G. C. DAVISON.

AUTOMOBILE TORPEDO.

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977,438. Patented Dec. 6, 1910.

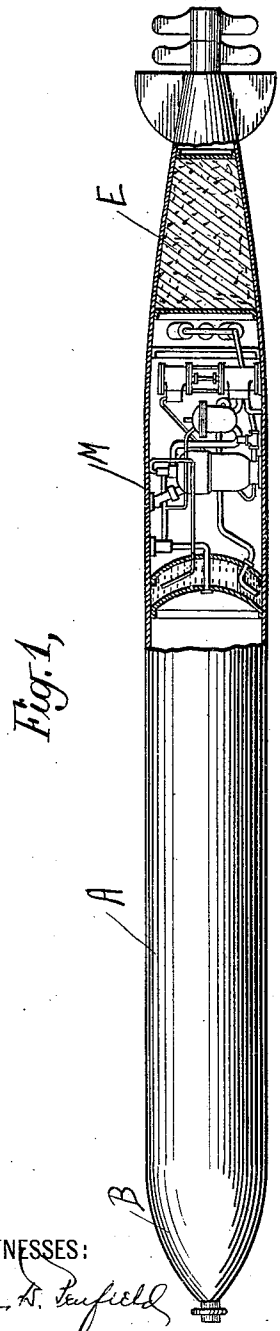

Fig. 1,

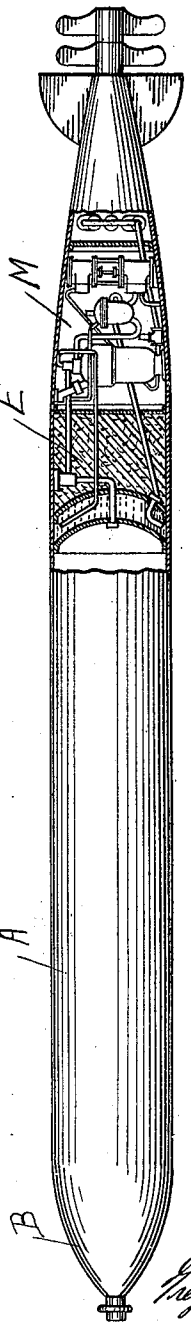

Fig. 2,

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AUTOMOBILE TORPEDO.

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To all whom it may concern:

Be it known that I, GREGORY CALDWELL DAVISON, a citizen of the United States, residing at Quincy, in the county of Norfolk and State of Massachusetts, have invented certain new and useful Improvements in Automobile 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.

The ordinary type of torpedo now in use carries an explosive charge which is exploded in contact with the ship or structure to be destroyed, and this charge is carried in the forward portion or head of the torpedo, so that when the torpedo strikes the ship and is exploded the charge is separated from the point of contact only by the inclosing wall of the torpedo. The torpedo itself is surrounded by the water and is subjected to the pressure thereof, whereas, within the torpedo there is a flask or chamber for containing the compressed air or other gas used for propelling the torpedo, which chamber or flask is commonly formed by partitioning off all the available space within the body of the torpedo, the object being to make the air flask as large as possible, and to crowd the machinery of the torpedo into the smallest possible space, in order that the torpedo may have the maximum range. I have discovered that the destructive effect of such a torpedo may be greatly increased by placing the explosive charge back of the flask or chamber containing the compressed air or gas instead of forward of that chamber, as has heretofore been done. The apparent effect of this change in the position of the explosive charge is to permit the gases which are evolved by the detonation of the high explosive (such as gun cotton, explosive gelatin, etc.) to expand in the direction of the length of the torpedo through the air flask, being confined by the surrounding water, so that the gases acquire an enormous velocity in the direction of the ship or structure to be destroyed. This structure is, therefore, not only subjected to the static pressure of the gas, but also to a dynamic effect due to the velocity of the gases. This may be regarded as a bombardment of the structure to be destroyed by a vast number of minute molecular projectiles moving with enormous velocity.

The presence of air or other gas in the chamber or flask does not, in view of the magnitude of the forces employed, materially affect the result, which will take place with substantially the same effect as if the flask or chamber, instead of being filled with air or other gas under pressure, were completely or partially exhausted. In other words, the pressure of the explosion is so great that the pressure of the air or gas in the flask is negligible. In the ordinary automobile torpedo, on the other hand, upon the detonation of the explosive the forward bulkhead of the air flask is demolished, and the gases resulting from the detonation rush into the space formed by the air flask, their static pressure is reduced and the direction in which they travel is away from the target. In consequence of this, the effect of the explosion does not injure the target even as much as if the same amount of explosive were completely surrounded by water with no air or void space in the vicinity. The general effect upon the target may be described as that of producing a static pressure over a comparatively large area. This pressure, while sufficient to destroy a large area of comparatively thin plating, does not produce a deep penetration so that by providing on the ship, or other structure attacked, a series of internal bulkheads or platings, it is possible to protect it from the effects of such a torpedo. With the improved arrangement herein described, the explosive force is concentrated over a small area and is far greater in intensity so that a structure which would only be dented by the ordinary type of torpedo will have a hole blown through it by my improved torpedo.

In the drawings, which are of a somewhat diagrammatic character, Figure 1 illustrates the arrangement which I prefer, and Fig. 2 illustrates a possible modification.

In Fig. 1, the explosive charge, indicated by the reference letter E is in the very stern of the torpedo, the machinery space, indicated by the reference letter M, being immediately forward of the explosive, and the remainder of the body of the torpedo constituting the air flask A, the head B, which ordinarily contains the explosive charge, being empty. This arrangement is preferred because the explosive is immediately backed up by the surrounding water and the machinery is in substantially the position, with respect to the remainder of the torpedo,

that it occupies in the types of torpedoes now commonly employed. It will be obvious, however, that with the explosive charge in the very rear of the torpedo the relative position of the air flask and the machinery may be reversed without losing the beneficial effects of my invention. It may also be pointed out that when the machinery is in front of the explosive charge, the various parts of the machinery, together with the bulkheads of the air flask, will be hurled through the opening made by the gases of the explosion, into the interior of the structure attacked, and will thereby add to the destructive character of the torpedo.

In Fig. 2, I have illustrated, however, a form of the invention which is within its broader scope and in which the explosive charge E is located between the air flask A and the machinery chamber M. As a practical matter, the machinery chamber of such a torpedo is so filled with the machinery that it offers little room for the expansion of the gases resulting from the explosion, so that in the construction of Fig. 2 the characteristic effect of the construction of Fig. 1 would be substantially attained. That is to say, the explosive charge would be substantially backed up by the surrounding water and would have an opportunity to expand in the direction of the structure attacked, through the air flask; though obviously, the machinery would not be blown through the opening made by the explosion.

What I claim is:—

1. An automobile torpedo comprising a shell containing a chamber or flask for the storage of air or gas to develop the motive power, and machinery for driving the torpedo, and an explosive charge within the shell at the very stern thereof, whereby the gases resulting from the detonation are enabled to expand in the direction of the object attacked; substantially as described.

2. An automobile torpedo comprising an elongated shell, containing a chamber or flask for the storage of air or gas to develop the motive power, and machinery for driving the torpedo, and an explosive charge within the casing back of the said chamber or flask, whereby the gases resulting from the detonation are enabled to expand in the direction of the object attacked; substantially as described.

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

GREGORY CALDWELL DAVISON.

Witnesses:

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W. D. FESLER.