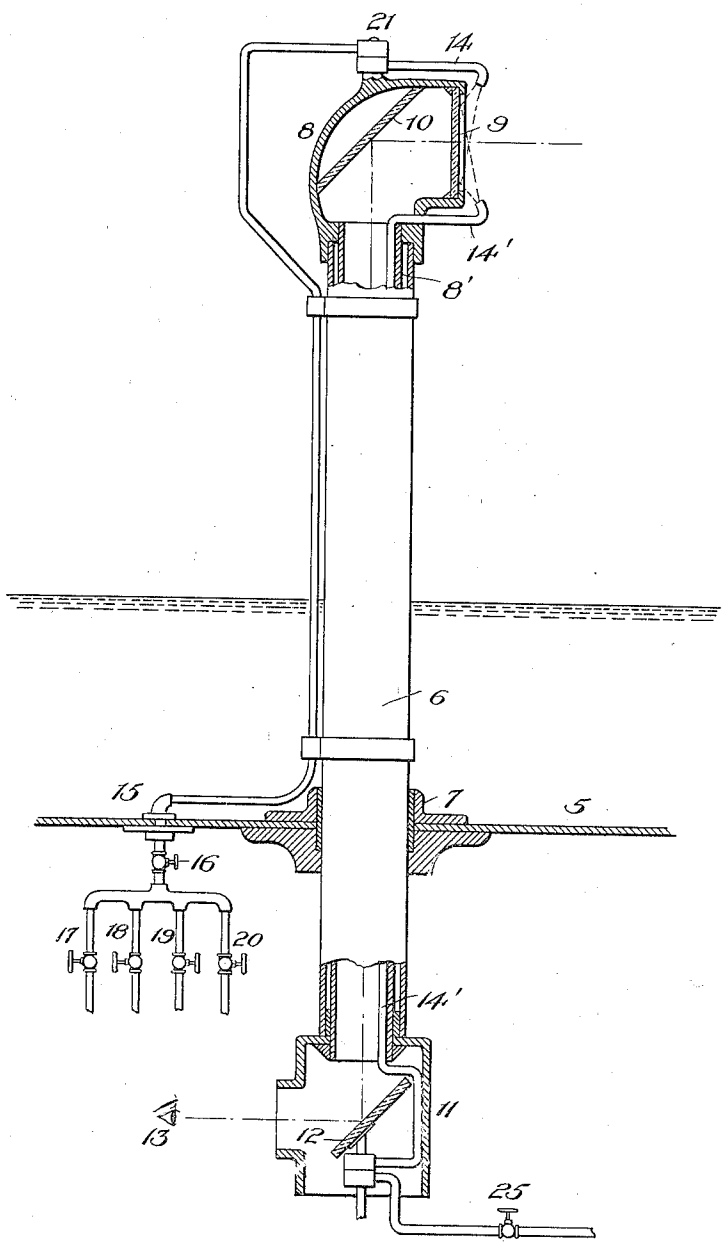
J. A. STEINMETZ.

CLEANING PERISCOPE GLASSES.

APPLICATION FILED OCT. 4, 1916.

1,222,156. Patented Apr. 10, 1917.



Witness

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JOSEPH A. STEINMETZ, OF PHILADELPHIA, PENNSYLVANIA.

CLEANING PERISCOPE-GLASSES.

1,222,156. Specification of Letters Patent. Patented Apr. 10, 1917.

Application filed October 4, 1916. Serial No. 123,795.

To all whom it may concern:

Be it known that I, JOSEPH A. STEINMETZ, a citizen of the United States, and resident of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Cleaning Periscope-Glasses, of which the following is a specification, reference being had therein to the accompanying drawing.

The object of this invention is to provide for keeping periscope outlook glasses clear enough for distinct vision. It is now usual for men to pass from the inside to the outside of a submarine boat in order to remove vision obstructing matter from the glass, which is soon fogged even by salt water alone and which is more quickly made almost useless by common hostile expedients, such for example as covering great areas of the water's surface with oil or the like.

In accordance with this invention, fluid under pressure is discharged against the exterior surface of the glass by means under control of persons within the submarine when the latter is closed or submerged.

