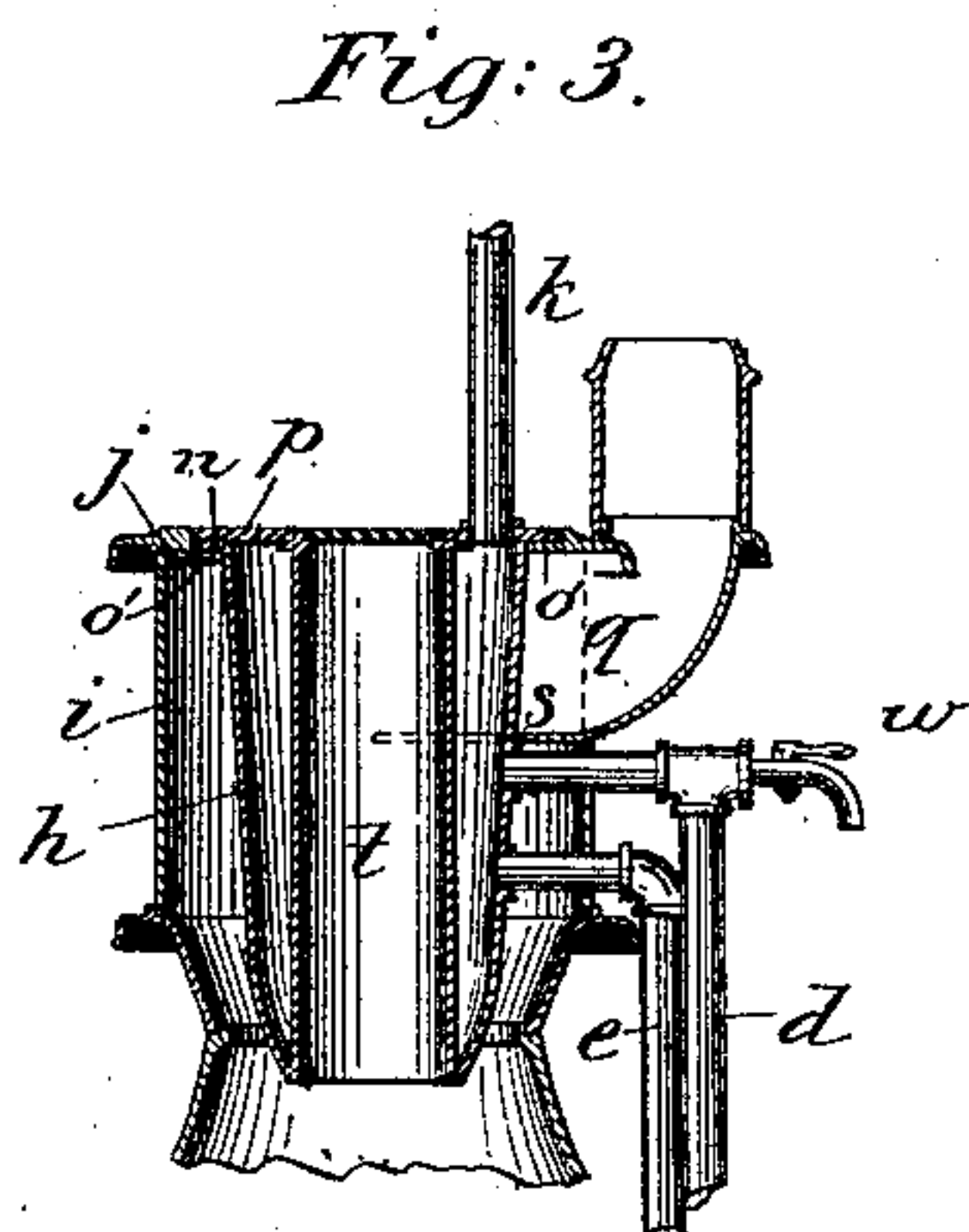
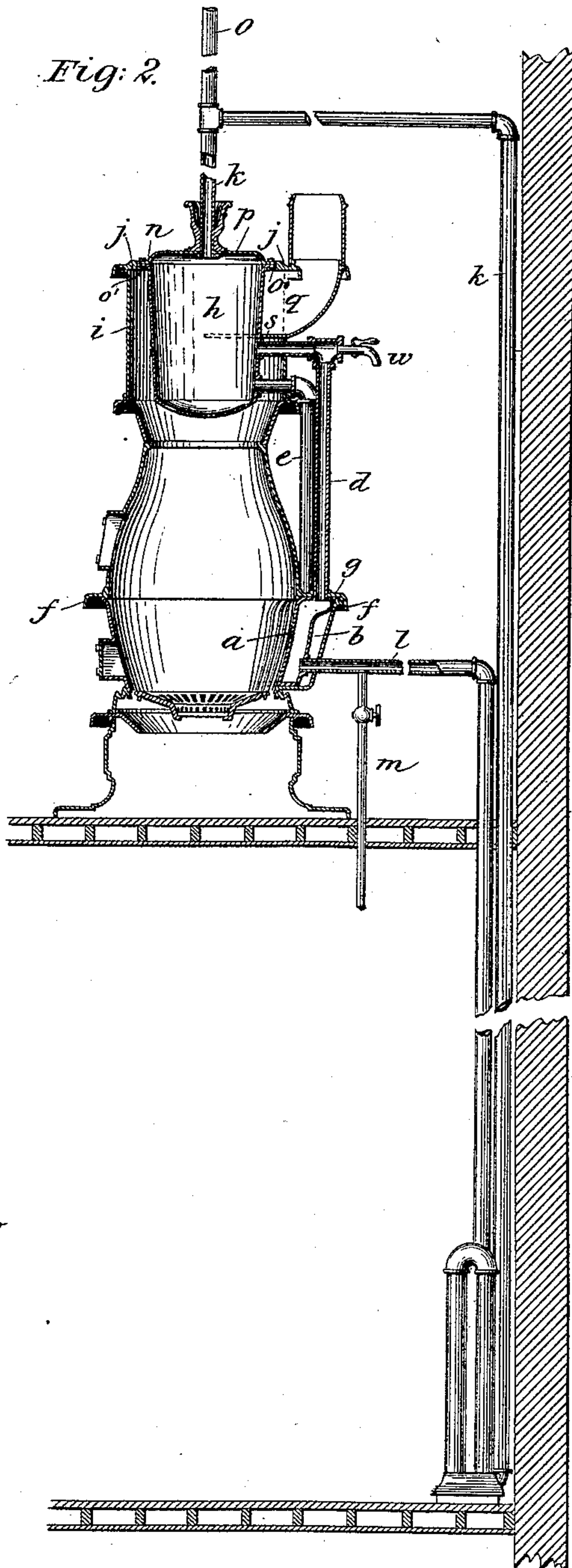
