

J. C. LYONS.

Fog Alarm.

No. 68,763.

Patented Sept. 10, 1867.

Fig. 2

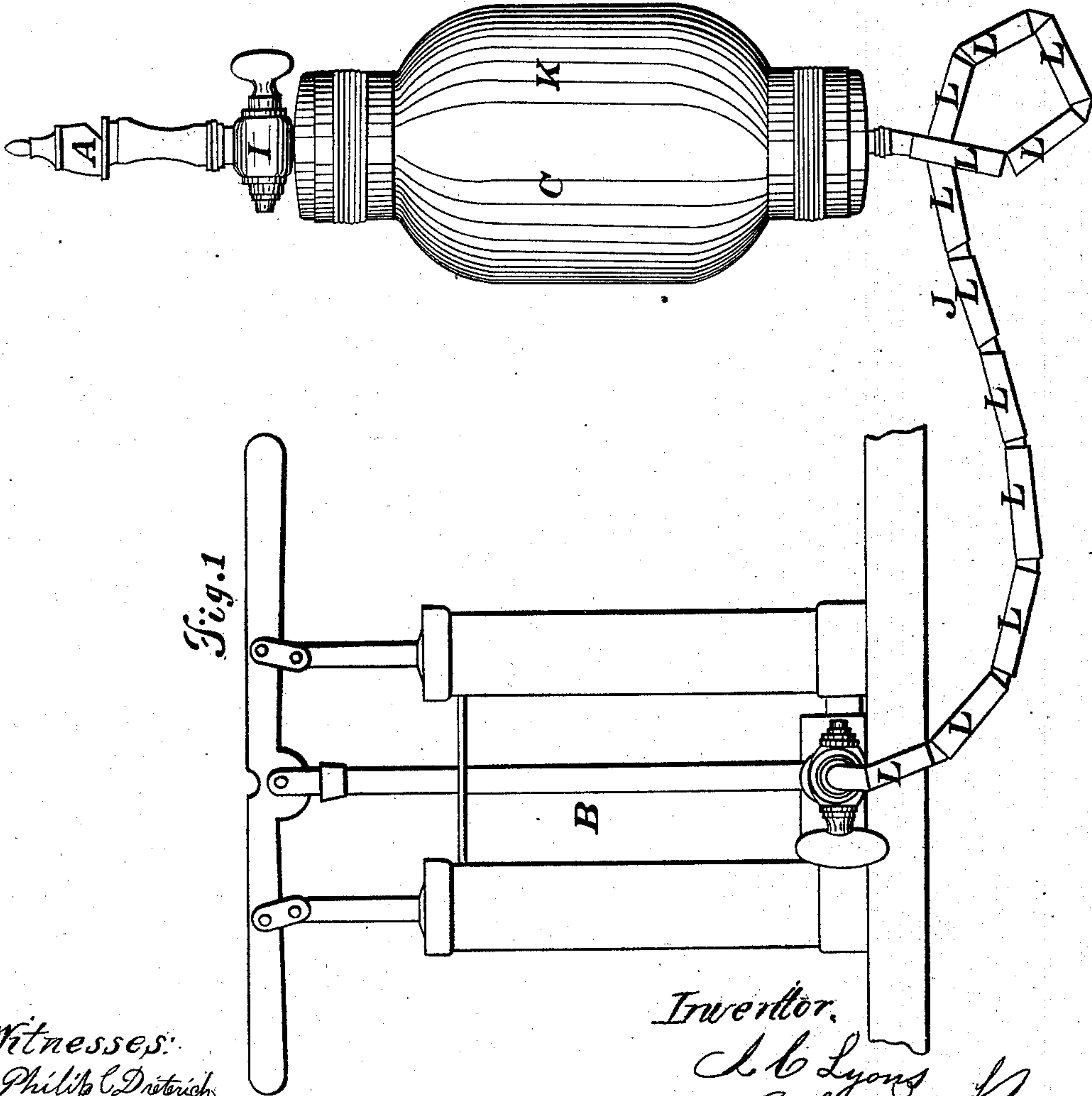
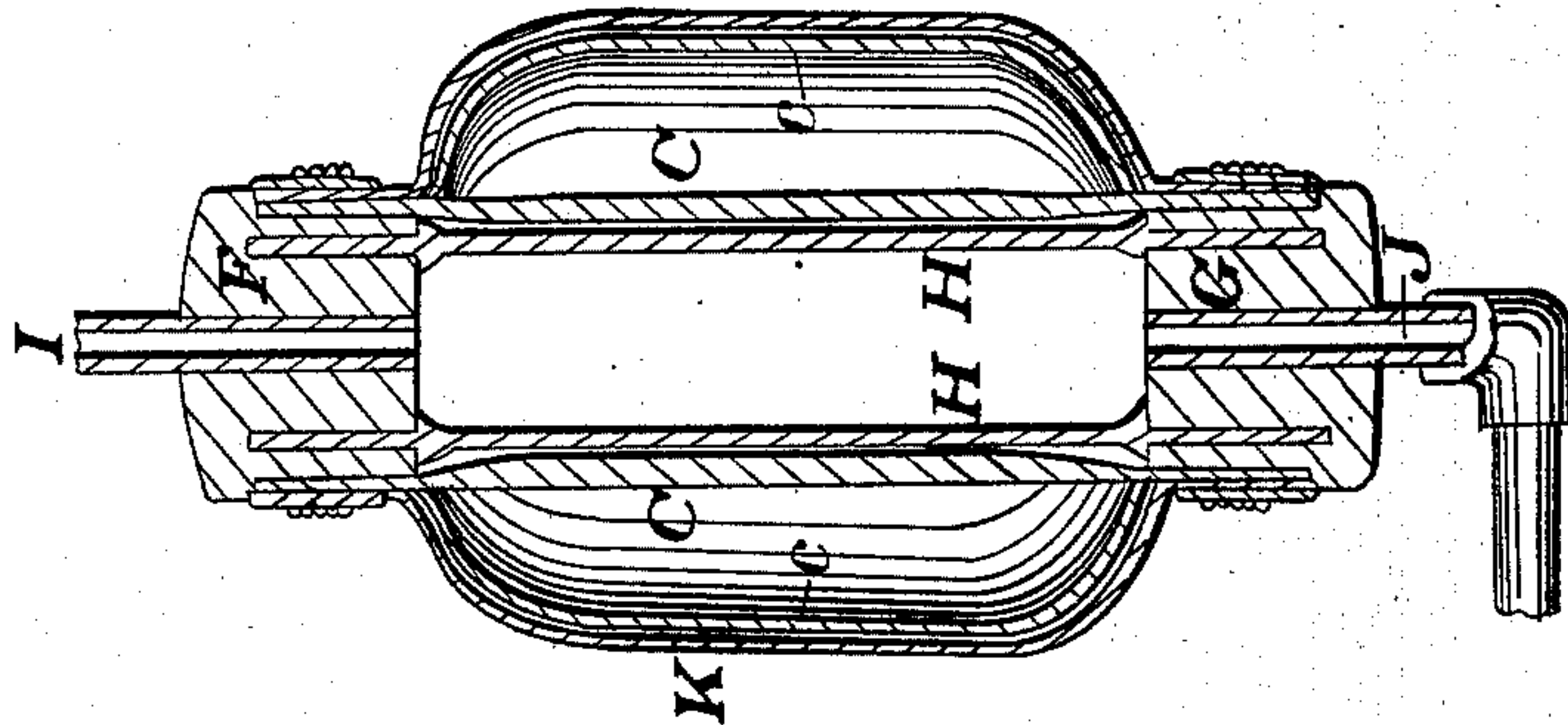


