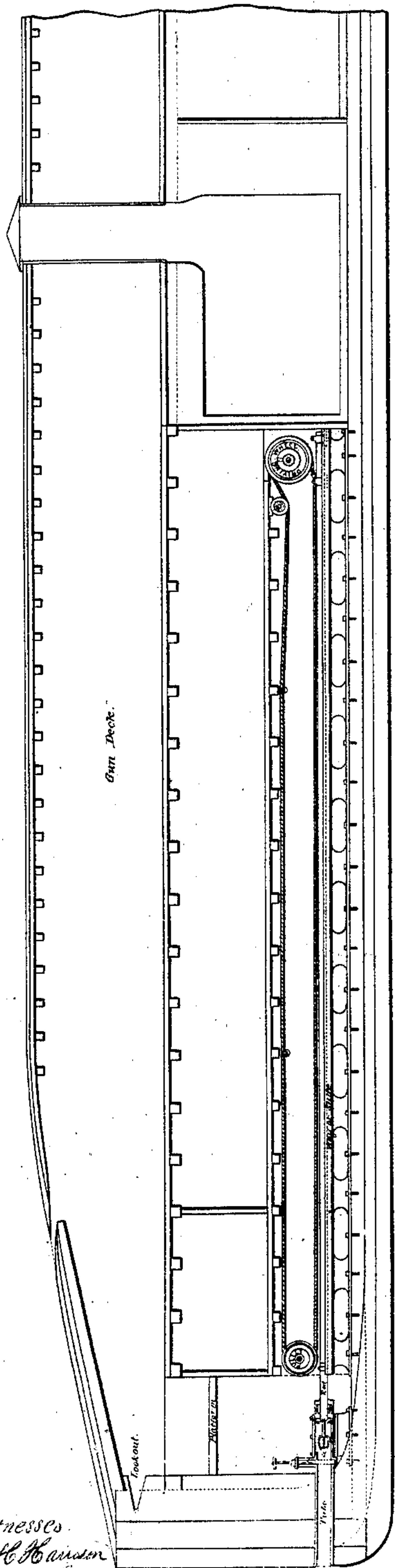
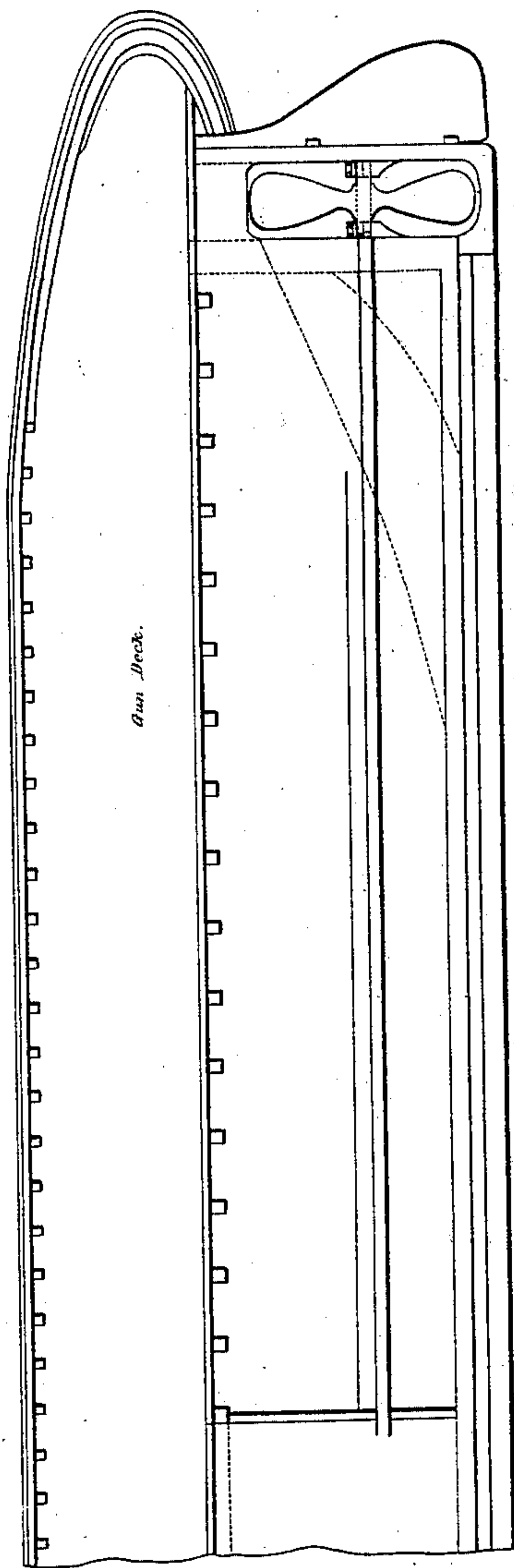


