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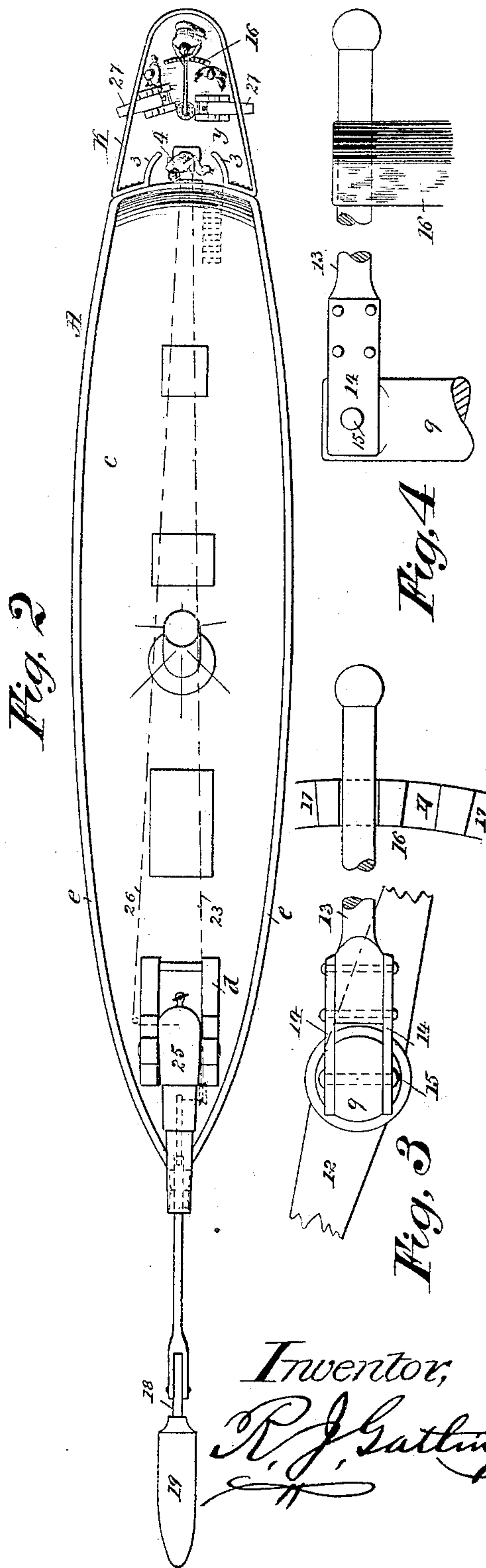
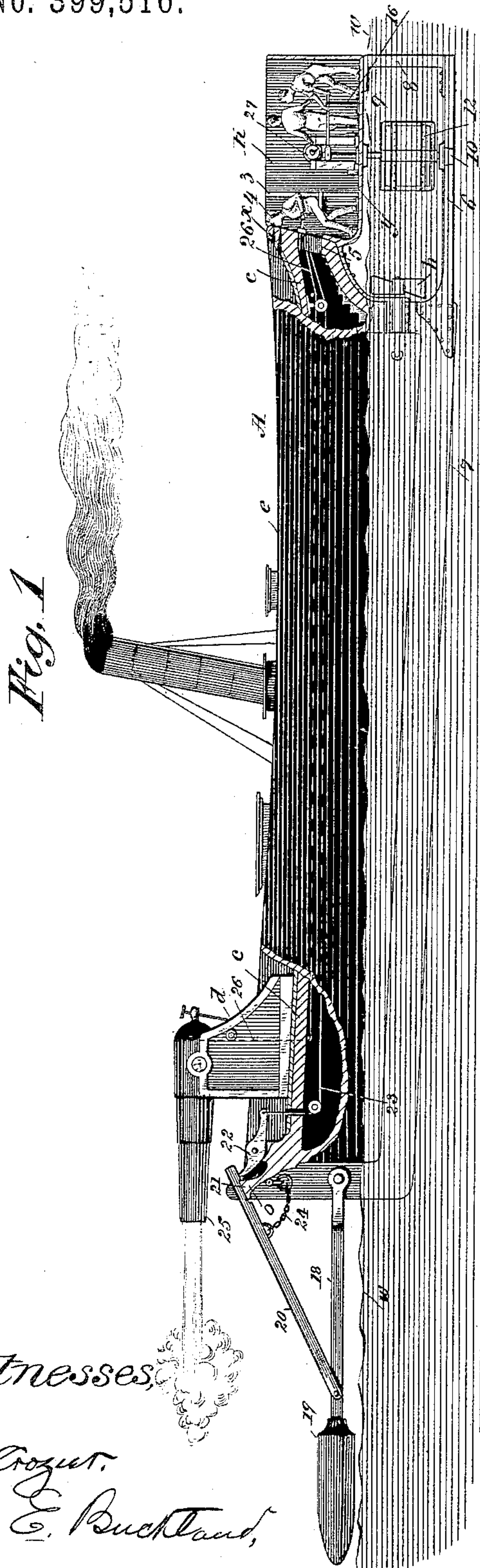
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R. J. GATLING.

