

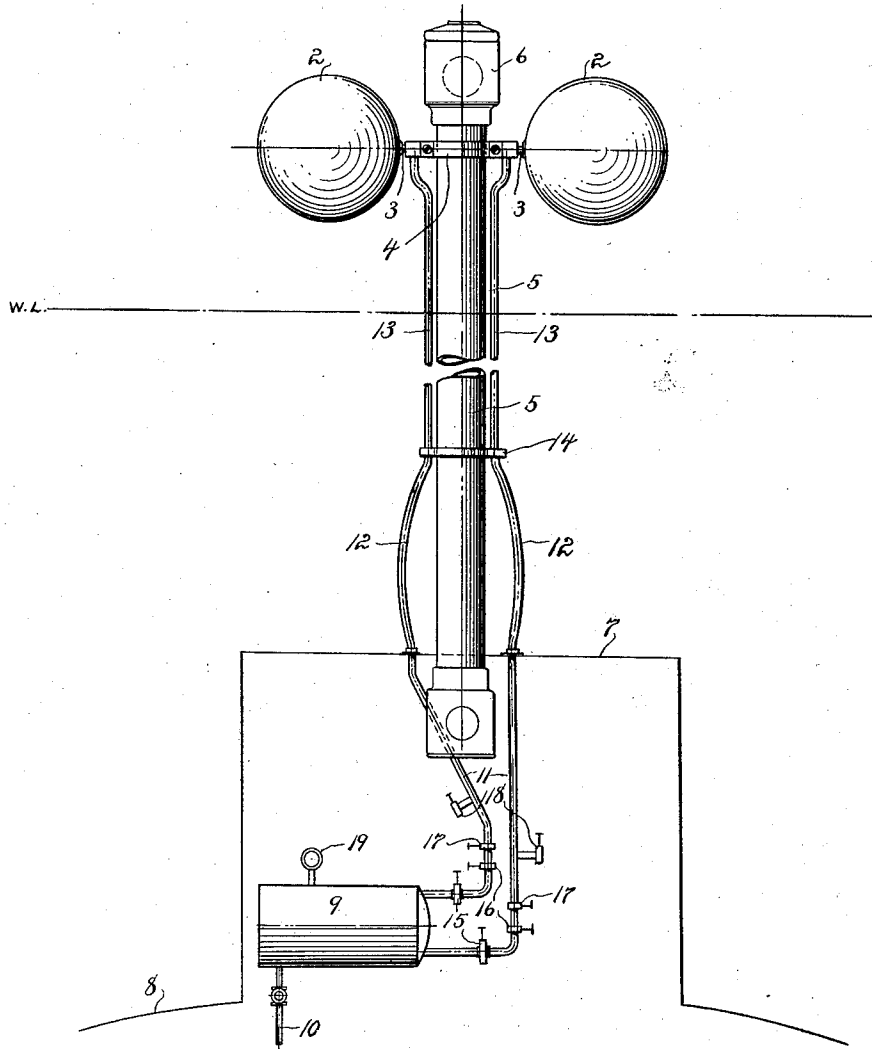
S. DANENHOWER.
VISUAL SIGNAL FOR SUBMARINES.
APPLICATION FILED OCT. 28, 1912.

1,057,223.

Patented Mar. 25, 1913.

2 SHEETS—SHEET 1.

Fig. 1.



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2 SHEETS—SHEET 2.

Fig. 2.

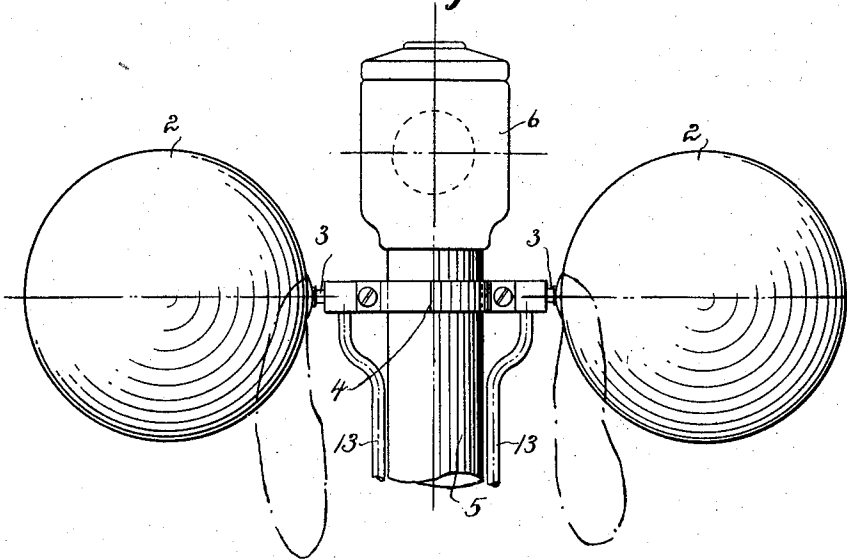


Fig. 3.