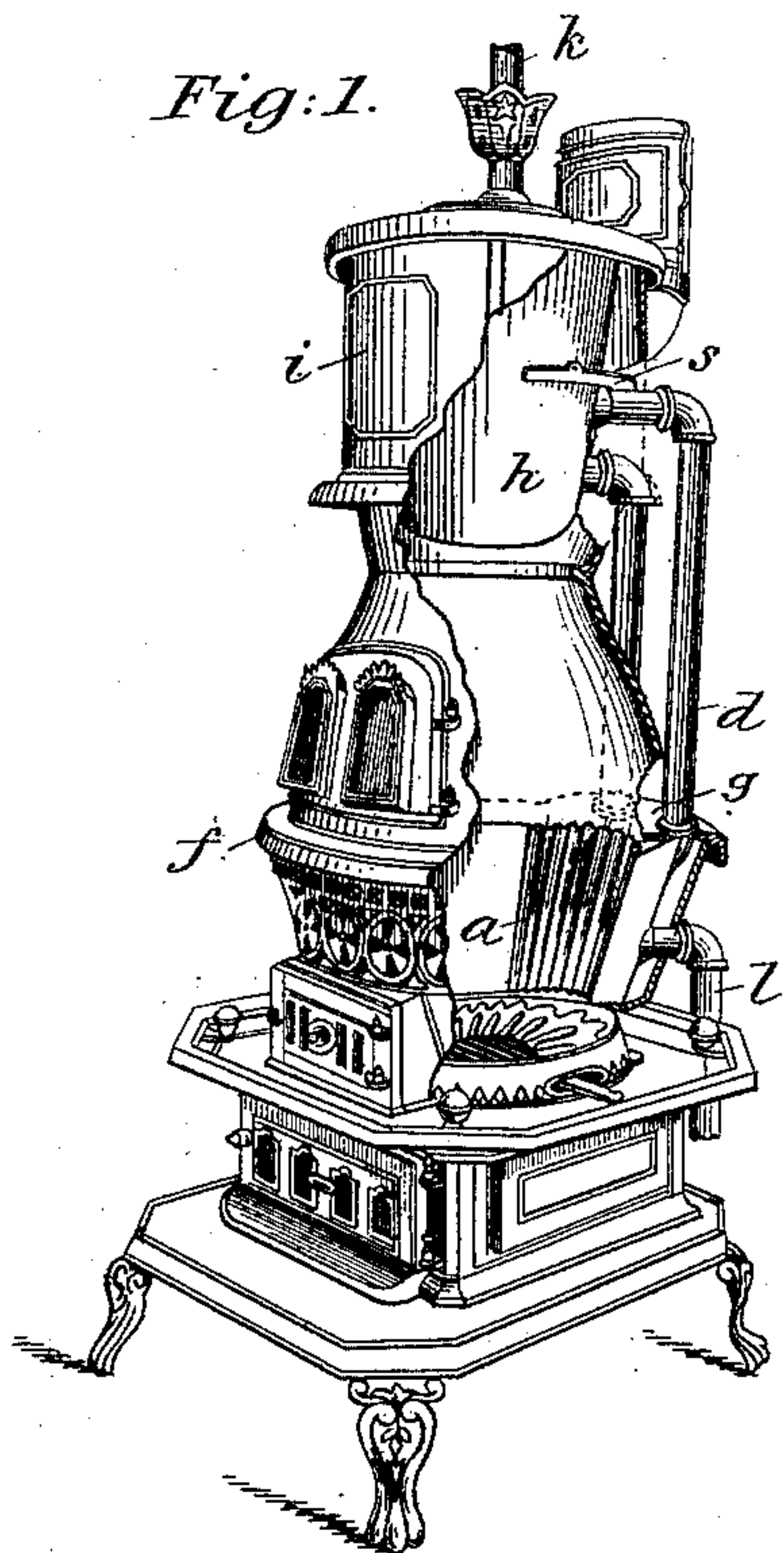


