E. GOMEZ.

MODE OF EXPLODING TORPEDOES.

No. 120,963. Patented Nov. 14, 1871

Fig. 1.

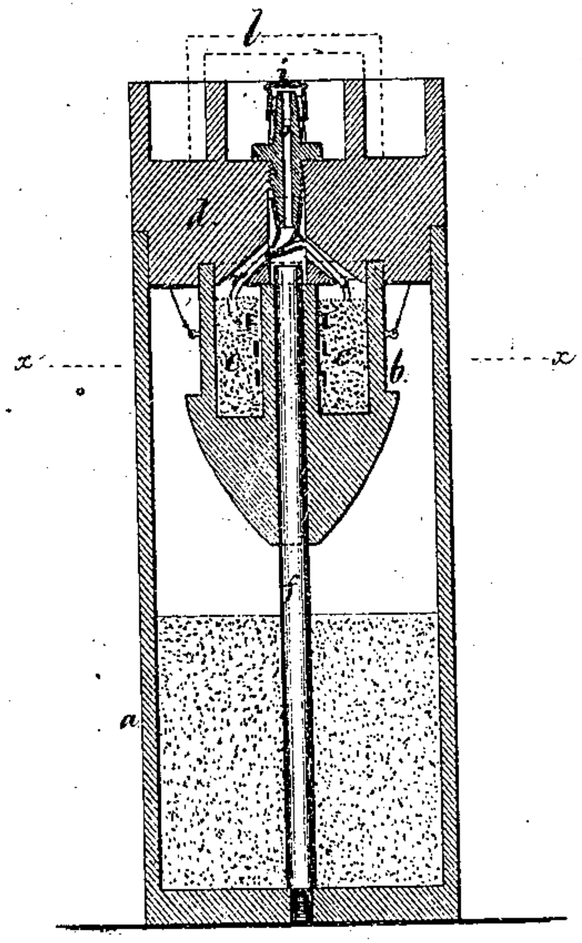


Fig. 3.

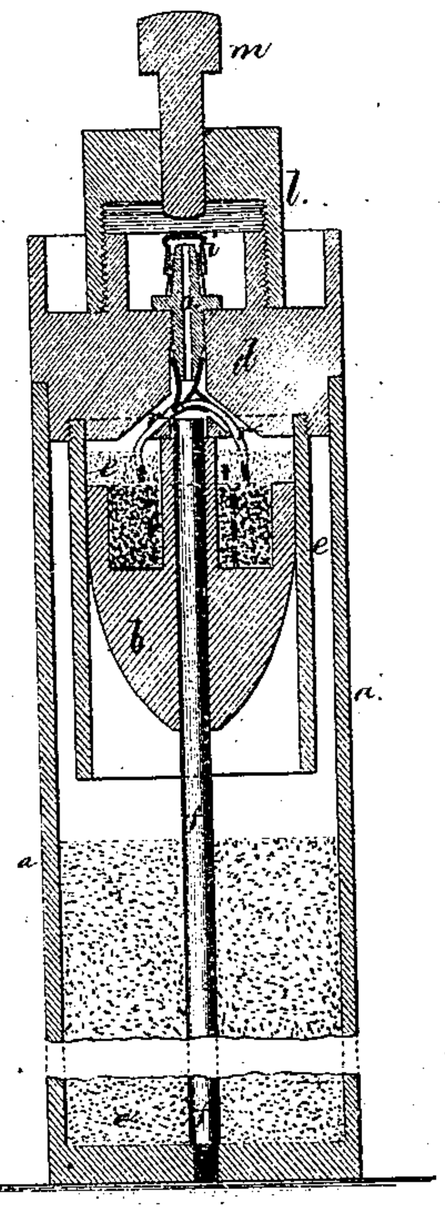
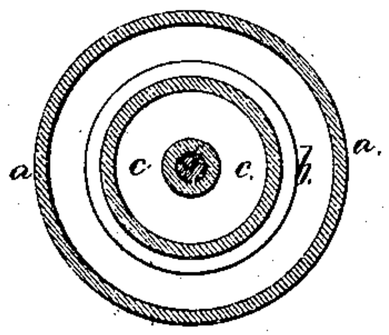


Fig. 2.



Witnesses

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UNITED STATES PATENT OFFICE.

EDWIN GOMEZ, OF NEW YORK, N. Y.

IMPROVEMENT IN MODES OF EXPLODING TORPEDOES.

Specification forming part of Letters Patent No. 120,963, dated November 14, 1871; antedated November 9, 1871.

