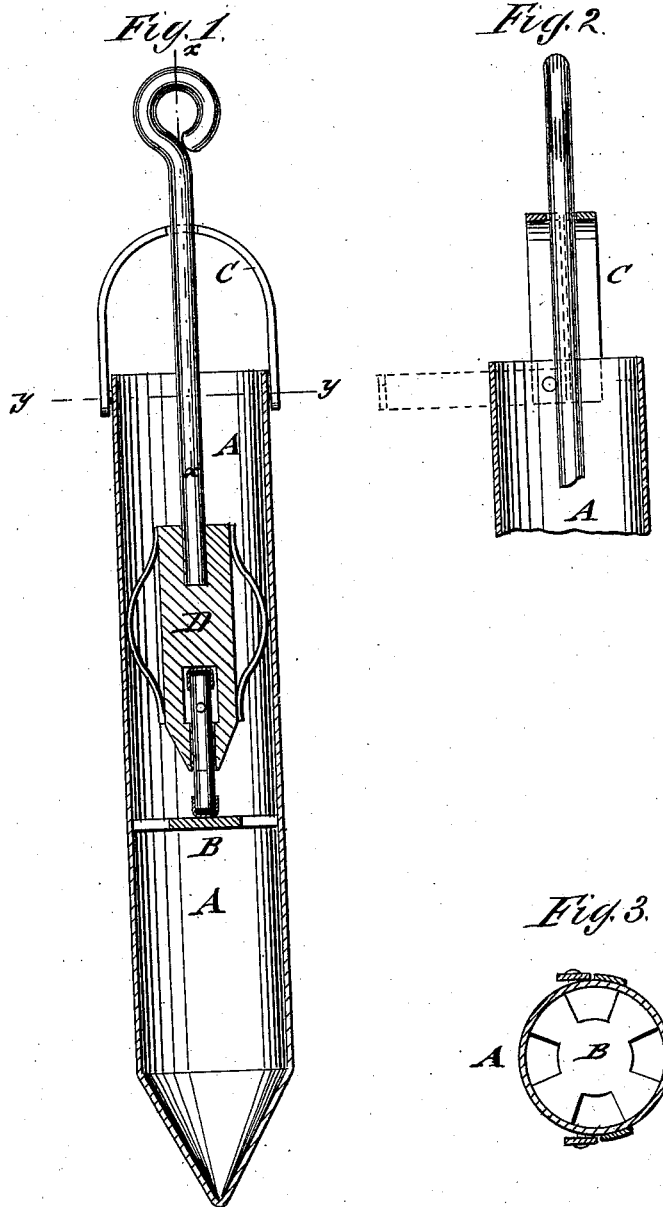


A. M. SMITH.
TORPEDOES FOR OIL-WELLS.

No. 194,621.

Patented Aug. 28, 1877.



WITNESSES:

E. Wall
J. H. Scarborough

INVENTOR:

A. M. Smith

BY

Wm. H. ...

ATTORNEYS.

UNITED STATES PATENT OFFICE.

ARAUNAH M. SMITH, OF EDENBURG, (KNOX P. O.,) PENNSYLVANIA.

IMPROVEMENT IN TORPEDOES FOR OIL-WELLS.

Specification forming part of Letters Patent No. 194,621, dated August 28, 1877; application filed July 30, 1877.

To all whom it may concern:

Be it known that I, ARAUNAH M. SMITH, of Edenburg, (Knox P. O.,) in the county of Clarion and State of Pennsylvania, have invented a new and Improved Torpedo for Artesian Wells, of which the following is a specification:

In the accompanying drawings, Figure 1 represents a vertical central section of my improved torpedo or cartridge for artesian wells. Fig. 2 is a vertical transverse section on line *x x*, Fig. 1; and Fig. 3 a horizontal section of the same on line *y y*, Fig. 1.

Similar letters of reference indicate corresponding parts.

The object of this invention is to improve the torpedoes or cartridges used for shattering the rock in artesian wells, for the purpose of increasing the production of oil or other mineral substances, they being so constructed that they may be handled without danger of explosion until they are at the proper point; and the invention consists of a shell, with a bail made of two parts, one part being stationary, the other working upon side pivots, to swing down for inserting or removing the hammer, with the percussion-caps, without interfering with the charge of nitro-glycerine.

In the drawings, A represents the shell of my improved cartridge or torpedo, for shattering the rock in oil or other artesian wells, and producing an increased flow of oil. The shell A is made of the usual shape, with an anvil, B, in the interior, at suitable height above the point, the anvil being formed of a center piece with radial supports and intermediate recesses for the passage of the nitro-glycerine.

The bail C of the shell is constructed differently from the old style of bails, being made of two parts, of which one part is stationary, while the other swings on side pivots, both parts being recessed at the center of their interior sides to fit around the stem or rod of the dropping hammer iron D.

The hammer-iron is provided at the lower part with a guide part and sliding rod, that carries and explodes the percussion-caps in the usual manner.

By constructing the bail of a fixed and a swinging part, the danger of a premature explosion is almost entirely obviated, for the reason that the hammer-iron and percussion-caps may be kept out of the shell until the

same has been filled with nitro-glycerine, and is ready to be lowered into the well. The hammer is then placed in position in the shell and the bail closed by fastening the swinging part by means of a wire-string, catch, or other device, when all is ready. The torpedo is then suspended from the stem or rod of the hammer by the bail, and discharged, when the torpedo arrives at the bottom of the well, by suddenly slackening the rope or wire by which the torpedo has been lowered to its place, so that the cap is exploded by the sudden dropping of the hammer and striking against the anvil, and thereby the charge of nitro-glycerine exploded. The cap only enters the nitro-glycerine when the hammer is dropped, so as to prevent any premature explosion, until the shell arrives at the bottom of the well.

In case the explosion does not take place for some reason or other, the torpedo has to be raised for examination. This has been the most dangerous part in handling these torpedoes, as the same may be just on the point to explode when raised.

By using my improved torpedo, it is not necessary to take the same out of the well and empty the nitro-glycerine out of the shell, which is an extremely hazardous performance; but it is stopped and made fast in the same position as when it was being filled, the swinging part of the bail is opened, the hammer removed from the shell, the caps examined or replaced with new ones, when the hammer is ready to be replaced, the bail closed, and the torpedo lowered again, to be exploded, when arriving at the bottom, by the sudden dropping of the hammer.

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

As an improvement in the torpedoes or cartridges used for shattering the rock in artesian wells, the combination, with the shell containing the charge, and of the drop-hammer, carrying the percussion-caps, of a bail, made of a stationary and a pivoted part, which are fitted to the stem or rod of the hammer, substantially as and for the purpose set forth.

ARAUNAH M. SMITH.

Witnesses:

JOHN F. QUINN,
LUCIEN SCHRADER.