

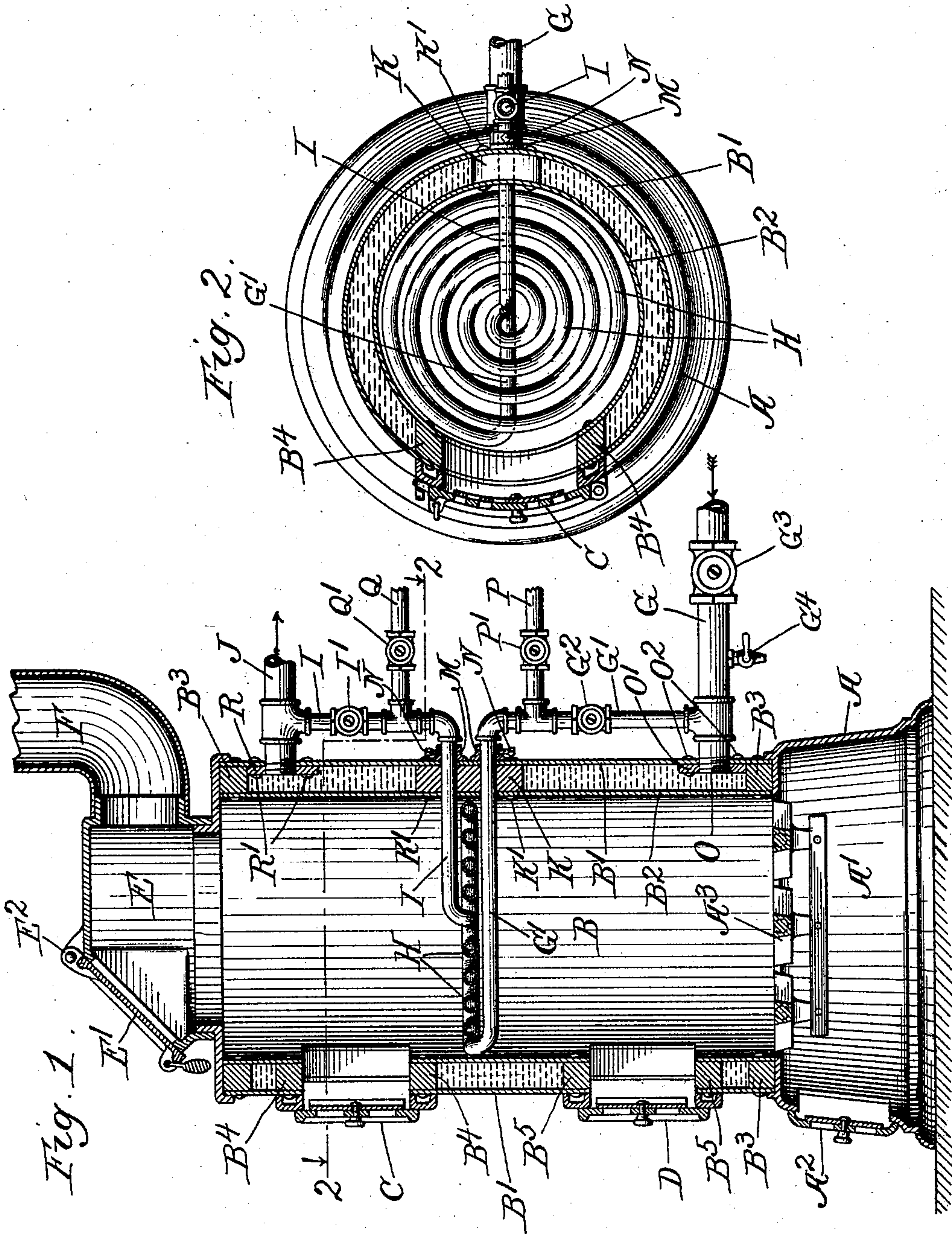
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M. J. CRAGIN.
GARBAGE CREMATORY.

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NO MODEL.



Witnesses.

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GARBAGE-CREMATORY.

SPECIFICATION forming part of Letters Patent No. 773,248, dated October 25, 1904.

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To all whom it may concern:

Be it known that I, MORGAN J. CRAGIN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Garbage-Crematories, of which the following is a specification.

My invention relates to devices for the combined purpose of burning garbage or other refuse matter and at the same time heating water, and has for its object to provide a new and improved construction for devices of this character.

In the accompanying drawings, Figure 1 represents a vertical section of my apparatus. Fig. 2 is a sectional view on line 2 2 of Fig. 1 looking in the direction of the arrows.

