

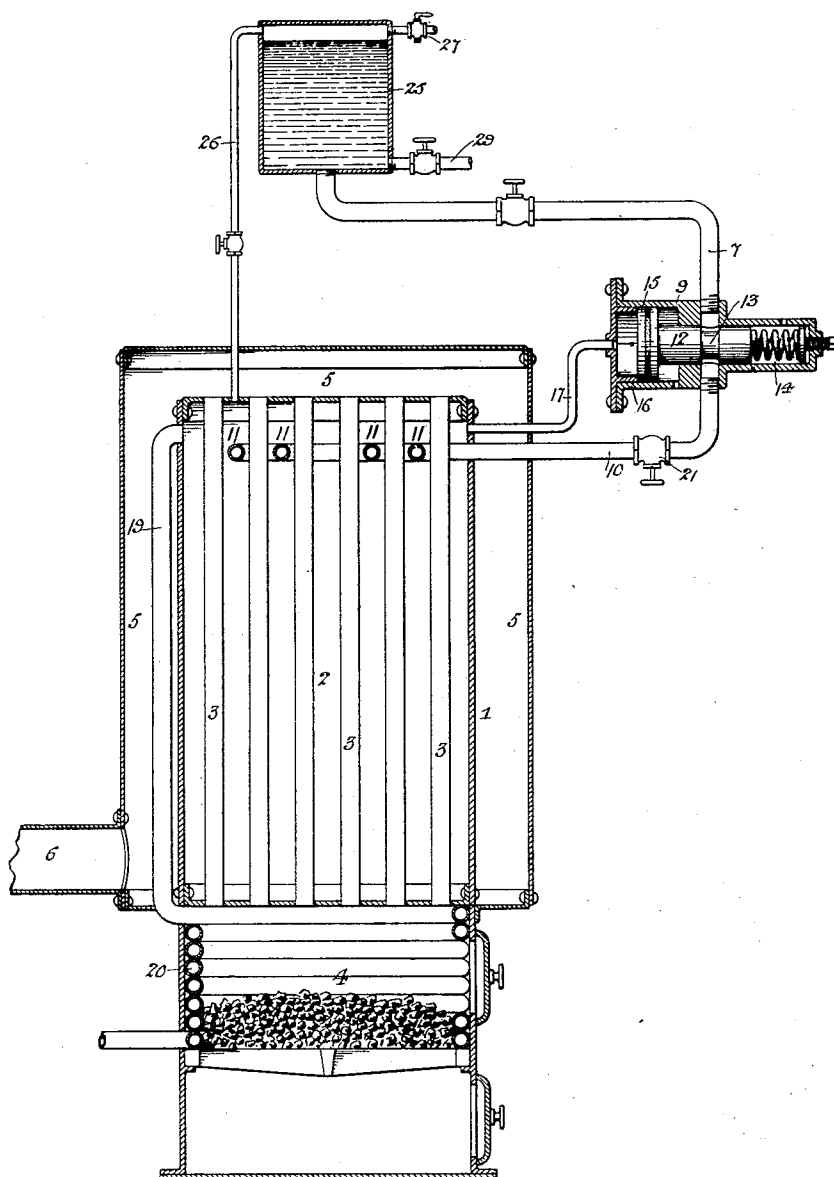
No. 733,259.

PATENTED JULY 7, 1903.

A. B. NEIMAN.
STEAM GENERATOR.

APPLICATION FILED MAY 8, 1902.

NO MODEL.



Witnesses:

Frank W. Abraham
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UNITED STATES PATENT OFFICE.

ALVIN B. NEIMAN, OF PHILADELPHIA, PENNSYLVANIA.

STEAM-GENERATOR.

SPECIFICATION forming part of Letters Patent No. 733,259, dated July 7, 1903.

Application filed May 8, 1902. Serial No. 106,444. (No model.)

To all whom it may concern:

Be it known that I, ALVIN B. NEIMAN, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain improvements in Steam-Generators, of which the following is a specification.

My invention relates to steam-generators of the flash type, the objects of my invention being to prevent accumulation of any considerable body of water in the generating-chamber and to effect superheating of the generated steam. These objects I attain in the manner hereinafter set forth, reference being had to the accompanying drawing, which represents in vertical section a steam-generator constructed in accordance with my invention.

