

M. GLASS.

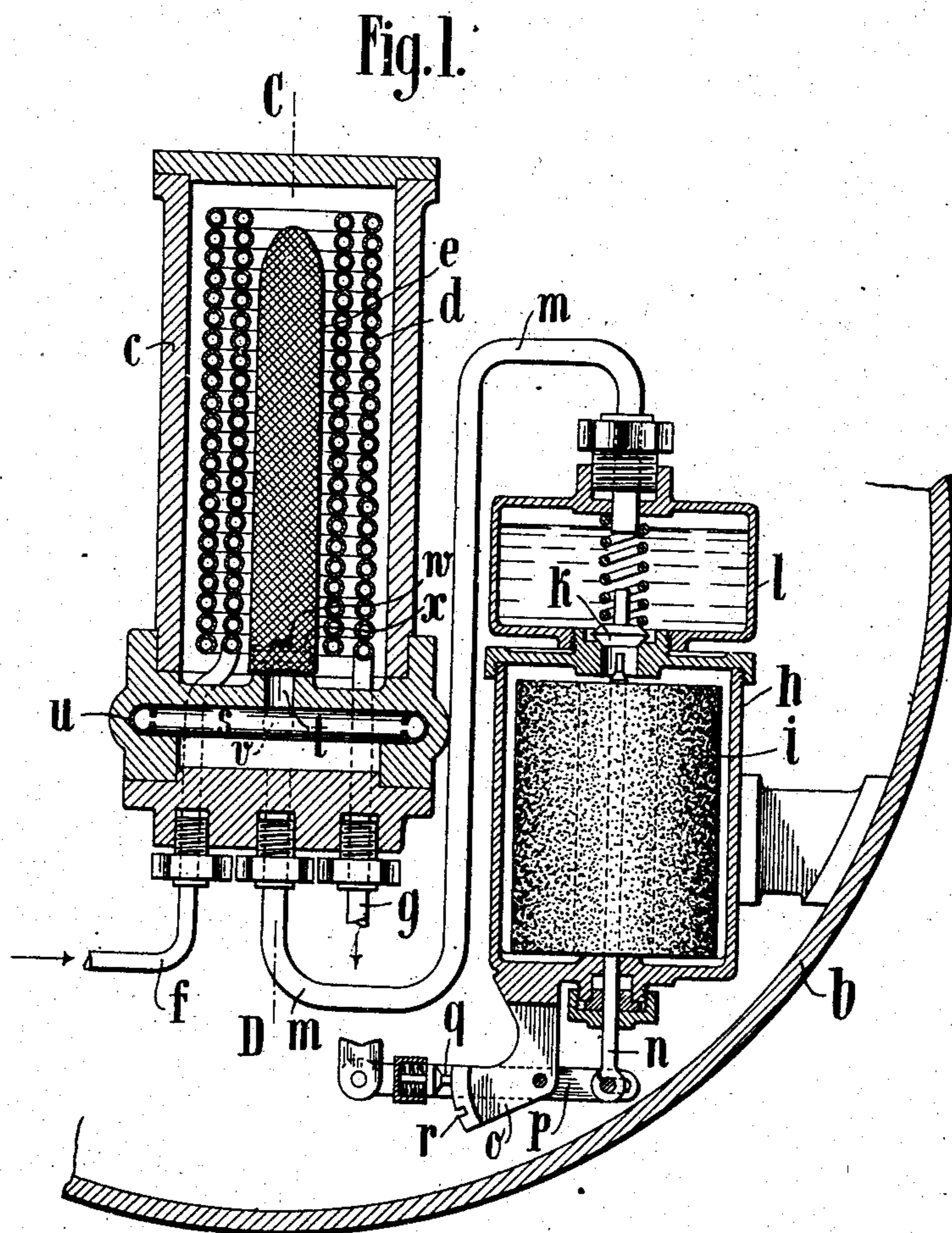
MEANS FOR INCREASING TENSION OF GASEOUS PROPELLANTS FOR TORPEDOES.

APPLICATION FILED NOV. 22, 1909.

973,774.

