

C. F. RIGBY.
OIL SAVER.

APPLICATION FILED MAR. 26, 1914.

1,152,548.

Patented Sept. 7, 1915.

2 SHEETS—SHEET 1.

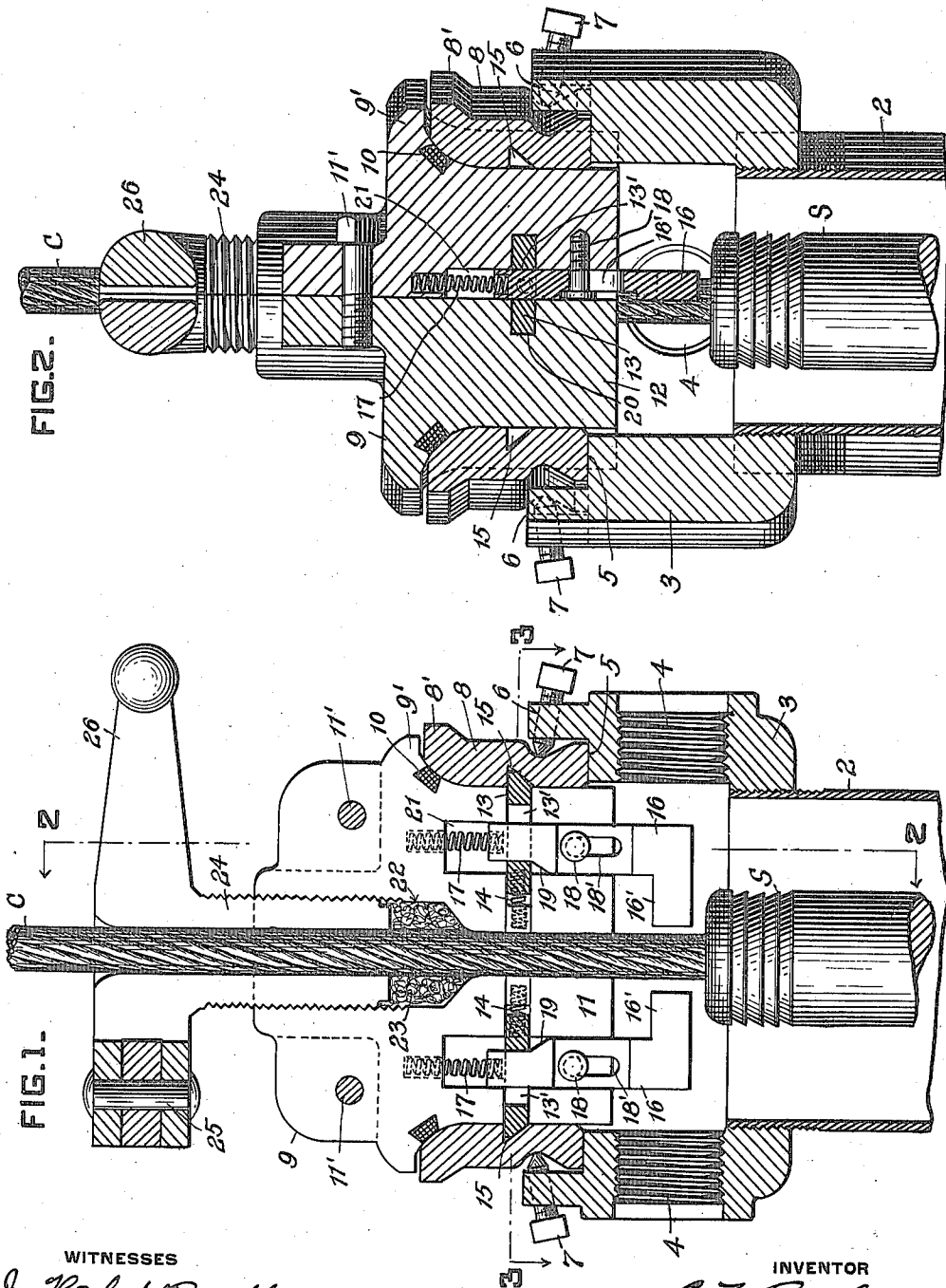


FIG. 1.

