L. A. MOSHER.

OIL WELL TORPEDO.

APPLICATION FILED JULY 29, 1918.

1,296,836. Patented Mar. 11, 1919.

Fig 1.

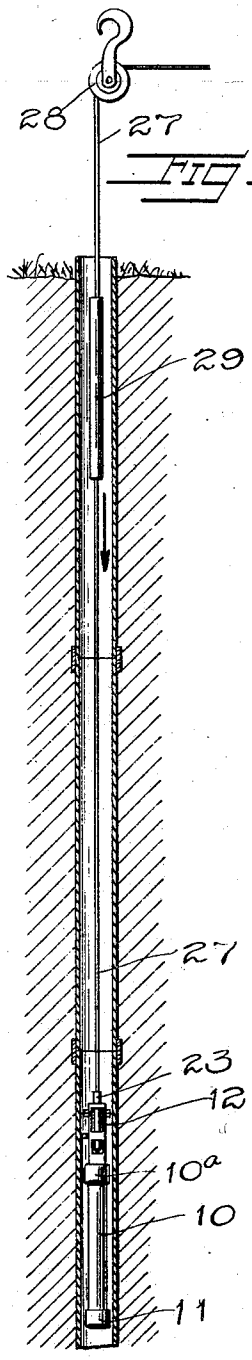


Fig 2.

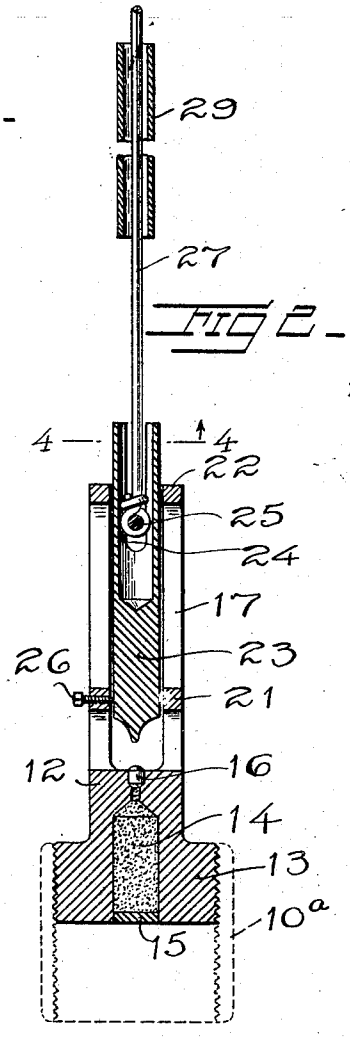


Fig 4.

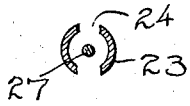
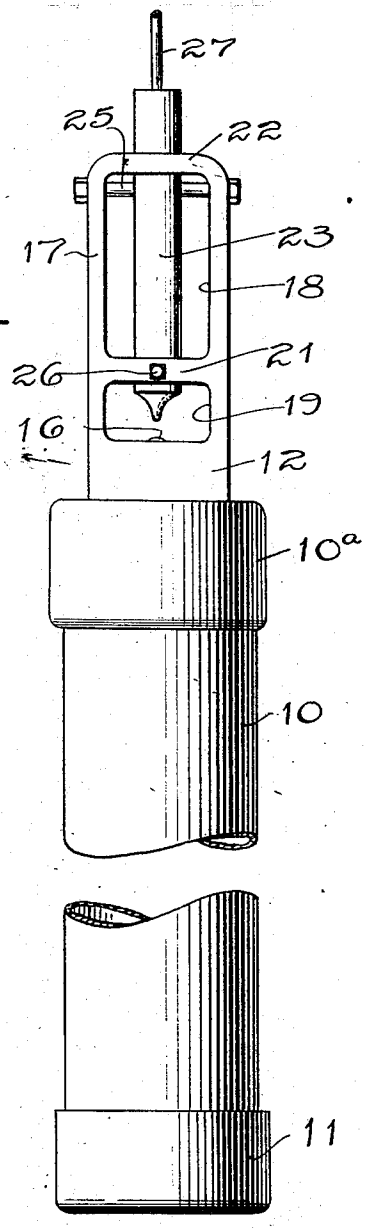


Fig 3.



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OIL-WELL TORPEDO.

1,296,836. Specification of Letters Patent. Patented Mar. 11, 1919.

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To all whom it may concern:

Be it known that I, LEWIS A. MOSHER, a citizen of the United States, residing at Goose Creek, in the county of Harris and State of Texas, have invented certain new and useful Improvements in Oil-Well Torpedoes, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to means for detonating explosives in oil wells, and more particularly to means for exploding nitro-glycerin in oil wells.

The general object of the invention is to provide a very simple means for lowering a charge of nitro-glycerin into an oil well and then exploding a fulminate cap to thereby explode the nitro-glycerin.

A further object is to provide a device of this character which may be loaded without danger of premature explosion and which may be lowered into the well without danger of such an explosion, and which will therefore be very safe to handle.

Another object is to provide a device of this character which is very simple in construction and cheap to manufacture and which any one of ordinary intelligence can handle with entire safety.

