

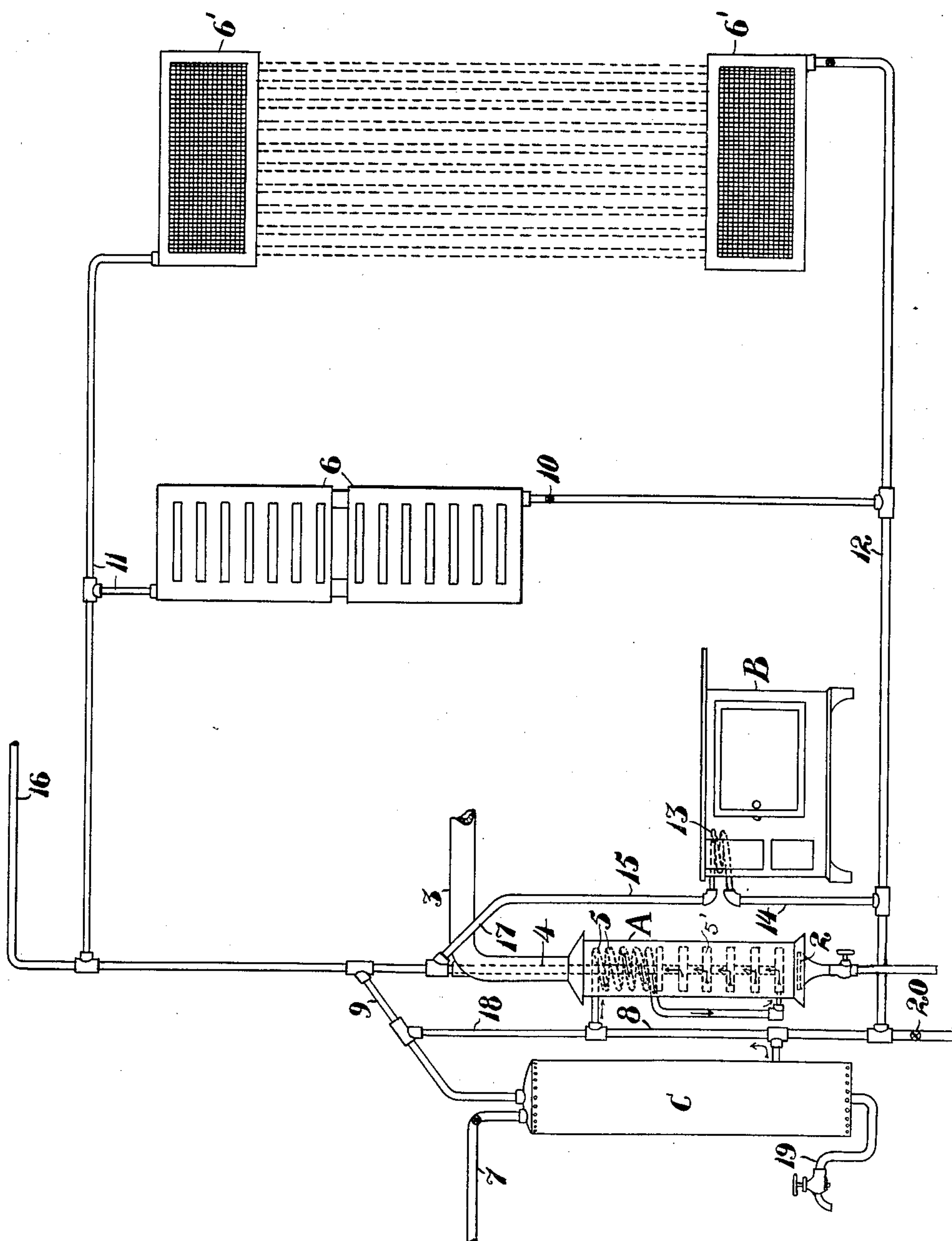
No. 835,812.

PATENTED NOV. 13, 1906.

G. COWLES & F. M. SIMPSON.

DOMESTIC HOT WATER SUPPLY AND HEATING SYSTEM.

APPLICATION FILED AUG. 23, 1905.



**Witnesses:-**

Witnesses:-  
F. C. Fiedner  
B. Sauer

# *Inventors*

Inventors  
George Cowles  
Fenderson M. Simpson  
Mr Geo. H. Strong; atty



# UNITED STATES PATENT OFFICE.

GEORGE COWLES AND FENDERSON M. SIMPSON, OF SACRAMENTO,  
CALIFORNIA.

## DOMESTIC HOT-WATER SUPPLY AND HEATING SYSTEM.

No. 835,812.

Specification of Letters Patent.

Patented Nov. 13, 1906.

Application filed August 23, 1905. Serial No. 275,376.

*To all whom it may concern:*

Be it known that we, GEORGE COWLES and FENDERSON M. SIMPSON, citizens of the United States, residing at Sacramento, in the county of Sacramento and State of California, have invented new and useful Improvements in Domestic Hot-Water Supply and Heating Systems, of which the following is a specification.

Our invention relates to a hot-water supply and heating system for domestic purposes.

The object of our invention is to provide a safe, cheap, simple, and practical system particularly adapted for heating and supplying hot water to a number of rooms, such as are usually arranged together in an apartment or flat, the heating and the hot water requiring but one boiler and one source of heat.

The invention consists of the parts and the construction and the combination of parts, as hereinafter more fully described and claimed, having reference to the accompanying drawing, in which the figure illustrates our system.

