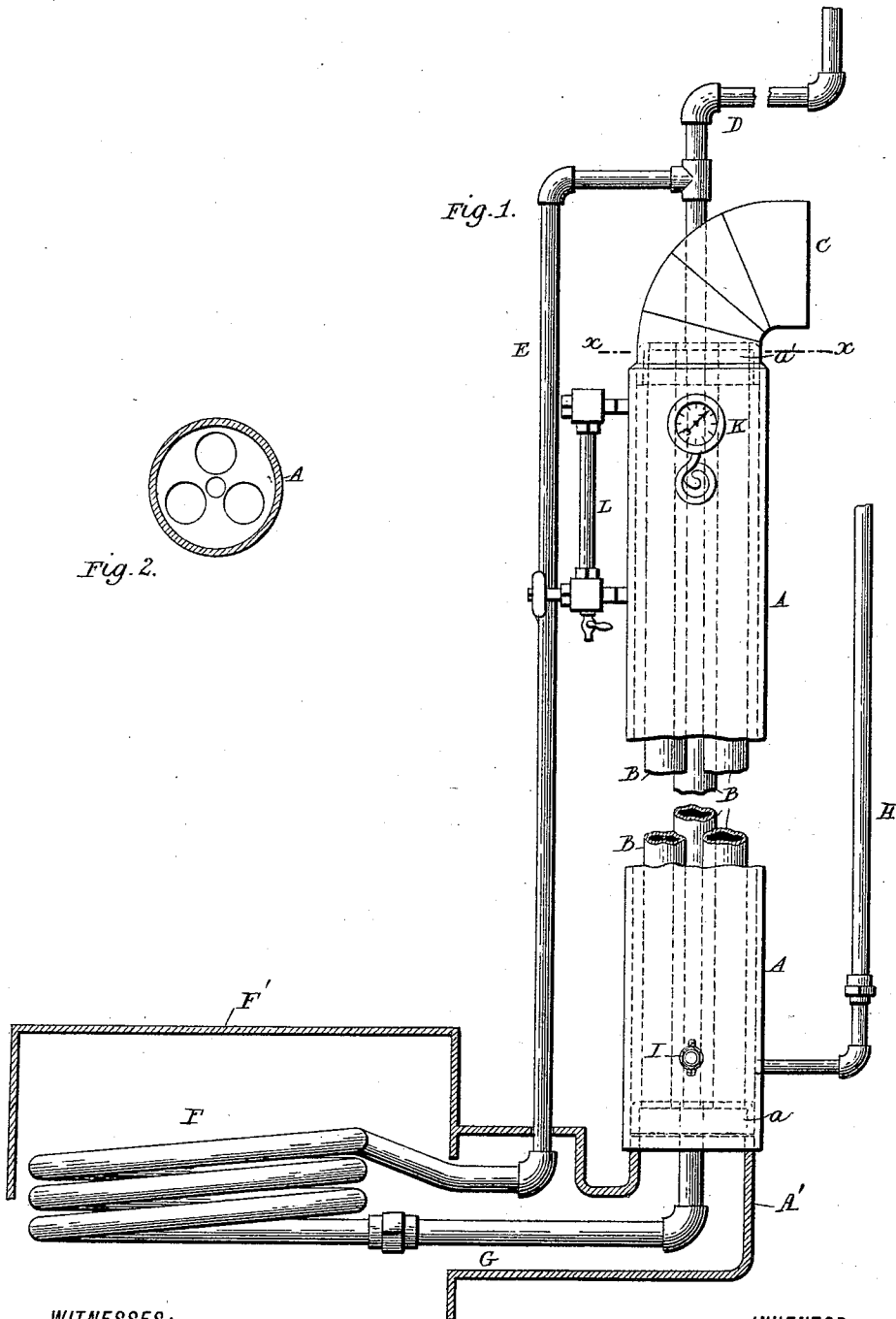


(No Model.)

B. CAVANAGH.
STEAM HEATING APPARATUS.

No. 448,932.

Patented Mar. 24, 1891.



WITNESSES:

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BARTHOLOMEW CAVANAGH, OF DUNKIRK, NEW YORK.

STEAM-HEATING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 448,932, dated March 24, 1891.

Application filed January 28, 1890. Serial No. 338,362. (No model.)

To all whom it may concern:

Be it known that I, BARTHOLOMEW CAVANAGH, a citizen of the United States, residing at Dunkirk, in the county of Chautauqua and State of New York, have invented certain new and useful Improvements in Steam-Heating Apparatus; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to certain new and useful improvements in steam-heating apparatus, and more especially to that class of apparatus designed for heating private dwellings, and has for its object to provide a boiler for generating steam that will be partially heated by the waste products of combustion escaping from a stove, the tubes or flues passing through said boiler forming substantially a part of the stove-pipe.

