C. E. JOHNSTON AND A. J. JORGENSON.

HEAT PRODUCING AND DISTRIBUTING ELEMENT.

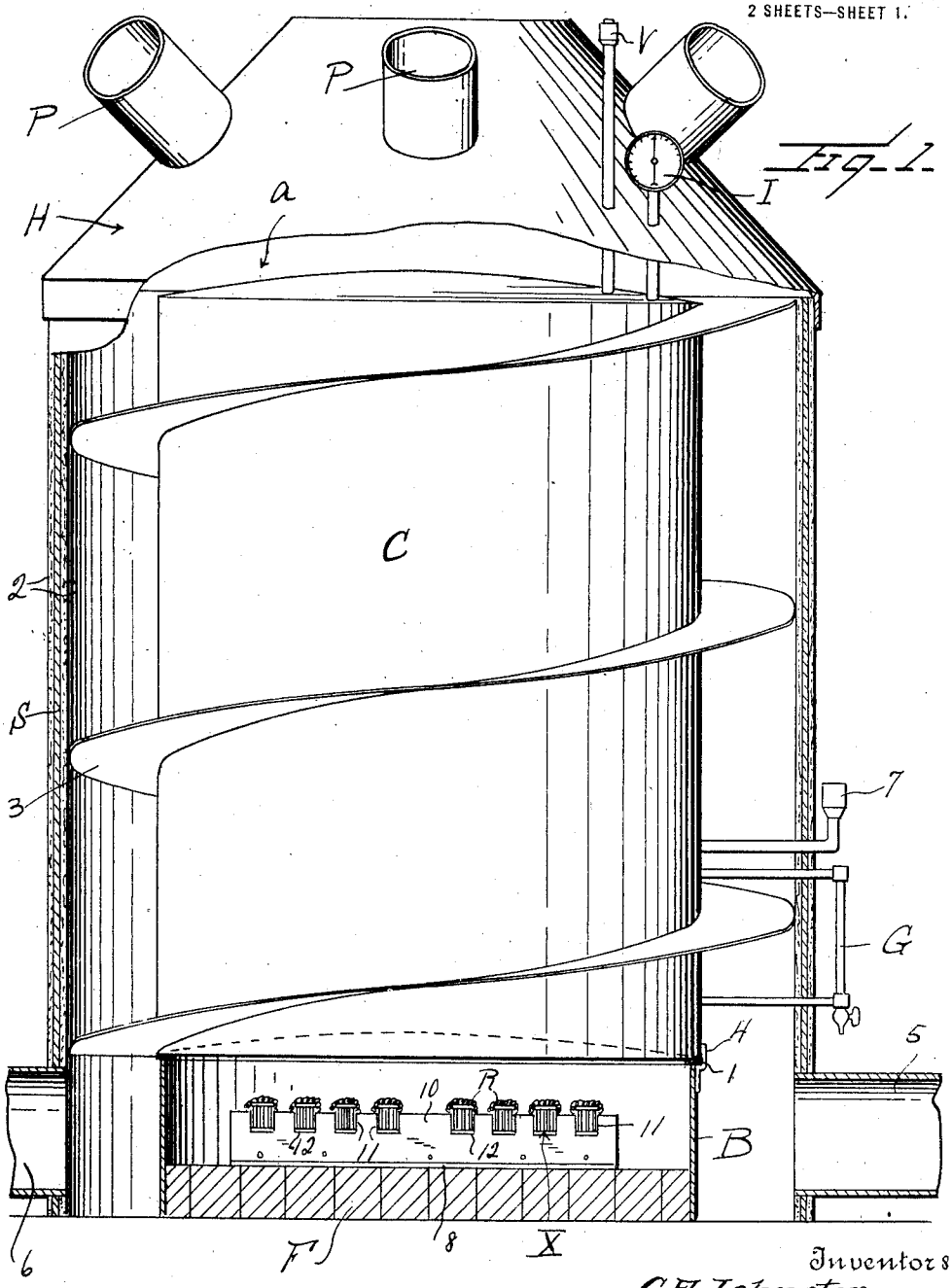
APPLICATION FILED APR. 28, 1920.

1,383,211.

Patented June 28, 1921.

2 SHEETS—SHEET 1.

Fig. 1.



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2 SHEETS—SHEET 2.

Fig. 2.

