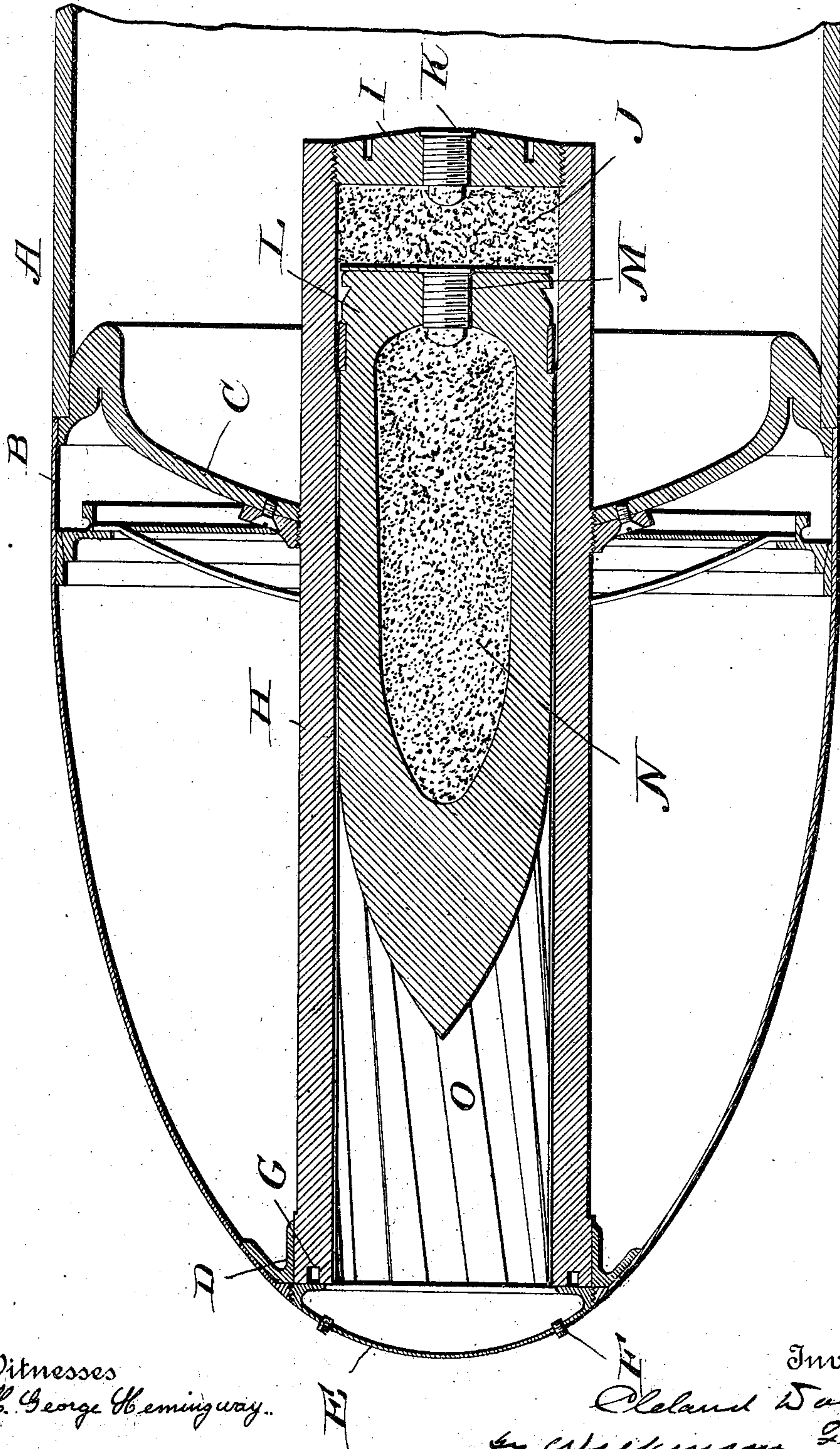


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TORPEDO.

APPLICATION FILED JULY 15, 1907.

964,147.

Patented July 12, 1910.



Witnesses
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UNITED STATES PATENT OFFICE.

CLELAND DAVIS, OF THE UNITED STATES NAVY, ASSIGNOR, BY MESNE ASSIGNMENTS,
TO NATIONAL TORPEDO COMPANY, OF NEW YORK, N. Y., A CORPORATION OF
MAINE.

TORPEDO.

964,147.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, CLELAND DAVIS, a lieutenant-commander U. S. Navy, a citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Torpedoes; 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 torpedoes and particularly to that class of torpedoes that are propelled or projected through the water, under the surface thereof, and are adapted to strike the vessel or other object attacked below the water line.

