(No Model.) 2 Sheets—Sheet 1.

A. P. CREQUE.

BOILER.

No. 290,667. Patented Dec. 25, 1883.

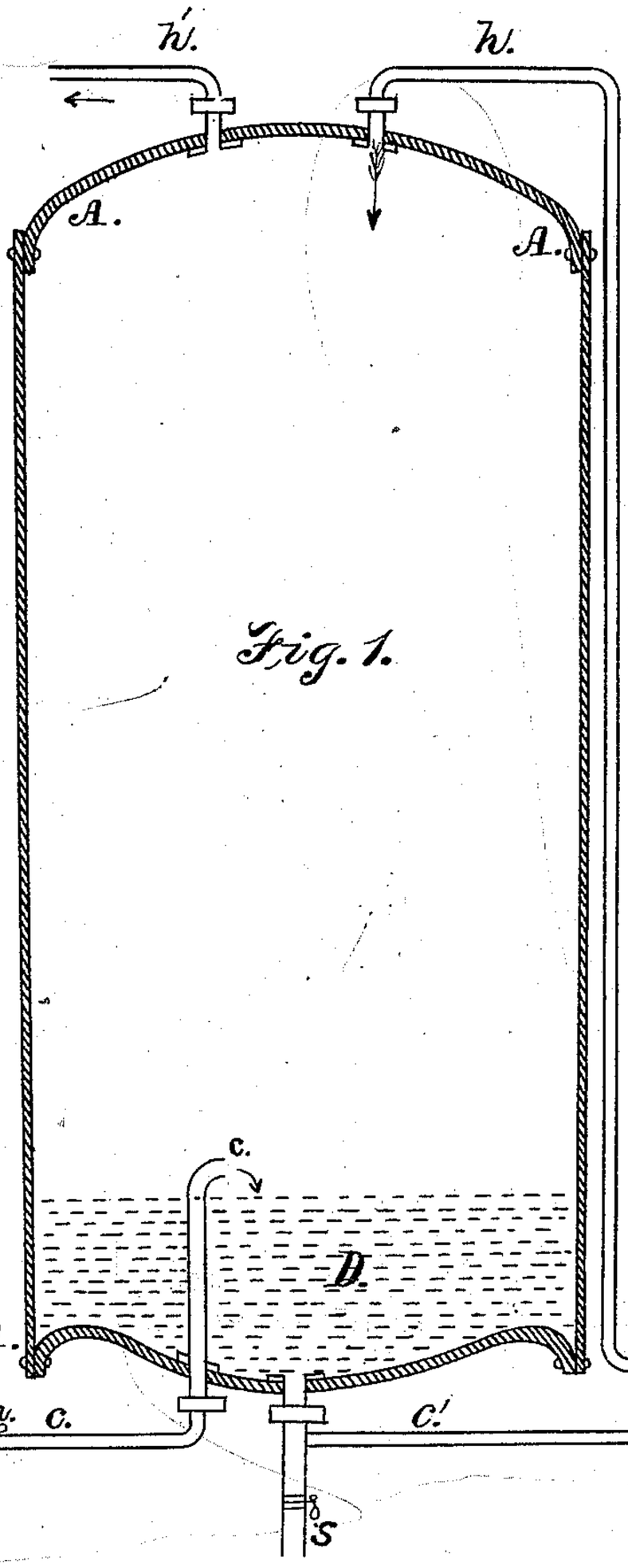

Fig. 1.

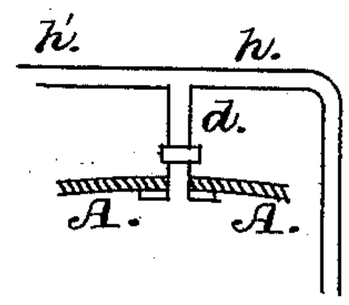

Fig. 2.

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Joseph H. Clarke

Inventor;
Allen P. Creque,
by
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Atty

(No Model.)

