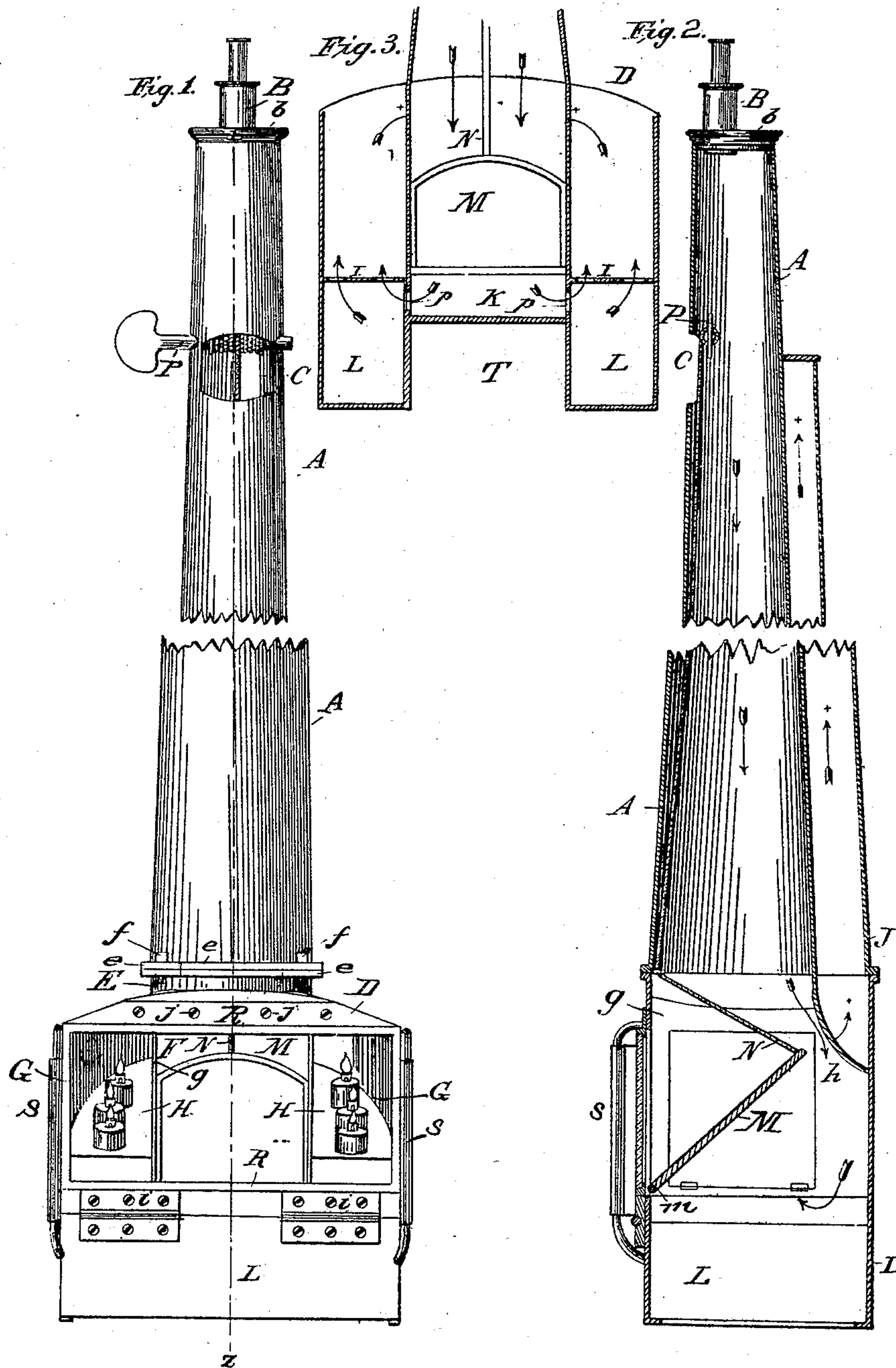


W. DAY.  
Sub Marine Telescope.

No. 7,285.

Patented Apr. 16, 1850.





# UNITED STATES PATENT OFFICE.

WILLARD DAY, OF BROOKLYN, NEW YORK.

## SUBMARINE TELESCOPE.

Specification of Letters Patent No. 7,285, dated April 16, 1850.

*To all whom it may concern:*

Be it known that I, WILLARD DAY, of the city of Brooklyn, in the county of Kings, in Long Island and State of New York, have invented a new and useful improvement on the submarine telescope invented by Sarah P. Mathers, which was patented on the 16th day of April, 1845; and I hereby do declare that the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a front elevation. Fig. 2 is a vertical transverse section taken at the line  $z, z$  Fig. 1. Fig. 3 is a linear section showing by the arrows, the way the lamps are supplied with air, and the passage by which the smoke escapes.

The same letters of reference indicate like parts on all the figures.

