E. E. SWETT.

Torpedo for Oil-Wells.

No. 196,999. Patented Nov. 13, 1877.

Fig. 1.

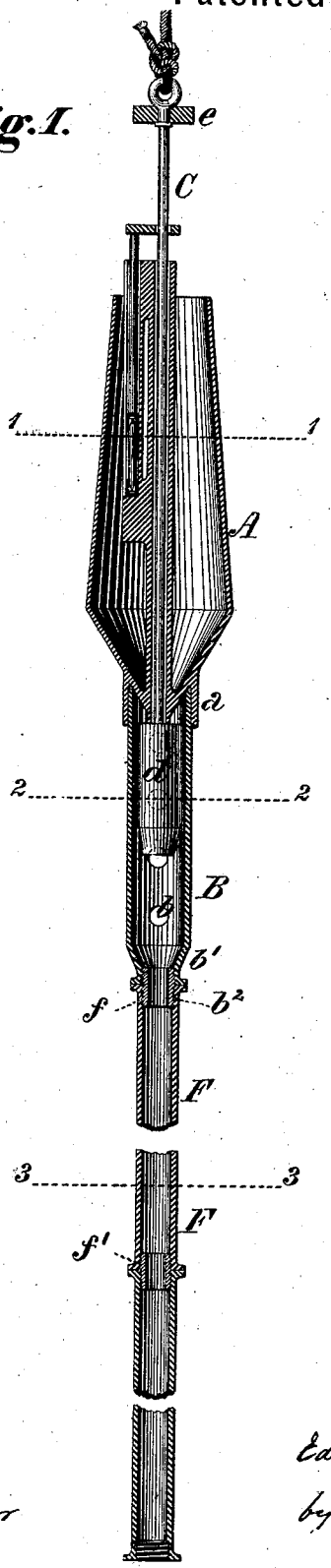

Fig. 3.

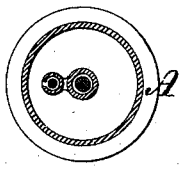

Fig. 2.

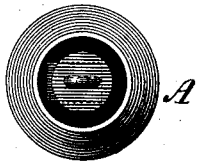

Fig. 4.

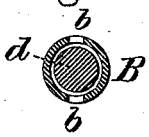

Fig. 5.

Witnesses.

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UNITED STATES PATENT OFFICE.

EDWARD E. SWETT, OF KNOX, ASSIGNOR TO THE PRODUCERS' TORPEDO COMPANY, OF FRANKLIN, PENNSYLVANIA.

IMPROVEMENT IN TORPEDOES FOR OIL-WELLS.

Specification forming part of Letters Patent No. **196,999**, dated November 13, 1877; application filed October 10, 1877.

To all whom it may concern:

Be it known that I, EDWARD E. SWETT, of Knox, in the county of Clarion and State of Pennsylvania, have invented certain new and useful Improvements in Oil-Well Torpedoes, of which improvements the following is a specification, reference being had to the accompanying drawings, forming part thereof.

My present invention consists of improvements upon the oil-well torpedo for which Letters Patent of the United States No. 179,077 were granted to me, under date of June 20, 1876; and it is their object to insure freedom from obstructions to, and greater certainty in, the action of the firing apparatus, and to facilitate the adjustment and support of the torpedo in the well at the point where it is desired to ex-explode it.

To these ends my invention consists, first, in combining with the shell containing the charge a perforated sheath, attached to or forming an extension of the lower end of the shell, to incase the weight; and, second, in combining with the shell a strut made in lengths, with connections or couplings between the lengths, so that the strut can be made longer or shorter to exactly conform to the depth of the well below the point at which it is desired to explode the torpedo, these improved devices being substituted for the open wire loop described in said Letters Patent No. 179,077.

The accompanying drawings represent my said improvements applied to a shell, A, such as described and shown in the said Letters Patent No. 179,077—

Figure 1 being a vertical longitudinal central section through the shell sheath and strut; Fig. 2, a plan or top view of the shell; Fig. 3, a horizontal section at the line 1 1 of Fig. 1; Fig. 4, a similar section through the sheath and weight at the line 2 2 of Fig. 1; and Fig. 5, a similar section through the strut at the line 3 3 of Fig. 1.

