

No. 684,949.

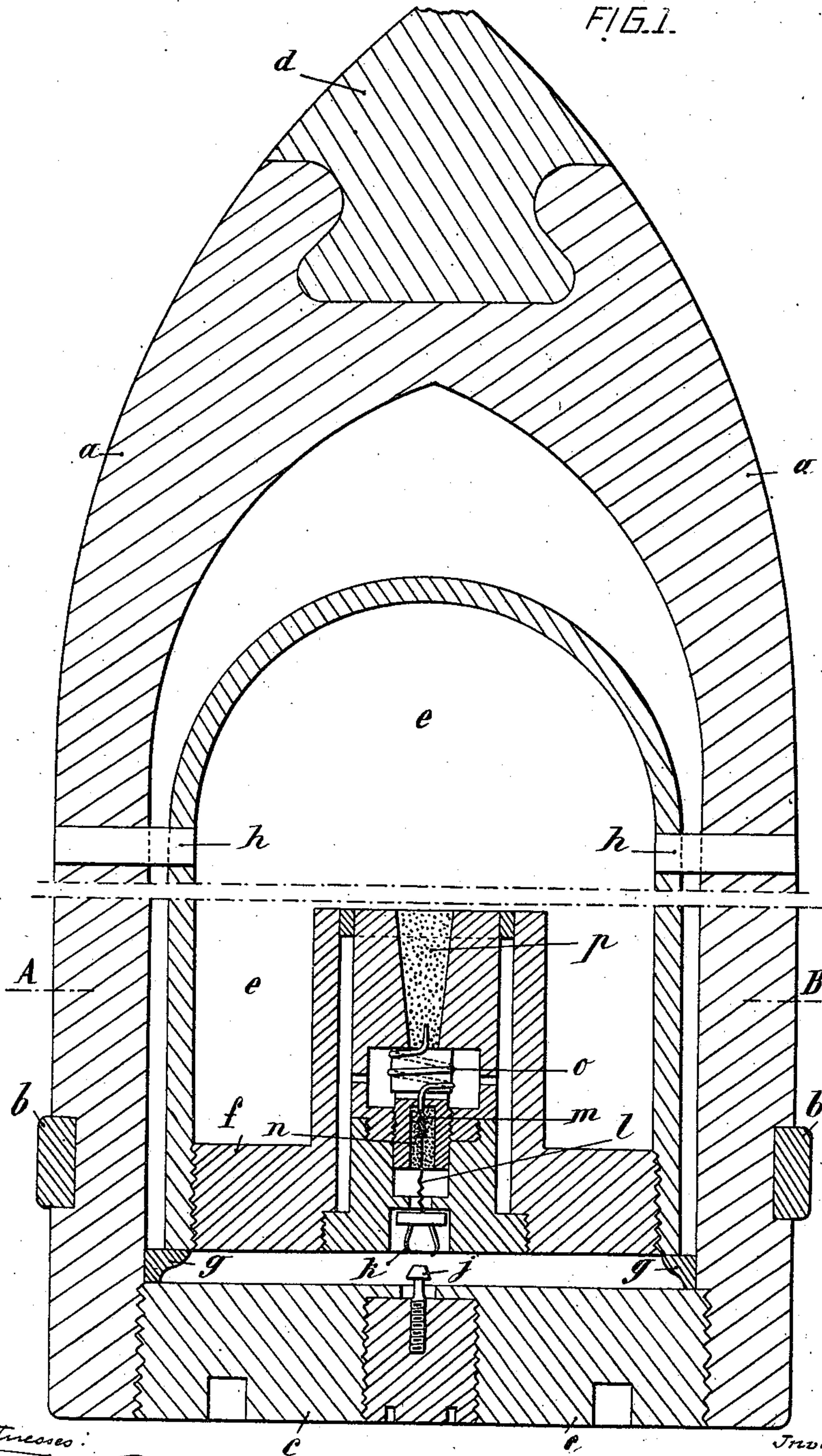
Patented Oct. 22, 1901.

A. PRIMAT.
PROJECTILE.

(Application filed Sept. 18, 1900.)

(No Model.)