2 Sheets—Sheet 2.

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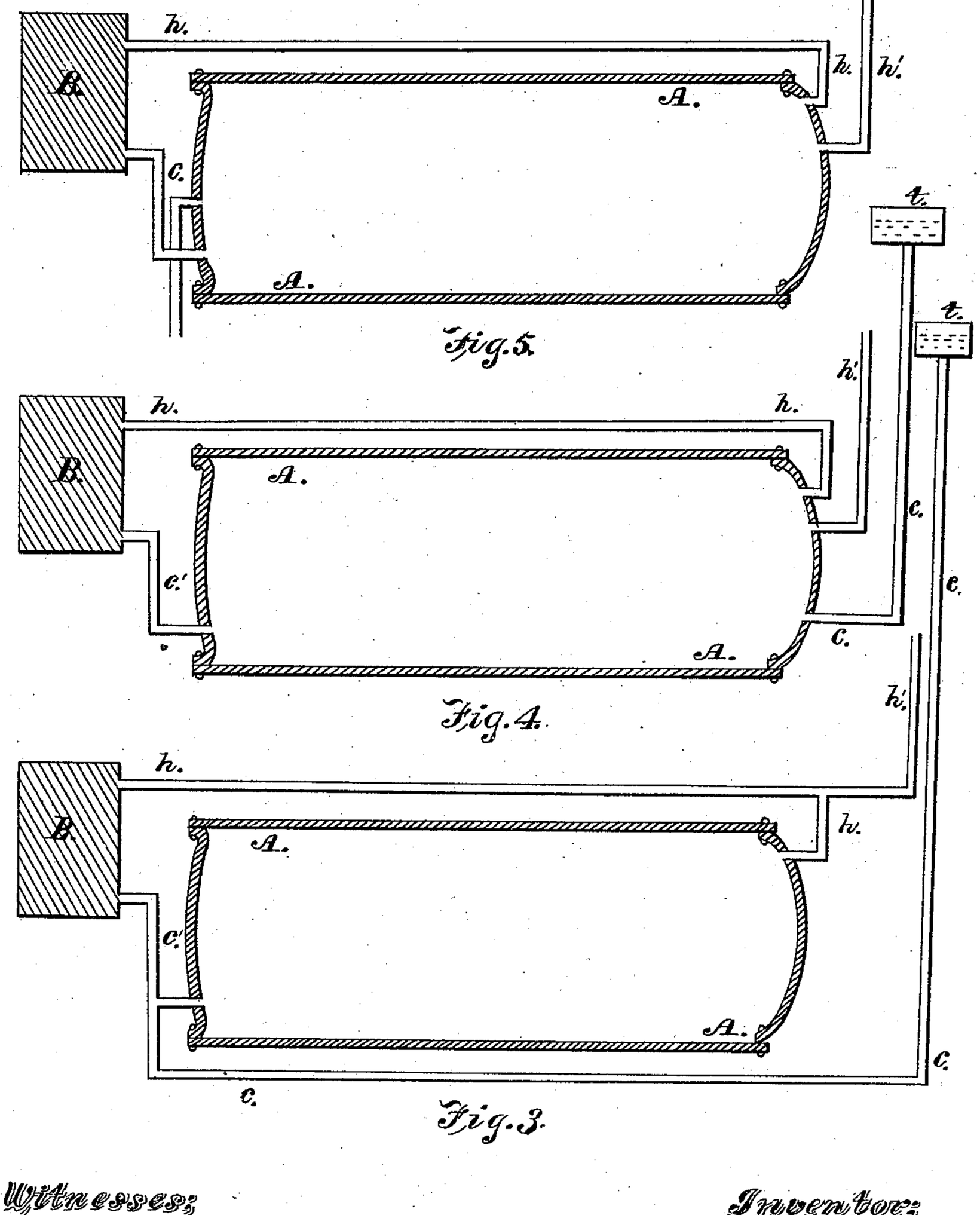

Fig. 5.

