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DEVICE FOR CONNECTING A LINE TO A BAIL

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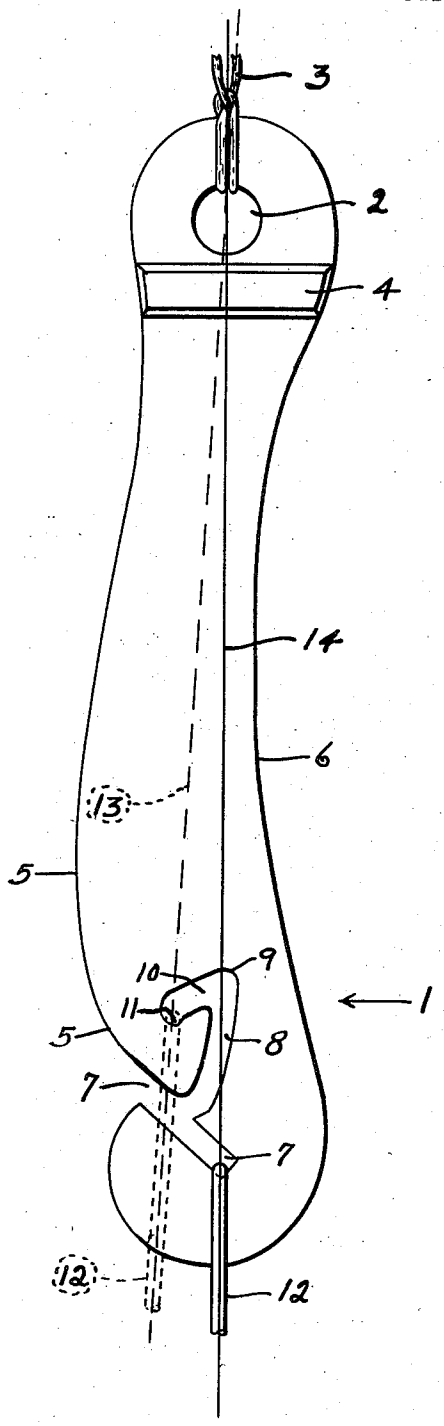


FIG. 1

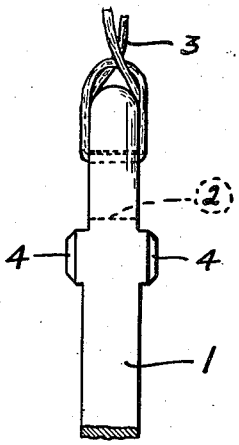


FIG. 2

Orland C. Mays

INVENTOR

BY Loyd J. Miller

ATTORNEY

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DEVICE FOR CONNECTING A LINE TO A BAIL

Orland C. Mays, Oklahoma City, Okla.

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6 Claims. (Cl. 294—83)

My invention relates to apparatus for removably connecting a line to a bail, and is particularly designed to function between a torpedo line and a torpedo for shooting oil and gas wells.

The prime object of the invention is the prevention of inadvertent explosion of the torpedo.

At the present time in shooting oil and gas wells, the torpedo, which consists of an explosive carried within a bailed container, is lowered into the well upon a torpedo line and is located within the producing stratum. A hook is usually employed for attaching the line to the bail so that when the torpedo reaches the bottom of the well it will disconnect from the bail and the line may be withdrawn before the torpedo is exploded.

In utilizing a common hook for this purpose it frequently occurs that the torpedo strikes a bridge or other obstruction in the well and becomes disconnected from the line before the bottom of the well is reached. It then becomes necessary to fish for the torpedo and only with considerable good fortune is it possible to remove the torpedo without causing its explosion. An explosion of the torpedo at a point in the well other than at its bottom invariably causes considerable expense, and in many instances causes complete loss of the well.

My invention is designed for the purpose of preventing the inadvertent separation of the line and the torpedo, as well as for insuring their separation when the torpedo has been placed at the bottom of the well.

Other objects of the invention are to provide a device of the class described which is new, novel, practical and of utility; which is simple in construction and positive in action; and, which will be efficient in accomplishing all the purposes for which it is intended.

With these and other objects in view as will more fully appear hereinbelow, my invention consists in the construction, novel features, and combination of parts hereinafter more fully described, pointed out in the claims hereto appended, and illustrated in the accompanying one-sheet drawing, of which,

Figure 1 is a side elevation of the device suspended from a torpedo line and disclosing a fragment of the torpedo bail hung therein; and,

Fig. 2 is a fragmentary edge elevation of the upper portion of the device.

Like characters of reference designate like parts in all the figures.

It is understood that various changes in the form, proportion, size, shape, weight and other details of construction, within the scope of my invention may be resorted to without departing from the spirit or broad principle of my invention and without sacrificing any of the advantages thereof; and it is also understood that the drawing is to be interpreted as being illustrative and not restrictive.

The inventive idea involved is capable of receiving a variety of mechanical expressions one of which, for the purpose of illustrating the invention, is shown in the accompanying drawing wherein:—

The reference numeral 1 indicates as a whole a single piece body preferably cast out of metal. The upper end of the body is equipped with an eye 2 for receiving a line 3 by which it may be lowered into the well. Oppositely disposed bosses or protrusions 4 are provided upon each side face of the body for preventing the line 3 from being worn by contact with the well walls as the device is being lowered into and withdrawn from the wall.

