

[54] **CORE DRILLING APPARATUS**

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[51] Int. Cl. **E21b 49/02**

[58] Field of Search **175/226, 233, 243, 244**

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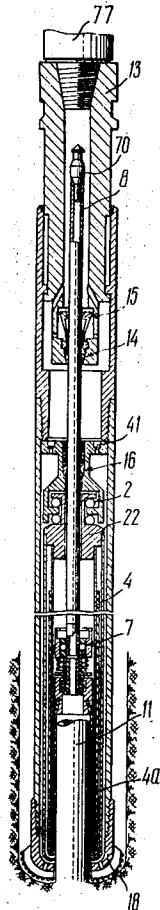
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ABSTRACT

Mounted on the exterior of a non-rotatable core barrel is an end of a resilient tape the other end of which extends inwardly into the barrel and is connected to a device for pulling the tape inwardly into the barrel. The apparatus is also provided with an arrangement which forms a sleeve from the tape as this is being pulled into the core barrel. During the coring operation, the tape is being pulled inwardly into the barrel and a sleeve is formed from the tape with the aid of said arrangement to encase and protect the core from disturbance.

The coring apparatus is intended for core drilling in soft, unconsolidated and fractured formations.

3 Claims, 14 Drawing Figures



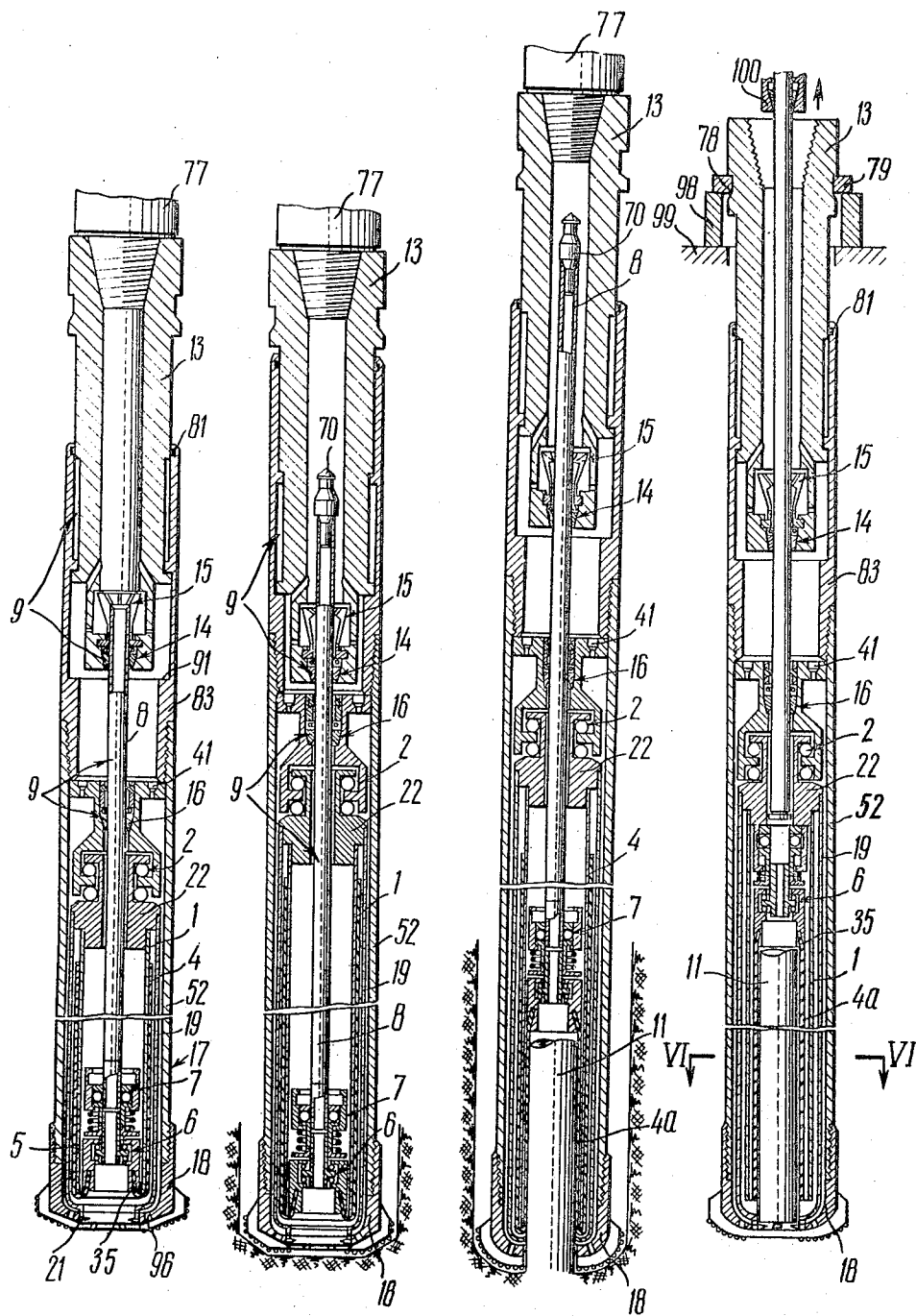
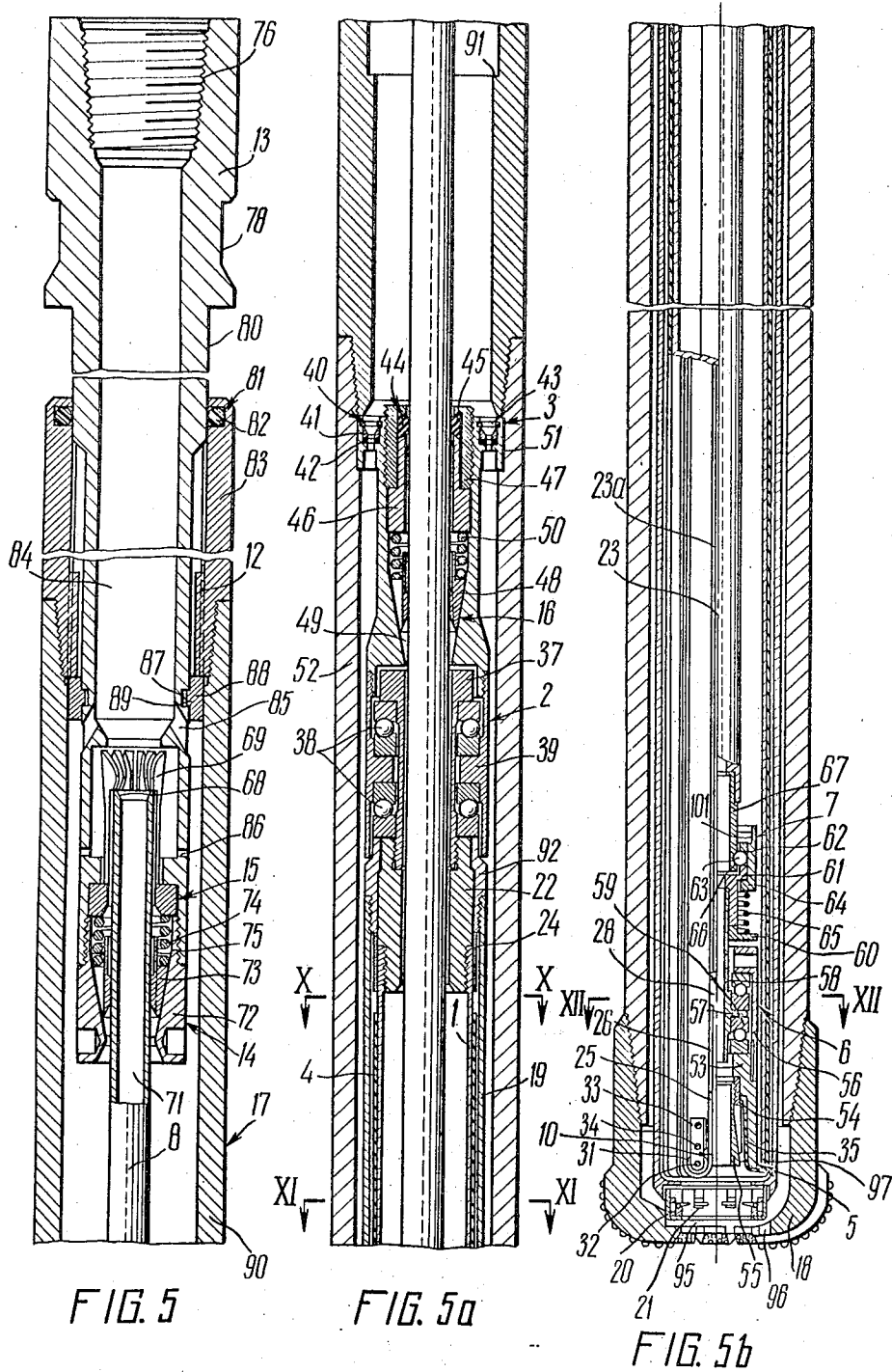


