

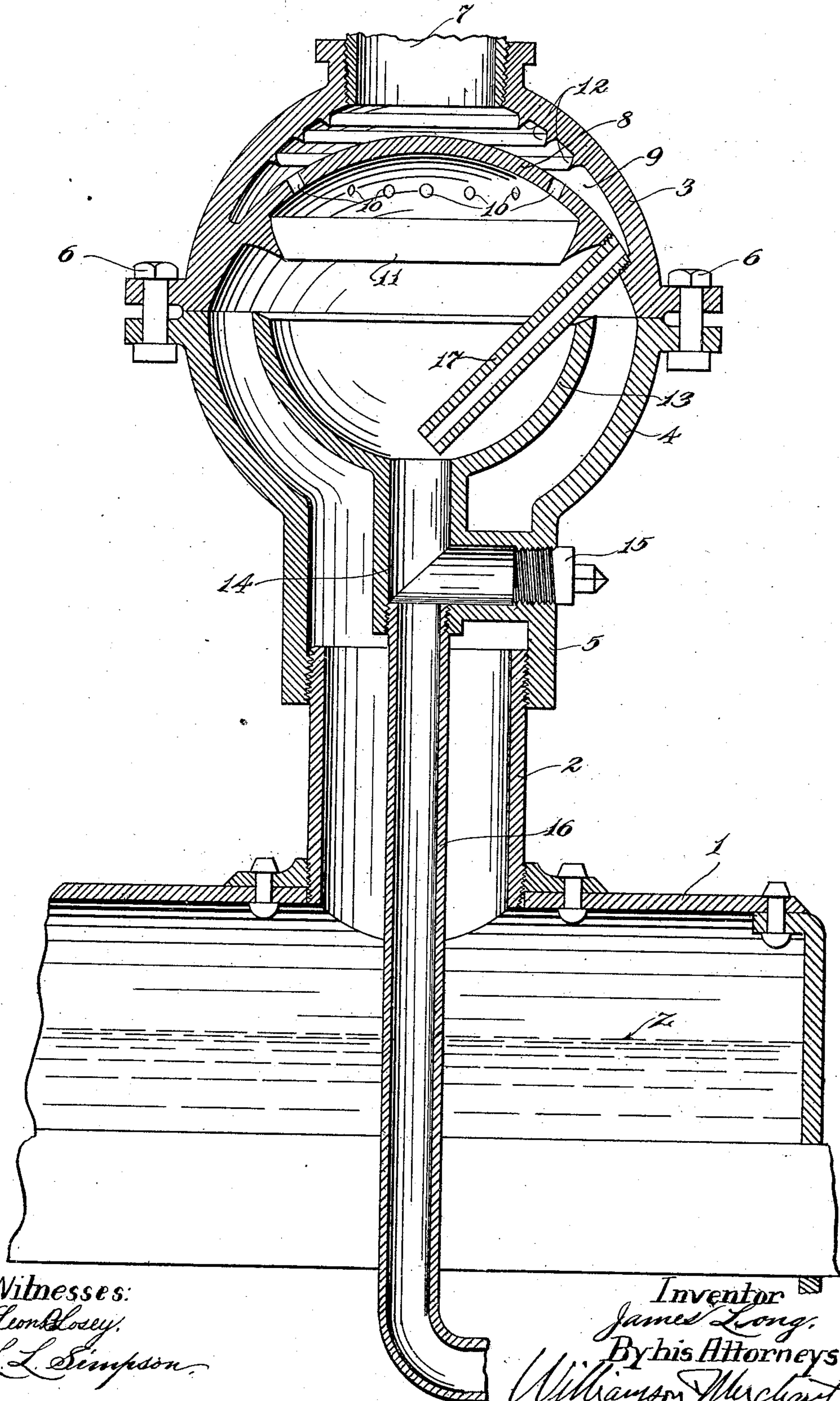
No. 874,971.

PATENTED DEC. 31, 1907.

J. LONG.

WATER ELIMINATOR FOR STEAM BOILERS.

APPLICATION FILED JULY 11, 1907.



Witnesses:
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UNITED STATES PATENT OFFICE.

JAMES LONG, OF MINOT, NORTH DAKOTA.

WATER-ELIMINATOR FOR STEAM-BOILERS.

No. 874,971.

Specification of Letters Patent.

Patented Dec. 31, 1907.

