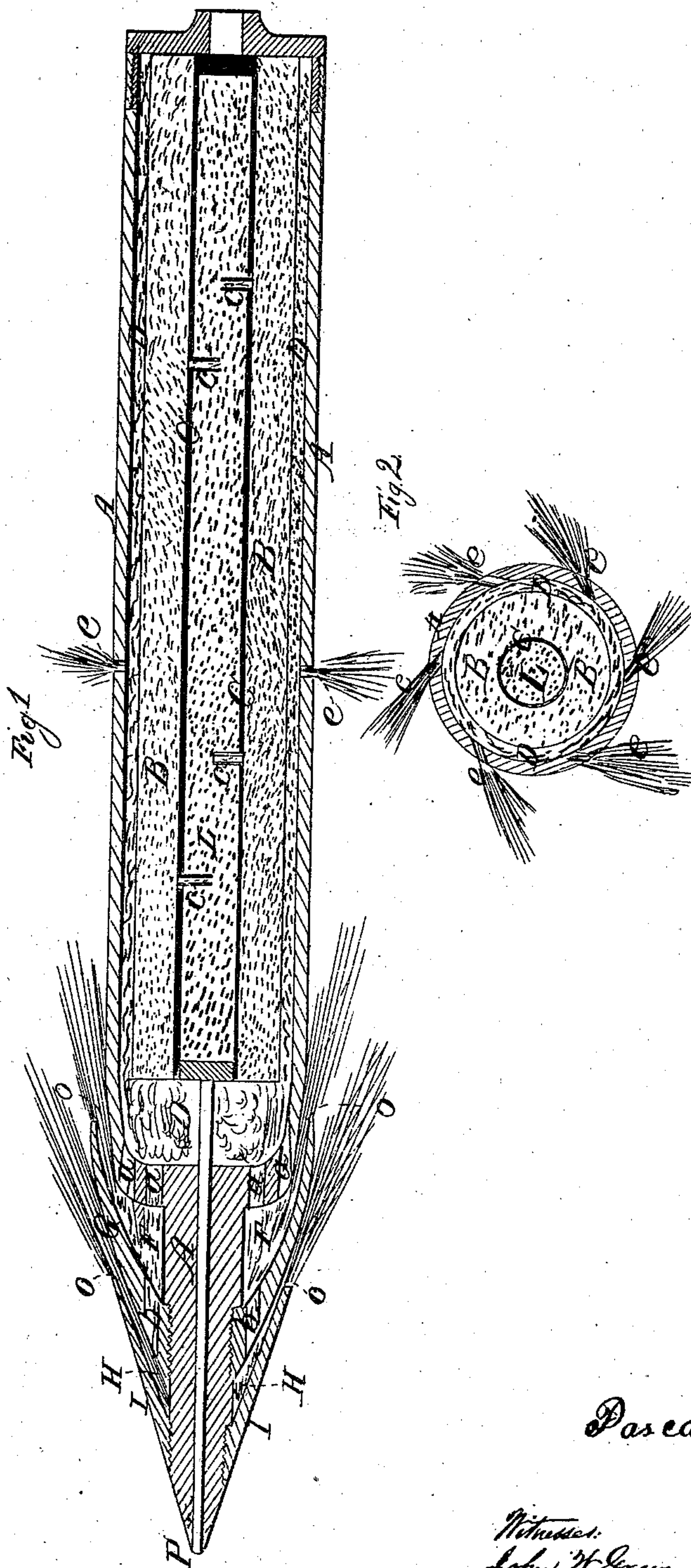


*P. Plant.  
Rocket.*

*No. 37940.*

*Patented Mar 17 1863*



*Pascal Plant*

*Witnessed:  
John H. Green  
John Meigs*



# UNITED STATES PATENT OFFICE.

PASCAL PLANT, OF WASHINGTON, DISTRICT OF COLUMBIA, ASSIGNOR TO HIMSELF AND RUFUS WAPLES, OF SAME PLACE.

## IMPROVEMENT IN WAR-ROCKETS.

Specification forming part of Letters Patent No. 37,940, dated March 17, 1863.

*To all whom it may concern:*

Be it known that I, PASCAL PLANT, of the city of Washington, in the District of Columbia, have invented a new and useful improved rocket-torpedo to be driven and directed through the air or through the water for the purposes of destroying the vessels and the armies of an enemy, removing sand bars, piles, rocks, stationary torpedoes, and similar obstructions from rivers and other bodies of water, defending ships, forts, harbors, &c., and for all other purposes for which rocket-torpedoes have heretofore been designed. The following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 shows a section through or interior of the rocket-torpedo. Fig. 2 shows a cross-section of the same.

