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W. J. MILLER.

HOT WATER HEATING APPARATUS.

(Application filed Aug. 12, 1897.)

(No Model.)

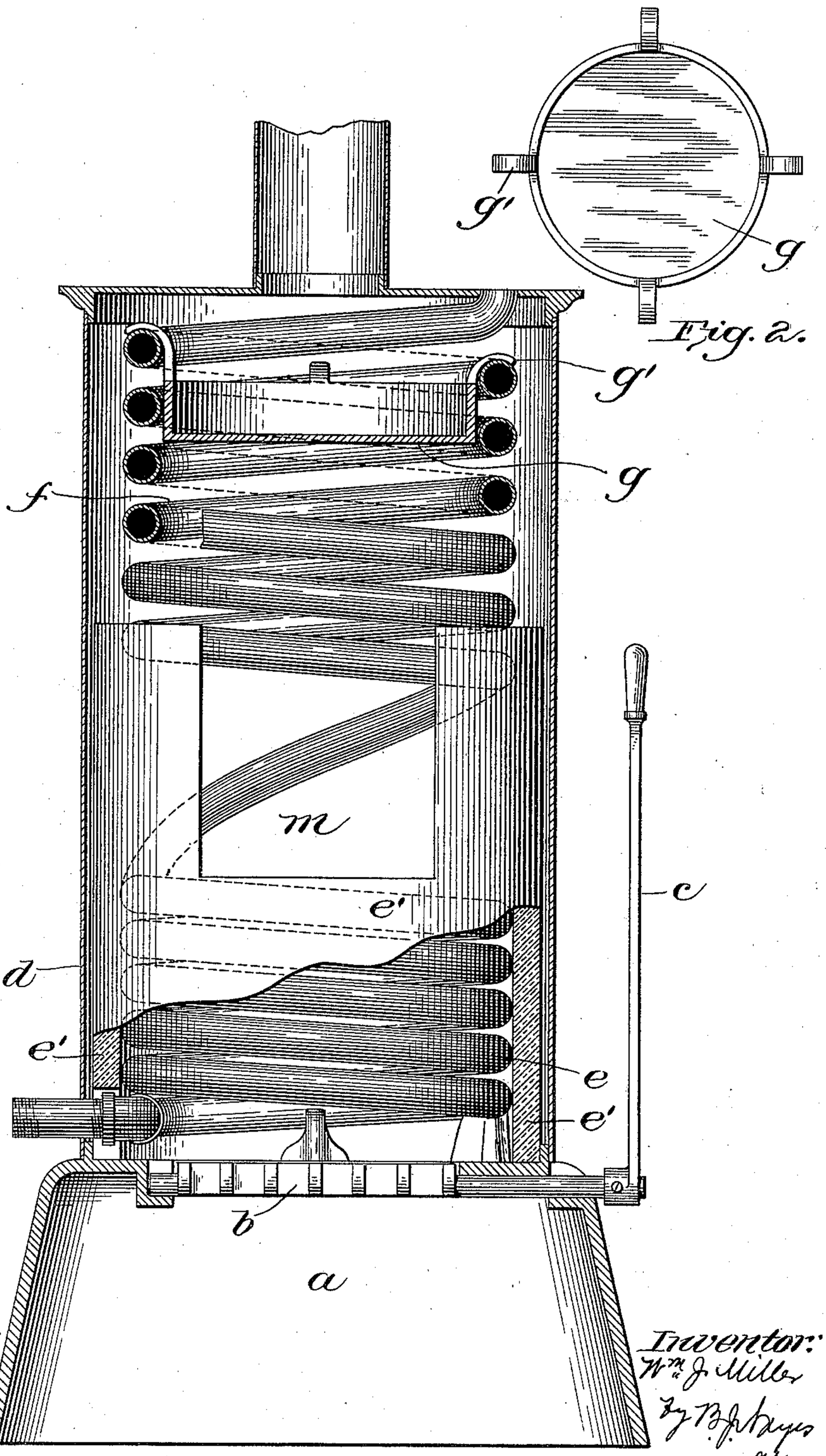

Fig. 1.

Fig. 2.

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UNITED STATES PATENT OFFICE.

WILLIAM J. MILLER, OF BOSTON, MASSACHUSETTS.

HOT-WATER HEATING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 610,685, dated September 13, 1898.

Application filed August 12, 1897. Serial No. 647,961. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM J. MILLER, of Boston, county of Suffolk, State of Massachusetts, have invented an Improvement in Hot-Water Heating Apparatus, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention has for its object to improve the construction of hot-water heating apparatuses, to the end that economy of installation and operation may be attained.

