May 27, 1924. 1,495,557

M. M. KINLEY

TORPEDO LOWERING HOOK

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Fig. 1.

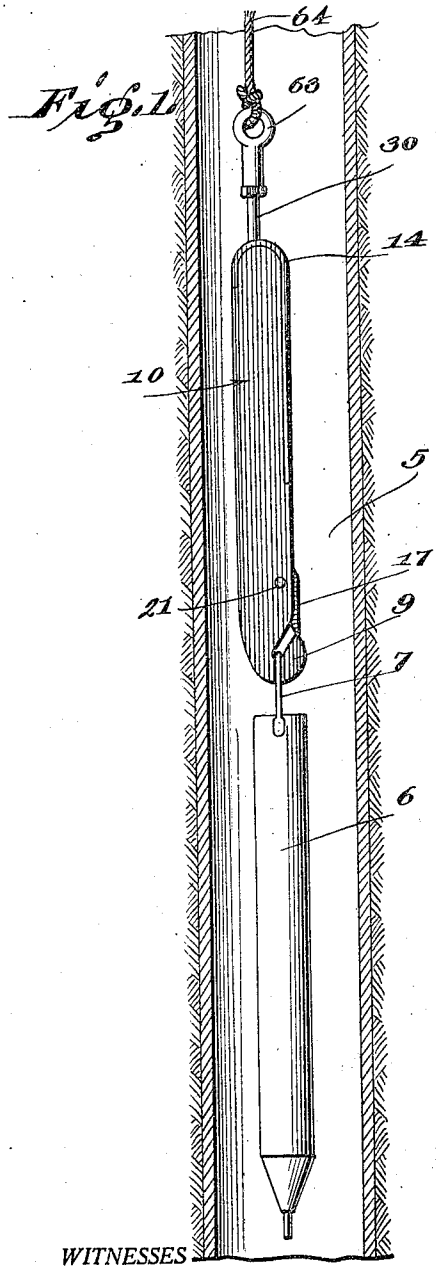
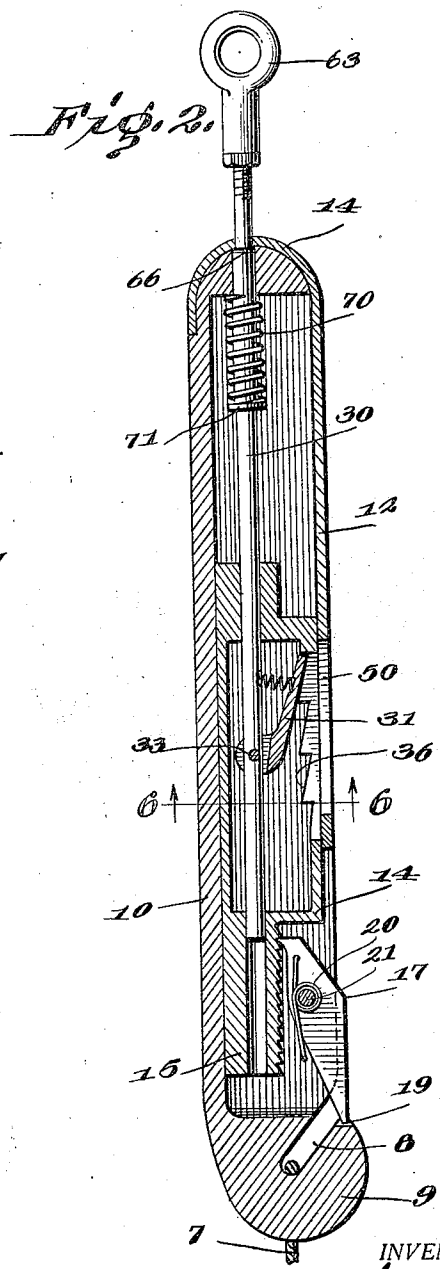


Fig. 2.



WITNESSES

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Fig. 3.

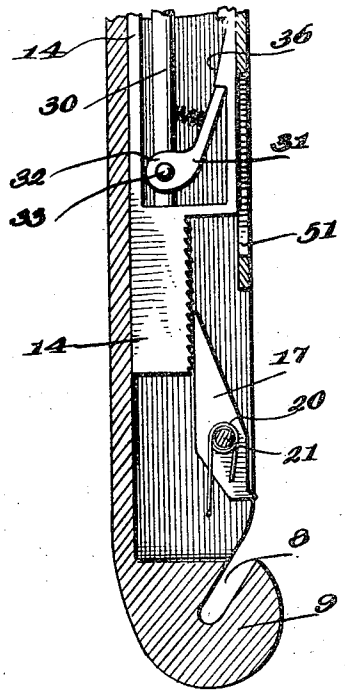


Fig. 5.