Fig. 4.

Fig. 3.

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UNITED STATES PATENT OFFICE.

ALLEN P. CREQUE, OF NEW YORK, N. Y.

BOILER.

SPECIFICATION forming part of Letters Patent No. 290,667, dated December 25, 1883.

Application filed May 24, 1882. (No model.)

To all whom it may concern:

Be it known that I, ALLEN P. CREQUE, a citizen of the United States, residing in the city, county, and State of New York, have invented a certain new and useful Improvement in Boilers, of which the following is a specification.

My invention relates to improvements in that class of boilers known as "range-boilers," and which are intended for the circulation, storage, and supply of hot water to be used for domestic purposes.

Heretofore it has been customary to construct these boilers and arrange the connecting-pipes in such a manner that the cold water from the main is delivered into the boiler through an orifice in its top by a tube to two discharging-points, one located in the tube about eight inches below the head of the boiler and the other at the end of the tube near the bottom of the boiler, whence the water, as was supposed, passed through a pipe extending from the bottom of the boiler to the water-back of the range, where it was heated. The water so heated then passed, as was supposed and was intended, through a pipe having one end attached to the water-back and the other end entering the side of the boiler at a point somewhat below its middle. Such a construction of the boiler and arrangement of its pipe-connections embody great objections.

First. It does not secure a positive, invariable, controllable, rapid, and sufficient circulation of the water, because in many cases the circulation is the reverse of that intended—*i. e.*, the cold water issuing from the side of the boiler to the water-back, and the heated water being delivered from the water-back into the bottom of the boiler.

Second. Under the most favorable circumstances the hot water is injected into the boiler at a point where it encounters a large body of cold water, all of which must be heated before hot water can be stored in the boiler, and consuming much time before hot water can be drawn from the boiler for use.

Third. The repeated reversals of the circulation suddenly change the temperature of the water at the various points, producing violent contractions and expansions of the boiler, highly detrimental and dangerous, causing leaks and rapid destruction, and increasing the liability of the boiler to explode.

Fourth. The cold-water supply is taken through the boiler, which is designed for the storage of hot water, and the hot water is diffused through the cold water discharged into the boiler; hence there is no certain and distinct division for the independent conduct and storage of cold water, and the separate accumulation and deposit of hot water from the water-back.

Fifth. It necessitates four openings in the boiler—to wit, one for the supply of cold water to the boiler, one for the exit of cold water from the boiler to the water-back, one for the entrance into the boiler of the hot water from the water-back, and one for the exit of hot water for consumption. Therefore at least four orifices are required, thus increasing the cost of construction and the liability of leakage, and weakening the boiler.

Sixth. It entails unnecessary expense for couplings, piping, tubing, &c., when the boiler is first put up, and extra expense for repairs.

I have described different modifications of boilers which obviate these disadvantages in two applications for Letters Patent filed at the same time as the present application; but those forms of boilers, while suitable for all ordinary purposes, might be disadvantageous for use in apartment-houses, or places where the water-pressure from the main is liable to be decreased from the drawing off of the supply by neighboring tenants more advantageously situated, because in such situations, when the pressure from the main is decreased, the water in the water-back is liable to be exhausted, and in that case the water-back will burn out. To remedy this defect, and to obtain a boiler which shall at the same time have the advantages which I have claimed for the boilers described in said two applications, I have devised the boiler hereinafter described, and shown in the accompanying drawings.

Figure 1 is a sectional view of my improved boiler, with the water-back and the necessary connecting-pipes. Fig. 2 illustrates the method in which I prefer to construct the coupling in

the head of my boiler and the connecting-pipes. Figs. 3, 4, and 5 show modifications hereinafter described.

Similar letters refer to similar parts throughout the several views.

