

(No Model.)

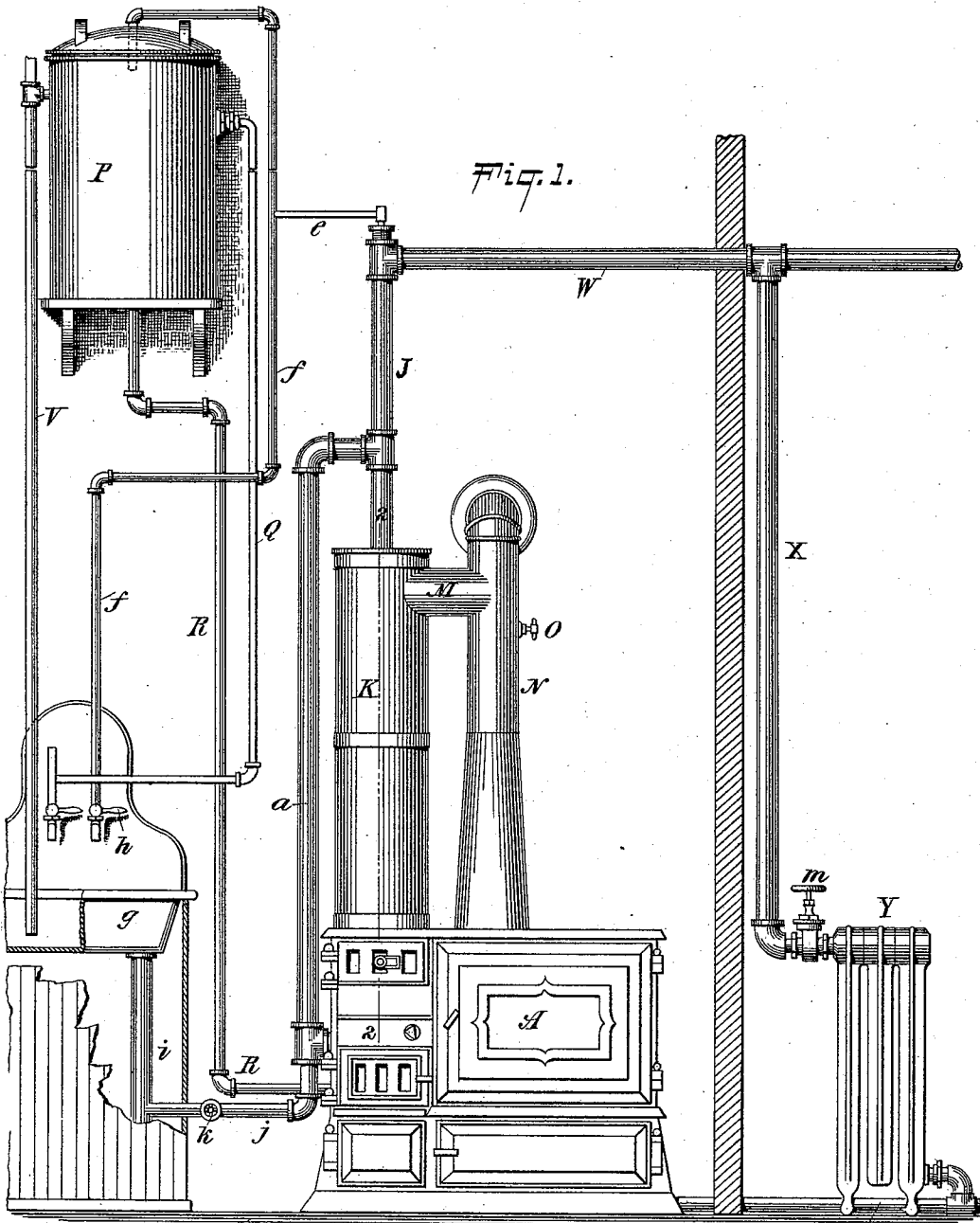
2 Sheets—Sheet 1.

H. A. JONES & J. E. MARCY.

APPARATUS FOR HEATING AND CIRCULATING WATER.

No. 474,961.

Patented May 17, 1892.



WITNESSES:

William Gebel.
R. A. Porteous

INVENTORS

Henry A. Jones and
Joseph E. Marcy,
BY
Chas. C. Gill
ATTORNEY.

