

No. 664,980.

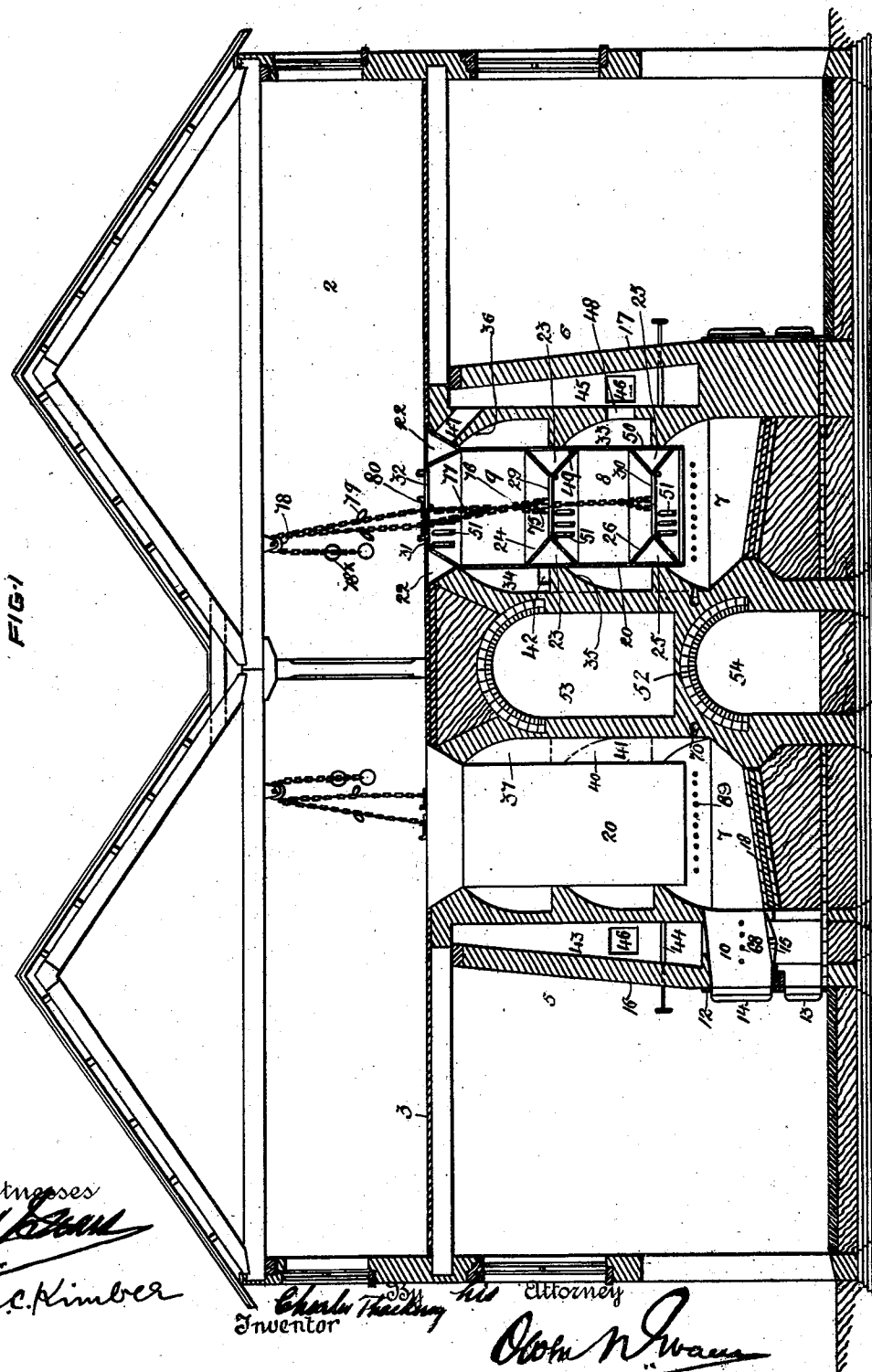
Patented Jan. 1, 1901.

C. THACKERAY.
CALCINATORY.

(Application filed Mar. 17, 1900.)

(No Model.)

4 Sheets—Sheet 1.



Witnesses
[Signature]
R. A. Kimber

Charles Thackeray
Inventor

Attorney
Oliver N. Swann

No. 664,980.

