Aug. 28, 1956 J. A. VERTSON 2,760,795

ROTARY BLOWOUT PREVENTER FOR WELL APPARATUS

Filed June 15, 1953

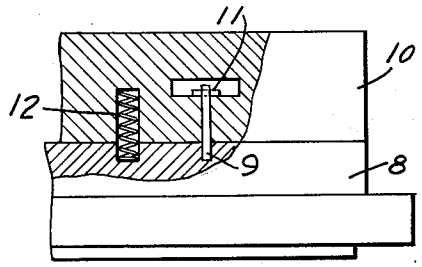


Fig. 4

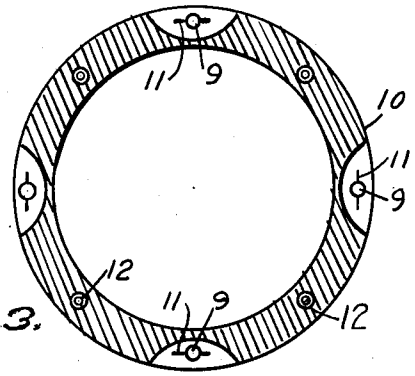


Fig. 3.

Fig. 1

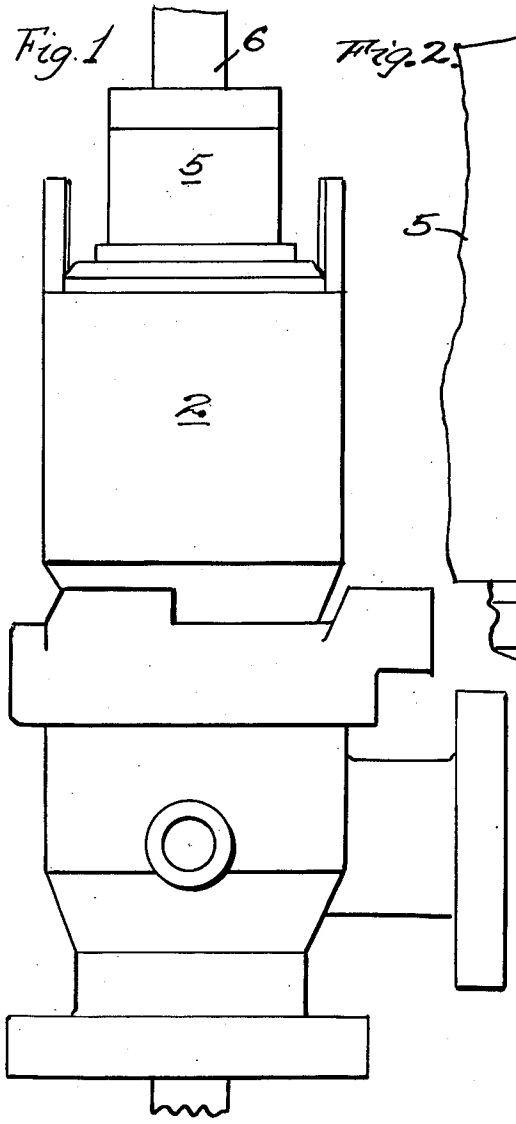
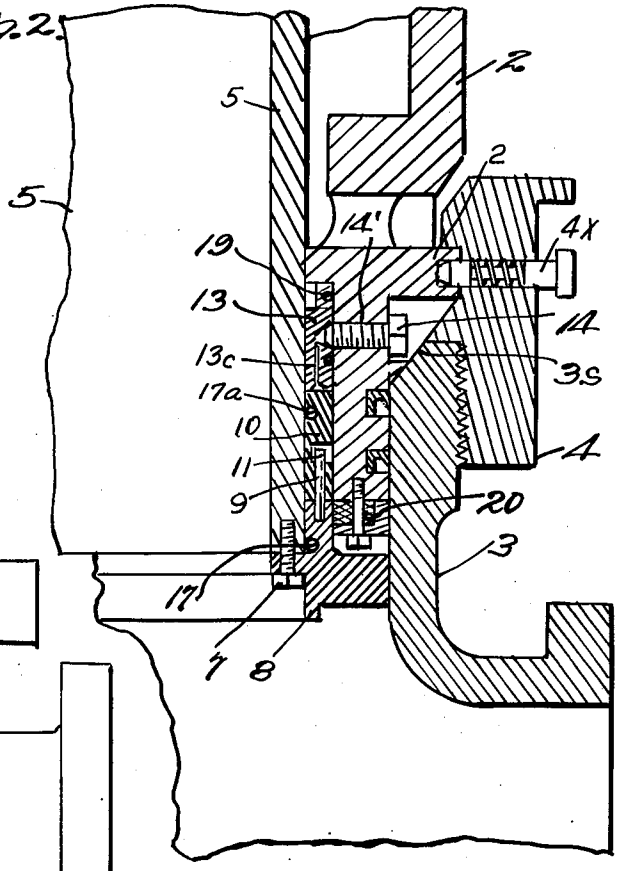


Fig. 2.



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ROTARY BLOWOUT PREVENTER FOR WELL APPARATUS

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3 Claims. (Cl. 286—11.15)

This invention is a rotary blowout preventer of the type in Schweitzer Patent No. 2,170,916 and concerns new packing means.

An object of the invention is to provide a simple, practical, reliable and highly efficient packing means in a preventer in which a drive sleeve rotates in an outer housing.

It is an object of the invention to provide a packing means of few and substantial parts and in which a packing collar is constantly and mechanically thrust to sealing and running engagement with a stationary track part in the housing.