My improvement consists in pressing the rocket composition around a cylindrical powder-magazine and conveying the gas through the annular space between the rocket composition and the outer case to the front, where I have conical cap-pieces to give it direction to propel the rocket-torpedo.

To enable others skilled in the art to construct, apply, and use my invention, I will proceed to describe it more fully, referring to the drawings, and to the letters of reference marked thereon.

Within the outer case, A A A, I inclose the rocket composition B B, pressed around the case C C of the powder-magazine L. The case C C is firmly screwed at the ends to the case A A. Between the rocket composition and the case A A A there is a space, D D D, so that when the rocket composition is lighted it burns all around over its whole surface at once, and the burning gas passes through the openings a a a a into the chamber F, which chamber forms the interior of the cup or cap-piece G. A part of the burning gas will also be forced through the holes or openings b b to the chamber H, which forms the interior of the cup or cap-piece I. One or more cap-pieces may be placed in front of these, arranged in the same manner. The burning gas finds its only way of escape from the cups through the circular open spaces o o o o. Through these circular

open spaces it is forced out against the water or the air, (through whichever medium the rocket-torpedo may be passing,) and thus propels the missile. The course of the flame through these open spaces o o o o forms an acute angle with the line of the projectile. Of course, the form of the flame will be that of a funnel or the lower part of a cone. A series of cups or sleeves, like the cap-pieces G and I, may be made to encircle the case A A A, extending its whole length, so as to distribute the propelling-power; or a series of holes may be made all over the case A A A, so inclined as to cause the flame to burn in the direction given by the cap-pieces, to attain the same object. When the rocket composition B B shall have burned through to the case C C, the little tubes c c c c will conduct the flame (by means of the powder with which they are packed) to the powder-magazine L, which it will ignite, thus causing the explosion of the magazine. Should the missile strike any hard substance before the rocket composition shall have been consumed, the punch P will be forced against a primer, and thus ignite the powder-magazine L, effecting the purpose of the invention, as in the other case. To render the explosion the more effective, a larger number of small rocket-torpedoes may be placed inside of the case C C to be lighted and sent in every direction by the explosion of the powder-magazine L. This may be found useful when the missile is directed through the air to be thrown into the army of an enemy.

The cup or cap-piece I forms, with the point of the projectile, a perfect cone, and as it is less in diameter at the base of the cone than the body of the torpedo, and as the burning gas is emitted from its base, displacing the air or water, (as the case may be,) much of the head-resistance is avoided. By making additional cap-pieces of this form, extending farther toward the front point, almost all the head-resistance may be avoided. The cap-pieces are firmly screwed upon the front part of the case A A A.

About midway the length of the case A A A a series of holes, e e e e e e, may be made, to allow gas to escape in the direction indicated by the drawings, for the purpose of giving the rocket-torpedo a rotary motion. This purpose may be accomplished, however, by inserting



pieces into the mouths of the cups G and I, of such form as to give the escaping flame a spiral direction.

Small holes may be made in the rear of the case A A A, to allow a small portion of the gas to escape for the purpose of filling up the vacuum immediately behind, caused by the rapid flight of the projectile.

The rocket-torpedo may be balanced by attaching a chamber to one end of it filled with matter either lighter or heavier than the medium through which the rocket-torpedo is passing.

The rocket-torpedo may be made in the form of a cone, the front point being the apex and the extreme rear the base of the cone.

To prevent the rocket-torpedo from moving forward before the gas of the rocket composition has accumulated its full force as a propelling-power, the vents o o o o may be plugged with sufficient firmness to hold the gas in the chambers F and H until the force becomes so great as to displace the plugs and to act against the air or water, thus propelling the projectile.

I am aware that rockets have been made with

shells or powder-magazines attached; that they have been made to rotate; that they have been held back when first ignited to await the accumulation of the propelling-gas in a manner different from that just described—that is, by means of springs attached to the stand from which the rockets are discharged, all of which I disclaim.

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

1. The pressing of the rocket composition around the case of the powder-magazine, forming a cylinder of less circumference than the interior of the outer case, that the gas may pass through the annular space to the holes in front, and thence pass to the cap-pieces.

2. One or more conical cap-pieces of less diameter than the body of the projectile, to give direction to the gas from the burning composition, constructed and operating substantially as and for the purposes described.

PASCAL PLANT.

Witnesses:

JOHN MEIGS,

J. M. VAN BUSKIRK.