

July 15, 1941.

C. J. HAYNES

2,249,358

FISHING TOOL

Filed Dec. 30, 1939

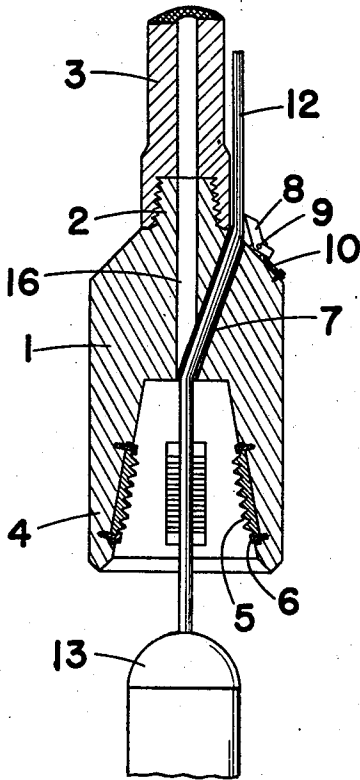


FIG. 1.

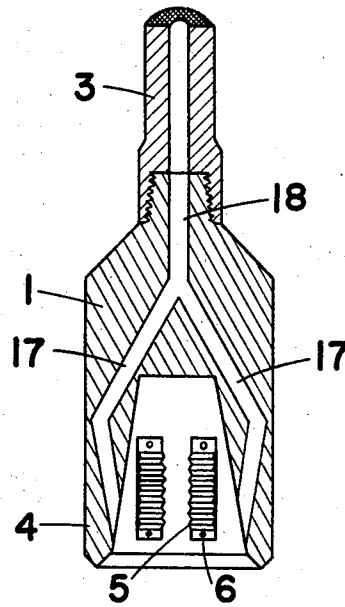


FIG. 3.

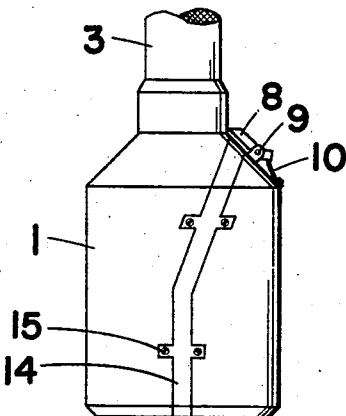


FIG. 2.

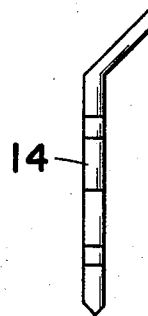


FIG. 4.

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2,249,358

FISHING TOOL

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Application December 30, 1939, Serial No. 311,801

10 Claims. (Cl. 255—34)

The present invention relates to a device for recovering both the cable and the tool when a cable suspended tool becomes lodged in a bore hole.

An object of the present invention is to produce a device which may be positively forced down a bore hole after a stuck cable suspended tool and which will release all of the cable which is free in the well.

Another object of the present invention is to provide a device which may be forced down a bore hole, and while being forced downwardly will direct a stream of liquid on a cable which may be lodged in the hole.

A further object of the present invention is to combine an overshot having milling jaws with a cable knife in such a manner that tension may be applied by the cable to a cable suspended tool stuck in a bore hole to center the tool within the milling jaws before the cable is severed by the cable knife.

Other objects and advantages of the present invention may be seen by reading the following description and by reference to the accompanying drawing in which

Fig. 1 is a cross-sectional view of one modification of the device showing a cable carrying a tool threaded in a slot with which the device is provided;

Fig. 2 is a front elevation depicting either the modification shown by Fig. 1 or that shown by Fig. 3, since the front elevations of both modifications are identical;

Fig. 3 is a cross-sectional view of a different modification of the device; and

Fig. 4 is a side view of the key used to retain a cable in position in the device.

