(12) **United States Patent**
Thornton

(10) **Patent No.: X988**
(45) **Date of Patent: Jan. 16, 1809**

(54) **BOILERS, STEAM,& BOATS/STEAM BOAT**

(76) Inventor: **William Thornton**

To obtain all the necessary Steam and Water constructed in the following manner &c. [illegible]
[illegible] Drawings made & annexed to this Specification, and to the Letters & Figures marked thereon, reference being had to the same, viz. A A A A the Outside Case or Shell of the Boiler constructed of Iron Plates or Sheets of Copper or any other proper metal or metals, and the Ends B B are also made of Iron or Copper or any other proper metal or metals, and strengthened by cross pieces of Iron both upright and horizontal, and is rounded towards the Ends, although this is not necessary, but it is the most convenient shape in the proportion of Length to Diameter to six or seven feet in length. Within this is a Cylinder made of strong Copper or other metal in the same form as the outer Cylinder but much smaller being less than two feet in Diameter in the clear for reasons to hereafter be mentioned. The inside Cylinder can be put in the said case or Shell of the Cylinder resting on its Ends or Perigenbaits; to give room in the annular space between the two Cylinders for the Water & Air when in operation. The ends of the inside Cylinder are open & in the Plane between the Cylinders, the ends of the flue is in front of the Boiler, the ends are made of Iron or Copper or any other metal with strips or bars of Iron or Copper both on the inside & the outside of the inside Cylinder, with upright pieces to give additional support to the bars of the Grate may be made of Iron or Copper, or other metal, to keep and hinge it steady and secured with hard Solder or Chemists made Light into the sides of the interior Cylinder with the ends open, so as to permit the Water of the Boiler to pass through and thus prevent the Bars from melting, & thus also increasing the Steam in a very great degree as the Bars or Grate may be made hollow, and communicate with the hollow Sides & Ends of the Fire place for heating Water or Air, and not merely the Water, and have an opening or openings so as to permit the air to come into the Fire. These bars may run across or lengthways the Fire place as the Boiler may be made long or short, & they also may go about half way in, if the Boiler be in the proportion and of the Size mentioned, but may be regulated by the wood or other fuel if on a large scale, and where the fuel is to be chopped, Bars may go across made in the same way as the others, either hollow or solid, and thus a Chamber will be left behind the Fire in which the smoke will be consumed and give out an abundance of Caloric, to give the air through the Fire a check must be placed under the Fire at the end of the grate, so as to fill up the space underneath, and cut off the communication of air into the Chamber except through the Fire. This may be a Plate of cast Iron or other metal or substance that will stand Fire. It is held in the place by small Knees, Lumps, upright or bolts on each side.

The flue rises near the back of the interior Cylinder, and conveys the consumed vapour out; and if the flue be in due proportion to the Fire place, nothing or very little termination, which may be some feet above the Boiler, but a little trembling vapour without any smoke whatever after the Fire is in full operation. This flue is also of Copper,

either behind or in any other manner.

H. Langfeld.
Stephen Decatur Jr.
C. G. Grant.

William Lambton.

Patent dated 16th. January 1809.
Received and Recorded same Day.

2,000 words