

March 22, 1932.

J. W. RITTER

1,850,157

LINER SETTER HEAD

Filed Feb. 25, 1930

2 Sheets-Sheet 1

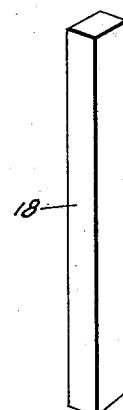
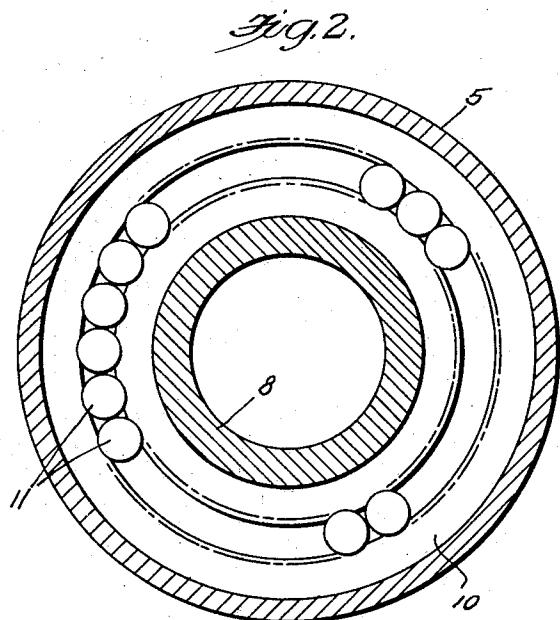
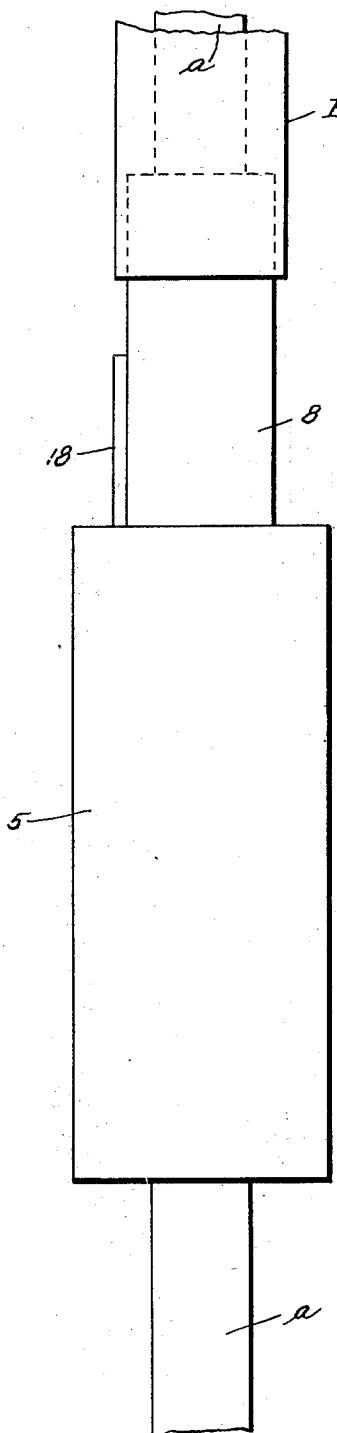


Fig. 6.