To all whom it may concern:

Be it known that I, EDWIN GOMEZ, of the city and State of New York, have invented and made an Improvement in Exploding Torpedoes, and the following is declared to be a correct description thereof.

Torpedoes have heretofore been exploded by either a fuse passing from the nipple or exploder down into the powder, or else a chamber to contain explosive material has been employed to communicate the fire to the explosive material of the torpedo. The powder or explosive material settling down in the torpedo and leaving a space in the upper part, has rendered it necessary to resort to some means such as before named for communicating fire from the point of ignition to the powder. In the case, however, of a powder-chamber the explosion of the powder therein frequently injures the upper part of the torpedo so as to allow water to pass into the same and prevent the explosion of the main charge.

My invention consists in an igniting projectile combined with the torpedo, said projectile being fired by the first explosion into or through the main charge, conveying fire to the entire mass of explosive material with suddenness, so as to insure the entire ignition of the same before any water can pass in; thus a perfect explosion is effected regardless of the depth to which the powder may have settled down or the length of the cartridge.

In the drawing, Figure 1 is a vertical section of the torpedo. Fig. 2 is a sectional plan of the igniting projectile at the line *x x*, and Fig. 3 is a section of a modification in said torpedo.

The powder-chamber *a* or case containing the explosive material is of a suitable size and shape and may be made in any usual manner. The igniting projectile *b* is made to contain material that will burn, and said projectile is driven longitudinally of the powder-chamber to ignite the powder or explosive material thereof in its passage through the same. I introduce into the projectile *b* a cavity, *c*, to contain compressed powder or other material that will burn with the flame necessary for said ignition. This cavity may contain the explosive material by means of which the ball is projected, such explosive material also effecting the ignition of the charge. The projectile *b* receives its momentum within the torpedo-case by any suitable means. I have shown in Fig. 1 said projectile as attached by cords or wires to the under side of the cap *d* of the torpedo, so that by the explosion of the material inserted in the chamber *c* the projectile is driven lengthwise of the torpedo upon the central or other guide *f*, breaking said cords or wires and igniting the contents of the case *a*. In Fig. 3 the projectile is shown as within the barrel *e*, and it may be held therein by adhesive material or otherwise so as not to shake out, but so that the explosion in *e* will drive the same lengthwise within the torpedo without breaking the torpedo-case by the explosion in the barrel *e*. The result in either case is the instant explosion of the entire charge in the case *a*, regardless of its length. The barrel *e* may be unscrewed for inserting the projectile *b* from the upper end, so that the same will be fired the same as in breech-loading guns. To fire the powder in *c* or *e* a galvanic battery and wires might be employed, but I prefer a percussion-cap, *i*, upon a nipple, *o*. I make the same water-tight, but allow of the motion necessary in exploding the cap by means of a thin rubber tube or elastic cement around the nipple, between the same and the interior of the sides of the cap, but not at the end of said nipple. Thereby said nipple is made water-tight, but is free to be moved, in exploding the cap, by a hammer or weight. A movable screw-cap, *l*, may be employed over the percussion-cap for protection in transportation, and a pin, *m*, can be inserted through the same to receive the blow and communicate the same to the cap. The flash of the cap will be conveyed to the contents of the cylinder or barrel *e* to better advantage through a quick-firing fuse, *r*, that is attached to the inner end of the nipple or tube *o*, said nipple being of a tapering form to enter the end of the said quick-firing fuse, and the parts being connected by a winding of string around the exterior of such fuse. The tapering end of the nipple or tube may be roughened or have a thread cut to prevent the fuse slipping. The firing-pin *m* may be kept away from the percussion-cap by a spring to lessen risk in transportation, or it may be provided with a spring to cause it to strike the cap when released after being pulled away from the nipple by a cord or rope.

The explosive materials employed may be of any desired character, and the movement of the projectile in contact with detonating material, or

material that will ignite by friction, may be used for communicating fire to the main charge of the torpedo, and with some materials the passage of the ball alone through the same will be sufficient for their ignition. The projectile may contain inflammable or detonating material to be ignited by friction or concussion in passing into the main charge of the torpedo.

I claim as my invention—

1. A torpedo, combined with a ball, to be driven lengthwise of the case by the explosion of powder in a chamber, said ball making an opening through the powder for the fire which follows the same, so that the charge will be ignited, as set forth.

2. The nipple *o* or tube made with a tapering end to enter the folds of the fuse *r*, and to which it is united, as specified.

Signed this 19th day of January, A. D. 1871.

EDWIN GOMEZ.

Witnesses:

HAROLD SERRELL,

GEO. T. PINCKNEY.

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