

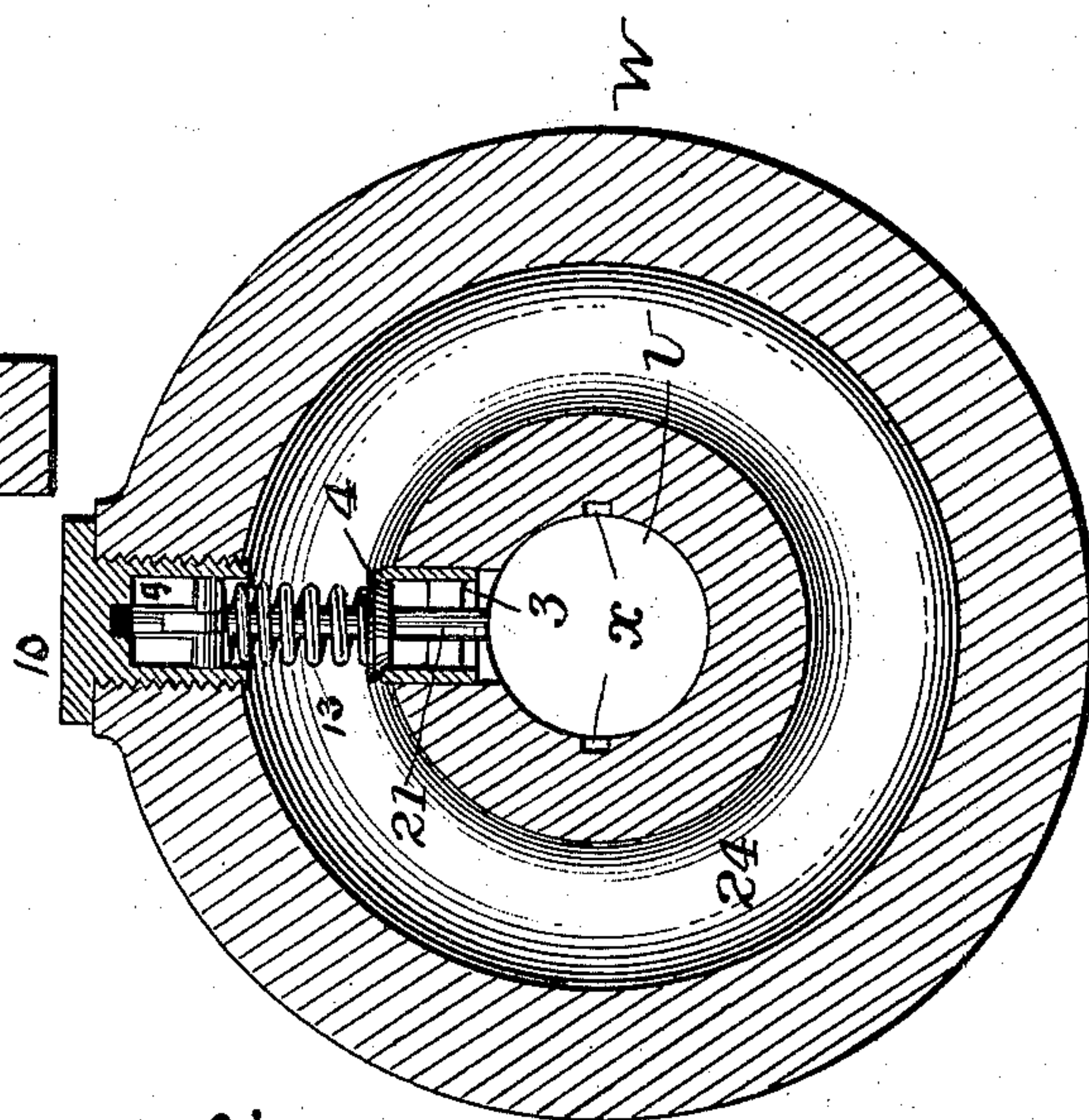
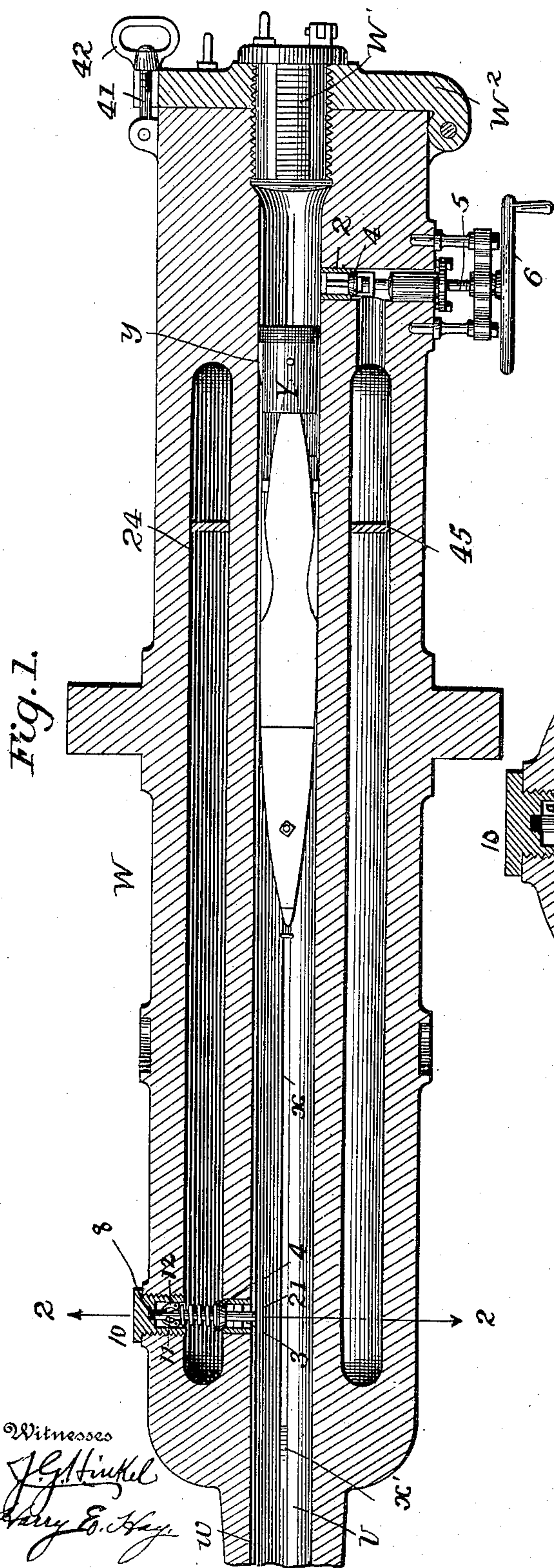
No. 638,464.

