(No Model.) 2 Sheets—Sheet 1.

A. F. SPAWN.

APPARATUS FOR EXTINGUISHING FIRES ON VESSELS.

No. 285,520. Patented Sept. 25, 1883.

Fig. 1.

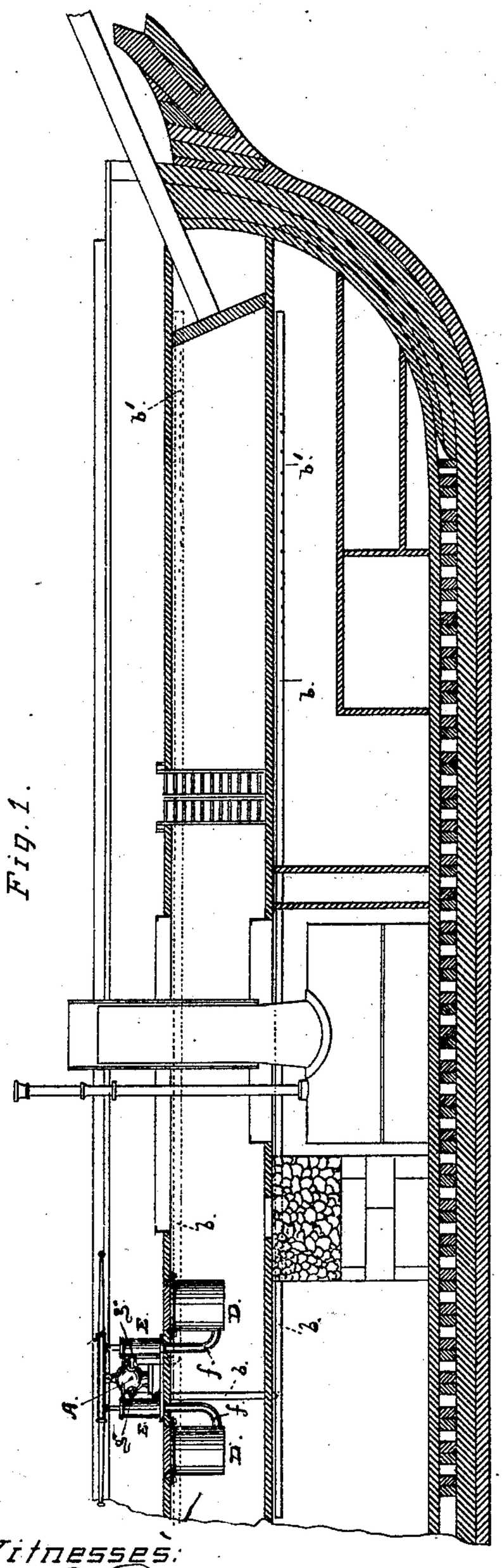
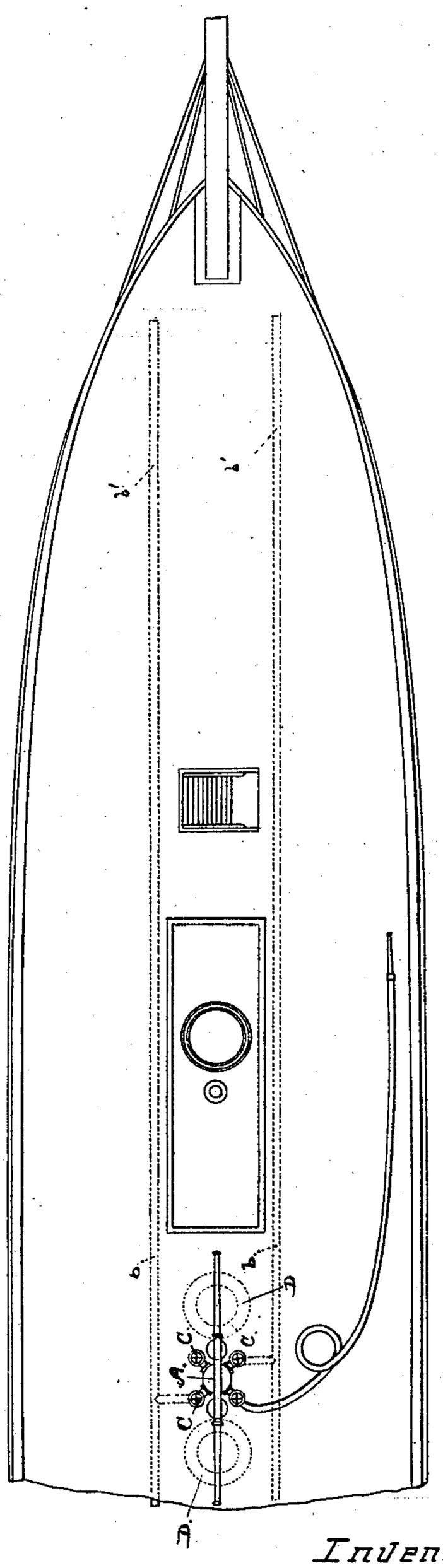


