T. SEEVERS.

STEAM BOILER FURNACE.

APPLICATION FILED AUG. 16, 1909.

946,525.

Patented Jan. 11, 1910.

2 SHEETS—SHEET 1.

Fig. 1.

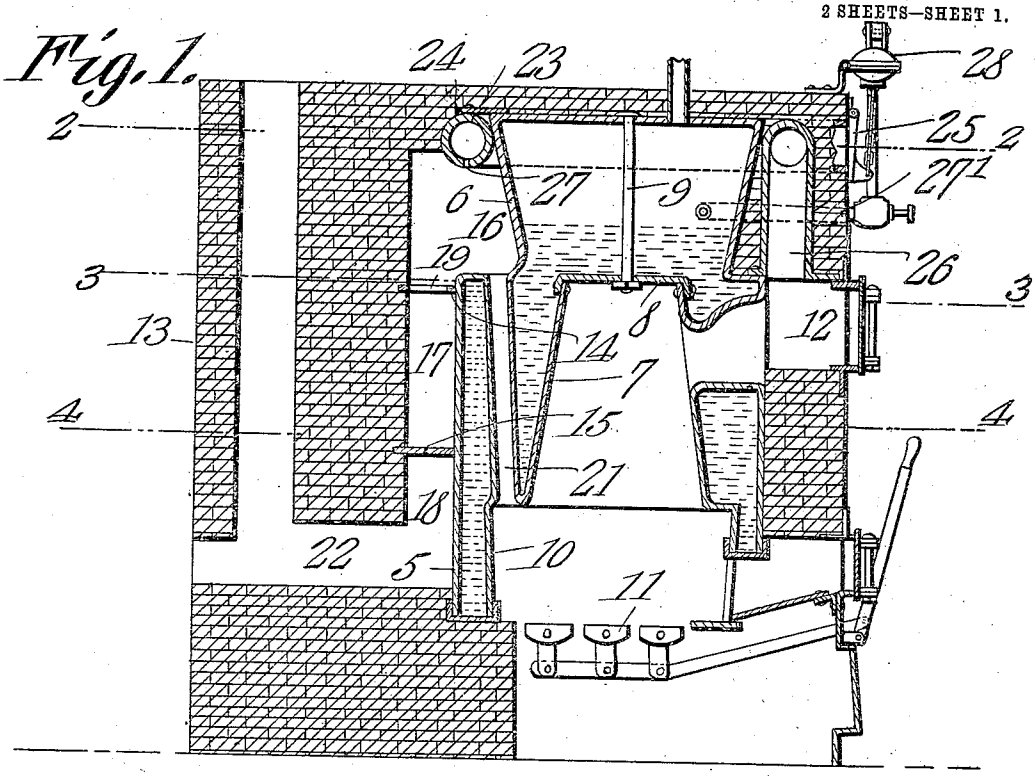
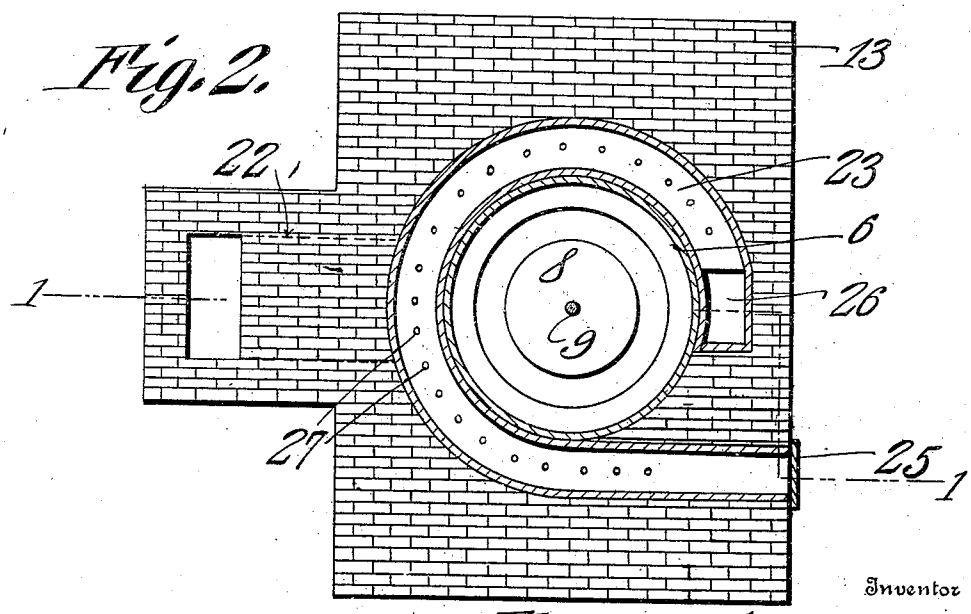


Fig. 2.



