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E. E. GREVE

DRILL OR GRIEF STEM FOR ROTARY DRILLING MACHINES

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FIG.1.

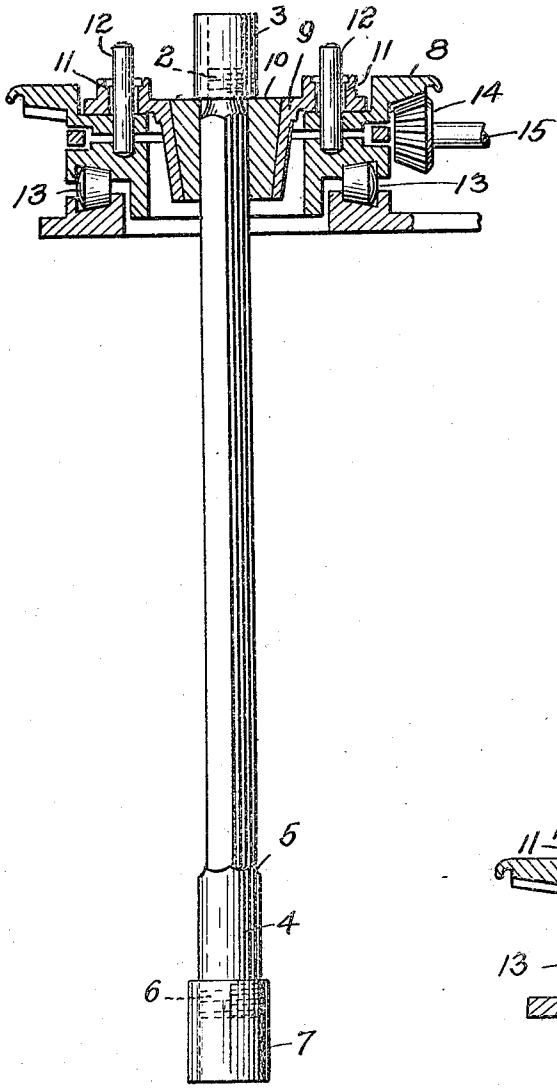
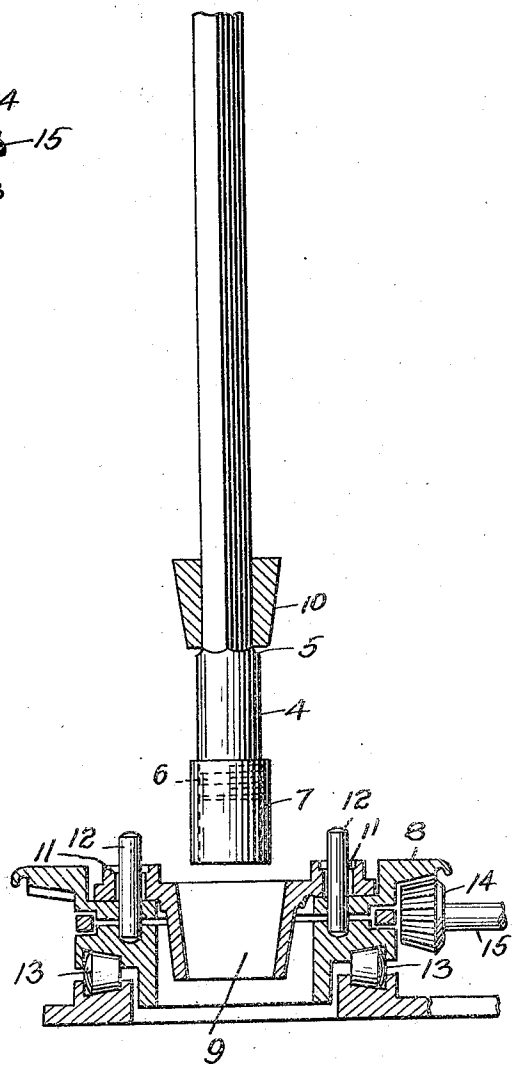


FIG.2.



WITNESSES

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UNITED STATES PATENT OFFICE.

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DRILL OR GRIEF STEM FOR ROTARY DRILLING MACHINES.

Application filed August 2, 1919. Serial No. 314,919.

To all whom it may concern:

Be it known that I, EDGAR E. GREVE, a citizen of the United States, residing at Bellevue, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Drill or Grief Stems for Rotary Drilling Machines, of which the following is a specification.

My invention relates to improvements in well drilling apparatus of the hydraulic rotary type, and more particularly to a new and improved grief or grip stem employed for connecting the sectional drill stem with the rotary driving mechanism. In apparatus of this character, especially where a grip or grief stem of non-circular cross section is employed, the rotary driving mechanism is provided with a drive ring bushing, which bushing is designed to connect a drive ring of the driving mechanism and the grief stem.