(No Model.)

G. T. BREWER.  
HOT WATER ATTACHMENT FOR STOVES.

No. 422,496.

Patented Mar. 4, 1890.



Witnesses:  
John H. Remick.  
H. J. Morgan.

Inventor;  
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att'y



# UNITED STATES PATENT OFFICE.

GILBERT T. BREWER, OF HOBOKEN, NEW JERSEY, ASSIGNOR TO THE COMBINATION STOVE AND WATER HEATER COMPANY, OF JERSEY CITY.

## HOT-WATER ATTACHMENT FOR STOVES.

SPECIFICATION forming part of Letters Patent No. 422,496, dated March 4, 1890.

Application filed December 14, 1888. Serial No. 293,549. (No model.)

*To all whom it may concern:*

Be it known that I, GILBERT T. BREWER, a citizen of the United States, residing at Hoboken, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Hot-Water Attachments for Stoves; 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.

This invention is an improvement on the hot-water attachment for stoves on which a patent was granted to me April 5, 1887, No. 360,411, for certain improvements in the arrangement of a water-back in a recess in the inner side of the fire-box, connected with a reservoir on the top or other elevated part of the stove by suitable pipes for enabling a constant circulation of the water through the water-back and tank to provide a supply of hot water to be drawn from the tank from time to time.

The present improvement of the invention is a contrivance of the reservoir within the upper part of the stove, so as to greatly increase the heating power, together with an attachment of circulating-pipes, whereby an ordinary heating-stove may be used for heating other rooms by the circulation of hot water through coils or radiators therein, either on a higher or lower level than that of the stove, all as hereinafter fully described, reference being made to the accompanying drawings, in which—

Figure 1 is a perspective view of a stove with a part broken out, showing the application of the attachment as I now arrange it. Fig. 2 is a sectional elevation of the same; and Fig. 3 is a sectional elevation of a self-feeding or magazine stove having the attachment applied to it.

The water-back *a* is located in the recess *b* in the fire-box at the level of the fire-bed, or thereabout, for being most effectually heated, and has the induction-pipe *d* and eduction-pipe *e* for circulating between it and the reservoir *h*, connected with it through the shell of the fire-box, substantially the same as in

my prior patent above referred to, except that in the present case the recess is made open at the upper end, flush with the upper end of the lower section of the fire-box, and the flange *f*, formed on the lower end of the upper section of the fire-box, to rest on the top of the lower section and project over and conceal the joint, is made with a suitable projecting section *g* to cover the recess, and the connecting-pipes *d e* are connected through this projection with the water-back; but the reservoir *h*, heretofore placed on the top or other elevated part of the stove, I have now contrived to locate inside of the heating-drum *i*, above the fire-box, by suspending it therein through an opening in the stove-top *j*, and connecting the circulating-pipes *d* and *e* with it through the side of the drum, so that the whole area of the reservoir, except the top, is directly exposed to the heat within the drum, instead of the bottom only, as heretofore, and its heating power is thereby very greatly increased, so that with the additional heating power of the water-back I have contrived a stove attachment practically available for heating other rooms by the circulation of hot water through radiators therein; and to this end I now attach the pipe *k*, for the outflow of the hot water, to the top of the reservoir, and the return-pipe *l*, for the cold water, to the water-back, so that a circulation of water through a radiating system is also maintained, besides the local circulation, between the water-back and the reservoir, making a very simple, cheap, and efficient heating system, that may be readily and temporarily set up when it may be wanted and be as readily removed, and such as can be operated merely by firing the ordinary heating-stove; but for the circulation through the radiator system it is not absolutely essential that more than one of the pipes connecting the reservoir and the water-back be used. It is only when the attachment is to be employed as a heater for water to be drawn from the reservoir, as by the faucet *w*, that both are positively required; but they facilitate the hot-water system also by the local circulation they promote, and



