

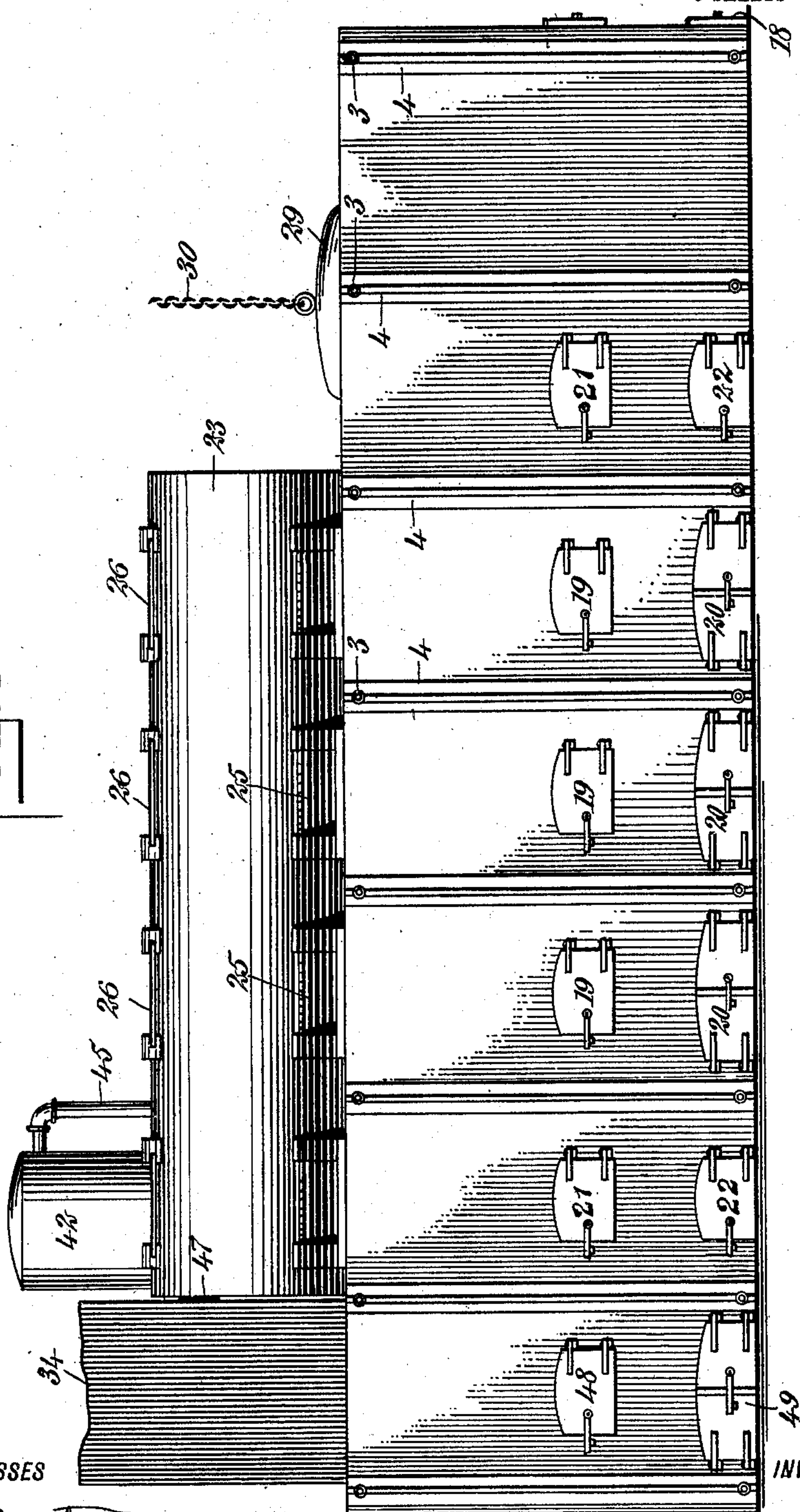
963,554.

