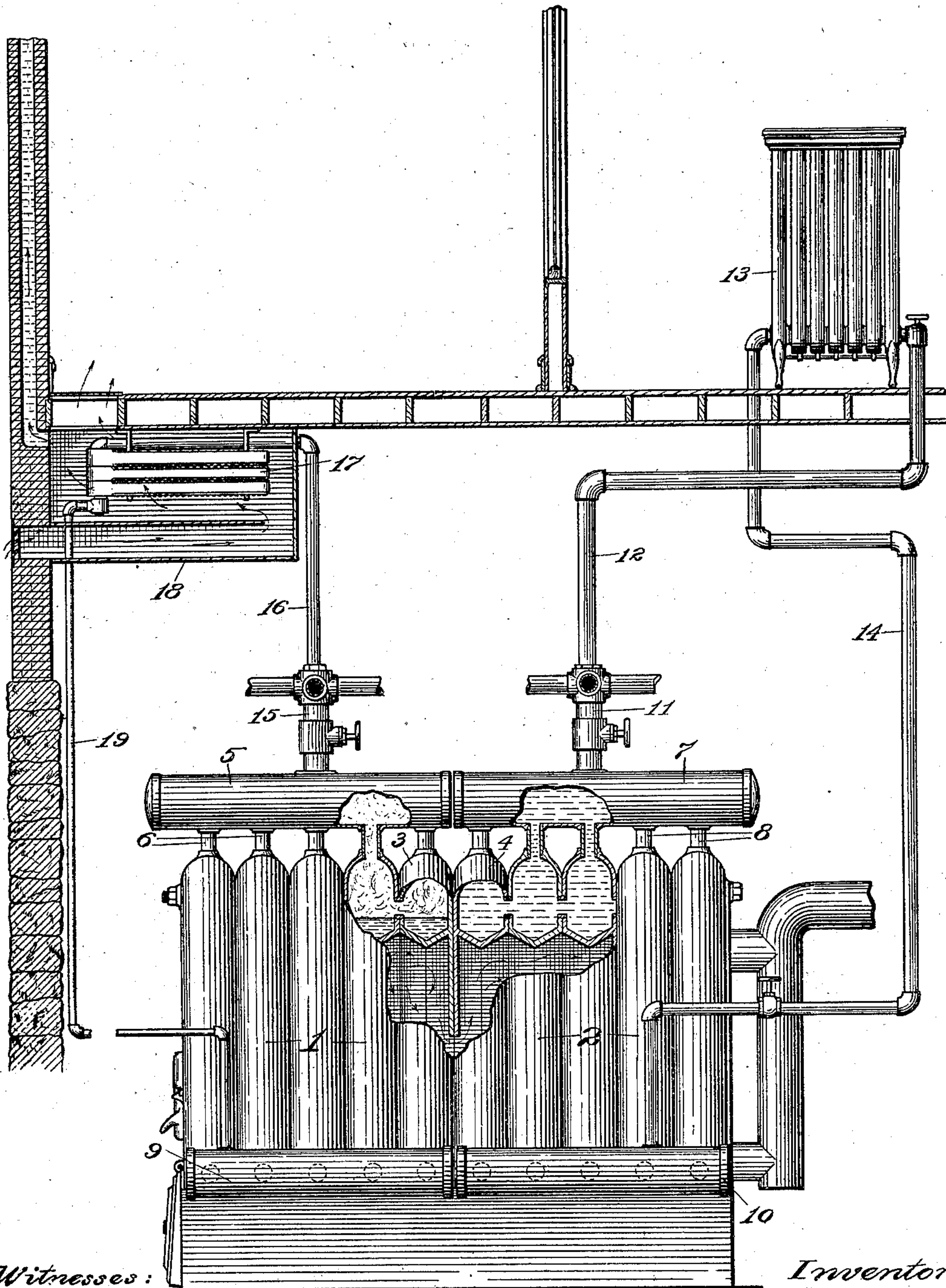


No. 750,358.

PATENTED JAN. 26, 1904.

F. C. GOFF.
HEATING SYSTEM.
APPLICATION FILED JAN. 19, 1900.

NO MODEL.



Witnesses:

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FRANK C. GOFF, OF DENVER, COLORADO.

HEATING SYSTEM.

SPECIFICATION forming part of Letters Patent No. 750,358, dated January 26, 1904.

Application filed January 19, 1900. Serial No. 2,033. (No model.)

To all whom it may concern:

Be it known that I, FRANK C. GOFF, a resident of Denver, in the county of Arapahoe and State of Colorado, have invented a certain new and useful Heating System, of which the following is a specification.

My invention pertains to heating systems generally; and its object is to provide a single system having the advantages of both steam and hot-water heating and operated from a single plant or boiler.

It is well known that for certain reasons hot-water heating is preferred under some conditions, but a hot-water plant or system is not as desirable or efficient for indirect radiators, particularly on account of the necessarily large area and number of stacks of such indirect radiators that must necessarily be required. Consequently for indirect heating steam is the more efficient, and a less number of stacks is found necessary; but when steam is thus used for such purpose for heating the entire house or building the system is, of course, a steam system throughout, and the advantages of a hot-water system cannot be enjoyed, because the direct radiators must of course be steam-radiators. To provide in the same system for hot-water heating and steam-heating, either direct or indirect, from the heat of the same plant is the purpose generally of my invention.

