(No Model.) 2 Sheets—Sheet 1.

R. T. CONNELL & J. C. CALHOON.

WATER HEATING FIREPLACE.

No. 556,807. Patented Mar. 24, 1896.

Fig. 1.

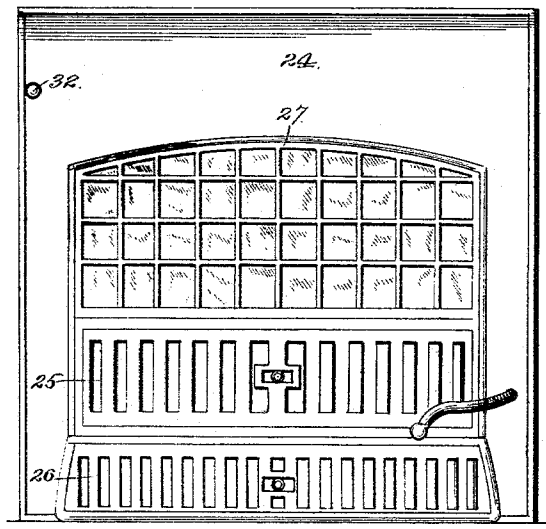


Fig. 3.

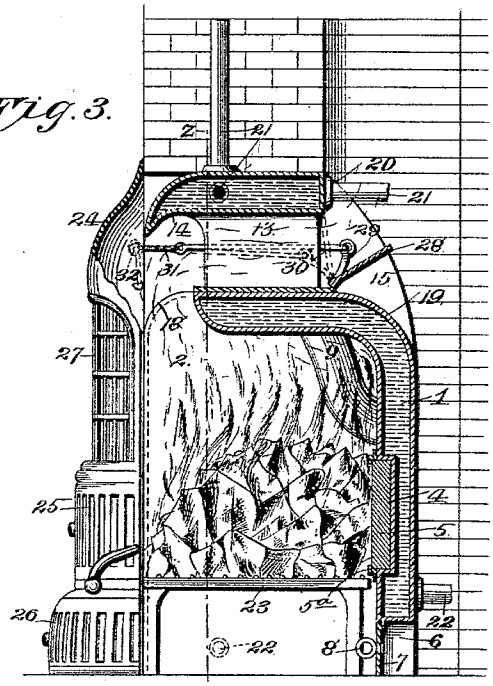


Fig. 2.

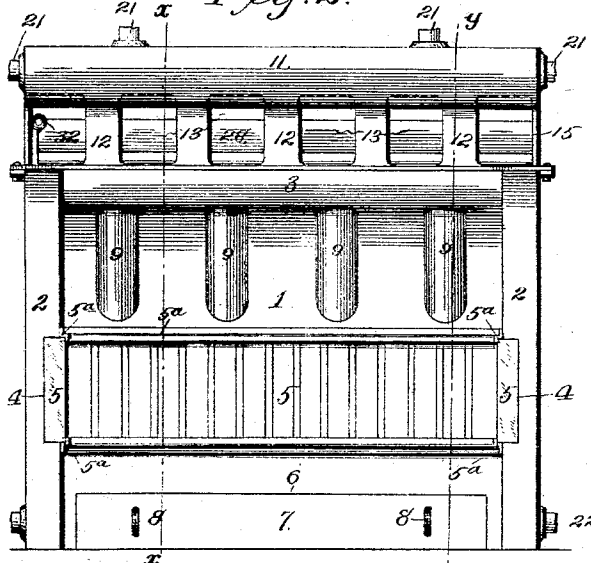
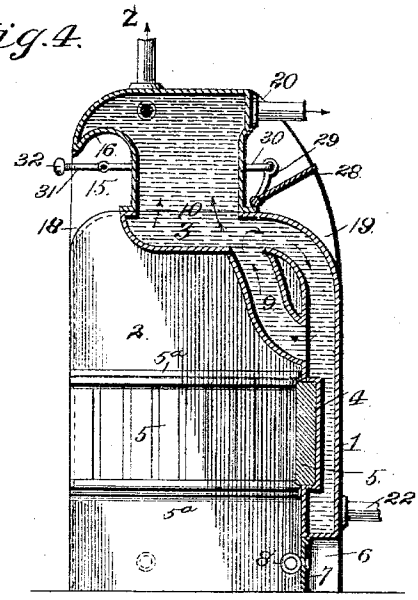


Fig. 4.