FIG. 1

FIG. 2

FIG. 3

FIG. 4



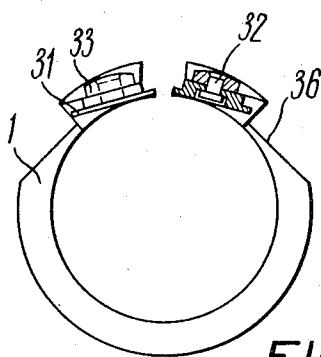


FIG. 9

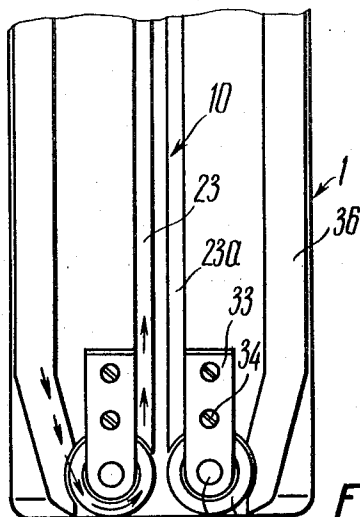


FIG. 8

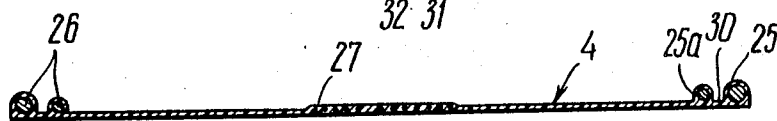


FIG. 7

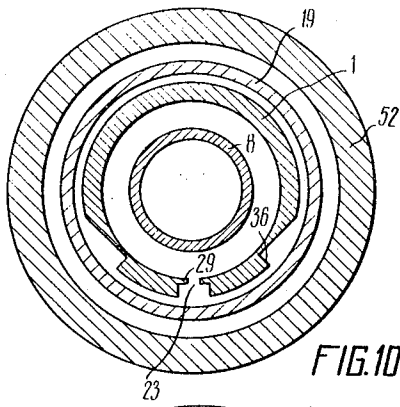


FIG. 10

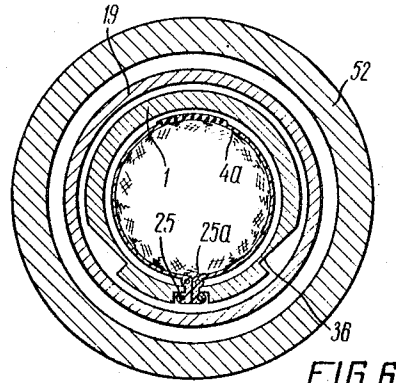


FIG. 6

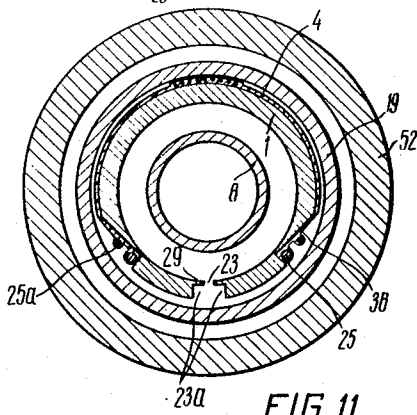


FIG. 11

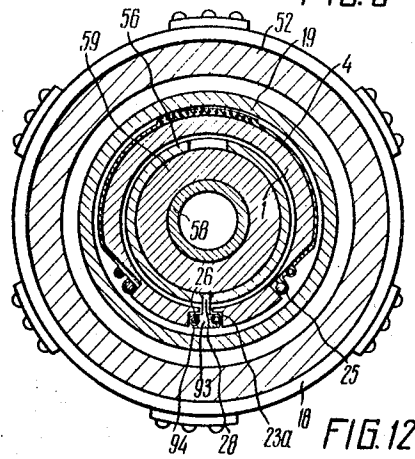


FIG. 12

CORE DRILLING APPARATUS

The present invention relates to core drilling and more specifically to apparatus for core drilling of wells in soft or unconsolidated formations and in those which are fractured or are liable to be washed away by the drilling fluid.

Known in the art are apparatus for core drilling said formations and recovering cores. Coming under this category are core drills with rubber and rubber-like core-receiving sleeve which are made by the firm of Christensen Diamond Product Co in accordance with the U.S. Pat. Nos. 2,927,775; 2,927,776; 3,012,622; 3,363,705 and 3,092,191.

A distinctive feature of said core drilling apparatus is a rubber or rubber-like sleeve mounted upon the exterior of the core barrel so that said sleeve is pulled from the exterior of the core barrel during the coring operation and, enveloping the core, is fed simultaneously with the latter into the core receiving barrel.

The core drill according to the U.S. Pat. No. 3,012,622 includes a non-rotatable core receiving barrel supported by bearings and serving to accommodate the core during the drilling operation; a core bit; a rubber or rubber-like sleeve for retrieving the core, which sleeve engages the periphery of the core barrel with one end and extends into the barrel with the other end; a device for pulling the sleeve into the core-receiving barrel to receive the core as it enters the barrel, which device is provided with a tubular shaft whose lower end is connected by means of a clamping device and a bearing unit to the sleeve end extending into the core-receiving barrel.