**Patented Dec. 5, 1899.**

T. W. JUST.  
GUN.

(Application filed Jan. 26, 1899.)

(No Model.)



Witnesses  
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# UNITED STATES PATENT OFFICE.

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## GUN.

SPECIFICATION forming part of Letters Patent No. 638,464, dated December 5, 1899.

Application filed January 26, 1899. Serial No. 703,507. (No model.)

*To all whom it may concern:*

Be it known that I, THOMAS WEMYSS JUST, a citizen of the United States, residing at New York, (Brooklyn,) in the county of Kings and State of New York, have invented certain new and useful Improvements in Guns, of which the following is a specification.

My invention relates to that class of guns or projectors used for projecting torpedoes, and more especially to that class in which a compressed gas is used for expelling the torpedoes; and my invention consists in constructing the gun, as fully set forth hereinafter, so as to expel the torpedo by successive discharges of gas and so as to facilitate operations with torpedoes of a certain class.

In the accompanying drawings, Figure 1 is a longitudinal section of a torpedo-gun embodying my improvement. Fig. 2 is a transverse section on the line 2 2, Fig. 1.

The body W of the gun is built up or constructed in any suitable manner, and the bore U extends from end to end, being enlarged at the breech and provided with sectional threads to receive the breech-block W', also provided with sectional threads and carried, as usual, by a pivoted or swinging bracket or carrier W<sup>2</sup>, which may be secured in any suitable manner—as, for instance, by means of a pivoted screw 41 and hand-nut 42, as shown.

