Feb. 14, 1928.

1,659,244

G. J. CORMIER

OIL WELL SAFETY HEAD

Filed March 24, 1926

Fig. 1.

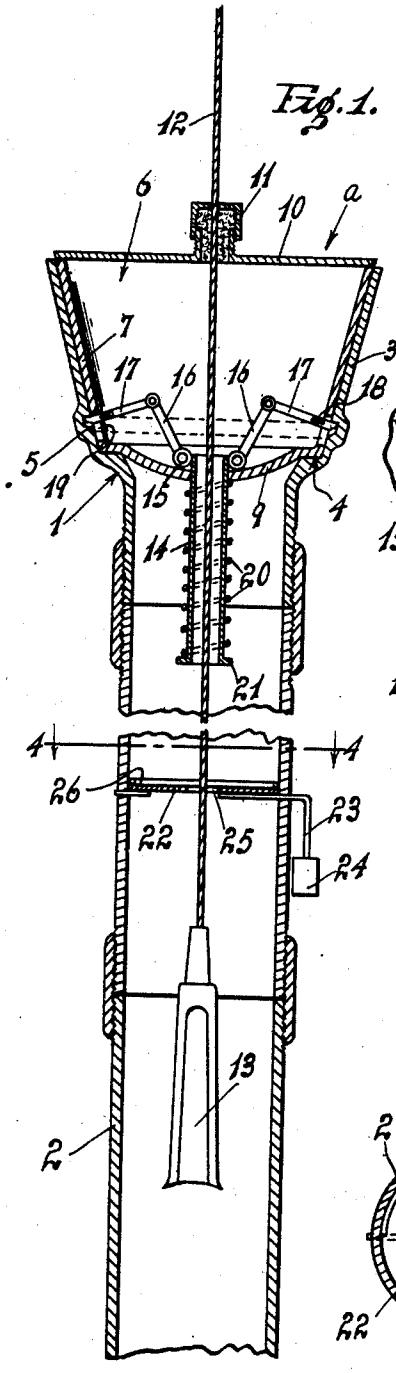


Fig. 2.

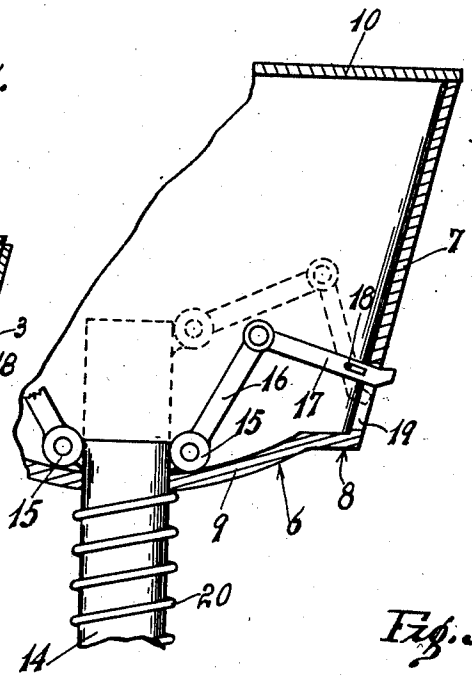


Fig. 3.

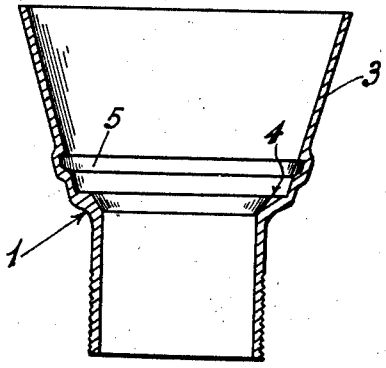
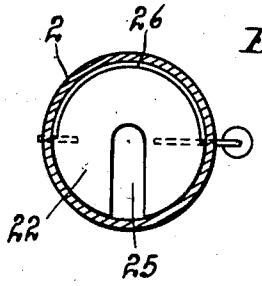


Fig. 4.



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UNITED STATES PATENT OFFICE.

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OIL-WELL SAFETY HEAD.

Application filed March 24, 1926. Serial No. 96,946.

My invention is particularly useful while swabbing a well for production or in drilling with cable tools. During these operations it is essential that the top of the casing be closed to prevent loss of oil and gas. Further in withdrawing the tools from the well it was impossible to determine when they were at the surface, this frequently resulted in the tools striking the control valve or the like, damaging said valve or breaking the cable and allowing the tools to drop into the well and irreparably damaging the same.

