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SUBAQUEOUS MOTOR DRIVEN SIREN WITH INTERNAL ROTOR.

APPLICATION FILED MAR. 31, 1914.

1,209,503. Patented Dec. 19, 1916.

Fig. 1.

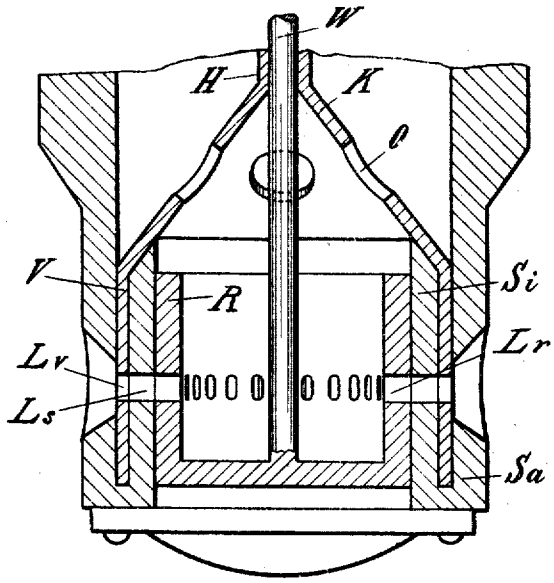
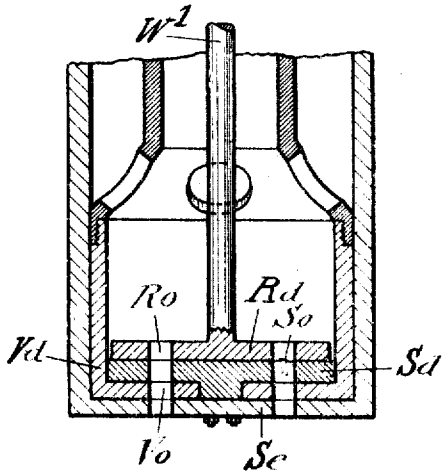


Fig. 2.



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SUBAQUEOUS MOTOR-DRIVEN SIREN WITH INTERNAL ROTOR.

1,209,503. Specification of Letters Patent. **Patented Dec. 19, 1916.**

Application filed March 31, 1914. Serial No. 828,627

To all whom it may concern:

Be it known that I, FERDINAND SCHENKELBERGER, engineer, a subject of the German Emperor, and residing at Kiel, in Germany, have invented certain new and useful Improvements in Subaqueous Motor-Driven Sirens with Internal Rotors, of which the following is a specification.

Motor driven subaqueous sirens have been proposed with a rotor arranged at the outside of the stator and the valve for giving signals placed inside the stator in order that the siren may be easily protruded through the hull of the ship and so that the control device for moving the valve may be arranged inside the casing which surrounds the driving shaft. This constitutes a departure from the ordinary construction in which the rotor is arranged internally and the valve externally. Circumstances may arise which forbid a departure from the ordinary design but which render it desirable that the object aimed at by the new type shall also be striven for. An advantage of the new type is that it greatly simplifies the construction and manipulation of the valve which consists principally of a cylinder that is turned by means of a hollow shaft which is arranged concentrically around the shaft of the rotor.

The difficulty that has to be overcome when the valve is arranged externally, and when in spite of this arrangement the siren is to be protrudable, resides in passing the controlling means for moving the valve through the casing of the siren. This would necessitate openings in the hydraulic pressure chamber and in these openings the supporting arms extending to the valve would have to be movable. In the various positions of the valve these openings would, of course, only be partly filled by the supporting arms that pass through them and the unfilled parts would have to be tightly closed by some special means. Reliable means that will meet these requirements can hardly be devised.

This invention constitutes an improvement in this connection by a valve being provided which is guided at its lower end, containing the sound openings, in the stator. The stator is formed so that no part of the valve needs to be passed through the casing of the siren. In this way the difficulties described above regarding openings in the siren casing that would have to be tightly closed are completely avoided and besides the sirens can be built so as to be protrudable in the ordinary way. This idea can be applied to subaqueous sirens of all kinds. The guiding of the valve can be made specially simple if the stator is bent outwardly in the shape of a U and embraces the valve so as to form a completely positive guide for the same. The casing of the siren joins on to the ouwardly bent portion of the stator and thus a very simple type is obtained that will meet the same working requirements as the type with an external rotor.