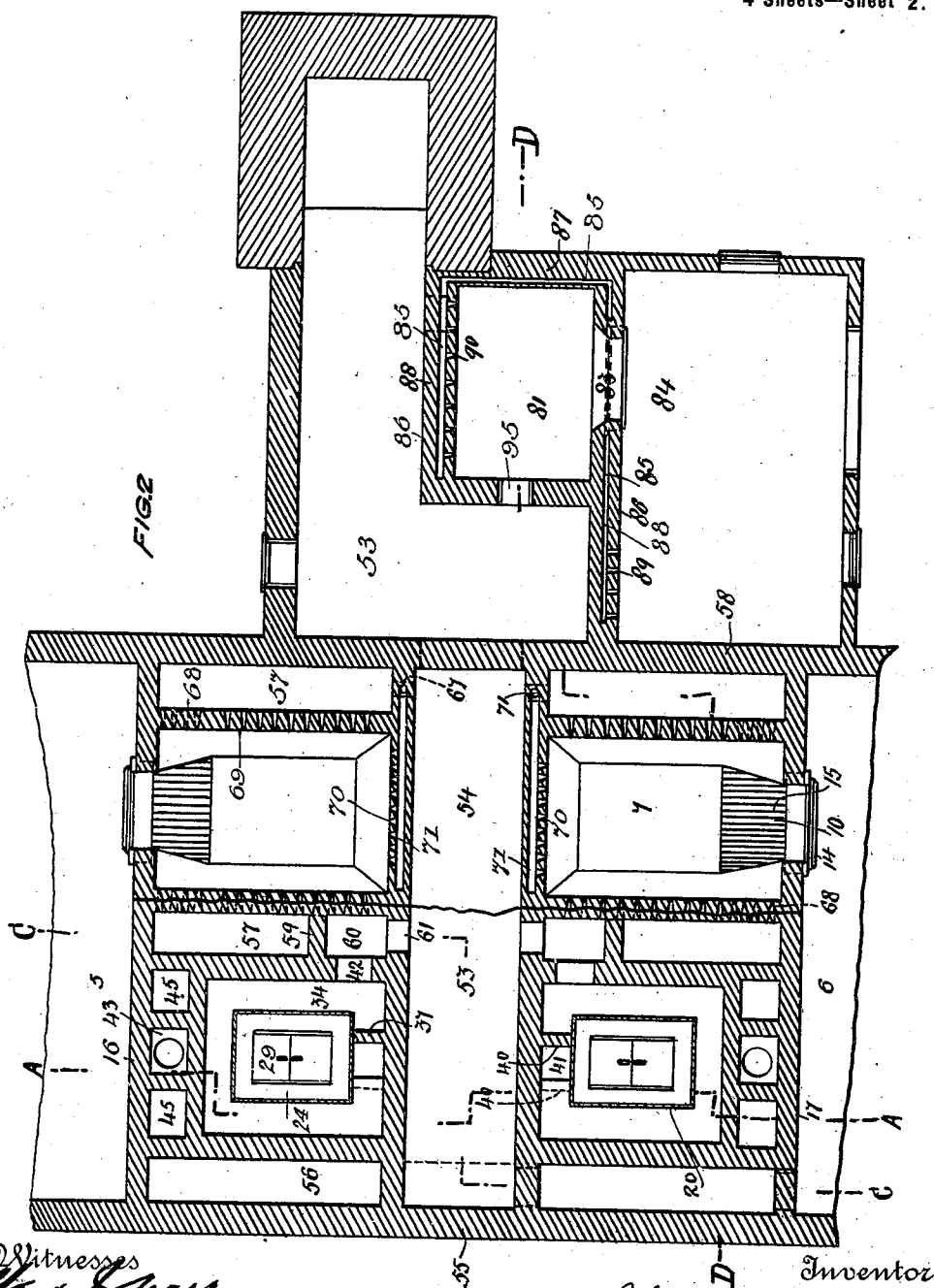
C. THACKERAY.
CALCINATORY.

Patented Jan. 1, 1901.

(No Model.)

(Application filed Mar. 17, 1900.)

4 Sheets—Sheet 2.



Witnesses
[Signature]
[Signature]

Inventor
Charles Thackeray
By *his* Attorney
John H. Swan

No. 664,980.

Patented Jan. 1, 1901.

C. THACKERAY.
CALCINATORY.

(Application filed Mar. 17, 1900.)

(No Model.)