An object of my invention is to provide a safety head which is mounted on the casing, and which will be released from said casing when engaged by the tool.

Another object is to provide a head of the character stated which will be gas and oil tight while the tools are in the well.

Other objects are simplicity of construction and effectiveness in operation.

Other objects, advantages and features of invention may appear from the accompanying drawing, the subjoined detailed description and the appended claims.

In the drawing illustrating my invention:

Fig. 1, is a longitudinal sectional view of my safety head.

Fig. 2, is an enlarged fragmentary sectional view of the locking head.

Fig. 3, is a longitudinal sectional view of the seating sleeve.

Fig. 4, is a sectional view taken on line 4—4 Fig. 1.

Referring more particularly to the drawing my safety head *a* comprises a seating sleeve 1, which is securely fastened to the top of the casing 2. This sleeve has outwardly tapering walls 3 and a seat 4 in the lower end thereof. An annular groove 5 is provided in the sleeve 1 above the seat 4 the purpose of which will be further described.

The locking head 6 is formed with outwardly tapering walls 7 which closely fit the walls 3 of the sleeve 1. A shoulder 8 is formed in the bottom wall 9, which shoulder rests on the seat 4. A cover 10 is provided with a stuffing box 11, through which the cable 12 extends and a suitable tool or swab 13 is secured to said cable, and works in the casing 2.

A tube 14 is slidably mounted in the bottom wall 9 and depends therefrom. Ears 15, 15 are provided on the upper end of the tube 14, and links 16, 16 are pivoted thereto. These links are pivoted to the ends of locking fingers 17, 17 which fingers are pivoted at 18, to the head 6. The ends of the fingers 17 extend through slots 19, 19 in the head 6 and extend into the groove 5 thereby locking the head 6 securely in place and preventing displacement thereof due to gas or oil pressure.

A coil spring 20 surrounds the tube 14 and seats against the bottom 9 and a ring 21 on the tube; thereby holding the tube in such a position that the fingers 17 engage the groove 5.

When the tool 13 is being raised out of the casing, it engages the bottom of the tube 14 and raises said tube against the tension of the spring 20, to the position shown in dotted lines Fig. 2 which swings the fingers 17 out of the groove 5 and allows the head 6 to be carried upwardly without damage to the head or tool. When the head 6 is replaced in the sleeve 1 the spring 20 urges the tube 14 downwardly so that the fingers 17 again lock said head in position.

As a further safeguard against the tool falling into the casing a plate 22 is provided in a section of the casing 2 and the hinging rod 23 thereof extends through said casing and has a pendulum 24 thereon. The cable 12 runs through a slot 25 in the plate 22 and a stop ring 26 is provided on the casing. When the tool 13 is drawn upwardly the plate 22 swings to permit passage thereof and at once returns to a position to close the casing so that the tool cannot fall.

Having described my invention I claim:

1. In a well having a casing, a safety head comprising a sleeve adapted to be secured to the casing a locking head seated in said sleeve, a tube slidably mounted in said locking head and adapted to be engaged by the well tool and means connected to said tube and adapted to engage said sleeve to lock said locking head in the sleeve, said means comprising fingers pivotally mounted in said locking head, and adapted to engage said sleeve, and links pivoted to said fingers and the tube.

2. In a well having a casing, a safety head comprising a sleeve having a groove therein, and adapted to be secured to the casing a locking head seated in said sleeve comprising side walls having slots therein and top and bottom walls, a tube slidably mounted in said locking head, fingers adapted to extend through the slots in the side walls, and

into the groove in the sleeve, links pivoted to said fingers and the tube whereby sliding of the tube will swing the fingers into or out of the groove.

3. In a well having a casing, a safety head comprising a sleeve having a groove therein, and adapted to be secured to the casing a locking head seated in said sleeve comprising side walls having slots therein and top and bottom walls, a tube slidably mounted in said locking head, fingers adapted to extend through the slots in the side walls, and into the groove in the sleeve, links pivoted to said fingers and the tube whereby sliding of the tube will swing the fingers into or out of the groove, and spring means urging said tube downwardly.

In testimony whereof I affix my signature.

GUSTAVE J. CORMIER.