In accordance with this invention a single coil of pipe is employed in the heater as a heating-pipe for the water, the convolutions of which are separated into two groups, and said heating-coil is set vertically in the heater, and the lowermost group is constructed and arranged to form the side wall of the fire-pot above the grate, and the uppermost group is contained in the combustion-chamber. The lower group of convolutions which form the side wall of the fire-pot are inclosed within or surrounded by a wall of fire-brick or equivalent material or masonry, and said fire-brick wall preferably continues upwardly to the lower end of the upper group of convolutions, thereby inclosing the space between the two groups of convolutions. An outer shell will be provided, and a door will be set therein opposite the space between the upper and lower groups of convolutions.

A deflector is provided at the top of the coil of pipe, which is shaped to fit inside of said coil, so as to close the opening or passage up through it, and thereby cause the products of combustion to pass between the successive convolutions of said coil, which are more or less separated for the accomplishment of this result. As the convolutions of the lower group are designed to form the side wall of the fire-pot above the grate, they will preferably lie close together, although such formation is not absolutely necessary, and the fire-brick wall surrounding or inclosing said lower group serves as a reflecting and non-heat-conducting wall.

Figure 1 shows in side elevation and partial section a hot-water heating apparatus embodying this invention. Fig. 2 shows a detail of the deflector, which is located at the top of the coil of pipe which constitutes the heating-coil.

a represents the base of the heater, which is constructed and arranged to provide an ash-pit and to furnish a suitable support for a grate *b*, which is herein shown as adapted to be rocked and dumped by means of a lever *c*.

d represents the outer shell of the heater, which may be made of sheet-iron.

A single coil of pipe is provided as the heating-coil, the convolutions of which are separated into two groups, the lower one of which, as *e*, is constructed and arranged to form or serve as the side wall of the fire-pot of the heater, and the upper one of which, as *f*, is contained in the combustion-chamber. The successive convolutions of the lower group *e* preferably lie one upon the other or close together to better enable them to serve as the side wall of the fire-pot, and said group is surrounded by or inclosed within a fire-brick or other wall *e'*, said wall being set close to or against the coil. This fire-brick wall is designed and intended to serve as a reflecting and non-heat-conducting wall, and it may extend to the top of the lower group *e;* but, as herein shown, it extends or continues above said group *e* to the lower end of the upper group *f*, thereby inclosing the space between the two groups *e* and *f*, such extension or continuation being preferable. The successive convolutions of the upper group *f* are more or less separated, as shown, for the escape of the products of combustion between them.

A deflector is surmounted on the top of the heating-coil, substantially closing the opening or passage at the upper end thereof. This deflector is made as a circular disk or plate *g*, formed or provided with a vertical marginal rim having laterally-projecting lugs or ears *g'*, which overlie and rest upon the top of one of the convolutions of the heating-coil. The plate *g*, with its rim, is of suitable size to fit within the coil *f* at the top to close the central passage up through the coil, and thereby cause the products of combustion to pass through the spaces between the several convolutions. The lugs *g'*, which project laterally from the rim, are made of varying length, as shown, so that they may overlie one of the convolutions of the upper group and support

the deflector, so that its broad flat surface occupies a substantially horizontal plane.

I claim—

1. In a hot-water heating apparatus, a single heating-coil of pipe comprising two groups of convolutions, the lower one forming the side wall of the fire-pot above the grate, and the upper one contained in the combustion-chamber, the convolutions of said upper group being more or less separated for the passage between them of the products of combustion, and a deflector *g*, supported by said coil at the top of the upper group of convolutions, which fits inside of and closes the upper end thereof, substantially as described.

2. In a hot-water heating apparatus, a single heating-coil of pipe comprising two groups of convolutions, the lower one forming the side wall of the fire-pot above the grate, and the upper one contained in the combustion-chamber, the convolutions of said upper group being more or less separated for the passage between them of the products of combustion, and a deflector at the top of said coil which fits inside of and closes the upper end thereof, and which has laterally-projecting lugs *g'* which overlie one of the convolutions of said coil, thereby suspending said deflector within and supporting it by said coil, substantially as described.

3. In a hot-water heating apparatus, a coil of pipe contained in the combustion-chamber, the convolutions of which are more or less separated, and a deflector at the top of said coil which substantially closes the opening thereat, and which is provided with laterally-extended lugs *g'* of varying length which overlie the coil, thereby suspending said deflector within and supporting it by said coil, substantially as described.

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

WILLIAM J. MILLER.

Witnesses:
B. J. NOYES,
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