Sept. 1, 1942. C. A. DE LONG ET AL 2,294,390

CREMATOR

Filed Sept. 29, 1939 2 Sheets-Sheet 1

FIG. 1

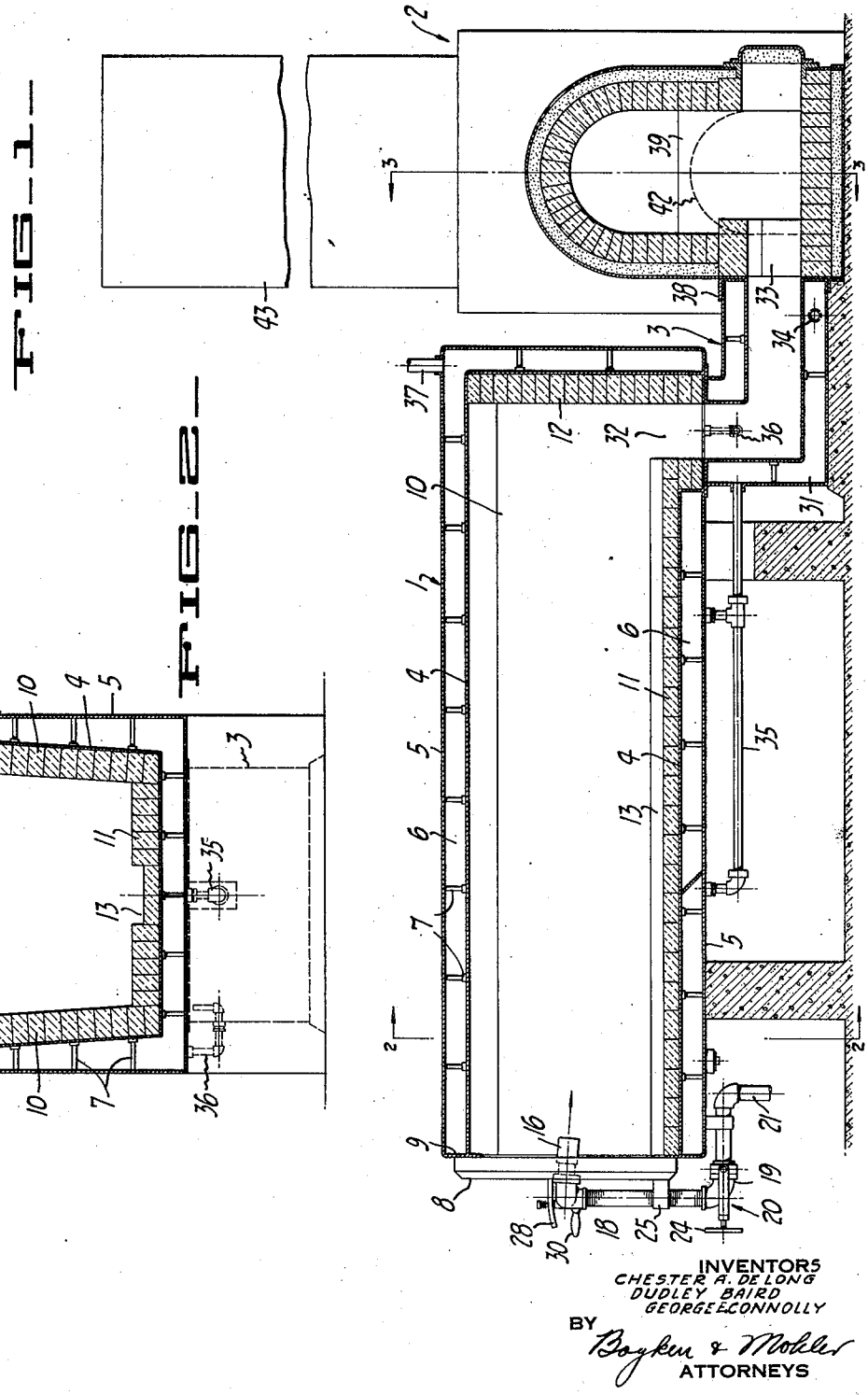


FIG. 2

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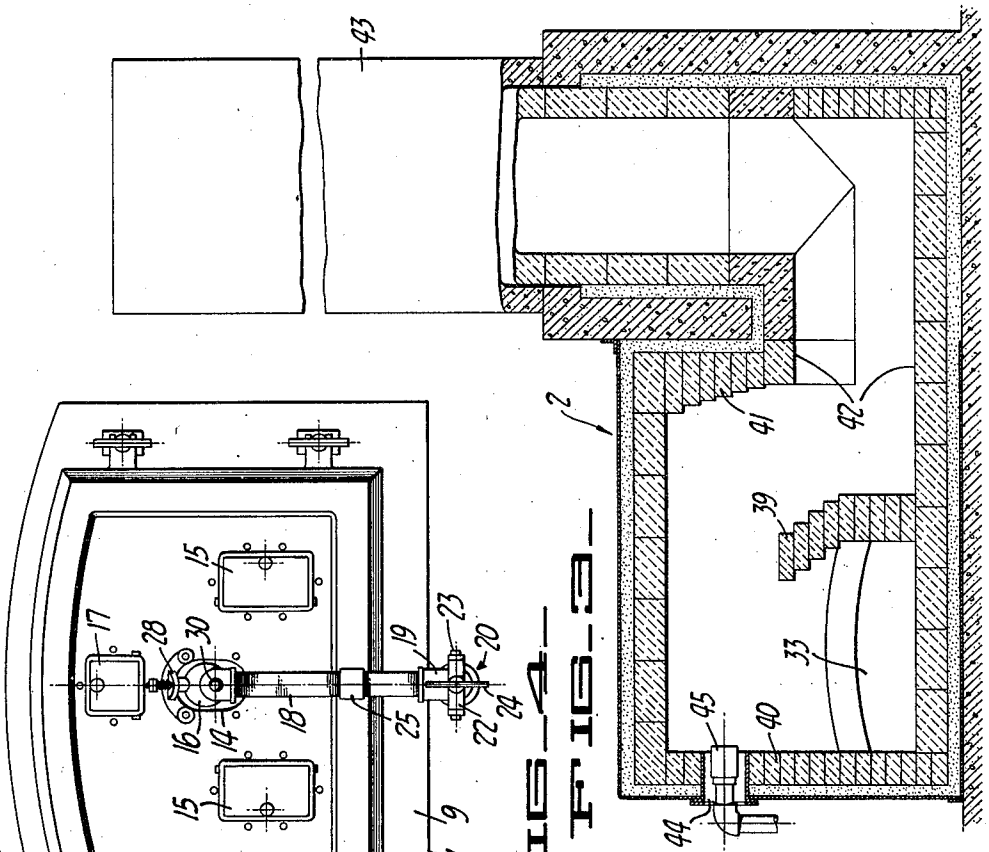


FIG. 4