Like parts are represented by like letters in both figures.

A is the circular base inclosing the ash-pit A' and having in front the door A² and supporting a fuel-grate A³ of any preferred sort.

B is the fire-box inclosed by the walls B' and B², of metal or other suitable material, one outside the other and joined to the rings B³ by suitable connections so as to form between them a water-jacket surrounding the fire-box. In front the walls B' B² have apertures with casings B⁴ for the door C admitting to the upper end of the fire-box and with casings B⁵ for the door D at the lower end of the fire-box.

Above the fire-box is the chamber E, communicating with the fire-box and having in front the door E', oblique to the vertical and hinged at E², through which the refuse matter is admitted to the fire-box to be burned. From the other side of the chamber E leads the flue F. The outer wall B' of the water-jacket has an aperture near the base into which is fitted the end of the water-supply pipe G. The pipe G' leads upward from the pipe G, passes through the walls B' B² at a point between the doors C and D, crosses the fire-box, and is bent upward to form a connection with the outer turn of a horizontal flat spiral coil of pipes H, the inner end of which coil has the pipe connection I, which pierces the walls B² B' and is bent upward to connect with the pipe

J, which leads from the water-jacket near its upper end. The horizontal sections of the pipes G' and I pass through a block K, which is placed between the walls B' B² and secured in position by the rivets K' K'. The horizontal sections of the pipes I and G' will fit the block and the walls as closely as possible; but to avoid the escape of gases from the fire-box each of these pipes is provided with a close-fitting collar M, secured in position by the set-screw N.

The size, proportions, and relations of the several parts may be greatly altered without departing from the spirit of my invention.

By using the rings B³, casings B⁴ B⁵, and block K and making them of sufficiently heavy material it is possible to secure a strong rigid water jacket or cylinder, the interior of which constitutes the fire-box, by using very thin material for the walls B' B². The pipe G is held in position by being screwed at O into the washer O', which is riveted at O² to the wall B', and in like manner the pipe J is held in position by the washer R, which is secured by the bolts R'. Leading to the vertical section of the pipe G' is the additional water-supply pipe P, having therein the valve P', and in the pipe G', between its connections with this additional water-supply pipe P and the water-supply pipe G, is the valve G². Similarly the outlet-pipe Q, having the valve Q', leads from the vertical section of the pipe I, and the pipe I has the valve I' between its connection with the pipe Q and the jacket outlet-pipe J. The supply-pipe G has the valve G³ and between such valve and the connection of pipe G with pipe G' the draw-off cock G⁴. The valves P' and Q' are kept closed and the valves G², I', and G³ are kept open when my device is used as a water-heater, the pipe connections P and Q, with their associated valves, coming into use when my device is operated as a steam-generator, as will appear later.

The use and operation of my invention are as follows: A fire of any desired material is built on the grate A³, and the garbage or other refuse matter is thrown into the furnace through the door E' and upon the coil H, the turns of which are at a sufficient distance apart

so that it performs the function of a grate. The refuse matter is here consumed, the smoke and fumes passing up through the flue F. The door C is used for cleaning the refuse grate or coil and removing metal and the like and the door D for supplying fuel. Water is supplied to the jacket by the pipe G and obviously will become heated and pass out through the pipe J. The coil H affords another and very efficient means for heating water, as it presents a considerable heating-surface. The water enters the coil from the pipe G through the pipe G' at the outer turn of the coil and is gradually heated as it passes therethrough, leaving the coil through the pipe I at the hottest point therein, directly above the center of the fire. It will be clear that by limiting the amount of water-supply my device can be used for the generation of steam. The coil which is used as a grate for the garbage is made to carry from time to time a considerable weight, and it is also subject to considerable variations in temperature. It is therefore important that the coil should be firmly held in position. On the other hand, since the water-jacket is itself likewise subject to considerable variation in temperature it is difficult to maintain a connection at the joints. By inserting between the walls a large heavy plate, like K, I am able to secure a proper support for the coil and also to unite the two walls at the place where they are perforated, so as to preserve them from the danger of leaking at the point of connection. The coil when arranged, as shown, in a substantially flat manner will serve as a grate, and both of its connections should pass out at one side in substantially the same plane as the grate, so that they do not interfere with the material either above or below the grate, but leave clear spaces in the fire-box. It is, however, also desirable that the water should enter below such coil and pass out above it. Hence the inlet-pipe is below the grate, the outlet above it. It is also desirable, as indicated, to have the water enter at the outer section of the coil, which is the coldest part of the coil, and take its departure from the middle of the coil, which is obviously the hottest part of the coil.