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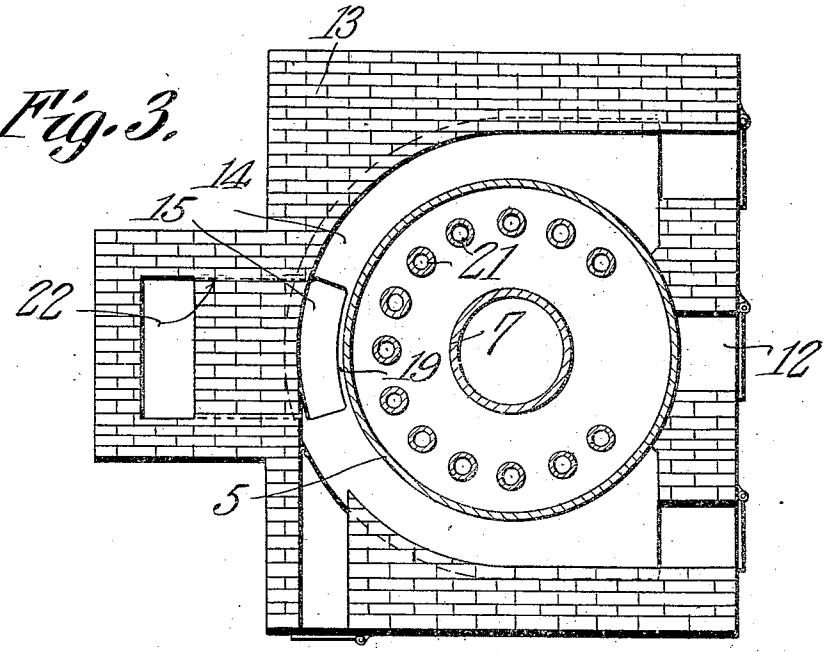
2 SHEETS—SHEET 2.

Fig. 3.



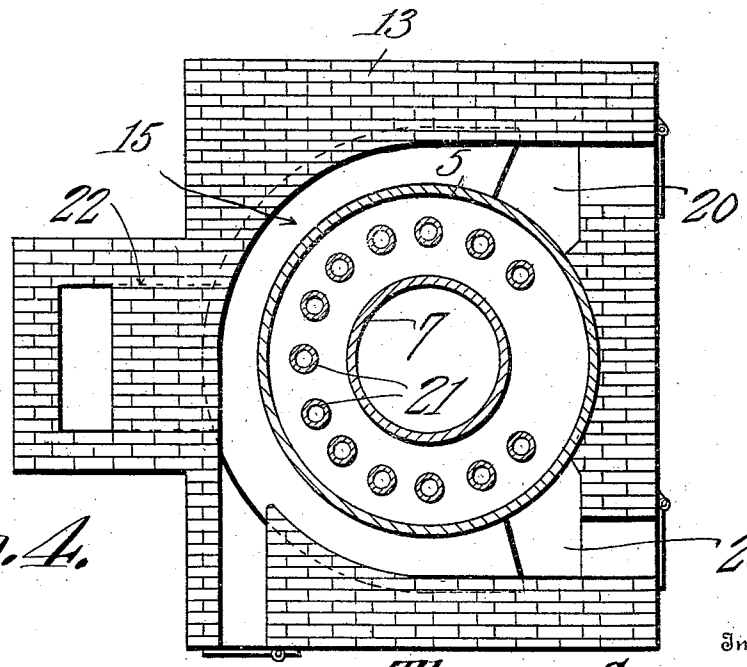


Fig. 4.

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UNITED STATES PATENT OFFICE.

THOMAS SEEVERS, OF OSKALOOSA, IOWA.

STEAM-BOILER FURNACE.

946,525. Specification of Letters Patent. Patented Jan. 11, 1910.

Application filed August 16, 1909. Serial No. 513,085.

To all whom it may concern:

Be it known that I, THOMAS SEEVERS, a citizen of the United States, residing at Oskaloosa, in the county of Mahaska and State of Iowa, have invented new and useful Steam-Boiler Furnaces, of which the following is a specification.