4 Sheets—Sheet 1.



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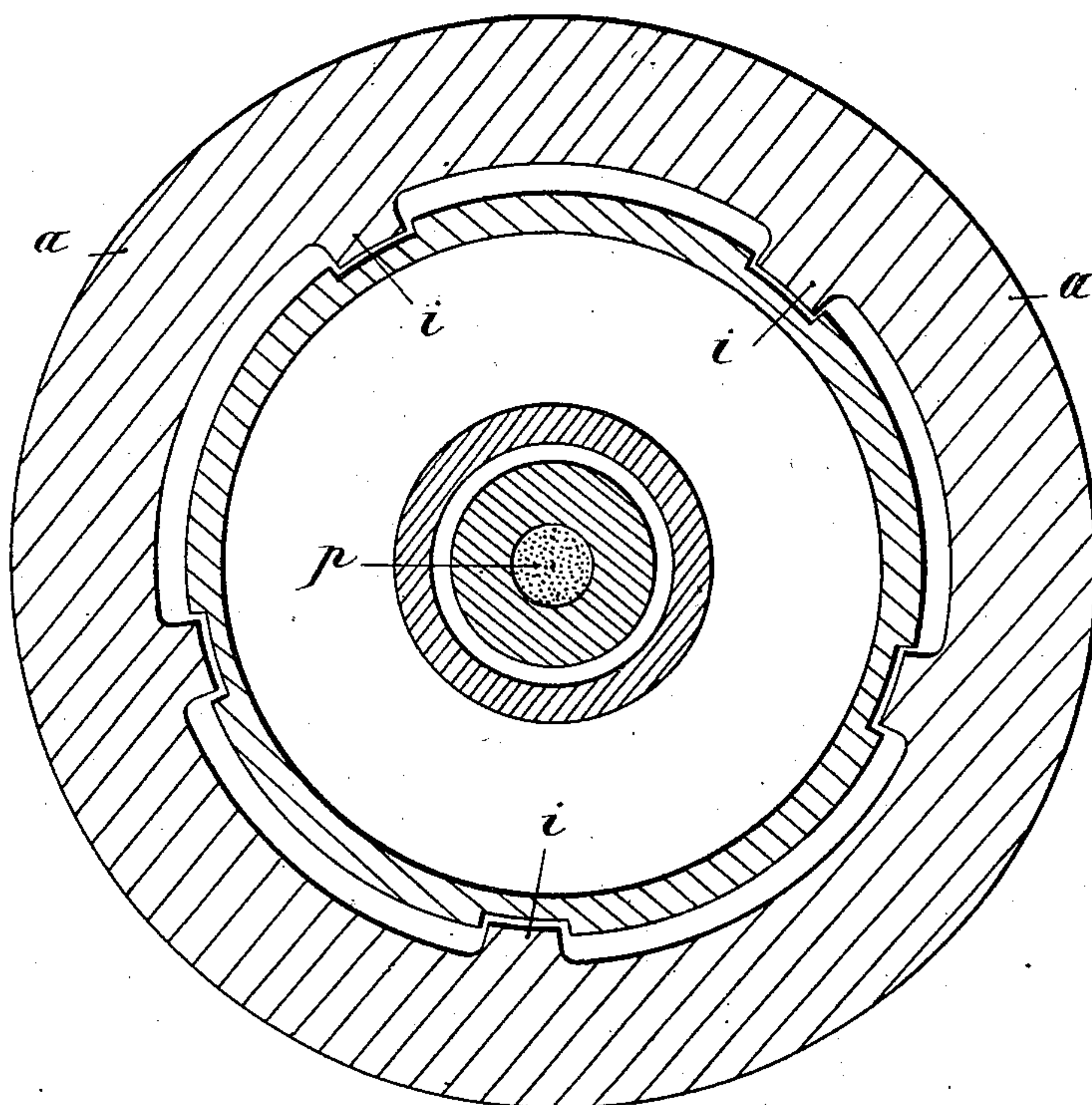
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FIG. 2.