Application filed July 11, 1907. Serial No. 383,211.

To all whom it may concern:

Be it known that I, JAMES LONG, a citizen of the United States, residing at Minot, in the county of Ward and State of North Dakota, have invented certain new and useful Improvements in Water-Eliminators for Steam-Boilers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention has for its object to provide an improved water eliminator for steam generating boilers, and to this end it consists of the novel devices and combinations of devices hereinafter described and defined in the claims.

The invention is illustrated in the single view of drawing, which view is a vertical section taken centrally and longitudinally through a boiler, some parts of which are broken away, and showing the internal construction of the so-called water eliminator embodying my invention.

The numeral 1 indicates the boiler, which may be of any suitable type but which as shown is a horizontal boiler, provided at its upper portion with an upwardly projecting sleeve 2.

The body of the eliminator is preferably in the form of a hollow bulb with a spherical head made in two parts 3 and 4, the lower section 4 having a depending neck 5 which is joined to the sleeve 2, as shown, by threaded engagement. At their adjoining edges, the two bulb sections 3 and 4 have projecting flanges through which short nutted bolts 6 are passed to rigidly secure the said sections together. A steam outlet pipe 7 extends from the top of the boiler. The upper section 3 of the bulb is formed with an internal dome-like partition plate 8 that unites with the lower portion thereof and forms a supplemental condensation chamber 9 in the top of the said section. This partition plate 8 is provided with ports 10 that are located outward of the pipe 7 and is formed with an internal annular deflecting rib 11 which is outward of the annular row of ports 10. In the supplemental condensation chamber 9 the upper bulb section 3 is provided with several annular deflecting ribs 12.

The lower bulb section 4 is provided with a semi-spherical gathering plate or cup 13 which, as shown, is connected to the sleeve 5 of said bulb section 4 by an L-shaped neck

14, the outer extremity of which, as shown, is normally closed by a plug 15. A return pipe 16 leads from the bottom of the neck 14 downward through the sleeve 2 and terminates within the boiler 1 at a point below the water level thereof, which water level in the drawings is indicated at *z*. An inclined drip tube 17 leads from the lower portion of the supplemental condensation chamber 9 into the drip cup 13.

In applying the so-called water eliminator to boilers of different design, it is sometimes impossible to make the proper connection therewith by the return pipe 16 extending directly downward, and in such instances the opening shown as tapped by said pipe 16 would be closed by the plug 15, and the return pipe would be screwed into the opening afforded by removal of the said plug 15 from the position shown in the drawings.

With the device constructed and applied as shown in the drawings, the steam generated from the boiler will find its escape upward through the necks 2 and 5, through the space between the lower bulb section 4 and drip cup 13 into the upper chamber of the boiler, thence through the ports 10 into the supplemental condensation chamber 9 and from thence out through the steam pipe 7. In making this passage, the steam is repeatedly brought into contact with the deflecting surfaces and ribs upon which water carried by the steam would be gathered. For instance, in passing to the ports 10, the steam will be driven against the deflecting rib 11, while in passing from the ports 10 to the steam pipe 7, it will be directed against the deflecting ribs 12, as well as against the top of the upper bulb section 3. Water collected upon the deflecting rib 11 will run to the sharp lower edge thereof and from thence will be precipitated into the drip cup 13, while water collected upon the ribs 12 or other surfaces within the supplemental condensation chamber 9, will run from the bottom of said chamber through the drip tube 17 and thence back to the boiler through the neck 14 and pipe 16. The bulb or spherical head is made in two sections, so that access may be had to the interior thereof, and furthermore, this facilitates or cheapens the construction of the device, which would otherwise be very difficult to make.

What I claim is:

The combination with a boiler and a steam conduit leading therefrom of a water elimi-

nator comprising a two-part hollow bulb rigidly secured together, a drip cup in the lower section of said bulb having a drain pipe depending into the boiler, a perforated dome-like partition in the upper section of said bulb, forming a supplemental condensation chamber in the top of the bulb, a drain tube secured to said perforated dome-like partition at a point outside of said perforations and leading from the lower portion of said supplemental condensation chamber into said drip cup, an annular deflecting rib on the

under surface of said dome-like partition, outward of the perforations thereof, and one or more annular deflecting ribs on the upper interior surface of said supplemental condensation chamber, substantially as described. 15

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

JAMES LONG.

Witnesses:

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