COMBINED TORPEDO AND GUN BOAT.

No. 399,516.

Patented Mar. 12, 1889.



*Fig. 4*

*Fig. 3*

Witnesses,

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(No Model.)

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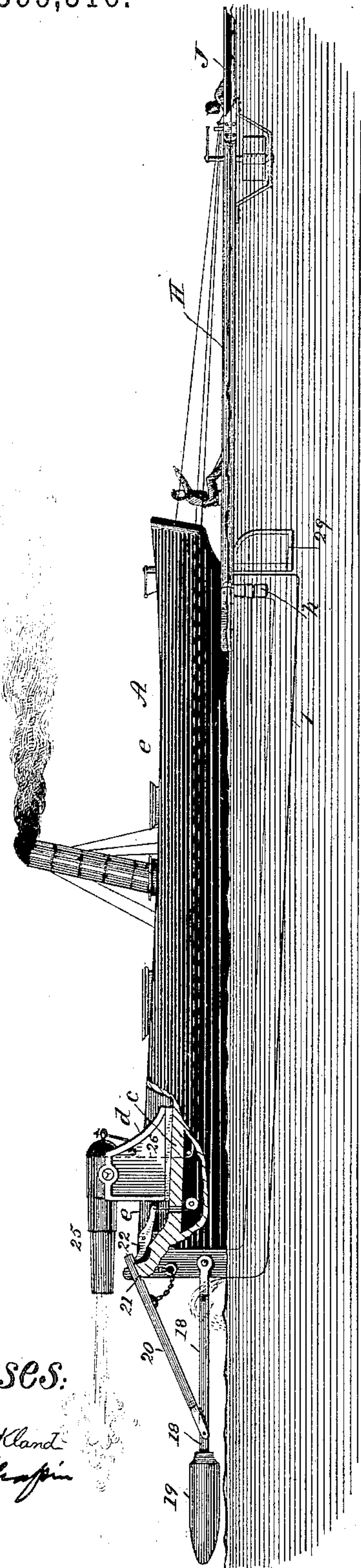
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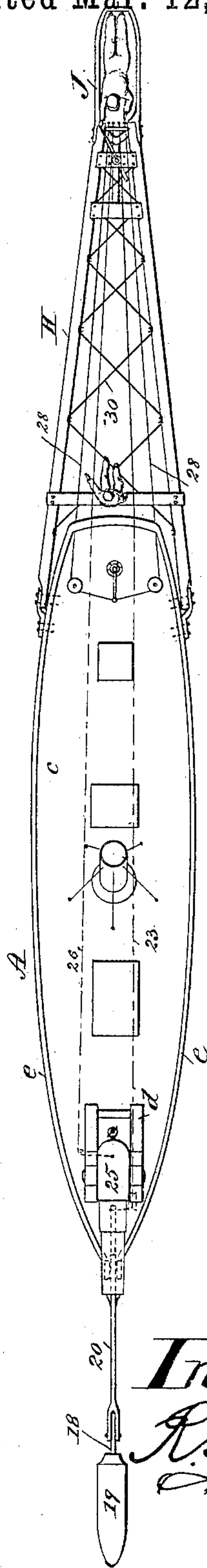
No. 399,516.