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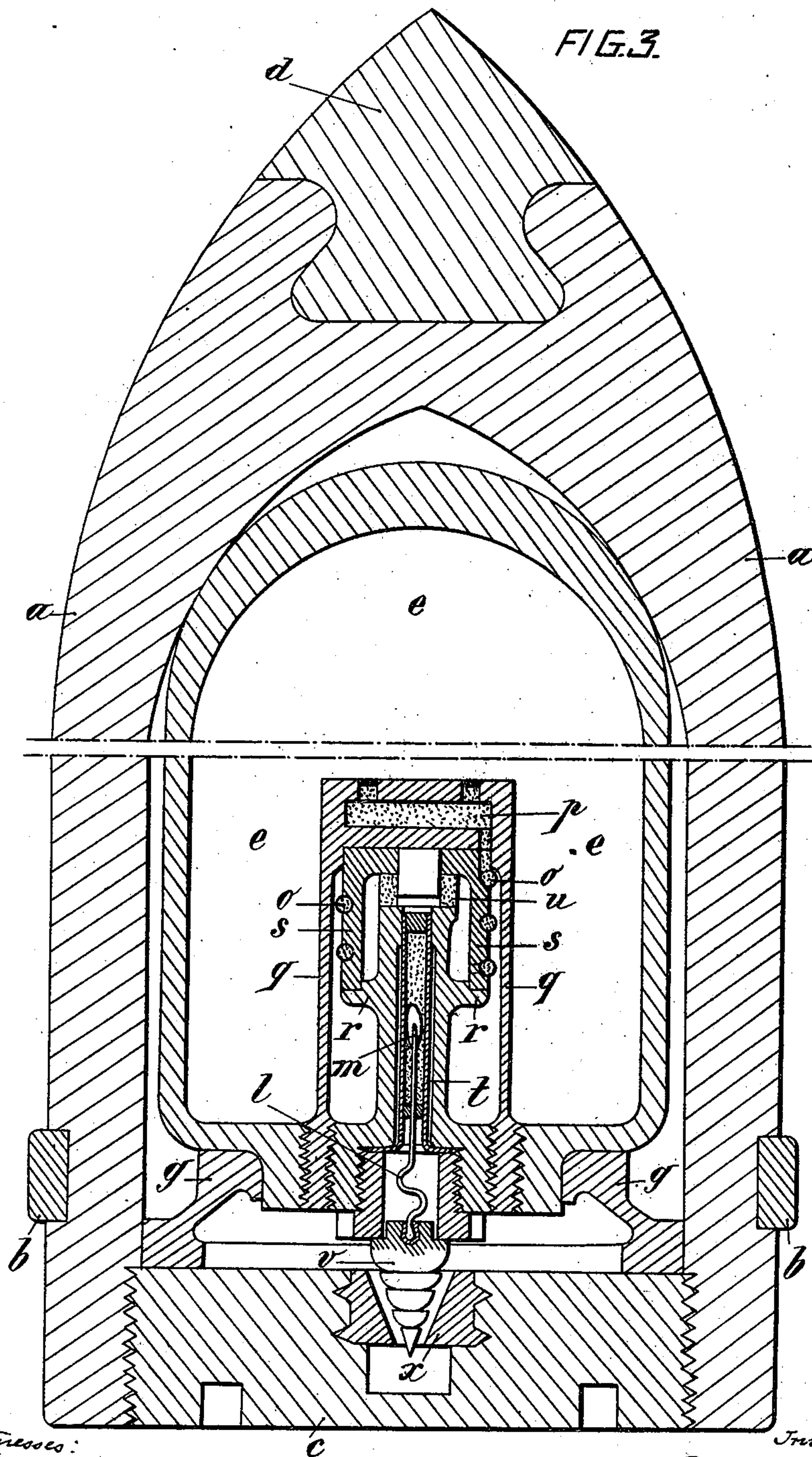
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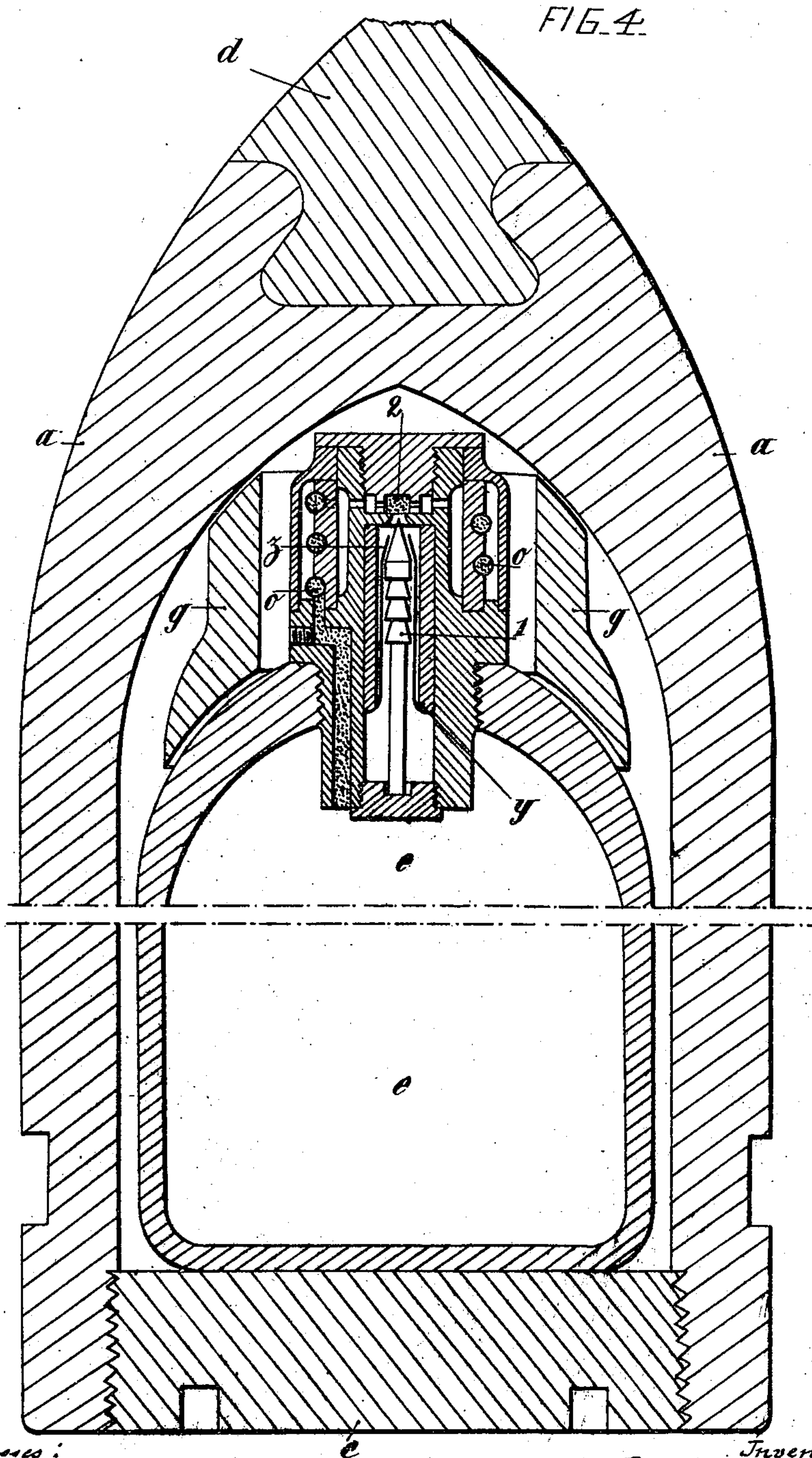
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4 Sheets—Sheet 4.