The nature of my invention consists, first, in providing the main telescopic tube with an opening near its upper extremity to supply the lamps with air, to allow the use of a spy glass, when required, in combination with the main tube; second, the construction of the mirror box of a square form with a glass in its bottom, below which there is an open recess, to confine a portion of air between the glass or tight window in the bottom, and thus allow the bottom of the seas, &c., to be examined through the chamber of the mirror; third, the arrangement of the lamps on each side of the mirror, in separate chambers, but with one folding glass door in front; and the supplying of the lamps with fresh air through the main tube, conducting it under the lamps to feed them, and then conducting the smoke away by a separate passage.

To enable others skilled in the art to make and use my invention I will proceed to describe its construction and operation.

A, is the main tube constructed of one or more pieces joined together in any of the most suitable methods.

B, is a small auxiliary telescope or spy glass. It is made to fit into the mouth  $b$  of the main tube, in the most suitable manner.

C, is an opening in the main tube. Its principal use is to supply the lamps with air when the spy glass B is used without which the lamps would not burn.

D, is a metal box tubular at its top E, and with a flange  $e$ , secured by screws  $f f$  to a

similar flange on the lower end of the main tube A.

F is the mirror chamber.

G G are the lamp chambers.

The mirror chamber is open at the top, communicating inside with the main tube A.

$g g$ , are side plates or division partitions which separate the mirror chamber from the lamp chambers, with the exception of a narrow rectangular opening  $p$ , at each side near the bottom of the mirror chamber, as represented in Fig. 3.

H, H, are the lamps. There are three lights to one lamp, which is a metal box, with the lights placed on an inclination, the one rising or standing higher than the other. The lamp box is secured on a perforated bottom plate I Fig. 3, which is secured in the lamp chamber above the opening  $p$ . The air to feed the lamps passes down the main tube behind the mirror as shown by the arrow at  $h$  then down through the slits  $p p$ , then through the perforated plates I I, into the lamp chambers behind the lamps, or it may come in at front or at the sides. The smoke from the lamps is carried off up the auxiliary tube J, which is soldered to the back of the main tube A, and communicates only with the tops of the two lamp chambers by conduits made by division plates at the back of said chambers as indicated by the arrows marked  $\times \times$ , as represented in Figs. 2 and 3, and which need not be further described.

M, is the mirror. It is secured at the bottom on an axis  $m$  and at the top to a cord N. This cord passes up through the interior of the main tube and around a reel or pirn P. This reel can operate the cord, to make the mirror move through a space of ninety degrees, and retain it at any degree on the quadrant. When the mirror is drawn perpendicular or vertical to the bottom, the observer can examine objects through the glass light at the bottom.

K is this glass light or window. It may be made of about three square inches each way, nine square inches altogether, more or less as may be desired. The box D, is made with projecting sides, front plate and back plate L L, which form a square chamber T, directly below the glass K, and it is open downward, leaving the view unobstructed to the examiner who is looking through the main tube A, when the mirror is in the position heretofore described. The lamp and



mirror chambers are protected from the water in front by a folding glass door R R, which is secured in a brass or metal frame and united to the front of the box D, with  
 5 hinges *i i* at the bottom, and at the top by screws *j j*. By loosening the screws, this door can be opened at any moment, to trim the lamps, &c. This single glass door allows  
 10 the light of the lamps to be thrown out in front and the mirror to receive the impression of objects in the water, which may be reflected upon it. S, S, are side grooves or they may be flanges to receive a slide, to protect the glass door, when the instrument is  
 15 not in use.

When the instrument is let down into the water, a portion of air will be confined in the chamber or recess T below the light of glass K. The water will therefore be pre-  
 20 vented from touching the said glass. It will therefore be kept perfectly clean in muddy waters. If any moisture gathers inside on the front glass door R, it could be removed by a piece of cotton fixed on a bent wire, or  
 25 one across the said glass door, made to be drawn up and down the height of the door, by being attached to a wire rod extending up through the main tube; or the temperature inside of the mirror chamber, may be  
 30 kept lower than the temperature outside by some ice placed on the bottom of said chamber.

This instrument as improved by me I de-

nominate the "Submarine Examiner." It is useful for exploring the hulls of vessels 35 that may spring a leak at sea; for examining the bottom of rivers; and for all general sub-marine explorations.

The new features of my improvements are set forth, under the three heads describ- 40 ing the nature of my invention.

Having thus described my invention, I claim—

1. The main tube A, constructed with the side opening C in it, to allow a spy glass 45 B, to be used in combination with the telescope, as herein set forth.

2. The mirror chamber constructed to allow the mirror to move through a space of about ninety degrees, and with a glass K 50 in the bottom of it, in the manner substantially as herein described and for the purpose herein set forth.

3. I claim the arrangement of the lamps or artificial lights on each side of the mirror, 55 and leading the feeding draft from the main tube to the lamps under the mirror and lamps, and carrying the smoke away through the separate passage J, in the manner substantially as herein described, or in any 60 other manner substantially the same.

WILLARD DAY.

Witnesses:

S. H. WALES,  
 C. F. INNESS.