F. F. C. SCHENKELBERGER.

SIREN FOR SUBMARINE SIGNALING.

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1,196,296. Patented Aug. 29, 1916.

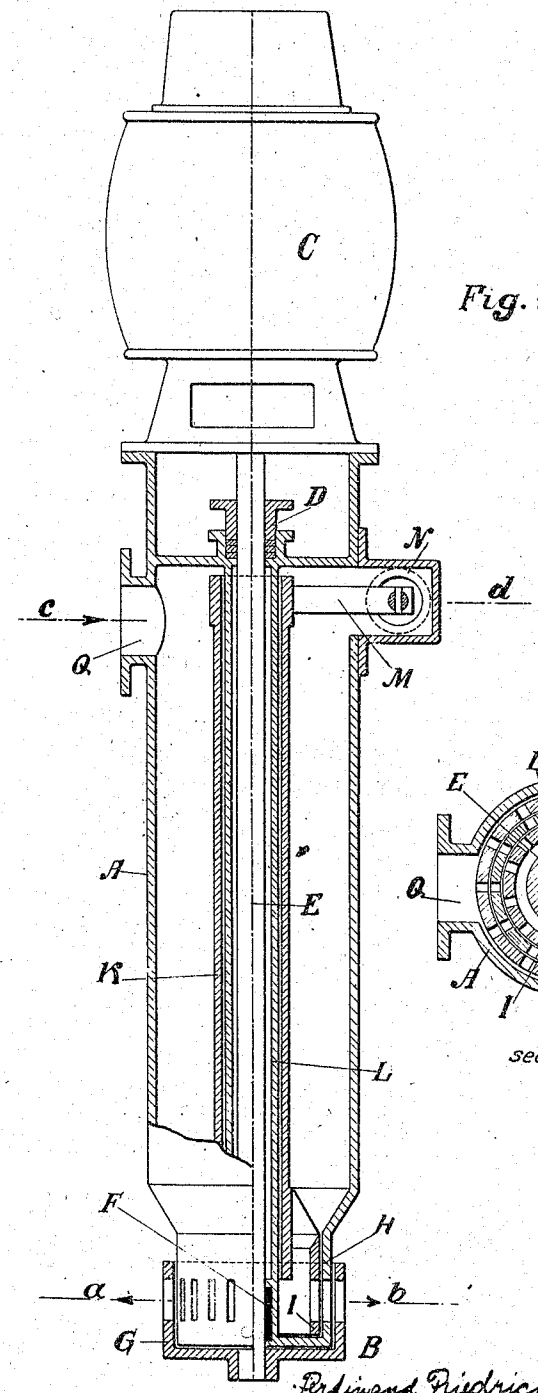
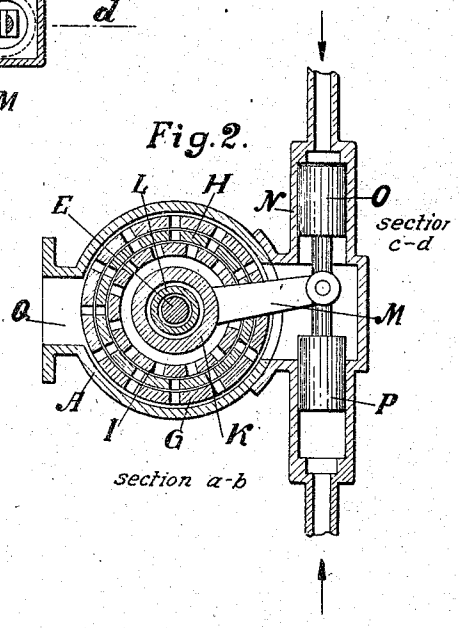


Fig. 1.

Fig. 2.



Witnesses:
Elsie Swenson
Marguerite Schamp

Inventor:
Ferdinand Friedrich Carl Schenkelberger
by Knight Bro
Attorneys

UNITED STATES PATENT OFFICE.

FERDINAND FRIEDRICH CARL SCHENKELBERGER, OF KIEL, GERMANY.

SIREN FOR SUBMARINE SIGNALING.

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To all whom it may concern:

Be it known that I, FERDINAND FRIEDRICH CARL SCHENKELBERGER, residing at 76 Hansastreet, Kiel, Germany, have invented certain new and useful Improvements in Sirens for Submarine Signaling, of which the following is a specification.