W. K. HERBERT.
GARBAGE CREMATORY.
APPLICATION FILED APR. 5, 1909.

Patented July 5, 1910.

5 SHEETS—SHEET 1.

Fig. 1



WITNESSES

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INVENTOR

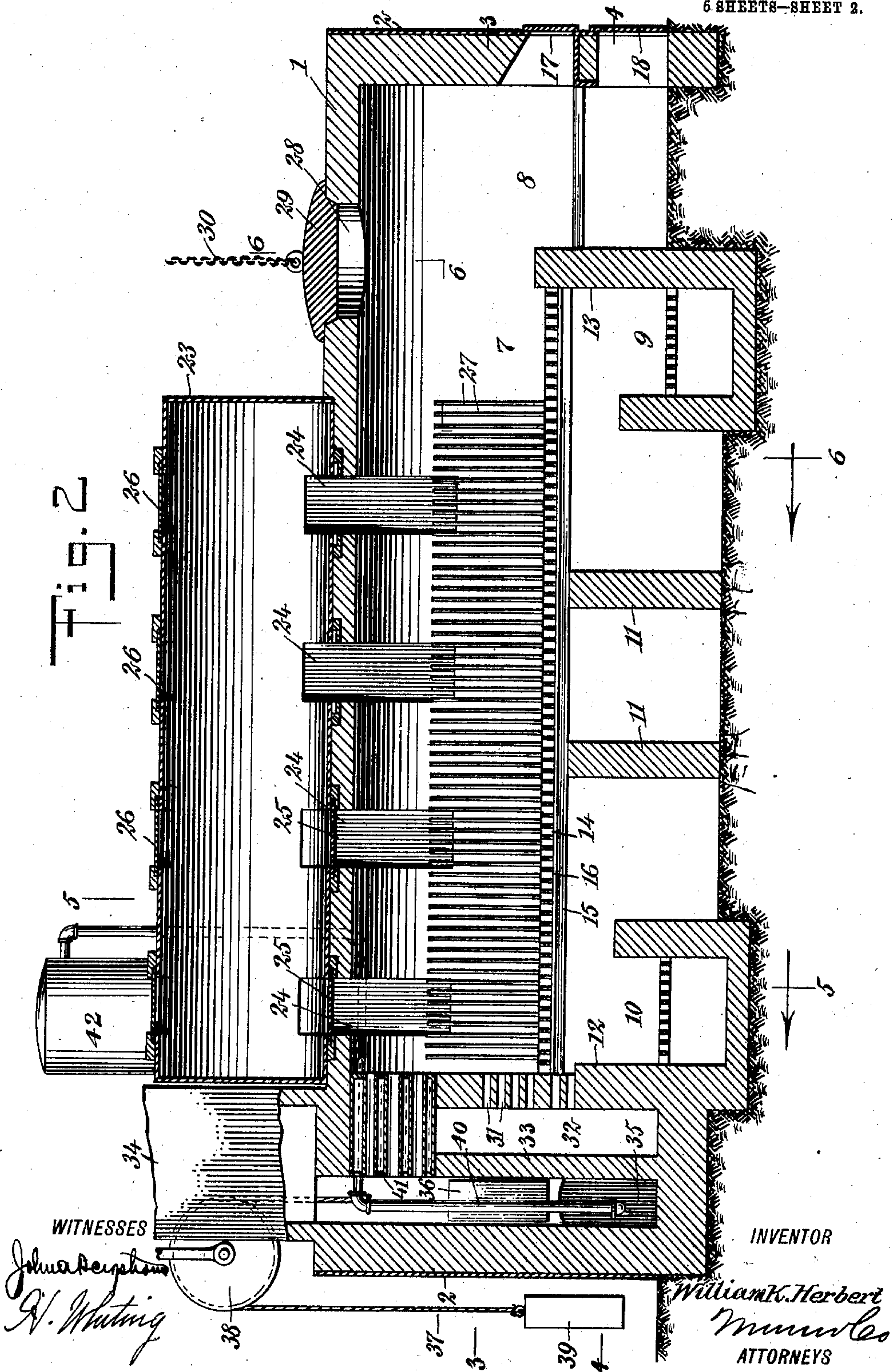
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6 SHEETS—SHEET 2.