FIG. 2.

WITNESSES

J. Herbert Bradley.
Ellis McConnell

INVENTOR

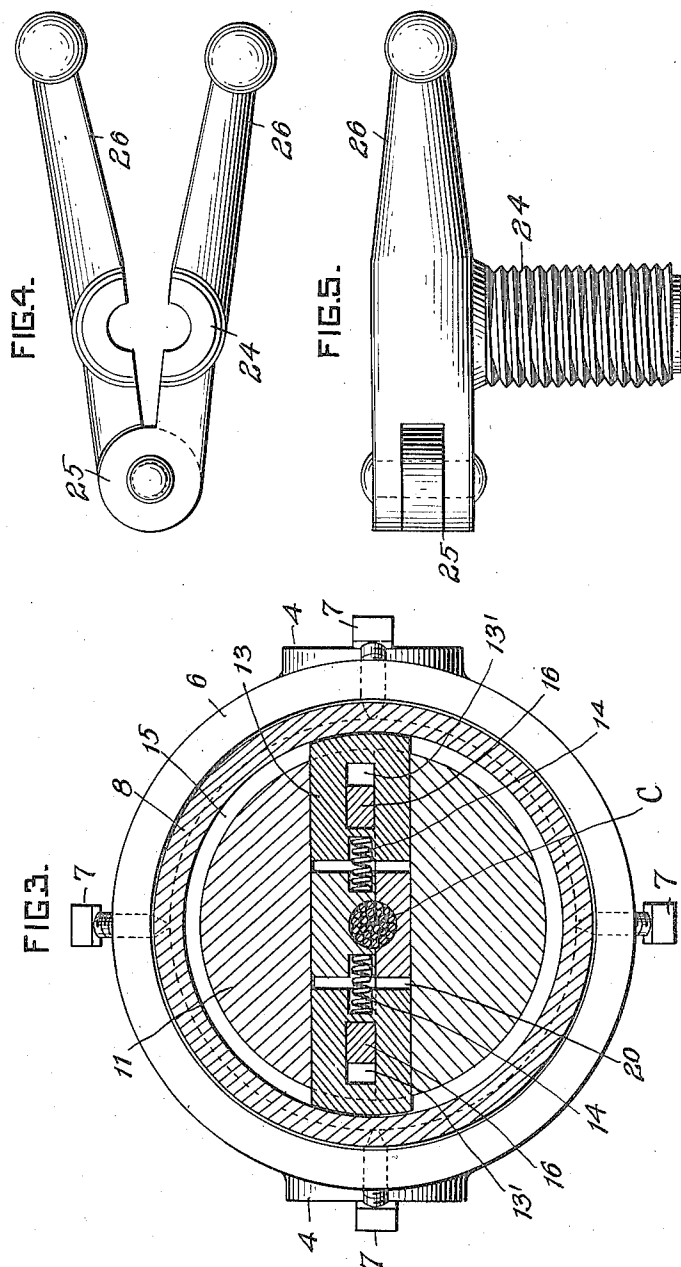
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UNITED STATES PATENT OFFICE.

CLARK F. RIGBY, OF BUTLER, PENNSYLVANIA.

OIL-SAVER.

1,152,548.

Specification of Letters Patent.

Patented Sept. 7, 1915.

Application filed March 26, 1914. Serial No. 827,383.

To all whom it may concern:

Be it known that I, CLARK F. RIGBY, a citizen of the United States, and resident of Butler, in the county of Butler and State of Pennsylvania, have invented certain new and useful Improvements in Oil-Savers, of which the following is a specification.

The drilling of oil and gas wells is frequently continued after the oil or gas, or both, have started to flow, making it necessary to close the top opening of the casing head through which the drilling cable operates, the closure having a cable passage so that the work may proceed. Devices of this general character, known in the art as oil savers, are illustrated in the patents granted to me April 1, 1902, No. 696,747, and February 7, 1911, No. 983,314. It is of course necessary to remove the closure when the tools are to be taken out for dressing the bit, etc., also for discharging the bailer. It is desirable to retain the closure in position until the tools or bailer have been raised to the top of the well so that the flow and waste ensuing when the closure is removed may be minimized as much as possible. In deep wells in which cable of corresponding length is required, the latter portion of the withdrawing operation is tedious due to lack of exact knowledge of the position of the ascending tools and the resulting necessity of slow movement so that the tools may be quickly brought to a standstill before striking the casing closure. But it is not an infrequent occurrence to have them raised into forcible collision with the closure, endangering the latter and risking the loss of the tools by the parting of the cable.