Further, a purpose of the invention is to provide a mounting part to which is attached the packing collar for unit handling to aid in assembly and disassembly of the packer in the housing.

The invention resides in certain advancements in this art as set forth in the ensuing disclosure and has, with the above, additional objects and advantages as hereinafter developed, and whose constructions, combinations and details of means and manner of operation will be made manifest in the following description of the herewith illustrative embodiment; it being understood that modifications, variations, adaptations and equivalents may be resorted to within the scope, spirit and principles of the invention as it is claimed in conclusion hereof.

Figure 1 is a side elevation of a blowout preventer of the type concerned and through which extends a kelly bar forming a part of a string of tool parts. Figure 2 is a radial section on a vertical plane of the packing assembly. Figure 3 is a horizontal section across the packing collar and showing the dowel pins, which connect it to a mounting ring, in plan, top end view. Fig. 4 is a fragmentary view of the mounting ring and the collar, with portions broken away to show the dowel pins and springs therein.

Preventers of this class include a cylindrical housing **2** landed on a conical seat **3***s* of a complementary flange **3** attached to the upper end of a well casing (not shown) and having a locking girdle **4** engaging the seated housing.

Rotatively disposed in the housing is a central sleeve **5** through which axially works a tool string element here shown as a drill rotating kelly bar **6**.

The invention here involved concerns a packing means disposed between the sleeve **5** and its housing **2**. Fixed by screws **7** onto the lower end of the sleeve is a mounting ring **8** having an upwardly extending hub in which there is rigidly fixed an annular series of dowel pins **9**. These pins slidably fit in the lower end of a suitable collar **10** of an adaptable packing material which is cut out at the heads of the said pins so that cotter keys **11** may be put in the upper parts of the pins to interconnect the collar to the ring **8** for unit handling. Also mounted on the ring is a set of vertical helical jack-springs **12** whose function is to thrust the collar firmly upward against the adjacent, lower end of a renewable track-forming ferrule **13** interposed between the sleeve and the bore face of the housing. The track ferrule is

fixed against rotation in the housing by suitable radial locking screws **14**.

It will be seen that the packing collar **10** is constantly thrust against and rotated on the track ferrule and a reliable seal is effected by the constant and automatic effort of the jack-springs.

The ferrule is grooved in its bottom face and from the groove a number of channels **13***c* extend up to the radial holes **14'** to facilitate greasing from time to time.

A packing ring **17** is mounted between the sleeve and the mounting ring, and a packing ring **17***a* is mounted between the sleeve and the collar **10**, and other packing rings **19** are mounted between the ferrule and the adjacent face of the housing.

A filter band **20** is mounted between the mounted ring **8** and the lower end of the housing to prevent infiltration of grit to the packing collar.

The bolt **14** screws into the lower portion of the housing **2** which is latched at **4***x* to the griddle **4**. When it is desired to lubricate or grease the device, the usual well known procedure is followed to provide access to the screws **14**. These screws are then removed and a suitable fixture is secured in the threaded hole **14'** and the grease then forced therein. This grease will follow the external groove in the ferrule **13** and pass through the passages **13***c* to lubricate the lower end of said ferrule **13**.

What is claimed is:

1. A rotary blowout preventer packing including: a cylindrical housing; a central sleeve through which axially works a tool string element; a mounting ring removably secured to the lower end of said sleeve, said ring having an upwardly extending hub; annually spaced longitudinally arranged dowel pins rigidly fixed in said hub; a packing collar above said mounting ring, said collar having longitudinal bores therein for slidable reception of said dowel pins and cut-outs at the upper ends of said bores to provide access to the upper ends of said pins; means for securing said pins in said bores through said cut-outs so that the collar and ring constitute a unit assembly with said collar and ring having limited relative movement; a removable track-forming ferrule interposed between the sleeve and the bore face of the housing; means for releasably securing said track ferrule against movement in said housing; and vertically arranged springs urging the collar upwardly into sealing engagement against the lower end of said ferrule.

2. A rotary blowout preventer packing including: a cylindrical housing; a central sleeve through which axially works a tool string element; a mounting ring removably secured to the lower end of said sleeve, said ring having an upwardly extending hub; annually spaced upstanding dowel pins rigidly fixed in said hub; a packing collar above said mounting ring, said collar having longitudinal bores therein for slidable reception of said dowel pins and cut-outs at the upper ends of said bores to provide access to the upper ends of said pins; means for securing said pins in said bores through said cut-outs so that the collar and ring constitute a unit assembly with said collar having limited axial movement on said dowel pins; a removable track-forming ferrule interposed between the sleeve and the bore face of the housing, said ferrule having a groove in its bottom face from which grease holes extend upwardly in said ferrule; means for releasably securing said track ferrule against rotation in said housing; and vertically arranged jack springs urging the collar upwardly into sealing engagement against the lower end of said ferrule.

3. A rotary blowout preventer packing including: a cylindrical housing; a central sleeve through which axially works a tool string element; a mounting ring removably secured to the lower end of said sleeve, said ring

having an upwardly extending hub; annually spaced dowel pins rigidly fixed in said hub and extending longitudinally thereof; a packing collar above said mounting ring, said packing collar having bores therein for slidable reception of said dowel pins and cut-outs at the upper ends of said bores to provide access to the upper ends of said pins; means for securing said pins in said bores through said cut-outs so that the collar and ring constitute a unit assembly but have limited relative longitudinal movement; a track-forming ferrule interposed between the sleeve and the bore face of the housing and secured in said housing; vertically arranged springs urging the collar upwardly into sealing engagement against the lower end of said ferrule; and an annular filter mounted between said ring and the housing to prevent infiltration of grit to said collar.

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