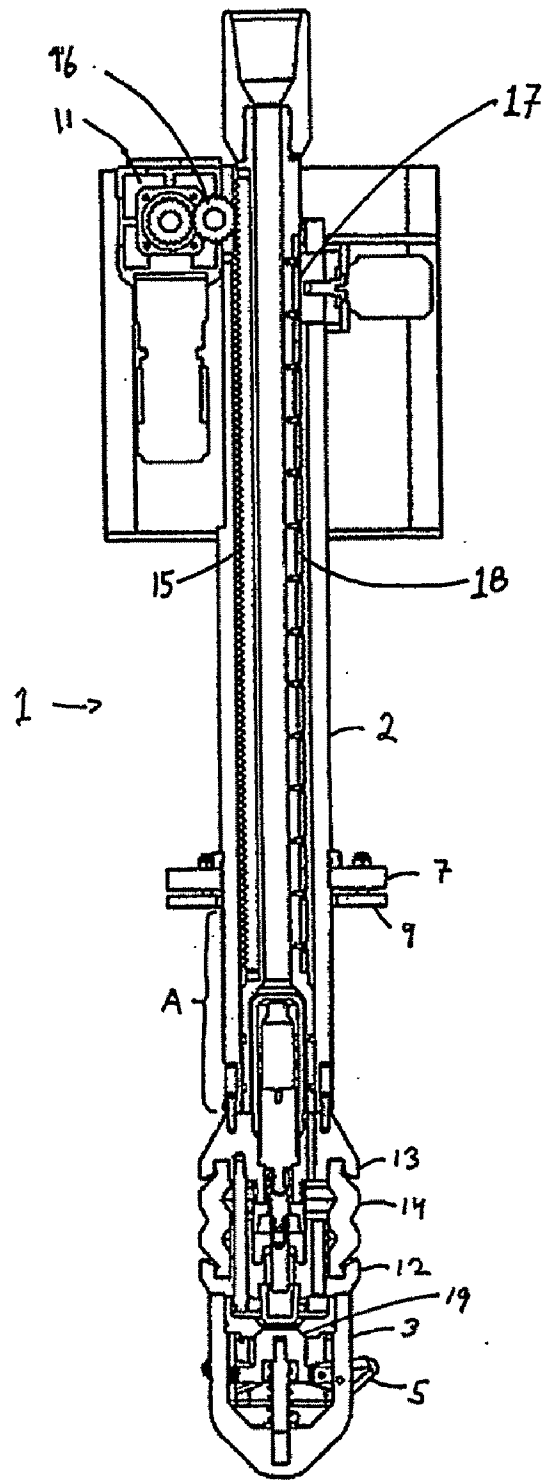


Fig. 1

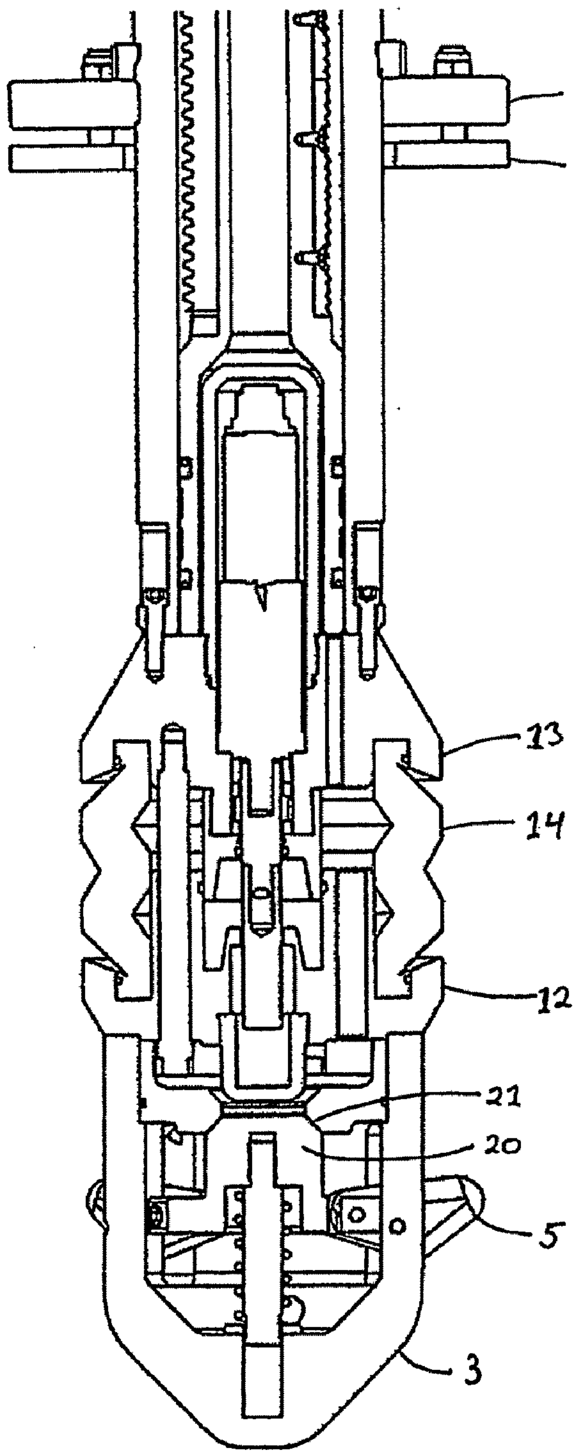


Fig. 2

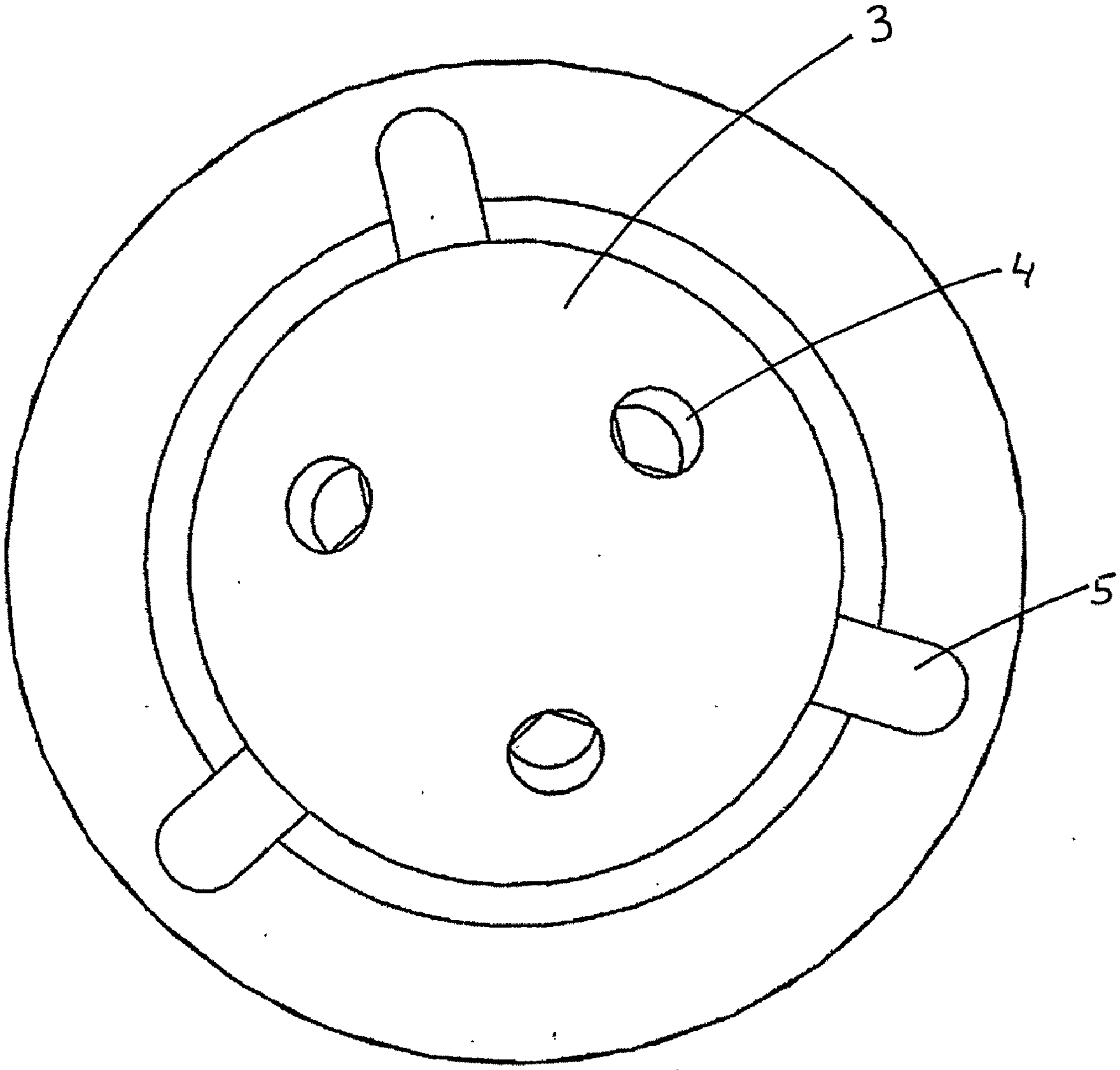


Fig. 3

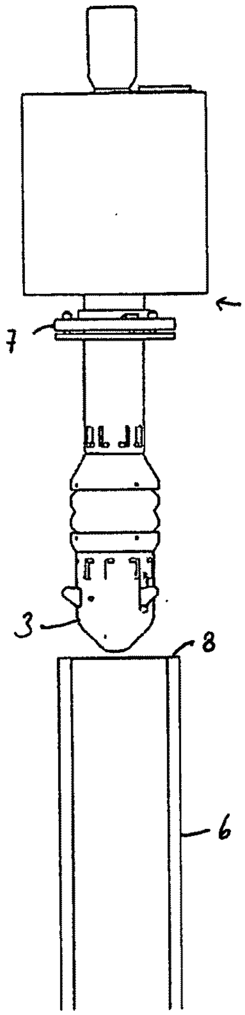


Fig. 4a

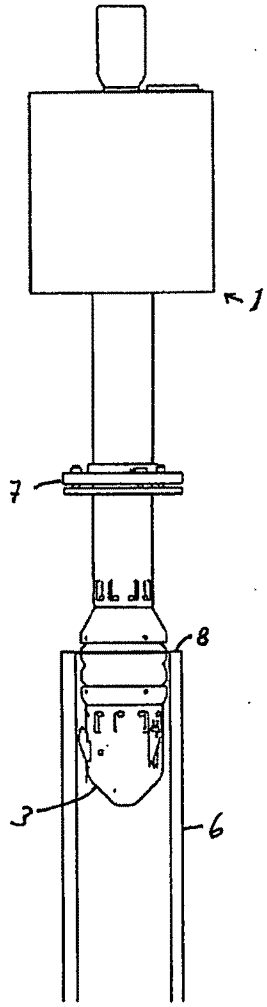


Fig. 4b

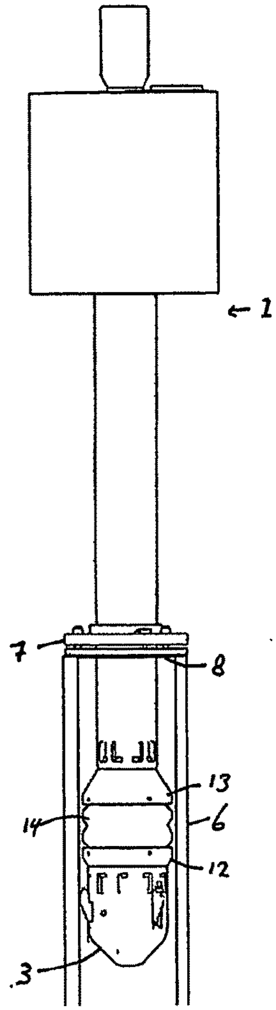


Fig. 4c

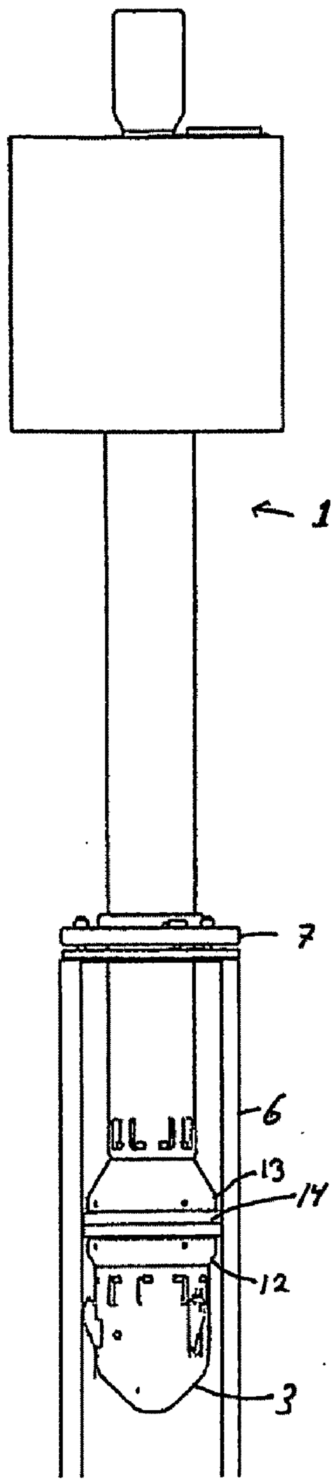


Fig. 5

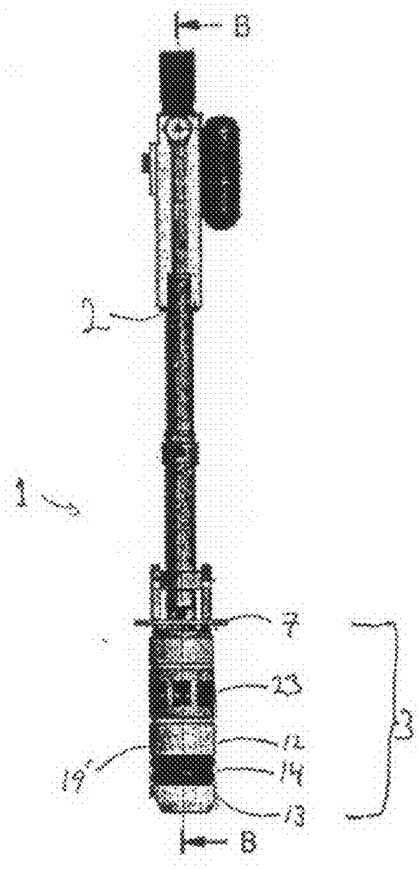


Fig. 6a

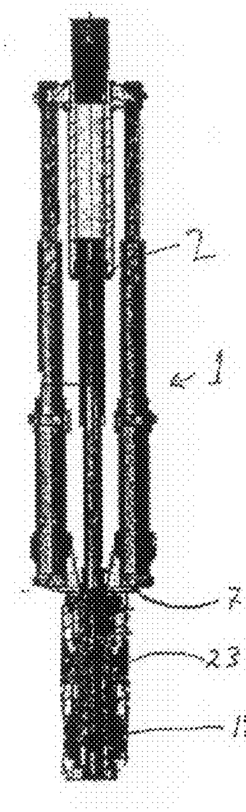


Fig. 6b

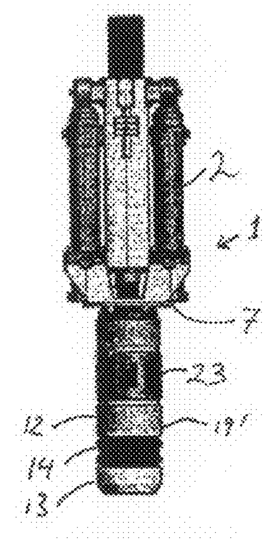


Fig. 6c

WELLBORE TOOL FOR FILLING, CIRCULATING AND BACKFLOWING FLUIDS

[0001] The present invention relates to a tool for filling, circulating and backflowing fluids in a pipeline being run into or out of a wellbore.

[0002] U.S. Pat. No. 6,722,425 relates to a tool for filling and backflowing fluids in a pipeline being run into or out of a wellbore. The tool according to this publication comprises an elongate, telescopically acting body, a sealing element for sealing between the tool and the pipeline into which the tool is run, as well as a fluid flow actuated valve means arranged for closing when the tool is pulled out of the pipeline. The