are preferred for that also. It is indeed much better, for it seems to be clearly demonstrated by the practical operation of the attachment that the circulation through the radiator system is much more effective with the water back and tank connected by two pipes than with only one pipe. I believe it to be due to less back-pressure on the water running into the tank through the water-back, because with the two pipes the one through which the water returns from the tank to the water-back affords greater relief to the back-pressure of the steam and hot water forcibly impelled from the hot surfaces of the tank, while the water has unobstructed flow into the tank from the water-back through the other pipe and is at the same time accelerated somewhat by the force of the element returning into the water-back. At any rate, the activity of the circulation through the radiators has been found in practice to be much greater with the two pipes than with one, whatever the action may be, and the two pipes afford local circulation when the radiators are shut off.

The apparatus being once charged with water will seldom need replenishing except when used for drawing hot water; but in practice there may be a feed-water pipe *m* from the water-main or other source connecting with the return-pipe *l*, or directly with the water-back, to increase the quantity of the water as needed, as there may be some waste through the vents of the radiators or through an open stand-pipe *O*, that it is desirable to have rising a suitable distance above the radiators for the varying level of the water through the variations of the temperature and of the water-supply, and when the radiator is to be placed below the level of the stove the column of hot water in this stand-pipe, being lighter than in the rest of the circulating system, establishes the circulation, causing the heavier cold water to ascend from the radiator into the heater again. This is also facilitated by the circulation between the water-back and the tank in the top of the stove. The large volume of water contained in the water-back and tank prevents steam from being generated, which would tend to prevent the ascent of the cold water through the return-pipe, especially before the return-pipe becomes heated. This is an especial advantage of this arrangement for heating the water as compared with a coil-heater placed in the stove, with the circulating-pipes extended below, which, owing to the small quantity of water contained in the coil and the larger amount of surrounding metal, is liable to be quickly heated and steam-pressure generated, which flows alike into the return-pipe and the outflow, so as to stop circulation and cause the pipe to be burned.

The reservoir is suspended by its flange *n* in an annular recess *o* of the stove-top surrounding the opening through the top of the

stove for the reservoir, and which is closed thereby and the cover *p* of the reservoir is bolted on tightly to prevent leak.

The reservoir extends downward in the stove below the smoke-pipe opening *q*, and at the bottom of said opening is a heat-deflector *s*, stopping the direct upward flow of the heat thereto on the side of the reservoir next to the opening and causing it to rise up the other side and then pass around to have better effect on the reservoir. For the application of this reservoir to a stove having a self-feeding coal-magazine I make the reservoir with a central vertical tube *t*, extending through it, either serving itself for the magazine, as herein represented, or for inserting the magazine in it. In such case the reservoir will preferably extend farther down in the stove to compensate for the space occupied by the magazine.

The preferable arrangement for the magazine-stove is to cast the reservoir and magazine together in one structural device, as I have represented them in Fig. 3.

The return-pipe of the hot-water-circulating system may be connected directly with the reservoir, if desired.

I am aware that elaborate and expensive steam and hot-water boilers are in use, in which water is contained, so as to circulate outward from the top and inward at the bottom, and I do not claim such apparatus broadly. In my patent, No. 360,411, above referred to, I have represented a simple, cheap, and much more effective hot-water attachment to common cylinder heating-stoves than others in use, and in the present case I only represent further improvements of the same simple and cheap character, and still specially for such stoves, and which I have found to have such great heating power as to render such stoves capable of efficient service for heating by the hot-water-circulating system, which up to this time has not been accomplished by a common stove, and I have represented the suitable pipe-connections for such service; but I do not mean to claim anything on the general principle of hot-water heaters, my invention still being confined to means adapting the common stove for such purpose.

What I claim, and desire to secure by Letters Patent, is—

1. The combination, with a stove, of the hot-water attachment consisting of the water-back located in the recess in the inside of the fire-box at the level of the fire-bed, or thereabout, the reservoir suspended in the upper part of the stove from the top, and the circulating-pipes connected with the water-back and reservoir through the shell of the stove, substantially as described.

2. The combination, with a stove, of the hot-water attachment consisting of the water-back located in the recess in the inside of the fire-box at the level of the fire-bed or



thereabout, the reservoir suspended in the upper part of the stove from the top, a pipe connecting the water-back and reservoir, the outflow-pipe of a circulating system connected with the reservoir, and the return-pipe of said system connected with the water-back, substantially as described.

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

GILBERT T. BREWER.

Witnesses:

W. J. MORGAN,

W. B. EARLL.