Witnesses.

M. R. Remley.

G. L. Thorp Jr.

Inventor:

R. T. Connell and J. C. Calhoon.

By Higdon & Higdon

Attys.

(No Model.) 2 Sheets—Sheet 2.

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Fig. 5.

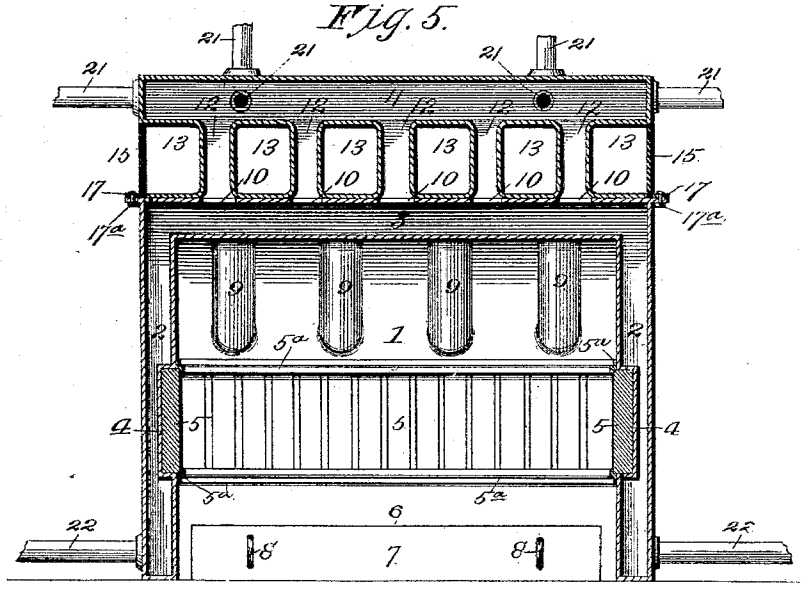


Fig. 6.

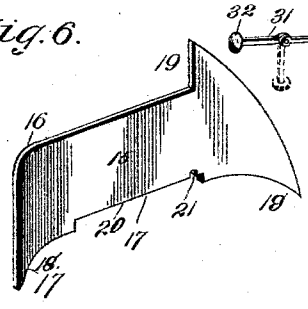
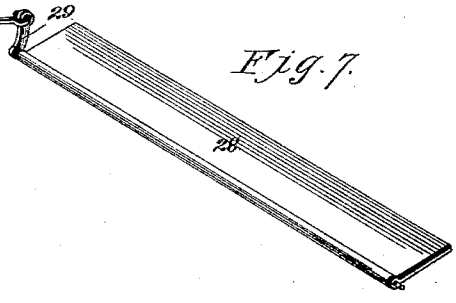


Fig. 7.



Witnesses.
M. P. Remley.
C. F. Thorpe.

Inventors.
R. T. Connell and J. C. Calhoon.
By Higdon & Higdon
attys.

UNITED STATES PATENT OFFICE.

RICHARD T. CONNELL AND JOHN C. CALHOON, OF ST. JOSEPH, MISSOURI.

WATER-HEATING FIREPLACE.

SPECIFICATION forming part of Letters Patent No. 556,807, dated March 24, 1896.

Application filed March 14, 1895. Serial No. 541,831. (No model.)

To all whom it may concern:

Be it known that we, RICHARD T. CONNELL and JOHN C. CALHOON, of St. Joseph, Buchanan county, Missouri, have invented certain new and useful Improvements in Water-Heating Fireplaces, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part thereof.

Our invention relates to fireplaces; and the object is to provide apparatus for heating water and distributing it in private houses or elsewhere for heating purposes without the necessity of employing the usual expensive furnace and steam-boiler.

Other objects will appear in the following description, and the novel features of construction and arrangement of parts will be pointed out in the appended claims.

In order that the invention may be fully understood we will proceed to describe it with reference to the accompanying drawings, in which—

Figure 1 represents a front view of a fireplace embodying our invention. Fig. 2 is a front view of the same, with the front portion of the fireplace and the grate omitted, to show clearly the arrangement of the water-receptacles and the passages for the products of combustion. Fig. 3 is a view partly in elevation and partly in vertical section, the section being taken on the line *x x* of Fig. 2. Fig. 4 is vertical section taken on the line *y y* of Fig. 2. Fig. 5 is a vertical section taken on the line *z z* of Fig. 3. Fig. 6 is a detail perspective view of one of the end plates, and Fig. 7 is a detail perspective view of the damper and the handle for operating the same.