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UNITED STATES PATENT OFFICE.

ALEXANDRE PRIMAT, OF PARIS, FRANCE.

PROJECTILE.

SPECIFICATION forming part of Letters Patent No. 684,949, dated October 22, 1901.

Application filed September 18, 1900. Serial No. 30,376. (No model.)

To all whom it may concern:

Be it known that I, ALEXANDRE PRIMAT, glover, of 38 Rue d'Hauteville, in the city of Paris, Republic of France, have invented a
5 new or Improved Projectile, of which the following is a full, clear, and exact description.

This invention relates to a projectile particularly intended for naval purposes as a substitute for a self-propelling torpedo, over
10 which it presents the following advantages:

First. The projectile can be aimed and fired like an ordinary shell.

Second. It may have a range of from five thousand to six thousand yards, according to
15 the caliber of the gun in which it is employed.

Third. It may be carried without risk on board ship, as it is only primed at the moment of firing and the fuse comes into action only at the moment of impact.

20 Fourth. It does not need any special weapon or appliance for firing it, inasmuch as it can be fired from any modern piece of ordnance in the same way as an ordinary shell.

Fifth. It is not liable to become ineffective,
25 and does not contain any internal mechanism besides that for exploding the projectile.

Sixth. It can be manufactured at a very small cost.

My invention is illustrated in the accompanying drawings, wherein—
30

Figure 1 represents a longitudinal section of the projectile; and Fig. 2, a cross-section of the same on line A B, Fig. 1. Figs. 3 and 4 are longitudinal sections of modified arrangements.
35

The same characters of reference denote like parts in the several figures.

My improved projectile comprises an external cylindroogival shell or case *a*, provided
40 near its base end, like an ordinary shell, with a copper ring *b* for fitting in the rifling of the barrel of the gun for the purpose of rotating the projectile. The base of the projectile is closed by a screw-plug *c*, and the pointed end
45 of the projectile is provided with a soft-metal nose or plug *d* to prevent the projectile from penetrating the armor-plating of a ship or rebounding after striking. This soft-metal nose may, however, be replaced by a hard-metal
50 plug if the projectile is to be used for piercing armor-plates, to which end the plug may be so fitted as to be readily removable.