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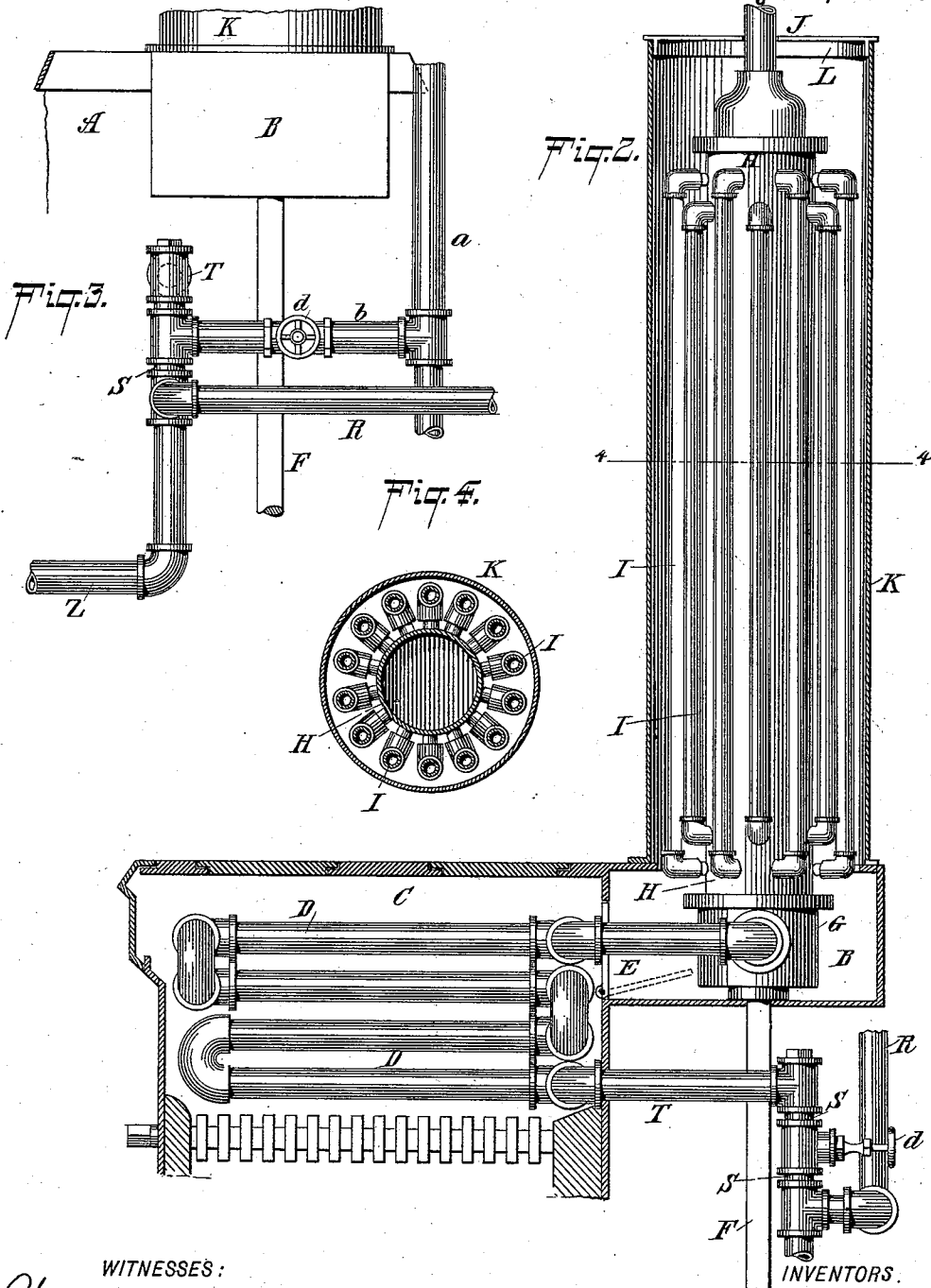
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UNITED STATES PATENT OFFICE.

HENRY A. JONES AND JOSEPH E. MARCY, OF NEW YORK, N. Y.

APPARATUS FOR HEATING AND CIRCULATING WATER.

SPECIFICATION forming part of Letters Patent No. 474,961, dated May 17, 1892.