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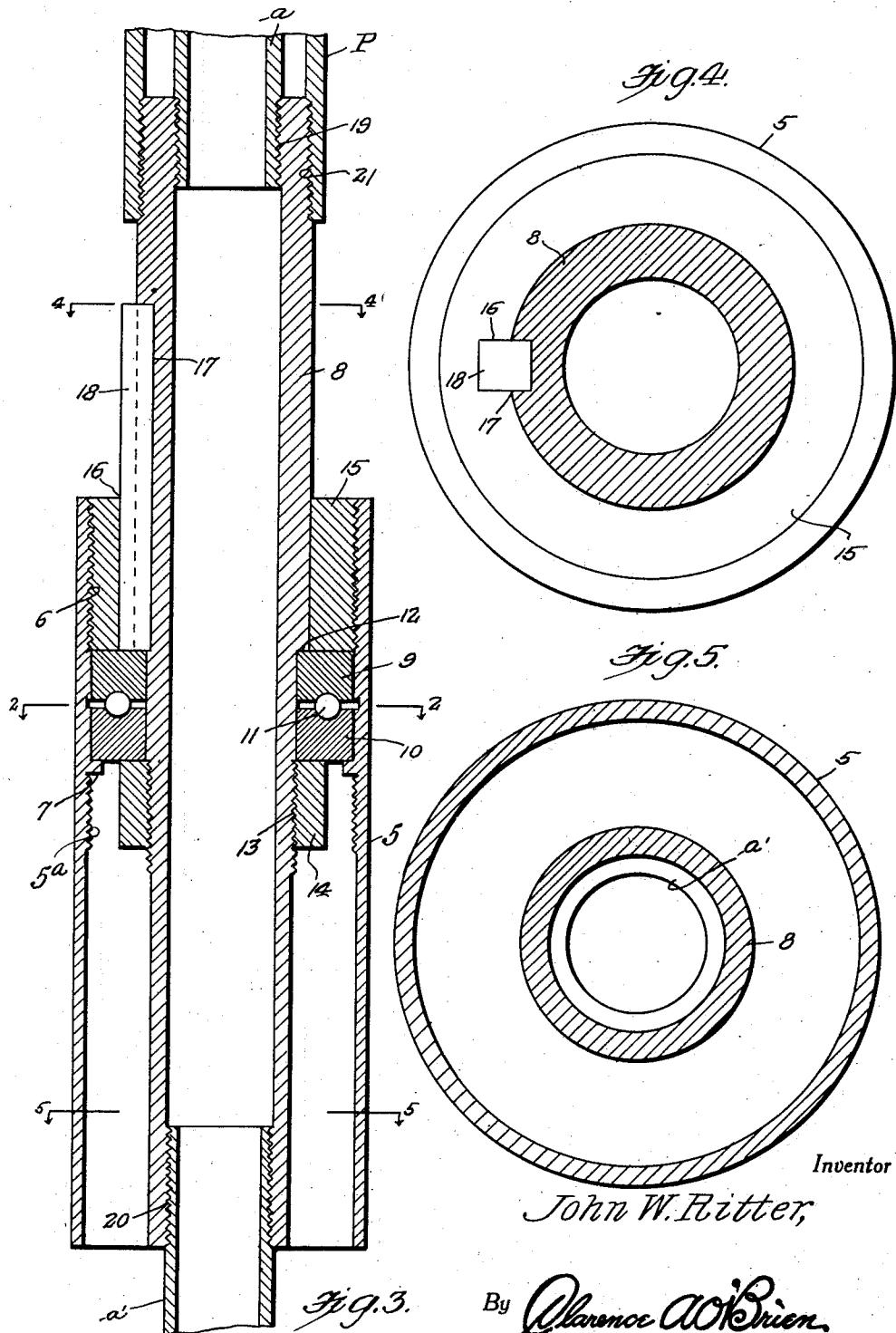
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2 Sheets-Sheet 2



UNITED STATES PATENT OFFICE

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LINER SETTER HEAD

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The object of this invention is to provide means for lowering a section of well casing or liner into the well to increase the length of the casing as may be required by an increase in depth of the well.

As is well known in the art, the well casing is usually cemented in the hole or bore of the well, and during drilling operation the depth of the bore is often increased beyond the lower end of the well casing with the result that it is necessary to insert an additional section of well casing to compensate for the increased depth of the well and as before intimated it is therefore a primary object of this invention to provide means to facilitate adding the required casing section to the lower end of the well casing and subsequently cementing the additional section in position in the bottom of the well.

The nature of the invention, as well as its many objects and advantages will be apparent from a study of the following description taken in connection with the accompanying drawings wherein:

Figure 1 is an elevational view of the device for setting the additional section of well casing.

Figure 2 is a transverse sectional view taken substantially on the line 2—2 of Figure 3.

Figure 3 is a vertical longitudinal sectional view taken through the structure shown in Figure 1.

Figure 4 is a transverse sectional view taken substantially on the line 4—4 of Figure 3.

Figure 5 is a similar view taken substantially on the line 5—5 of Figure 3.

Figure 6 is a perspective view of a key member forming part of the invention.

With reference more in detail to the drawings, it will be seen that my device for setting an additional section of casing in the bottom of the well for increasing the length of the original well casing, consists in the provision of an open ended cylindrical casing collar 5 provided intermediate its ends with internal threads 5a to facilitate coupling of the collar 5 on the upper end of the casing section to

be lowered into the well. Preferably the threads 5a are right hand threads.

The threads 5a are located below an annular internal flange 7 adapted to provide a seat for a bearing structure which includes upper and lower bearing races 9 and 10 and ball bearings 11 interposed between said races.

A tube or pipe section 8 extends through the collar 5, and intermediate its ends the tube 8 is provided with an annular external shoulder 12 adapted to rest on the upper bearing race 9, the lower end of the tube 8 preferably terminating substantially flush with the corresponding end of the collar 5. The shoulder 12 cooperates with a nut 14 threadedly engaged with the tube 8 as at 13 for rotatably retaining on the tube or pipe section 8 the bearing structure including the parts 9, 10 and 11.