The core drill has a housing so arranged that its top portion is linked up with a splined mandrel via a splined expanding joint. Accommodated inside the housing is a nozzle carrier that has hydraulic nozzles providing pressure drop to produce axial load of the core bit on the bottom of the hole. Secured to the nozzle carrier by means of rolling-contact bearings is the core barrel. Embracing the exterior of the core barrel is a rubber or rubber-like two-layer sleeve. One end of the inner sleeve is secured to the barrel at its lower end. The lower end of the outer sleeve extends inwardly over the lower end of the core receiving barrel and is linked with the tubular shaft of the arrangement intended to pull the rubber or rubber-like sleeve into the barrel. The tubular shaft is arranged along the axis of the core barrel apparatus and passes through the upper and lower clamping devices which grip the shaft and fix it longitudinally with respect to the well bore during the drilling operation. While the core bit is lowered as the drilling operation proceeds, the tubular shaft remains stationary, being held fast by the upper clamp. When the tool is lowered into the bore-hole, the shaft remains stationary due to the action of the lower clamp.

The upper clamp is arranged at the lower end of the splined mandrel of the splined expanding joint where a shaft stop is also located.

The lower clamp of the tubular shaft is mounted inside the nozzle carrier, above the rolling-contact bearings of the core barrel.

The clamping device of the rubber or rubber-like sleeve is connected via a bearing unit to the tubular shaft and via the latter to the upper and lower clamps.

Threadedly attached to the core drill housing is a core bit with a core breaker.

In this apparatus, the core is protected from the action of drilling fluid by the rubber or rubber-like sleeve which envelops the core during the drilling operation when the core enters the core barrel, assisting in maintaining the core in its original state.

However, the coring apparatus described in the U.S. Pat. No. 3,012,622 has a number of disadvantages which are as follows:

the rubber or rubber-like sleeve can be used only once;

the material of said sleeve must have good physical properties and high mechanical strength which add to its cost;

a special device is required for pulling the sleeve over the core barrel so that difficulty is experienced in the field when preparing the apparatus for drilling;

twisting or failure of the expensive sleeve can occur in the event of clogging the core barrel bearing or the bearing assembly connecting the sleeve clamp to the shaft of the device which pulls the sleeve inside the core barrel.

An object of the present invention is to provide such a coring apparatus in which the sleeve protecting the core from disturbance can be used more than once.

Another object of the invention is to provide such a coring apparatus which can employ a sleeve made from a less expensive material.

A further object of the invention is to provide a coring apparatus in which the sleeve needs no special arrangement for pulling it over the core barrel.

Still a further object of the invention is to provide a coring apparatus in which the possibility of twisting or failure of the sleeve in the event of clogging the core barrel bearing or the bearing assembly connecting the sleeve clamp to the tubular shaft of the arrangement for pulling the sleeve into the core barrel is eliminated.

Said and other objects are attained by providing a core drill for use in core drilling which connects with its upper part to the drill string and includes a non-rotatable core barrel suspended from bearings and entered by the core during the drilling operation, a core bit; a sleeve protecting the core from disturbance and attached with one of its ends to the exterior of the core barrel while the other end extends inwardly into the barrel; an arrangement for pulling the sleeve into the core barrel to envelop the core as it enters the core barrel; which arrangement includes a tubular shaft whose lower end is connected by means of a bearing assembly and a clamping device to the sleeve end extending inwardly into the core barrel. According to the invention, the sleeve is made as a tape whose lateral edges are adapted to connect to each other so as to form a sleeve which envelops the core as it enters the core barrel; the apparatus also includes a device which joins the lateral edges of the tape so as to form the sleeve.

In order to produce a sleeve from the tape the lateral edges thereof are provided with thickenings in the form of at least one bead arranged parallel to each other and it is expedient to make the device for joining the longitudinal edges of the tape as a longitudinal through slot in the core barrel and a slide block moving along the slot while being rigidly secured to the tape clamping arrangement and linked by means of a bearing with the tubular shaft moving integrally with the tape when this is being pulled inwardly into the core barrel and linked

with the tape beads arranged on the exterior of the core barrel so that they join along the slot when the tape is being pulled inwardly into the core barrel to form a sleeve.

It is also expedient to provide external grooves along the slot so that the beads arranged along the tape edges enter the grooves while the tape is being pulled inwardly into the core barrel; such arrangement reduces the overall dimensions of the coring apparatus and guards the beads against wear in operation.

The present invention provides a core drilling apparatus adapted to recover cores from soft, unconsolidated and fractured formations in which the sleeve protecting the core against disturbance can be used more than once, is made from a less expensive material and needs no special arrangement for pulling it over the core barrel. Apart from that, in the apparatus disclosed herein the twisting or failure of the sleeve is eliminated should clogging occur of the core barrel bearing or the bearing unit connecting the sleeve clamp to the tubular shaft of the arrangement for pulling the sleeve into the core barrel.