If it is desired to use my refuse-burner for generating steam, this can be done by closing valve G³ in pipe G and drawing off the water in the jacket to a proper level through cock G⁴. The steam will be generated in the upper part of the water-jacket, passing out to the desired place of use through the pipe J. At the same time the coil H may be used for maintaining a supply of hot water by closing valves G² and I' and opening valves P' and Q', thereby cutting off the coil H from its connection with the water-jacket, now used for the generator, and permitting the independent circulation of water through the coil.

I claim—

1. In a combined refuse-burner and fluid-heater, the combination of a fire-box and a water-jacket inclosing the fire-box, with a substantially flat coil of pipes within the fire-box, doors above and below such coil, and water connections to the coil and the water-jacket, and a heavy block between the walls of the water-jacket secured thereto and perforated for the passage of the two ends of the coil.

2. In a combined refuse-burner and fluid-heater, the combination of a fire-box with a water-jacket inclosing the fire-box, a substantially flat horizontal coil of pipes within the fire-box to serve as a grate for garbage-burning, and a support through which the terminals of the coil pass, said support attached to the walls of the jacket so as to give a rigid support to the coil and to the walls of the jacket.

3. In a combined refuse-burner and fluid-heater, the combination of a fire-box with a water-jacket inclosing the fire-box, and a refuse-grate therein composed of a substantially flat horizontally-arranged spiral coil, an inleading-pipe extending beneath and across the coil and opening into its outer section, and an outleading-pipe extending above and across the coil and opening into its center.

4. In a combined refuse-burner and fluid-heater, the combination of a fire-box with a water-jacket inclosing the fire-box, and a refuse-grate therein composed of a substantially flat horizontally-arranged spiral coil, an inleading-pipe extending beneath and across the coil and opening into its outer section, and an outleading-pipe extending above and across the coil and opening into its center, and a support in the side of the fire-box for the passage of said inleading and outleading pipes so that such coil-grate is supported from one side of the fire-box.

5. In a combined garbage and fluid heater, the combination of a fire-box with a refuse-grate therein comprising a substantially flat spiral coil with an inleading-pipe extending beneath and across the coil and opening into its outer section, and an outleading-pipe extending above and across the coil and leading from near the center of the coil.

6. In a combined garbage and fluid heater, the combination of a fire-box with a refuse-grate therein comprising a substantially flat spiral coil with an inleading-pipe extending beneath and across the coil and opening into its outer section, and an outleading-pipe extending above and across the coil and leading from near the center of the coil, said outleading and inleading-pipes separated vertically and supported at the side of the fire-box so as to give a rigid support to the coil.

7. In a combined refuse-burner and water-heater an ash-pit with a suitable door, a fuel-grate, a fire-box, a water-jacket surrounding the fire-box, means for conducting water to and from such jacket at respectively its lower

and upper ends, a door for admitting fuel to the grate, a flat spiral coil of pipes placed horizontally across the fire-box, a pipe associated with the jacket supply-pipe to conduct
5 water to the outer turn of the coil, and a pipe connection from the inner end of the coil to the jacket-outflow, a door above the coil and another door for admitting the refuse matter at the top of the fire-box, substantially as de-
10 scribed.

8. In a combined refuse-burner and fluid-heater two separate heating devices, and separate inlet and outlet connections to and from each of said devices, and means for connect-
15 ing the inlet and outlet connections of one of such devices with, or disconnecting them from respectively the inlet and outlet connections of the other of such devices, so that such de-
20 vices may be supplied from a common source or from different sources, and may deliver a common supply of heated fluid or separate supplies.

9. In a combined refuse-burner and fluid-heater two sets of apparatus, independent of
25 each other, for the circulation of fluid through

such heater, separate inlet and outlet connections associated with each of such sets of apparatus, and means for connecting or disconnecting such inlet and outlet connections so that the heater will be fed by a single supply 30 or by separate supply of fluid and will deliver a common supply or separate supplies of fluid.

10. In a combined refuse-burner and fluid-heater the combination of a fire-box, a fuel-grate with two separate fluid-heating devices, 35 one comprising a flat spiral coil of pipes adapted to be used for consuming the refuse, the other a water-jacket surrounding the fire-box, and separate inlet and outlet pipes for each of such heating devices, and connections between 40 the inlets and outlets, respectively, of the heating devices adapted to be opened or closed so that the heater may be fed from one or two sources of supply, and may deliver a common supply or two separate supplies of heated 45 fluid.

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