The invention relates to sirens for transmitting submarine sound signals and particularly to those which for the purpose of the transmission, can be protruded from an opening in the wall of the ship. Sirens of this kind consist of a rotor, a drum or disk provided with perforated or slotted rims or rings, a stator constructed in a similar manner and a slide likewise similarly constructed for suddenly closing and opening the sound holes. In known sirens of this kind the rotor has been always arranged hitherto inside and the shutting off slide outside the stator for the purpose of separating the devices for operating the slide from the devices for actuating the rotor. If, however, the siren is to be capable of being protruded through the wall of the ship, it must be built into a casing that insures a tight joint around the opening in the ship's wall, and all functions which are to be transmitted to the movable parts of the siren during the working, that is, the driving for moving the rotor, the feeding of the water under pressure and the driving for operating the signaling slide must be carried from the interior of the ship through the interior of the casing so that neither water under pressure nor external water can enter the ship.

A particularly complete solution of this problem is obtained by the invention, which consists in the arrangement hitherto employed being reversed, that is to say the rotor being arranged outside and the slide inside the stator. If then the motor that drives the rotor be firmly built on to the preferably cylindrical protrudable casing, the driving shaft can be carried through the outer end of the casing in the axial line and the shaft for transmitting the movements of the slide being likewise axially arranged, as a tube surrounding the driving shaft. Moreover between the two parts, that is, between the shaft that drives the rotor and the tube transmitting the movements of the slide, a stand pipe can be arranged which can be firmly connected by its lower end with the stator and thereby connected with the siren casing.

The effect obtained hereby is that the actuating shaft of the rotor requires to be packed only in relation to the outboard pressure and not in relation to the much greater working pressure of the siren and that the stuffing box necessary for this can be arranged in the upper part of the casing so as to be easily accessible.

According to the speed at which the ship is traveling a greater or less lateral pressure bears on the protruded part of the siren casing in consequence of the friction of the water and if the rotor is made drum shape and arranged externally according to the invention, it is pressed by this pressure onesidedly against the stator. This difficulty is overcome according to the invention by the arrangement on the lower end of the casing of a special bearing completely immersed in the water, that supports the rotor shaft.

Figure 1 of the drawing is a vertical section through a siren according to the invention and Fig. 2 a combination of two transverse sections through *a—b* and *c—d* in Fig. 1.

On the outer end of a cylindrical casing A a drum siren B is constructed and on the inner end an electric motor C arranged. The motor shaft E is carried into the casing through a stuffing box D and runs through the lower end of the casing in a bearing F that is immersed in the water. The rotor G is keyed to the projecting end of the shaft. The stator H of the siren is formed by the lower end of the casing itself.

The slide I is arranged inside the stator. It is firmly connected with a hollow shaft K, that surrounds the driving shaft. Between the motor shaft E and the slide shaft K a fixed standpipe L is tightly built above and below into the casing.

To the upper end of the slide shaft K a lever M is fixed which is connected with two pistons O and P in a cylinder N built on to the casing A. Accordingly as water under pressure is admitted to the piston O and the water allowed to exhaust from behind piston P or inversely, the lever M is operated and the slide I reversed. The transmission of the water under pressure from the piston

O to the piston P is preferably effected electrically if a Morse device is employed from a distance.

The working water under pressure flows in through a junction Q into the casing and out through the sound openings in the rotor G. The pipe L prevents its entering the stuffing-box D, so that this latter only needs to be packed to meet the natural external pressure of water.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. A submarine siren adapted to be protruded from an opening in the wall of a ship, comprising in combination a stator, a rotor arranged outside of said stator, a slide valve for giving the signals arranged inside of said stator, and means for operating said rotor and said slide valve from the interior of the ship while excluding from the ship water under pressure or external water.

2. A submarine siren adapted to be protruded from an opening in the wall of a ship, comprising in combination a stator, a rotor arranged outside thereof, a standpipe within said stator, a driving shaft extending through said standpipe and operatively connected with said rotor, and a slide valve disposed within the space between the stator and said standpipe.

3. A submarine siren adapted to be protruded from an opening in the wall of the ship, comprising in combination a stator, a rotor disposed outside said stator, a standpipe within said stator, an operating shaft for said rotor disposed within said standpipe and passing through a bearing normally immersed in water, and a slide valve disposed within the space between said stator and said standpipe.

4. A submarine siren adapted to be protruded from an opening in the wall of a ship, comprising in combination a casing having its outer end in the form of a stator, a standpipe within said casing forming an isolated annular fluid space, a slide valve disposed within said space, a shaft passing through said standpipe, and a rotor fixed on the projecting end of said shaft and disposed outside of said stator.

In testimony whereof I affix my signature in presence of two witnesses.

FERDINAND FRIEDRICH
CARL SCHENKELBERGER.

Witnesses:
CL. WILHELM KRÜTZFEL,
CLAUDIUS HINZ.