The invention will be best understood from a description of a preferred embodiment when read in conjunction with the accompanying drawings in which:

FIG. 1 is a diagrammatic longitudinal section of the coring apparatus, according to the invention, shown in the position preparatory to being lowered into a borehole;

FIG. 2 is a view similar to FIG. 1 illustrating the apparatus on the bottom of the borehole and prepared for drilling with core recovery;

FIG. 3 is a view similar to FIG. 1 illustrating the apparatus after some length of core sample has been obtained;

FIG. 4 is a view similar to FIG. 1 illustrating the apparatus after a full-length core sample has been obtained and the tubular shaft disconnected;

FIGS. 5, 5a and 5b are diagrammatic longitudinal sections of the coring apparatus, according to the invention, shown in the position preparatory to being lowered into a borehole;

FIG. 6 is a cross section taken along the line VI—VI of FIG. 4;

FIG. 7 shows the unrolled tape in cross section;

FIG. 8 is a side view of the lower end of the core barrel;

FIG. 9 is a bottom view of the core barrel shown in FIG. 8;

FIG. 10 is a cross section taken along the line X—X of FIG. 5a;

FIG. 11 is a cross section taken along the line XI—XI of FIG. 5a;

FIG. 12 is a cross section taken along the line XII—XII of FIG. 5b.

In the diagrammatic longitudinal sections of the coring apparatus (FIGS. 1 through 4) showing the relative position of parts at various stages of the drilling operation, the core barrel 1 is suspended by means of the bearing assembly 2 from the nozzle carrier 3 to prevent the core barrel from rotating while the drilling is going on.

FIG. 1 shows the coring apparatus in the position ready for drilling.

Accommodated on the exterior of the core barrel 1 is an end of a tape 4. The other end of the tape 4 extends inwardly into the core barrel 1 and is connected

via a clamping arrangement 5, a bearing assembly 6 and a release device 7 to a tubular shaft 8 of an arrangement 9 which serves the purpose of pulling the tape 4 inwardly into the core barrel.

The longitudinal edges of the tape 4 are adapted to be joined to each other with the aid of an arrangement 10 (FIG. 8) so as to form a sleeve 4a which envelops the core 11 (FIGS. 3 and 4) as it enters the core barrel.

The arrangement 9 for pulling the tape 4 inwardly into the core barrel includes a jar-type mechanism comprising a splined expanding joint 12 with a mandrel 13 containing an upper collet clamp 14 and a mandrel stop 15 which rests on the tubular shaft 8 and retains the splined expanding joint 12 in the extended position.

The arrangement 9 has also a lower collet clamp 16 located in the nozzle carrier 3.

The splined expanding joint 12 in cooperation with the upper and lower collet clamps 14 and 16, respectively, serves the purpose of gripping the tubular shaft 8 and provides in this way for the pulling of the tape 4 inwardly into the core barrel.

The gripping of the tubular shaft 8 by the arrangement 9 is accomplished in the following manner.

While drawing the mandrel 13 into the apparatus, the upper collet clamp 14 opens and moves downwardly along the tubular shaft 8 while the latter is being prevented from the downward motion by the lower collet clamp 16.

While drawing the mandrel 13 out of the apparatus, the upper collet clamp 14 engages the tubular shaft 8 and moves upwardly integrally therewith while the lower collet clamp opens and allows the shaft 8 to be freely moved.

The release device 7 of the apparatus is intended to disengage the tubular shaft 8 from the bearing assembly 6 when the drilling operation is completed and the apparatus is lifted out of the borehole.

All the above-mentioned parts of the apparatus are contained in a housing 17. Threadedly attached to the lower end of the housing 17 is a core bit 18.

For separating the tape 4 from the flow of drilling fluid, the apparatus incorporates an intermediate pipe 19.

Threadedly attached to the lower end of the intermediate pipe 19 is a shoe 20 mounting a core breaker 21 which catches the core 11.

FIGS. 5, 5a and 5b are views similar to FIG. 1 illustrating, however, the core drilling apparatus more in detail and on a larger scale.

The core barrel 1 is threadedly attached to a bushing 22 and has a through slot 23. To prevent the core barrel from expanding along the slot 23, the barrel has a cap 24; to obtain a tight joint between the barrel 1 and the bushing 22, the exterior of the barrel end and the interior of the cap 24 are made tapered.

The tape 4 is a strip of resilient material such as lathan, nylon, anide, rubber and the like. Along its longitudinal edges the tape 4 has a thickening in the form of beads 25 (FIGS. 5b, 6, 7, and 11) and since the tape is of the same width all the way along the beads 25 are arranged parallel to each other.