The wire-loop rest described in my aforesaid Patent No. 179,077 I have found susceptible of improvement, in that it does not support and protect the weight and rod properly while the torpedo is being handled, but leaves them liable to derangement and torsion from accidental shocks or blows before the shell is loaded and located in the well, and, moreover, after the shell is loaded, leaves the weight *d* liable to be jammed or arrested by any accidental obstruction encountered in lowering and adjusting the torpedo; and, also, in that it is not practicable with the desirable facility to make the loops of the proper lengths to suit the varying depths at which the torpedoes are to be exploded, nor does the loop afford the desirable facility of adapting its depth, in the first instance, to the ascertained measurements of the well in which it is to be applied. Accordingly, instead of leaving the weight *d* to fall between the two sides of this open loop, I attach to the shell A a sheath or case, B, either permanently or, as in the instance shown, by a slip-joint between the outside of the sheath and the inside of the depending rim *a* on the shell; and, in order to prevent the air which would otherwise be confined in this sheath from cushioning the weight and lessening the force of the blow upon the cap, I perforate the sheath, as shown at *b b*, and thus afford the weight *d* a sheltered and unobstructed space within the sheath, through which it may fall with the proper effect upon the cap, the depth and diameter of the sheath being such as to afford a free course to the weight throughout the full range of its vertical traverse with the raising and dropping of the weighted head *e*.

The shell and the firing apparatus, in other repects than those just described, are similar to the details given of the construction and operation of the parts in my said Letters Patent No. 179,077. The rim *a* is soldered or otherwise attached to the bottom of the shell, as shown in Fig. 1, and the upper end of the sheath B fits snugly within it, as also shown in that figure.

I have found, in practice, that the slip-joint affords sufficient hold between these parts; but when the strut is of unusual length, and of such weight as to make a more positive connection desirable, the top of the sheath and the rim *a* may be soldered together, or otherwise securely connected.

To make a strut that can be readily lengthened as the well is deeper or shallower, I contract the bottom of the sheath B below the range of movement of the weight *d*, as at b^1, and in the instance shown, as heretofore in practice, bush the throat of this contracted bottom of the sheath, and tap a female screw, b^2, in the bushing. I then provide a section of tin pipe, F, Fig. 1, having on its upper end a male screw, *f*, fitting the female screw b^2 of the bushing, with which it makes a joint-connection, and at the lower end of this pipe is another female screw, *f'*, and where further extensions of the strut are required similar sections of pipe are provided, with alternate male and female screws, so that the length of the strut can be made to conform exactly to the distance between the bottom of the well, on which the bottom of the strut rests, and the point in the well at which it is desired to explode the torpedo. The strut thus formed, without being so solid as to be converted by the effect of the explosion into any obstruction, is abundantly firm and steady, or possesses sufficient rigidity to sustain the torpedo, and to bear the shock of the weight in exploding the cap.

I do not confine myself to the described construction of the strut-sections, nor to the screw-couplings of the sections, as I contemplate using any other simple attachment between the strut and the sheath, or between the different sections of the strut; but, as is well understood, it is desirable to have the strut susceptible of being jointed and unjointed with facility. I do not propose to use a fixed joint or permanent attachment between the shell and the strut, or between the several sections of the strut.

Having thus described the nature and objects of my improvements, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with the shell of an oil-well torpedo, of a rod working endwise in the shell, a weight carried by the rod, and a sheath or case for the weight attached to the bottom of the shell, substantially as and for the purposes set forth.

2. The combination, with the shell of an oil-well torpedo, of a strut made in coupled sections, adjustable in length, and capable of being fixed together or rigidly connected to afford a firm and steady support of the required length for the torpedo, and bear the shock of the weight in exploding, substantially as set forth.

3. The combination, substantially as hereinbefore set forth, of the shell, the weight carried by a rod working through the shell, the sheath or case attached at its upper end to the shell, and the jointed adjustable strut coupled by its upper section to the lower end of the sheath.

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Witnesses:
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