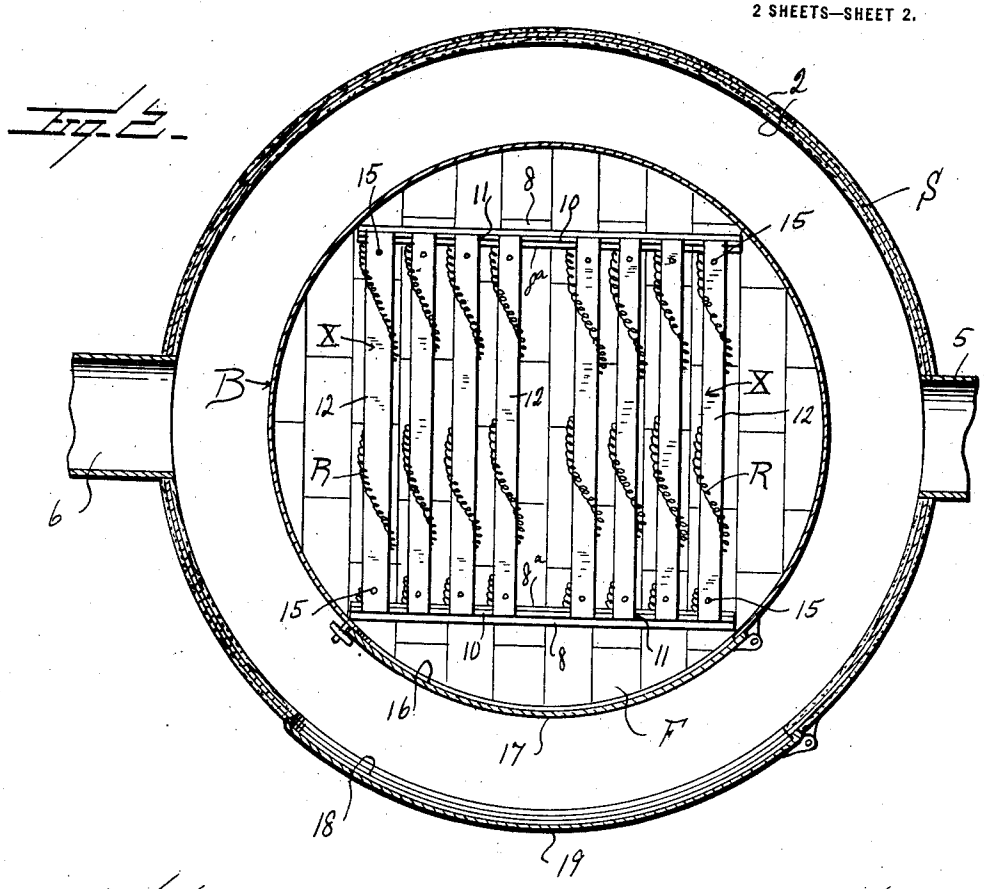


Fig. 3.

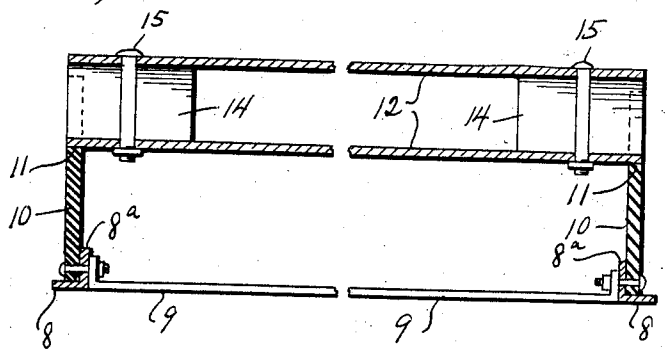
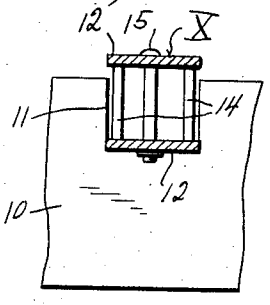


Fig. 4.



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HEAT PRODUCING AND DISTRIBUTING ELEMENT.

1,383,211. Specification of Letters Patent. **Patented June 28, 1921.**

Application filed April 28, 1920. Serial No. 377,348.

To all whom it may concern:

Be it known that we, CHARLES E. JOHNSTON and ANDREW J. JORGENSON, citizens of Canada, residing at Vancouver, in the Province of British Columbia, Dominion of Canada, have invented certain new and useful Improvements in Heat Producing and Distributing Elements, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to certain improvements in heat producing and distributing elements, and it is an object of the invention to provide a novel and improved element of this general character embodying means whereby the maximum of heat is communicated to circulating air.