1 represents the casing of the generator, which incloses the generating-chamber 2. Through the latter pass vertical tubes 3, communicating at the lower ends with the fire-box 4 and at their upper ends with the chamber 5, the latter surrounding the casing 1 and being provided at its lower portion with an outlet-flue 6, so that the products of combustion from the fire-box 4 first rise through the tubes 3 and then descend around the casing 1 until they escape through the flue 6 to the chimney or stack.

The valved water-supply pipe 7 communicates with any available supply of water under pressure and is connected to a valve-chest 9, from which leads a pipe 10, provided within the steam-generating chamber 2 with one or more perforated coils 11, from which the water is discharged into said chamber 2 and into contact with the tubes 3 therein.

The water-supply is preferably derived from an elevated reservoir 25, to whose upper portion steam from the generator 1 is admitted through a valved pipe 26, and said reservoir has also a petcock 27 and a valved water-supply pipe 29. In operation the cock 27 and valve in pipe 29 are closed and steam is admitted to the reservoir, from which the water flows through the pipe 7. When it is desired to refill the reservoir, the valves in the pipes 7 and 26 are closed, the cock 27 is opened to release the pressure from the reservoir, and water is then permitted to flow into the latter from the pipe 29.

The valve-chest 9 contains a cylindrical

valve 12, grooved or ported, as at 13, so that when in the position shown in the drawing it will open communication between the supply-pipe 7 and the pipe 10 and will permit a flow of water into the steam-generating chamber 2. When the valve is moved, however, in the direction of the arrow from the position shown in the drawing, it will gradually contract and finally cut off the flow of water from the pipe 7 to the pipe 10. The valve is moved in one direction by a coiled spring 14, contained in an extension of the chest 9, and in the opposite direction by pressure of steam upon a piston 15, which is secured to or forms part of the valve 12 and is contained in the chamber 16 of the valve-chest 9, which chamber is in free communication with the steam-generating chamber 2 by means of a pipe 17. When, therefore, the pressure of steam in the chamber 2 is less than that provided for by the tension of the spring 14, (which can be regulated by an adjusting-screw,) the valve will remain open and water will flow into the chamber 2, so as to continue the generation of steam therein until the desired pressure has been attained, any increase of pressure below the predetermined figure causing the closing of the valve 12 and the cutting off of any further flow of water into the generator until the pressure falls to the desired extent. By this means the accumulation of any large volume of water in the generator is prevented, and the heat is enabled to effect the instant conversion into steam of the small volumes of water projected onto the tubes 3 by the perforated coils 11.

In order to effect the superheating of the steam, the delivery-pipe 19 of the generator is coiled, as shown at 20, so as to inclose the fire-box, the steam in its passage from the generator to the point of use being thereby subjected to the highest degree of heat maintained in any portion of the furnace.

In carrying out my invention various forms of automatic regulating-valve may be used for controlling the flow of water into the generator under the pressure of steam therein, that illustrated being simply selected as an example of one type of valve available for the purpose.

A valve 21 in the pipe 10 serves to regulate the flow of water into the generator in start-

ing the same and before there has been such generation of steam as to render the valve operative.

Although I have shown my invention as embodied in a generator of the vertical type, it will be evident that it is equally applicable to other types of generators.

Having thus described my invention, I claim and desire to secure by Letters Patent—

1. A steam-generator consisting of a casing, means for heating the same, a pipe for supplying water to the generating-chamber within said casing, and a valve consisting of a piston exposed to the pressure of steam in the generator and having a stem acting as a controlling-valve and serving to directly govern the flow of water into the generating-chamber, substantially as specified.

2. A steam-generator consisting of a casing, means for heating the same, a pipe for supplying water to the generating-chamber within said casing, a valve controlled by the pressure of steam in the generator and serving to govern the flow of water into the same, and an independent hand-controlled valve for regulating the supply of water before the generation of steam with sufficient pressure to actuate the automatic valve, substantially as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ALVIN B. NEIMAN.

Witnesses:

F. E. BECHTOLD,
JOS. H. KLEIN.