There are additional beads 25a (FIG. 7) on the tape 4 which provide for better tightness along the edges when the tape is joined into a sleeve. Inside the beads 25 and 25a there are ropes 26 (FIGS. 5b, 7, 12) made of a flexible but non-contractible material. Their func-

tion is to prevent beads 25 from entering the core barrel 1 through the longitudinal slot 23 and beads 25a from leaving the barrel through said slot.

If the tape is made of a stretchable material, rubber for example, yarns 27 (FIG. 7) of a strong non-stretchable material must be placed longitudinally inside the tape.

The arrangement 10 for forming a sleeve 4a from the tape 4 consists of a longitudinal through slot 23 in the core barrel and a slide block 28 moving along said slot.

On the exterior of the core barrel there are grooves 23a running along the through slot on both its sides.

The grooves 23a form two opposite projections 29 which, when the tape is being pulled inwardly into the barrel, engage a recess 30 between the beads 25 and 25a located along either side of the tape so that the beads 25a enter the core barrel (FIG. 10).

To reduce friction coming into play when the tape 4 is being pulled inwardly into the core barrel 1 from its exterior, rollers 31 (FIGS. 5b, 8, 9) rotating on fulcrum pins 32 attached to strips 33 are provided at the lower end of the core barrel. The strips 33 are arranged along the slot 23 and secured to the core barrel 1 by screws 34.

While the lower end 35 of the tape 4 is passed inwardly into the core barrel 1 and held fast by the clamping arrangement 5, the beads 25 of the tape 4 pass over the rollers 31 and engage the grooves 23a.

The slide block 28 is rigidly connected to the clamping arrangement 5 of the tape and is linked via a bearing with the tubular shaft serving to pull the tape inwardly into the core barrel; the slide block moves along with the tape as this is being pulled inwardly into the core barrel and is linked with the tape beads which are joined in the grooves 23a along the slot so as to form a sleeve from the tape, the wire ropes 26 extending beyond the end of the tape 4 are passed behind the slide block 28 and interconnected.

On the sides of the core barrel 1 there are longitudinal grooves 36 in which the beads 25 and 25a are placed during the process of mounting the tape 4 on the core barrel. Arrows in FIG. 8 indicate the direction of beads 25 as these are moved from the grooves 36 into the grooves 23a while the tape is being pulled inwardly into the core barrel from its exterior.

The bushing 22 is threadedly attached to an internal bushing 37 of the bearing unit 2. Mounted on the internal bushing 27 are two thrust bearings 38 which are protected from the flow of drilling fluid by a housing 39 of the bearing unit 2.

The housing 39 is threadedly attached to the nozzle carrier 3 which has a plurality of holes accommodating hydraulic nozzles 41. The nozzles 41 are provided with sealing rings 42. The nozzles 41 are held fast in the nozzle carrier 3 by means of locking rings 43. An annular packing 44 of the tubular shaft 8 is contained in the nozzle carrier 3.

The nozzles serve to provide a pressure drop required to obtain a downward drilling load acting along the axis of the core bit.

The annular packing 44 of the tubular shaft 8 prevents leaks of the drilling fluid through a clearance between the nozzle carrier 3 and the tubular shaft 8. This annular packing 44 comprises a rubber cup 45 mounted on a bushing 46 and held fast by a nut 47.

The lower collet clamp 16 mounted in the nozzle carrier 3 comprises a collet 48 placed in a tapered hole 49 of the nozzle carrier 3 and acted upon by a spring 50 which tends to move the collet 48 downward so that it is firmly pressed against both the surface of the tapered hole 49 and the tubular shaft 8. The nozzle carrier 3 is accommodated in a recess 51 bored in the lower section 52 of the housing 17 of the coring apparatus.

The clamping arrangement 5 of the tape 4 comprises an outer housing 53 accommodating the end 35 of the tape, a coaxial by placed collet 54 and a cone 55; when the cone 55 is screwed into the collet 54, the latter expands and the end 35 of the tape 4 is firmly pressed against the interior of the housing 53. The housing 53 of the clamping arrangement 5 is threadedly attached to the housing 56 of the bearing assembly 6 of the tubular shaft 8. Inside the bearing housing 56 on a shoulder 57 of an extension piece 58 of the tubular shaft 8 are mounted two bearings 59.

The bearing assembly 6 prevents the clamping arrangement 5 from turning over during the drilling operation.

Threadedly attached to the top portion of the extension piece 58 of the tubular shaft 8 are a lock nut 60 and the housing 61 of the release device 7. In holes 62 at the top of the housing 61 are located balls 63 covered by a bushing 64. The bushing 64 is prevented from moving downward by the action of a spring 65 interposed between the bushing 64 and the lock nut 60. The balls 63 partly snap into an annular groove 66 provided in the end piece 67 of the tubular shaft 8, insuring thereby the engagement of the tubular shaft with the bearing unit 6 and, via the clamping arrangement 5, with the tape 4.