purpose of the valve means is to prevent the spill of fluid when the tool is pulled out of the pipeline. Also, the tool is provided with a through channel within which the valve means is installed, openings formed at each end of the channel and at each side of the sealing element providing a fluid flow path through the tool, allowing fluids to be filled into and discharged from the pipeline.

[0003] When pipe sections, such as casing, are run into a wellbore, a check valve will cause the casing to be filled with mud from the drilling floor as pipe sections are being lowered into the wellbore. As the pipe sections are run into the wellbore, a corresponding volume, plus the volume of the casing steel, of mud will be displaced in the wellbore, and this displaced mud needs to be collected and stored in the return pit, where it is prepared for further use.

[0004] Today, most wells are being drilled using steerable drilling machines allowing for a much more extended reach drilling than in the past. A well is commonly drilled through several layers or zones of rock having different thickness and characteristics, the main portion of the well generally following a wavy or helical path in an essentially horizontal direction. This fact, as well as the increasing demand for ever larger inner diameter casing in order to increase the recovery rate, makes it more difficult to run the casing into the wellbore to the desired depth while maintaining control of the well.

[0005] If the wellbore walls have zones of weakness, mud will be able to migrate out of the wellbore and into the surrounding formations. This results in a loss of mud and pressure in the well. In order to solve this problem, mud containing sealing substances is circulated in the well, whereby the sealing substances penetrate into the weak zones of the formation recovering the integrity of the wellbore.

[0006] When pipe sections such as casing are run into a well, the casing must be refilled with mud in order to prevent the casing from collapsing. Mud is also circulated through the casing in order to reduce the friction and thereby ease the process of lowering the casing to the desired depth. The circulation of mud also effects a cooling that facilitates the process of cementing the casing to the wellbore walls.

