(No Model.)

R. STRETCH.

DEVICE FOR HEATING WATER BY STEAM.

No. 606,310. Patented June 28, 1898.

Fig. 1.

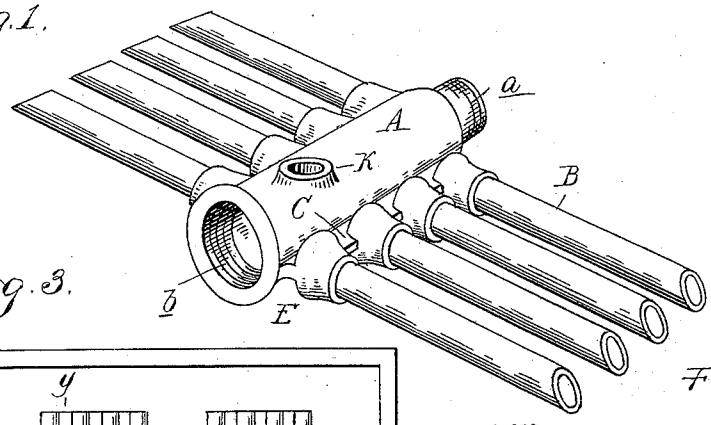


Fig. 3.

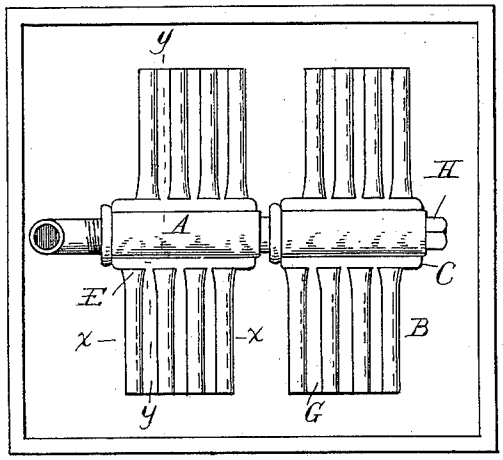


Fig. 2.

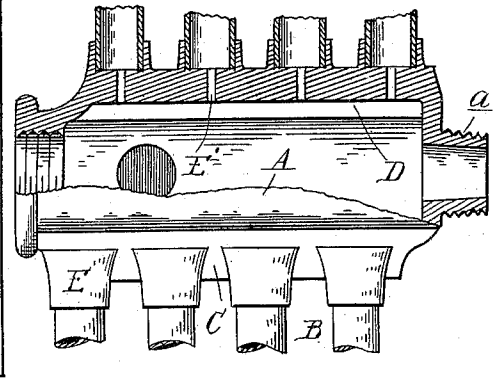


Fig. 6.

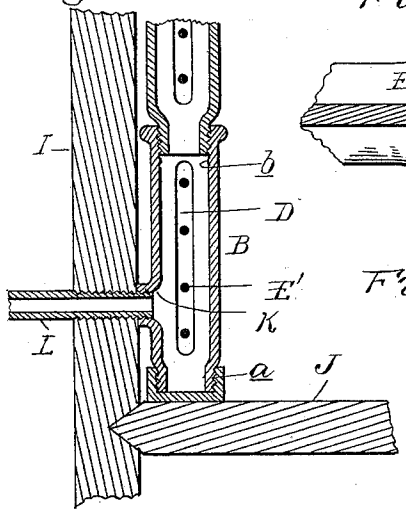


Fig. 5.

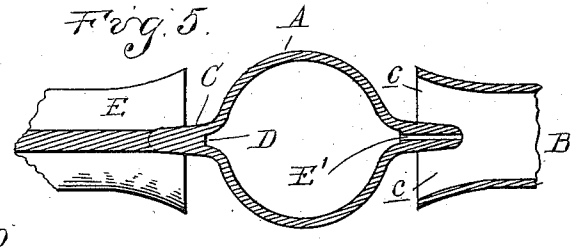
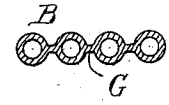


Fig. 4.



Witnesses
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UNITED STATES PATENT OFFICE.

ROBERT STRETCH, OF DETROIT, MICHIGAN.

DEVICE FOR HEATING WATER BY STEAM.

SPECIFICATION forming part of Letters Patent No. 606,310, dated June 28, 1898.

Application filed February 14, 1898. Serial No. 670,171. (No model.)