In the said drawings, 1 designates a receptacle which is arranged adjacent to the back wall of a grate, so that a suitable space shall be left between the said receptacle and the rear wall of the combustion flue or chimney, as shown clearly in Fig. 3.

2 designates a pair of receptacles of like construction, which are arranged against the side walls of the fireplace and communicate with the receptacle 1, and also with the horizontally and forwardly projecting portion 3 of said receptacle 1, which, however, terminates a suitable distance inward of the front edge of the fireplace, which is flush with the front edge of the said side receptacles, 2. The back receptacle, 1, and also the side receptacles, 2, at a suitable height are formed with a recess 4 in their inner sides, as shown clearly in the drawings, and occupying said recess are the fire-bricks 5, which are secured in place by means of metallic strips 5^a or any other suitable means.

The back receptacle, 1, is provided in its lower margin with a passage 6, affording communication between the fireplace proper and the chimney or flue. Said passage extends nearly the full width of the fireplace and is closed by a detachable door 7, provided with handles 8 in the form of eyebolts, or may be provided with any other suitable handle by which it may be engaged by a poker or other instrument and placed in or removed from position. In order that the water may be more quickly heated, the back receptacle is provided with a number of tubular passages 9, which extend obliquely from the front side of the back receptacle proper to the lower side of the forwardly-projecting portion 3 of the said back receptacle. This disposition of the said tubes and constructing them preferably as shown, so that the flame and heat may entirely surround them, render it possible to create a circulation of the water within said back receptacle, owing to the fact that the comparatively small quantity of water within the tubes 9 responds more quickly to the action of heat, said circulation passing in the direction indicated by arrows, Fig. 4. The top wall of the forwardly-projecting portion 3 of the back receptacle is provided with a number of openings 10, and communicating with said openings are a corresponding number of vertical passages or channels 12, which communicate with and form a part of the top receptacle, 11, which extends from side wall to side wall and to the front side of the fireplace. Said top receptacle is preferably in the form of a single casting, as are also the back and side receptacles previously described, and said receptacles, when placed and secured by bolts and nuts or rivets, or in any other suitable manner, in proper position relative to each other, form a series of combustion flues or passages 13 between said top receptacle, 11, and the upper portion of the back receptacle, 1.

The top receptacle, 11, at its front edge preferably curves downwardly and forwardly, as shown at 14, so as to provide a deflecting-surface which overhangs the mouth of said passages 13 and directs the products of combustion and heat therethrough, and at the same time also receives the direct action of the products of combustion at a point where there is only a small quantity of water comparatively, that the same may be quickly heated. These receptacles 1 and 11 are preferably joined and secured together by means of the end plates 15, which have their upper edges bearing against the lower side of the receptacle 11 and their lower edges resting upon the upper side of the horizontal portion 3 of the receptacle 1, being preferably provided with outwardly-projecting flanges 17, which rest upon corresponding flanges projecting from the upper ends of the side receptacles, 2, which flanges are bolted thereto, as shown at 17ª, or in any other suitable or preferred manner. At opposite ends of the flanges 17 the lower edges of the end plates 15 curve, as shown at 18 and 19, in the plane of and fit upon the upper curved ends of the side walls, as clearly shown. Said end plates at their front upper ends also curve, as shown at 16, in the plane of and fit against the lower side of the receptacle 11, and at their rear upper corners are provided with a shoulder 20, which fits against the rear end of said top receptacle, 11, as shown in Fig. 4. This construction of the end plates, as it provides a close joint, is the one that we prefer, though it is to be understood that we do not desire or intend to limit ourselves to the precise construction illustrated of said end plates or of the receptacles 1 and 11, as slight modifications in the form and arrangement of parts may be made without departing from the spirit and scope of our invention.

Communicating with the receptacle 11 at various points are a number of pipes 21, which lead to various parts of the house or building to be heated and connect with proper radiators or other suitable apparatus for distributing or radiating the heat throughout the rooms and halls of the house or building.