Referring to the drawing in detail and first to Fig. 1, the body 1 of the tool has its upper end provided with a screw threaded pin connection 2 of suitable size to engage the threaded box end of a drill stem 3. The lower portion of the tool body is in the form of a tapering bell 4, the interior of which is provided with milling jaws 5 attached to the tool body by screws 6. Extending laterally from the upper portion of the bell-shaped interior to a point adjacent threaded pin 2 is a slot or groove 7. Adjacent the upper end of groove 7 is a knife member 8 pivoted to the tool body by means of pin 9. A leaf spring 10, attached to the tool body by any suitable means, such as screw 11, causes a downward force to be exerted on the knife edge of member 8.

In Fig. 1 a cable 12 having a tool 13 attached to its lower end is shown positioned in slot 7. Means for retaining the cable in position is shown in Figs. 2 and 4 in that a key 14 is fitted into slot 7 and then retained in position by screws 15. In the modification shown by Fig. 1 the

tool body is provided with a central passage 16 which will allow fluid to flow directly from drill stem 3 into the upper end of the interior bell-shaped opening.

The modification depicted by Fig. 3 differs from that shown in Fig. 1 only in being provided with side fluid passages 17 which connect to an upper central passage 18. Such a modification of fluid passages may sometimes produce a more rigorous washing action on a lodged cable and tool than the modification shown in Fig. 1. It will be understood that the cross-section shown in Fig. 3 is taken along a different angle than that of Fig. 1 in order to more clearly show the branched fluid passages and that the tool is provided with a laterally extending cable groove 7 and a knife 8 as is the modification shown in Fig. 1.

As above explained, both modifications of the invention have the front elevation shown by Fig. 2 which is provided with a key 14 fitting into slot 7. Fig. 4 is a side view of key 14.

The device is used in the following manner: When an electrode or similar cable-suspended tool, for example, a bore hole gun or a coring device, becomes stuck in a bore hole, the cable is threaded through groove 7 of the device while the knife edge of member 8 is held in an upward position to allow the cable to extend vertically upward after it leaves the tool. Key 14 is then placed in position in slot 17 and secured in this position by screws 15. Sections of drill stem are then progressively attached to the device to enable the device to be lowered into the well. In making up the drill stem it is not rotated in the customary manner, but is made up by holding the drill stem stationary with the elevators, and threading the last section to the stationary sections by the aid of the cat line. The drill stem is made up in this manner in order to keep the drill stem in a vertical direction and to keep it from rotating so that the cable will not be twisted.

As the device is lowered into the well, the fluid in the well will flow into the bell-shaped mouth of the overshot and then upwardly through the cable containing slot. This flow of fluid through the device will exert a pressure forcing the knife away from the cable surface as long as the device is moving downwardly.

The weight of the drill stem will ordinarily be sufficient to force the device to a position adjacent the stuck cable suspended tool. However, on some occasions, it may be necessary or desirable to force a stream of fluid down into the bore hole to aid in placing the device. If such is desired, the upper end of the drill stem may be connected to a pump through a flexible hose in the known manner and fluid forced down through the central passage of the drill stem

and then through the device to wash material from around the cable.

If the lowering of the device has been successful, a position will be attained with the electrode, or other stuck tool, within the mouth of the bell adjacent the milling jaws. When this position has been reached, the drill stem may be given a quick upward jerk. This will cause the cable knife to sever the cable and allow the cable to be withdrawn from the bore hole. The drill stem may then be lowered until the milling jaws rest upon the electrode and a thread milled in the electrode in the conventional manner of fishing with a milling tool. After a thread has been milled on the electrode, the device having the electrode attached to it by said threads may be withdrawn from the bore hole.

It will be understood that on some occasions the hole will be so completely bridged that it will be impossible to force the overshot down to the stuck object in order to mill a thread on the object. If the hole is in this condition, the cable may be severed after the device has been forced downward as far as possible and the cable salvaged leaving the lodged tool in the bore hole. However, it will be understood that the weight of the drill stem and the force of the fluid impinging in the bore hole will on most occasions enable both the cable and the stuck tool to be recovered from the bore hole.