This invention relates more particularly to base burning, magazine steam boilers, and it has for its object to provide improved means for feeding air to the magazine, and to the combustion chamber, the air being heated before it is discharged, in order to obtain a more perfect combustion of the fuel.

A further object is to provide a combustion chamber of novel structure, as will be hereinafter more fully described.

In the accompanying drawings:—Figure 1 is a vertical section of a boiler constructed in accordance with the present invention, the upper portion thereof being taken on the line 1—1 of Fig. 2. Fig. 2 is a horizontal section on the line 2—2 of Fig. 1. Figs. 3 and 4 are horizontal sections taken on the lines 3—3 and 4—4 respectively of Fig. 1.

Referring more particularly to the drawing, 5 denotes the cylindrical outer shell of the boiler, and 6 denotes a steam dome which is of less diameter than the boiler, and is located at the top thereof. The steam dome is flared in the direction of its upper end, in order to present a more extended surface to the action of the fire and the hot gases.

At 7 is indicated the fuel magazine, which is located centrally in the outer shell 5. The crown sheet 8 of the magazine is connected to the top of the steam dome by means of a rod 9. Located centrally in the shell, at the lower end thereof, is a fire box 10 provided with a shaking grate 11. A coal chute 12 leads to the magazine 7.

The boiler is incased in a setting 13 of brick work which is arranged so as to form a combustion chamber surrounding the boiler as well as the steam dome. Within this combustion chamber are located horizontal partitions 14 and 15, the former being located near the top of the boiler, and the latter at the middle. These partitions divide the combustion chamber into compartments 16, 17 and 18. The compartment 16 is in communication with the compartment 17 by an opening 19 made in the partition 14, and the compartment 17 communicates with the compartment 18 by the way of openings 20 made in the partition 15. The opening 19 is at the rear of the boiler, and the openings 20 are at the front of the boiler on opposite sides thereof, by reason of which the products of combustion will be caused to take a tortuous course through the combustion chamber. The compartment 16 surrounds the steam drum, and the compartments 17 and 18 surround the boiler. A series of vertical flues 21 passing through the boiler connect the fire-box with the compartment 16. From the compartment 18 a cross flue 22 leads to the stack, this flue entering the compartment to the rear of the boiler.

The products of combustion pass through the flues 21 into the compartment 16 and then through the compartments 17 and 18 in the order named, and thence to the stack by way of the flue 22. The inclined wall of the steam dome 6 overhangs the outlet ends of the flues 21, whereby the products of combustion as they leave said flue are caused to impinge against said wall, whereby the steam is rapidly superheated.

At 23 is indicated an air supply pipe for supplying air to the magazine. This pipe is located in the compartment 16 of the combustion chamber, and partly surrounds the steam dome at its top, it being held in place by lugs 24 secured to the top of the steam dome. One end of the pipe opens through the front of the setting, said end being fitted with a hinged damper 25. The other end of the pipe opens into a flue 26 extending down through the brick work to the coal chute 12 and communicating therewith. By mounting the air supply pipe as herein described, it is exposed to the hot gases and other products of combustion, in the compartment 16, whereby the air is heated before it is discharged into the magazine. In the bottom of the air supply pipe are a series of perforations 27 for supplying air to the compartment 16, which air mixes with the gases, and effects a more perfect combustion of the same.

To the steam dome 6 is connected a pipe 27′ which leads to a pressure regulator 28 which is operatively connected to the damper 25, so that when the pressure of the steam becomes too great for safety, the damper will be closed to cut off the air supply to the fire. As the pressure is decreased, the damper operating devices move in the

opposite direction and open the damper to admit air to the fire. The air supply is thus operated automatically.

The coal chute 12 enters the magazine near the top thereof, and as the flue 26 opens into this chute, it will be seen that air is taken in at the top of the magazine. The air passes down through the coal in the magazine whereby a more perfect combustion is had, and the fire will not clog up and cut off the air supply as is frequently the case when it is fed from underneath the grate. The ashes and cinders fall away from the burning coal and keep the same open for the free passage of the air down through the same in the magazine.

What is claimed is:—

The combination of a magazine and a fire-box, a fuel chute entering the upper end of the magazine, a setting arranged to form a combustion chamber surrounding the magazine, flues leading from the fire-box to the combustion chamber, an air supply pipe mounted in the combustion chamber, and discharging into the fuel chute of the magazine, that portion of the pipe which is located in the combustion chamber being provided with perforations and a damper for the pipe.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

THOMAS SEEVERS.

Witnesses:

L. E. Seevers.

Ben Gould.