N° 11,350 A.D. 1905

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COMPLETE SPECIFICATION.

"Improvements in Gas Heating-apparatus for Baths"

We Dr. Franz Fürstenheim and Mrs. Cäcilie Hirschhorn of the Firm of J Hirschhorn, Lamp Manufacturers, of Köpnickerstrasse 149, Berlin, Germany, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

The present invention relates to improvements in gas heating apparatus for baths, the water receptacles of which have a very small capacity and are heated very rapidly and only when water continuously flows through same. The class of heater to which this invention relates is that in which the supply of gas to the burner is regulated by the pressure of water passing into the heater, and in which a rotatable burner is provided for opening the main gas cock.

According to this invention the burner is connected by a chain or other pulling member to the gas cock and for preventing the burner being extinguished each time the supply of water to the bath is cut off during bathing, or otherwise, the valve controlling the supply of gas and opened by the pressure of the water to be heated is provided with a separate channel or byepass through which the burner is supplied with a quantity of gas sufficient to maintain an igniting flame or flames, when the valve is closed.

The said effect can however also be obtained by branching off in front of the water pressure valve a separate small gas pipe leading to the burner, said gas pipe being adapted to feed an igniting flame when the valve is closed and consisting at its end of two bent parts sliding one into the other, for allowing the movements of the burner.

One form of construction of the heating apparatus is shown in the annexed drawing, in which:

Figure 1 is a front view of a bath heater provided with the improvements.

Figure 2 a plan view from above of the burner, with the receptacle removed.

Figure 3 a vertical section of the water controlled gas-valve which regulates the gas supply to the heating burner and

Figure 4 is a similar view to Figure 3 showing a modified construction of the gas valve, in which the valve seat is provided with a byepass for feeding igniting flames.

The bath heater comprises a water receptacle *a* containing ribbed heating tubes or the like and below which is a plate shaped gas burner *b* pivoted at *c* to the gas feed pipe *d* leading from the water-pressure gas-valve *e*. To the frame of the burner *b* is connected a chain *f* by means of a loop *g* or the like as shown in Figure 2 which chain passes over a guide pulley or roller *h* to the controlling lever of the gas-cock *i*.

From the main gas pipe *k* in front of the water-pressure gas-valve *e* is branched a small gas tube *l* (see Figure 1) leading to the burner *b* and extending at a suitable part of the latter into a pipe *m*. To enable the pipe *l* to follow the oscillating movements of the burner *b* said pipe consists of two parts adapted to slide one within the other and curved as shown in Figure 2 with the pivoted point *c* as a centre. To avoid the use of a stuffing box and to prevent obstruction of the outlet of pipe *m* the small gas supply pipe *l* is provided with a small outlet orifice whereas that of pipe *m* is of larger cross-section.

The action of the form of construction described is as follows: By rotating the gas burner *b* by means of the handle *q* into the position shown in dotted lines in Figure 2 the gas cock *i* is opened by means of the chain *f* so that

[*Price 8d.*]

gas flows through the small pipes *l* and *m* to the igniting flame at such a speed that it cannot escape at the connection of said two pipes.

The gas flowing out through the pipe *m* is thus brought to ignition, whereupon the burner is pushed back under the water receptacle *a*, and the water cock *n* opened so that the heating tubes are filled with water, and the burner *b* after the lifting of the membrane *o* and opening of the valve *p* is supplied with gas. After ignition of the different small gas flames by the igniting flame of pipe *m* the heating of the water takes place.

When the water supply valve *n* is closed the gas valve *p* is also closed, the heating flames are extinguished and only the igniting flame fed by the pipe *l* continues to burn. The said igniting flame is however insufficient to heat the contents of the water receptacle to any extent.

If the water valve *n* is now again opened so that a fresh supply of water can flow into the receptacle *a*, the burner *b* is obviously again lighted by the igniting flame of the pipe *m*.

Complete closing of the gas-cock *i* and extinguishing of the igniting flame is effected by pulling a chain *r* adapted to operate the closing lever of said gas cock.

When using the water-pressure gas valve *e* shown in Figure 4 the arrangement of separate gas pipes *l* and *m* is not necessary, since when the valve *p* is closed a small quantity of gas may be supplied to the burner *b* through the bye-pass *s* in the seat of said valve *p*, this quantity of gas being sufficient to keep the burner *b* burning with a small flame.

Compared with the arrangement shown in Figures 1 to 3 this construction has however the disadvantage that during the time in which the water receptacle *a* is not supplied with fresh water the small burner flames continue to burn and further heat the contents of the receptacle *a*.

If the capacity of the receptacle *a* is large enough and the passage of gas through the channel *s* regulated in such a manner that the burner flames are very small they will not heat the contents of the water receptacle to any great extent. When said receptacle is however comparatively small, the form of construction shown in Figures 1 and 2 is to be preferred, since in the latter only a small igniting flame continues to burn.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. In a gas heating apparatus for baths wherein the supply of gas to the burner is regulated by a valve opened by the pressure of the water to be heated, and the burner is pivoted or rotatable for the purpose of opening the main gas cock, the construction wherein the valve is provided with a bye-pass through which a quantity of gas sufficient to feed an igniting flame is supplied to the burner when the valve is closed, substantially as set forth.

2. In the heating apparatus as described in Claim 1 the construction wherein the burner is connected to the main gas cock by a chain or other pulling member.

