May 26, 1942. H. H. GREENE 2,284,197

RELEASING SAFETY HOOK

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FIG. 1.

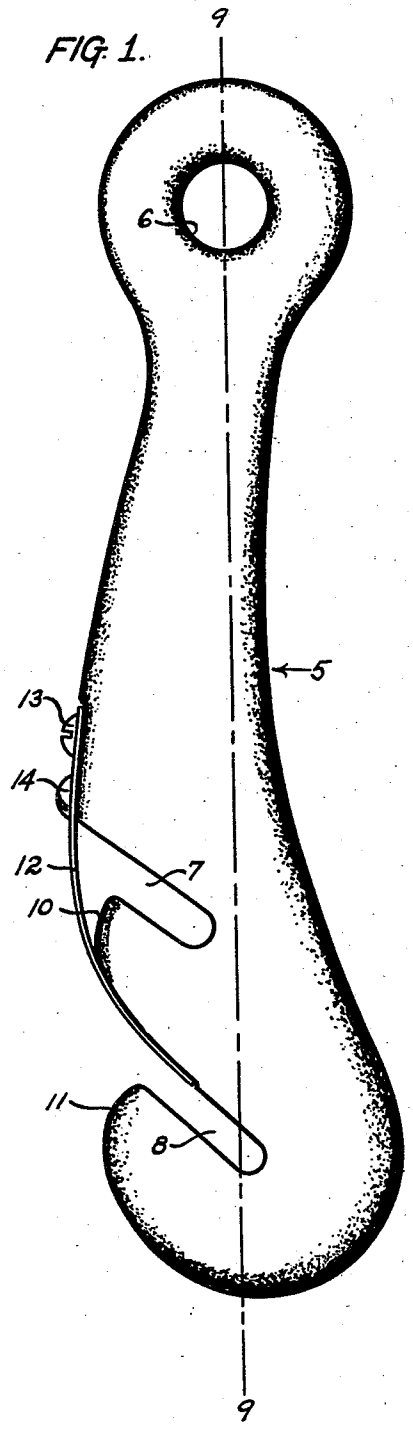
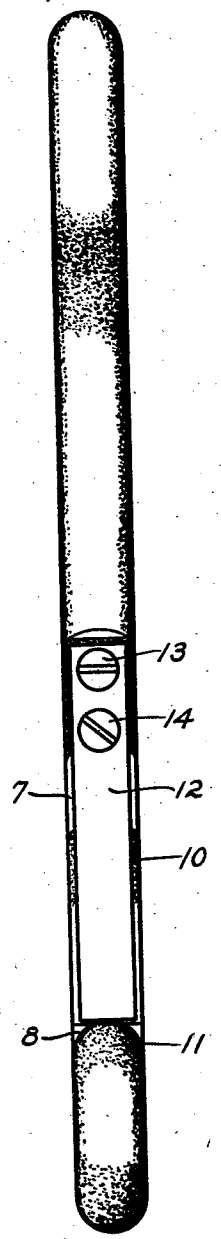


FIG. 2.



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RELEASING SAFETY HOOK

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3 Claims. (Cl. 24—236)

This invention relates to a safety hook for connecting a line to a bail, and is particularly adapted for connecting a line to a torpedo or nitro-glycerine shot for lowering the shot into an underground well for "shooting" the well.

The chief object of the invention is to provide a hook of this class which is so constructed that it practically eliminates the possibility of the shot becoming disconnected from the line while the shot or string of shots is being lowered into the well, yet which affords release of the shot or string of shots from the hook at the desired time by a simple manipulation of the line or cable to which the hook is attached. The prevention of the shot from becoming disconnected from the hook during the lowering operation naturally reduces the possibility of premature shot explosion, with possible consequent injury to the working crew, to the equipment, and to the well.

The details in the construction of a preferred form of the invention, together with other objects attending its production, will be better understood from the following description when read in connection with the accompanying drawing, which is chosen for illustrative purposes only, and in which

Figure 1 is a side elevation of the invention; and

Fig. 2 is a front or edge elevation thereof.

Referring to the drawing it will be seen that the hook includes a one piece body 5, preferably cast out of a suitable metal. At its upper end the body is provided with an eyelet 6 which facilitates attachment of a line or cable thereto. The body 5 is preferably of concavo-convex form, the convex edge being provided with a pair of spaced substantially parallel slots 7 and 8. The normal or unloaded gravitational axis of the body 5 is indicated by the broken line 9—9, and it will be seen that the slots 7 and 8 both slope in a downwardly convergent direction with relation to this axis, the extreme lower end of the slot 8 being in alignment with said axis. It will also be noted that the lower side wall of each notch is considerably shorter in length than its respective upper side wall. This is accomplished by rounding the edges of the lower side walls, as indicated by the numerals 10 and 11 respectively.