The primary object of the present invention is to provide means actuated by the upward movement of the tools, bailer, etc., for releasing the closure, whereby the latter is retained in place until the tools have reached the top of the well, and whereby the heretofore necessary slowing-down of the withdrawing operation is avoided and the work expedited, no injury resulting from forcible contact of the tools with the closure.

A further purpose is to provide the casing closure with a sectional cable-embracing gland of improved construction.

In the accompanying drawings, Figure 1 is a vertical section of the closure positioned in the casing head, showing the cable and tools in raised position just prior to releasing the closure. Fig. 2 is a vertical section

taken at right angles to Fig. 1, the plane of the section being indicated by line 2—2 of Fig. 1. Fig. 3 is a sectional plan on line 3—3 of Fig. 1. Figs. 4 and 5 are detail views of the improved gland.

Referring to the drawings, 2 designates a well casing, and 3 a casing head secured to its upper end and provided with the lateral outlets 4 and above the outlets with the upwardly facing seat 5, the seat being surrounded by annular flange 6 which supports the binding screws 7. The casing head embodying all of these features is of usual and well known construction.

Secured in seat 5 by screws 7 and rising therefrom is the annular seat-forming collar 8 which constitutes an upward continuation of the casing head cavity. The upper extremity of the bore of collar 8 is flared outwardly slightly as indicated at 8'. The annular head-like casing closure 9 fits within collar 8 and is shouldered at 9' complementary with the flared upper extremity 8' of the collar in order to seat thereon, the shouldered portion carrying packing 10 which seals the seat joint.

Closure 9 is divided vertically into two sections 11 and 12 which are secured together by screw bolts 11'. This sectional construction is a feature of my above mentioned Patent No. 696,747, and facilitates placing and removing the closure without cutting the cable or disconnecting it from the tools.

In the present adaptation, the latch mechanism for releasably securing the closure is mounted on the latter, and as here embodied consists of the opposite horizontal latches 13 which are held normally projected by springs 14 for engagement with the internal annular groove 15 in collar 8. Each latch is slotted at 13', and slidable vertically therein is the trip bar 16 which depends beneath closure 9, being held normally depressed by spring 17. The bar is held in place by screw 18, being slotted at 18' to move thereon. When the bar is raised the beveled shoulder 19 on its rear edge engages latch 13 and withdraws it from groove 15. The lower extremity of the bar is deflected inwardly toward the plane of cable C, as indicated at 16'. Latches 13 move in slots 20, portions of which are formed in each of the closure sections 11 and 12, and these slots are intersected by the vertical passages 21 formed in the joint face of section 11 for

confining bars 16, the result being that when the closure sections are separated all of the latch mechanism is carried by section 11.

The upper portion of the closure cable passage is enlarged to form the stuffing box 22 in which packing 23 is compressed by the vertically divided screw gland 24 as in Patent No. 696,747, the upper portion of the stuffing box being threaded to receive the gland, and the vertical division of the gland facilitating applying and removing the same without disturbing the cable. In the present adaptation, the gland sections are united by the laterally offset hinge 25 which is arranged opposite the handle projections 26, whereby the gland may be conveniently opened and closed, and at the same time the gland parts are so connected as to be caused to accurately close together, with their threaded exteriors in accurate register.

With the closure in position the operations accomplished by cable C, whether drilling, bailing, etc., proceed in the usual way, and when the tools are to be withdrawn they are raised by reeling the cable quite regardless of the presence of the casing closure. When the rope socket S or other uppermost tool approaches the under side of the closure, it engages and elevates bars 16 and the resulting immediate retraction of the latches releases the closure so that it may be lifted from the casing head along with the tools, the closure when thus removed remaining on the cable and above the tools, as will be understood. When the tools are again introduced into the well the lowering of the cable results in seating and latching the closure.

