

O. H. SVENSSON.  
SIREN OR FOGHORN.  
APPLICATION FILED JUNE 30, 1921.

1,427,034.

Patented Aug. 22, 1922.

FIG. 1.

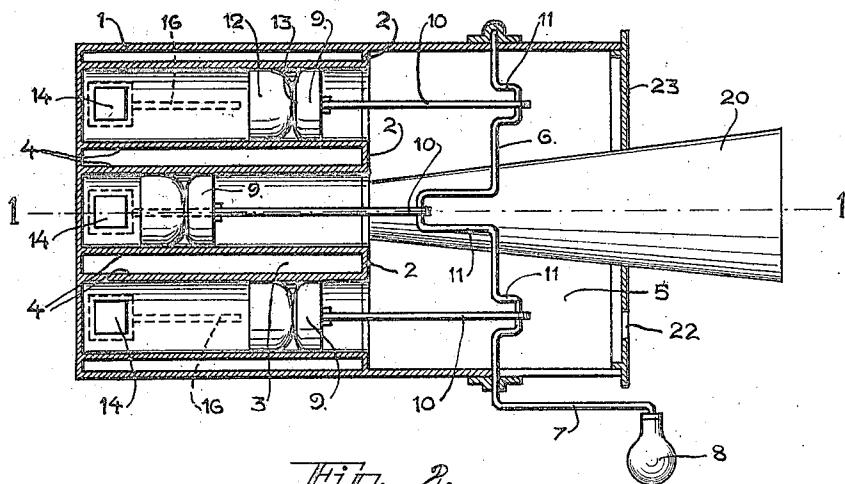


FIG. 2.

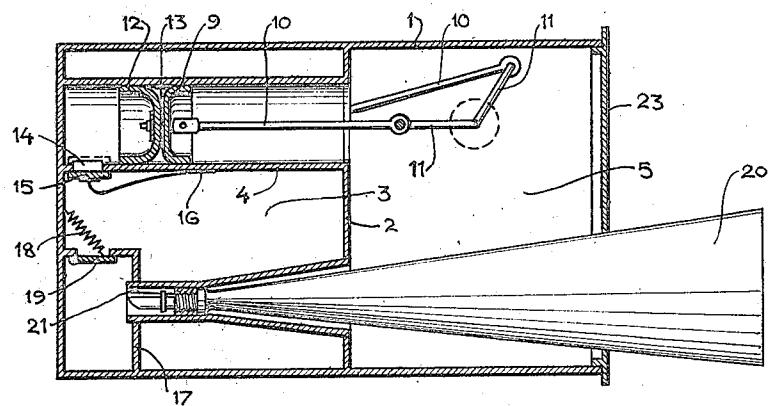
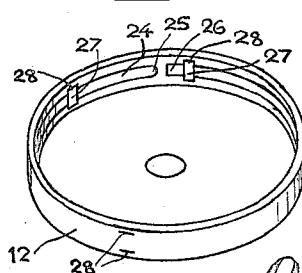


FIG. 3.



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## SIREN OR FOGHORN.

1,427,034.

Specification of Letters Patent. Patented Aug. 22, 1922.

Application filed June 30, 1921. Serial No. 481,638.

To all whom it may concern:

Be it known that I, OLOF HJALMAR SVENSSON, a subject of the King of Sweden, residing at Gottenborg, in the county of Gottenborg and Bohus, Sweden, have invented 5 certain new and useful Improvements in Sirens or Foghorns, of which the following is a specification.

The present invention relates to sirens and 10 particularly to such fog horns as used in sailing-vessels or similar vessels lacking steam or other suitable fluid for actuating the siren. The present invention relates more particularly to sirens which operate by 15 means of air, that is, compressed in a chamber by hand by means of pistons operating in cylinders, and when leaving the chamber is caused to vibrate by means of suitable devices so as to produce the tone wanted. 20 This invention has for its object to overcome certain inconveniences in sirens or fog horns hitherto used as made clear by the following specification.

It is of course of a particularly high importance, that the design of such an appliance as a fog horn be made as reliable and simple as possible, since reliability and the possibility of quick repair are often important factors in the saving of lives and valuables. A usual defect in sirens of the above mentioned kind is, that the packings of the pistons, when in operation for some time or when the siren has not been used for a long time, become defective. Another disadvantage is, that the air at the beginning of the compression is liable to pass by the vibrating device without producing any tone, and a further defect in such sirens is also the fact, that the valves between the cylinders 25 and the compression chamber often are rather complicated and therefore expensive, such valves being provided to enable a sufficient high air pressure for the producing of a good tone. According to this invention 30 the air discharge opening from the compression chamber is checked by a loaded valve, which the air must lift before it can escape from the compression chamber and arrive to the vibrating device, wherethrough is attained, that the air obtains such a high compression before it leaves the compression chamber, that its pressure and speed when passing through the vibrating device produces instantly a clear and distinct tone. 35

This invention further consists therein,

that the bottom to which the leather packing collar of the air-pump piston is fastened has a convex shape in relation to the said collar, whereby the leather collar is caused to be bent, so that a more effective packing 60 is obtained than by a piston with a plane bottom as hitherto employed.

This invention further consists therein, that the cylindrical inner surface of the partially cylindrical leather collar is provided 65 with a split metal ring yielding outwardly to prevent, that the cylindrical portion of the collar loses its contact with the surface of the cylinder.