It is also an object of the invention to provide a novel and improved element of this general character wherein the heat is initially produced electrically and transmitted to a fluid and wherein the heat radiating from the fluid serves to properly heat air in circulation.

An additional object of the invention is to provide a novel and improved element of this general character embodying a water container or boiler mounted upon a base in which is arranged an electrical heating agency for the water within the container or boiler, togther with a casing surrounding the container or boiler, affording a chamber through which air circulates and from which chamber leads suitable distributing means for the heated air.

The invention consists in the details of construction and in the combination and arrangement of the several parts of our improved heat producing and distributing element whereby certain important advantages are attained and the device rendered simpler, less expensive and otherwise more convenient and advantageous for use, as will be hereinafter more fully set forth.

The novel features of our invention will hereinafter be definitely claimed.

In order that our invention may be the better understood, we will now proceed to describe the same with reference to the accompanying drawings, wherein:

Figure 1 is a view partly in section and partly in elevation illustrating the heat producing and distributing element constructed in accordance with an embodiment of our invention;

Fig. 2 is a transverse sectional view taken through the lower portion of the structure illustrated in Fig. 1 with certain of the parts in top plan;

Fig. 3 is an enlarged fragmentary view partly in section and partly in elevation, illustrating in detail a mounting for a heating element, a coacting resistance coil being omitted; and

Fig. 4 is a fragmentary view in cross section of the structure illustrated in Fig. 3.

As disclosed in the accompanying drawings, B denotes a cylindrical base of non-inflammable material and upon which is mounted a boiler or container C having its heads concavo-convex with the convex faces upwardly disposed. The boiler or container C is of a diameter slightly in excess of the diameter of the base B and is also made from a suitable non-inflammable material. We also find it of advantage to interpose between the boiler or container C and the upper edge of the base B a packing 1 of material non-conductive of electricity.

Arranged within the base B is a floor F, preferably of fire brick.

Surrounding the base B and the boiler or container C concentric thereto but spaced therefrom is a casing or shell S having applied to its opposite faces the laminations 2 of asbestos or other heat resisting material. Mounted upon the upper end of the casing or shell S is a hood H of a conventional type, affording therein a hot air chamber A. Leading from the hood H and in communication with the air chamber A are the hot air distributing pipes P.

Disposed around the boiler or container C is a spirally arranged baffle 3 extending from the bottom of said boiler or container C to the top thereof. The baffle 3 bridges the space between the boiler or container C and the casing or shell S and said baffle may be integral with the wall of a boiler or container C, may be riveted or welded thereto or may be held in applied position by the pressure of the casing or shell S thereon. The specific means employed, however, forms no particular part of our present invention. The boiler or container C is also adapted to be connected to the base B in any desired manner, as by the straps 4, or in any other manner which may be employed with convenience and facility to assure a perfect contact of the base B and

the boiler or container C with the interposed packing or gasket 1.

Communicating within the lower portion of the casing or shell S and at a point below the boiler or container C are the pipes 5 and 6, the pipe 5 constituting a cold air intake from the outside of the building structure and the pipe 6 an air return from the inside of the building structure. The container or boiler C is adapted to hold a desired quantity of water which is fed therein through the filling tube or injector 7 leading from said boiler or container at a predetermined point and extending exteriorly of the casing or shell S. Also in suitable connection with the boiler or container C is a water gage G arranged exteriorly of the casing or shell S.

V denotes a safety valve in communication with the boiler or container C through the top head thereof and extending exteriorly through the hood H. I denotes an indicator or similar gage arranged exteriorly of the hood H and also in communication with the boiler or container C through the top head thereof.

Resting upon the flooring F is a pair of angle irons 8 connected by the metallic spacing strips 9. Secured to the vertical flange 8^a of each of the angle irons 8 is the lower marginal portion of an elongated spacer plate 10, having its flat faces vertically disposed. The upper marginal portion of the plate 10 is provided with a series of longitudinally spaced notches or recesses 11. Each recess or notch 11 of one of the plates 10 is in alinement with a similar recess or notch in the second plate and seating within each pair of alining recesses or notches 11 is a bar X. Each bar X comprises two flat strips 12, of non-inflammable material, having interposed therebetween at their opposite ends the spacing plates 14 of similar material and said strips and plates are maintained in assembled relation through the instrumentality of the clamping bolts 15. Around each of the bars X is suitably wound a resistance coil R in suitable connection with a source of electrical energy. As this connection forms no particular part of our present invention, a detailed description and illustration thereof is believed to be unnecessary although it is to be mentioned that it is preferred that each coil have a separate controlling switch and also to have a thermostatic device whereby an automatic control may be had for regulating the heat generated by the several resistance coils R.