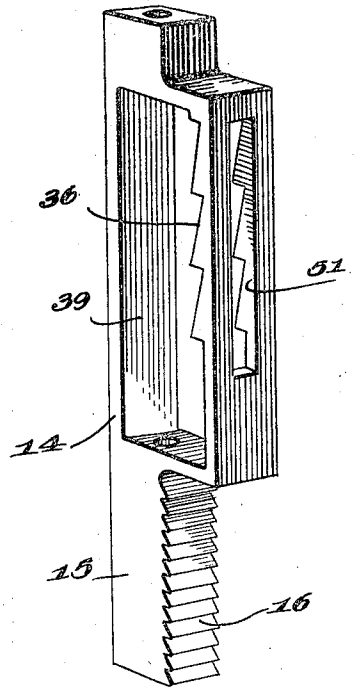


Fig. 4.

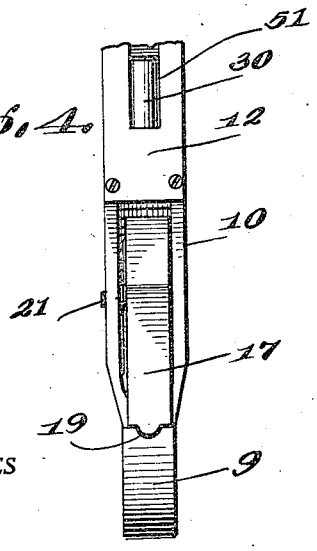
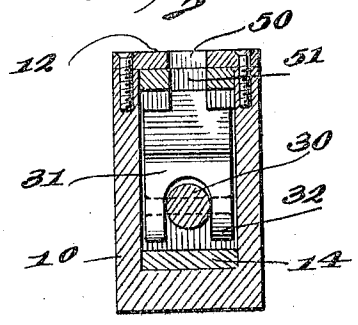


Fig. 6.



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UNITED STATES PATENT OFFICE.

MYRON MACY KINLEY, OF TULSA, OKLAHOMA.

TORPEDO-LOWERING HOOK.

Application filed October 4, 1923. Serial No. 666,573.

To all whom it may concern:

Be it known that I, MYRON MACY KINLEY, a citizen of the United States, and resident of Tulsa, in the county of Tulsa and State of Oklahoma, have invented certain new and useful Improvements in Torpedo-Lowering Hooks, of which the following is a specification.

This invention relates to torpedo shell lowering devices especially adapted for use in oil and gas wells.

As is well known those skilled in the art the lowering of a nitro-glycerin containing shell in an oil or gas well may be required so that when the shell reaches the bottom of the well it may be set off and it frequently occurs that the shell containing the nitro-glycerin is prematurely released from the lowering means and possibly prematurely exploded thereby seriously endangering the operators or attendants. Also in case of a gas well the gas pressure in the well may be sufficient to retard the downward movement of the shell and cause it to be accidentally and prematurely released from the lowering means, and further when the torpedo is lowered in an oil well it is done between flows, the frequency of the flows being known to the operator and in case the well flows with unexpected frequency during the lowering of the shell its accidental release from the lowering means is quite likely, all of which is accompanied by great danger to the operators.

Therefore, an important object is to provide a torpedo shell lowering mechanism having means to positively prevent the premature release of the shell.

A further object of the invention is to provide a torpedo shell lowering means which may be conveniently released from the torpedo shell by merely exerting a predetermined number of pulls or jerks on the lowering cable.

A further object is to provide a torpedo lowering device which is simple to use, durable in use and cheap to manufacture.

Other objects and advantages will be apparent during the course of the following description.

In the accompanying drawings forming a part of this application and in which like numerals are employed to designate like parts throughout the same,

Figure 1 is a side elevation of the improved torpedo releasing device in use.

Figure 2 is a vertical sectional view through the same.

Figure 3 is a detail sectional view illustrating the lower portion of the device in its open or shell releasing position.

Figure 4 is a fragmentary front elevation illustrating the closing means for the lowering device in its operative position.

Figure 5 is a perspective of a locking member or rack embodied in the invention.

Figure 6 is a horizontal sectional view taken on line 6—6 of Figure 2.

In the drawing wherein for the purpose of illustration is shown a preferred embodiment of the invention the numeral 5 designates a well into which torpedoes 6 of any desired construction may be lowered. The torpedo 6 is provided with the usual bail 7 adapted to be received in the socket 8 of a bill 9 on the lower end of a hook or torpedo lowering device 10.

The hook or lowering device is in the nature of an elongated body having its forward side or one longitudinal edge closed by a strip or cap 12. The strip or cap 12 is secured to one longitudinal edge of the body and has its rear portion curved as indicated at 14 and secured to the rear end of the body.

As illustrated in Figure 2 a sliding locking member 14 is mounted in the body and is provided at its lower end with a rack 15 having its forward side provided with teeth 16 engaged by the tooth on the rear end of a locking dog 17. Figure 2 illustrates the operative position of the tool and it will be seen that one end of the dog 17 extends over and closes the socket 8 and is received in a recess 19 in the bill 9 so as to prevent the lower end of the dog from engaging any obstructions or objects which might be present on the inside of the well. The sliding locking member 14 is normally held in the lower portion of the body principally by gravity. A spring 20 is extended about the head 21 which rotatably supports the dog 17 and as the spring urges the dog into engagement with the teeth 16 of the rack 15 so that the spring acts also in a measure as a means to retain the sliding locking member in the lower portion of the body.