This invention finally consists therein, 70 that the valve, which shuts off the aperture between the cylinders and the compression chamber, comprises a flap of india rubber or some similar flexible material, which by means of a blade spring is fastened to the 75 respective cylinder, through which an effective, simple and rather cheap design is obtained.

All these features cooperate to effect a reliable and simple siren or fog horn which 80 at its first sound produces a good tone.

Referring now to the accompanying drawing illustrating one embodiment of the invention, Figure 1 shows a horizontal length section of the siren, Figure 2 a vertical section of the same on the line 1—1 in Figure 1 and Figure 3 a perspective view of a leather packing collar on a larger scale.

In the embodiment shown, which has three cooperating cylinders, 1 denotes a casing 90 preferably of sheet-metal the said casing enclosing all the operative parts of the siren. The casing 1 is by means of a partition wall 2 divided into an interior air-tight space 3, within which the three cylinders 4 are provided, and an exterior space 5, within which a crank-shaft 6, journaled in a suitable way, operates, the said shaft having three cranks and being operable by means of a crank handle 7, 8, outside the casing 1. The casing 100 1 is provided with a cover 23 with holes 22 serving as supply openings for the air to the cylinders 4. The reciprocating pistons 9 of the cylinders are in a known way, by means of connecting rods 10 each connected with 105 one of the cranks 11, and the packing of the pistons consists of leather collars 12. The collars 12 are fastened to the convex rear bottom 13 of the pistons 9. In order to obtain a still more reliable packing between 110

the inner surfaces of the collars 12, which in a known manner are provided with a cylindrical operative portion, the said collars are provided each with a split metal ring 24 fitted on the inside of the cylindrical portion of the collar 12 (see Figure 3) and yielding in outward direction. The split ring 24 may be fastened to the inside of the collar 12 for instance by sharpening one end 10 25 of the same and forcing this end down into the material of the collar 12. The opposite end 26 of the ring 24 is free and the said ring is along its circumference displaceably attached to the collar 12 by means 15 of lugs 27 which are fastened to the said collar for instance by means of throughgoing pins 28, which of course ought to be of a softer material than the operative surface of the cylinders 4.

20 The apertures 14 between the cylinders 4 and the compression chamber 3 are closed by a valve, designed as a flap 15 of india rubber or any similar flexible material, which by means of a blade spring 16 is connected to respective cylinder 4. Between 25 the air discharge opening in the compression chamber 3 and the vibrating device 21 there is provided a box 17, which is shut off from the chamber 3 by means of a valve 30 19 actuated upon by a spring 18 in such a way, that the air cannot escape from the chamber 3 before a pressure has been created therein which is of a sufficient height to overcome the tension of the spring 18. Thus 35 a sufficiently high pressure is always guaranteed to obtain the clear tone wanted. The horn 20 with the vibrating device 21 is in any suitable manner fastened to the box 17.

From the foregoing I believe that the 40 construction, operation and advantages of the invention may be readily understood by those skilled in the art, and I am aware that various changes may be made in the details disclosed without departing from 45 the spirit of the invention as expressed in the claims.

What I want to secure by Letters Patent is:

1. In sirens or fog horns, a cylinder, a 50 reciprocal piston operatively mounted within said cylinder, an air chamber communicating with said cylinder so as to be supplied with compressed air by the operation of the piston, a passageway checked by 55 a valve, and vibrating means communicat- ing with said chamber through said passageway, said valve being so loaded that it is caused to open automatically for discharg- ing the air into the vibrator, when the air

in said air chamber has reached a prede- 60 terminated pressure.

2. In sirens of the class mentioned, reciprocal pistons operating within cylinders, a chamber communicating with said cylinders so as to be supplied with compressed air by the operation of the pistons, vibrating means actuated upon by the compressed air, each of said pistons having a convex surface facing the pressure side of said piston, and a leather packing collar 70 bearing against said convex surface and connected to said piston as and for the purpose set forth.

3. In air operated sirens, reciprocal pistons operating within cylinders, an air 75 cylinder communicating with said cylinders so as to be supplied with compressed air by the operation of said pistons, each of said pistons being provided with a leather packing collar, said collar having an inner cylind- 80 rical surface, a split metal ring arranged within the cylindrical surface and yielding outwardly, and vibrating means actuated by the compressed air.

4. In sirens, reciprocating pistons operat- 85 ing within cylinders, an air chamber communicating with said cylinders so as to be supplied with compressed air by the operation of said pistons, leather packing collars on said pistons, each of said packing collars 90 being provided on its inner cylinder surface with a split yielding metal ring, said ring being fastened to the collar at one end and displaceably guided by lugs fastened to the collar, and vibrating means actuated 95 by the compressed air.

5. In sirens, a casing, a partition wall ar- 100 ranged within the casing and dividing the same into two compartments, a plurality of cylinders arranged in one compartment, pis- 105 tons arranged in said cylinders, means for ac- tuating said pistons, passageways arranged in said cylinders and adapted to permit air compressed by said pistons to be forced in to the compartment in which the cylinders 110 are arranged check valves controlling said air passageways, a chamber arranged within one of said compartments and having an air passageway, a check valve for closing the air passageway leading into said cham- 115 ber, a vibrating device adapted to be ac- tuated by compressed air within said cham- ber, and a horn connected to said vibrating device.

In testimony whereof I have affixed my signature.

OLOF HJALMAR SVENSSON.