4 Sheets—Sheet 3.

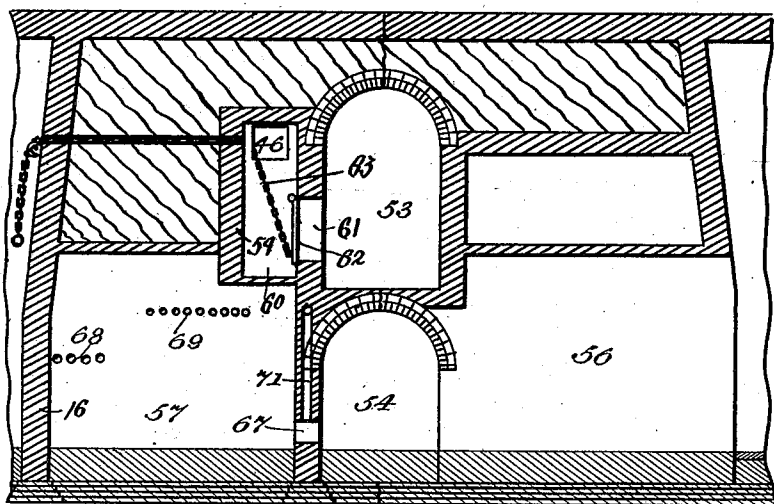


FIG 3

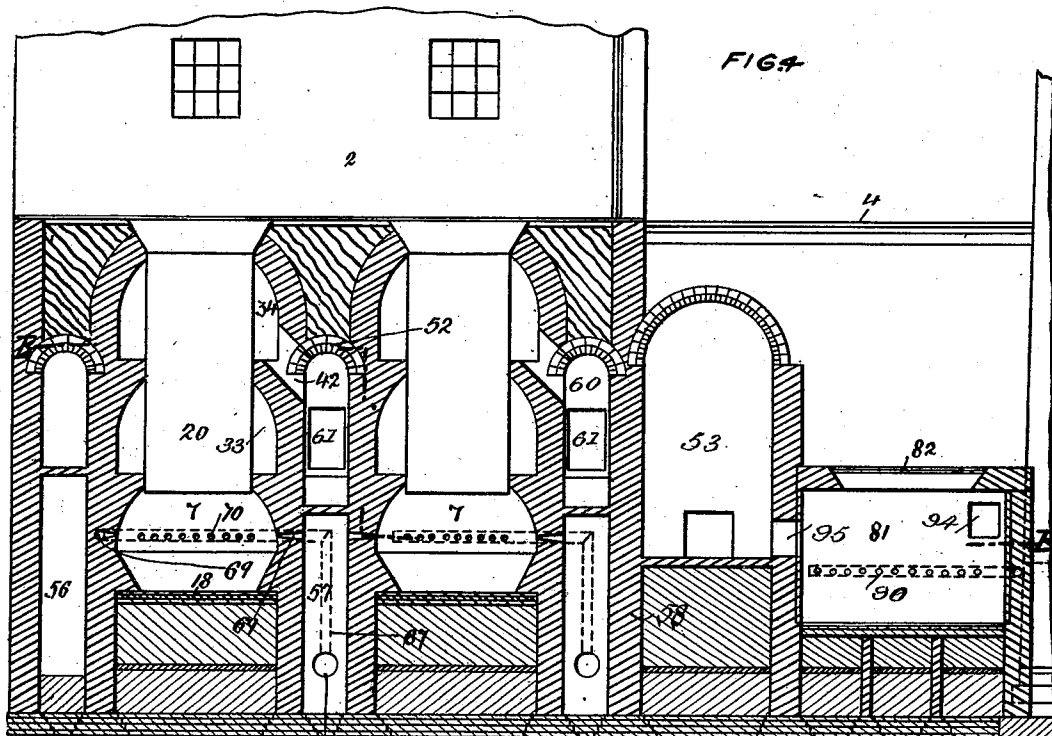


FIG 4

Witnesses
[Signature]
R. C. Kimber

Inventor
Charles Thackeray
By his Attorney
[Signature]

No. 664,980.

