

(Model.)

J. E. GALLAGHER.

EXPLODING AND TAMPING WEIGHT FOR TORPEDOES.

No. 247,036.

Patented Sept. 13, 1881.

Fig. 2.

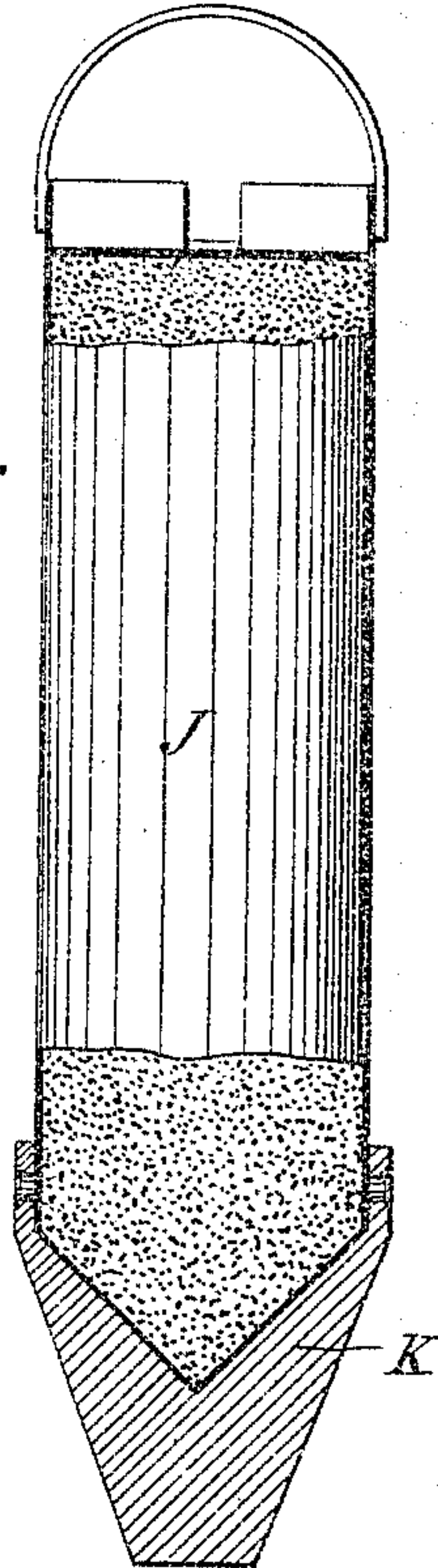


Fig. 3.

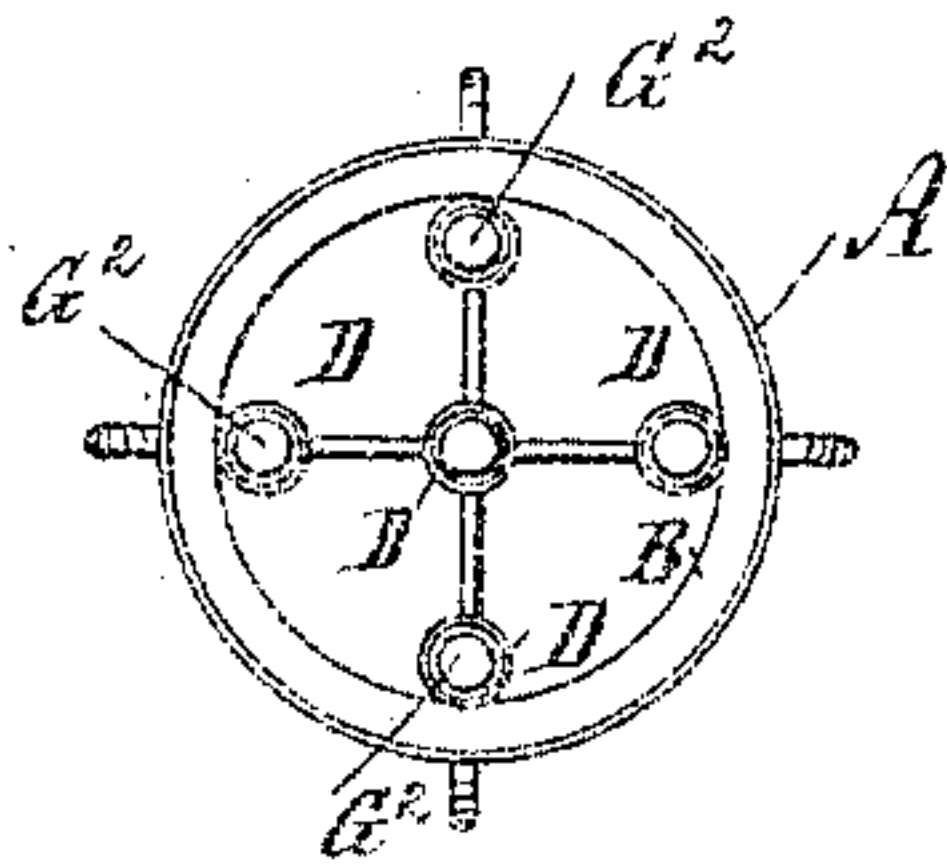


Fig. 4.