The single figure in the accompanying sheet of drawings represents in a more or less diagrammatic way one of the embodiments of my invention, which will serve for an illustration and comprehension of my invention.

While it will be understood that the system embodying my invention may assume somewhat different forms, I have for the sake of proper description and illustration selected the hereinafter-described system as one exemplification without intention of limiting myself to any detailed features of construction that may be shown or described.

In the system shown the boiler is of the sectional type—that is, made up of sections bolted or otherwise secured together; but obviously any other construction of boiler may be adopted without departing from the spirit of my invention. The boiler is intended both as

a steam-boiler and as a water-boiler, heated by the same fire. The series of sections 1, which constitutes the steam-boiler proper, are preferably located at the furnace end of the boiler, where the heat is the greatest, while the series of sections 2, having no communication with the steam-boiler, are located at the opposite end and constitute the water-boiler proper. The steam-section (marked 3) represents the back steam-section, and the hot-water section (marked 4) represents the front hot-water section, this point marking the division between the sections 1 and 2, which, however, are all provided with fire-flues, so that the fire and heated gases can pass from the steam-boiler sections into and through the water-boiler sections, as clearly shown in the drawing.

The steam-boiler sections may be connected to a steam dome or header 5 by nipples 6 or otherwise, and the sections 2 may be connected to a hot-water drum or header 7 by nipples 8 or otherwise. The boiler may also have a return-header 9 communicating with the steam-sections for receiving and delivering to the boiler the returned water of condensation. A similar header 10 may communicate with the hot-water heater or water-boiler sections as a part of the hot-water arrangement or system.

The hot-water-supply pipe 11 may obviously have any desired number of branches to heat any number of stacks of radiators, and, as shown, it is provided with a number of branches, the supply-pipe 12 leading to a hot-water radiator 13, represented as being located in a room above the boiler. The other hot-water branch pipes may lead to other hot-water radiators located wherever hot-water heating is desired. The hot-water return-pipe 14 leads from the radiator to the return-header 10. Obviously the water-boiler may serve to supply any number of radiators consistent with its capacity. Likewise the steam-supply pipe 15 from the header 5 may have any number of branches. As shown, a steam-pipe 16 communicates with the stack of indirect steam-radiators 17, located within a suitable box 18 in the usual and well-known manner. Any desired arrangement of air conduits and

flues for the cold air and the hot air may be adopted, so that the air will be delivered into a room where hot air is desired, either through a floor-register or wall-register. As shown in the drawings, the hot air passes from the stack of indirect radiators into the room above through a floor-register, and a flue is also shown as passing upwardly in a space between the walls and intended to supply the room above the first room. Obviously the steam-pipe may supply steam to other indirect radiators or, if desired, to direct steam-radiators, according to the capacity of the steam-boiler. The usual return-pipe 19 for the return of water of condensation leads from the stack of indirect radiators to the return-header 9.

My system thus possesses all the advantages of both steam-heating and hot-water heating, and the single plant is designed to accommodate both methods of heating. By the use of this system the indirect heating may be done with indirect steam-radiators, which are smaller and less expensive than the hot-water radiators, and at the same time and with the same plant some or all of the direct radiators may run on the hot-water system, so that the user may be afforded the advantages of both systems wherever he desires them. In all cases my purpose is to heat the water and the steam from a common source of heat, whether the water of the hot-water system be heated directly or indirectly by the same fire.

I claim—

1. A heating system comprising a hollow steam-boiler section and hollow hot-water-boiler section independent of each other and each of which is provided with a combustion-chamber forming with the other when assembled a common furnace extending through said sections, hot-water radiators communicating with the water-boiler section, and

steam-radiators communicating with the steam-boiler section, all cooperating substantially as described.

2. A heating system comprising a hollow steam-boiler section and hollow hot-water-boiler section, independent of each other and each of which is provided with a combustion-chamber forming with the other a common furnace throughout the said sections, a door opening into fire-box at the steam-boiler end, a flue at the water-boiler end, hot-water radiators communicating with the water-boiler, and steam-radiator communicating with the steam-boiler.

3. A heating system comprising a hollow steam-boiler and a hollow hot-water boiler both being entirely independent, but placed end to end and each of which is provided with a combustion-chamber forming with the other a common furnace throughout the said sections so that they can be heated by the same fire, both of said boilers consisting of a series of vertical sections of hot-water radiators communicating with the water-boiler, and a steam-radiator system with the steam-boiler, all operating substantially as, and for the purpose described.

4. A heating system comprising a hollow steam-boiler at the furnace end, a hollow hot-water boiler at the other end, both boilers being independent of each other, but placed end to end and consisting of a series of vertical sections each of which is provided with a combustion-chamber forming with the other a common furnace throughout the said sections, but adapted to operate independently as to the circulation of steam and water therein; substantially as and for the purpose described.

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Witnesses:

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