Patented Mar. 12, 1889.

Fig. 1a



**Fig. 2a**



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# UNITED STATES PATENT OFFICE.

RICHARD J. GATLING, OF HARTFORD, CONNECTICUT.

## COMBINED TORPEDO AND GUN BOAT.

SPECIFICATION forming part of Letters Patent No. 399,516, dated March 12, 1889.

Application filed October 29, 1888. Serial No. 289,450. (No model.)

*To all whom it may concern:*

Be it known that I, RICHARD J. GATLING, a citizen of the United States of America, residing at Hartford, in the county of Hartford and State of Connecticut, have invented new and useful Improvements in Torpedo and Gun Boats, of which the following is a specification.

This invention relates to controlled torpedoes, meaning thereby boats or launches carrying an explosive agent or agents and other weapons, offensive and defensive, which boats carry their motive power with them, but are designed to be under the control of operators carried therein; and the invention consists in the peculiar construction of said boat or launch and its attached parts, and in the construction and arrangement of its explosive holding and firing devices, and in means for operating the same, all as hereinafter fully described, and pointed out in the claims.

In the drawings forming part of this specification, Figure 1 is a side elevation of a torpedo-carrying boat and explosive holding and projecting devices, all constructed according to my invention, one side of said boat and an attached part being shown, respectively, partly and wholly removed to disclose the interior thereof. Fig. 2 is a plan view of said boat or launch. Fig. 3 is a plan view of a portion of the rudder of the boat and of the rudder-post, the tiller, and the tiller-holder. Fig. 4 is a side elevation of a portion of the rudder-post and of the tiller and the tiller-holder. Fig. 1<sup>a</sup> is a similar view to Fig. 1, but illustrating a modified construction hereinafter fully described. Fig. 2<sup>a</sup> is a plan view of the construction shown in Fig. 1<sup>a</sup>.

The essential object of this invention is to provide, in connection with a light-running and noiseless steam-launch of great speed, a spar or boom capable of a change of position, an explosive carried by said spar, improved machinery for operating said spar or boom, a gun for throwing a high explosive against the side of the object (above the water-line) to be destroyed, and an annex or compartment for the operators of the torpedo, attached to the stern of the boat, whereby the latter becomes a shield which protects said operators from shots directed toward the boat while approaching its objective point.

In the drawings, A indicates a boat or launch having its hull constructed, generally, in any of the well-known ways, whereby it offers the greatest practicable protection against injury from cannon-shot that may strike its sides or deck, and of such build or model as provides for a high rate of speed by the application of suitable motive power. In the drawings, the deck *c* of said boat is shown depressed more or less below the gunwales *e*; but, if desired, said deck may be made flush with said gunwales, and in the latter case the gun-carriage *d* at the bow of the boat would be arranged accordingly. In either of the above-mentioned methods of building said deck the upward incline thereof at the stern of the boat, as clearly shown in Fig. 1, is maintained, in order that any shots coming over the bow of the boat and hitting the deck near the stern shall find no vertical resistance, and be thereby directed upward and over the stern.

One or more sight-holes, *x*, are formed in a longitudinal line through the stern of the boat and the adjoining end of the deck *c*, whereby an operator or operators are enabled to look toward and beyond the bow of the boat for the purpose of noting and directing her course and of determining when to fire a gun, as below described.