WITNESSES

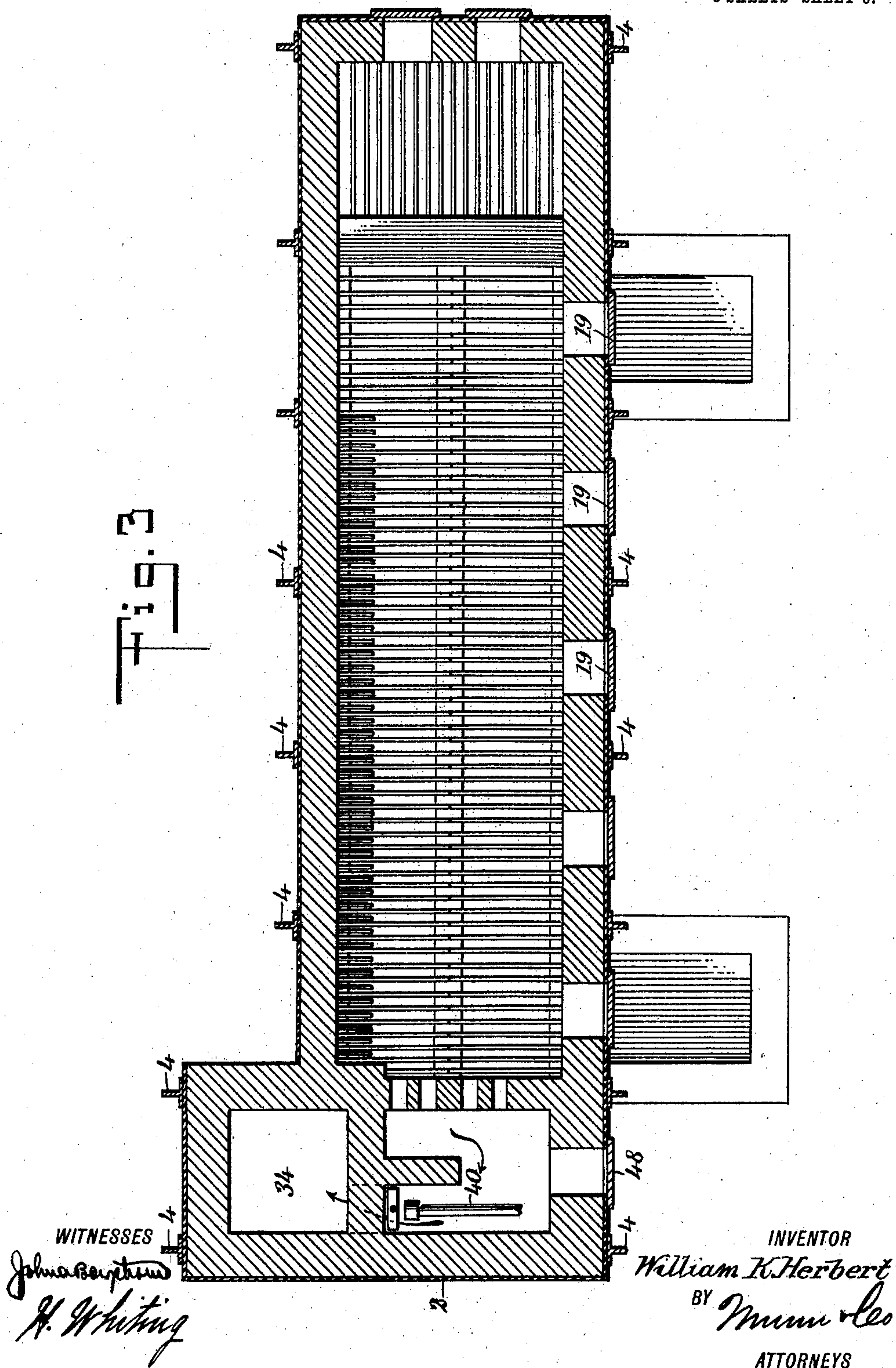
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5 SHEETS—SHEET 3.



