

(No Model.)

C. SMITH.
HOT WATER HEATING ATTACHMENT FOR FURNACES.
No. 577,695. Patented Feb. 23, 1897.

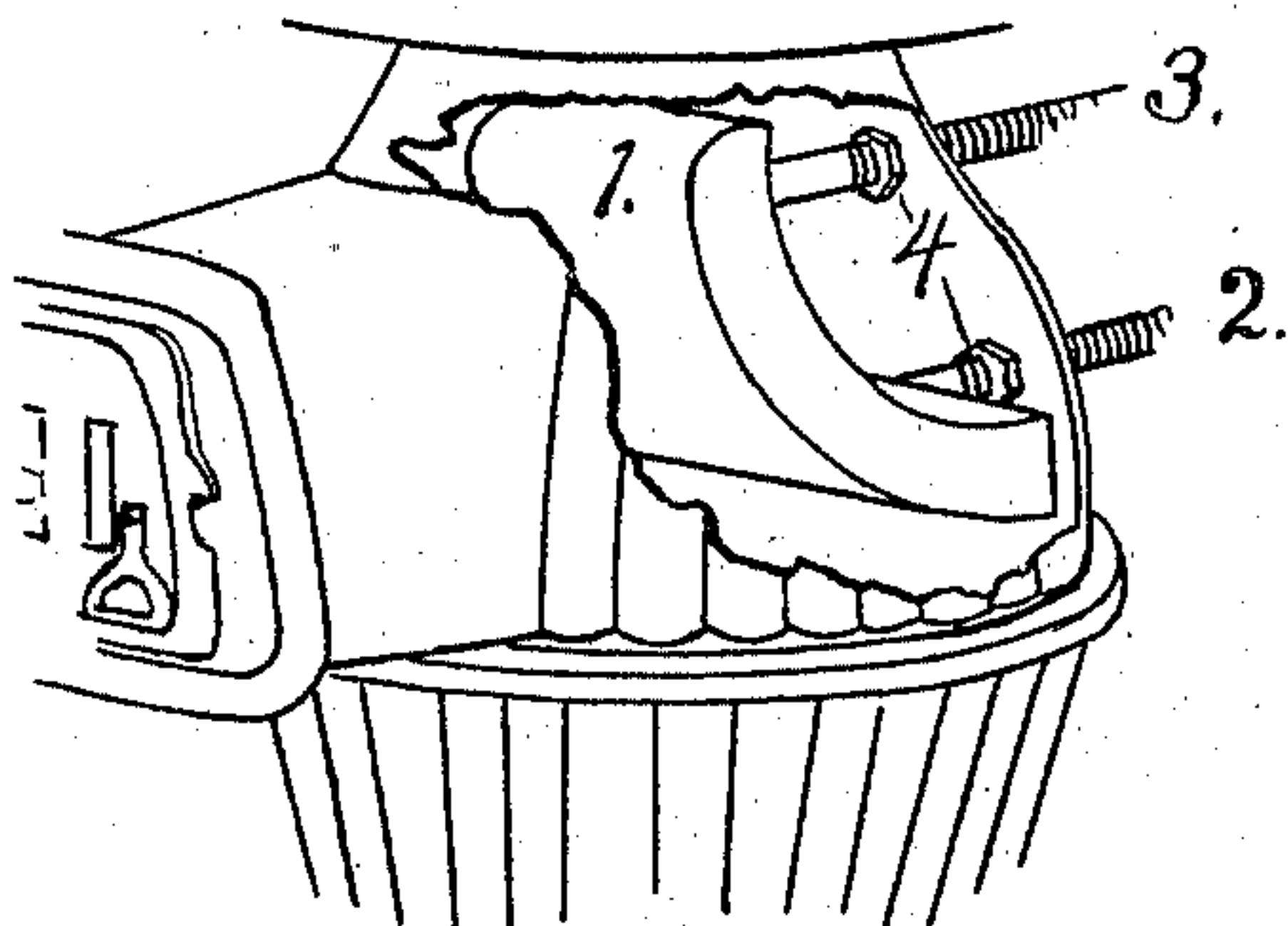


Fig A

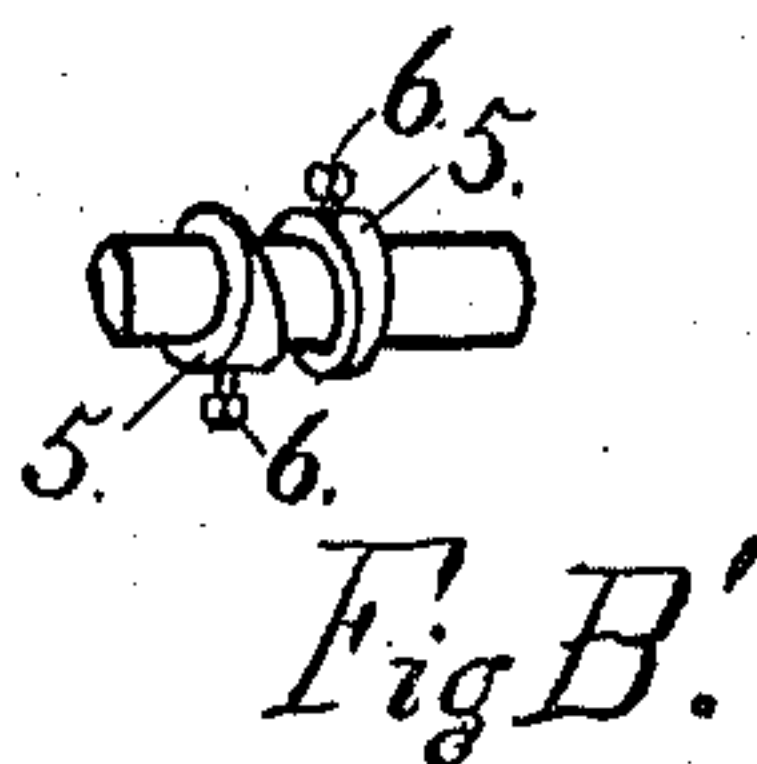