Other objects will appear in the course of the following description.

My invention is illustrated in accompanying drawings, wherein:—

Figure 1 is a vertical sectional view of a well casing with my torpedo disposed therein;

Fig. 2 is a vertical sectional view of the detonating head and the go-devil;

Fig. 3 is an elevation partly broken away of the detonating head and the dynamite container; and

Fig. 4 is a section on the line 4—4 of Fig. 2.

Referring to the drawings, it will be seen that my device comprises a nitro-glycerin container designated 10, which is formed of a pipe open at its opposite ends, one end being exteriorly screw-threaded and the lower end being closed by a cap 11 after the charge of nitro-glycerin has been inserted. The detonator proper consists of a body 12 enlarged at its lower end as at 13 and exteriorly screw-threaded to fit within the upper end of a coupling 10^a on the nitro-glycerin container 10. This enlarged portion 13 contains a chamber 14 designed to contain fulminate, this fulminate being held in place by a wad 15. The upper end of this chamber is reduced in diameter, to form a seat for a detonating cap or primer 16. Formed integral with the body 12, and arching over this body, is the yoke 17, which is cut away as at 18 and as at 19, leaving a cross bar 21 just above the primer 16, and a cross bar 22 at the upper end of the yoke. These cross bars are perforated for the passage of a firing pin 23, the lower end of which is formed to engage and explode the primer 16. This firing pin, as seen in Fig. 4, has its upper end annular in cross section and vertically slotted as at 24 to accommodate a transverse bolt 25 which passes through the yoke 17. A screw 26 passes through the cross bar 21 and is adapted to engage the firing pin to hold it raised or in safety position.

For the purpose of supporting the charge of nitro-glycerin, and the detonator, a wire 27 is used which passes over the pulley 28 at the mouth of the well and extends downward into the well and at its lower end connects to the bolt 25. The wire 28 is connected to a reel or any other suitable means whereby it may be raised and lowered and adapted to slide downward on the wire 28 is a dart pipe or "go-devil" 29 having a diameter the same as the diameter of the firing pin 23.

In the practical use of this invention the bolt 25 is first removed and the firing pin 23 is raised to its full height and engaged by the set screw 26. Insert the primer on the seat 16 and fill the chamber 14 with black gun powder, or other quick-exploding fulminate held in place by means of the wad 15. The wire 27 is then inserted downward through the slotted opening 24 of the firing pin, a loop having been formed at the lower end of the wire previous to insertion for the passage of the bolt 25. The dart pipe or "go-devil" has been, of course, previously inserted upon the wire 27. The explosive charge is then disposed in the container or pipe 10 and the container is screwed into the coupling 10^a which connects the container 10 to the body 12. The set screw 26 is then loosened and the firing pin carefully lowered until it rests on the primer 16. The device is then lowered gently into the well to be torpedoed, the dart pipe being held at the top of the well against any downward movement until the detonator with its charge of dynamite has reached the

point where the explosion is to take place. When all is ready, the dart pipe or go-devil is released, and when it strikes the firing pin, the primer is exploded, exploding the fulminate 14 and the charge of nitro-glycerin.

The advantages of this invention lie in the safety with which it may be handled, the simplicity of its construction and its cheapness of manufacture. While I have described a form of my invention which I believe to be particularly effective, I wish it understood that many changes may be made in the details thereof, without departing from the spirit of the invention, as defined in the appended claims.

I claim:—

1. A well torpedo comprising an explosive container, a detonating head detachably connected to the container, and having therein a fulminate chamber and a primer seat, a firing pin slidably mounted in the detonating head above the primer seat, means for sustaining the firing pin in a safety position, and means for detachably connecting a wire to the detonating head.

2. A well torpedo including an explosive container, a detonating head having a fulminate chamber and a primer seat, the head above the primer seat being formed to provide an arched yoke, a bolt detachably engaged with the upper end of the yoke and extended transversely thereof and adapted to be connected to a supporting wire, a firing pin guided in the yoke and slotted to accommodate said bolt and disposed concentric to the wire when the wire is in place, and means on the yoke for engaging the firing pin and holding it raised.

3. A well torpedo including a tubular explosive container closed at its lower end and having screw-threads at its upper end, a detonating head having a chamber at its lower end for containing fulminate and connected by a coupling to the explosive container, there being a primer seat above the fulminate chamber and the upper portion of the detonating head being formed to provide an upwardly arching yoke, the yoke being formed with a medially disposed cross bar, the upper end of the yoke and the cross bar being both perforated, a bolt passing transversely across the upper end of the yoke, a firing pin slidably mounted in the perforation of the yoke and coacting with the primer seat, the upper end of the firing pin being vertically slotted, said bolt passing through the slot, a set screw passing through the lower cross bar of the yoke and engaging the firing pin to hold it in its raised position, a lowering wire connected to the bolt, and a dart pipe loosely surrounding the wire and adapted to engage the upper end of the firing pin when the dart pipe is dropped.

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

LEWIS A. MOSHER.

Witnesses:
CLIFFORD D. GREEN,
GEO. W. CAMERON.