The tubular shaft 8, provided with a seat 68 at its top, abuts lobes 69 of the mandrel stop 15. During the drilling operation, a plug 70 (FIGS. 2, 3) sinks into the seat 68, closing the hole 71 of the tubular shaft 8 from the drilling fluid. The mandrel stop 15 is mounted inside the splined mandrel 13 and pressed thereto by a housing 72 of the upper collet clamp 14. A collet 73 provided in the housing 72 is pressed downwardly by the action of a spring 74 so as to contact tightly the tapered surface of a hole 75 and the tubular shaft 8.

The splined mandrel 13 of the expanding expandin joint 12 has a thread 76 at its upper end for connecting the coring apparatus to a drill string 77; there is also a recess 78 to accommodate a yoke 79 (FIG. 4).

The middle part of the splined mandrel 13 has a smooth surface 80 contacting an annular packing 81 fitted in a groove 82 of a splined coupling 83. The annular packing 81 serves the purpose of preventing leaks of the drilling fluid through a clearance between the splined mandrel 13 and the splined coupling 83.

The splined mandrel 13 has a central bore 84 and side ports 85 and 86. The ports 85 are intended to provide an outflow for the drilling fluid in operation and the ports 86 serve to remove the cuttings from the lower part of the mandrel 13.

On the exterior of the splined mandrel 13 at its lower end there is an annular groove 87 fitting into which are projections 89 of the split ring 88 which consists of two parts. Their function is to provide for the alignment of the splined mandrel with the axis of the coring apparatus and prevent the former from slipping out of the latter.

The splined coupling 83 of the housing 17 is threadedly attached to a sub 90 which has an internal projection 91 serving to stop the split rings 88 and the splined mandrel 13 during their downward motion. The sub 90 is threadedly attached to the lower section 52 of the housing 17.

The intermediate pipe 19 is secured to the bushing 22 by an adapter nut 92 so that the intermediate pipe 19 is suspended from the bearing unit 2 in the coring apparatus as well as the core barrel 1; this arrangement provides for the immobility of said barrels (1 and 19) with respect to each other in order to prevent winding of the tape around the exterior of the core barrel 1 which may result in rupturing of the tape.

Twisting of the sleeve 4a is avoided due to the fact that the slide block 28 enters the grooves 23a with its thicker part 93 (FIG.12). This thicker part 93 has grooves 94 which accommodate the wire ropes 26 of the beads 25 of the tape 4 and the base of the slide block 28 is rigidly attached (welded) to the housing 56 of the bearing assembly 6.

The slide block 28 serves thus not only its primary purpose which is joining of the tape into a sleeve but is an effective means of preventing the tape from twisting.

The core drilling with the coring apparatus disclosed herein takes place in the following sequence of operations.

The coring apparatus with its parts in the relative position shown in FIGS. 5, 5a, 5b and diagrammatically in FIG.1 is lowered into a borehole, being attached to the end of a drill string 77. While being lowered into the borehole, the splined expanding joint 12 is expanded, since its stop 15 is resting against the end of the tubular shaft 8.

When the coring apparatus is close to the bottom of the hole, the kelly is attached to the drill string and pumps are started to flush out the cuttings from the bottom and stabilize the drilling fluid. In so doing the drilling fluid is admitted into the apparatus through the central bore 84 of the splined mandrel 13 and reaches the bottom being divided into two streams; one flowing through the hole 71 of the tubular shaft 8 into the core-receiving channel 95 of the core bit 18 and the other being directed to the bottom of the borehole through the side ports 85 of the splined mandrel 13, the nozzles 41 and the space between the lower section 52 of the housing 17 and the intermediate pipe 19 and, finally, through the circulating openings 96 of the core bit 18. This system of circulation ensures most favourable conditions for flushing the apparatus and cleaning out the hole bottom.

The coring apparatus is then lowered in rotating condition to the bottom and a mark is made on the kelly to indicate at a latter stage the distance drilled.

The pumps are stopped and the kelly disconnected from the drill string to enable the plug 70 to be dropped into the string. Next, the kelly is attached to the string and the pumps are set into operation again. The plug 70 is carried by the drilling fluid down to the coring apparatus where it sits into the seat 68 at the top of the tubular shaft 8, as shown in FIG.2. While seating, the plug 70 moves the lobes 69 of the mandrel stop 15 apart, disengaging thereby said stop from tubular shaft 8.

A sharp increase of pressure registered by a pressure gauge is an indication that the plug 70 has reached the

apparatus, took the seat 68 and plugged the hole 71 of the tubular shaft 8.

At this stage, the circulation is stopped the apparatus set into a position indicated by the mark made as said above and lowered for the distance "K" (FIG.1) equal to the stroke of the splined expanding joint 12. The coring apparatus is ready for a coring operation (FIG.2).