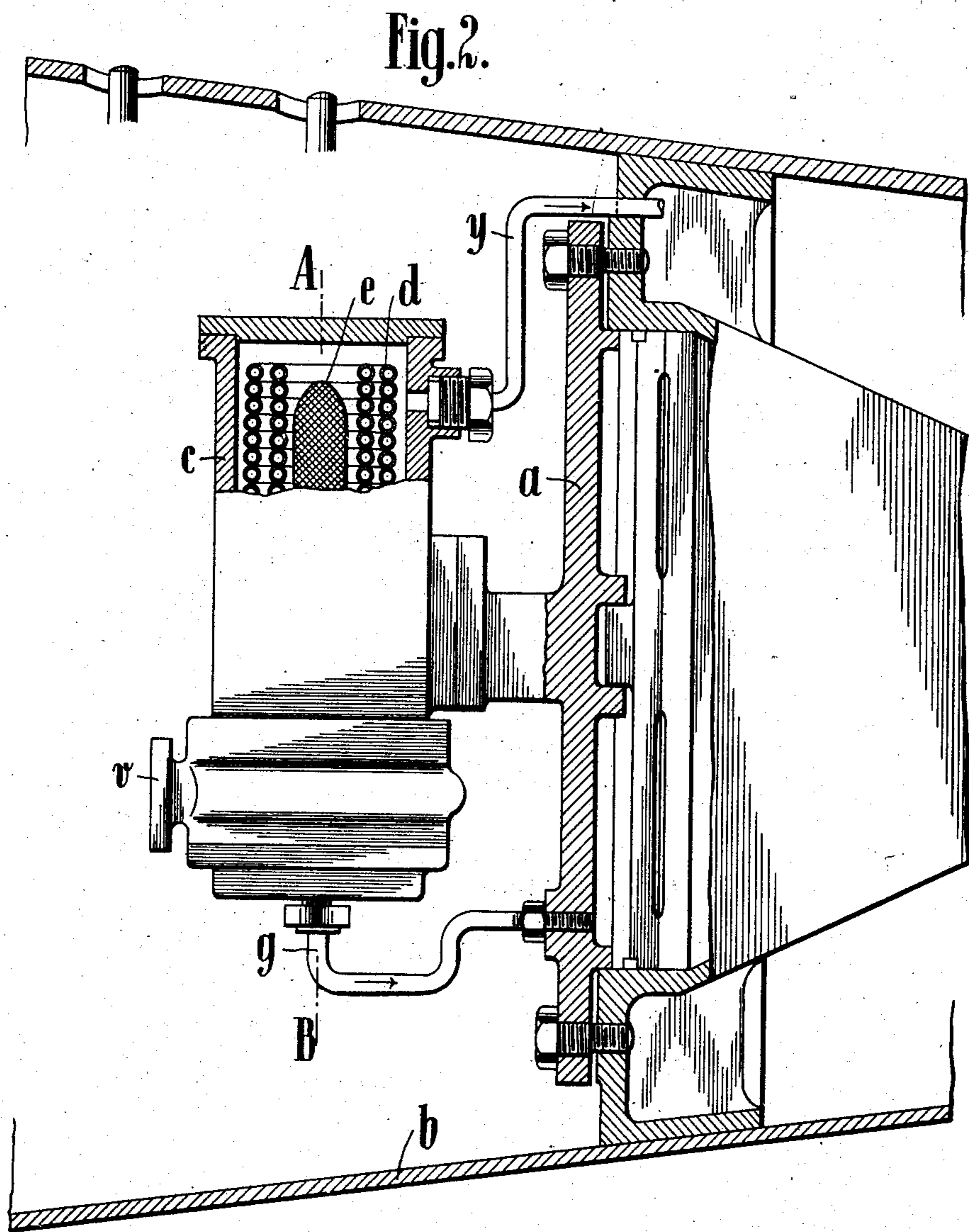
Patented Oct. 25, 1910.

2 SHEETS—SHEET 1.



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# UNITED STATES PATENT OFFICE.

