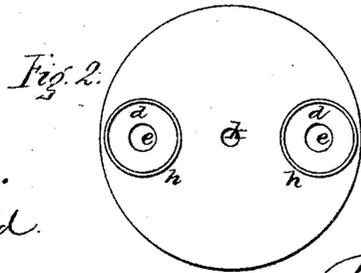
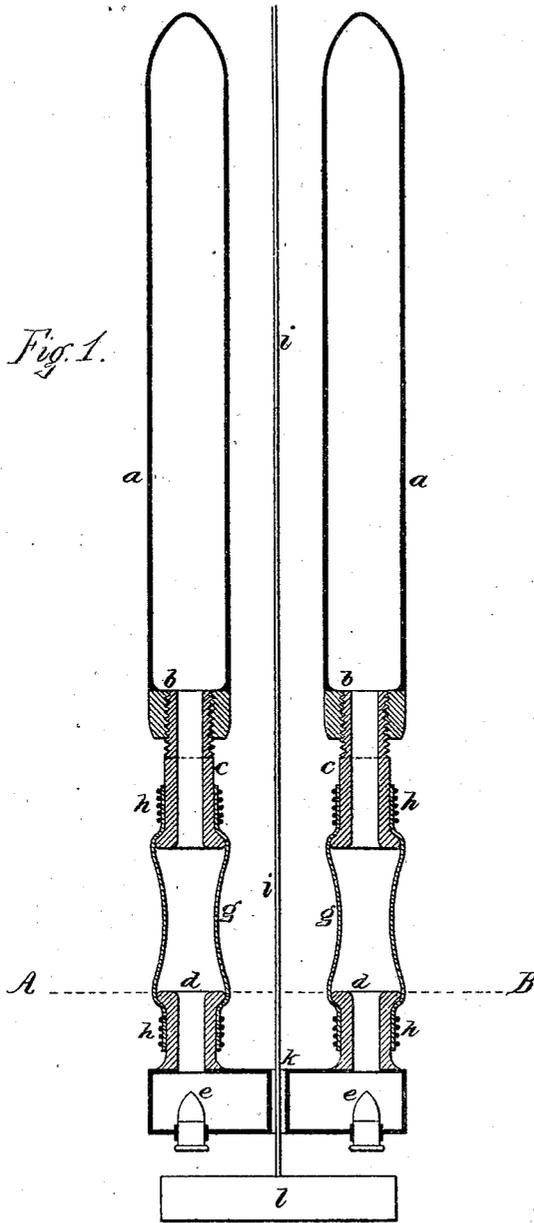


JULIUS C. DICKEY.

Improvement in Torpedoes for Oil Wells.

No. 120,574.

Patented Nov. 7, 1871.



Witnesses.
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G. S. Underwood.

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UNITED STATES PATENT OFFICE.

JULIUS C. DICKEY, OF TITUSVILLE, PENNSYLVANIA.

IMPROVEMENT IN TORPEDOES FOR OIL-WELLS.

Specification forming part of Letters Patent No. 120,574, dated November 7, 1871.

To all whom it may concern:

Be it known that I, JULIUS C. DICKEY, of Titusville, in the county of Crawford and State of Pennsylvania, have invented certain Improvements in Torpedoes for Increasing the Production by Enlarging the Diameter of Oil-Wells.

The nature of my invention consists in making a torpedo that will expand to the full size of the well, so as to bring the explosive in close contact with the rock at the sides of the well so as to shatter the rock and enlarge the diameter of the well more effectually than can be done by the use of any other torpedo.

Figure 1 is a longitudinal cross-section, and Fig. 2 is a cross-section on line A B.

The tubes *a*, which contain the powder or other explosive, I usually make of tin, the female screw *b*, through which the powder is put into the tube, which is riveted or soldered into the tube, as well as the hollow male screw *c*, being made of brass or iron. I make the tube *a* round or half-round, to conform to the sides of the well. The cells *d*, which form the base of the torpedo, and into which the cartridges *e* are soldered, I also make of brass or iron, and connect them with the male screw *c* by a flexible rubber hose, *g*, or other flexible material, which hose *g* is secured to the cells *d* and male screws *c* by winding a wire, *h*, around the same, or in any other suitable manner. I also connect the cells *d* with the male screws *c* with a metal hinge or hinges in connection with the hose *g*, which metal hinge may be located inside or outside the hose *g*. I make the base of the torpedo, below the cells *d* and below line A B, from two to twelve inches in length. I secure the tubes *a* together by any mechanism by which they can be made to expand to the full size of the well, so as to bring the explosive in close contact with the rock at the sides of the well where it is required. When the torpedo is let down into the cavity in the well, made by blasting, the tubes *a* fall back into this cavity or recess so as to bring the explosive in contact with the rock, five, ten, or more feet from the sides of the well. I connect the cells *d* together, so that if one cartridge explodes an explosion

will take place in both of the tubes *a*. I also make a chamber below, and connecting with the cells *d*, which is filled with powder, and into which the cartridges project.

I suspend the torpedo in the well by a wire secured to the base of the same, or by a wire, *i*, which passes through the hole *k* of the base, and connected to a weight, *l*. This weight *l* is brought up against the cartridge *e* by the wire *i* to produce an explosion. I also explode the torpedo by electricity, in which case I suspend the torpedo in the well by the electrical wire or otherwise, and pass the electrical wire into the cells *d* or directly into the tubes *a*.

By using a torpedo, in an oil-well, constructed in the manner set forth, I am able to bring the explosive in close contact with the rock at the sides of the well, so that no fluid tamping is required; and when the sides of the well are shattered, so as to make a recess into which the tubes *a* can project, I secure a solid rock tamping for the torpedo from six to ten hundred feet in thickness, or nearly the whole depth of the well.

By the use of torpedoes, in oil-wells, of this construction, when wells are put down near to each other I am able to blast out the oil-bearing sand-rock between two or more wells, so that two or more wells can be pumped by the tubing in one well, the wells being connected by removing the sand-rock between them.

The most prominent feature of my invention consists in making a torpedo of any metallic material that will expand to the full size of the well, so as to enlarge the diameter of the well to a greater extent and with greater facility than can be done with torpedoes of any other construction.

I claim as my invention—

In a torpedo, the combination of the tubes *a*, flexible couplings *g*, and base *k*, substantially as and for the purpose set forth.

JULIUS C. DICKEY.

Witnesses:

JOEL N. ANGIER,
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