In the operation of drilling, it is necessary to permit a longitudinal movement of the grief stem relatively to the rotary driving mechanism. It is also necessary to raise the grief stem sufficiently to bring its lower end and the coupling connecting the lower end of the grief stem with the top section of the drill stem above the rotary table for the purpose of adding new sections to the drill stem, and for other purposes.

As heretofore constructed, the grief stem has been of such a character as to pass through the drive ring bushing until the upper end of the coupling connecting the grief stem with the drill stem has come into contact with the lower end of the drive ring bushing. When the said coupling meets the drive ring bushing, the latter is lifted out of the rotary mechanism, but rests directly upon said coupling member. In order to provide sufficient space to repair or change the coupling, the drive ring bushing had to be raised upwardly along the grief stem and secured thereon at a point sufficiently high to permit of the coupling being manipulated.

It will be understood that no means on the grief stem are provided for attaching the drive ring bushing thereto, and the practice heretofore followed of attempting to tie the drive ring bushing to the grief stem has proven unsatisfactory, and frequently resulting in serious accidents to the drillers, due to the bushing becoming disconnected.

The prime object of the present invention is to provide a new and improved grief stem having means for elevating the bushing and maintaining the same in an elevated position out of the way of the lower end of the grief stem, whereby the coupling connecting the grief stem and the drill stem may be manipulated without trouble.

In the accompanying drawings which illustrate an application of my invention,

Fig. 1 is a part sectional view and a part elevational view of a portion of a drilling apparatus embodying my invention; and

Fig. 2, a similar view showing the grief stem and the drive bushing elevated from the rotary driving mechanism.

Referring to the drawings, the grief stem includes a hollow non-circular body portion 1 having a reduced circular upper threaded end 2, the latter being designed to be entered in a coupling member 3. The lower end of the stem is formed with an enlarged extension 4, said enlarged extension forming at the juncture of said extension and the body portion, an exterior shoulder 5. As illustrated and as preferred, the enlarged extension 4 is circular in cross section, and is provided with a threaded portion 6, the latter being adapted to be entered in an internally threaded coupling member 7.

Any preferred construction of rotary driving mechanism may be employed, as the rotary driving mechanism per se forms no part of the present invention. In the drawings, I have shown a rotary table 8, a drive ring 9, and drive ring bushing 10. The drive ring 9, as shown, comprises a disk like structure having apertures 11 through which pins 12 are passed for attaching the ring to the table. The table 8 is mounted on suitable bearings 13, and is designed to be rotated by a gear 14 mounted on drive shaft 15.

It will be understood that with my improved grief stem, the operation of drilling is carried on as is usual, with the exception that in raising the grief stem up through the rotary driving mechanism, the under surface of the drive ring bushing 10 will come into contact with the shoulder 5, said shoulder 5 being spaced a considerable distance from the end of the grief stem, and consequently from the coupling member 7 allowing sufficient space for the application of a pipe tong thereto. As the grief stem is raised, it will, of course, be

understood that the drive ring bushing 10 will be raised therewith, and maintained on the grief stem a sufficient distance to permit the coupling member 7 to be disconnected from the grief stem or from the upper end of the top drill stem section, not shown.

Bushing 10, which may be made in a one piece structure or in two parts suitably secured together, and which has outer faces formed to correspond with the inner faces of the drive ring and inner faces corresponding with the outer faces of the grief stem, is placed on the grief stem by removing the upper member 3.

What I claim is:—

1. A grief stem for rotary drilling operations comprising an integral member having its intermediate portion of non-circular cross section, a threaded extension at one end of the member of less diameter than the greater transverse dimension of the non-circular portion, a threaded circular extension on the other end of the member of greater diameter than the non-circular portion, whereby an annular shoulder is provided between the circular extension and non-circular portion, said circular extension having substantially the same diameter throughout its length and having a portion only of its length threaded, an intervening smooth surface being provided between the annular shoulder and the threaded portion.

2. A grief stem for rotary drilling having a threaded upper end portion, an intermediate portion of non-circular cross section, and a circular lower end portion of greater diameter than the greatest transverse dimension of the non-circular part, whereby an annular shoulder is formed between the circular and non-circular portions, the circular portion being of substantially the same diameter throughout and being threaded throughout only a portion of its length, an intervening smooth area being provided between the threads and the annular shoulder to which a wrench may be applied, and a coupling threaded onto the circular portion, the smooth surface extending throughout a distance sufficient to enable any wrench that will operate on the coupling to operate on the said smooth surface.

In testimony whereof I affix my signature in presence of two witnesses.

EDGAR E. GREVE.

Witnesses:
J. M. GEOGHEGAN,
LOIS WINEMAN.