[0007] It has turned out that the implementation of efficient mud filling and circulation operations, in which, in particular, the circulation time and frequency are sought kept at a maximum, is the single most important factor to achieve a successful result when deep wells are to be drilled and lined with casing.

[0008] The above conventional filling and circulating operations are carried out using elongated, tubular tools that are connected to the casing section rising through the drilling floor. The tool includes a pipe stub or tube that is run some length into the pipe section, as well as sealing elements sealing the connection between the tool and the pipe section.

[0009] The conventional tools must be mounted on the traveling block or top drive together with an elevator. A highly accurate positioning of the tools is necessary in order for the seal of the tools to locate correctly relative to the pipe section. As far as possible, mud must be prevented from leaking out onto the drilling floor, as the mud constitutes a serious health risk for the personnel located on a rig or drilling vessel. New regulations are very strict in this respect, and in reality, there is a zero tolerance of mud spill. The conventional tools are shaped in such a manner that a correct and quick positioning of the seal is difficult to achieve, and the tools also tend to jam. Moreover, the seal is subject to severe wear, so it is not certain whether or not the seal is in fact tight. In addition, the conventional tools are relatively large and unmanageable, and may be difficult to adapt to different equipment having varying dimensions, and they also tend to leak mud onto the drilling floor when being moved back and forth across the pipe section.

[0010] The pipe section rising through the drilling floor, to which the tool is to be connected, often includes an inner threaded flange to which the next pipe section is to be threadingly connected. The flange presents an obstruction for the elevator, requiring the tool with the seal to be lowered a sufficient distance in order for the seal and the elevator to not be positioned incorrectly relative to the flange. Due to the manner of operation of the elevator, the elevator may jam if it is positioned too close to or contacts the flange. If the seal is not brought sufficiently far down the pipe section to be fully or in part level with the flange, the seal between the tool and the pipe section will be inadequate and may cause leaks and spill onto the drilling deck.

[0011] Due to the requirement of an automated, unmanned drilling floor during the installation of casing, the prior art technology does not accommodate the new remotely controlled, self-gripping elevators that do not require a flange on the casing sections in order to lift and lower such casing sections into the well. These remotely controlled, self-gripping elevators save time as compared with elevators requiring a flange as they are able to connect to the casing more quickly since they do not need to locate a flange on the pipe. The elevator may grip the pipe sections in two different manners; either the elevator may grip the pipe while the pipe is located in an essentially horizontal position, or the elevator may grip vertically arranged pipes provided in an automated pipe handling system located on the drilling floor. In either case, there will be a demand to accuracy and verification, and there is also a need for a flexible adjustment in the longitudinal direction of a filling and circulating tool, providing a more rapid and reliable filling and circulation of mud.

[0012] The prior art mud filling and circulation devices are characterized in that they do not provide adjustability in the longitudinal direction when the tube or seal is inserted into the pipe. The prior art devices are fixedly installed in the top drive and move in the longitudinal direction along with the elevator. The drawback of these tools is, as mentioned, that they require a very accurate adaptation to be useful. Such tools are fully mechanical, and require the tool to be installed in the casing manually by horizontal arrangement of the elevator before the pipe is raised to a vertical position to further lower the pipe down onto the previous pipe section rising through the drilling floor. This is necessary in order to be able to threadingly connect the pipe sections using the appropriate torque. It is common to delay circulation until the pipe section is located approximately one meter above the drilling deck to be able to manually observe when the pipe has been filled with mud. In order to effect circulation using this prior art technology, the casing needs to be suspended from the drilling floor by slips so that the top drive and the elevator may be lowered to position a packer inside the casing and thereby achieve a seal. A major disadvantage of this technology is that, being mechanically locked to the top drive and moving with the elevator, it is not able to circulate while the casing is being lowered into the well. Using a self-gripping automatic elevator, it is possible, by means of this technology, to initiate the circulation once the pipe has been wedged to the drilling floor, after which the self-gripping elevator is lowered an exact predetermined distance to thereby set the seal of the tool. In order to achieve circulation while the casing is being lowered into the well, the seal of the self-gripping elevator must be set while it gripes the pipe to then lift the pipe up from the slip lock at the drilling floor, after which the casing is lowered in the borehole while mud is being circulated. The disadvantage of such a method is that the process of activating the seal is unreasonably time consuming and that it is difficult to verify whether or not the packer has been set and is in fact pressure tight. Another, at least as important disadvantage, is that the packer needs to be set approximately 14-18 m above the drilling floor, in which case the consequence of a leak or a mechanical failure may result in falling objects or the spreading of hazardous drilling mud from 14-18 m above the drilling floor. Hence, it has become common practice to only fill or circulate the casing after the casing has been lowered into the wellbore and properly locked by the slip lock at the drilling floor while the pipe project at most approximately 2 meter above the drilling deck, making it possible to visually observe and verify that the filling or circulation of mud in the well progress as expected.

[0013] Another solution also exists comprising a mechanical adjustment in the longitudinal direction that is able to move the seal independently of the elevator. This solution allows the seal to be positioned into the casing independently of the elevator, making it possible to fill and circulate through the pipe while the pipe is being lowered into the well. The solution includes a mechanical telescoping means, the length of which is adjusted by rotating the top drive, whereby the length increases with the number of revolutions. When rotating the top drive in the opposite direction, the tool gets shorter, so that the seal is pulled out of the pipe. The solution utilizes a two-way hydraulic cylinder, which, via a pump, is able to apply a pressure that can relocate the seal independently of the elevator, enabling the filling and circulation process to proceed while the casing is being lowered into the well.

[0014] The drawback of the prior art solutions is that they do not provide any satisfactory indication as to the extent of the length variations. Hence, the various operations are difficult to verify. Another major disadvantage is that the movable parts have to withstand the hydraulic forces caused by the pressure applied to the seal. The prior art technology suffer from the disadvantage that no verified support for these forces exist that may be visually observed at the drilling floor. Thus, there is a huge risk that a leak may occur 12-14 m above the drilling floor, and of falling objects, due to the sole mechanical verifications of the movement and the lack of visual verification. A further disadvantage of the prior art is that the extension section only has a limited movement in the longitudinal direction. This necessitates adaptation of the top drive and the length between the top drive and the elevator. This causes lost rig time as it is not possible to use the same length elevator supporting arms as during drilling. This results in unproductive rig time and additional risk that objects may fall down onto the drilling floor.

