E. I. INGLES.

LIQUID HEATING ATTACHMENT FOR FURNACES.

APPLICATION FILED MAY 24, 1916.

1,216,811. Patented Feb. 20, 1917.

Fig. 1.

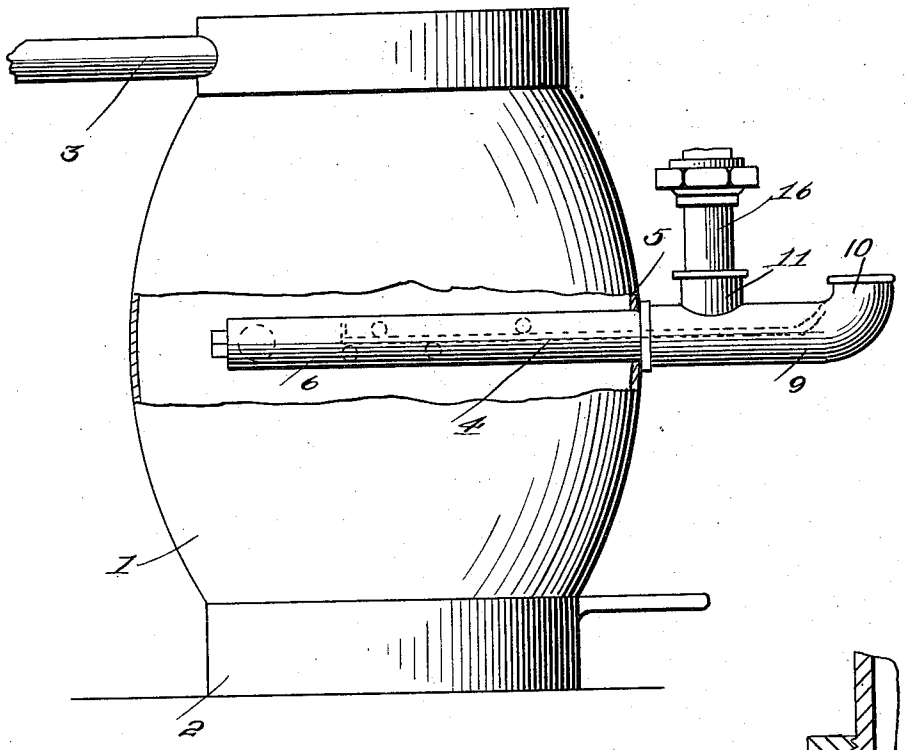


Fig. 2.

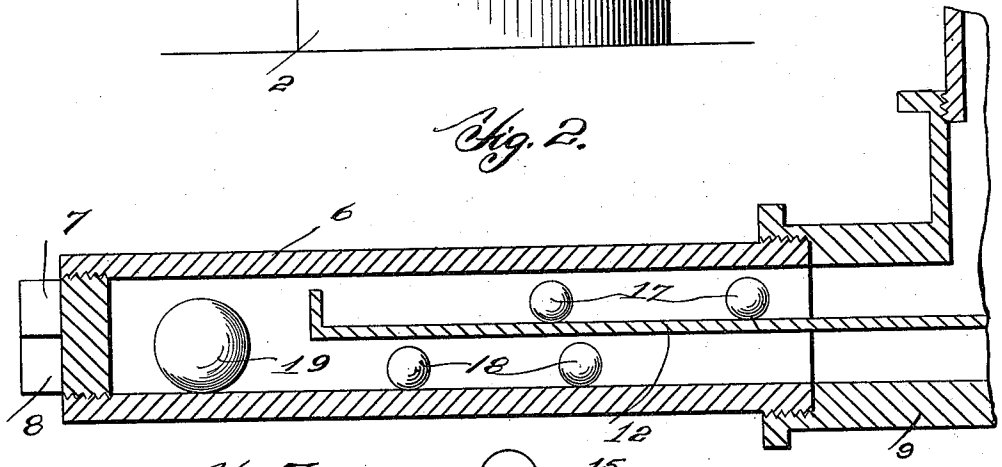
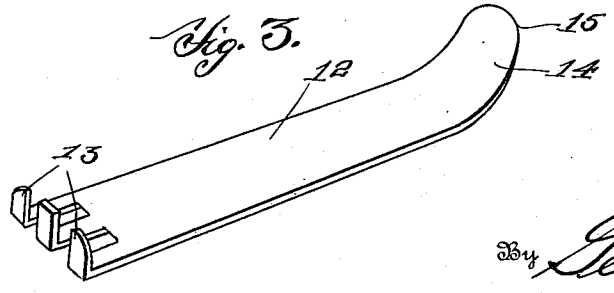


Fig. 3.



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LIQUID-HEATING ATTACHMENT FOR FURNACES.

1,216,811. Specification of Letters Patent. **Patented Feb. 20, 1917.**

Application filed May 24, 1916. Serial No. 99,569.

