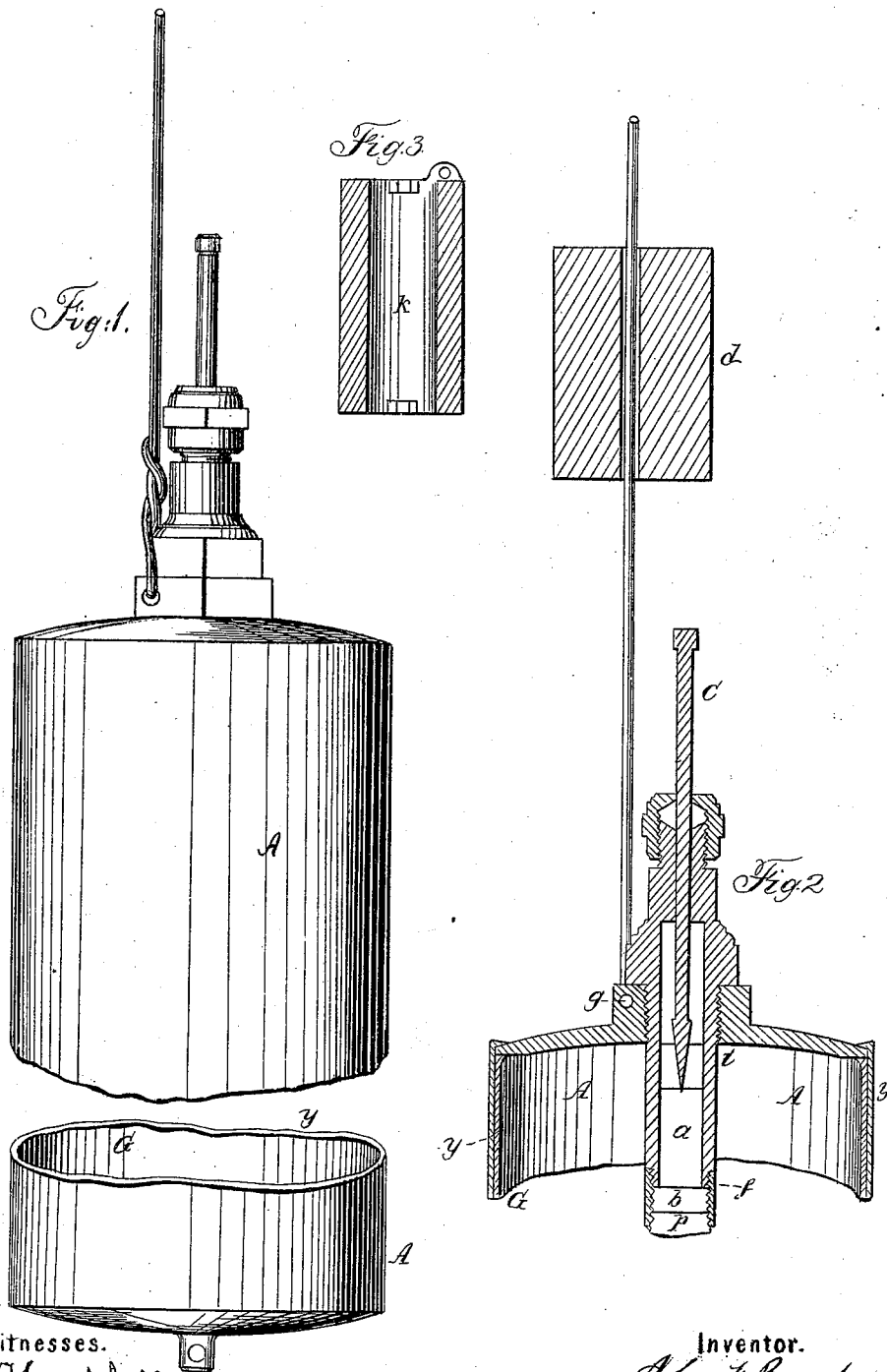


J. F. BOYNTON.

Torpedo.

No. 49,706.

Patented Sept. 5, 1865.



Witnesses.
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JOHN F. BOYNTON, OF SYRACUSE, NEW YORK.

IMPROVEMENT IN TORPEDOES FOR OIL-WELLS.

Specification forming part of Letters Patent No. 49,706, dated September 5, 1865.

To all whom it may concern:

Be it known that I, JOHN F. BOYNTON, of Syracuse, State of New York, have invented a new and useful Improvement in Oil-Well Fulminating Torpedoes; and I hereby declare the following to be a full and exact description of the same, which will be better understood by reference to the drawings, in which—

Figure 1 is an elevation; Fig. 2, a section showing the hammer *d*; Fig. 3, a modification of the hammer.

One important object of my invention is to effect an improvement in the mode of constructing the external case of the torpedo. It is almost impossible to make castings that will not have holes or pores sufficient in size to allow of the permeation of water in sufficient quantity to impair the gunpowder when they are subjected to the pressure due to the depth of water in most of the oil-wells.

