

(No Model.)

2 Sheets—Sheet 1.

F. E. DYER.  
MECHANICAL FOG HORN.

No. 436,651.

Patented Sept. 16, 1890.

*Fig. 1.*



WITNESSES:

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INVENTOR:

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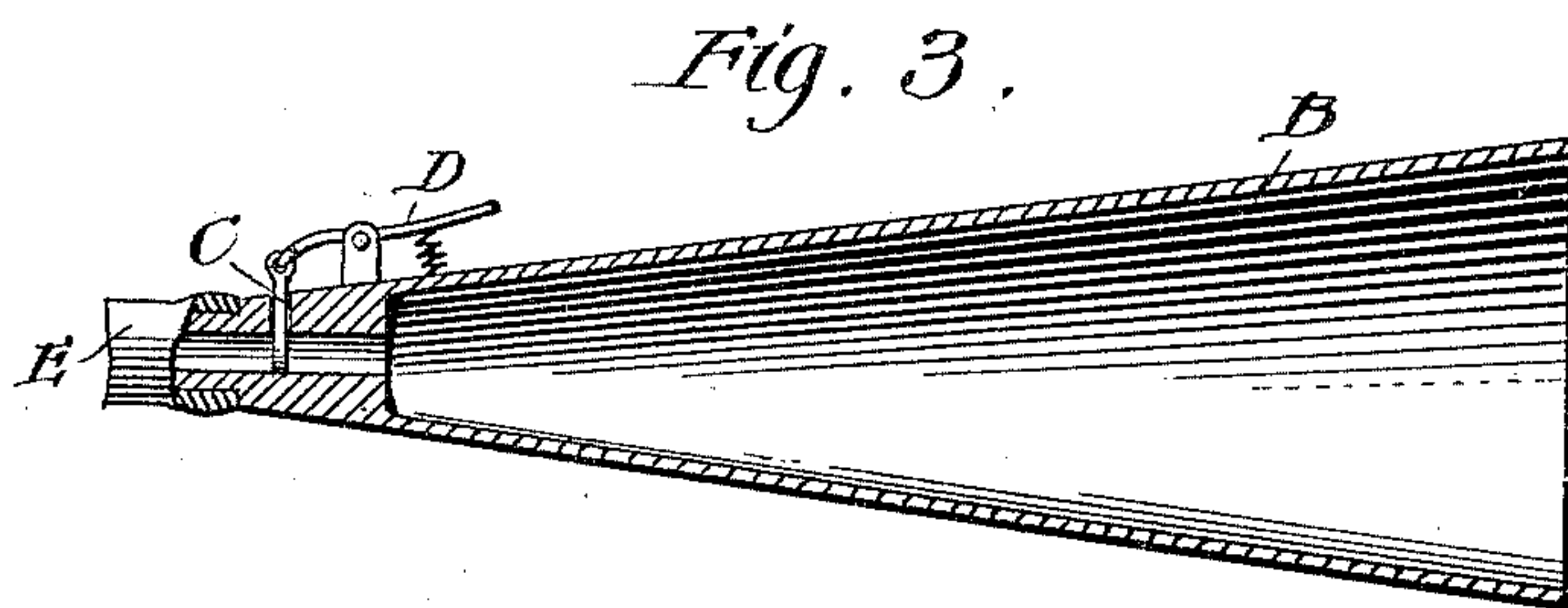
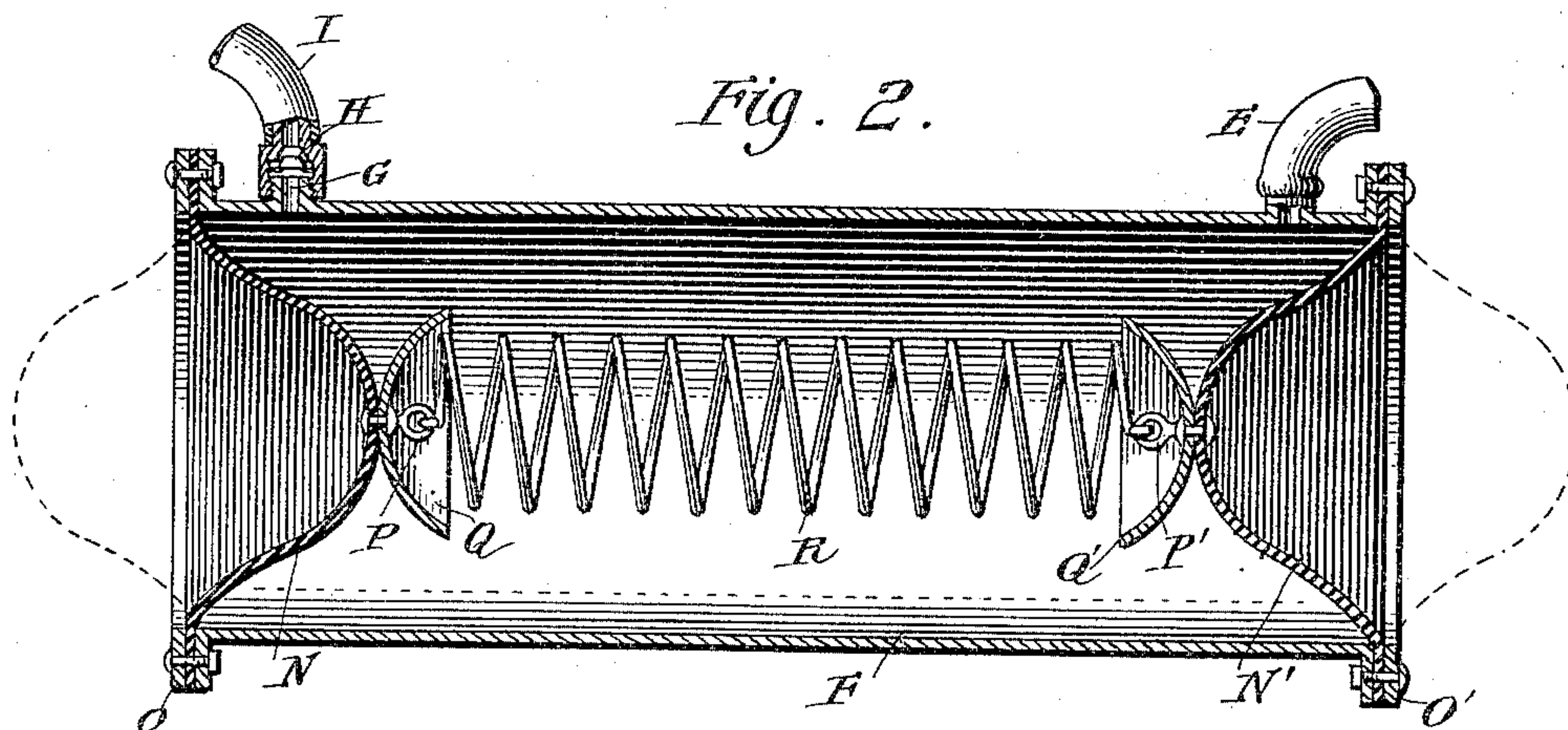
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# UNITED STATES PATENT OFFICE.