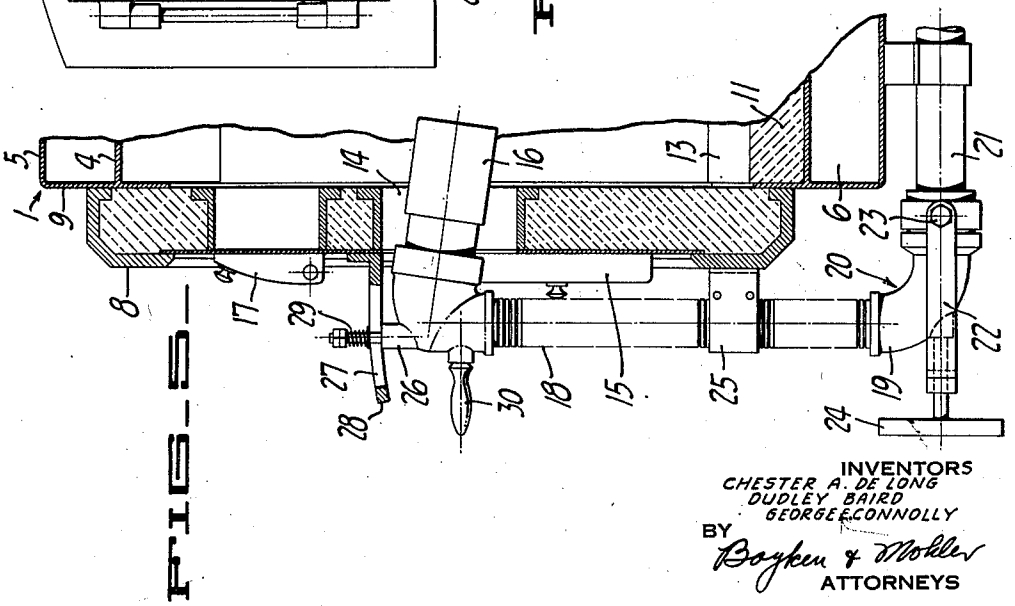


FIG. 5

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UNITED STATES PATENT OFFICE

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CREMATOR

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Application September 29, 1939, Serial No. 297,100