Fig. 2.



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(No Model.) 2 Sheets—Sheet 2.

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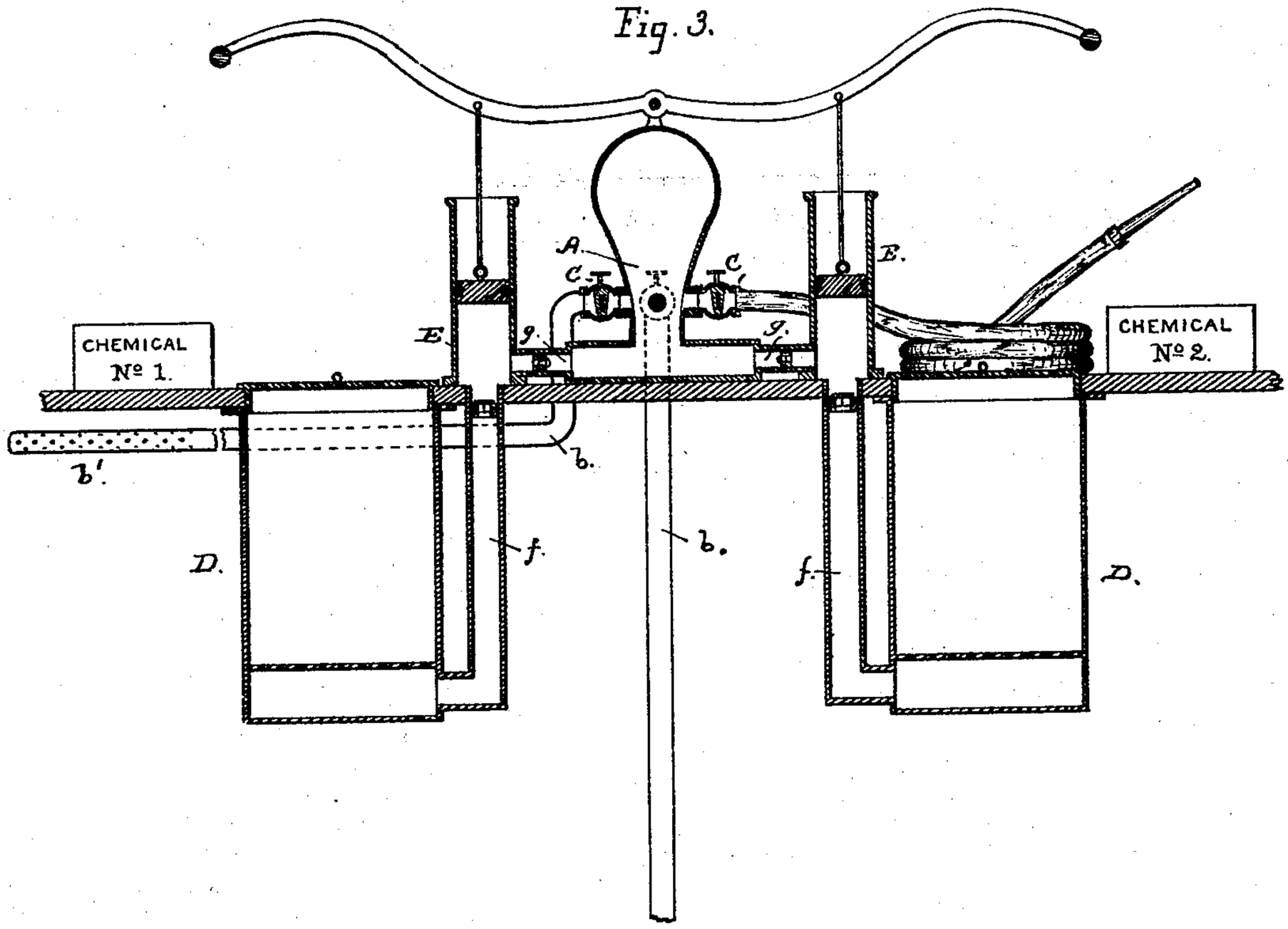
Fig. 3.