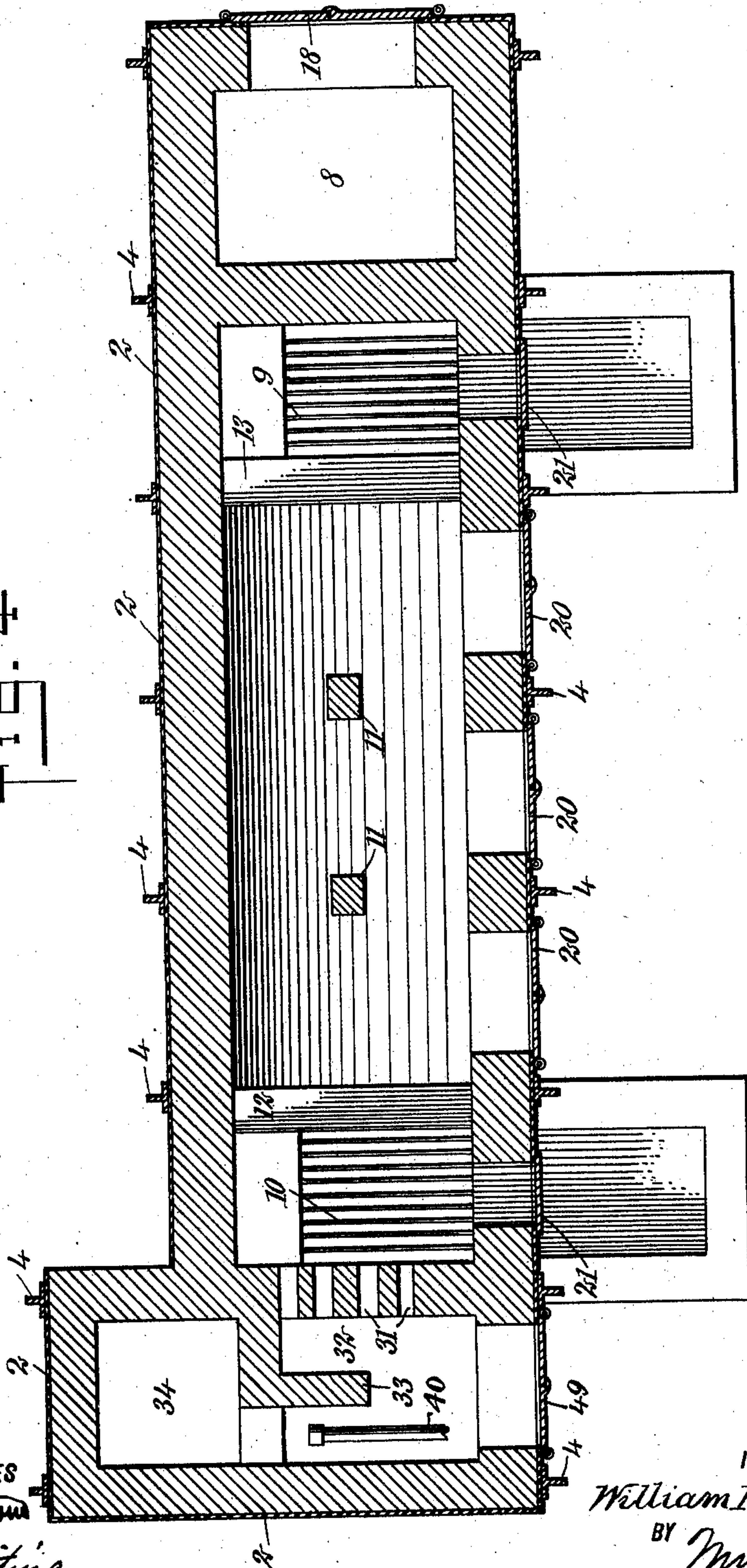
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5 SHEETS—SHEET 4.