In the drawing Figures 1 and 2 show two examples in which the invention is applied. Fig. 1 represents a siren of the drum type and Fig. 2 a siren of the disk type.

The rotor R is rotated by the shaft W and moves in the stator S^1, S^2 and the valve V is arranged next to the stator in the usual order. In the stator and in the valve are arranged the sound openings L^2 and L^v respectively which coöperate with the sound openings L^r of the rotor in such a manner, that the sound which is produced by the rotated rotor as long as the valve openings lie opposite to the stator openings, may be interrupted and continued alternately by moving the valve to and fro, so that the stator openings are covered by the studs separating the valve openings, or are in correspondence with the said valve openings. In this manner and by moving the valve at the proper time the siren is enabled to give Morse signals. Joined to the valve handle, which is formed in the shape of a hollow shaft H that embraces the shaft W, is a cone K which is integral at its bottom end with the actual valve V. In accordance with the invention the valve is guided in the stator which is specially shaped for this purpose. It consists of an internal stator and an external stator S^1 and S^2 respectively which both form one piece and between which the valve V is guided and tightly fitted so as to prevent the passage of pressure or water. The casing of the siren joins on to the external stator and the casing thus has the shape of a tube the end of which is bent over inwardly in the shape of a collar.

Openings O are arranged in the cone K and through these water is forced by hydraulic pressure into the drum shaped chamber.

In the case of Fig. 2, the external shape must necessarily be made different because

the rotor R^d, stator and valve are formed in the shape of disks placed parallel to each other. But also in this case the stator is formed of an internal stator and an external stator S^d and S^e respectively and between these two parts the valve V^d is guided in essentially the same manner as in the case of Fig. 1. The sound openings R^o, S^o and V^o are disposed in the disk-shaped parts of the rotor, stator and valve around the shaft W^1 and coöperate in the same manner as in the case of Fig. 1.

In the design shown in Fig. 2 the internal stator is preferably made in the shape of a special disk that is fixed to a part of the external stator, this latter forming a part of the casing of the siren.

It will be seen from the two examples shown that the siren can in both cases be protruded through the hull of the ship.

I claim:—

1. A subaqueous motor-driven siren comprising a casing, a rotor arranged within said casing, an internal and an external stator forming one piece, a valve for giving signals guided between the internal and external stator and having sound openings at one end corresponding to and coöperating with like openings of the double stator and of the rotor, the rotor being surrounded by the said double stator and the valve, and the valve being contained in the inside of the said casing and having rotating means within said casing enabling the valve to be rotated from a distant place.

2. Subaqueous motor-driven siren comprising a casing, a rotor arranged within said casing, a stator, a valve for giving signals which is formed at one end in the shape of a cylinder perforated by sound openings corresponding to and coöperating with like openings of the stator and of the rotor, the rotor being surrounded by the stator and the valve, an annular groove in the said stator which is closed at the bottom and into which the cylinder shaped end of the valve is movably fitted, the entire valve being contained in the inside of the said casing and having a hollow rotating shaft surrounding the shaft of the rotor.

3. Subaqueous motor-driven siren comprising a casing, a rotor arranged within said casing, a stator, a valve for giving signals which is formed at one end in the shape of a cylinder perforated by sound openings corresponding to and coöperating with like openings of the stator and of the rotor, the rotor being surrounded by the stator and the valve, the stator being formed in the shape of an internal and an external ring joined at their bottom ends so as to form an annular space into which the cylinder shaped end of the valve is movably fitted, the entire valve being contained in the inside of the said casing and having a hollow rotating shaft surrounding the shaft of the rotor, and the said external ring of the stator joining directly on to the casing.

In testimony whereof I affix my signature.

FERDINAND SCHENKELBERGER.