In connection with the gun there is employed one or more chambers 24, in which is stored under high pressure a suitable volume of air or gas. This chamber may be in a casing separate from the gun, but preferably and as shown, it is in the body of the gun surrounding the bore, with which it communicates at two or more different points—thus through a port 2 near the breech and through another port 3 forward of the breech, and additional ports may be provided, if desired. Each port is provided with a valve 4, closing under the pressure of the air in the chamber, and means are provided whereby these valves may be opened to admit air back of the body of the torpedo. Thus the valve of the port 2 is opened by drawing outward a valve-rod 5, extending through a packed opening in the body of the gun and threaded at the outer end to receive a threaded hand-

wheel 6, by turning which the rod may be drawn outward, carrying the valve with it. This admits a volume of air behind the sabot Y of the torpedo to start the latter forward. After the body of the torpedo passes the next port 3 the valve thereof is opened, admitting another volume of air, which serves as an auxiliary force to aid in the expulsion of the torpedo. Preferably I employ means whereby the valve of the port 3 may be operated from the torpedo or the sabot. Thus the valve may be provided with a projecting stem or portion 21, which by its contact with some part of the torpedo or sabot is the means of causing the lifting of the valve. As shown, the projection 21 extends slightly into a longitudinal channel w of the bore, into which channel projects a rib y upon the sabot, the said rib inclined at the forward end to gradually lift the valve as the sabot passes beneath the stem or projection 21 thereof.

Means should be provided to hold the valve of the port 3 open after the rib y has passed by the port, and one way of accomplishing this is to provide the valve with a stem 8, extending up into a chamber 9, formed in a screw-plug 10, fitted into the wall of the air-chamber 24. The stem is provided with one or more notches 11, with which a pawl or pawls 12 are adapted to engage when the valve is moved from its seat. Preferably the pawls will have a hinged or other connection with the plug, so that by turning the plug the pawls will be disengaged from the notches and permit the valve to return to its seat, preferably under the action of a spring 13.

In order to adapt the gun to be used with the class of torpedoes having separable sections provided with compressed-air chambers, valves, and devices for operating them, as set forth in my application for Letters Patent Serial No. 703,506, I provide the gun within the bore with shoulders or bearings suitably arranged to make contact with valve-operating devices carried by the torpedo. As shown, these shoulders consist of inclined faces x' at the ends of longitudinal channels x, into which project the valve-operating devices carried by the torpedo or its sabot, or both. As shown, the channels x lead from the rear end of the bore to a point intermediate the ends



of the bore. Near their forward ends the channels gradually decrease in depth until they merge into the bore of the gun, thus forming the inclined portions  $x'$ . These channels are parallel to the axis of the bore, and the inclined portions thereof are radial.

It is not desirable to start the torpedo under maximum pressure. On the contrary, it is desirable to start it with a minimum pressure, to increase the pressure as or after the head of the torpedo is projected forward from the body, and to thereafter in some instances still further increase the propelling force, so that the maximum pressure is brought to act only as the torpedo reaches the forward part of the gun. To effect this, I employ two or more chambers stored with compressed air at different pressure. Thus the chamber 24 is divided by a partition 45. The rear part is stored under one pressure and the forward part under a greater pressure, securing the result desired.

Without limiting myself to the precise constructions shown, I claim—

1. A torpedo-gun having a portion of its bore provided with a channel the depth of which gradually decreases at its forward end until it merges into the bore of the gun, substantially as and for the purpose set forth.

2. A torpedo-gun having a plurality of channels formed in its bore parallel to the axis of the bore, each channel extending from the rear end of the bore to a point intermediate the ends of the bore and terminating in a radial incline at the forward end, substantially as and for the purpose set forth.

3. A torpedo-gun provided with a port communicating with an air-chamber, a longitudinal channel in the bore of the gun, and a valve in said port having a projection extending into said channel, substantially as described.

4. A torpedo-gun provided with a port com-

municating with an air-chamber, a longitudinal channel in the bore parallel to the axis thereof and intersecting the port, a valve in said port, and a stem on the valve projecting into the channel, substantially as described.

5. A torpedo-gun provided with a port communicating with an air-chamber, a longitudinal channel in the bore of the gun, and a valve in said port having a projection extending into said channel and adapted to be engaged by a projection at the rear end of a torpedo when the latter is moving toward the muzzle of the gun, whereby air is admitted in the rear of the moving torpedo, substantially as described.

6. A torpedo-gun provided with a port communicating with an air-chamber, a longitudinal channel in the bore of the gun, a valve in the port having a projection extending into the channel and adapted to be engaged by a projection at the rear end of a torpedo, when the latter is moving toward the muzzle of the gun, to open the valve, and means to hold the valve in its open position, substantially as described.

7. A torpedo-gun provided with separated ports one near the breech and the other nearer the muzzle of the gun, said ports communicating with the bore and respectively with separated air-chambers, valves in said ports, hand-controlled mechanism to operate the valve near the breech, and means movable with the torpedo, to be fired from the gun, and at the rear thereof to operate the other valve, substantially as described.

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

THOMAS WEMYSS JUST.

Witnesses:

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