On applying the brakes to the which drum in order to prevent the downward motion of the drill string, the pumps are restarted and the rotary table set rotating. The drilling fluid passing through the nozzles 41 creates a pressure drop acting in a downward direction through the nozzle carrier 3 and the lower section 52 of the housing 17 to the drill bit 18, providing for the axial load on the bottom. The weight of the drilling string recorded by the weight indicator, will be reduced at this stage by an amount equal to the value of this axial load.

As drilling progresses, the splined mandrel 13 remains at the same level because the drill string has been secured against downward motion but the core bit, the housing 17 as well as the intermediate pipe 19 and the core barrel 1 are moving downwardly with respect to the tubular shaft 8. At this stage, the tubular shaft 8 as well as the mandrel 13 remains in its original position, being gripped and held in place by the upper collet clamp 14. The lower collet clamp 16 freely slides down the tubular shaft 8 at the same time.

During the coring operation, the core barrel 1 is lowered integrally with the apparatus and exerts with its end face 97 pressure against the tape 4 which is pulled away from the exterior of the barrel. Since the clamping arrangement 5 linked up with the tubular shaft 8 remains stationary, the tape is pulled inwardly into the core barrel 1. The beads 25 provided along the sides of the tape 4 are moved from the external grooves 36 of the core barrel over the rollers 31 into the grooves 23a whereas the tape itself folds inside the core barrel into a sleeve 4a which encases the core 11 and enters therewith the core barrel 1.

The core drilling goes on until the splined expansion joint 12 moves apart for a distance equal to "K" as this is diagrammatically shown in FIG.3.

The operator at the surface will be informed that the coring apparatus has lowered for a distance equal to the length "K" of the stroke of the splined expansion joint 12 by the weight indicator which will read the initial weight of the apparatus. The rotary table and pumps are stopped, the drill string lowered for an interval "K" and drilling resumed. The cycle is then repeated.

When the apparatus is being lowered for a distance equal to the length K of the stroke, the lower collet clamp 16 wedges and holds fast the tubular shaft 8, preventing it from moving downward, and the upper collet clamp 14 opens and slides down the tubular shaft 8 until the split ring 88 come abutting against the projection 91.

Recharging and drilling cycles are repeated until the coring apparatus has drilled a distance equal to the length of the core barrel.

On completing the coring operation, the coring apparatus is lifted from the borehole and placed on the rotary table 99 with the aid of the clamp 79 of an elevator 98. On disconnecting the drill string 77, a length of the

tubular shaft 8 equal to the distance drilled will protrude upwards from the string.

To disconnect the tubular shaft 8 from the coring apparatus, the shaft is lifted by means of a clamp 100 slipped thereon. In lifting, the release device 7 moves upwardly integrally with the tubular shaft 8 until the end face of the bushing 64 comes abutting against the bushing 22. Further upward movement of the tubular shaft 8 causes the bushing 64 to start moving downwards relatively the housing 61 with the result that the spring 65 is compressed and the balls 63 come out of the groove 66 in the end piece 67 of the shaft and snap into a groove 101 in the bushing 64. Said relative position of core drill parts is illustrated in FIG. 4. The arrow indicates the direction in which the tubular shaft 8 is moving.

What is claimed is:

1. A coring apparatus for core drilling comprising a splined expanding joint adapted to be connected to a drill string; a housing attached to said expansion joint with its upper end and connected to a core bit with its lower end; a core barrel arranged inside said coring apparatus and suspended from said housing by means of bearings; a sleeve protecting the core from disturbance embodied in the form of a tape made of resilient material whose one end is mounted on the exterior of said core barrel, the other end extends inwardly into said barrel and the edges are adapted to be joined one with

another so as to form a sleeve which encases the core as this is produced and enters the core barrel; a means for pulling said tape inwardly into said core barrel; a clamping arrangement connected to the end of said tape extending inwardly into said core barrel and to said means of pulling said tape inwardly into said core barrel; a means for joining the longitudinal edges of said tape and forming said sleeve from said tape.

2. A coring apparatus according to claim 1 in which said tape for forming said sleeve has thickening along its longitudinal edges in the form of at least one bead arranged parallel to each other; said means for joining said longitudinal edges comprises a longitudinal through slot in said core barrel and slide block rigidly connected to said tape clamping arrangement located inside said core barrel and to said tape beads located outside said core barrel; said slide block moves along said slot while pulling the tape inwardly into the core barrel so as to place said beads on the exterior of said core barrel along said slot and to form said sleeve from said tape.

3. A coring apparatus according to claim 2 in which said core barrel has exterior grooves arranged next to the sides of said slot and engaged, when said tape is pulled inwardly into said core-receiving barrel, by said beads insuring a tight joint between longitudinal edges of said tape.

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