I propose to construct the body of the cylinder which is to contain the magazine of cast metal of strength sufficient to serve as a frame to prevent collapse from external pressure, and then to incase this cylinder in a closely-fitting jacket of tin or other sheet metal. This external jacket should be made of greater length than the interior cast cylinder, so that when the heads of the cylinder are applied as shown in the drawings there may be left a rim or chine at each end, in which solder may be applied in such a way as to render the torpedo perfectly water-proof, or the jacket may be made the same length as the cylinder, and the head a little larger than the cylinder and jacket—say the sixteenth of an inch—and a rim of solder passed round on the under surface of the projecting portion of the head, soldering the jacket to the head. The heads may be cast and covered with sheet metal, in like manner as the cylindrical surfaces, or they may be made entirely of sheet metal. In the latter case they should be pressed or otherwise formed into dome shapes, the more effectually to resist the great pressure to which they will be subjected. They should be accurately fitted to the ends of the body of the cylinder, but should not be attached thereto by screws, inasmuch as the pressure for which they are intended will hold them fast together. To prevent all possibility of water being forced in at these points, I propose, after the torpedo is otherwise completed,

to solder the heads to the jackets, thus rendering the torpedo entirely water-proof.

In order to explode the torpedo at the proper time I use certain ingredients which are harmless when kept separate, but which, by chemical action, when brought in contact, produce instantaneous combustion. These are placed in separate chambers, and means are provided to bring them into contact when the explosion is desired. Fig. 2 represents one method of effecting this purpose. In chambers separated by a thin diaphragm, *f*, I place chemicals *a* and *b*, which, when brought into contact, will produce combustion. The upper chamber is to contain a liquid, and when the separating-diaphragm is ruptured by the needle *c* the contact which is to produce the necessary chemical action is at once effected. The needle *c* passes through a stuffing-box, and may be driven downward by means of the hammer *d*, working along the supporting-wire *e*. The point of the needle is made angular, so that when it perforates the diaphragm it shall not plug up the aperture in such a way as to still prevent the intermixture of the chemicals. The liquid in the upper chamber may be sulphurate of carbon, and in the lower chamber phosphorus may be used, or water in the upper chamber and naphtha and potassium or sodium in the lower chamber, and may be held in contact with the diaphragm by means of a plug, *p*. When the combustion takes place the plug is driven downward and the explosion at once results. Instantaneous combustion may also be produced by the chemical action of other ingredients upon each other, but the principle would be the same. After filling the magazine with powder, dry chemicals, instead of being held fast against the liquid-chamber by the plug *p*, may be spread over the powder, so that when the diaphragm is ruptured the liquid chemicals may fall upon those which are dry, and thus produce the desired combustion.

In order to prevent any inequality of pressure on the opposite sides of the diaphragm *f*, I construct a small aperture, *i*, which may be closed with wax when the torpedo is being moved from place to place. This wax will yield to pressure before the diaphragm will be ruptured.

To operate this oil-well-needle fulminator the

powder or gun-cotton or other explosive material should be first placed in the magazine through the aperture left in one of the heads. That aperture is then closed by the plug containing the liquid-chamber *a*, which plug is afterward screwed fast, as shown in the drawings. By means of a drop-tube the acid or other liquid may be inserted into the liquid-chamber. The needle may then be inserted and the cover of the stuffing-box carefully screwed down. The torpedo, which is suspended by a wire, *e*, attached to the torpedo at some suitable point, *g*, may then be lowered into the well. When all is ready for the explosion the hammer *d*, which has been retained at the top of the well, is allowed to fall, guided by the wire *e*, until it strikes the needle *c*, forcing it through the diaphragm *f*. Should the hammer fail to drive the needle through the diaphragm sufficiently for the purpose intended, it may be raised again by means of a small wire or cord attached to the hammer by means of an eye, as shown in Fig. 3, and a second blow given.

On the lower head of the magazine is seen a small projection or boss having an aperture, by means of which a weight may be suspended, when necessary, to sink the torpedo in places where there is an upward current of water in the well.

I am aware that torpedoes in oil-wells have been exploded by means of a hammer guided by a wire in the manner above proposed; but the explosion in those cases was produced by percussion requiring a quick blow. The resistance of the water to the descent of the hammer is so great as often to prevent the velocity from being sufficient to cause explosion, whereas mere pressure will move my needle sufficient to produce the effect desired.

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

1. In torpedoes for oil-wells and other like uses, the construction of the body of the cylinder of cast metal inclosed in a jacket of sheet metal, substantially as and for the purpose described.

2. In a torpedo constructed as above proposed, retaining the heads in place by means of a jacket inclosing the cylinder and soldered to the head of the cylinder, as described.

3. The closing of a torpedo-magazine with a diaphragmed chambered plug, substantially as described.

4. For the exploding of a torpedo, the combined use of stuffing-box and needle with the diaphragmed chambered plug, substantially as described.

5. In a torpedo-exploder, the use of a hammer, *k*, so constructed and operated that the blow, if insufficient, may be repeated without moving the torpedo itself by means of contrivances substantially as set forth.

6. In a torpedo-exploder, the use of an aperture to preserve the uniformity of pressure on both sides of the diaphragm *f*, substantially as described.

7. In a torpedo-exploder, the use of a suitable substance spread upon the powder in the magazine beneath the liquid-chamber, and in such a position that the puncturing of the liquid-chamber shall cause the explosion, substantially as described.

JOHN F. BOYNTON.

Witnesses:

JOHN WHITE,
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