Various modifications of the device may be made without departing from the scope of the invention. For example, the slot for the cable may be cut radially into the body of the tool, and a key carrying a cable knife at its upper end fitted into the slot. As another modification milling jaws formed integral with the device may be used instead of removable jaws. It will be obvious that various changes in the shapes and sizes of the parts of the device may also be made. It is therefore not my intention to be limited to the specific modifications of the invention shown, but to claim my invention as broadly as the prior art permits.

I claim:

1. A fishing tool for an object suspended on a cable comprising a body provided with milling jaws adapted to cut a thread on the upper end of said object, a passage in said body to receive the cable, and a knife carried by said body for cutting said cable preliminarily to the threading operation.

2. A fishing tool comprising a body provided with a bell-shaped lower portion, milling jaws attached to the interior of said bell-shaped portion, a passage extending laterally through the body from the upper part of the bell-shaped space to the upper surface of said body, and a knife pivoted to the upper surface of said body adjacent the entrance of said passage and provided with elastic means to force the cutting edge thereof in the direction of said entrance.

3. A device in accordance with claim 2 provided with a central passage extending through said body from its upper surface to the upper part of said bell-shaped space.

4. A fishing tool comprising a body provided with a bell-shaped lower portion, screw threads on the upper portion of said body for attaching said body to the lower end of a string of pipe, a plurality of passages in said body arranged to convey fluid from said string of pipe to a lower

portion of said bell-shaped portion, milling jaws attached to the interior of said bell-shaped portion, a guideway extending laterally through the body from the upper part of the bell-shaped space to the upper surface of said body adapted to receive a cable, a member attached to said body arranged to form the outer wall of said guideway and to be removed for the insertion of a cable in said guideway, a knife mounted on said body adjacent said passage, elastic means forcing the edge of said knife against a cable threaded in the guideway, the knife and elastic means being arranged so that an upward pull on said string of pipe will cause said knife to cut the cable.

5. A fishing tool comprising a body provided with means for attaching it to the lower end of a string of pipe, a downwardly extending guideway in said body for receiving a line, means arranged on said body for severing said line, and a passage in said body arranged to convey a stream of fluid from said string of pipe to a point adjacent the line entering the lower end of said guideway.

6. A device in accordance with claim 5 in which the lower portion of said body is provided with a relatively large upwardly extending cavity in communication with said guideway and said passage.

7. A fishing tool comprising a body provided with means for attaching it to the lower end of an elongated rigid member, an upwardly extending cavity in the lower portion of said body provided with means for milling threads, a guideway for a line in said body in communication with said cavity, and a knife arranged on said body adjacent said guideway for severing said line.

8. A fishing tool comprising a body provided with means for attaching it to the lower end of an elongated rigid member, an upwardly extending cavity in the lower portion of said body having arranged within it means for attaching said body to an object within a bore hole, a guideway for a line in said body in communication with said cavity, and means attached to said body arranged for severing said line.

9. A fishing tool comprising a body provided with means for attaching it to the lower end of a string of pipe, an upwardly extending cavity in the lower portion of said body having arranged within it means for attaching said body to an object within a bore hole, a guideway for a line in said body in communication with said cavity, means arranged on said body for severing said line, and a passage in said body arranged to convey a stream of fluid from said string of pipe to a point adjacent the line entering said guideway.

10. A fishing tool comprising a body provided with means for attaching it to the lower end of a string of pipe, an upwardly extending cavity in the lower portion of said body, a guideway for a line in said body in communication with said cavity, a knife arranged on said body adjacent said guideway for severing said line, and a plurality of passages in said body arranged to convey fluid from said string of pipe to said cavity in a plurality of inwardly and downwardly directed streams.

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