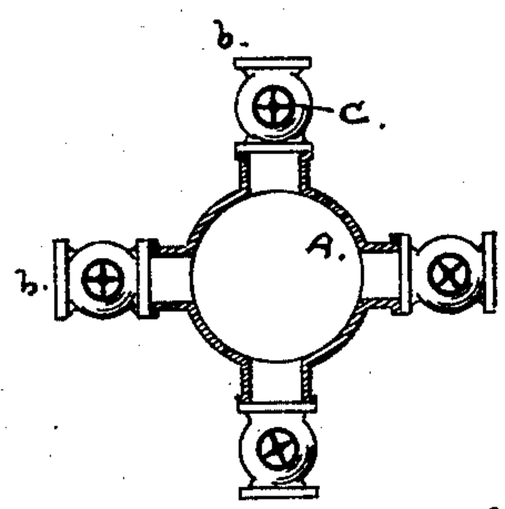


Fig. 4.

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UNITED STATES PATENT OFFICE.

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APPARATUS FOR EXTINGUISHING FIRES ON VESSELS.

SPECIFICATION forming part of Letters Patent No. 285,520, dated September 25, 1883.

Application filed January 26, 1883. (No model.)

To all whom it may concern:

Be it known that I, ABEL F. SPAWN, a citizen of the United States, residing in the city of Oakland, county of Alameda, State of California, have made and invented certain new and useful Improvements in Fire-Extinguishing Apparatus for Vessels; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification.

My invention has for its object to provide a means, device, or apparatus wherewith to reach, control, and extinguish fires in all parts of ships and vessels from a central station or point of operation, whereby an incipient conflagration can be checked and overcome in whatever part or locality it may be found to exist, and with such rapidity that the vital parts of the vessel are not endangered or destroyed.

To such end and purpose my invention consists in carrying and laying within and throughout a ship or vessel to be protected a number of permanent conducting tubes or pipes, and in connecting the said tubes or pipes with a fixed chamber or compartment, in which, by suitable apparatus and chemicals, a body of carbonic-acid gas is generated, and in which also, by suitable mechanical means, a pressure is produced and maintained to force the gas as quickly as generated into and through a number or all of the several conducting-pipes, with sufficient pressure to reach the point or locality of egress and application at the end of such conductor.

The following description fully explains the nature of my said invention and the manner in which I proceed to construct, apply, use, and operate it, reference being had to the accompanying drawings by letters and figures—that is to say:

Figure 1 is a longitudinal section through a vessel to which my improved apparatus is applied. Fig. 2 is a plan or top view of the same. Fig. 3 is a vertical section of the pumps, mixing and chemical chambers, showing the connected parts. Fig. 4 is a horizontal section of the mixing-chamber and connections to the distributing-pipes.