11 Claims. (Cl. 110—3)

This invention relates to a cremator, and has for one of its objects, a substantially complete cremator adapted to be shipped to the point of use for rapid installation at such point without the difficulties attendant upon the fabrication and assembly of parts by skilled labor at said point. Another object is a construction in a cremator providing for rapid cooling thereof after each cremation, thus enabling substantially continuous use. Another object is a construction in a cremator of a relatively thin lining of refractory material and which material is so arranged as to be supported against spalling or crumbling or deformation due to thermal expansion, and a still further object is a construction in which there is no masonry, such as brick, clay, or other refractory material positioned over the area in which the cremation is accomplished, thus preventing any falling of refractory material into the ashes. Other objects and advantages will appear in the specification and drawings.

Fig. 1 is a vertical section view through the retort and smoke consuming chamber.

Fig. 2 is a sectional view along line 2—2 of Fig. 1.

Fig. 3 is a sectional view along line 3—3 of Fig. 1.

Fig. 4 is an enlarged elevational view of the door-end of the retort showing the burner in place and its connection to the fuel line.

Fig. 5 is an elevational view of the door from the front side of the retort.

In detail, the main elements of the cremator comprise a retort 1, smoke consumer 2 and a flue 3 connecting between the retort and smoke consumer. The retort is a vault-like chamber and is preferably made of heavy steel boiler plate 4, with pressure tight welded seams and is entirely surrounded, except at the door end, by another heavy steel boiler plate jacket 5 to which it is welded. Ordinarily, the space 6 between the opposed sides of the retort and jacket, is about four inches, and spacers 7 are provided across said space, at intervals, which spacers are welded to the retort and jacket, and which spacers also function as strengthening members.

The retort is elongated, having ends, lateral sides and a top, one of said ends being integrally welded to the lateral sides and top, and the opposite end is closed by a door 8 hinged in the conventional manner along one of its side edges for swinging open for insertion of a casket.

The walls of the jacket substantially correspond to the walls of the retort, but are spaced therefrom and the corresponding edges of the retort and jacket are connected by plates 9 around the door opening at indicated in Fig. 1.

The opposed lateral walls of the retort, instead of being vertical, extend divergently upwardly from the bottom wall, as indicated in Fig. 2, and the top walls of the retort and jacket are arched transversely of the length of the retort and jacket.

Supported against each of the inner sides of the said divergent, or outwardly slanting walls of the retort, is a relatively thin lining 10 of refractory material, such as fire brick, the said lining resting at its lower edge on the bottom of the retort, but there is no brick or lining at the underside of the arched steel roof of said retort. Refractory material 11, such as fire brick, covers the floor of the retort and similar material 12 covers the end of the retort opposite the door. The floor 11 is centrally formed to provide a channel 13 extending longitudinally of the retort, in which channel the ashes resulting from a cremation are deposited for removal from the door end of the retort.

From the foregoing, it is seen that relatively few bricks are required within the retort, and by reason of the slant of the side walls, the brick lining can be installed without the use of fire clay or bonding cement. Also, due to this construction, the spalling or crumbling of brick and the deformation of the structure holding the brick in place, usually caused by thermal expansion, does not result in any damage, inasmuch as there need be no masonry at the top of the retort and the lateral side walls support the lining against any inward falling of masonry, refractory material or the like.

The door 8 is formed with an opening 14, the door itself being of metal suitably heat insulated on its inner side. Other conventional openings with closures, as indicated at 15 (Fig. 5), may be provided in said door. A burner 16 extends through said opening with its nozzle directed inwardly into the retort. This burner may be for gas or oil, as desired, and is of the usual air-fuel proportioning type to maintain a correct ratio of air to fuel at all rates of fuel consumption. For the purpose of supplying additional air during that period of operation when air is required for direct combustion of the remains within the retort, the doors 15, at opposite sides of the burner may be opened. A third door 17 (Fig. 5) may be positioned over an opening in door 8, which opening is above the burner. This upper opening may also be opened to provide additional air, and is

also used as a combined observation opening and lighter hole.