Application filed December 3, 1891. Serial No. 413,851. (No model.)

To all whom it may concern:

Be it known that we, HENRY A. JONES and JOSEPH E. MARCY, citizens of the United States, and residents of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Apparatus for Heating and Circulating Water, of which the following is a specification.

The object of the invention is to produce suitable apparatus connected with a kitchen-range whereby water may be heated and circulated through radiators in the rooms of a dwelling or apartment for the purpose of heating them, the design being to utilize the fire in the range for affording heat to the rooms and to supply the hot water necessary for domestic and toilet purposes; and to this end the invention consists in the novel devices and combinations of parts hereinafter described and claimed.

The invention will be fully understood from the detailed description hereinafter presented, reference being had to the accompanying drawings, in which—

Figure 1 is a front plan view, partly in section, of an apparatus constructed in accordance with the invention. Fig. 2 is an enlarged vertical section of same on the dotted line 2 2 of Fig. 1. Fig. 3 is an enlarged view of the pipe connections below the boiler, and Fig. 4 is a transverse section through the boiler on the dotted line 4 4 of Fig. 2.

In the drawings, A designates a kitchen-range of ordinary construction, except in that it is provided with the chamber B in the rear of its fire-box C and with the coils D in said fire-box and forming a water-back. The coils D circulate along the sides and front and rear ends of the fire-box C and afford an effective heating-surface for the water within them without interfering with the proper operation of the range for cooking and other purposes. The chamber B is in the nature of an extension at the upper rear side of the range and is in line with the fire-box C, the chamber B and fire-box C being in connection with each other and adapted to be cut off from each other when desired by means of a hinged damper E, which is shown in its closed position by full lines in Fig. 2 and in its open

position by dotted lines. Within the chamber B is supported by means of a rod F or other base the lower end of the boiler G, which, as more clearly illustrated in Figs. 2 and 4, consists of the central tubular portion H and the series of tubes I, encircling the portion H and connected therewith at its upper and lower ends. The lower end of the boiler G is connected with the coils D, forming the water-back, and the upper end of said boiler is connected with a pipe J, through which the hot water passes to the radiators, bath, and such other places as it may be directed, as herein-after more particularly stated. The boiler G, consisting of the central tubular portion H and the tubes I, is inclosed by a shell or casing K, which rests upon the extension B of the range and is closed at its upper end by a cap L.

At one side of the casing or shell K there is a connection M with the ordinary smoke pipe or flue N, provided with the usual damper O, as illustrated in Fig. 1. The purpose of the connection M between the casing K and flue N is to permit the passage of the heat and smoke upward through the casing K and around the boiler G, and thence through the pipe M into the flue N above the damper O. When it is desired that the heat shall pass upward through the casing K prior to entering the flue N, the damper E will be opened and the damper O closed, and when it is desired that the heat and smoke shall pass directly upward through the flue N and not affect the boiler G the damper E will be closed and the damper O opened, under which condition of dampers the heat and smoke will take their usual course upward through the flue N.

The water used in supplying the water-back D will first be fed into the reservoir P, suitably mounted upon a bracket or other support, the supply-pipe for such reservoir being indicated by the letter Q, and the water passes from said reservoir P through the pipe R, which at its lower end connects with the pipe S, which is in direct connection with the inlet-pipe T of the coils D, and hence the water passing downward from the reservoir P through the pipe R will enter the pipe S and pipe T, and thence pass directly into the lower coil D. The reservoir P is also provided with an over-

flow-pipe V, which at its upper end above its connection with the reservoir P will preferably be open to the atmosphere. Within the reservoir P we recommend that an ordinary float-valve be employed for the purpose of closing off the supply from the pipe Q when the water has attained its proper level, in order that the operation of the apparatus may be automatic. The pipe J is connected with a main supply-pipe W, which passes through the dwelling or apartment, and from it will extend to the various rooms, branch pipes X directly connecting with the radiators Y and with the bath or toilet basins or other places at which it may be desired to have a hot-water supply. The radiators Y will also be connected at their lower portion with a return-pipe Z, passing back to the vertical pipe S, connecting with the pipe T, leading to the coils D. It will thus be seen that there is a circulation of the water from the boiler G upward through the pipe J, pipe W, branch pipes X, radiators Y, and return-pipe Z to the coils D and boiler G. There is also provided what we term a "short circulation," and this is through the pipe *a*, extending from the pipe J above the boiler G downward to the horizontal pipe *b*, provided with a valve *d* and leading into the pipe S, connected with the coils D. It is intended that the pipe *a* and pipe *b*, forming this short circulation, shall only be used in summertime, when it may be desired that hot water is only wanted for use in the kitchen, and at such time the valve *d* will remain open, in order that there may be a free circulation of water from the pipe J downward into the heating-coils D, forming the water-back. In winter, however, when it is desired to have the rooms heated by the radiators Y the short circulation through the pipes *a b* will be prevented by closing the valve *d*.