The bottom or lower end of the slot 7 lies outside the gravitational axis of the hook body 5, and toward the convex edge of the body, and the entire mouth of this slot 7 is normally closed by a curved leaf spring guide 12, one end of which is rigidly secured to the edge of the body 5 by means of screws 13 and 14, or by other suitable means. On account of its curved shape and its inherent tension, the other end of this guide 12 extends well into the slot 8 and lies flat and presses against the upper side wall of that slot. The intermediate portion of the guide thus closes the mouth of slot 7.

In operation, the bail of the torpedo or shot is slipped into the mouth of slot 8, the free end of the guide is manually moved away from the side wall of slot 8, and the bail is then moved upward between the guide and side wall, and thence into the bottom of slot 7. The shot is then lowered into the well by means of a cable or shot line (not shown) attached to the eyelet end of the hook.

If, on the way down to the bottom of the well, the shot should meet some obstruction in the well, the hook is relieved of the weight of the shot, and the shot bail simultaneously moves from the bottom of slot 7 toward its mouth to a point substantially between the curved portion 10 and the guide 12. The line operator, recognizing that an obstruction has been struck, lifts up on the line, and the weight of the shot forces the bail to travel downward to the bottom of the slot 8. During this downward travel of the bail, the guide 12 serves to positively prevent the bail from becoming detached from the hook. With the shot bail in slot 8, the shot can be withdrawn from the well, the obstruction drilled out or removed, and the shot again lowered into the well for shooting.

When the shot reaches the point where it is to be exploded, the early steps of the above described operation are repeated by the line operator, but after the shot bail is positioned in slot 8, he again lowers the hook instead of raising it. When the hook is lowered the second time the shot bail moves upward out of slot 8, and the line and hook are then withdrawn from the well, leaving the shot in proper shooting position.

From the above description it will be seen that I have produced a hook which prevents the accidental severing of the connection between the shot and the shot line, yet which is so constructed that the connection may be severed, when desired, simply by a manipulation of the line to which the hook is attached.

While I have described and illustrated only a single embodiment of the invention, I am aware that it may be embodied in other forms, and I

do not wish to be limited except by the prior art and by the scope of the appended claims.

I claim:

1. A safety hook for releasably connecting a bailed object to a suspended line comprising: An elongated flat body adapted to have its upper end connected to the line; a pair of downwardly sloping bail holding slots cut into a side edge of said body, and located one above the other; and resilient means spanning the mouth of the uppermost one of said said slots only, and projecting unattached into the lowermost slot and lying flat along its uppermost wall for positively guiding a bail from the upper slot directy into the lower slot, the guiding means being so positioned as to normally afford free entrance of a bail into or out of said lower slot, and said means being movable to afford bail entrance into the upper slot from the interior of the lower slot only.

2. A releasable safety hook for lowering a bailed torpedo into a well comprising: a body having one of its ends adapted for connection to a line; a pair of spaced bail holding slots in the side edge of said body, one above the other, both slots sloping downward with relation to the longitudinal axis of the body, the lower edge of the upper slot being considerably shorter than its upper edge; and a curved leaf spring type guide having its upper end rigidly secured to the said body, its intermediate portion spanning the mouth of the uppermost slot, and its lower portion normally extending well into the lowermost slot flat along the upper wall thereof, leaving the lowermost slot normally open; said guide being adapted to positively prevent the severance of the connection between the hook and a bail resting in the uppermost slot until after said bail has passed into the lowermost slot.

3. A safety hook for releasably connecting a bailed member to a suspending line comprising: a one piece body having means at its upper end to facilitate its connection to said line, and having a pair of spaced downwardly sloping substantially parallel bail holding slots cut into one of its side edges, one above the other; and a leaf spring type guide having one of its ends secured to said body immediately adjacent the upper end of the uppermost slot, the remaining portion of said guide spanning the mouth of the upper slot and extending along the slotted edge of said body and well into the lower slot flat against its upper wall, said guide adapted to guide a bail passing out of said upper slot directly into said lower slot, while affording free egress of a bail from said lower slot.

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