Collar 8 adapts the invention to casing heads of the construction now in general use, but it will be understood that the invention is not limited in this regard. Nor is it restricted to use with drilling tools, although designed with special reference to such use.

I claim:

1. The combination of a casing head, a casing head closure having a cable passage, and releasable head securing means operative beneath the closure and within the head.

2. The combination of a casing head, a casing head closure having a cable passage, and closure-securing latch mechanism mounted on and operative at the under side of the closure.

3. The combination of a casing head, a casing head closure having a cable passage, and latch mechanism operative beneath the closure for detachably securing the latter to the casing head, the latch mechanism adapted to be engaged and actuated by a device carried by the cable.

4. The combination of a casing head, a casing head closure having a cable passage, and latch mechanism mounted on the clo-

sure and depending therefrom, said mechanism detachably securing the closure to the casing head and adapted to be engaged and actuated by a device carried by the cable.

5. The combination of a casing head, a casing head closure having a cable passage, latch mechanism for detachably securing the closure to the head, the latch mechanism including latch actuating means located beneath the closure, a cable operative through the closure, and a device secured to the cable and adapted to be raised into engagement with and operate the latch actuating means for releasing the closure.

6. The combination of a casing head, a closure therefor having a cable passage, latches on the closure adapted to engage the casing head, and vertically movable latch retracting means depending from the closure.

7. The combination of a casing head, a closure therefor having a cable passage, latches for detachably securing the closure to the head, and latch operating devices beneath the closure and in proximity to the plane of the cable passage.

8. The combination of a casing head, a closure therefor having a cable passage, laterally movable latches normally projected from the closure into head engaging position, and upwardly movable latch retracting means depending from the closure and arranged in proximity to the plane of the cable passage.

9. The combination of a casing head, a closure therefor having a vertical cable passage, horizontal latch-ways, spring-projected latches in the latchways normally in head-engaging position, and vertically movable devices depending from the closure and engaging the latches and adapted when elevated to retract the latter.

10. The combination of an internally grooved casing head, a closure adapted to fit within the casing and having a vertical cable passage, latch devices carried by the closure and normally projected into groove-entering position, and latch retracting means mounted on the closure.

11. The combination of a casing head having its bore flared outwardly adjacent its upper end, a closure adapted to fit within the casing head and shouldered complementary with the flared upper portion of the head, packing carried by the closure for engaging the flared portion of the closure, and means for securing the closure to the casing head.

12. The combination of a casing head, a closure therefor having a vertical cable passage and also formed with intersecting vertical and horizontal passages with the vertical passages open through the closure bottom and the horizontal passages open through the side of the closure, vertically

slotted latches slidable in the horizontal passages, and devices depending from the closure and slidable in the vertical passages and when elevated adapted to retract the latches from head-engaging position.

13. The combination of a casing head body formed with a seat, an annular upwardly projecting collar secured in the seat, a closure removably fitting the collar, and latch means detachably connecting the closure and collar.

14. The combination of a casing head body provided with an upwardly facing seat, an upwardly extending vertically open collar secured in the seat and recessed on its inner face for the engagement of latches, a closure removably fitting the collar, and latch devices mounted on the collar and adapted to enter the collar recess for detachably uniting the closure and collar.

15. The combination of a vertically divided casing head, a vertically divided casing head closure having a cable passage, the closure formed in vertical sections with the joint between the sections intersecting the cable passage, latches carried by the closure

and adapted to engage the casing head, and latch releasing devices within and depending from the closure, said devices located at the joint between the closure sections and accessible when the closure parts are separated.

16. The combination of a casing head body, a seat-forming collar removably secured to the body, a casing closure adapted to fit the collar seat, and releasable closure-securing means operative beneath the closure and within the body.

17. The combination of a casing head body, a seat-forming collar removably secured to the body, a closure divided vertically and formed with a cable passage for removably embracing a cable with the closure adapted to fit the collar seat, and closure-securing means operative beneath the closure and within the body.

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

CLARK F. RIGBY.

Witnesses:

J. M. NESBIT,
F. E. GAITHER.