In order that the kitchen may be provided with a ready means of drawing the hot water for domestic purposes, the pipe *e* is provided, which, as illustrated in Fig. 1, extends from the upper end of the pipe J to the pipe *f*, leading downward to the sink *g* and provided with the usual faucet *h*. The upper end of the pipe *f* passes upward beyond the pipe *e* and enters the upper end of the reservoir P, where it operates as an air-escape.

We have described above all of the pipe connections necessary for the heating and circulation of the water, and but one additional pipe need be employed and that is for drawing off the water from the apparatus. In Fig. 1 we have illustrated this pipe as leading from the vertical pipe *a* to the sewer-pipe *i* and have indicated the same by letter *j*. This pipe *j* may of course be led to any source; but we prefer to connect it directly with the pipe *i* and to provide it with a valve *k*, by which it may be closed, except at such times as it may be desired to draw off the water.

In the operation of the invention cold water may be supplied through the pipe Q to the reservoir P, whence it will pass downward

through the pipe R into the pipes S T and enter the coils D, where it will be heated and caused to pass into the boiler G and upward through the pipe J, whence it will be circulated through the pipe W, branch pipes X, radiators Y, and return-pipe Z, thus moving the water to the pipes S T and again into the heating-coils D. At the same time the hot water may be drawn at the sink *g* by means of the pipe *e*, pipe *f*, and faucet *h*. The damper E being open and the damper O closed, the entire heat escaping from the fire-box C will pass upward around the tubular portion H, encompassing the tubes I of the boiler G, and thus effectually increase the heat of the water prior to its escape through the pipe J and pipe W.

It is to be understood that each of the radiators Y throughout the building will be provided with an independent valve *m*, by which the water may be turned off or on, and hence should it not be desired to heat a portion of the rooms such rooms may be removed from the effect of the hot water, and it is also to be understood that in summertime the pipe leading to the bath may remain in complete connection with the boiler G, thus being supplied with hot water, while the remaining rooms of the dwelling will be unaffected by the circulating water. The reservoir P also operates as an expansion-tank, and hence the heat does not expand the water back into the main nor interfere with the cold-water faucet. The water flows from the expansion-tank to the heating-coils D by gravity.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. In combination with a range or stove, the water-back therein, the boiler connected with said water-back and composed of the main tubular portion and exterior tubes, the casing inclosing said boiler and being in the path of the products of combustion from said range, the circulating-pipe leading from said boiler to the radiators, the return-pipe leading from said radiators to the water-back, the supply-pipe leading to and feeding the water-back, and the hot-water pipe provided with the faucet by which the hot water may be drawn for domestic use, substantially as set forth.

2. In combination with a range or stove, the water-back therein, the boiler connected with said water-back and composed of the main tubular portion and exterior tubes, the circulating-pipe leading from said boiler to the radiators, the return-pipe leading from said radiators to the water-back, the supply-pipe leading to and feeding the water-back, the short circulation-pipe extending around said boiler, and the hot-water pipe provided with the faucet for drawing the hot water for domestic purposes, substantially as set forth.

3. In combination with a range or stove, the water-back therein, the expansion-tank supplying said water-back, the boiler connected with said water-back and composed of

the main tubular portion and exterior tubes, the circulating-pipe leading from said boiler to the radiators, the return-pipe leading from said radiators to the water-back, and the short
5 circulation-pipe around said boiler, substantially as set forth.

Signed at New York, in the county of New

York and State of New York, this 30th day of November, A. D. 1891.

HENRY A. JONES.
JOSEPH E. MARCY.

Witnesses:

CHAS. C. GILL,
ED. D. MILLER.