The burner 16 includes a fuel conduit 18 to the nozzle, which conduit extends downwardly to a point below the lower edge of the door where it is provided with an elbow 19. A tongue and groove, gasketed, quickly detachable clamp connection, generally designated 20, connects said conduit with fuel supply pipe 21 secured at one end to the jacket of the retort. This clamp connection includes a yoke 22 pivoted at its free ends 23 to opposite sides of said pipe, and the connection between the arms of the yoke at their opposite ends extends across elbow 19. A clamping screw 24 threaded through said connection engages the elbow 19 to draw the end of pipe 21 and end of elbow 19, together. The tongue and grooves in said connection are formed, respectively around the end of pipe 21 adjacent the elbow, and the end of the elbow adjacent the pipe. Thus, upon unscrewing screw 24, the clamp arms 22 will swing downwardly in their pivots, thus detaching the connection between the elbow 19 and pipe 21 to allow the door 8 to swing open, carrying with it conduit 18 and burner 16.

The conduit 18 is of flexible tubing, secured to door 8 by bracket 25 which projects from the lower portion of the door. The burner 16 carries an upwardly projecting arm 26 that passes through an elongated slot 27 in a bracket 28 that is secured to the door 8 above opening 14. This bracket is arcuate in direction of its length, and corresponds to a curve about the connection between bracket 25 and the conduit, as an axis. A spring 29 around arm 26 and reacting between a washer engaging opposite sides of the slot and a washer at the outer end of said arm, tends to hold the burner in any position of movement as the arm is moved longitudinally of the slot. A handle 30 on said burner is provided for moving the latter, thus the burner may manually be moved to a plurality of adjusted positions for controlling the direction of the flame as desired, and when in one of the adjusted positions, the burner remains fixed against further accidental movement.

The flue 3, as shown in the drawings, is also provided with a water jacket 31 and the space between the flue and jacket is closed at the ends of the flue. The one end of the flue communicates with an opening 32 through the retort 4 and jacket 5 of the latter, which opening is in the bottom of the retort at the end remote from door 8. From this opening 32, the flue and jacket therefor, extend downwardly and then laterally beyond the adjacent end of the retort, and the open end of the flue opposite opening 32 communicates with opening 33 in the side of the smoke consumer 2, near the bottom of said consumer.

Water is supplied to the space between the retort jacket and flue jacket and the retort and flue respectively, from a water supply pipe 34 opening into the water jacket 31 at the lower side thereof and at a point adjacent the smoke consumer. A connecting pipe 35 between the lower side of jacket 5 and a point in jacket 31 adjacent the connection between the flue and retort passes water from the flue jacket to the space between the retort and its jacket. To prevent air lock in the uppermost end of the space between the flue and its jacket, a pipe 36 is extended through the jacket 31 with its open end within said space positioned closely adjacent the wall closing the uppermost end of the space between the flue and its jacket, and the opposite end of said pipe communicates with the space between the retort and its jacket. Thus any air inside the flue jacket will pass to within the retort jacket and will pass to the upper side of the retort for exhaustion through water outlet pipe 37 at said upper side of the retort jacket. The outlet 37 also serves as an escape for any small amount of steam that may be inadvertently formed in the jacket. However, it is to be noted that under proper operation of the crematory no steam will be formed in the jacket.

A sleeve 38 around opening 33 projects outwardly of a side of the steel wall 39' that forms the outer side of the smoke consumer, and which sleeve receives an end of the flue 3 and jacket 31. To provide a tight seal between the sleeve and jacket, asbestos cement or any other suitable, similar, refractory seal may be used.

The smoke consumer itself is lined with fire brick and is provided with baffle wall 39 (Fig. 3) extending thereacross from one side of opening 33 and in the direction in which said opening opens into the consumer. One of the sides 40 of said smoke consumer extends parallel with said baffle wall from the opposite side of said opening 33. The wall 39 extends only about half way between the floor and roof of the smoke consumer, but to a point above the top of opening 33. The side 41 of the smoke consumer opposite the side 40 is spaced from the baffle wall 39 and is formed with an opening 42 adjacent the bottom, which opening is adapted to register with a similar opening in the bottom of a stack 43, the smoke consumer being adapted to be bolted to said stack.

The wall 40 formed with an opening 44 for a burner 45, the burner being at a level above the top of baffle wall 39, and directed toward wall 41 and stack 43, so that the smoke and fumes entering the smoke consumer through opening 33 will be subjected to the burner flame in rising over the baffle wall.

From the foregoing, it will be seen that the retort, smoke consumer, and connecting flue, are units adapted to be fabricated at a point of manufacture, substantially complete, and then shipped and set up at the desired point for use at only a fraction of the cost heretofore required, and the cremator when so set up, is more efficient, cleaner and more serviceable than heretofore.