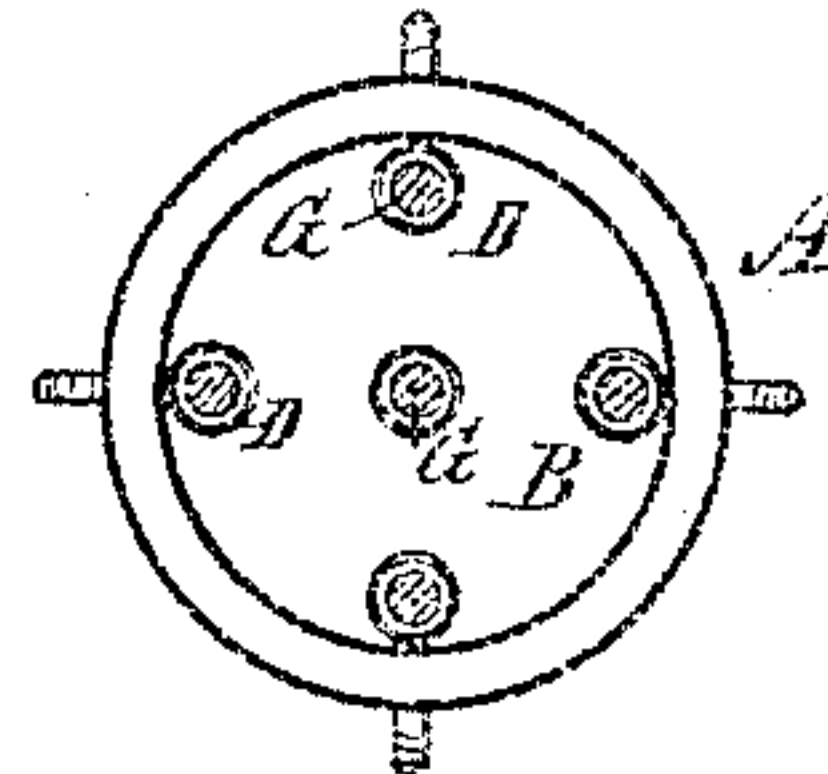
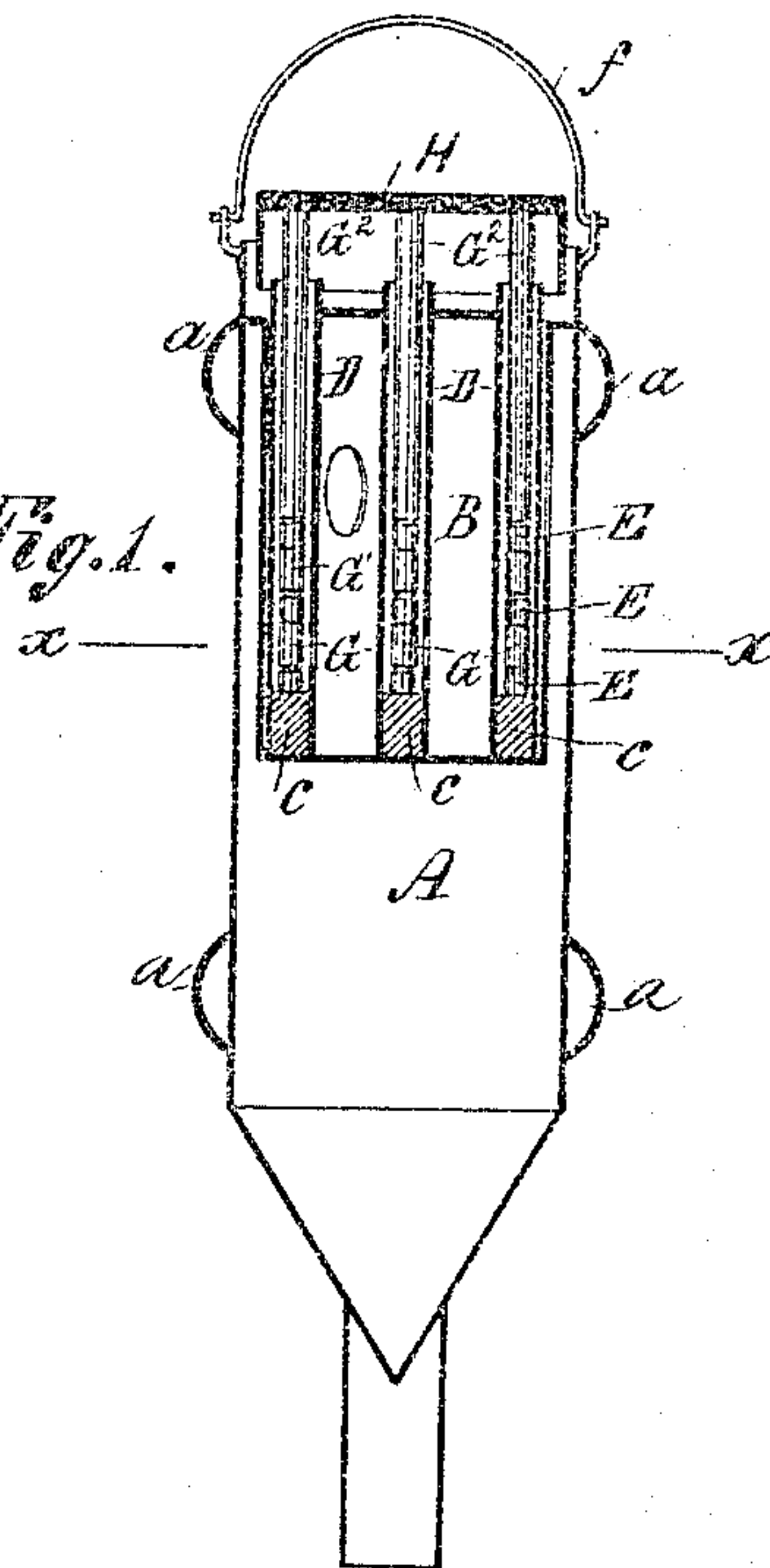