Any suitable steam engine and boiler are employed for driving the boat, the products of combustion escaping through the usual smoke-pipe, as shown in the drawings; but, if preferred, the boiler used may be fired by the consumption of crude petroleum or other hydrocarbon in any of the well-known ways, instead of by the use of coal, and under such condition said smoke-pipe may be dispensed with, and all smoke or other indication of fire, which may attract attention to the approaching boat, be avoided.

The propeller *h* is of the usual description and is connected with said engine by the usual shaft, to which said propeller is secured.

A compartment, K, above referred to, constructed from iron plates which afford protection to men from projectiles while conducting the operations of the torpedo, is securely attached to the stern of the boat A, as shown in Figs. 1 and 2, and extends rearwardly therefrom, and is wholly behind and protected



by said stern, as aforesaid. Said operator's compartment has its floor *y* preferably slightly above the water-line (as indicated at *w*) of the boat, and two vertical curved shields, 3, of metal plate, extend from the stern of the boat and are adapted to partially inclose and further protect the chief operator, 4, of the boat while the latter is in active service. The side walls of said compartment K extend vertically to the plane of the floor *y* thereof, and access to the compartment is had through its top, which is left open, and thereby, in case of accident, the operators and the engineer and fireman may enter and leave the hold of the boat by a passage, 5, through the stern of the boat, (a stairway being provided, as shown,) which communicates with said compartment.

Other means of ingress and egress to and from the hold of the boat may be effected through the deck *c*; but it is desirable that the latter shall present as nearly an unbroken surface as possible, in order that it may be better able to resist the effects of shot. In torpedo service of the nature herein described the operators may wear life-preservers, and may all, in case of need, escape through and from the annexed compartment by jumping over its sides. An additional support for said compartment is provided by the longitudinal metallic extension 6 of the keel 7 of the boat, said extension consisting, preferably, of two metallic plates or bars, each firmly secured by one end on opposite sides of the rear end of said keel, and having a vertical iron post, 8, bolted to its end and to the floor of said compartment, as shown.

The rudder-post 9 is suitably supported in a box in the floor *y* and in a step, 10, in said extension 6, and has secured thereto a rudder, 12, of the form shown in Figs. 1 and 3, or one of the ordinary form, as shown in Fig. 1<sup>a</sup>; but that shown in Fig. 1 is preferred as inducing a quicker change of the boat's course.

The tiller 13 has two metallic plates, 14, bolted to its sides, whose free ends extend on opposite sides of the rudder-post 9, and the tiller has a pivotal connection with said post by a bolt, 15, passing through said plates and post, whereby the free end of the tiller may have a vibratory motion in a vertical plane.

A curved tiller-holder, 16, having a series of notches, 17, in its upper end, is rigidly fixed to the floor *y* in a vertical position, and said notches receive the tiller, which extends over said holder, as shown, and holds it and the rudder in such positions as they may be turned to, the said pivotal connection of the tiller and rudder-post permitting the tiller to be lifted out of the notch in which it may rest in order to swing it and operate the rudder, after which the tiller is re-engaged with the holder, as before.

The explosive-carrying spar or boom 18, preferably of metallic construction, is pivotally attached by one end to the stem of the boat, as shown, in order that its outer extrem-

ity, on which the explosive 19 is carried, may be capable of a certain degree of vibratory motion, whereby at a given moment, or when said explosive is to be driven against the side of a ship, it may be caused to drop and strike said ship below its water-line. The above-described manner of carrying the spar-explosive out of water avoids the danger of premature explosion by driving it against some unseen floating object, and provides for maintaining the explosive in a known effective condition, which is not always the case when it is carried under water. The said spar 18 is supported in its normal or substantially horizontal position by means of the stay-rod 20, pivotally attached by one end to said spar, as shown, and its opposite end has a tripping connection with the upper end of the stem of the boat, whereby it is capable of being instantly detached in order to let the explosive 19 drop beneath the surface of the water, as and for the purpose above set forth. The said tripping connection is preferably constructed as follows: The side of the stay-bar 20 has a recess, 21, therein near its upper end, which engages, as shown, with a fixed part of the boat at *o*, and while said bar is so engaged, as shown, the explosive-bearing end of the spar 18 is maintained above the water. A tripping-lever, 22, is pivoted to the boat under the end of said stay-bar, one arm of which is capable of acting under the end of said bar to lift it. To the opposite or rear end of said tripping-lever is attached the end of a chain or cord, 23, which passes around a guide roll or rolls under the deck *c*, as shown, and terminates within the said annexed compartment behind the stern of the boat and within reach of an operator therein, preferably the aforesaid chief operator 4, said tripping of the bar 20 being effected by pulling the said cord 23, thereby swinging the lever 22 and lifting the rear end of said bar and disengaging it from the boat.