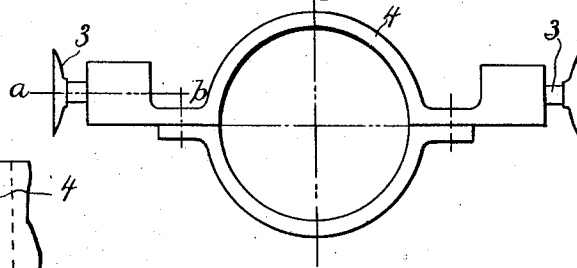
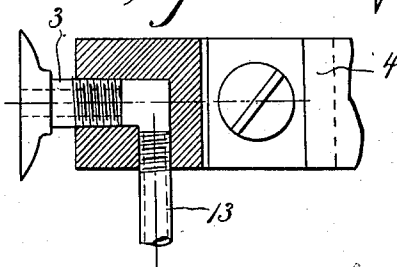


Fig. 4.



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UNITED STATES PATENT OFFICE.

SLOAN DANENHOWER, OF BRIDGEPORT, CONNECTICUT.

VISUAL SIGNAL FOR SUBMARINES.

1,057,223.

Specification of Letters Patent.

Patented Mar. 25, 1913.

Application filed October 28, 1912. Serial No. 728,249.

To all whom it may concern:

Be it known that I, SLOAN DANENHOWER, a citizen of the United States, residing at Bridgeport, in the county of Fairfield and State of Connecticut, have invented a new and useful Improvement in Visual Signals for Submarines; and I do hereby declare the following, when taken in connection with the accompanying drawings and the characters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this application, and represent, in—

Figure 1 a view in elevation of one form which my improved signal may assume, with its signal bags inflated. Fig. 2 a broken detail view showing the signal bags inflated by full lines, and deflated by broken lines. Fig. 3 a detached plan view of the yoke employed for carrying the signal-bags. Fig. 4 a broken detail view in section on the line *a—b* of Fig. 3, showing the compressed-air connection for inflating and deflating the signal-bags.

Heretofore submarines and submersible vessels while running with their hulls submerged and with only their periscopes exposed, have had no means of communication with those on the surface except through audible signals which are difficult to distinguish, and hence unreliable and limited in use to comparatively short ranges.

The object of my present invention is to overcome the objections to audible signals for submarines and submersible vessels, and provide such vessels with reliable signals which may be used over relatively long ranges.

Although my improvement was primarily designed for, and is peculiarly adapted to submarines and submersible vessels, it may also be used to great advantage in ordinary vessels, at shore stations, and in other situations where signal devices are called for.

With these ends in view, my invention consists in a visual signal having certain details of construction and combinations of parts as will be hereinafter described and pointed out in the claims.

In carrying out my invention as herein shown, I employ two inflatable and deflatable spherical signal-bags 2 of rubber or other equivalent material and differentiated in color in accordance with a predetermined or accepted signal code. These bags are mounted upon flanged and threaded stems 3

entering the opposite ends of a yoke 4 applied in horizontal position to the upper end of the rotary tube 5 of a periscope of any approved construction and having, as shown, a head 6, though this is not necessary. At its lower end the tube 5 is mounted in the top of the conning tower 7 of a submarine or submersible vessel diagrammatically represented at 8.

For the inflation of the signal-bags 2, I locate within the said conning-tower 7, a small tank 9 which may be supplied from any convenient source with compressed air, and by preference through a pipe 10 leading to it from the air-tanks of the submarine. From the small tank 9, pipes 11 lead to the top of the tower 7 where they are connected in any convenient manner with rubber tubes 12 of sufficient length to permit the periscope-tube 5 to be rotated through 360° in the operation thereof in the usual way. At their upper ends the said rubber tubes 12 are connected with metal pipes 13 the lower ends of which are secured to a horizontal yoke 14, while their upper ends terminate in the ends of the yoke 4 which are chambered and threaded to receive them, as well as the threaded inner ends of the tubular stems 3 to which the bags 2 are attached. Each of the pipes 11 is furnished with a control stop-valve 15, a reducer-valve 16, an inflating stop-valve 17 and a deflating vent-valve 18, by the manipulation of which the inflation and deflation of the bags 2 is accomplished. The tank 9 is provided with an ordinary gage 19 for showing the pressure of the compressed air within it.

In using my improved visual signal, the periscope is first consulted in the ordinary manner for ascertaining the position of the party to whom it is desired to signal. This position having been ascertained, the periscope-tube 5 is revolved to the extent required to cause the two signal-bags 2 to occupy a position substantially at a right angle to a line drawn from the submarine to the receiving station where the part to receive the signal is located. The several valves are now manipulated as required to inflate and deflate the bags 2 in accordance with the code employed. Inasmuch as the signal bags are spherical, it is apparent that they will always present the same appearance when viewed from any angle so that any misinterpretation of the signal on account of variation in form is impossible.

My preference, therefore, at the present time, is to employ bags which will assume a spherical form when inflated, though I do not limit myself to spherical bags, as I may
5 choose other forms which will answer the purpose equally or nearly as well.

I claim:—

1. In a visual signal device, the combination with an upright rotatable standard, of
10 a plurality of inflatable and deflatable bags connected with the said standard for rotation therewith, and air connections for the said bags whereby they may be inflated and deflated in accordance with a signal code.

15 2. In a visual signaling device for submarines or submersibles, the combination

with a submarine or submersible, of a periscope having a rotatable periscope-tube carried by the said vessel, a plurality of inflatable and deflatable bags carried by the said
20 tube for rotation therewith, and means carried by the said submarine or submersible for inflating the bags with air and deflating them in accordance with an accepted visual
25 code.

In testimony whereof, I have signed this specification in the presence of two subscribing witnesses.

SLOAN DANENHOWER.

Witnesses:

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."