Fig. 4



WITNESSES
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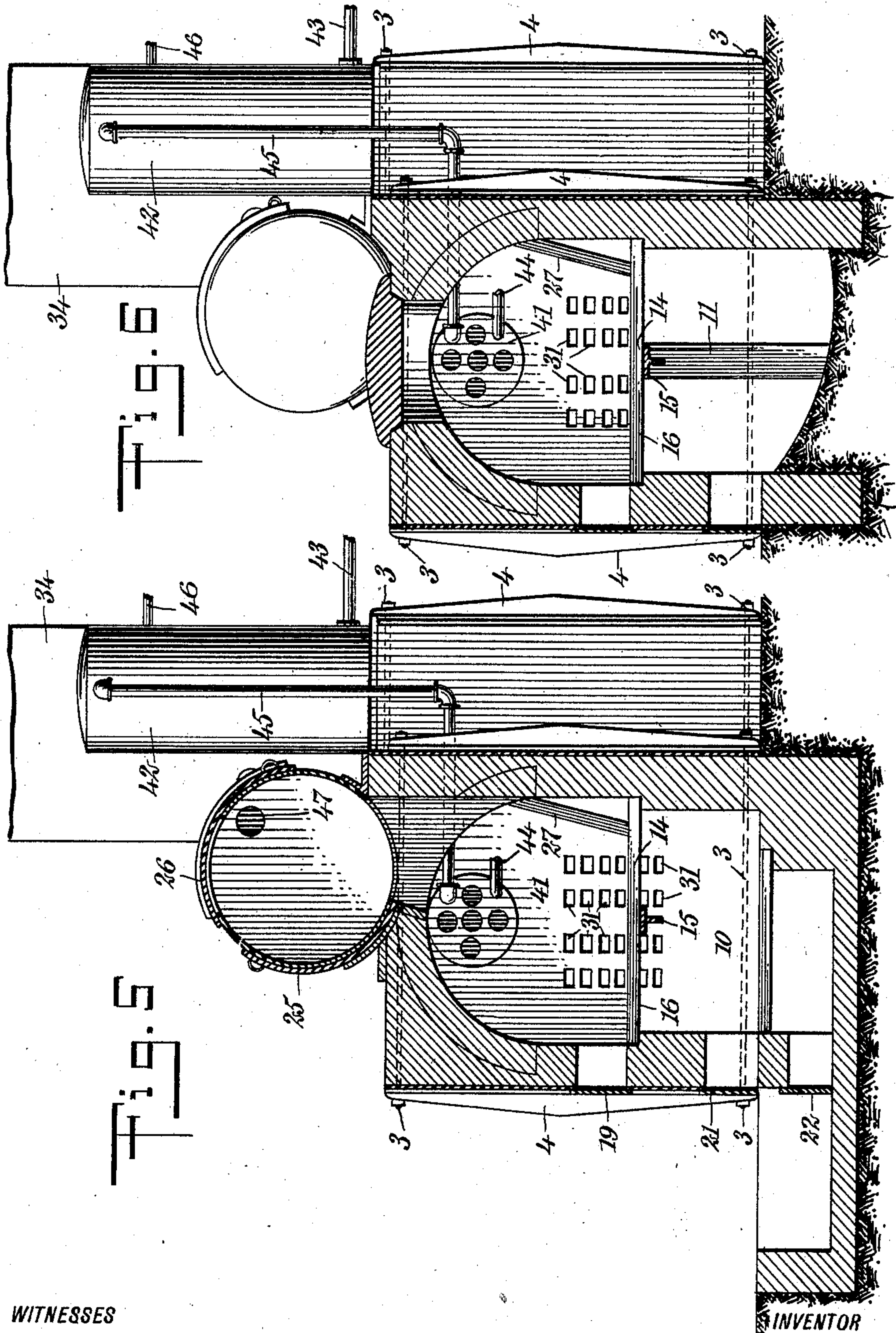
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6 SHEETS—SHEET 6.



