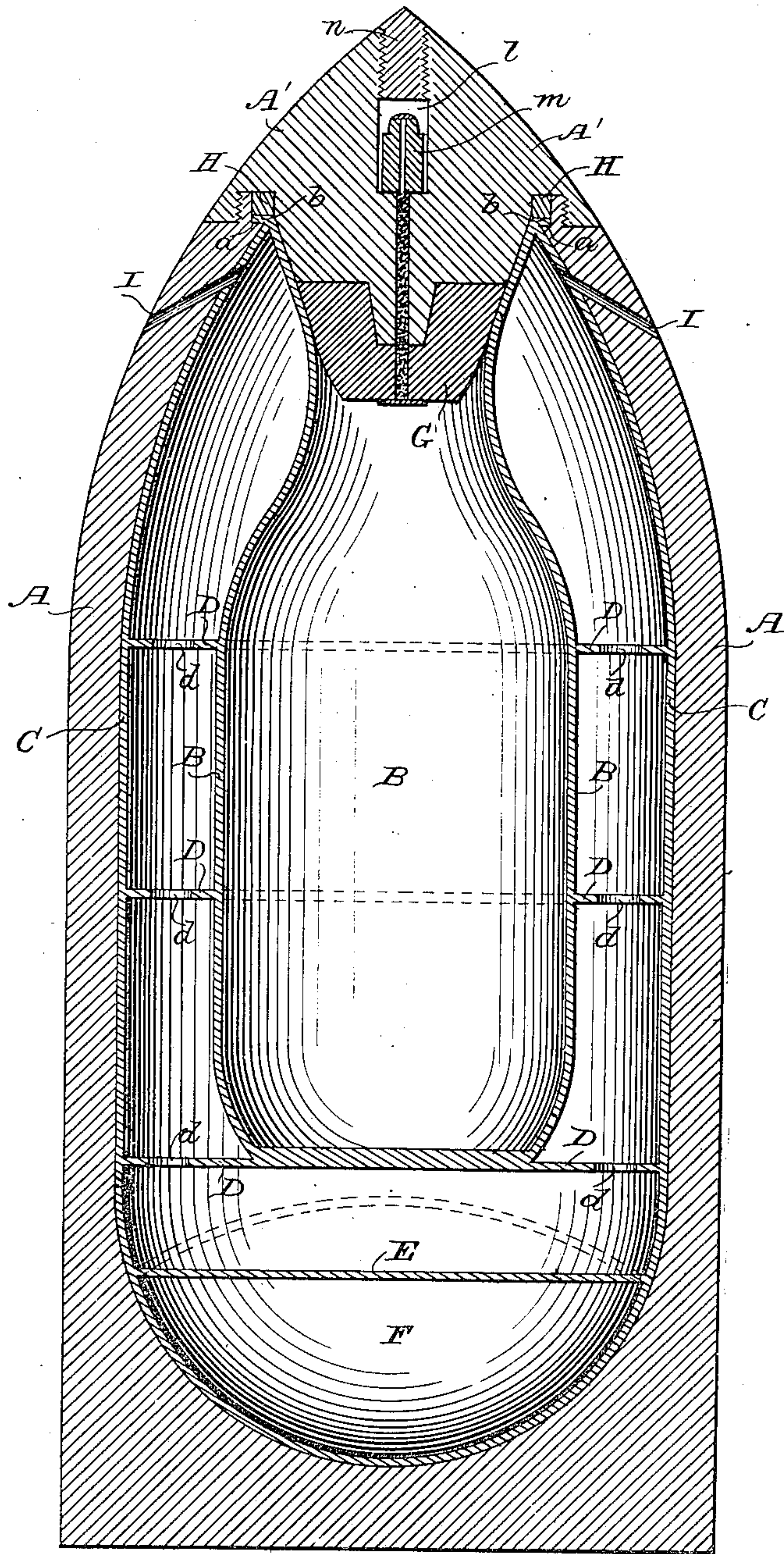


(No Model.)

T. W. YOUNG.
DYNAMITE SHELL.

No. 365,456.

Patented June 28, 1887.



Witnesses,
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TAPLEY W. YOUNG, OF WASHINGTON, DISTRICT OF COLUMBIA.

DYNAMITE SHELL.

SPECIFICATION forming part of Letters Patent No. 365,456, dated June 28, 1887.

Application filed September 6, 1886. Serial No. 212,834. (No model.)

To all whom it may concern:

Be it known that I, TAPLEY W. YOUNG, a citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Dynamite Shells; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to projectiles of the class designed to contain a charge of highly-explosive compound, such as dynamite, and to be fired from a cannon by means of gunpowder.

Dynamite being susceptible to explosion by concussion, it is evident that if the projectile containing it is to be thrown through the agency of gunpowder some means must be provided to arrest the concussion imparted to the metallic shell by the initial charge before it has been communicated to the dynamite, else there will be great danger of an explosion of the latter before the shell is ejected from the cannon.