To all whom it may concern:

Be it known that I, ROBERT STRETCH, a citizen of the United States, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Devices for Heating Water by Steam, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to that class of water-heating devices which inject steam into the water; and the invention consists in the construction, arrangement, and combination of different parts, whereby a simple and efficient device is obtained which is adapted for a variety of uses, as in laundries, breweries, &c., and which forms a convenient unit whereby any desired capacity for heating can be obtained by coupling any required number of units, all as more fully hereinafter described, and shown in the drawings, in which—

Figure 1 is a perspective view representing my device in the form of a single heating-unit. Fig. 2 is a horizontal central section of the same. Fig. 3 is a plan of the device in the form of two units coupled together, the construction of the unit being slightly modified. Fig. 4 is a section on line *x x*, Fig. 3. Fig. 5 is a cross-section on line *y y*, Fig. 3. Fig. 6 is a section of the device at right angles to Fig. 2 and showing the device as arranged within a vat.

My device consists of one or more units, each composed of a hollow steam-head A and two series of combining-tubes B, arranged in a diametrical plane on opposite sides thereof. The head is preferably tubular and formed with male and female screw connections *a b* at the opposite ends in a manner to permit of connecting any number of like heads together. Upon opposite sides the head is formed with two fins C, and corresponding therewith the grooves D, preferably V-shaped in cross-section, are formed in the interior wall of the head.

The combining-tubes B are of the character of ordinary tubing, except that at the inner end each is enlarged to form a flaring mouth E. These tubes are arranged in two like rows at right angles to the head on opposite sides thereof in the plane of the fins and by means of which they are united to the head, so that the fins bisect the inner ends of the tubes, as shown, and form two segmental inlets *c* into each tube.

Each combining-tube is provided with a steam-induction port by means of apertures E′, formed through the fins in the axis of the different tubes in such manner that the apertures lead from the bottom of the grooves D. Thus composed of a head and a number of tubes connected thereto the device is in its simplest form and constitutes a unit of which any number may be coupled together, either with the combining-tubes all in the same plane, as in Fig. 3, or in different planes. Such a unit can be readily made in a single casting of the construction shown in Fig. 3, where the tubes B are cast integrally with the head and fins and with a thin web G, uniting the tubes, or the head, fins, and the parts E may be made in one casting and the tubes B secured thereto in any suitable manner.

A heater of this construction, even if composed only of one single unit, forms a very efficient device for heating water. In practice it may be placed on the bottom of the tub or vessel in which the water is to be heated and one end is suitably connected by a pipe, or, if desired, by a flexible connection, with a source of steam-supply, and the other end is closed by a suitable plug or cap H. If thus arranged, it will be seen that if steam is admitted into the head the steam will issue through the apertures E′ into the combining-tubes in the form of jets and produce a suction which draws the water through the segmental inlets *c*, and the steam and water combine in the tubes and a strong circulation is produced which does away with the creation of any noise and causes the steam to be rapidly absorbed into the water.

If desired to discharge the water from the ends of the tubes in a less concentrated stream, the tubes may be cut on a bevel at the outer ends, as shown in Fig. 1.

The peculiar flat and compact form of my device makes it especially applicable for industrial purposes—as, for instance, in vats, in which there are revolving stirrers, as in mash-tubs. Here there will be generally found room enough to avoid the stirrers by setting the device in an upright position against the inner walls of the tub, as shown

in Fig. 6, in which I represents the wall of the tub, and J the bottom. The connection with the steam may then be formed by providing the head with a side aperture, as K, into which the steam-pipe L is connected, and which also may serve as the means to hold the device in position. It is obvious that the head may have only one row of combining-tubes or it may have two, three, or more, all arranged in the same manner in relation to the head.

What I claim as my invention is—

1. In a device for heating water, the combination of a hollow steam-head having means for connecting it to a source of steam, a series of open-ended combining-tubes at right angles to the steam-head, a fin on the body of the steam-head to which the inner ends of said combining-tubes are united, said fin having apertures leading from the steam-head into the combining-tubes and forming segmental openings for the admission of water into the tubes on opposite sides of the fin.

2. In a device for heating water, the combination of a hollow steam-head having means for connecting it to a source of steam, two series of open-ended combining-tubes arranged upon opposite sides thereof at right angles thereto, and two fins formed correspondingly on opposite sides of the body and to which the combining-tubes are united, said fins forming dividing-partitions across the inner ends of the combining-tubes and having perforations for admitting steam into said tubes.

3. In a device for heating water, the combination of the hollow steam-head formed with male and female coupling members at its opposite ends and one or more rows of combining-tubes united to the steam-head by longitudinal fins integrally cast with the steam-head and combining-tubes, and steam-passages in said fins from the steam-head into the combining-tubes.

4. In a device for heating water, the combination of the hollow steam-head formed with male and female coupling members at its opposite ends respectively, the fins C formed on opposite sides of said steam-head, the grooves D formed correspondingly therewith in the steam-head, the open-ended combining-tubes B united at their inner ends to the fins, the segmental water-inlets *c* into the combining-tubes and the steam-passages E′ extending from the grooves in the steam-head into the mouth of the combining-tubes.

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

ROBERT STRETCH.

Witnesses:
OTTO F. BARTHEL,
M. B. O'DOGHERTY.