[0015] The above issues have left these prior art technologies with limited applicability. This is particularly true for floating drilling units and offshore rigs, for which the safety, verification, and reliability of the prior art is considered inadequate and/or too expensive. In practice, telescopic solutions are not used because they are not considered sufficiently safe. The authorities have increased the demands upon safety and verifiability, which has resulted in a need for a tool that is able to verify that the connection and seal are adequate, and that the tool automatically prepares for performing the next operational step in order to save rig time and to provide verification to the driller at the drilling floor as to the position in which the tool is located and to which function of the tool is activated at any time.

[0016] The authorities has increased the demands upon safety and verifiability, which has resulted in a need for a tool that is able to verify that the connection and seal are adequate, and that the tool is ready to perform the next operational step.

[0017] The present invention, according to the independent claim **1**, provides a tool that does not suffer from the above disadvantages.

[0018] FIG. **1** shows an embodiment of the present invention,

[0019] FIG. **2** shows a section of the embodiment in FIG. **1**,

[0020] FIG. **3** shows the head **3** as seen in a bottom view,

[0021] FIGS. **4***a*-*b* show the manner in which the present invention may be lowered into a pipe section for performing filling and/or circulation,

[0022] FIG. **5** shows how the seal of the present invention is set for circulation,

[0023] FIG. **6***a* shows an alternative embodiment of the present invention in an extended position,

[0024] FIG. **6***b* shows the embodiment of FIG. **6***a* along section B-B,

[0025] FIG. **6***c* shows the embodiment of FIG. **6***b*, but in a retracted position.

[0026] FIG. **1** shows an embodiment of a tool **1** according to the present invention. Tool **1** includes an elongate, telescopically acting body **2** comprising a running head **3** at one end of the tool. Running head **3** includes a valve means **19** that is able to be opened by outwardly protruding, spring loaded valve arms **5** that are pressed together when running head **3** is stabbed into a pipe section **6** that rises above a platform deck and forms an upper end of a pipeline, the valve means **19** assuming a closed position when the running head is pulled out from pipe section **6** as valve arms **5** are re-expanded by the spring action. When running head **3** has been stabbed sufficiently far into pipe section **6**, a stopping plate **7** hits the top **8** of pipe section **6**. Sensors **9** provided in the stopping plate **7** will detect that the stopping plate has hit the top of pipe section **6**, and further movement of the tool into pipe section **6** will be prevented.

[0027] As an alternative, tool **1** may be provided with a hydraulically actuatible ball valve **19'** instead of the outwardly protruding, spring loaded valve arms **5**. When stopping plate **7** hits the top **8** of pipe section **6**, a signal from sensors **9** in stopping plate **7** will cause the hydraulically actuatible ball valve to open. An example of such an embodiment is shown in FIGS. **6***a-c*.

[0028] Tool **1** is fixed to a top drive. When tool **1** is to be deployed, tool **1** is run, via the top drive, to above the pipe section **6** rising through the drilling floor. Tool **1** includes a drive **11** that, through the telescopic action of tool **1**, extends tool **1** so as to run running head **3** down into pipe section **6** until stopping plate **7** abuts against the top of pipe section **6** and drive **11** receives a signal from sensors **9** in stopping plate **7** informing that the stopping plate is abutted against the top of the pipe section and that drive **11** needs to stop the telescopic movement. This is shown in FIGS. **4***a-c*.

[0029] At this point, tool **1** is correctly positioned in pipe section **6**, and valve means **19**, **19'** has opened due to the fold-in of valve arms **5** on insertion of running head **3** into pipe section **6** or to activation of the hydraulically actuatible ball valve.

[0030] Running head **3** also includes two metal rings **12**, **13** as well as a sealing element **14**. By squeezing sealing element **14** between metal rings **12**, **13**, the sealing element will expand outwards and seal against the interior of pipe section **6**. The radii of metal rings **12**, **13** and sealing elements **14** are chosen so that sealing element **14** does not project outside metal rings **12**, **13** when the metal rings are not squeezed together. In this manner sealing element **14** is protected when tool **1** is being run into or out of pipe section **6**. If tool **1** scrapes or hits against the inner walls of pipe section **6**, sealing element **14** will be protected against wear and tear as metal rings **12**, **13** take the load. Preferably, metal rings **12**, **13** are shaped having sloping edges in order to facilitate the process of running tool **1** into or out of pipe section **6** without the risk of hooking onto something or undue scraping against the inner walls of pipe section **6**. As mentioned, sealing element **14** is set by squeezing metal rings **12**, **13** together. This action may be achieved, for example, in that running head **3** is fully telescopically retracted by drive **11** or another drive means adapted for the purpose. This is shown in FIG. **5**.

[0031] During filling of pipe section **6**, it will not be necessary to set sealing element **14**, but during circulation, sealing element **14** will have to be set in order to secure the seal against the inner walls of pipe section **6**.

[0032] Due to the shape and manner of operation of tool **1**, various verifiable feedbacks are provided to the operator during the operation of the tool. The positioning of valve arms **5** indicates whether or not the valve of running head **3** is open. Sensors **9** in stopping plate **7** provide feedback as to whether tool **1** runs sufficiently far into pipe section **6**. Drive **11**, by means of suitable locking mechanisms and sensors, may confirm that tool **1** has been locked in its correct extended position and does not run the risk of being pushed out of pipe section **6** in the case of a sudden, severe pressure buildup in the well. Also, the status of seal **12** may be verified by sensors indicating whether or not running head **3** has been telescopically retracted by drive **9** or another similar drive means. While the present invention has been explained with reference to an embodiment including a stopping plate **7**, sensors **9** detecting that the tool has been run a certain length into the pipe section could have been used to achieve the same result. The signal from sensor **9**, detecting how far into the pipe section the tool has been run, is used both to automatically stop further lowering of the tool and to verify for the operator that the tool is in fact correctly positioned in the pipe section, so that the next operation step may commence. Thus, the signal from sensor **9** will result in a go-ahead signal on the operator panel if the operation proceeds normally, or alternatively an error signal that both indicates an error and prevents further work.