To provide a vessel for containing the explosive compound which will not be subject to the dangerous effects of undue concussion resulting from the explosion of the charge of gunpowder behind the shell in which the vessel is placed is the object of my invention, which consists in the novel construction and arrangement of parts, which will first be fully described in connection with the accompanying drawing, and then clearly pointed out in the claims.

In the drawing, which is a vertical section of a shell containing my improvement, A represents an ordinary metallic shell.

B is the vessel for containing the explosive compound, preferably bottle-shaped, as shown.

C represents the outer casing of the vessel B, the said casing being of a size and shape to snugly fit the bore of the shell.

D D represent annular rims connecting vessel B and casing C, being preferably formed integral with those parts, and through these rims, at suitable intervals, are perforations *d*, for a purpose which will presently appear.

The bottom of vessel B is formed integral with one of the annular rims, and is made

somewhat thicker than the rim, as seen in the drawing, so as to offer greater resistance to the air driven against it by the deflection of diaphragm E.

The space between the bottom of the vessel and the bottom of the bore of the shell is divided by a diaphragm, E, joined to the casing, thus leaving an air-cushion, F, in the bottom of the shell.

The vessel, casing, rims, and diaphragm are all made of elastic material, such as rubber. In fitting the shell for use these parts can be compressed sufficiently to enter at the mouth, when they will at once expand and assume their proper forms.

The mouth of the shell and also the mouth of the vessel are closed by a metal screw-plug, A', the lower end of which is considerably reduced in diameter, and over this reduced portion is fitted a rubber stopper, G. The flange *b* around the mouth of the vessel takes into a recess, *a*, in the top of the shell, over which is placed an annular ring, H, flush with the top of the shell, for securing the vessel at that point.

Rearwardly-inclined perforations I are formed through the upper portion of the shell and casing, as shown in the drawing, these perforations preferably corresponding in number with the perforations in each of the rims D.

The desired quantity of dynamite or other like explosive compound having been placed in the vessel and the screw-cap put on, the shell is ready to be placed in the gun over the charge of powder. When the explosion of the powder takes place, the concussion imparted to the bottom of the shell causes an impact of the air in the cushion against diaphragm E, which, being elastic, is thereby deflected in a manner shown in dotted line. This sudden deflection of the diaphragm will drive the air above it outwardly and upwardly through the perforations *d* outside and around the vessel C, when it will escape from the shell through perforations I. Thus there will be no such impact on the vessel at any point as would be liable to cause a premature explosion of its contents. Should the vessel not be filled full, the compound would of course have motion within it, and therefore, to avoid its coming in contact with any hard

substance, I have attached the rubber stopper to the metallic screw-plug.

In order to render the explosion of the dynamite or other like compound certain, I prefer to use a fuse of some description, that which I have illustrated being a desirable one on account of its effectiveness and simplicity. In using this fuse I cut a chamber, *l*, in the point of the screw-plug of the projectile, and perforate the screw-plug and stopper, the upper end of the perforation communicating with the said chamber, and the lower end being covered by a piece of light strong material, like parchment. This perforation is filled with gunpowder up to the chamber, and in the chamber is placed what may be called a "plunger," *m*, having a nipple formed upon it for carrying a percussion-cap. The chamber is closed at the top by a screw-plug, *n*. When the shell strikes, the plunger is by its momentum thrown against the plug *n* with sufficient force to explode the cap, whereby fire is communicated to the powder forming the fuse, the explosion of which will detonate the dynamite.

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

1. In combination with a metallic ordnance-shell, an elastic casing fitting the bore of the shell, an inner elastic vessel, and perforated annular rims connecting the vessel with the casing; for the purpose above set forth.

2. In combination with a metallic ordnance-shell, an elastic casing fitting the bore of the shell, an inner elastic vessel, and perforated annular rims connecting the vessel with the

casing, the bottom of the vessel being thicker than and formed integral with one of said rims; for the purpose stated.

3. In combination with a metallic ordnance-shell, an elastic casing fitting the bore of the shell, a bottle-shaped inner elastic vessel, the neck of which is attached to the casing, and annular elastic perforated rims connecting the body of the vessel with the casing, substantially as described.

4. In combination with a metallic ordnance-shell having rearwardly-inclined perforations in its forward end, an elastic vessel having an outer perforated casing adapted to fit the bore of the shell, the vessel and casing connected by perforated annular rims, and a diaphragm extending across the casing below the vessel, substantially as described, and for the purpose set forth.

5. In combination with a metallic ordnance-shell having rearwardly-inclined perforations in its forward end, an elastic casing fitting the bore of the shell, an inner elastic bottle-shaped vessel provided with a rubber stopper, perforated elastic annular rims connecting the vessel with the casing, a diaphragm extending across the casing below the vessel, and means for detonating the contents of the vessel, substantially as described, and for the purposes above set forth.

In testimony whereof I affix my signature in presence of two witnesses.

TAPLEY W. YOUNG.

Witnesses:

S. O. HEMENWAY,
G. W. BALLOCH.