Fig B'

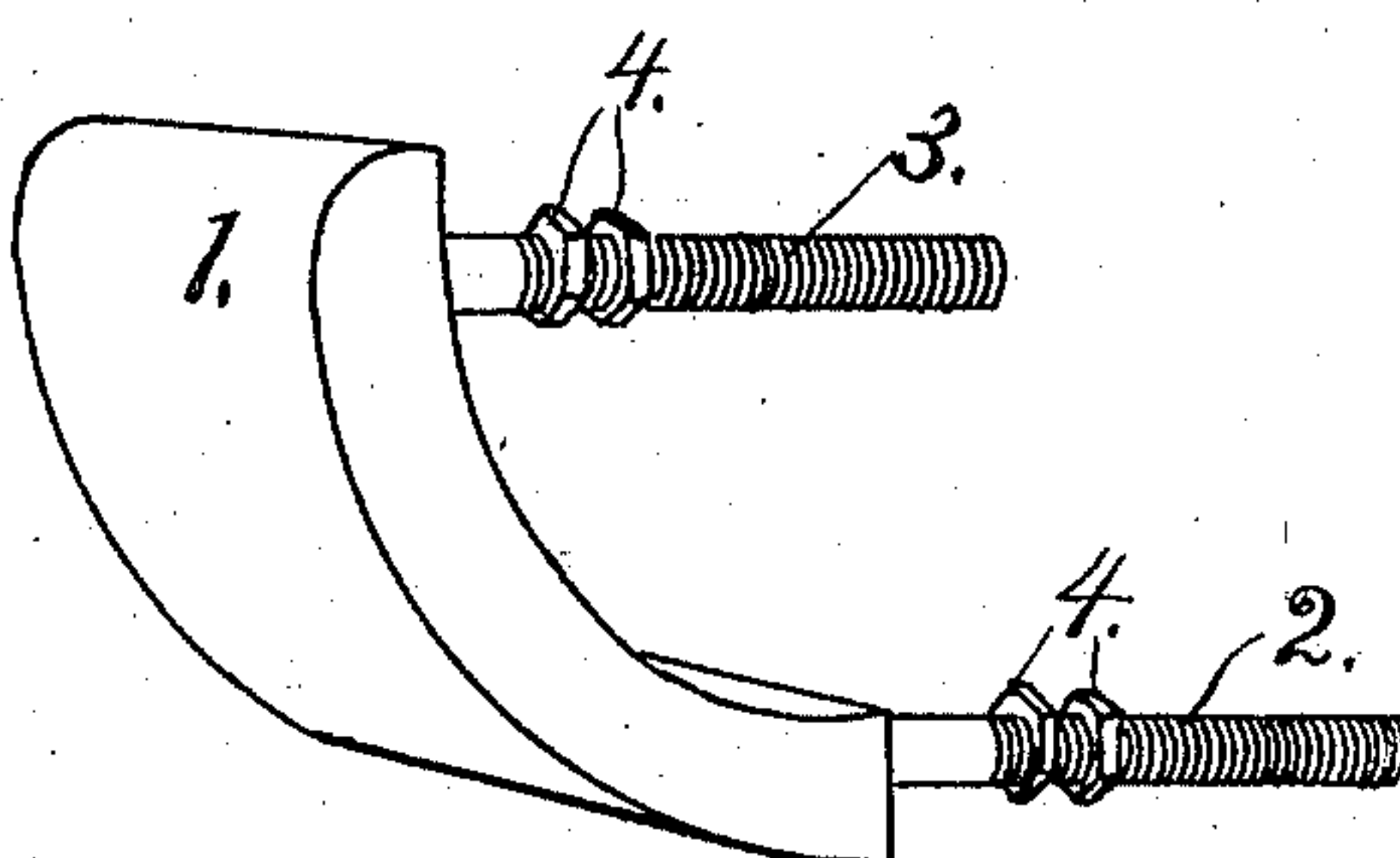


Fig B

Witnesses
C. Smith
W. W. Garrard

Charles Smith Inventor
By his Attorney *Paul Synnestvedt*

UNITED STATES PATENT OFFICE.