[0033] The distance A (see FIG. **1**) with which running head **3** extends into pipe section **6** may be adjusted by moving stopping plate **7** up or down along tool **1**. This may be accomplished, for example, by providing stopping plate **7** and tool **1** with threads, whereby stopping plate **7** is moved up or down when being rotated relative to the tool. As an alternative, as mentioned, a number of sensors **9** are used instead that indicate how far into the pipe section running head **3** extends. Different applications, pipe types, or the fact that the elevator grips each pipe section at a slightly different point, will require that the distance from running head **3** to stopping plate **7** and/or sensors **9** is adjusted each time, as this distance determines how far into pipe section **6** the running head extends.

[0034] According to an embodiment of the present invention, tool **1** is provided with means in the form of sensors or the like measuring the distance from the gripping point of the elevator to the pipe section end. This distance influences how far running head **3** is to be run into the pipe section. If the distance from the gripping point of the elevator to the pipe section end is measured, this measurement is used by the operator or an automatic control system to subsequently run running head **3** the appropriate length into the pipe section. Several known sensors are commercially available that may be adapted for this particular application.

[0035] According to an embodiment of the present invention, drive **11** comprises a pitch rack **15** and one or more gear wheels **16**. By rotating gear wheel **16**, running head **3** is run either into or out of pipe section **6**. Drive **11** receives a signal from sensor(s) **9**, which signal causes the drive **11** to stop when running head **3** has been run sufficiently far into the pipe section.

[0036] According to another embodiment of the present invention, drive **11** comprises a hydraulically actuated telescoping device that operates to extend and retract the telescopically acting body **2** comprising a running head **3**. It is understood that other drive means may be used in order to move running head **3** into and out of the pipe section, such as pneumatically or electrically actuated systems, etc.

[0037] According to an embodiment of the present invention, tool **1** also includes a locking block or locking pal **17**, as well as a ratchet lever **18**, the locking pal **17** being engaged with ratchet lever **18** in order to make sure running head **3** maintains the correct position in pipe section **6**. Ratchet lever **18** and locking pal **17** may be shaped in such a manner that their mutual engagement may not loosen and cause impact movement in the case of strong vertically upward forces acting on the tool from the well. A sensor may confirm that locking pal **17** has correctly engaged ratchet lever **18**. Various other locking mechanisms preventing impact movement of the tool may also be used.

[0038] According to another embodiment of the present invention, tool **1** includes slips **23** that assist in ensuring that running head **3** maintains the correct position in pipe section **6**. In one embodiment, slips **23** may be disposed on the running head below stopping plate **7**, and be shaped in such a manner that teeth or jaws are forced out to engage the interior of pipeline **6**. Slips **23** are of a “non marking” type, that is, minimizes the imprint onto the interior of the pipeline.

[0039] According to an embodiment of the present invention, tool **1** also includes a sensor at the end of running head **3** that detects the level of liquid in the pipeline into which it is inserted. The detection of the liquid level will help enabling a significant increase of the mud filling rate. Today, the filling rate is kept down in order to avoid the risk of overfilling pipeline **6**, causing mud to squirt out onto the drilling floor. Using a liquid level detector, the filling may be performed automatically and with an increased filling rate. This will save time and facilitate/provide verification. The liquid level detector will be able to send a signal to the control system of the tool and to the operator panel. Several known liquid level detectors are commercially available, that may be adapted to this particular use.

[0040] In the following, exemplary advantageous functions of tool **1** are provided.

Filling

[0041] In filling a pipe section **6**, for example, an elevator is used for gripping and lifting a casing section, after which this pipe section is connected to the pipeline that has been lowered into a well, and the one end of which rises through the platform deck. Tool **1** is located above pipe section **6** and is mounted in the top drive. Regardless of the type of elevator or pipe lifting means that is being used, such as a side door elevator, slip joint elevator, etc., the operation of tool **1** will be the same. The distance from the gripping point of the elevator to the pipe section end is measured, providing indication to the system of how far into the pipe section running head **3** is to be run.

[0042] Drive **11** of tool **1** is activated so that running head **3**, being arranged on the elongate, telescopically acting body **2**, is caused to move downwards in an outgoing impact movement making the valve arms **5** hit the top of pipe section **1** and hence fold inwards (see FIGS. **4***a*-**4***c*).

[0043] The outgoing impact movement proceeds continuously until stopping plate **7** hits the top of pipe section **6**, or sensors **9** detect that the running head has been run sufficiently far into pipe section **6**. The optional stopping plate **7** is provided with a sensor array or sensors **9** detecting that stopping plate **7** has hit the top of pipe section **6**. Alternatively, only sensors **9** are used. Sensors **9** send a stop signal to drive **11**. The distance from stopping plate **7** to running head **3** determines how far running head **3** extends into pipe section **6**. As mentioned, this distance may be adjusted by moving stopping plate **7** closer to or further away from running head **3**.

[0044] Then locking pal **17** is locked to engage ratchet level **18**. Alternatively, if slips **23** are used instead of the locking pal/ratchet lever pair, the slips are activated. This ensures that the elongate, telescopically acting body **2** with running head **3** does not hit upwards out of pipe section **6** due to a pressure buildup in the well.

[0045] When valve arms **5** hit the top of pipe section **1** and fold inwards, a valve means **19** is opened. This valve may, for example, be comprised of a disc valve **20** that in a closed position abuts against a valve seat **21**. Alternatively, the hydraulic ball valve **19'** is activated when the stopping plate hits the top of pipeline **6**. When valve means **19**, **19'** opens, fluid may flow through tool **1**, valve **19**, **19'**, and exit through a liquid outlet **4** provided in the running head. In that, pipe section **6** is filled with fluid.

[0046] The liquid level detector monitors the level of liquid in the pipe section as it fills, thereby acting to prevent the liquid level in the pipe section from becoming too high.

[0047] When the process of filling pipe section **6** has been completed, locking pal **17** or slips **23** are deactivated, and drive **11** is activated to carry out a retracting impact movement pulling the elongate, telescopically acting body **2** out of pipe section **6**. When running head **3** has been pulled sufficiently far out of pipe section **6** for the valve arms **5** to spread out, valve means **19** is closed. Alternatively, hydraulic ball valve **19'** is actuated to close. Any fluid remaining in running head **3** may continue to flow out of the running head and down into pipe section **6** until it has been completely emptied. This prevents subsequent spill onto the platform deck.