The base B is provided in a wall with an opening 16 affording means whereby access may be had therein and said opening 16 is normally sealed by the door 17. The casing or shell S is also provided with an opening 18 adjacent the opening 16 and which opening is also normally closed or sealed by the door 19. The opening 18 is so positioned as to permit ready access to the door 17 when it is desired to have access within the base B.

The heat given off by the resistance coils serves to bring the water within the boiler or container C to a boiling point and the radiation therefrom heats the air entering within the casing or shell S at the bottom thereof and passing in a tortuous or spiral path around the boiler or container C. This spiral or tortuous path of travel of the air causes the air to receive a maximum of heat before entering the chamber A and distributing therefrom through the pipes P.

From the foregoing description, it is thought to be obvious that a heat producing and distributing element constructed in accordance with our invention is particularly well adapted for use by reason of the convenience and facility with which it may be assembled and operated, and it will also be obvious that our invention is susceptible of some change and modification without departing from the principles and spirit thereof, and for this reason we do not wish to be understood as limiting ourselves to the precise arrangement and formation of the several parts herein shown in carrying out our invention in practice except as hereinafter claimed.

We claim:—

1. A device of the class described comprising, in combination, a hollow base, a boiler mounted thereon, a casing surrounding the base and boiler and spaced therefrom, a hood mounted upon the casing and overlying the boiler, said hood having distributing means in communication therewith, and an electrical heating medium arranged within the base.

2. A device of the class described comprising, in combination, a hollow base, a boiler mounted thereon, a casing surrounding the base and boiler and spaced therefrom, a hood mounted upon the casing and overlying the boiler, said hood having distributing means in communication therewith, an electrical heating medium arranged within the base, and a spiral baffle surrounding the boiler and bridging the space between the boiler and the casing.

3. A device of the class described comprising, in combination, a hollow base, a boiler mounted thereon, a casing surrounding the base and boiler and spaced therefrom, a hood mounted upon the casing and overlying the boiler, said hood having distributing means in communication therewith, and an electrical heating medium arranged within the base, the casing at a point below the boiler being provided with an air inlet.

4. A device of the class described comprising, in combination, a hollow base, a boiler mounted thereon, a casing surrounding the

base and boiler and spaced therefrom, a hood mounted upon the casing and overlying the boiler, said hood having distributing means in communication therewith, an electrical heating medium arranged within the base, and a filling device in communication with the boiler and extending exteriorly of the casing.

5. A device of the class described comprising, in combination, a hollow base, a boiler mounted thereon, a casing surrounding the base and boiler and spaced therefrom, a hood mounted upon the casing and overlying the boiler, said hood having distributing means in communication therewith, an electrical heating medium arranged within the base, and a water gage arranged exteriorly of the casing and in communication with the boiler.

6. A device of the character described comprising, in combination, a hollow base, a boiler mounted thereon, and an electrical heating means arranged within the base, said means comprising a pair of upstanding plates, bars supported by said plates, and resistance coils extending around the bars.

7. A device of the character described comprising, in combination, a hollow base, a boiler mounted thereon, a casing surrounding the boiler and base and provided with distributing means, an electrical heating means arranged within the base, said means embodying a pair of vertically disposed plates provided with notches in the upper marginal portions thereof, bars seating within said notches and bridging the space between the plates, and resistance coils disposed around the bars.

8. A device of the character described comprising, in combination, a hollow base, a boiler mounted thereon, a casing surrounding the boiler and base and provided with distributing means, an electrical heating means arranged within the base, said means embodying a pair of vertically disposed plates provided with notches in the upper marginal portions thereof, bars seating within said notches and bridging the space between the plates, resistance coils disposed around the bars, each of said bars comprising a pair of spaced strips, plates interposed between the opposite end portions of the strips for holding the same in spaced relation, and tie members for holding the strips and plates in assembled relation.

In testimony whereof we hereunto affix our signatures.

CHARLES E. JOHNSTON.
ANDREW JAVER JORGENSON.