The object of my invention is to create greater disabling effects than is now possible with the present torpedoes, and especially when the ship attacked is provided with armor or other protecting devices below the water line.

As is well known, the effect of modern torpedoes on vessels provided with a considerable protection of thin, or more or less thick armor plating below the water line, is simply to blow a hole therethrough. This hole when there is no armor protection may be very large, and does injury to the vessel by the admission of water. If, however, there is a thin armor protection, the hole will be much smaller, and it might or might not be sufficiently large to disable the vessel. And again, if the armor is made sufficiently thick the hole will either be too small to cause much damage, or it will not be made at all.

The object of my invention, more specifically stated, is to send high explosives into the vitals of the ship, thus insuring her destruction under all conditions.

To this end my invention consists in providing an ordinary torpedo shell with a simple form of gun from which an ordinary projectile, carrying an explosive charge may be fired. By this means I am enabled to pierce the underwater body of the ship, or any protection that may have been provided against torpedoes upon the ship, that is being attacked. After the said ship, or its protection is pierced, the shell, of course, may be exploded within the vessel, thereby

disabling her machinery, or causing her destruction by exploding her boilers or magazines.

Referring to the accompanying drawing, forming a part of this specification; the figure illustrates a sectional view of the war head end of a standard torpedo shell.

A designates the shell or air flask of a standard torpedo, and B the war head.

C represents the ordinary disk closing the air flask, and D a flanged ring in the end of the war head.

E represents a cap screwed into the war head, as usual, and F represents small plugs passing through the cap E.

H represents the barrel of a gun, which is preferably rifled and screwed into the disk C by means of a wrench or other tool engaging the holes G in the end thereof.

I represents any suitable closure of the breech of the barrel H, and K any standard fuse fitted into the same.

J represents a suitable charge of powder, and L a suitable armor piercing or other projectile of standard make, M represents a standard fuse which may be a suitable time fuse, or a delayed action percussion fuse, and is preferably located in the base of said projectile, and N an explosive charge for the projectile.

O represents the rifling in the gun or barrel H.

The gun H and projectile L are chosen of such weight as to not materially affect the ballistics of the torpedo shell or to materially change the center of gravity of the same, as determined for ordinary firing. This result is materially aided by omitting the explosive charge ordinarily carried in the war head. The contour of the torpedo being not changed in any sense, nor its weight or center of gravity in any material sense, it follows that upon firing the same from its tube it will behave precisely as if it did not carry my improvement. In other words, it can be fired just as accurately with my improvement as without it. On the other hand, since my shell L will pierce armor precisely the same whether it is fired from my gun or not, if the torpedo strikes the vessel I am sure to penetrate its side or bottom. That is to say, in this device I have no experimental features to

try out, and I am assured of its certainty of operation under all conditions.

Specifically, the operation of the device is as follows:—The standard shell A is fired
5 from the standard tube, or otherwise propelled until it strikes the vessel attacked, which causes the fuse K to explode the charge J, which charge is so selected as to give the necessary velocity to the shell L
10 to penetrate the object against which the torpedo strikes. Upon striking this object the shell L penetrates the same and explodes upon the inside of the vessel in the well known manner, and thereby creates
15 a destructive effect much greater than could possibly be the case were only a small hole, or none at all, blown into the vessel by an ordinary torpedo.

It will thus be seen that my invention is
20 exceedingly simple, is certain in operation, and can be applied to standard torpedoes by involving only slight changes. In assembling the parts, all that is necessary to do is to load the shell into the barrel H,
25 place the charge J on top the same, screw in the breech plug L, and then screw the loaded gun into the disk C until it occupies the position shown in the figure.

The small plugs F are for the purpose
30 of allowing air to escape when the nose of the torpedo strikes the vessel, and is crushed in. The apparatus, of course, is designed to be used only once, and therefore the barrel H does not have to be loaded but once.
35 In all cases, however, it is essential that my projectile be given sufficient velocity before leaving the gun to penetrate the ship's side, or other target, and to this end I have made the barrel of the gun longer
40 than the projectile used, and have employed the cap E to exclude water from said barrel. That is to say, if the barrel H were shorter than the projectile, then upon impact, the explosive force of the charge J, would act
45 on the projectile more like a pressure driving a wedge, or like a blow on the same. In such case, the projectile being in actual contact with the ship, or other target, could not penetrate anything like so deeply as
50 it would, were it hurled against the ship with an accelerated velocity. Then again, if the cap E were removed and water allowed to enter the barrel H before firing, the projectile would be forced against the
55 water in contact therewith, so suddenly, that owing to the very high resistance water offers to such sudden displacements, the velocity of the projectile, and therefore its penetrating powers, would be very greatly
60 reduced. In fact, under either of such conditions, unless special means are provided, the resistance to the forward movement of the projectile would be so great, that the force of the explosion would expend itself,
65 not in driving the projectile forward, but

