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Carr

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(54) **STEAM, GENERATING**

(76) Inventor: **Job Carr**

Jeb Case of Springborough Ohio

Letters Patent

The Schedule referred to in these Letters Patent and making part of the same containing a description in the words of the said Jeb Case himself of his improvement in the Steam Generator or Boiler.

To all to whom these presents shall come. Be it known that I Jeb Case of Springborough in the County of Warren and State of Ohio have invented a new and useful machine being an improvement in the common Steam Generator or boiler for generating a sufficient quantity of Steam for propelling any kind of machinery to which Steam power is or may be applicable without any danger of bursting or collapsing and that the following is an exact description thereof. Make a reservoir of Cast Iron or wood bound with Cast Iron and shaped in the following manner (of sufficient size to generate the quantity of steam required always allowing allowance in the calculation for the size of the furnace as the case may be) make the Bottom flat, sides straight or vertical and top circular one half or oftener if required let a strong bar of iron be placed under the bottom with a hole in each end exactly even with the outside of the reservoir then another bar fitted to the top and sides. the ends extending through the first bar and well secured with a good nut then two or more strong Bars fitted across each end of the reservoir and let them extend round the reservoir with holes in each end through which the bars that go over the top of the ends are to pass before. they are fastened at the bottom to the first bar. a number of the reservoir must then through the ends and let steam pass through the ends and then bars on the ends and screw them well at each end. the number of these must vary to be regulated by the size of the reservoirs. The steam to be generated in this reservoir by pipes made of iron, Cast Iron or any other metallic substance with a flange at the end and to make

Be it known that I, [illegible], a citizen of the United States, have invented a new and useful improvement in the manner of constructing and operating steam boilers, and that the following is a full and exact description thereof, reference being had to the accompanying drawings, forming part of this specification.

The nature of my invention consists in the construction of a steam boiler with a series of tubes arranged in a peculiar manner, and in the combination of such tubes with a furnace and water-chamber, so that the heat and flame from the furnace shall pass through the tubes before escaping into the chimney, thereby heating the water in the chamber and generating steam.

To enable others skilled in the art to make and use my invention, I will now proceed to describe its construction and operation, referring to the drawings, in which—

Figure 1 is a longitudinal vertical section of my boiler, taken through the middle of the furnace and the tubes. Figure 2 is a transverse vertical section of the same, taken through the furnace and the tubes. Figure 3 is a plan or top view of the boiler, with the upper part removed to show the arrangement of the tubes.

A is the outer shell of the boiler, which may be made of any suitable material, and of any convenient size or form. B is the water-chamber, which is also of any convenient size or form, and is placed at the front end of the boiler. C is the furnace, which is placed within the water-chamber, and is surrounded on all sides by water, except at the front, where it is open to the air. D is the fire-grate, which is placed at the bottom of the furnace. E is the ash-pit, which is placed below the grate D, and is open at the front. F is the flue, which leads from the top of the furnace to the chimney. G is the damper, which is placed in the flue F, and is used to regulate the draft of the furnace. H is the feed-pipe, which is used to supply the boiler with water. I is the steam-pipe, which is used to carry the steam from the boiler to the engine. J is the safety-valve, which is placed on the steam-pipe I, and is used to relieve the boiler from excessive pressure of steam. K is the blow-off pipe, which is used to empty the boiler when required. L is the manhole, which is used to enter the boiler for the purpose of cleaning and repairing it.

The tubes M are arranged in a peculiar manner, as follows: They are placed in a horizontal position, and are arranged in a series of rows, one above the other, with a space between each row. The tubes in each row are placed directly over the spaces between the tubes in the row below, so that the flame and heat from the furnace will pass through the tubes in a zigzag manner, and will thus be brought into contact with a large surface of the water in the chamber B. The tubes are made of any suitable material, and are of any convenient size or form. They are secured in the front and back ends of the boiler by any suitable means, so as to be water-tight.

The operation of my boiler is as follows: The fire is built on the grate D, and the flame and heat pass through the tubes M, and thence into the flue F, and out at the chimney. The water in the chamber B is heated by the flame and heat passing through the tubes, and steam is generated. The steam passes out through the steam-pipe I, and is used to drive the engine. The safety-valve J is set to blow off at a certain pressure, and prevents the boiler from bursting. The blow-off pipe K is used to empty the boiler when required.

What I claim as my invention, and desire to secure by Letters Patent, is—

The arrangement of the tubes M, in the manner and for the purpose described.

In testimony whereof I have hereunto set my hand and seal this [illegible] day of [illegible], 1847.

[illegible]

Witnesses:

[illegible]

[illegible]