B.F. Smith Jr. Sheet 1 of 2 Sheets
Sub-Marine Battery
N^o 37942. Patented Mar. 17. 1863



Witnesses.
Wm H. Harrison
E. C. Smeed

Fig. 1. Section.



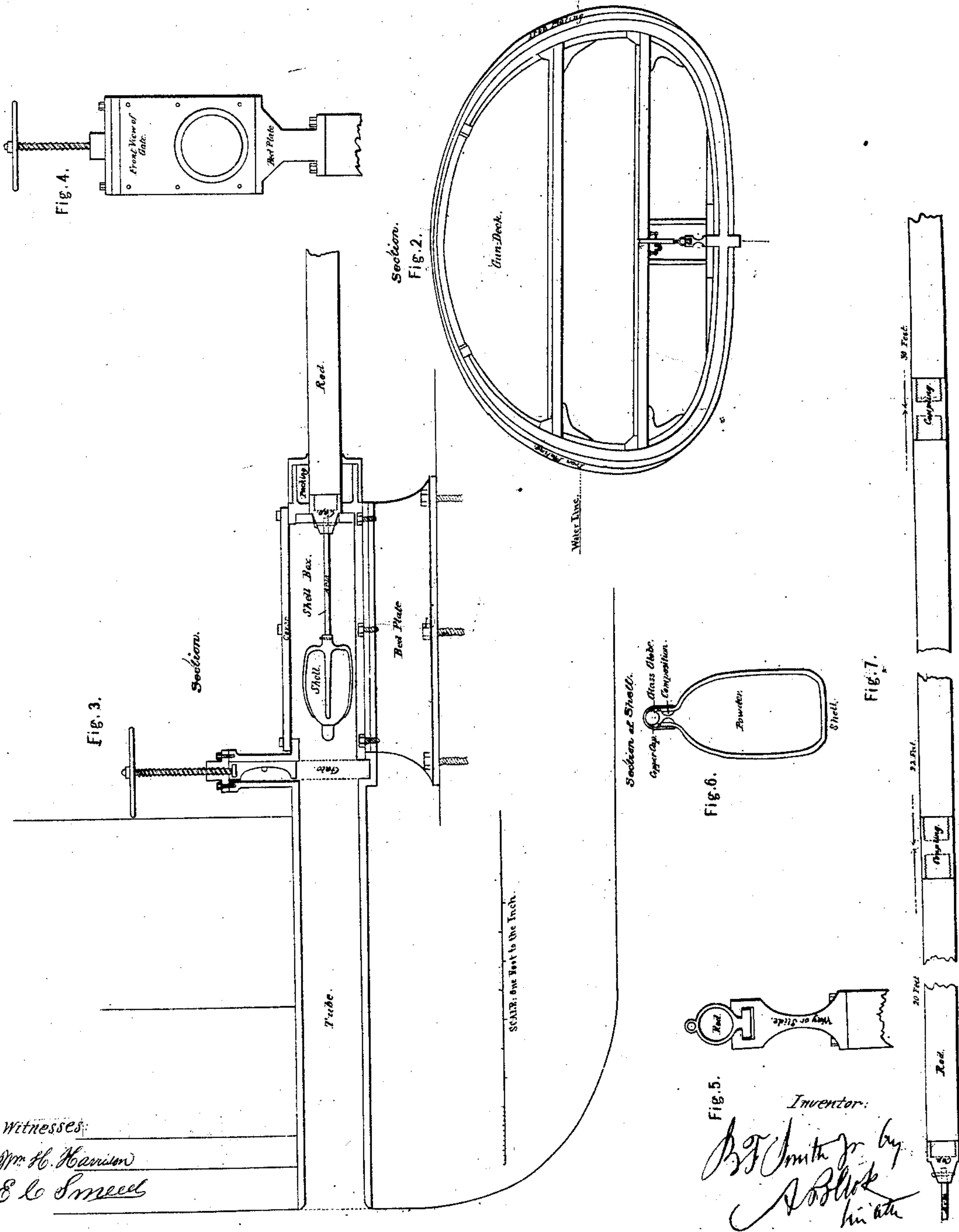
Inventor:
B.F. Smith Jr.
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B.F. Smith Jr. Sheet 2.2 Sheets.