Within the hollow shell or case *a* is inserted a container *e* for a charge of high explosive, adapted to constitute the bursting charge of
55 a projectile fired from a gun. This container *e* may be closed by a screw-plug *f* or otherwise and is supported when at rest upon a leaden ring *g* and by means of zinc tenons *h*, and it may also be guided by means of longitudinal ribs *i*, formed upon the interior of the shell *a*, as shown in Fig. 2.
60

The action of the projectile is, when fired against a vessel, as follows: When the gun is fired, the lead ring *g* becomes crushed beneath
65 the container *e*, owing to the latter remaining momentarily inert, while at the same time the zinc tenons *h* are shorn through and the conical stud *j* is caused to engage with the spring-clips *k*, thus priming the projectile.
70 On the nose of the projectile striking the vessel the motion of the outer shell *a* is arrested and the projectile drops into the water close to the hull, the container *e* at the moment of such arrest continuing its forward movement
75 by reason of its acquired momentum, thus causing (owing to the engagement of spring-clip *k* with stud *j*) a pull to be exerted upon the roughened end *m* of wire *l*. The charge of fulminate *n* is thus exploded and ignites
80 the Bickford fuse *o*, which in turn ignites the charge of compressed black powder *p*, which finally detonates the charge of high explosive contained in chamber *e*. The time which elapses between the impact and bursting of
85 the projectile thus depends practically upon the length of the Bickford fuse, and as it is easy to estimate beforehand the depth below water at which the projectile should burst the length of the fuse-cord can be regulated
90 accordingly. Should the external envelop *a* of the projectile become fractured by the force of impact, the internal container *e* would remain intact and the charge of explosive would act equally well, owing to the container
95 *e* being closed to the entrance of water.

In the modification shown in Fig. 3 the container *e* is maintained in position in the projectile by abutting at its forward end against the interior walls of the envelop *a* and by being supported at its base upon a lead ring *g*.
100 The fuse comprises a casing or body *q*, in the interior of which is fitted a central stem *r*, provided with a mushroom-head, which sup-

ports a barrel *s*, upon which is coiled a Bickford fuse *o*, in communication with a charge *p* for igniting the explosive charge in the interior of the projectile. The interior of the

5 mushroom-headed stem is channeled to receive a quick-match *t* for igniting a disk of powder *u*, which in turn serves to ignite the Bickford fuse. The quick-match is provided with a friction device *m*, attached to a stem

10 *l*, which extends rearwardly and is attached to a barbed head *v*, which when the lead ring *g* is crushed is received in and held by a lead washer or socket *x*. At the moment of impact the container *e* is carried forward, drawing

15 with it the body of the quick-match, which becoming thus ignited sets fire to the Bickford fuse, which ignites the charge *p* and detonates or otherwise fires the explosive contained in the projectile.

20 In the modification shown in Fig. 4 the fuse is placed at the front end of container *e*. The action of the fuse in this case is as follows: On firing the projectile the socket *y*, disposed longitudinally within the fuse, re-

25 tains its position by reason of its inertia, as does also the spring-clip *z*, fixed in said socket, so that the fingers of the clip *z*, being thereby pressed inwardly, engage a striker *1*, suitably disposed for the purpose, the fuse

30 being thus primed. At the moment of impact, on the motion of the outer shell *a* of the projectile being arrested, the socket *y* and striker *1* continue their forward movement by virtue of their acquired momentum,

35 the lead ring *g* becomes crushed, and the

striker, being released, moves forward and explodes the charge of fulminate *2*, thus igniting the Bickford fuse *o*, which in turn determines the explosion of the charge contained in the projectile.

It is to be understood that the forms, details, accessories, materials, and dimensions of the several parts of the projectile may be varied without in any way departing from the principle of the invention.

I claim—

1. In a projectile, the combination of an exterior shell or envelop, a movable powder-chamber, a frangible means for maintaining the powder-chamber in position, a primer contained within said chamber and means for firing the said primer upon impact of the projectile.

2. In a projectile, the combination with an exterior shell or envelop of a movable powder-chamber contained therein, a primer therefor contained within said chamber and containing a firing means, means for setting the primer for operation at the time of discharge of the projectile and for effecting the firing of the primer by the movement of the movable primer-chamber upon impact of the projectile.

The foregoing specification of my new or improved projectile signed by me this 1st day of September, 1900.

ALEXANDRE PRIMAT.

Witnesses:

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MAURICE H. PIGNET.