Fig. 5.



Fig. 1.



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EXPLODING AND TAMPING WEIGHT FOR TORPEDOES.

SPECIFICATION forming part of Letters Patent No. 247,036 dated September 13, 1881.

Application filed June 9, 1881. (Model.)

To all whom it may concern:

Be it known that I, JAMES E. GALLAGHER, of Olean, in the county of Cattaraugus and State of New York, have invented a new and useful Improvement in Tamping and Firing Devices for Torpedoes, of which the following is a full, clear, and exact description.

My invention relates to a tamping and firing device for torpedoes which is more particularly intended for use in oil-wells, but is also applicable to wells and drills of various descriptions.

The invention consists of a device which serves the double purpose of exploding the shell and tamping the charge, as hereinafter more particularly described.

The accompanying drawings illustrate a mode of carrying out my invention.

Figure 1 is a central vertical sectional view of my improved cartridge or torpedo. Fig. 2 is a similar view of the exploding and tamping device. Fig. 3 is a view of the upper end of the torpedo, with the head removed. Fig. 4 is a transverse section taken in the line $x-x$ of Fig. 1. Fig. 5 is a detail view of a percussion cap and nipple, hereinafter more particularly referred to.

Similar letters of reference indicate corresponding parts.

A represents a shell for holding the nitro-glycerine or other explosive compound. It is preferably cylindrical in form, and may have a tapering lower end. The diameter of the shell is less than that of the well or drill-hole in which it is to be used, and in order to enable it to rest centrally in said well or drill-hole it is provided with guards consisting of wires a bent in semicircular form and attached to its exterior.

In the upper portion of the shell A is a chamber, B, smaller than the inner diameter of the shell, and perforated so as to communicate therewith. In this chamber are a number of tubes, D, also perforated, and having an anvil, c , at the bottom. In each tube D is placed a number of percussion caps, E. There may be any suitable number of tubes and caps. As here shown there are five tubes, each containing three caps. In each cap is placed a short rod or nipple, G, (see Fig. 5,) the lower end of which serves to explode the cap in which it rests, and the upper end serves as an anvil for the cap next above it. The uppermost rod or nipple is elongated and forms a firing-pin, G^2 . Over the upper ends

of the firing-pins G^2 is placed a plunger or follower, H, which forms the head of the cartridge or torpedo.

The shell is provided with a swinging handle or bail, f , to which a cord may be attached for lowering the torpedo into the well or drill-hole.

Referring now to Fig. 2, J represents a cylindrical casing of any suitable material. It is cylindrical in form and of a diameter so nearly corresponding with that of the well or drill-hole as to fit loosely and be able to descend easily therein. The lower end of the casing is armed with a heavy cast-metal point, K. The material of which the casing is made is sufficiently strong to enable it to carry its full capacity of sand, but sufficiently fragile to allow it to burst when the point K suddenly strikes a hard or unyielding substance or obstruction.

The torpedo or shell A, constructed and prepared as above described, is gently lowered to its seat in the well or drill-hole in which it is to be used. When the charge is to be exploded the shell J, loaded with sand and armed with the point K, is dropped into the well or drill-hole on the top of the torpedo. As the point K strikes the head H one or more of the caps, actuated by the firing-pin or nipple, explodes the torpedo. At the same instant the sand, released by the bursting of the shell J, escapes and becomes packed above the torpedo, so as to effectually tamp the charge and cause it to act laterally instead of vertically, and thus confine its operation as nearly as possible to the strata in which it is located.

Instead of dropping the shell J suddenly, as above described, it may be lowered gently until its point touches the head H, and the charge may then be exploded by raising the shell J by its cord or rope and allowing it to fall suddenly, so as to forcibly strike the head H.

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

A tamping and firing device consisting of the shell J, of fragile and insoluble material, filled with sand and provided with the solid head K, whereby the sand, liberated by the destruction of shell J through contact with head H, is retained in a compact mass above the exploding torpedo, substantially as herein shown and described.

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Witnesses:

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