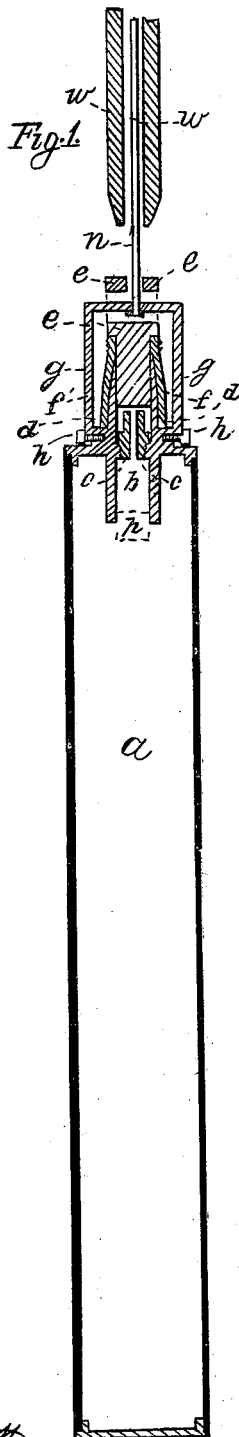


E. A. L. ROBERTS.

Torpedo.

No. 47,458.

Patented Apr. 25, 1865.



Witnesses }  
Guinness & Co.  
Richard B. Buzor

E. A. L. Roberts

# UNITED STATES PATENT OFFICE.

EDWARD A. L. ROBERTS, OF NEW YORK, N. Y.

## IMPROVEMENT IN EXPLODING TORPEDOES IN ARTESIAN WELLS.

Specification forming part of Letters Patent No. 47,458, dated April 25, 1865.

### *To all whom it may concern:*

Be it known that I, EDWARD A. L. ROBERTS, of the city, county, and State of New York, have invented a new and useful improvement in apparatus for exploding gunpowder or other explosive material when submerged in water in Artesian or other similar wells, of which the following is a specification.

It is frequently necessary or desirable, in order to accomplish certain results, to cause an explosion in a well at a given point, which may be anywhere between the top and bottom of the well; and while it is comparatively easy to explode gunpowder contained in a vessel which is to be dropped to the bottom of a well, by the effect of the concussion upon apparatus which may be readily protected from moisture by perfect water-proof casing, it has always been found difficult to explode it in a vessel suspended in the water several hundred feet below the surface, and at any given point above the bottom, for the reasons, first, that the powder is liable to become dampened from exposure to the water about the place where it is connected with the machinery for igniting it; and, second, such machinery being usually connected with the top of the vessel containing the powder, which is usually a flask made of considerable length, in order to hold sufficient powder to create the force required upon the explosion, the powder is very liable to settle so far down in the flask, on account of the motion and jarring that it necessarily undergoes in being placed in position, as to fall beyond the reach of the fire intended to ignite it, both of which difficulties are removed by my invention.

The use of my improvement is also preferable where it is desired to cause the explosion at the bottom of the well, as it insures much greater certainty of explosion than any means now in use.

The following is a full and correct description of my invention, reference being had to the accompanying drawing, making a part of this specification.

Figure 1 represents a sectional elevation of my improved apparatus, and of the means used to secure the powder from moisture, and to cause certainty of explosion at the proper time; but more particularly to describe said apparatus, I will refer to the drawing by letters of reference marked thereon.

Letter *a* represents the flask for containing

the powder, with a thread cut on the inside of the upper end, for the cover to screw into.

*b* is a priming-chamber in the cover of the flask, and consists of a tube about half an inch in diameter, extending down into the interior of the flask from one to two inches; or, if it be desired to ignite the powder first in the center of the flask, it may extend to that point. In the upper part of the priming-chamber the small hollow nipple *c* is securely screwed, for the purpose of receiving a percussion-cap on its upper end. The nipple *c* is surrounded by a guard, *d*, extending above it about one inch, which also serves as a guide to the bolt *e*, and keeps it to its place upon or directly over the nipple. This guard and the priming-chamber may be of one piece with the cover, which is made to screw down into the flask water and air tight. The flask and cover are made of cast-iron, but other metals or substances may be used. The bolt *e* is used to explode the cap. It is composed of iron or other metal, and is made to slide easily in the nipple-guard over and down upon the nipple. *f* is an india-rubber tube drawn tightly over the guard, and extending above it nearly to the head of the bolt *e*. The bolt is then inserted in the guard, and the rubber tube tied tightly at its lower end around the guard, and its upper around the bolt, thus making the connection between the bolt and guard water-tight, and preserving the nipple and cap thereupon from moisture. The head of the bolt *e* is about one inch in length, and a hole is made through it laterally about three-fourths of an inch in length, and wide enough to allow it to play up and down on the strap *g* the length of the hole without friction. *g* is a strap made of hoop-iron or other similar material, and passes over the top of the flask through the hole in the head of the bolt, and is fastened on opposite sides of the cover by the screws *h* and *h'*, or in any other convenient manner. The wire *n* is used to let the apparatus down into the well to the proper depth. It extends through a hole in the center of the upper section of the bolt, and through the strap *g*, directly beneath, to which it is fastened by a nut screwing on the lower end of the wire, or in any other convenient manner. This wire also serves to guide the weight *w* in its descent to the head of the bolt from the top of the well when the apparatus is lowered to the required position. The weight *w* is of oblong shape, composed of lead or other metal, with a

hole running longitudinally through the center sufficiently large to allow it to slide easily down the wire *n*, which runs through it; and it should be of sufficient gravity to drive the bolt *e* down upon the cap with force enough to explode it, from the momentum gained in its descent to the head of the bolt.

In order to use the apparatus, the flask is filled with powder, the priming-chamber is also filled with powder, and the bottom of the chamber closed by a stopper or plug; *p*, inserted sufficiently tight to prevent its falling out in getting the apparatus in position, but not so tight but what the explosion of the powder in the priming-chamber will blow it out, its use being to retain a quantity of powder near the cap, to be ignited upon its explosion. A percussion-cap is then placed on the nipple, the other parts of the apparatus being placed in the position before described, with the lower

end of the bolt *e* in the guard, and upon or slightly above the cap, care being taken not to have the strap *g* so long as to strike the upper section of the head of the bolt and prevent the descent of the bolt to the cap.

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

1. The priming-chamber *b*, in combination with the flask, plug, and nipple, substantially as described.

2. The arrangement of the tube *f*, or its equivalent, composed of india-rubber or other similar material, with the guard *d* and bolt *e*, substantially as described, in combination with the flask *a*.

E. A. L. ROBERTS.

Witnesses:

GUERNSEY SACKETT,  
RICHARD BAIRD.