In practicing our invention we use an ordinary gas-heater, as A, or a common kitchen-range, as B, either singly or combined, as shown, for our source of heat-supply. Where we use a gas-heater, we may modify its construction in such a way as to give us the fullest benefit of the heat produced by the burner.

The heater here shown is of well-known construction and comprises a casing provided with a suitable burner 2 at the bottom and a vapor-vent 3 at the top. Within the casing are arranged the vertical hot-water pipe 4 and the upper and lower water-heating sections 5 5'. The upper water-heating section is in the form of a coil 5, which is the cold-water coil, since cold water is admitted directly to it. This coil is located in the upper part of the casing A, where the heat is always the most intense. The lower water-heating section 5' includes disks or radial arms connected by the vertical pipe 4. As shown, the lower terminal of the coil 5 is extended to a point outside the casing A and thence extends downwardly and enters said casing and is connected to the lower disk or radial arm of the lower water-heating section, as shown, whereby the cold water admitted to the upper end of the coil 5 flows

down said coil and through the extended lower terminal thereof and enters the lower part of the lower water-heating section 5' and thence flows backwardly through the pipe 4 relative to the flow through the upper water-heating section or coil 5. From the pipe 4 the water is delivered into the system.

C is an ordinary kitchen-boiler, preferably set low and on or near the floor, so as to leave plenty of space between the top of the boiler and the ceiling for the circulation of the hot water through the radiators 6 6', as in case it is wanted to heat up the room quickly without first having to heat the water in the boiler.

Cold water from the mains enters the boiler through pipe 7. Thence it passes through the vertical pipe 8 into the top of the upper water-heating section or coil 5 of the heater, passes downward through the same and through the lower water-heating section 5', and discharges as hot water up through the pipe 4, either into the boiler through the inclined pipe 9 if the valve 10 is closed or else passes through the overhead system of hot-water pipes 11 to the radiators 6 6', which are arranged, preferably, on or in the walls and above the level of the boiler. With the valves 10 open the water circulates by gravity through the radiators and returns to the heater through the subjacent system of pipes 12 and pipe 8.

If desired, the water-back 13 in the range B may be coupled up with the heater A and made to supplement the latter, as shown, or, if gas is not convenient or a gas-heater is not to be had the range will supply all the necessary heat, the cold water entering the water-back through pipe 14 and discharging through pipe 15.

The supply of hot water for domestic purposes is taken from pipe 16, which is arranged at a point higher than the boiler or any radiators, and distributed to the various fixtures in the house. Any air in the radiators or coils or boiler that is liable to accumulate is discharged through the hot-water-supply pipe 16; hence the reason for inclining the pipes 9 and 17. The small pipe 18 is for the purpose of leading any air off from the water-pipe 8 and gas-heater coils.

The radiators may be of any improved pattern and form by themselves no part of our



invention. Any sediment in the water or pipe 8 may be drawn off from time to time through the cocks 19 20.

The advantages of this system are that it  
5 allows the use of hot water from an ordinary kitchen-boiler to be used for all domestic purposes, including the heating of the rooms. The arrangement of the pipes and radiators is such that the water has a gravity circula-  
10 tion. When the valve 10 is open, the circulation is through the radiators, and the rooms are heated before the boiler is heated. By closing the valve 10 all the heat is diverted to the boiler, and the temperature of the rooms  
15 will remain practically unaffected. In cold weather, however, the first consideration is comfort, and hence the reason for placing the radiators above the boiler.

Having thus described our invention, what  
20 we claim, and desire to secure by Letters Patent, is—

1. An improved heating and hot-water system comprising a boiler, a gas-heater, radiators arranged at different levels above the  
25 boiler, a cold-water-supply pipe connecting with the boiler, a vertical pipe 8 connecting the boiler with the heater said heater having a casing and upper and lower reversely-arranged water-heating sections through which  
30 the water circulates in opposite directions, said upper water-heating section having a lower terminal extended to and connecting directly with the lower terminal of the lower water-heating section, and said upper water-  
35 heating section connecting with said pipe 8 and said lower water-heating section having a delivery-pipe leading the water thereof to the radiators, and return-pipes connecting with the radiator.

2. An improved heating and hot-water sys- 40  
tem comprising a boiler, a gas-heater, radiators arranged at different levels above the boiler, a cold-water-supply pipe connecting with the boiler, a vertical pipe 8 connecting the boiler with the heater said heater having  
45 a casing and upper and lower reversely-arranged water-heating sections through which the water circulates in opposite directions, said upper water-heating section having a lower terminal carried outside the casing and  
50 downwardly to and connected with the lower part of the lower water-heating section, said upper water-heating section connecting with said pipe 8 and said lower water-heating section having a delivery-pipe leading the water  
55 thereof to the radiators, an upwardly-inclined pipe 9 connecting the boiler with the delivery-pipe of the lower water-heating section, a pipe 18 connecting the upper end of the pipe 8 with said inclined pipe and serving  
60 to conduct air from the pipe 8, and a pipe 16, arranged above the boiler and radiators and connecting with the hot-water delivery of the lower water-heating section and supplying  
65 hot water for domestic purposes, said pipe 16 also serving as a discharge for any air conducted by the pipes 18 and 9, and return-pipes connecting with the radiators, substantially as described.

In witness whereof we have hereunto set  
70 our hands in presence of two subscribing witnesses.

GEORGE COWLES.  
FENDERSON M. SIMPSON

Witnesses:

CLINTON L. WHITE,  
ETHEL MCGILLIVRAY.