FRANK E. DYER, OF MOUNT DESERT, MAINE.

## MECHANICAL FOG-HORN.

SPECIFICATION forming part of Letters Patent No. 436,651, dated September 16, 1890.

Application filed May 7, 1890. Serial No. 350,934. (No model.)

*To all whom it may concern:*

Be it known that I, FRANK E. DYER, of Mount Desert, in the county of Hancock and State of Maine, have invented a new and Improved Mechanical Fog-Horn, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved mechanical fog-horn which is simple and durable in construction, specially designed for use on sailing vessels, and readily carried about by a sailor to any desired place, and sounded with full and clear sounds or blasts, according to marine rules and regulations.

The invention consists of certain parts and details and combinations of the same, as will be hereinafter fully described, and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a perspective view of the improvement as applied. Fig. 2 is an enlarged sectional side elevation of the storage-reservoir, and Fig. 3 is a sectional side elevation of the horn.

The improved fog-horn A is provided with the horn proper B of any approved construction, and provided in its mouth with a valve C, connected at its outer end with a spring-pressed lever D, which holds the valve C normally closed. The mouth-piece in front of the valve C is connected by a flexible tube E with a storage-reservoir F, provided with an inlet G, in which is held a check-valve H, leading into a flexible tube I, connected with an air-pump J of any approved construction, preferably single acting, and provided with an L-shaped foot-piece K, adapted to be engaged by the foot of the operator carrying the fog-horn A.

The pump-rod L extends from the pump J, opposite the foot-piece K, and is taken hold of by the operator in order to work the pump, as is plainly shown in Fig. 1. The storage-reservoir F is provided with two flexible heads N and N', secured by rivets O and O' to the flanged ends of the reservoir F, as is plainly illustrated in Fig. 2. The flexible heads N

and N' are about bell-shaped and extend in their normal position into the interior of the cylinder forming the reservoir, but are pressed outward into the position shown in dotted lines when the reservoir is filled with a compressed fluid pumped into the reservoir by means of the pump J.

The flexible heads N and N' are connected by rivets or bolts P and P', respectively, with the cups Q and Q', respectively held on the insides of the said heads and extending in an opposite direction to the middle parts of the said heads N and N' when the latter are in their innermost position. When the heads are pressed outward, the spherical surfaces of the cups Q and Q' conform to the insides of the middle parts of the heads N and N'. The cups are connected with each other by a coiled spring R, fastened to eyes formed on the bolts P and P', or on the cups themselves, if desired. The spring R holds the flexible heads N and N' in an innermost position until a desired pressure is reached.