Sub Marine Battery

N^o 37942.

Patented Mar. 17. 1863.



UNITED STATES PATENT OFFICE.

BENJAMIN F. SMITH, JR., OF ALBANY, NEW YORK.

IMPROVED SUBMARINE BATTERY.

Specification forming part of Letters Patent No. **37,942**, dated March 17, 1863; antedated November 15, 1862.

To all whom it may concern:

Be it known that I, BENJAMIN F. SMITH, Jr., of Albany, in the county of Albany and State of New York, have invented certain new and useful Improvements in Submarine Batteries; and I hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, in which—

Figure 1 represents a longitudinal and Fig. 2 a transverse section of an iron-clad vessel or floating battery with my improvement attached. Figs. 3, 4, 5, 6, and 7 are details on an enlarged scale.

My invention consists in the application to and combination with vessels of otherwise ordinary construction of a mechanism for driving or thrusting with force and unerring precision a shell or other explosive substance against ships or any other given object, there to explode by contact, substantially as herein-after described. To accomplish this I fit through the vessel, preferably the bow, a tube having a gate for closing against inflowing water. At the inner end of this tube a stuffing-box is used for packing a rod, to which a forward-and-backward movement may be imparted to pass in and out of the vessel. To the forward end of the rod an explosive shell is secured, to effect which the gate is first closed to shut out the water. The hand-hole is then opened and the shell is introduced through it. The rod is propelled—*i. e.*, it is forced out against the object to be struck or withdrawn therefrom—by mechanism driven by steam or hand power to suit circumstances.

Having thus stated the principal features of my invention, I shall now proceed to give a detailed description of the apparatus used.

The tube A is located in the hull of the vessel, preferably in the bow, under the level of the water. Its sectional diameter is such as to correspond with the size of the shell used, as shown in the accompanying drawings. In rear of the tube, and in continuation thereof, there is the shell-box B, consisting of a quadrangular metallic case firmly bolted at its under side to a bed-plate, which in its turn is securely attached by suitable flanges to the keelson. The shell-box is open on top and provided with a covering-plate, which is removable at pleasure, for the insertion of a fresh