Fig. 1

Witnesses:
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United States Patent Office.

J. C. LYONS, OF NEW YORK, N. Y.

Letters Patent No. 68,763, dated September 10, 1867.

IMPROVEMENT IN FOG-ALARMS.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, J. C. LYONS, of New York, in the county of New York, and State of New York, have invented a new and useful Improvement in Fog-Alarms; and I do 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 is an elevation of my apparatus, with air-pump.

Figure 2 is a vertical longitudinal section of the air-reservoir; in which the form of the flexible reservoir when collapsed is shown in black, and its form when expanded is shown in red.

My invention consists in the construction and use of an elastic and flexible air-chamber or reservoir, in connection with an air-pump or its equivalent, and some sonoric device, for the purpose of forming an air-trumpet or whistle which admits of use on board of sailing vessels where it would be inconvenient to accommodate a rigid and unyielding reservoir, such as have hitherto been used.

That others may understand my invention, its construction and use, I will particularly describe it.

A is an ordinary whistle, or its equivalent, in producing a loud sound when exposed to a strong current of air. The ordinary form, known as the "steam-whistle," I consider to be the best known device for the purpose, though, as concerning the subject of this patent, the construction of the sonoric device is immaterial.

B is an air-pump, for the purpose of compressing the air within the reservoir, to produce the desired blast. Its construction is immaterial, as regards the invention herein described.

C is a flexible and expansible sack, forming the reservoir, into which air is forced under pressure by the forcing pump, and from which it may escape only through the whistle, to produce the desired sound. I will particularly describe the construction of this reservoir and its advantages. I first provide two head-blocks, F and G, which should be constructed of metal. Through these head-blocks are inserted the tubes I and J, which unite the whistle and the forcing pump to the reservoir. The head-blocks F and G are connected by the rods H H, which are secured to said blocks by screws or otherwise. The rods may be two or more in number, as may be found to be necessary to give the required strength and stiffness to this structure. After securing the head-blocks to the connecting-rods H H, I place them within the cylindrical sack C, which is open at each end, and secure said ends firmly to the head-blocks, as shown, by winding wire or cord tightly about that part which covers the head-block, or by some other reliable method. The reservoir C is constructed, as I prefer, of India rubber, formed in a seamless open-ended tube of proper size, though I do not confine myself to the use of that material, nearly the same result being produced by any other flexible material which may be rendered impervious to air. When air is forced into this reservoir its sides yield and expand in proportion to its thickness of material and its tensile strength, so that the desired quantity, as well as the required pressure, may be obtained with a reservoir which, when the apparatus is not in use, will occupy but very little space. As it is practically impossible to manufacture India rubber with a uniform tensile strength throughout its mass, and owing to extreme elasticity and mobility of compressed air, an unprotected rubber reservoir would be constantly liable to injury and over-straining when fully inflated, I therefore deem it expedient to cover my reservoir with a cylinder, K, of leather or canvas, which, being of definite form and unyielding, will limit the possible expansion of the India rubber and render its accidental fracture unlikely. In constructing the reservoir C of India rubber it should be formed with a greater thickness of sides midway from end to end, as shown in the drawings, fig. 2, and a gradual decrease of thickness from that point toward each end, because, in expanding, the central portion is more elongated than those parts nearer the ends, and the strain will be more perfectly equalized if the central parts be made with greater thickness. The reservoir C may be constructed of leather or canvas, varnished or otherwise, made impermeable to air, but I prefer to use the combined structure of rubber and leather or canvas, the former to retain the air and the latter to secure the desired strength.

In apparatus hitherto made for the purposes of a fog-alarm the reservoir has been constructed with solid and unyielding walls of sheet metal. A reservoir has been required in order to produce a prolonged sound from the whistle, extending over the space of time when the cranks which work the air-pistons are passing the dead-centres, but it is manifest that such a reservoir, of sufficient size, would be highly inconvenient on the deck of a vessel. With my apparatus the reservoir, being flexible, may be made to occupy a space not much larger than the diameter of the head-blocks F G, and may be permanently stored behind the rack at the foot of

the mast. An advantage in the use of rubber, in constructing my reservoir, is, that the natural capacity of such a reservoir is very small, and hence expansion under pressure would commence as soon the operation of the pump should commence, whereas, with reservoir of varnished canvas or leather, it would be necessarily fully inflated before pressure could commence—a difference which might frequently be of great importance.

It may sometimes be inconvenient to use metallic tubing for the entire connection between the air-pump and reservoir. In such case the connection may be made by flexible India-rubber tubing, protected and covered by short sections of metallic tube, L, as shown in the drawings, which, while they do not reduce in any important degree the flexibility of the tube, will protect it externally and prevent its undue expansion under the power of the force-pump. On board a sailing or other craft the pump may be a fixture in some convenient place below decks, or the whole apparatus, being light and portable, may be kept in a convenient place, and brought upon deck only to be operated.

It is evident that this apparatus is equally applicable to land-stations as at light-houses or life-boat stations, but the restrictions as to size will not be so important on land as on sea.

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

In combination with an air-pump and whistle, as set forth, a flexible and elastic air-chamber or reservoir, for the purposes set forth.

The reservoir, constructed with the head-blocks F G, rods H H, and covering C, in combination with the whistle A and pump B, substantially as set forth.

Covering the flexible-tube connection with short sections of metallic tubing, as and for the purpose set forth.

J. C. LYONS.

Witnesses:

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