The operation is as follows: The reservoir F is provided with suitable straps adapted to be taken hold of by the operator, so as to conveniently strap the reservoir to his back, as is plainly shown in Fig. 1. The horn proper B is taken hold of by the operator with one hand, and in his other hand he carries the air-pump J, which, when put to use, is placed on the deck with the foot-piece K so arranged as to enable the operator to conveniently put his foot on the horizontal extension of the foot-piece. The operator is then enabled to conveniently work the pump J, so as to force air under pressure past the check-valve H into the reservoir F. The valve C in the horn proper B remains closed while the pumping is going on. When sufficient air has accumulated in the reservoir F to overbalance the tension of the spring R, then the flexible heads N and N' are forced outward by incoming air forced into the reservoir through the pump J. By continuing the pumping the heads N and N' are forced into their outermost position, as shown in dotted lines in Fig. 2, after which the operator ceases pumping, and the check-valve H seats itself to prevent the air from passing from the reservoir F back to the pump. When the operator now desires



to sound the horn proper B, he presses on the free end of the spring-pressed lever D, so as to open the valve C in the mouth-piece of the horn, and the latter sounds full and clear  
 5 blasts. When the operator releases the pressure on the lever D, the valve C instantly closes, and after a certain interval the lever D is again pressed, so as to again sound the blast. Now, it will be understood that after  
 10 the first blast is sounded the heads N and N' move inward by the force of the spring R, so as to maintain about the same pressure in the reservoir F as was therein before the first blast was sounded. Thus when the operator  
 15 presses the lever D for the second blast the latter is as full and clear in tone as the first one. A third, and even a fourth blast can be sounded in the same way before it is necessary to recharge the reservoir F with com-  
 20 pressed air from the pump J, as previously described.

According to the present marine rules and regulations it is necessary that three blasts of the horn B should be sounded when the  
 25 vessel is running with free wind, two blasts are required when the vessel is running on the port tack, and one blast when the vessel is on the starboard tack. The three successive blasts above mentioned have to be sound-  
 30 ed at short intervals and must all be full and clear, so as to be distinctly heard by another vessel in the immediate neighborhood of the one sounding the blasts. If the blasts should grow weaker by the discharge of the com-  
 35 pressed air from the reservoir F on opening the valve C in the horn B, then the third or even the second blast would not be very full and clear, so that the other vessel would not  
 40 hear the third or even the second blast, but only the first one, and would consider the vessel to be on the starboard tack instead of running with free wind. As this device operates  
 45 as long as required, giving full and clear blasts, no such mistake and consequent collision could happen.

In case the flexible heads N and N' have moved into their innermost position after the signal of three regulation-blasts above mentioned has been given, the operator recharges  
 50 the reservoir F in the manner above described, so that a second signal of three, two, or one blast can again be sounded full and clear, as above described. According to marine regulations a minute is allowed between  
 55 two signals, and this amount of time is more than sufficient to recharge the reservoir F.

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

60 1. A mechanical fog-horn comprising an air-receiver, a flexible tube leading from the air-receiver to an air-pump, a second flexible tube leading from the said air-receiver, and a

fog-horn connected with the said second tube, substantially as described. 65

2. A mechanical fog-horn comprising an air-pump, a flexible tube leading therefrom, an air-receiver connected with said flexible tube and provided with shoulder-straps, a second  
 70 flexible tube leading from the said air-receiver, and a fog-horn connected at its mouth-piece with the said second flexible tube, substantially as described.

3. A mechanical fog-horn comprising an air-pump provided with a foot-piece, a flexi- 75 ble tube leading from said pump, an air-receiver connected with said tube and provided with shoulder-straps, a second flexible tube leading from said air-receiver, and a fog-horn connected at its mouth-piece with said second  
 80 tube, substantially as described.

4. In a mechanical fog-horn, the combination, with a horn proper having a spring-pressed valve, of a tube leading from the  
 85 mouth-piece of the said horn proper, and a storage-reservoir connected with the said tube and provided with flexible heads connected with each other by a spring, substantially as shown and described.

5. In a mechanical fog-horn, the combina- 90 tion, with a horn proper having a spring-pressed valve, of a tube connected with the mouth-piece of the said horn proper, a storage-reservoir connected with the said tube and provided with an outlet and a check-valve, a  
 95 second tube leading from the said outlet and adapted to be closed by the said check-valve, and an air-pump connected with the said second tube, substantially as shown and described. 100

6. In a mechanical fog-horn, the combination, with a horn proper having a spring-pressed valve, of a tube connected with the  
 105 mouth-piece of the said horn proper, a storage-reservoir connected with the said tube and provided with an outlet and a check-valve, a second tube leading from the said outlet and adapted to be closed by the said check-valve, an air-pump connected with the said second  
 110 tube, and a foot-piece held on the said air-pump adapted to be engaged by the foot of the operator, substantially as shown and described.

7. In a mechanical fog-horn, a storage-reservoir comprising a cylinder having an inlet 115 and an outlet, flexible heads held on the ends of the said cylinder, and preferably bell-shaped cups secured to the insides of the said flexible heads, and a spring connecting the said cups with each other, substantially as  
 120 shown and described.

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Witnesses:

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