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UNITED STATES PATENT OFFICE.

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GARBAGE-CREMATORY.

963,554.

Specification of Letters Patent.

Patented July 5, 1910.

Application filed April 5, 1909. Serial No. 488,100.

To all whom it may concern:

Be it known that I, WILLIAM K. HERBERT, a citizen of the United States, and a resident of McKeesport, in the county of Allegheny and State of Pennsylvania, have invented a new and Improved Garbage-Crematory, of which the following is a full, clear, and exact description.

This invention relates to a crematory to be used to destroy garbage and other refuse.

The invention consists broadly in a storing and drying chamber, an incinerating chamber, an auxiliary combustion chamber, and means to deodorize and cleanse the combustion gases.

The invention further consists in the construction and combination of parts, to be more fully described hereinafter and particularly set forth in the claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views, and in which—

Figure 1 is a side elevation of the device; Fig. 2 is a vertical longitudinal section thereof; Fig. 3 is a horizontal section on the line 3—3 in Fig. 2 above the grate of the incinerating chamber; Fig. 4 is a horizontal section on the line 4—4 in Fig. 2, below the grate of the incinerating chamber; Fig. 5 is a vertical cross section on the line 5—5 in Fig. 2; and Fig. 6 is a vertical cross section on the line 6—6 in Fig. 2.

Referring more particularly to the separate parts of the device, 1 indicates a combustion furnace in which the garbage is to be incinerated. It consists in a structure composed of any suitable material, such as fire-brick, and which is reinforced on the outside by a sheet metal plate 2. The sides are held together and prevented from cracking during expansion and contraction by means of suitable tie-bolts 3, which are fastened to brace-beams 4, spaced at suitable intervals on the sides. The combustion furnace has an incinerating chamber 7, which is heated up in the first place by a fire placed in a fire box 8, and is kept up to a suitable heat by auxiliary fire boxes 9 and 10. Spaced apart from the foundation of the furnace, and supported by any suitable means such as walls 11, 12 and 13, is a grate 14, on which the garbage to be incinerated is adapted to be placed. The grate 14 may be of any suitable material and

form, but is preferably composed of longitudinal supporting members 15 and cross bars 16, spaced apart at intervals. Access is gained to the fire box 8 by means of a door 17, and the ashes from this fire box 8 may be raked out through the opening which is closed by a door 18. In order to clean the top of the grate 14 of garbage or incinerated matter accumulated thereon there are provided doors 19 in the side of the furnace. There are also provided doors 20 at the bottom of the side of the furnace, to remove the particles of incinerated matter and the ashes which have fallen through the grate 14. The auxiliary fire boxes 9 and 10 are attended to through fire doors 21 and ash-pit doors 22.

In order to feed the matter to be incinerated to the incinerating chamber, there is provided at the top of the furnace a suitable casing 23, which is made of any suitable material and in any suitable form, but is preferably a cylindrical sheet metal container. There are openings in the upper side of the furnace 1, as at 24, corresponding with which are openings in the casing 23. In order to close these openings, there are provided on the casing 23 suitable doors 25, which are preferably curved, conforming to the surface of the casing 23 and adapted to slide between the openings in the casing and the openings in the top of the furnace. In the top of the casing 23 there are provided openings, which are closed by doors 26, which may be of any form and material, but are preferably curved sliding doors, similar to the doors 25. These latter openings are for the purpose of permitting the garbage and other material being inserted in the casing 23, which is for the purpose of drying the garbage before it passes to the incinerating chamber. On the side of the incinerating chamber at which the garbage falls through the openings 24, there are provided slanting grate bars 27, which are for the purpose of keeping the material to be incinerated away from the side walls of the chamber, and thus permit the flames to circulate back of the material being incinerated.