A is the boiler. *c* represents the pipe through which the water from the main is supplied to the boiler. B is the water-back in which the water is heated. *h* is the pipe through which hot water passes into the boiler. *h'* is the pipe through which the service of hot water is made to the point where it is to be consumed. *w* is a waste-pipe through which the boiler is emptied when it is desired to clean it, and *s* is a stop-cock which opens and closes the waste-pipe. *m* is a stop-cock which opens and closes the pipe from the main. The arrows indicate the circulation of the water.

Referring to Fig. 1, it will be seen that the cold water is delivered directly into the boiler through the pipe *c*, passes thence into the pipe *c'*, coupled to the bottom of the boiler, and thence into the water-back B. After it is heated, it traverses the pipe *h* and flows into the boiler. It is drawn off for consumption through the pipe *h'* at the top of the boiler. By delivering the water from the main into the boiler through a pipe situated as the pipe *c* is situated, I prevent the water from being siphoned out of the boiler below the level of the mouth of the pipe *c* when the pressure from the main is decreased. I have indicated this level by the dotted lines D. By delivering the hot water into the boiler at a point at or near its top, I obtain a longer hot-water pipe than is generally used, and a consequent better control of the circulation, while the hot water does not lose its heat by directly meeting and passing through a large body of cold water supplied from the main, as in the boilers commonly constructed, but is always quickly conducted and stored where it can be readily drawn off for use. To prevent the water from the main from spouting into the boiler, I bend the top of the pipe *c*, as indicated, or I plug up its mouth and perforate its sides for the lateral emission of the water. I draw off the hot water through a pipe opening into the boiler at or near its top. I find that by this mode of construction I am enabled to procure hot water from the boiler in much less time than from boilers as commonly constructed, while the circulation in the boiler is constant, whatever may be the pressure from the main.

At Fig. 2 is shown a single coupling in the head of the boiler, and a T-pipe. Hot water is admitted to the boiler through the pipes *h* and *d*, and drawn off through the pipes *d* and *h'*. I prefer this method of construction, as it only necessitates one opening in the head of the boiler.

It is apparent from the drawings that while I place the boiler in a horizontal position I do not materially alter the relative position of the pipes. One of the sides of the boiler, when placed in a perpendicular position, becomes the top of the boiler when placed in a horizontal position, and the opposite side becomes the bottom or lower part of the boiler. I still preserve the marked divisions between the hot and cold water in the boiler by supplying cold water to the lower part of the boiler and hot water to the upper part, while I draw the hot water from the upper part.

All the features of my invention which are applicable to the boiler when placed in a perpendicular position are also applicable to the boiler when placed in a horizontal position.

It is usual to place the kitchen-boiler in an upright position by the side of the range and near the water-back of the range, and in Fig. 1 of this application, and in the drawings forming part of the applications above referred to, I have shown the boiler in such position. In some houses, however, I may prefer to place the boiler in a horizontal position—such as under the sink—and therefore in Figs. 3, 4, and 5 I have shown boilers placed in a horizontal position, with their pipe attachments as arranged according to my principles of construction. Figs. 3 and 4 illustrate boilers and their attachments when the boiler is supplied with cold water from a tank, *t*. Fig. 5 shows a boiler supplied with water directly from the main.

I am aware that I am not the first to construct a stand-boiler in which the heated water is delivered from the heater or water-back into the top of the boiler, and therefore I do not claim, broadly, such a method of construction; but

What I claim is—

1. The combination, in a building, with a stand-boiler and heater, of an elevated water-tank and a system of pipes, arranged substantially as described, whereby the cold water from the tank is delivered directly into the heater, and from the heater into the upper part of the stand-boiler, and from the upper part of the boiler for consumption.

2. The combination of the following elements, viz: first, a stand-boiler; second, a heater; third, a pipe for conveying water from the boiler to the heater; fourth, a pipe extending directly from the heater to the faucets for consumption; and, fifth, a branch pipe below the consumption-faucets extending to the boiler, whereby hot water may be delivered directly from the heater for consumption, and when not needed for consumption will be circulated through the boiler and heater.

ALLEN P. CREQUE.

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