In order to limit the downward motion of the outer end of the spar 18 and its attached explosive 19 when the end of the stay-bar 20 is detached from the boat, as aforesaid, a slack stop-chain, 24, is connected to said bar and to the boat, as shown, whereby the explosive 19 is held at the desired degree of immersion when about to be exploded.

The explosive 19, carried on the spar 18, consists of any well-known shell construction containing the most powerful and destructive explosive matter—as, for instance, nitro-glycerine or dynamite, or any other similar material—and the explosion is intended to be caused by the effect of the concussion of said shell with the object against which the torpedo is directed in any well-known manner. It is obvious, however, that said spar-carried explosive may be fired, if desired, by means of electricity.

As a further offensive armament of the said boat, a gun, 25, is mounted on a suitable carriage, *d*, preferably at or near the bow thereof,



as shown, by which shells (explosive by concussion) containing dynamite, nitro-glycerine, or other high-power explosive may be fired by the use of gunpowder ignited by electricity, and to that end a suitable battery is carried on the boat, having electric connection with said gun by suitable conductors, 26, which extend within reach of the said operator 4 in the compartment at the rear of the stern of the boat.

The use of gunpowder for firing the above-referred-to shells containing nitro-glycerine or dynamite in said gun is made practicable by the well-known use of some suitable compressible cushion placed between the powder-charge and the said shell. The combined use of said gun and torpedo is much more efficient to destroy an iron-clad ship than either one alone, for the ship is thereby struck above and below the water-line, and said gun, using powder, has a greater range and is more simple to manage than any pneumatic gun.

As means of defense by the crew or operators of the torpedo against boats that may be sent to attack the overhanging compartment on the stern of the boat A, one or more guns, 27, either of the ordinary class or Gatling guns, are located in said compartment and adapted to be fired through suitable port-holes in the side walls thereof.

From the above description of the boat A and its armament its manipulation and its efficiency as a destructive "engine of war" will be easily understood; but its peculiar advantages are that it (in contradistinction to torpedoes which carry no operators) always carries with it the intelligence of the officer in command up to the instant of attack. It possesses the destructive power both of the ram and the high-power gun. It is positive in its action. It contains the element of certainty which insures the greatest possible number of hits. Its range is practically not limited, while that of ordinary torpedoes is about four hundred yards. It possesses, besides, the elements of certainty of starting, certainty of explosion, security from the enemy's fire, heavy charges, great speed to the end of the run, directing-power, ease of manipulation, simplicity of construction, and ease of repair, all of which are recognized as essential to the successful operation of a torpedo-carrying boat.

The above-referred-to modification (shown in Figs. 1<sup>a</sup> and 2<sup>a</sup>) consists in attaching a frame, H, to the stern of the boat A, (in lieu of the compartment K,) which extends substantially on the water-line rearwardly, as shown, said frame being so located relative to the stern of the boat A that any of the crew who may be on said frame will be shielded by the boat from shots directed at its bow in substantially the same manner that they are when in the compartment annexed to the stern, as shown in Figs. 1 and 2. Said frame H has attached thereto at its rear extremity a low-sided yawl, J, for carrying an operator,

who may direct the boat by means of tiller-ropes 28, connected to the tiller of the rudder 29, or by means of a rudder on said frame, as shown. Said frame is provided with "rattlings" 30 or other similar intermediate lacing between the sides of said frame, whereby the latter is made light and offers but little resistance while moving through or on the water, and persons may move thereon from the boat to said yawl, and vice versa. Electric conductors are also run from the boat A to or within reach of the operator in said yawl, and also a cord or chain attached to the tripping-lever 21, all as and for the purposes above set forth.