[0048] The retracting impact movement of the elongate, telescopically acting body **2** comprising running head **3** continues until tool **1** is located a sufficient distance above pipe section end **8**, after which the operation may be repeated. Optionally, tool **1** may be moved and parked at a desired place.

Circulation

[0049] During circulation of fluid through the well, the manner of operation of tool **1** is somewhat different than during a filling operation.

[0050] In a similar manner as in the filling operation, the drive of tool **1** is activated so that running head **3**, being arranged on the elongate, telescopically acting body **2**, is caused to move downwards in an outgoing impact movement making valve arms **5** hit the top of pipe section **1** and hence fold inwards. Valve arms **5** hit the top of pipe section **1**, fold inwards, and cause valve means **19** to open.

[0051] The outgoing impact movement proceeds continuously until stopping plate **7** hits the top of pipe section **6**, and/or until sensor(s) **9** send a stop signal to drive **11** informing that running head **3** extends sufficiently far into pipe section **6** (se FIGS. **4***a*-**4***c*).

[0052] Alternatively, the hydraulic ball valve **19'** is activated to open when stopping plate **7** hits the top of pipeline **6**.

[0053] Again, locking pal **17** is activated to engage ratchet lever **18**. Alternatively, slips **23** are activated to engage the inner walls of pipeline **6**. This ensures that the elongate, telescopically acting body **2** comprising running head **3** does not hit upwards out of pipe section **6** in case of a pressure buildup in the well.

[0054] Then sealing element **14** is activated to make the tool **1** seal against the inner walls of pipe section **6** by squeezing metal rings **12**, **13** together, whereby sealing element **14** expands outwards and seals against the inner walls of pipe section **6** (see FIG. **5**). As mentioned, the diameter of metal rings **12**, **13** and sealing element **14** are selected so that sealing element **14** does not project outside metal rings **12**, **13** when they are not squeezed together. In this manner, sealing element **14** is protected when tool **1** is run into or out of pipe section **6**.

[0055] If tool **1** scrapes or hits against the interior of pipe section **6**, sealing element **14** will be protected against wear and tear as metal rings **12**, **13** take the load. Preferably, metal rings **12**, **13** are shaped having sloping edges in order to ease the process of running tool **1** into or out of pipe section **6** without the risk of hooking onto something or undue scraping against the inner walls of pipe section **6**. As mentioned, sealing element **14** is activated by squeezing metal rings **12**, **13** together. This action may be achieved, for example, in that running head **3** is fully telescopically retracted by drive **11** or another drive means adapted for the purpose. FIGS. **1** and **2** show an embodiment using a separate drive for squeezing metal rings **12**, **13** together, thereby expanding sealing element **14** outwards to seal against the interior of pipe section **6**. According to this embodiment, the drive is a hydraulic drive.

[0056] When the tool **1** has been correctly positioned into pipe section **6** and sealing element **14** has been activated by squeezing metal rings **12**, **13** together, the circulation through the downhole pipeline may be carried out for as long as desired. When the circulation operation is to be ended, the pumps circulating the fluid through tool **1** and the downhole pipeline are stopped, and sealing element **14** is unset in that the hydraulic drive pulls metal rings **12**, **13** apart, whereby sealing element **14** assumes its original shape. The locking pal **17** or slips **23** for preventing undesired impact movement are released, and drive **11** is caused to retract the elongate, telescopically acting body **2** comprising running head **3** in a retracting impact movement, whereby valve arms **5** expands and close valve means **19** when the running head exits pipe section **6**.

[0057] During backflow through the downhole pipeline the manner of operation of the tool is the same as during circulation, except that the fluid is drawn up through the pipeline and the tool.

[0058] According to an embodiment of the present invention, tool **1** includes an electronic signal control module receiving, processing, and communicating signals from the sensors and drives of tool **1**, wherein the electronic signal control module of tool **1** communicates, wirelessly or not, with an electronic signal control module at the drilling floor, said two electronic signal control modules being designed to cooperate in performing the tasks of tool **1**, wherein the electronic signal control module of tool **1**, on the receipt of a particular signal from the electronic signal control module at the drilling floor, causes tool **1**, by means of measurements of the distance from the gripping point of the elevator on the pipeline **6** to the pipeline end **8**, measurements from sensors **9**, and optionally also by means of measurements of the level of liquid in the pipeline **6**, to find an optimal position for running head **3** relative to pipeline **6**, the position corresponding to one of the following positions:

[0059] a) a standby position if filling, emptying, or circulation is not to be performed,

[0060] b) a filling position,

[0061] c) an emptying position, or

[0062] d) a circulating position,

the current position and the various measurements being continuously updated and mediated to the electronic signal control module at the drilling floor, so that the operation and state of tool **1** may be monitored and verified at any time by the electronic signal control module at the drilling floor and/or an operator.

[0063] An important feature of the tool according to the present invention is that each operational step performed thereof is verifiable. When stopping plate **7** and/or sensors **9** detect that running head **3** has been run sufficiently far into pipe section **6**, a signal is sent to drive **11** and to the operator panel, informing the operator on how far into pipe section **6** running head **3** is located. At the same time, the operator will know for sure that valve means **19** has opened because valve arms **5** are forced to fold together to open valve means **19** before running head **3** may be run further down pipe section **6**. As an alternative, the hydraulic ball valve **19'** may only be activated after the top plate **7** has hit the top of pipeline **6** and this being confirmed by sensors **9**. The independently controlled locking mechanism **17**, **18**, or slips **23**, will, in a verifiable manner, indicate that the elongate, telescopically acting body **2** has been locked in the extended position, as locking mechanism **17**, **18** or slips **23** are shaped in such a manner that it may not slip and strike up if tool **1** is subject to an upward force. The verification from the "active" sealing element **14** that the seal has been set is provided in that the drive must be activated in order for metal rings **12**, **13** to squeeze together to expand sealing element **14**. Also, the means measuring the distance from the gripping point of the elevator on pipeline **6** to pipeline end **8**, and the means measuring the liquid level in pipeline **6**, enables the operator to monitor and verify that the elevator has actually gripped pipeline (**6**) as well as the level of mud in the pipeline (**6**).