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MEANS FOR INCREASING TENSION OF GASEOUS PROPELLANTS FOR TORPEDOES.

973,774.

Specification of Letters Patent.

Patented Oct. 25, 1910.

Application filed November 22, 1909. Serial No. 529,409.

*To all whom it may concern:*

Be it known that I, MAX GLASS, a subject of the Emperor of Austria-Hungary, and a resident of 176 Hadikgasse, Vienna, Austria-Hungary, have invented certain new and useful Improvements in Means for Increasing the Tension of Gaseous Propellants for 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, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

This invention relates to means for increasing the tension of gaseous propellants for torpedoes, in which the propellant or motive fluid is supplied through a worm to be heated by means of a heating device. In the operation of torpedoes it is important that the propellant be heated suddenly and rapidly, and that the heating device occupy little space. To this end, according to this invention, the air is heated in an optionally coiled pipe by a burner which the pipe surrounds and to which gas generated from carbide is supplied.

One illustrative embodiment of the invention is represented by way of example in the accompanying drawing, wherein:

Figure 1 is a vertical section through the device in the plane A—B in Fig. 2, and Fig. 2 is a side elevation of the casing containing the worm, partly in section in the plane C—D in Fig. 1.

Referring to the drawing, in a closed casing *c* secured on a partition *a* (Fig. 2) in the torpedo *b* is arranged the hot-air pipe *d* having the form of a double worm around an asbestos or other suitable burner *e*, so that the heat given off by the burner is well utilized. Air is supplied from the air-vessel (not shown) through pipe *f* (Fig. 1) to worm *d* and flows through pipe *g* to the motor (not shown).

Secured to the wall *h* of the torpedo is a carbide vessel *i* (Fig. 1) containing calcium carbide *j* which is either loose or in briquet form. In the latter event the briquet has preferably the shape of a sleeve in order to

offer as large a surface as possible to the water used for generating acetylene. Above the carbide vessel is a water tank *l* closed by a valve *k*; the gas supply pipe *m* is connected above to said tank and opens below burner *e* into casing *c*.

If the device is to be set working, valve *k* is opened by a vertical rod *n* arranged under it being lifted by a lever *p* which is fulcrumed on a plate *o* and moved either by the same device which, when discharging the torpedo, starts the motor, or by hand by means of a suitable device before the discharge. Rod *n* is held in its upper position and valve *k* is held open by a spring-influenced catch *q* which engages in a notch *r* in plate *o*, so that water can flow into the carbide vessel and the gas which is generated can escape through the tank. The gas passes through pipe *m* to the chamber or space *s* in casing *c* and flows through an orifice *t* to the burner *e*. In chamber *s* the gas mixes with air entering through holes in an annular pipe *u*. The used air flowing from the motor can be supplied to this pipe *u* through channel *v*. The mixture of gas and air is ignited at a glow pill *w* of platinum-sponge arranged above a sieve or piece of gauze *x* preventing the flame flashing back. The flame heats the burner rapidly and highly, and the burner delivers its heat suddenly to the worm. The products of combustion are conducted away through pipe *y* (Fig. 2).

Instead of being formed as a single or double spiral the hot-air pipe *d* may be arranged in several adjacent spirals, in which event several burners may be provided.

I claim:

1. In a torpedo, means for increasing the tension of a gaseous driving fluid, comprising a coil through which said driving fluid passes, an acetylene burner arranged axially within said coil for heating the same, an acetylene generator mounted on the inner face of a wall of the torpedo and means for feeding said burner therefrom, substantially as described.

2. In a torpedo, means for increasing the tension of a gaseous driving fluid, comprising a coil through which said driving fluid passes, an acetylene burner arranged within said coil for heating the same, an acetylene

generator and means for feeding said burner  
therefrom, said generator comprising a car-  
bid receptacle, a superposed water tank and  
an interposed valve, a lever for opening said  
5 valve and means for securing said lever in  
position to hold said valve open, substan-  
tially as described.

In testimony whereof I have signed my  
name to this specification, in the presence of  
two subscribing witnesses.

MAX GLASS.

Witnesses:

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