To all whom it may concern:

Be it known that I, EDWARD I. INGLES, a citizen of the United States, and resident of Indianapolis, in the county of Marion and State of Indiana, have invented certain new and useful Improvements in Liquid-Heating Attachments for Furnaces, of which the following is a specification.

The present invention relates to new and useful improvements in water heating devices for furnaces and has particular reference to a device of this character which may be quickly and easily inserted into a furnace without altering the furnace structure.

The primary object of my invention is to provide a device of the character described having an improved arrangement of parts whereby to prevent the collection of lime and other deposits which tend to render inefficient many of the heaters now in use.

Another object of my invention is to provide a device of the character described in which the parts are detachably associated for facilitating detachment of the parts for inspection and repair.

Other objects and advantages to be derived from the use of my improved heating device will appear from the following detail description and the claims, taken with an inspection of the accompanying drawing, in which:—

Figure 1 is a side elevational view of a furnace showing my improved water heater applied thereto;

Fig. 2 is a longitudinal sectional view of the water heater the end thereof being broken away; and

Fig. 3 is a reduced perspective view of the removable dividing partition employed in my improved water heater.

Referring more particularly to the drawing, wherein similar characters of reference designate like and corresponding parts throughout the various views, 1 designates the body of a furnace, 2 the base and 3 the usual outlet. My improved water heater is designated 4 in its entirety and is adapted to be disposed in the fire-box of the furnace, a suitable opening 5 being formed in the side wall of the furnace to accommodate said heater. In actual practice the openings which are provided in the usual furnace structure may be utilized for reception of the water heater of my invention.

The water heater of my invention includes a main body portion 6 formed of a length of conduit having a removable plug 7 in one end thereof, said plug having a squared head 8 on the free end thereof for an obvious purpose. The opposite end of the conduit 6 is exteriorly threaded with a relatively larger coupling pipe 9, said coupling pipe being provided with inlet and outlet extensions 10 and 11.

To direct the fluid through my improved heater I provide a removable partition 12, the inner free end of which is provided with a plurality of right-angularly bent fingers 13. The outer free end of said partition 12 is upturned as at 14 and provided with a rounded end portion 15, the same being intended to snugly fit within the coupling pipe 9 and the body portion 6. It will be noted that the bore of the coupling pipe 9 is concentric with the bore of the body portion 6 and of a like diameter. An outlet supply pipe 16 communicates with the outlet extension 11, said pipe conveying the heated liquid to the desired point. It will be seen that the partition 12 is diametrically arranged in the body 6, said partition extending about three-fourths the length of said body.

In order to prevent the collection of lime and other deposits in the body portion 6 I provide a plurality of disturbing elements in the form of balls 17 and 18 arranged above and below the partition 12. A relatively large ball 19 is arranged at the inner free end of the body portion 6 for a purpose similar to the balls 17 and 18.

In use my improved heater is applied to the furnace, water or the like being supplied to the connecting member 9, the water flowing beneath the partition 12 to one end of the chamber 6, and then returning over the partition 12 upwardly through the outlet 16.

The agitation resultant upon the heating of the water causes the balls 17, 18 and 19 to be disturbed striking the peripheral wall of the chamber 6 and the surfaces of the partition 12 preventing the collection of sediment or the "liming up" of the heater. Of course, it will be readily understood that my invention may be used as a water tube steam boiler or I may substitute a tube for the partition.

Thus it will be seen that in my improved heating and steam generating device I have provided a simple and compact structure capable of application to various types of furnaces without altering the structure of

the furnace, the provision of the agitating members preventing the collection of lime or other sediments in the generator or heater as the case may be. The device may be easily shifted from the center of the fire-box to the side to increase or decrease the amount of steam or hot water produced, and the device has a constant heating capacity.

From the above description taken in connection with the accompanying drawing, it is thought that a clear and comprehensive understanding of the construction, operation and advantages of my invention may be had, and while I have shown and described my invention as embodying a specific structure, I desire that it be understood that such changes may be made in said structure as do not depart from the spirit and scope of the invention as claimed.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. A liquid heating attachment for furnaces including a tubular body having a connector at one end thereof, an extension carried by said connector, a removable partition arranged longitudinally in the tubular body and short of the length of said body, a plurality of disturbing members carried above and below the partition and in said tubular body, means formed on the end of said partition to limit the movement of the disturbing member above the partition, a relatively large disturbing member mounted in the end of the body portion for a purpose specified.

2. A liquid heating attachment for furnaces, including a tubular body having a connector at one end thereof, an extension carried by said connector, said extension being connected to inlet and outlet supply pipes, a removable partition diametrically arranged in the said body, right-angularly bent fingers formed on one end of said partition, the outer free end of the partition being up-turned to snugly fit the connector, and a plurality of disturbing members carried above and below the partition in said tubular body for a purpose specified.

In testimony whereof, I affix my signature hereto.

EDWARD I. INGLES.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."