The boat being sent on its errand of destruction against a ship, the chief operator occupies a position in said annexed compartment, as shown, partly inclosed by said shields 3, and in position to observe through the sight-holes the course of the boat, and to manipulate the said devices whereby the torpedo-spar is dropped and the gun 25 is fired, and to direct the action of his assistants as the boat approaches the ship to be attacked.

What I claim as my invention is—

1. A torpedo-boat having a spar-torpedo projecting from the stem, an upwardly-curved deflecting-deck extending from the bow back of the engines, and a compartment at the rear of the boat having sighting-apertures through the curved deck, said compartment having operative connections to the torpedo, substantially as described.

2. A torpedo-boat provided with offensive weapons at its bow, and having an upwardly-curved deflective deck extending over and to the rear of the engines, and a rear compartment open at top, but shielded in front by said deck, from which compartment the offensive weapons and steering-gear may be operated, substantially as described.

3. A torpedo-carrying boat, substantially as described, having a forwardly-projecting spar pivoted by one end to the stem thereof, an explosive shell attached to said spar, a stay-rod pivoted by one end to said spar and having by its opposite end a detachable engagement with the boat, whereby said spar is supported in a horizontal position, a tripping-lever pivoted near the engaged end of said rod, an operator's compartment annexed to the stern of said boat, extending rearwardly therefrom, and communicating by a passage-way with the hold thereof, and a chain attached to one arm of said tripping-lever and extending to said compartment, substantially as set forth.

4. A gun-boat provided with a deflective deck extending rearwardly from the bow and over the engines, an open-top compartment for the crew in rear of said deck and having sighting-apertures through the curved deck, said compartment having side ports protected by shields, substantially as described.

5. A torpedo-carrying boat, substantially as described, having a forwardly-projecting



7 spar attached to the stem thereof, an explosive shell attached to said spar, a gun mounted on said boat capable of throwing shells containing high-power explosives, substantially as described, an operator's compartment annexed to the stern of said boat, extending rearwardly therefrom, and electric conductors extending between said gun and compartment, substantially as set forth.

10 6. A torpedo-carrying boat, substantially as described, having an operator's compartment annexed to the stern thereof, whereby said boat is caused to become a shield against projectiles fired toward the bow of said boat, 15 a longitudinal extension of the keel under said compartment, a post rigidly secured to the floor thereof and the extremity of said extension, and a rudder having its post-bearings in said floor and extension, substantially as set forth. 20

7. A torpedo-carrying boat, substantially as described, having an operator's compartment annexed to the stern thereof, whereby said boat is caused to become a shield against 25 projectiles fired toward the bow of said boat, a rudder having its post extending through the floor of said compartment, a tiller-holder

fixed to said floor having notches in its upper end, and a tiller pivotally connected to said rudder-post and engaging in said notches, 30 substantially as set forth.

8. A torpedo-carrying boat, substantially as described, having an operator's compartment annexed to the stern thereof, whereby said boat is caused to become a shield against 35 projectiles fired toward the bow of said boat, and curved shields within said compartment extending from the stern of the boat rearwardly, substantially as set forth.

9. A torpedo-carrying boat, substantially 40 as described, having an operator's compartment annexed to the stern thereof, whereby said boat is caused to become a shield against projectiles fired toward the bow of said boat, the deck of said boat at its junction with said 45 compartment being upwardly inclined, and having one or more longitudinal sight-holes therein communicating with said compartment, substantially as set forth.

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Witnesses:

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