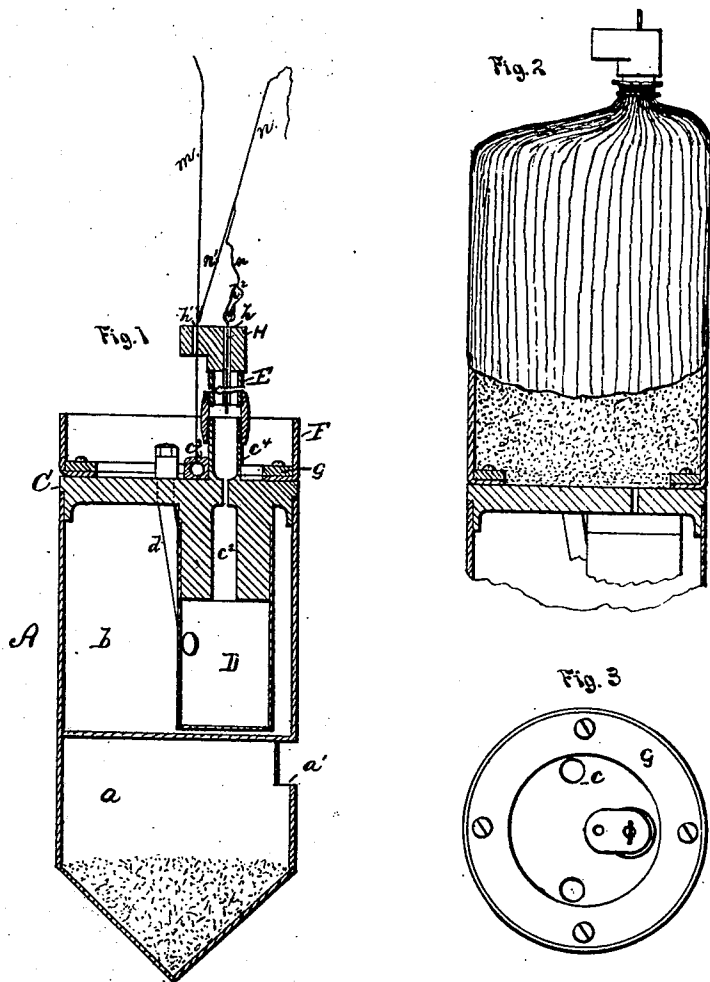


J. F. HERVEY.

Improvement in Torpedoes for Oil- Wells, &c.

No. 129,409.

Patented July 16, 1872



Witnesses.

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attys

129,409.—Torpedo for Oil- Wells.—JOHN F. HERVEY, Marietta, Ohio.

The object of this invention is to provide or combine with a torpedo for oil-wells a convenient means of tamping the charge, and consists in the means referred to in the claim.

Claim.—A torpedo provided with an elastic or flexible cup or sack adapted to retain sand or earth and prevent its descent below it in the well, and permit the said sand or earth at the same time to rest in immediate contact with the sides of the well, substantially as described.

UNITED STATES PATENT OFFICE

JOHN F. HERVEY, OF MARIETTA, OHIO.

IMPROVEMENT IN TORPEDOES FOR OIL-WELLS.

Specification forming part of Letters Patent No. 129,409, dated July 16, 1872.

SPECIFICATION.

To all whom it may concern:

Be it known that I, J. F. HERVEY, of Marietta, in the county of Washington and State of Ohio, have invented a new and useful Improvement in Torpedo for Oil-Wells; and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawing and to the letters of reference marked thereon.

This invention has for its main object the employment of sand or other similar material as a tamping for torpedoes, arranged for explosion in oil-wells; and consists in so constructing the torpedo that the sand or other similar material may be retained above it and in immediate contact with it without permitting the said sand or earth to descend below it, while at the same time the sand or earth bears directly against the sides of the well, as will be fully described hereinafter.

In the drawing, Figure 1 represents a central elevation; Fig. 2, an elevation partially in section; and Fig. 3, a plan view.

To enable others skilled in the art to make and use my invention, I will now proceed to describe fully its construction and operation.