Disposed about the tube or pipe section 8 above said bearing structure is an externally threaded bushing 15 provided with a keyway 16 cooperating with a keyway 17 provided on the periphery of the pipe section or tube 8 for accommodating a key 18 to lock the bushing 15 on the tube or pipe section 8 against rotation relative to said tube or pipe section.

In actual operation nut 14 is first screwed on the section 8 subsequent to the positioning of the bearing structure on the pipe or tube 8, nut 14 thus serving as before mentioned, in conjunction with shoulder 12 for rotatably supporting the bearing structure on the pipe section 8. The bushing 15 is then placed on the tube or pipe section 8 and keyed thereto in the manner before explained, and the tube 8 is then inserted through the collar 5 and by rotating the tube, it will be apparent that bushing 15 will be screwed into engagement with the upper internally threaded portion 6 of the collar 5 with the bearing structure arranged between the bushing 15 and the seat 7.

The pipe section 8 is adapted to be arranged between two sections a, a' of a conventional type of tubing, the pipe section 8 at its upper end being provided with internal threads for cooperation with the external threads on one

end of the tubing section α as at 19, and at its lower end the pipe section 8 is provided with internal threads for cooperation with the external threads on the upper end of the section 5 α' of the tubing as at 20.

5 Pipe section 8 is also provided at its upper end with external threads for cooperation with internal threads provided on the lower end of a conventional well drilling tool string, 10 a portion of which is designated by the reference character P.

The section of casing to be lowered into the well, (said section not being shown) is as before mentioned at its upper end threadedly

15 engaged with the threaded portion 5 α of the collar 5 so that as is apparent, the lower section α' of the tubing will extend through this casing section (not shown) and will, as is conventional, project at its lower end beyond 20 the corresponding end of such casing section.

All the parts being assembled as above indicated, the assembly is then lowered into the well passing through the original casing in the well for positioning said casing section 25 (not shown) at the bottom of the well to form an extension of the original well casing. Cement is then, in the usual manner pumped through the tubing now including the section α , pipe 8 and section α' , the cement 30 passing outwardly through the lower end of the section α' to be forced upwardly about the said casing section connected with the collar 5 for cementing or "freezing" said casing section in proper position at the bottom 35 of the well to form a continuation of the original casing.

When this operation has been completed, the string of tubing including the sections α , α' , and the pipe section 8 can then be removed 40 by rotating the tool string P in the manner well known in the art thus unscrewing the nut 15 from the collar 5 so that the tubing string referred to may be drawn upwardly leaving the collar 5 and the casing section secured thereto cemented in the bottom of the well. Of course, and as is thought apparent, the bearing structure together with the nut 45 14 will also be removed upon the removal of said tubing string.

50 It is thought that from the foregoing description, taken in connection with the accompanying drawings, a clear understanding, of the operation and construction is shown in the advantages of a device of this 55 character and will be had by those skilled in the art without a more detailed description.

Even though I have herein shown and described the preferred form of my invention, it is to be understood that the same is susceptible of changes fully comprehended by the spirit of the invention as herein described, within the scope of the appended claims.

Having thus described my invention, what I claim as new is:

65 1. In a device of the character described, a

casing collar comprising a substantially cylindrical open ended body provided with internal oppositely threaded portions, a pipe section extending through said collar, means for preventing said pipe section from passing entirely through the collar in one direction, said collar having one threaded portion thereof adapted to be engaged with a correspondingly threaded portion of a casing section, an externally threaded bushing keyed to said pipe section and engaged with the other threaded portion of said collar to thereby releasably retain said pipe section in operative position with respect to said collar.

2. Means for setting and cementing well 80 casing sections, and comprising an open ended cylindrical collar provided with an internal annular seat, tubing for conducting a cementitious material through the collar and casing section connected therewith and including a pipe section concentric of the collar, a bearing rotatable on the pipe section and adapted to engage said seat, means for rotatably retaining the bearing on said pipe section, an externally threaded bushing disposed about said pipe section and having threaded connection with said collar, and means for keying said bushing to said pipe section.

3. A device for setting well casings comprising in combination a collar provided with means for coupling to the casing to be set, an internal annular shoulder formed on the peripheral wall of said collar, a bearing structure adapted to rest on said shoulder and adapted to have suspended therethrough a section of well tubing, an externally threaded bushing screwed within the collar above said bearing structure, and means for keying the bushing to said section of well tubing.

In testimony whereof I affix my signature.

JOHN W. RITTER.

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