The central portion 5 of one edge of the body is convexly formed and the opposite edge is made concave as illustrated by the reference numeral 6. At a point directly below the convex portion 5 of the body, the body is provided with a notch 7 which extends from the convex edge downwardly and inwardly to approximately the transverse center of the lower portion thereof. An upwardly and inwardly extending notch 8 communicates with the notch 7 intermediate its ends and the uppermost point of notch 8 is indicated by the reference numeral 9. From the point 9 a notch 10 extends downwardly and toward the convex edge 5 and preferably terminates in a slight depression 11.

In use, a torpedo, not shown, having a suitable bail 12 is connected to the device by inserting the bail into the mouth of the notch 7, thence through the notches 8 and 10 to the depression 11. The body 1 is so shaped and the depression 11 is so located that when the weight of the torpedo is carried by the bail hung in the depression, the body will assume a position in which the dotted line 13 would represent the vertical axes of the line 3, body 1, bail 12 and the torpedo.

If it occurs that during the lowering of the torpedo into the well an obstruction is struck by the torpedo, the bail will be forced out of the depression 11 to the point 9. Since the torpedo is lowered very slowly it is possible for the operator to immediately ascertain when an obstruction has

been encountered due to slack appearing in the line. When this has been done before reaching the desired resting place of the torpedo and is thus discovered the operator will raise the line and consequently the body 1. Raising of the body 1 causes the bail to pass through the notch 8 and into the lower end of the notch 7 and the torpedo may then be withdrawn from the well without danger of its becoming disconnected from the body. The obstruction in the well may then be removed and the bail may be reset in the depression 11 before another attempt is made to lower the torpedo to the bottom of the well.

Before lowering a torpedo into a well the depth of the bottom of the hole is ascertained so that it is possible to distinguish when the torpedo rests upon the bottom instead of upon a bridge above the bottom.

When the torpedo has been properly located upon the bottom of the well, the line is slackened sufficiently to force the bail out of the depression 11 and to the point 9. The body is then raised sufficiently to draw the bail to the bottom of the notch 7. The body is then again lowered and, due to its convex side being heavier than its concave side, it will always tilt toward the convex side and this together with the downward motion of the body will cause the bail to be disconnected from the body through the mouth of the notch 7.

The solid line 14 indicates the vertical axes of the line 3, body 1, bail 12 and the torpedo when the bail is hung in the bottom of the notch 7.

Obviously, the invention is susceptible of embodiment in forms other than that which is illustrated in the accompanying drawing and described herein, and applicable for uses and purposes other than as detailed, and I therefore consider as my own all such modifications and adaptations and other uses of the form of the device herein described as fairly fall within the scope of my invention.

Having thus described my invention, what is claimed and desired to be secured by Letters Patent, is:

1. In well shooting apparatus, a device for removably connecting a torpedo line to the bail of a torpedo, comprising a body attached at its upper end to the line, said body having a first through notch for receiving the bail formed in its lower portion and extending from one edge inwardly and downwardly toward its transverse center, said body having a second notch intercepting the first notch intermediate its ends and extending upwardly from said first notch and away from said edge, said body also having a third through notch intercepting the upper end of the second notch and extending downwardly toward and terminating short of said edge.

2. A device for removably connecting two suspended members, comprising a body adapted to be connected to one of the members for suspension thereby, a through slot extending from one edge of the body inwardly and downwardly and having a closed lower end, a second through slot extending upwardly from the first slot, and a third slot in communication with the second slot and extending transversely thereof.

3. A device for removably connecting two suspended members, comprising a body adapted to be connected to one of the members for suspension thereby, a downwardly extending straight edged slot in the body terminating in a closed end and adapted to receive a part of the other member, a second slot extending upwardly from the first slot intermediate its ends, and a third slot in communication with the second slot and extending transversely thereof, said body having a centrally concave side edge opposite said slots, and a centrally convex heavier side edge opposite thereto.

4. Organization as described in claim 1, in which said body has a centrally concave side edge oppositely disposed with relation to said slots, and a centrally convex heavier side edge on said slot side.

5. Organization as described in claim 2, in which said body has a centrally concave side edge oppositely disposed with relation to said slots, and a centrally convex heavier side edge on said slot side.

6. In well shooting apparatus, a device for removably connecting a torpedo line to the bail of a torpedo, comprising a body attached at its upper end to the line, said body having a first through notch for receiving the bail formed in its lower portion and extending from one edge inwardly and downwardly toward its transverse center, said body having a second notch intercepting the first notch intermediate its ends and extending upwardly from said first notch and away from said edge, said body also having a third through notch intercepting the upper end of the second notch and extending downwardly toward and terminating short of said edge, said third slot adapted to hold said bail, and said body and said third and second slots adapted on the tilting of said body to release said bail into said first slot, and said body and said first slot adapted on the tilting of said body to release said bail and said torpedo at the bottom of the well.

ORLAND C. MAYS.