Communicating with the receptacles 1 and 2 at their lower ends are preferably a similar number of pipes 22, which are adapted to connect with the radiators or other apparatus hereinbefore referred to to convey the water as it becomes cool or cold back to the fireplace. Thus it will be seen that we have provided for a thorough circulation of the water as a heating medium, which can be employed at a comparatively small expense in private houses where there is not room for a furnace and steam-boiler. At the same time the room in which said fireplace is located receives the benefit of the heat radiating therefrom in the ordinary manner. The fire-brick lining hereinbefore described for said receptacles 1 and 2 is arranged to contact with the fuel, and thus prevent said water-receptacles from being quickly burned out by direct contact with the incandescent fuel, which rests upon a grate 23 of the usual or any preferred construction. The fireplace is also provided with a front hood 24 in the usual manner, without which it would be inoperative, as a part of the smoke, instead of passing back through the passages 13 to the flue or chimney, would escape into the room. Said hood may be of any ornamental configuration desired, and is provided with the usual detachable draft-damper castings 25 and 26 and the detachable door 27, preferably provided with isinglass windows. The passage to the flue or chimney is also controlled by a damper 28, which is provided with trunnions pivotally engaging the notches 21 in the end plates 15, between which said damper 28 fits snugly. Projecting from one end of the damper is an arm 29, and pivotally engaging the same is a rod 30, which in turn is hinged preferably to an arm 31, which is provided with a handle or head 32, by which it is grasped when the damper is to be operated. This arm 30 when the damper is closed, as shown in dotted lines, Fig. 3, projects entirely through the hood or cover 24 and hangs pendently downward, so as to be entirely out of the way. When the damper is in its open position, as shown in full lines in Figs. 3 and 4, said arm 30 projects into the fireplace, and the handle or head 31 thereof bears against the outer side of the hood or cover, as shown clearly in Figs. 1 and 3. When the damper is closed at night, any soot falling in the front part of the chimney will strike the rounded rear upper end of the receptacles 1 and 2 and be deflected to the bottom of the chimney, whence it may easily be removed by removing the damper-casting 26 and the door 7 and employing a hand-shovel in the ordinary manner.

The operation will be readily understood. The various receptacles may be supplied with water in any suitable manner and a fire built upon the grate, and being nearly surrounded by the water-receptacles quickly heats the water and causes it to circulate through the pipes and the building in the usual manner. Owing to the fact of the circulation of the water through the tubes 9, as hereinbefore stated, it will be apparent that the heat will be communicated by said circulation to the remainder of the water more quickly than would be the case were this internal circulation not provided.

From the above description it will be apparent that we have produced a water-heating fireplace which is simple and comparatively inexpensive of construction, and therefore may be applied easily and at small cost in houses or buildings which otherwise would have to depend upon simple grates or stoves of the ordinary construction, owing to the expense necessarily attendant upon a steam-plant and the operation of the same.

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

1. In a water-heating fireplace, the combi-

nation of a back receptacle having a forward extension at its upper end provided with openings, communicating side receptacles, a top receptacle superposed relatively to the said extension and overhanging the space formed forward of the said extension by the projecting side receptacles, and provided with depending channel-arms which register with the openings of said extension to form alternate ways for water and products of combustion, inlet and exit pipes communicating with said water-receptacle, and a hood arranged outward or forward of the top receptacle, the depending channel-arms thereof, and the extension of the back receptacle, substantially as shown and for the purpose set forth.

2. In a water-heating fireplace, the combination of a back receptacle having a forward extension at its upper end provided with openings, pipes connecting said receptacle and its extension at their fire-exposed or inner surfaces, a top receptacle above said extension and provided with depending channel-arms which register with the openings of the extension to form alternate water-ways and combustion-passages, and a damper controlling the passage to the chimney through said combustion-passages, substantially as shown and described.

3. In a water-heating fireplace, the combination of a water-receptacle which overhangs the fire, a top receptacle provided with depending water-arms which communicate with the first-named receptacle, and thereby form alternate water ways and spaces, a pivoted damper controlling the passage of the products of combustion through said spaces, a hinge-arm 29, projecting therefrom, a rod 30 pivoted to said arm, and a handle-rod 31, pivoted to the rod 30, substantially as shown and described.

In testimony whereof we affix our signatures in the presence of two witnesses.

RICHARD T. CONNELL.
JOHN C. CALHOON.

Witnesses:
FRANK J. SENNINGER,
JOHN J. TROMPETER.