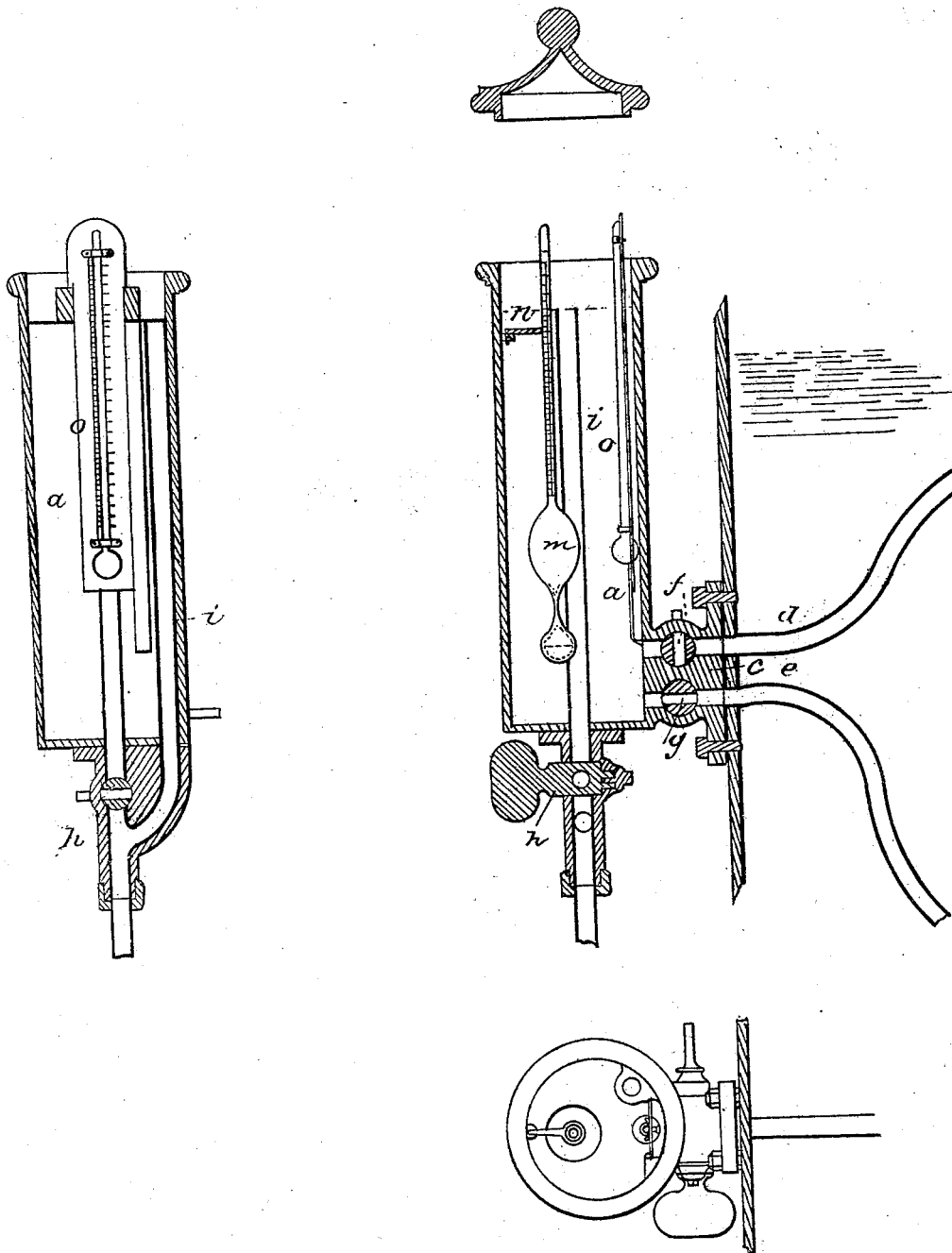


W. SEWELL, Jr.

Ascertaining the Saltiness of Water in Steam Boilers.

No. 6,104.