In the accompanying drawing which is largely diagrammatic, I have shown a vertical section through the wall of a submarine and the axis of its periscope. In this view, 5 represents a portion of a submarine, 6 an outer periscope tube held in any suitable way at 7 where it passes through the wall of the boat, 8 a periscope head mounted on the tube 6 to rotate about the vertical axis of the same, 9 the common outlook periscope glass, 10 a common reflector, 11 a chamber at the lower end of the tube 6, and 12 a second reflector for throwing to the eye at 13 the light entering at 9 and passing downward in the usual way. To the head 8 is rigidly connected an inner concentric tube 8′, shown as extending in this instance into the chamber 11.

Two pipes 14, 14′ are arranged to deliver against the outer surface of the glass 9 jets of fluid suited for removing such foreign matter as may have collected thereon. The pipe 14 passes through the submarine wall at 15 and is provided within the vessel with a valve 16 and with separately valve controlled branches 17, 18, 19, 20, leading to several sources of fluid under pressure.

Outside the boat, the pipe extends upward alongside the tube 6 to a point above and in the axis of the head where it is provided with a common joint 21 whereby the terminal segment of the pipe may rotate freely with the head without interfering with the flow of fluid.

The companion pipe 14′ discharges against the glass at another point, as shown at the lower part of the glass, although either or both points of discharge may be varied in location. This pipe passes into the upper part of the rotary tube 8′, downward along the wall thereof and into the chamber 11 where it passes around the reflector to a point in the periscope's axis of rotation where it is jointed like the pipe 14 above. The part beyond this point is provided with a valve 25 by which the flow of fluid under pressure may be controlled.

By means of the two tubes a great variety of fluids and combinations of fluids may be directed against the glass in different directions whereby the glass may be quickly and effectually cleaned, whatever the character of material thereon, and without any person exposing himself and without incurring the trouble and delay necessary for opening the submarine shell to allow manual cleaning. Obviously one pipe may be used alone if desired, and there is a further incidental advantage that both pipes will rarely be out of commission unless the periscope itself be destroyed.

As an example of the use of the device, we may suppose vision to be obstructed by ice upon the periscope glass, and that a single pipe, *e. g.* 17, is opened allowing hot air to be sprayed over the glass to remove the ice and dry the glass. Under other conditions, various liquid or gaseous fluids may be used, alone or in combination, to remove smoke, salt, oil, or any other obstructing matter. Gasolene, water, alcohol are examples of liquids which should be provided, preferably in suitable small tanks wherein they are, or may be, under pressure.

Since any fluids used may be under any desired pressure, produced by a hand pump or otherwise, the glass can, if necessary, be cleaned while still submerged.

What I claim is:

1. The combination with a periscope tube having a head revoluble about the tube's axis, of a pipe arranged to discharge against the periscope glass and having a swivel joint in the axis of rotation permitting the discharging end portion to rotate with said head.

2. The combination with a submarine, of a periscope having a head revoluble about a vertical axis, a pipe leading from within the vessel to position for discharging against the exterior of the periscope glass and having in the axial line of the head's rotation a joint allowing the terminal segment of the pipe to revolve with the head while delivering fluid.

3. The combination with a submarine, of a periscope tube having a head revoluble about the tube's axis and further having internal light-deflecting means, of a pipe, outside the tube, leading from the interior of the submarine and arranged to discharge against the periscope glass, a second tube leading from said interior upward inside the tube alongside the path of the light therein and thence outward to discharge against said glass, each of said pipes having a swivel joint allowing the terminal portion to rotate with said head.

4. The combination with a submarine having a periscope provided with a head revoluble about an axial line passing through the central portions of the reflecting surfaces, of a pipe leading from the interior of the submarine to position for discharging against the exterior of the periscope glass and swiveled in said line above said head, a second pipe swiveled in said line and leading upward in the periscope tube and outward at the head to position for discharging against said glass, and means for at will supplying fluid under pressure to each of said pipes.

5. The combination with a submarine, of a periscope tube having its upper portion revoluble about the tube's axis, of a pipe leading from the interior of the submarine, discharging against the periscope glass and having a swivel joint allowing its terminal portion to rotate with said upper portion, and means for at will supplying said pipe with various fluids, combined or otherwise.

In testimony whereof I hereunto affix my signature.

JOSEPH A. STEINMETZ.