in blowing up the breech portion of the gun, and in destroying the forward end of the torpedo shell. This action would be greatly aggravated in the case of the projectile being longer than the gun barrel, and therefore protruding therefrom. For, when its nose strikes the side of the vessel, the whole energy possessed by the torpedo shell, weighing perhaps 2000 pounds, and which would be moving at a considerable velocity, tends to hold the said nose firmly against the ship's side. This energy, therefore, serves to prevent the torpedo shell from going backward, while the ship prevents the projectile from going forward, when the explosion occurs, and the result is a bursting of the gun, without accomplishing any penetration to speak of. By providing the air space in front of the projectile, shown in the drawings, however, and by providing the cap E to exclude the water, I overcome both of these most serious objections. For air is sufficiently compressible to admit of a considerable velocity being attained by the projectile before it leaves the gun, and the small plugs F, when crushed in, furthermore facilitate its escape along with the powder gases that precede the projectile. The result is the projectile attains a considerable velocity before it leaves the gun, and is thereby enabled to penetrate the ship's side.

I do not limit myself to any form of gun, projectile, fuse or means of attaching the gun to the torpedoes, nor do I limit my gun to a moving torpedo, since the same may be applied to a submarine mine.

Having now described my invention, what I claim and desire to secure by Letters Patent, is:—

1. In a torpedo, the combination with the shell thereof, of a gun barrel fixed to the same adapted to fire a projectile therefrom, and means forming a fixed and rigid part of said shell adapted to exclude water from said barrel, substantially as described.

2. In a torpedo the combination with the body thereof adapted to move through the water, of a gun carried by the same and adapted to fire a projectile therefrom, and means attached to fixed and rigid with said body for excluding water from said gun, substantially as described.

3. In a torpedo, the combination with the shell thereof adapted to be fired from a tube, of a gun barrel carried by said shell and adapted to fire a projectile therefrom, and fixed means rigidly attached to said shell for excluding water from said gun barrel, substantially as described.

4. In a torpedo, the combination with the shell thereof properly proportioned to enable the same to be fired with accuracy from a torpedo tube, of a gun carried by said shell adapted to fire a projectile therefrom

and a screw cap attached to said shell for excluding water from said gun, substantially as described.

5. In a torpedo, the combination with the body thereof, of a gun barrel carried thereby, a charge and projectile carried by the gun barrel, and terminating short of the nose of the torpedo a distance sufficient to enable the projectile to acquire a considerable velocity before leaving the torpedo, and means for exploding said charge and firing the projectile upon the impact of the said torpedo upon the target attacked, substantially as described.

6. In a torpedo, the combination with the body thereof of standard make, of a gun carried thereby, a percussion fuse, a propelling charge, and a projectile, all carried by the said gun, and leaving a space between the point of said projectile and the nose of the torpedo, whereby upon impact the said fuse will ignite the charge and the projectile will attain a considerable velocity before it leaves the torpedo, substantially as described.

7. In a torpedo, the combination with the body thereof, of a gun fixed in said body and provided with a percussion fuse, a propelling charge, a shell provided with a bursting charge and a fuse in said shell, and means to exclude water from said gun, substantially as described.

8. In a torpedo, the combination with the body thereof of standard make, of a gun fixed in said body and provided with a breech closure, a fuse carried by said gun, a propelling charge, a projectile having a bursting charge, a fuse carried by said pro-

jectile, and means to exclude water from the same, substantially as described.

9. In a torpedo, the combination with the body thereof of standard make, of a gun fixed in said body and provided with a breech closure, a percussion fuse carried by said closure, a propelling charge, and a shell in said gun provided with a percussion fuse and bursting charge, means to exclude water from the same, the weight of the shell and gun being so distributed as to not materially affect the ballistics of the said torpedo, substantially as described.

10. In a torpedo, the combination with the body thereof of standard make and provided with a war head having its explosive charge removed, of a breech loading gun located entirely within said war head and provided with a percussion fuse and a propelling charge, and a standard shell provided with an explosive charge and a percussion fuse located in said gun, the combined weights of said gun and shell being so chosen and distributed as to not materially alter the original ballistics of said standard torpedo, whereby upon impact of said torpedo the fuse in the gun will ignite the propelling charge and the shell will attain considerable velocity before leaving the gun and will explode after passing through the vessel's side, substantially as described.

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

CLELAND DAVIS.

Witnesses:

FRANK A. HARRISON,
WILLIAM F. POWELL.