To this end my invention consists in the novel arrangement and combination of parts hereinafter fully described and afterward pointed out in the claims, due reference being had to the accompanying drawings, forming a part of this specification, wherein—

Figure 1 represents a side elevation, partially broken away, of my improved device, a portion of the stove being shown in section; and Fig. 2 a section taken on the line *xx* of Fig. 1.

Referring to said drawings, A indicates the boiler, consisting of a wrought-iron cylinder, of any suitable or preferred dimensions, within the lower end of which is riveted or otherwise secured a head *a*, and in the upper end thereof is likewise secured a head *a'*, said latter head extending or projecting slightly above the cylinder A, in order to fit within the elbow of the stove-pipe, as will more fully hereinafter be described. The cylinder A is provided with three (more or less) fire tubes or flues B, which extend through the length of said cylinder and are tapped through the heads *aa'*. The head *a* is preferably secured in the cylinder a slight distance above the bottom thereof to permit the cylinder to be placed over the flange A', commonly placed upon stoves for the reception of the stove-pipe, the fire tubes or flues of the cylindrical

boiler A occupying the place of and serving the purposes of the stove-pipe for conveying away the smoke and waste products of combustion from the stove, and at the same time constituting a boiler for the generation of steam for heating purposes. Upon the top of the boiler A, and fitting over the projecting head *a'*, is an elbow C, which is connected by the usual and ordinary pipe to the chimney or exit-flue.

D indicates a pipe connected to the top of the boiler, and may either be tapped through the head *a'*, and thence through the elbow C, or directly through the side of the boiler near the top thereof. Said pipe leads to the radiator or radiators, and is connected to a pipe E at a point above the boiler, said pipe E extending thence downwardly to the stove, where it is connected to a coil F, located within the fire-pot or combustion-chamber F' of the stove, the other end of said coil being connected with a pipe G, which is tapped through the head *a* of the boiler.

H indicates a return-pipe leading from the radiator or radiators and connected with the boiler near the bottom thereof, and conveys the water of condensation that forms in the radiators and their connections back to the boiler. Said boiler A is provided with a feed-water cock I for supplying the boiler with water, and is also provided with a steam-gage K and sight-feed tube water-gage L of the usual and ordinary construction.

As before described, the boiler A is applied to any form of ordinary stove, either heating or cooking stove or range, and occupies the place and serves the purpose of the usual stove-pipe, the smoke and waste products of combustion passing up and through the tubes B, and thence through the elbow C to the chimney, the escaping heat and waste products of combustion that would otherwise be wasted being utilized to heat the water contained in the boiler, and convert the same into steam, from whence it is led off by the pipe D to the radiators for heating purposes, the water of condensation being conveyed back to the boiler through the pipe H. The coil F, being located within the fire-pot or combustion-chamber of the stove and connected with the boiler, as before described,

will always insure a rapid and complete generation of steam, and the boiler will act in conjunction with and as an aid to said coil to maintain the necessary pressure.

5 By this invention I am enabled to utilize the escaping heat and waste products of combustion from a stove or range that ordinarily are allowed to escape, and through
10 the medium of the generated steam heat a room or rooms located in a distant part of the house.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

15 1. In combination with a stove, a vertical cylindrical boiler closed at its lower end by an inwardly-projecting head and fitting over the stove-pipe flange of said stove, and closed
20 at its upper end by an outwardly-projecting head fitting within the stove-pipe, and fire tubes or flues tapped through both of said heads and communicating with the stove and stove-pipe, substantially as shown and described, as and for the purpose set forth.

2. In combination with a stove, a vertical 25 cylindrical boiler A, closed at its lower end by a head *a*, located above the lower edge of the cylinder forming the boiler, and adapting said cylinder to fit over the stove-pipe flange, and closed at its upper end by an outwardly- 30 projecting head *a'*, fitting within the stove-pipe, fire tubes or flues B, tapped through both of said heads and communicating with the stove and stove-pipe, a steam-exit pipe D, return-pipe H, a coil F, located within the 35 stove, the pipe G, connecting the coil with the bottom of the boiler, and a pipe E, connecting said coil with the pipe D, all constructed and arranged substantially as shown and described, and for the purpose set forth. 40

In testimony whereof I affix my signature in presence of two witnesses.

BARTHOLOMEW CAVANAGH.

Witnesses:

JOHN W. O'BRIEN,
WILLIAM J. CARROLL.