1. A tool (**1**) for filling, circulating and backflowing fluids in a pipeline being run into or out of a wellbore, the tool (**1**) comprising an elongate, telescopically acting body (**2**), a sealing element (**14**) arranged for sealing between tool (**1**) and the pipeline (**6**) when this has been inserted into the pipeline, and a valve means (**19**) arranged for being closed when the tool is being pulled out of pipeline (**6**), the tool (**1**) further being provided with a through channel, characterized in that the elongate, telescopically acting body (**2**) includes a running head (**3**) on the lower end thereof, wherein valve means (**19**) is positioned in running head (**3**) and wherein valve means (**19**) includes a hydraulically actuatable ball valve arranged for being operable to open position when running head (**3**) is run into the upper end of pipeline (**6**), wherein the hydraulically actuatable ball valve is arranged for closing when running head (**3**) is pulled out of pipeline (**6**), one or more sensors (**9**), adapted for measuring how far into pipeline (**6**) running head (**3**) is located, being arranged along the elongate, telescopically acting body (**2**).

2. The tool (**1**) of claim **1**,
characterized in that the tool comprises drive means (**11**) selectively retracting or extending the elongate, telescopically acting body (**2**).

3. The tool (**1**) of claim **1**,
characterized in that the tool is provided with locking means arranged for locking the elongate, telescopically acting body (**2**) in a desired, extended position.

4. The tool (**1**) of claim **3**,
characterized in that the locking means include slips (**23**) arranged for locking the elongate, telescopically acting body (**2**) in a desired, extended position.

5. The tool (**1**) of claim **1**,
characterized in that the sealing element (**14**) is positioned on the running head (**3**), two metal rings (**12**, **13**) being provided at each side of sealing element (**14**), the metal rings (**12**, **13**) being arranged in such a manner that when sealing element (**14**) is squeezed between metal rings (**12**, **13**), sealing element (**14**) will expand outwards to seal against the interior of pipeline (**6**), the radius of metal rings (**12**, **13**) and sealing element (**14**) being chosen so that the sealing element (**14**) does not project outside metal rings (**12**, **13**) when said metal rings are not squeezed together.

6. The tool (**1**) of claim **5**,
characterized in that separate drive means (**22**) are provided for squeezing metal rings (**12**, **13**) together.

7. The tool (1) of claim 2, characterized in that said sensors (9) are adapted for transmitting signals to the drive means (11), the drive means (11) being arranged to stop when the sensors (9) transmit a signal indicating that the running head (3) has been run sufficiently far into the pipeline (6).

8. The tool (1) of claim 5, characterized in that the radii of the metal rings (12, 13) and the sealing element (14) are selected so that the sealing element (14) does not project outside the metal rings (12, 13) when said metal rings are not squeezed together.

9. The tool (1) according to claim 1, characterized in that the tool is provided with means measuring the distance from the gripping point of the elevator on the pipeline (6) to the pipeline end (8).

10. The tool (1) according to claim 1, characterized in that the tool is provided with means measuring the level of liquid in the pipeline (6).

11. The tool (1) of claim 10, characterized in that the means measuring the level of liquid in the pipeline (6) is/are disposed on the running head (3).

12. The tool (1) of claim 1, characterized in that the tool comprises an electronic signal control module receiving, processing, and communicating signals from the sensors and drive means of the tool (1), the electronic signal control module of the tool (1) communicating, wirelessly or not, with an electronic signal control module at the drilling floor, said two electronic signal control modules being designed for cooperatively performing the tasks of the tool (1).

13. The tool (1) of claim 9, characterized in that the tool comprises an electronic signal control module receiving, processing and communicating signals from the sensors and drive means of the tool (1), the electronic signal control module of the tool (1) communicating, wirelessly or not, with an electronic signal control module at the drilling floor, said two electronic signal control modules being adapted for cooperatively performing the tasks of tool (1), wherein the electronic signal control module of the tool (1), on the receipt of a particular signal from the electronic signal control module at the drilling floor, causes the tool 1, by means of measurements of the distance from the gripping point of the elevator on the pipeline (6) to the pipeline end (8), measurements from the sensors (9), and optionally also by means of measurements of the level of liquid in the pipeline (6), to find an optimal position for the running head (3) relative to the pipeline (6), the position corresponding to one of the following positions:

a) a standby position if filling, emptying, or circulation is not to be performed,
b) a filling position,
c) an emptying position, or
d) a circulating position,

the current position and the various measurements being continuously updated and mediated to the electronic signal control module at the drilling floor, so that the operation and state of the tool (1) may be monitored and verified at any time by the electronic signal control module at the drilling floor and/or an operator.

14. The tool (1) of claim 2, characterized in that the tool is provided with locking means arranged for locking the elongate, telescopically acting body (2) in a desired, extended position.

15. The tool (1) of claim 3, characterized in that said sensors (9) are adapted for transmitting signals to the drive means (11), the drive means (11) being arranged to stop when the sensors (9) transmit a signal indicating that the running head (3) has been run sufficiently far into the pipeline (6).

16. The tool (1) of claim 4, characterized in that said sensors (9) are adapted for transmitting signals to the drive means (11), the drive means (11) being arranged to stop when the sensors (9) transmit a signal indicating that the running head (3) has been run sufficiently far into the pipeline (6).

17. The tool (1) according to claim 2, characterized in that the tool is provided with means measuring the distance from the gripping point of the elevator on the pipeline (6) to the pipeline end (8).

18. The tool (1) according to claim 3, characterized in that the tool is provided with means measuring the distance from the gripping point of the elevator on the pipeline (6) to the pipeline end (8).

19. The tool (1) according to claim 4, characterized in that the tool is provided with means measuring the distance from the gripping point of the elevator on the pipeline (6) to the pipeline end (8).

20. The tool (1) according to claim 5, characterized in that the tool is provided with means measuring the distance from the gripping point of the elevator on the pipeline (6) to the pipeline end (8).

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