3. In a heating apparatus as described in Claim 1, the construction wherein a separate small gas pipe is branched off in front of the gas controlling valve, said pipe leading to the burner to feed an igniting flame when the valve is closed and, for allowing the oscillating movements of the burner, being formed at its end of two bent pipes sliding one into the other, of which the gas supply pipe has a small outlet orifice and the outlet pipe a larger orifice substantially as described for the purpose set forth.

Dated this 30th day of May 1905.

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[This Drawing is a reproduction of the Original on a reduced scale]

FIG. 1.

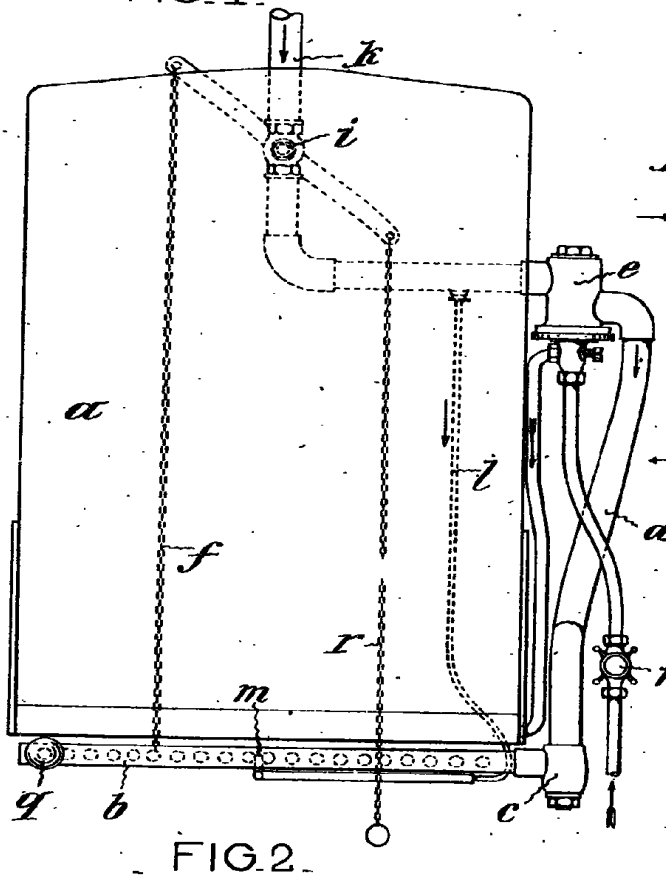


FIG. 3.

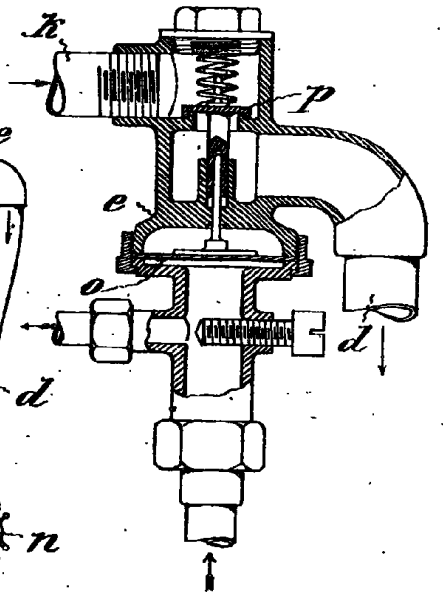


FIG. 2.

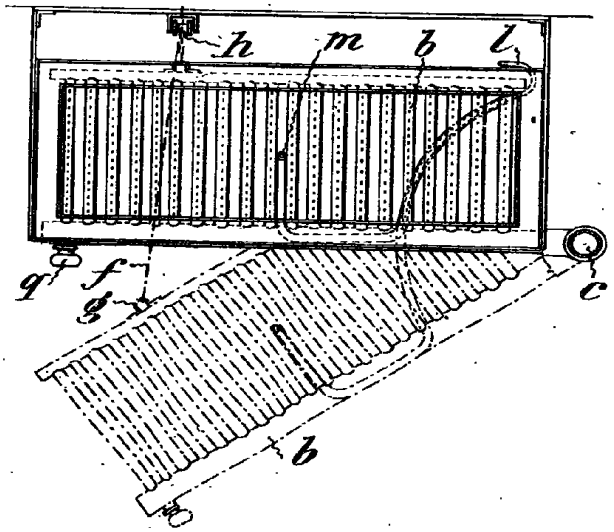
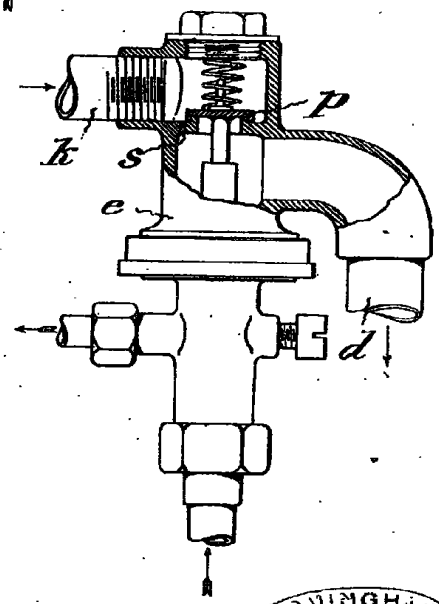


FIG. 4.



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