When the sliding locking member is elevated by means to be later described the dog 17 which is pivotally supported intermediate its ends immediately swings in a counter-clock-wise direction and consequently un-

covers the socket 8 so that the torpedo may be released.

An actuating rod 30 is slidable in the body and carries a pawl 31, the said pawl being provided at its lower portion with spaced ears 32 arranged on opposite sides of the rod and having pivotal connection therewith by means of a pin 33.

In carrying out the invention the pawl 31 is urged into engagement with a series of teeth 36 on the inner wall of the recess 39 in the locking member 14.

In operation the bail of the torpedo is inserted into the socket 8 and the locking member 14 is forced downwardly subsequent to the movement of the dog 17 into its operative position as illustrated in Figure 2. In order to move the locking member 14 downwardly to its operative position it is necessary to insert a screw driver or other small tool between the aligned openings 50 and 51 and disengage the pawl 31 from engagement with the teeth 36. This permits the actuating bar 30 to be raised to the limit of its upward movement and also permits the sliding locking member 14 to be moved downwardly to the limit of its movement. The upper end of the actuating rod is provided with an eye 63 by means of which the improved hook may be suspended from a lowering cable 64 and when the hook is lowered into the well the cable is steadily wound off the reel so that the hook will not be severely jarred or jerked.

During the descent of the hook the pawl 17 remains in the position illustrated in Figure 2 so that the torpedo cannot be accidentally released when encountering gas pressure or unexpected oil flow.

The weight of the torpedo and the body causes the body to move downwardly on the rod 30 to the limit of its movement and the cap 14 is engaged with an annular shoulder 66 on the upper portion of the rod. When it is desired to release the locking dog 17 it is merely necessary to exert about three successive jerks or pulls on the cable 64 so that the body 14 will be moved upwardly in the body 10. Each time a separate pull or jerk is exerted on the cable 64 the body 14 will ride upwardly the distance between one of the teeth 36 so that the sliding locking member will move upwardly in a step by step motion. When the final jerk is exerted on the cable 64 the ratchet will be located above the dog 17 so that the spring 20 will swing the dog to the position illustrated in Figure 3. The torpedo 6 may now be released from the bill 9 and subsequently exploded for shooting the well.

With reference to the foregoing description taken in connection with the accompanying drawings, it will be seen that the torpedo is positively prevented from being prematurely released and consequently the operators may work with a feeling of absolute safety. Also jar is reduced to a minimum during the descent of the hook and during the successive jerks on the cable 64 due to the presence of the spring 70 confined between the upper end of the hook and a retaining member 71 on the actuating rod 30.

Having thus described the invention, what is claimed is:

1. A torpedo lowering hook comprising a body having a bill provided with a socket, a dog pivoted intermediate its ends to said body and adapted for closing said socket, a rack slidable in said body and adapted for normally holding said dog in its operative position, and a combined line attaching and rack elevating member slidably connected to said body.

2. A torpedo lowering hook comprising a body having a bill provided with a socket, a dog pivoted intermediate its ends to said body and adapted for closing said socket, a rack slidable in said body and adapted for normally holding said dog in its operative position, a combined line attaching and rack elevating member slidably connected to said body, and a spring urging said dog into engagement with said rack.

3. A torpedo lowering hook for wells comprising a body having a bill provided with a socket, a dog pivoted intermediate its ends to said body and having one end portion normally extended over said socket, a sliding locking member mounted in said body and having means normally holding said dog in its operative position, and an actuating member slidable into said body and having means to elevate said locking member in a step by step motion whereby to release said locking member from engagement with said dog.

4. A torpedo lowering hook for wells comprising a body having a bill provided with a socket, a dog pivoted intermediate its ends to said body and having one end portion normally extended over said socket, a sliding locking member mounted in said body and having means normally holding said dog in its operative position, an actuating member slidable into said body and having means to elevate the locking member in a step by step motion whereby to release said locking member from engagement with said dog, said actuating member being provided with means whereby the same may be connected to the lowering cable.

5. A torpedo lowering hook comprising a body having a bill provided with a socket, a dog for normally closing said socket, a sliding locking member arranged in said body and having means to release said dog, said sliding locking member being provided with teeth, an actuating member slidably carried by said body and having a pawl to engage said teeth, and spring means urging said dog to its inoperative position.

6. A torpedo lowering hook comprising a body having a bill provided with a socket, a dog for normally closing said socket, a sliding locking member arranged in said body and having means to normally maintain said dog in its operative position, said sliding locking member being provided with teeth, an actuating member slidably carried by said body and having a pawl to engage said teeth, spring means urging said dog to its inoperative position, and a cushioning member mounted on said actuating member.

MYRON MACY KINLEY.