shell or for purposes of inspection and repairs. The covering-plate is provided at its under side with an india-rubber strip, whose office it is to render the cover when closed water-tight. The covering-plate may at one of its sides be hinged to the shell-box, while on the opposite side it may be furnished with a clasp or other hooking device for closing the cover onto the shell-box. The rear of the shell-box is closed by a huge stuffing-box of a diameter snugly to surround the shell-rod. The stuffing-box is made in the manner usual in steam cylinders or pumps to pack piston-rods, &c., and the packing may consist of rubber metal, hemp, or any other suitable substance. Communication between the tube and the shell-box is cut off and established at pleasure by means of a valve, arranged within suitable casing, cast to and forming the rear end of the tube. The casing is a quadrangular recess constituting the ways within which the valve-plate is confined, and capable of an up-and-down sliding motion. The valve is geared by means of a screw-shank working in a screw-nut on the top of the casing, and is operated by a wheel or crank on the outside. The screw and nut as well as the valve rim and ways are accurately fitted and adjusted so as to prevent water from leaking through at the joint. To effectively pack the valve I prefer to give its front face a concave form, as shown in the accompanying drawings, and I place within its concavity a suitable spring, whose pressure will cause the plate to bear against its ways to form a tight joint.

From the above it will be seen that the shell-box may be kept free from water, and that access may be had to it at will to attach a shell to the rod or for other purposes. The shell-carrier or the rod is made light, rigid, and of great power of resistance to compression in the direction of its length. I prefer to make it of iron tubing or wood in sections of convenient uniform length, united by means of metallic screw-coupling sleeves. By this arrangement I am enabled to lengthen and shorten the rod at pleasure, and to readily repair damages, if any should occur. If, therefore, any section becomes injured by explosion or otherwise, it can be readily replaced by another. The forward end of the rod is mounted by a socket recessed both at the

sides and in front for the reception and securing of the shell-arm within it. The rod is supported throughout the whole of its length by an iron way made of one or more pieces, and with flangs whereby it is fastened to the keelson. It may be made of wrought or cast iron, and may be formed in the shape of a girder, whereby great strength will be imparted to the structure. The rod, it will be seen, is supported by the iron way or slide throughout its whole length, with the exception of its forward end, which is passed through the stuffing-box into the shell-box, there to be armed with a shell or explosive missile. With the rod is combined a friction or other driving mechanism to propel the rod back and forth at will in the direction of its length. The driving mechanism may be constructed and arranged in various ways. In the accompanying drawings I have shown a drum and pulley, around which is passed an endless wire rope, fast to the rear end of the tube. On rotary motion being imparted to the drum by means of a crank coupled either with the engine of the vessel or a separate engine, the rod will be thrust out or drawn back with a velocity equal that of the revolution of the drum. The shell I use is held by claws on the arm, fitting the socket on the forward end of the rod, and may be made in accordance with any known system having a suitable percussion device applied to its forward end, which is to act directly on the percussion powder or on a bottle containing a chemical agent that, when liberated by the breaking of the bottle, shall generate the explosive gases and burst the shell. A cushion or buffers may be arranged at some convenient part at or near the forward end of the iron way to receive the blow of and hold the rod back when projected the whole extent of its length.

The apparatus constructed as herein above described, being applied to a gunboat, the operation is as follows: The commander is supposed to stand upon the platform, where, through the lookout he can perceive the object to be struck, also overlook the adjusting of the apparatus. The valve being closed, the assistants unfasten and raise the cover of the shell-box and place the shell, which is attached to the arm within the box, and fasten the arm to the end of the rod by means of an iron pin. This done, the cover of the shell-box is closed and the gate is raised and the rod is ready for action. When the vessel arrives within striking distance, the commander, by the movement of a crank, causes the rod to be forced out and the shell on striking will explode. By reversing the crank movement the rod is withdrawn and the gate closed, and another shell may be adjusted.

Having thus fully described my invention and the manner in which the same is or may be carried into effect, I shall state my claim as follows:

The application to and combination with vessels of otherwise ordinary or suitable construction of a mechanism for driving or thrusting shells or other explosive missiles against vessels or other bodies accessible by water and there by contact to explode; said mechanism being constructed and arranged to operate substantially in the manner herein set forth.

In testimony whereof I have signed my name to this specification before two subscribing witnesses.

B. F. SMITH, JR.

Witnesses:

E. SLOAN,
EDWARD J. MAXWELL.