A represents the shell of the torpedo, which is provided with the ballast-chamber *a* and powder-chamber *b*, the top of chamber *b* being closed by the plate C, as shown. The ballast-chamber is provided with a suitable opening, *a'*, for the introduction of the ballast, but access to the powder-chamber is obtained through a small opening, *c*, (Fig. 3,) in the plate, which opening is provided with a screw-plug. The plate C is further provided with an extension below, in which is formed the priming-chamber *c'*, to which extension is attached the chamber D, having the tube *d* extending through the plate C and closed with a screw-plug, as shown. The priming-chamber is provided with a ball or plug, which, when in place, closes its lower end. The plate C is, moreover, provided above with an ear, *c''*, and also with an extension, *c'''*, to which latter is connected the tube E, as shown. F represents a cup constructed of leather or other suitable elastic or flexible material, which cup is secured to the plate C by means of a ring, G, and bolts, as shown. H represents a fuse-cap, which is attached to the upper end of the tube E, as

shown. It is provided with orifices *h* ¹, the former of which leads into the tube E. The latter is designed to permit the passage of the supporting-cord *m*, the lower end of which latter is attached to the ear *c''* in the plate C.

The manner of charging the torpedo is as follows: The tube E is filled with powder, the fuse-cap being removed, and so also is the priming-chamber *c'*. The fuse-cap is then replaced with a water-proof friction-fuse. The chamber *b* is then filled through the opening with powder or other explosive material, the opening being afterward secured by a screw-plug. The chamber D may then be filled with nitro-glycerine (if nitro-glycerine is used through the tube *d*, the opening of which also is afterward secured with a screw-plug. The ballast-chamber is then suitably loaded with ballast through its opening.

The method of firing the torpedo is as follows: A supporting-cord, *m*, is attached at one end to the ear *c''*, and carried up through the orifice *h* ¹ in the fuse-cap H, as shown. By means of this cord the torpedo is lowered to its place and supported in position. *n* represents a fuse-cord, one end of which is fastened into the loop *h* ² of the fuse-cap. This cord is at the same time connected by a weaker cord *n'*, to the arm of the fuse-cap in such manner that when a gentle strain is exerted upon the fuse-cord it will be borne by the cord leading to the arm of the fuse-cap, and not by that portion leading to the wire-loop. When it is desired to explode the charge the fuse-cord *n* is pulled violently, and the weaker cord *n'* giving way, the pull is communicated directly to the loop *h* ², and the movement of the latter ignites the fuse by friction. The powder in the tube being ignited, fire is communicated to the priming-chamber, by which means its plug is violently driven into the nitro-glycerine and the latter exploded, and also, of course, the powder in chamber *b*. If desired, the torpedo may be exploded by omitting the fuse-cord, wire-loop, and friction-fuse, and by substituting instead thereof a percussion-cap, which can be exploded by permitting a weight to slide down the supporting-cord; or a needle could be placed in the fuse-cap and cause the explosion by being struck by a sliding weight in a similar manner. Electricity may be employed by dispensing with the tube E and its

attachments, and by introducing the wire of the battery into the priming-chamber through water-tight plug screwed into the nipple-imbible of tube E in the plate C.

The method of tamping preferably employed with this torpedo is as follows: To the plate attach the cup F, before described, in such manner that its upper edge and sides shall rest against the walls of the well and prevent sand from passing below it. After the apparatus has been lowered into the well and is ready to be exploded, then fill the cup F and the space above the same with sand to the required depth, in proportion to the strength of the charge, but not high enough to come above the fuse-cap H. If desired, instead of cup F, sack of suitable material and dimensions (as shown in drawing) may be attached to the plate L, which sack must be filled with sand and lowered with the torpedo. In this method of tamping the idea is to obtain immediately above the torpedo a solid resisting medium, which shall be in immediate contact with the walls of the well.

I am aware that solid material has been enclosed in the casing of a torpedo, but when thus employed the result obtained by my method is not produced, because the packing does not come into immediate contact with the

sides of the well, and hence, when the explosion takes place, it does not resist properly the force of the explosion, but is blown upward in the well like the shot from a cannon. I am also aware that sand has been employed to tamp charges of powder in dry blasts, but I am not aware that it has been employed before my invention in connection with a torpedo provided with means for preventing its descent below it, while it is permitted to rest in immediate contact with its top and with the walls of the well, as hereinbefore described.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

A torpedo provided with an elastic or flexible cup or sack adapted to retain sand or earth and prevent its descent below it in the well, and permit the said sand or earth at the same time to rest in immediate contact with the sides of the well, substantially as described.

This specification signed and witnessed this 27th day of March, 1872.

J. F. HERVEY.

Witnesses:

C. C. WARNER,
GEORGE IRISH.