There is provided in the top of the furnace 1 another opening 28, in which large articles to be incinerated, such as the carcasses of animals, may be inserted. This opening is closed by a suitable cover-plate 29, which may be connected in any suitable manner, as by means of a chain 30, to a

suitable hoisting device, such as a hydraulic crane. In the end away from the fire box 8 in the incinerating chamber, there is provided in the wall 12, a plurality of openings 31, which form a checkered surface for the highly heated gases to pass through. This checkered surface is heated by the fire boxes 8, 9 and 10, and also by the material being burned in the incinerating chamber. This checkered surface, when heated up to a red heat, serves to thoroughly break up the partially decomposed matter. The gases which pass through this checkered surface pass into an auxiliary combustion chamber 32, where they are further mixed and combined into non-injurious products of combustion. After passing from the auxiliary chamber 32, they pass around a vertical wall 33 into the out-take of a stack 34, which forms part of the furnace proper. The opening of the stack is preferably down near the base of the furnace, as at 35, and is closed and opened by means of a damper 36, which may be regulated by a connecting rope 37 which passes over a suitable pulley support 38 to a counter-weight 39.

Situated near the base of the stack 34 is a suitable spray pipe 40, which is adapted to spray hot water on the gases passing into the stack. This hot water is heated up to such a point that it partially decomposes and unites with the products of combustion, and also washes down the cinders and solid matter in the gases, at the same time taking out any putrid odors. The bottom of the stack may be connected in any suitable matter to a drain, where any excess water will be carried off to the sewer. The water which is used in the spray pipe 40 may be heated by means of a suitable coil 41, which is placed above the checkered surface formed by the openings 31, and through which a portion of the hot gases pass. The water heated in this coil passes to a suitable hot water container 42. The water may be circulated from the hot water container back into the coil 41 by means of pipes 43 and 44, which are a continuation of each other, and a pipe 45. The water in this container 42 may be also used to wash the garbage cans after they have been emptied, and an outlet of any suitable kind, indicated at 46, is provided for this purpose. There is provided a suitable connection 47 between the drying casing 23 and the stack 34, to carry off the moisture driven from the garbage.

In the operation of the device, the furnace is first heated by means of the fire box 8 and the incinerating chamber gotten up to a good high temperature, and then the garbage to be incinerated is inserted through the doors 26 in the top of the casing 23, the doors 25 in the meantime being closed, to prevent any escape of gases into the outside air. When a sufficient quantity of material

has been placed in the casing 23, the top doors 26 are closed, and the bottom doors 25 opened. The material in the casing 23 then commences to dry and shrivel up, the moisture passing off through the pipe 47 into the stack 34, and the dried particles falling down through the openings 24 to the grate of the incinerating chamber. Here the garbage is exposed to the fierce heat generated by the fire boxes 8, 9 and 10, and in burning up, it also adds to the temperature of the chamber.

If it is desired to insert large articles of refuse, such as the carcasses of animals, they may be inserted directly into the incinerating chamber through the auxiliary opening 28. When the incinerating chamber has once been heated up to a sufficient temperature, the fire in the fire box 8 may be drawn, and the crematory will be self-sustaining. However, it is generally advisable to keep small fires going in the fire boxes 9 and 10, to keep the under side of the grate 14 warm. The products of combustion in the incinerating chamber pass through the opening 31 in the checkered surface, with the exception of a small portion which passes through the coil 41 in the water-heater, into the auxiliary combustion chamber 32, where the gases are further mixed after being heated up by the checkered surface, from whence they pass down to the base of the stack 34, where they are subjected to the cleansing action of the spray of hot water. The hot water is partially broken up and unites with the products of combustion and also washes the gases free from solid matter, at the same time taking out the putrid odors. The exhaust wash water passes off into the drain, and thus into the sewer. I provide suitable openings, closed by the doors 48 and 49, for the combustion chamber, to permit access to the same.