Having described our invention, we claim:

1. A cremator comprising a retort and a smoke consumer, a passageway for smoke and fumes connecting between said retort and said smoke consumer, means for cooling said retort comprising a water jacket around said retort filled with water, and the walls of said retort and water jacket being of relatively heavy sheet metal, means for circulating said water, and a burner having a flame aperture directed into said retort arranged and adapted to burn human remains supported on the bottom of said retort.

2. A cremator comprising a horizontally elongated metal retort having opposed end walls, a top, a bottom and opposed lateral side walls, said lateral side walls extending divergently upwardly from said bottom, a metal water jacket enclosing said retort and a lining of refractory material covering the inner surfaces of said end walls, bottom and lateral side walls, and the inner surface of said top being exposed and free from a refractory lining.

3. In a construction as defined in claim 2, the refractory material covering the inner surfaces

of said lateral side walls comprising loosely laid bricks free of bonding material uniting the same together.

4. A cremator comprising a retort, a smoke consumer and a flue connecting between said retort and said smoke consumer, said retort and said flue being of sheet metal, means for cooling said retort, comprising a sheet metal water jacket enclosing said retort and said flue and a lining of refractory material covering the bottom and opposed side walls of said retort, and a burner having a flame aperture directed into said retort arranged and adapted to burn human remains supported on the bottom of said retort.

5. A cremator comprising a retort, a smoke consumer, and a flue connecting between said retort and said smoke consumer, said retort, flue, and smoke consumer each being formed of sheet metal, means for cooling said retort comprising a water jacket of sheet metal enclosing said retort and said flue, and a burner having a flame aperture directed into said retort arranged and adapted to burn human remains supported on the bottom of said retort.

6. A cremator comprising a horizontally elongated retort having opposed ends, a bottom wall, opposed lateral side walls and a top wall, all of said walls being of sheet metal, said lateral side walls extending divergently upwardly from the bottom wall and the top wall being arched in direction transversely of the length of the retort, one of said end walls being formed with an opening for admission of a casket to within the retort, a door hingedly supported on the retort for closing said opening, a burner opening formed in said door, a burner carried by said door for movement therewith, a water jacket of sheet metal enclosing the lateral sides and top of said retort and a wall of fire brick supported against each of the inner opposed surfaces of said lateral side walls, said fire brick being loosely laid and free from any bonding material uniting the same together.

7. A cremator comprising a retort and a smoke consumer, a passageway for smoke and fumes connecting between said retort and said smoke consumer, means for cooling said retort comprising a water jacket around said retort, means for admitting water to between the retort walls and jacket, and a burner having a flame aperture directed into said retort arranged and adapted to burn human remains supported on the bottom of said retort.

8. A cremator comprising a horizontally elongated metal retort having opposed end walls, a top, a bottom, and opposed lateral side walls, said lateral side walls extending divergently upwardly from said bottom, means for cooling said retort comprising a metal water jacket enclosing said retort, a lining of refractory material covering the inner surfaces of said end walls, bottom, and lateral side walls, and a burner adapted to direct a flame on human remains supported on the bottom of said retort.

9. A cremator comprising a horizontally elongated retort having opposed ends, a bottom wall, opposed lateral side walls and a top wall, all of said walls being of sheet metal, said lateral side walls extending divergently upwardly from the bottom wall and the top wall being arched in direction transversely of the length of the retort, one of said end walls being formed with an opening for admission of a casket to within the retort, a door movably supported on the retort for closing and opening said opening, a burner opening formed in said door, a burner carried by said door for movement therewith, a water jacket enclosing the lateral sides and top of said retort and a wall of fire brick supported against each of the inner opposed surfaces of said side walls, said fire brick being loosely laid and free of any bonding material uniting the same together.

10. A cremator comprising a retort and a smoke consumer, a flue connecting between said retort and said smoke consumer for passing smoke and fumes from the retort to the consumer, said flue opening at one of its ends through the bottom of the retort at a point adjacent one of the ends of the latter, a water jacket enclosing said retort and a separate water jacket enclosing said flue, an air and steam release conduit communicating between the uppermost portion of the water jacket enclosing said flue and the water jacket enclosing said retort for passing air and steam from within the jacket that is around the flue to within the jacket that is around the retort, air and steam release means at the uppermost side of the jacket around the retort for releasing air from within said latter jacket.

11. In a construction as defined in claim 10, means for filling both of said jackets with water for cooling the retort and flue.

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