Patented Feb. 6. 1849.



UNITED STATES PATENT OFFICE.

WM. SEWELL, JR., OF WILLIAMSBURG, NEW YORK.

APPARATUS FOR ASCERTAINING BY INSPECTION THE SALTNESS OF WATER IN STEAM-BOILERS.

Specification of Letters Patent No. 6,104, dated February 6, 1849.

To all whom it may concern:

Be it known that I, WILLIAM SEWELL, Jr., of the village of Williamsburg, in the county of Kings and State of New York, have invented certain new and useful Improvements in Applying Hydrometers to Measure the Saltness of Water in Boilers, and that the following is a full, clear, and exact description of the principle or character which distinguishes them from all other things before known and of the usual manner of making, modifying, and using the same, reference being had to the accompanying drawing, which forms a part thereof.

The nature of my invention consists in constructing and arranging an apparatus containing a hydrometer and with or without a thermometer and so connected with a steam boiler as to readily pass a current of water from any part of the boiler through it for the purpose of ascertaining at all times by inspection the exact degree of saltness of the water at such desired part of the boiler. The water in the apparatus under inspection being relieved from pressure assumes a uniform temperature which is necessary to render the indications of the hydrometer correct. This apparatus is readily placed in any desired location either on the boiler itself in the engine room or elsewhere, an advantage which is not possessed by any other apparatus designed for a like purpose with which I am acquainted.

The construction is as follows: A cylinder of brass or other material (*a*) is affixed to the front or other part of a boiler or in any other convenient position by means of screw bolts, &c., in a suitable manner, the cylinder having a projection (*c*) on one side for that purpose and when attached standing vertical as shown in the drawing two holes are made through the projection (*c*) above named which open a communication between the interior of the boiler and the interior of the cylinder. Within the boiler are two metal pipes, one attached to each opening through the projection (*c*). The upper one (*d*) curves upward and terminates near the surface of the water in the boiler the lower one (*e*) curves downward and terminates near the bottom of the boiler. Within the projection (*c*) are fitted two stop cocks one to each opening. In the drawing one of them (*f*) is represented closed cutting off the communication with the upper pipe. The lower one (*g*) is kept open by which the cylinder

communicates with the lower part of the boiler from which it is kept filled with water to a certain depth which is regulated by the height of the overflow pipe (*i*) which carries off the surplus water. A current of water is thus kept constantly passing through the cylinder which keeps it at the same degree of saltness as that part of the boiler from which it is drawn. The stop cock (*h*) is for the purpose of letting the water out of the cylinder (*a*) below which the overflow pipe joins and forms one pipe as shown in the drawing. Within the cylinder (*a*) I have an hydrometer (*m*) floating at a height corresponding to the density of the water, sustained and kept in place by the bracket (*n*). I also have a thermometer within the cylinder (*a*) to indicate the temperature of the water and designated on the drawing by the letter (*o*). The water it is well known shows a different degree of saturation by the hydrometer at different degrees of temperature consequently the thermometer is necessary to obtain an exact result. By this means I am enabled to ascertain at all times by inspection the exact degree of saltness or density of the water in any desired part of the boiler.

If it is desired to know the saltness of the water near the surface close the cock (*g*) open the cock (*h*) to empty the cylinder then shut it and open the cock (*f*) when the cylinder will be filled and the density or saltness of the water constantly indicated as before stated.

Having thus fully described my improvement, what I claim therein as new and for which I desire to secure Letters Patent is—

The employment of a cylinder containing an hydrometer and with or without a thermometer said cylinder being connected with a steam boiler and constructed and arranged substantially as set forth, with a current of water passing from the boiler through it which is kept always at the same height in the cylinder by means of a waste pipe above described, and I further claim connecting said cylinder with the interior of the boiler by more than one pipe at different levels so that the saltness at any level can be determined substantially in the manner set forth.

WILLIAM SEWELL, JR.

Witnesses:

J. J. GREENOUGH,
WM. GREENOUGH.