R. BOEKLEN.

Mode of Exploding Torpedoes in Wells.

No. 62,926. Patented March 19, 1867.

Fig. 1.

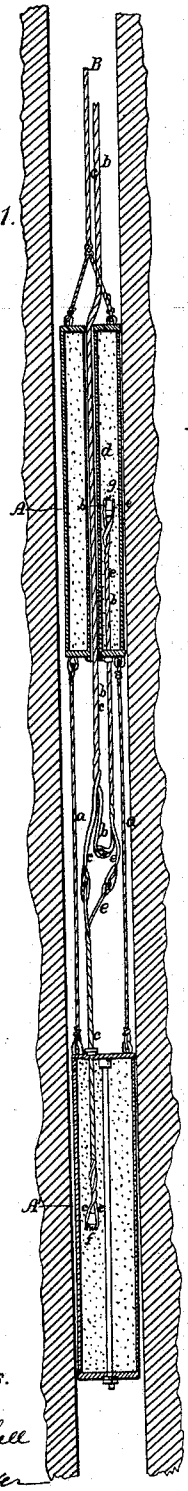


Fig. 3.

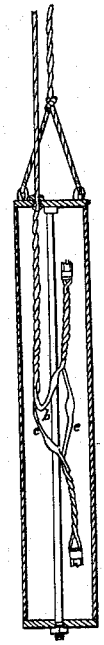


Fig. 2.

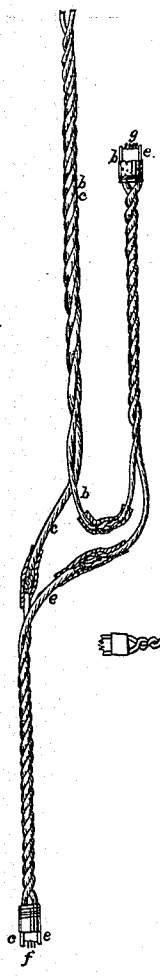
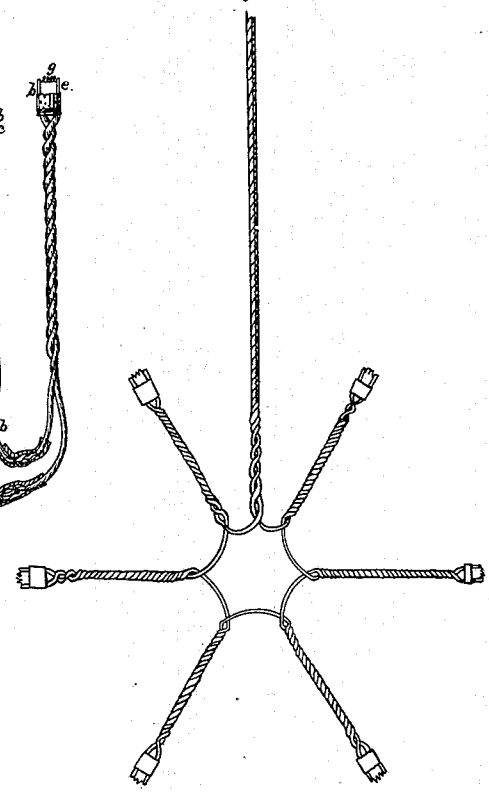


Fig. 4.



Witnesses.

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UNITED STATES PATENT OFFICE.

R. BOEKLEN, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN EXPLODING TORPEDOES IN OIL-WELLS.

Specification forming part of Letters Patent No. **62,926**, dated March 19, 1867.

To all whom it may concern:

Be it known that I, R. BOEKLEN, of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Mode of Exploding Torpedoes in Wells; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a vertical section showing two torpedoes arranged in a well to be exploded by electricity.

Figure 2 is an enlarged view of the battery wires and electrical lighters for exploding two torpedoes at the same time.

Figure 3 is a view in red of one torpedo having the electrical lighters arranged at two points in it.

Figure 4 is a view in red showing a mode of arranging the electrical lighters around a center so as to ignite powder at six different points at the same time.

Similar letters of reference indicate corresponding parts in the several figures.

This invention relates to an improved mode of exploding torpedoes in oil wells, for the purpose of enlarging the chambers and opening the crevices at and near the oil veins, and thus to promote the flow of oil. It consists in the employment of electrical lighters, in conjunction with one or more torpedoes, in such manner that the explosive material can be ignited at different points at one and the same time, thus effecting a rapid burning of said material and obtaining the greatest benefit from the charge or charges, as will be hereinafter described.

To enable others skilled in the art to understand my invention, I will describe its construction and operation.

In the accompanying drawings, Fig. 1, A A′ represent two torpedoes, which may be constructed in any suitable manner and made of any suitable capacity. These torpedoes are connected together by ropes or chains, *a a*, at proper distances apart, and the upper torpedo A is suspended by means of a rope, B, leading down from the top of the well. If desirable, more than two of the torpedoes may be connected together, one below the other, as described. Two wires, *b c*, which are properly insulated, lead down into the well, and are passed through a tube, *d*, of the upper torpedo A. The wire *b* is carried up through the lower end of the torpedo A, and the wire *c* is carried down into the torpedo A′. These two wires are connected at their ends to a wire, *e*, by means of fine platina wire, which will so interrupt the current of electricity as to become highly heated and ignite the powder or explosive material in the torpedoes. A clear illustration of the arrangement of these wires or conductors of electricity is shown in Fig. 2, in which the platina coils *f g*, which connect the ends of the wires together, are seen. In Fig. 3 I have shown a mode of igniting the explosive material at two points in one torpedo. This is done by an arrangement of the wires similar to that shown in Figs. 1 and 2, both ends of the wires terminating in the same torpedo, so that the explosive material will be ignited near both ends of the torpedo at the same time, thus causing a more rapid ignition of said material than would take place if the powder were ignited at only one point. The invention is not confined to two electrical lighters in one torpedo, as more than two may be adopted as circumstances require; and this may be the case if several torpedoes are arranged one below the other and connected together by ropes or chains. It has been found that the platina coils, terminating the ends of the wires in the torpedoes, will become heated simultaneously, without regard to the varying lengths of the wires; but if it is desired to have the wires of the same length, where one wire extends some distance below the other, the wire of the upper lighter may be coiled around the main wire.

By the employment of electricity, as above described, for igniting powder at different points in one torpedo or in many torpedoes, instead of employing hammers, as hitherto, danger from spontaneous explosion is avoided and less liability of failure is secured.

The advantage of exploding two or more torpedoes simultaneously instead of sucessively, is apparent. First, there is thereby secured greater certainty of striking the spot in the well whence the oil is obtained, and but

one operation needed of preparing and cleaning the well before and after said explosion. In the case of successive explosions it would be necessary to prepare and clean the well before and after each one, thereby causing great additional expense. Secondly, by applying and exploding more than one torpedo at the same time in the well, and one being on top of another, the force of the lower one is thereby prevented from being spent toward the opening of the well, which opening should be left open in order to prevent a dislocation of the upper part of the well and its driving pipe. Finally, by applying and exploding several torpedoes at the same time, some of which are more powerfully charged than others, a blow of a varying instead of a uniform pressure is thereby obtained; consequently a more thorough dislocation of the parts takes place and greater certainty secured of making way for the oil in the well.

What I claim as my invention, and desire to secure by Letters Patent, is—

The application of two or more torpedoes in an oil well, the same being connected together and exploded simultaneously by one continuous electric current, substantially as and for the purposes herein described.

R. BOEKLEN.

Witnesses:
THOMAS DONOGHY,
OTTO HAARHAUS.