CHARLES SMITH, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE CHARLES SMITH MANUFACTURING COMPANY, OF SAME PLACE.

HOT-WATER HEATING ATTACHMENT FOR FURNACES.

SPECIFICATION forming part of Letters Patent No. 577,695, dated February 23, 1897.

Application filed September 11, 1895. Serial No. 562,180. (No model.)

To all whom it may concern:

Be it known that I, CHARLES SMITH, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Hot-Water Heating Attachments for Furnaces, of which the following is a specification.

My invention relates to that class of devices in which a hot-water system is used as an auxiliary to some other method of heating.

More specifically, my invention is designed to be used in a combined hot-air and hot-water system, and has for its object the provision of a heating-boiler which can be readily inserted in any furnace already in use, made up with the fewest possible number of joints, reducing leakage to a minimum, and which is of such construction that it will most readily and rapidly heat the water and cause it to circulate with the greatest freedom.

Further, my invention is designed in such a form as will best utilize the heat from the center of the surface of the fire, which heat, although it is really the most efficient, is generally wasted to a large extent by forming the upper part of the fire-pot or boiler in the shape of a dome over the grate.

I will now proceed to describe more in detail the preferred practice and construction of my invention, reference being had to the accompanying drawings, in which—

Figure A is a partial view of the fire-pot of a furnace with my improved hot-water boiler in place, the front part of the upper half being broken out to show its position clearly; and Fig. B is a view of the heater or boiler itself drawn on a slightly-larger scale and showing clearly the two lock-nuts which are used on each pipe to hold the device in place. Fig. B' shows a substitute for the nuts 4.

Referring now more particularly to Fig. A, 1 is the main body of the heater, and 2 the inlet and 3 the outlet pipe. The main body 1 is made of a single piece of metal, preferably of cast-iron, formed hollow in the center by means of a core, and this body is so placed in the furnace that the bulging or convex side will project out over the center of the fire, generally opposite the door, (although the

latter requirement is not essential, as it might be placed a little to one side or the other.) On the inlet-pipe 2 and also on the outlet-pipe 3 I put a pair of lock-nuts 4 4 for the purpose of securing the heater in place, the method of applying them being very clearly shown in Fig. A of the drawings. Cold water enters the body through the lower pipe 2, and as the part into which this pipe is screwed stands in a position over the fire, which is nearly horizontal, the water has ample opportunity to become well heated before it begins to rise very rapidly, and then as it becomes warmer it ascends to the part of the body which stands in a position more nearly vertical and finally out through the outlet or hot-water pipe 3 to the radiator.

It will be readily seen that the form of my heater requires but two water-tight joints, (those where the pipes 2 and 3 are screwed into the body 1,) and the main part of the device consisting of but one simple casting the whole costs but very little to make and can be put in with very little expense.

In Fig. B' I have illustrated a device intended to be used where preferred as a substitute for the nuts 4. This consists of a collar surrounding the pipe and adapted to be held in place by a set-screw. 5 indicates the collar, and 6 the set-screw. This arrangement does away with the long screw used with the nuts 4 and makes it easier to remove or adjust the device in place. As may also be seen by reference to the drawings, each of the washers 5 is beveled on one side to provide for a more accurate fit where the casting through which the pipe passes stands at an angle to the axis of the pipe other than a right angle, it being readily adjusted to an angle of any degree by simply turning it on the pipe.

I am aware that it is not new to use a coil for heating water in a furnace, but my invention has marked advantages over such a method. In a coil which is approximately of equal diameter throughout the water moves too rapidly to get the best effect from the fire.

In my device by making the body portion many times larger in cross-sectional area than the inlet or outlet pipes I secure a rapid cir-

culation in the system outside of the furnace and a comparatively slow circulation directly over the fire. A coil can never be put in without taking the furnace apart.

5 My device can, if necessary, be inserted through the door and adjusted in place without disturbing the furnace.

10 If it be desirable, two of my heaters can be used in the same furnace, each acting independently of the other, and in that way two or even more rooms may be heated, each by an independent circulation.

15 It is obvious that in detail of construction my devices might be modified without departing from the spirit of my invention, and I therefore do not desire to be understood as limiting myself to the precise construction shown, but would include all substantial equivalents.

20 Having thus described my invention, what

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

A hot-water heating attachment for a furnace, consisting of a hollow body portion 25 formed of a single casting in the shape of a segment, an inlet-pipe communicating with the lower end of the body portion, and an outlet-pipe leading from the upper end of the body portion, said body portion being 30 adapted to be arranged in a furnace with its convex side directly exposed to the fire so that the lower portion, into which the water is first admitted, will stand substantially in a horizontal position over the fire, substantially as described.

CHAS. SMITH.

Witnesses:

ARTHUR T. TIMENELE,
R. N. MURCHISON.