In carrying out and applying my invention to a vessel, I first construct or place in and at some central and readily accessible point on deck a close gas-tight chamber or compartment, A. From this chamber I lead a number of tubes or pipes, *b b*, and fix them in position to form permanent conductors. These are carried from this chamber to different parts of the vessel, so that each locality, room, and space to be protected has the end of a conducting-pipe fixed in it. This end portion *b'* of the tube or pipe is perforated, or is provided with a number of jet-nozzles, through which the gas finds exit into the surrounding space, and the pipes have their inlet ends at the chamber controlled by cocks or valves C C, to regulate the flow of the gas through as many of them as the exigencies of the case may seem to require. In close proximity to this chamber I place two tanks, D D, of about the same capacity each, to hold a body of water in readiness for use, and each one connected with the suction-chamber of a force-pump, E, by means of a pipe, *f*, carried down into the tank, and terminating within a short distance above its bottom.

In the construction and application shown in Figs. 1 and 2 of the drawings, I have placed the chamber A upon the upper deck and secured the pump-cylinder E in close proximity to it, so that these discharge-chambers can be connected with the chamber A by short connections *g g*, and then the two pumps can be worked conveniently together. The tanks D D also are placed immediately under the deck, beneath openings covered by lids or trap-doors, that are raised to fill the tanks or to charge them with the chemicals for producing the aqueous solutions by the combination of which the gas is produced.

The pumps E can be simple force-pumps, such as are commonly used on vessels, excepting that the chamber A is substituted for the pump air-chamber. The couplings are situated around the sides of the chamber, and each one is properly marked or numbered to indicate the part or locality in the vessel to which its conducting-pipe is laid, and each one is controlled by its valve.

In size and capacity of the chamber A and

its conducting-pipes, the tanks and pumps will be governed by the area and the number of parts and spaces in the vessel to be protected.

In vessels of large size the most exposed parts and spaces—such as the cargo-spaces, coal-bunkers, and boiler-room—can be provided with a separate and special generating-chamber and force-pumps, which can be of larger size and capacity than the apparatus provided for those parts not particularly subject to fires by accidental or spontaneous combustion.

As constructed and applied in this manner the operation of my improved apparatus is simply as follows: A quantity of chemicals such as are commonly employed to produce by combination carbonic-acid gas in fire-extinguishing apparatus is thrown into each of the tanks D, which are kept always charged with water in readiness for service, and the pumps E are then set in motion. From each tank the solution is then raised up through the pipes *f* and forced into the chamber A, where the two streams combine to produce carbonic-acid gas. The continued operation of the pumps produces and maintains a pressure in the chamber sufficient to force the gas through the longest pipe and into the space where its perforated end is laid.

Any one or all of the compartments, spaces, or parts of the vessel connecting with the generating-chamber can be instantly filled with gas by opening any one or the required number of valves in the conducting-pipes.

In the operation of this apparatus it can be worked constantly for any required time by simply supplying the tanks D D with water and a fresh quantity of the acid and alkali chemicals, which are turned into them as fast as the solutions are drawn off by the pumps.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The herein-described fire-extinguishing apparatus for ships and vessels, consisting of a permanent chamber, A, in which to generate a body of carbonic-acid gas, the distributing-pipes leading therefrom and laid to the several parts and localities to be protected, and having their connections with the said chamber controlled by valves, and their distributing ends provided with perforations, the tanks D D, and the force-pumps E, connected with the tanks and delivering into the said generating-chamber, substantially as heretofore described.

2. The combination with and application to a vessel of the generating-chamber A, the permanent conductors controlled by valves connected to said chamber and laid and carried throughout the vessel into the several parts, spaces, and compartments to be protected, the tanks D D, to receive the chemicals, and the force-pumps E, connected with said tanks and delivering into the said chamber, to operate as and for the purpose set forth.

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Witnesses:

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