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

1. In a device of the class described, the combination with a casing having inlet and discharge openings, of means for closing said inlet openings, an incinerating chamber having openings corresponding to said discharge openings, means for closing said last-mentioned openings, a grate for said incinerating chamber, an auxiliary inclined side grate co-acting with said openings in said incinerating chamber, a fire box for heating said incinerating chamber, an auxiliary fire box for heating said grate, a checker-work connected to said incinerating chamber and adapted to heat the gases from said incinerating chamber, a combustion chamber communicating with said incinerating chamber through said checker-work, means for spraying hot water on the gases from said incinerating chamber, means connected with the

incinerating chamber for heating the water sprayed into said gases, and means for storing the hot water, said combustion chamber having an outlet for the products of combustion.

2. In a device of the class described, the combination with a drying casing having inlet and discharge openings, of means for closing said inlet openings, comprising curved, slidable doors, an incinerating chamber having openings corresponding to the discharge openings in said drying casing, a grate for said incinerating chamber, an auxiliary inclined side grate co-acting with said openings in said incinerating chamber and adapted to keep the matter away from the sides of the chamber, means for heating said incinerating chamber, auxiliary means for keeping said grate warm, means for directly charging large bodies into the incinerating chamber, a checker-work connected to said incinerating chamber and adapted to be heated by both of said heating means, means for spraying hot water on the gases coming from said incinerating chamber, means connected with said incinerating chamber adapted to heat the spray-water, means for storing the hot water, said incinerating chamber having an outlet for the gases of combustion, means for regulating the flow of gases from said outlet, and means for passing the moisture accumulating in said drying casing directly into said stack.

3. In a device of the class described, the combination with a drying casing comprising a hollow cylindrical casing having openings in the top and bottom, of an incinerating chamber located beneath said drying chamber and having openings therein corresponding to said openings in said drying chamber, slidable curved doors for closing said openings between said drying chamber and said incinerating chamber, a main grate for said incinerating chamber, an auxiliary inclined side grate for said incinerating chamber located beneath the openings communicating between said drying chamber and said incinerating chamber, a fire box at one end of said incinerating chamber, a plurality of fire boxes beneath the grate of said incinerating chamber, a combustion chamber connected to said incinerating chamber, a heating coil located at the end of said

incinerating chamber and above said combustion chamber, a stack communicating with said combustion chamber, means for regulating the flow of gases to said stack, means connected with said heating coil for spraying hot water in said combustion chamber, a tank connected to said heating coil and adapted to store the water heated therein, and an independent communication between said drying chamber and said stack.

4. In a device of the class described, the combination with a drying chamber, comprising a horizontal cylindrical metal casing having a plurality of top and bottom openings, of a plurality of slidable curved doors adapted to close said top openings, an incinerating chamber underlying said drying chamber and having a checker work at one end and a heating fire-box at the other end and also having communicating openings in alinement with said bottom openings in said drying chamber, and also having an enlarged opening communicating directly with the outer air, a plurality of curved doors located between said drying chamber and said incinerating chamber and adapted to cut off the communication therebetween, a main grate for said incinerating chamber, an inclined auxiliary side grate underlying said openings in said combustion chamber, a plurality of auxiliary fire-boxes located beneath said main grate and adapted to warm the same, a combustion chamber communicating with said incinerating chamber, a heating coil located above said combustion chamber and having communicating openings between said incinerating chamber and said combustion chamber, a tank for storing the water heated in said coil, means for spraying the water heated in said coil in said combustion chamber, means on said tank for supplying hot water for other purposes, a stack connected to said combustion chamber, means for regulating the flow of gases into said stack, and an independent direct connection between said drying chamber and said stack.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM K. HERBERT.

Witnesses:

THOMAS D. GARDNER,
HARRY C. GARDNER.