C. THACKERAY.
CALCINATORY.

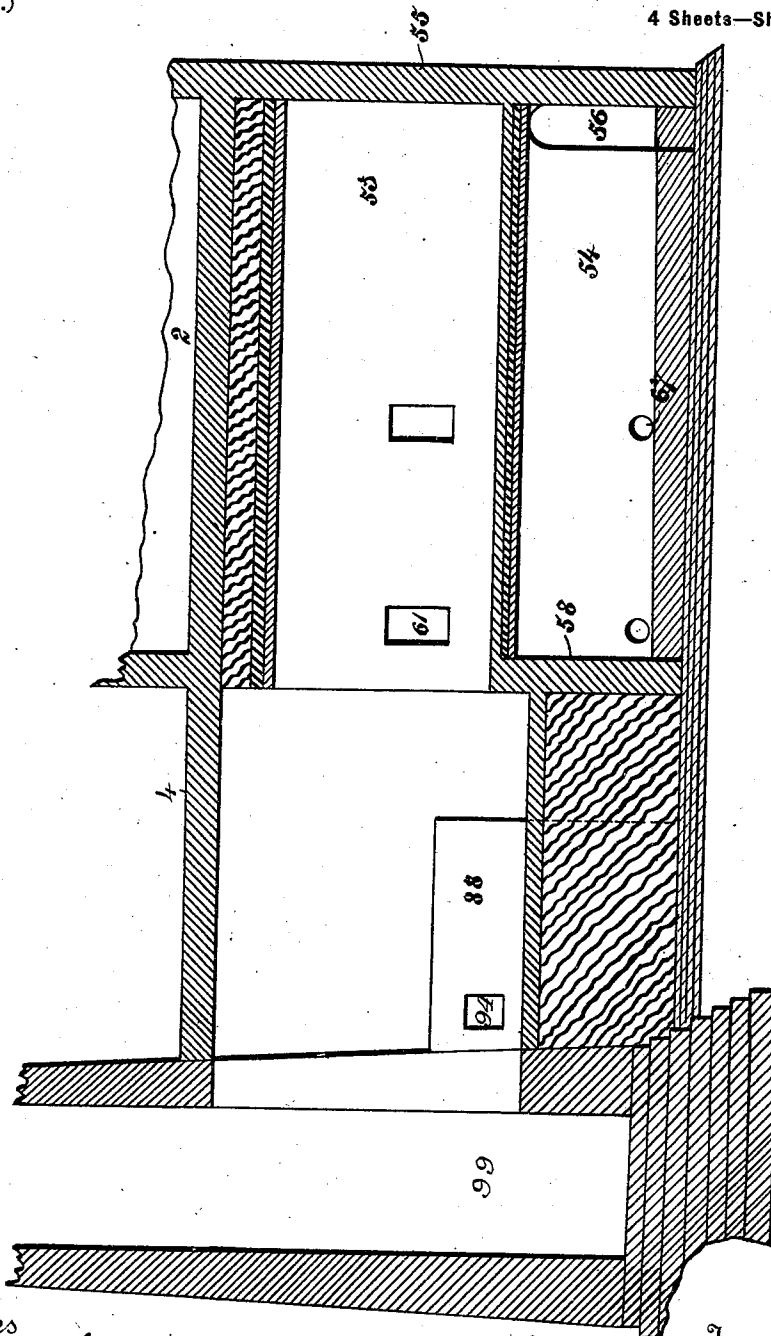
Patented Jan. 1, 1901.

(No Model.)

(Application filed Mar. 17, 1900.)

4 Sheets—Sheet 4.

FIG. 5



Witnesses
Rac. Kimber
H. J. Swann

Inventor
Charles Thackeray
By his Attorney
H. M. Swann

UNITED STATES PATENT OFFICE.

CHARLES THACKERAY, OF MONTREAL, CANADA.

CALCINATORY.

SPECIFICATION forming part of Letters Patent No. 664,980, dated January 1, 1901.

Application filed March 17, 1900. Serial No. 9,123. (No model.)

To all whom it may concern:

Be it known that I, CHARLES THACKERAY, of the city of Montreal, in the district of Montreal and Province of Quebec, Canada, have
5 invented certain new and useful Improvements in Calcinatories; and I do hereby declare that the following is a full, clear, and exact description of the same.

My invention has for its object to provide
10 means for the simultaneous destruction of night-soil, garbage, and general refuse, whether wet or dry, and that will insure, first, the dissipation of the moisture contained in the substance to be calcined and then the
15 destruction of the dried substance and the septic and other poisonous gases liberated therefrom by the said dissipation of the moisture.

To this end the invention may be said,
20 briefly, to consist of a calcining-furnace above which one or more drying-chambers are located and from which said drying chamber or chambers are separated by a partition or partitions pervious to heat, preferably in the
25 form of sheet-iron trap-doors, these chambers being in communication with the calcining-furnace also by suitable passages of peculiar construction, and heated pure-air supplies are provided, respectively, near the point at which
30 said passages join the furnace and near the place where the substance to be calcined is located within the furnace.

Two batteries of these calcining-furnaces, with their drying-chambers, are preferably
35 provided and arranged back to back, with a main flue and an air-chamber between said batteries and communicating with the furnaces of each of said batteries.

For a full comprehension, however, of my
40 invention reference must be had to the accompanying drawings, in which like symbols indicate the same parts, and wherein—

Figure 1 is a vertical transverse sectional view of my improved calcinatory, taken on
45 line A A, Fig. 2. Fig. 2 is a horizontal sectional view taken on line B B, Fig. 4; and Fig. 3 is a transverse vertical sectional view taken on line C C, Fig. 2. Fig. 4 is a sectional view on line D D, Fig. 2. Fig. 5 is a
50 vertical sectional view taken longitudinally through the main flue and looking toward the rear of the animal-crematory.

My improved calcinatory is located in any suitable building 2 and with the top thereof constructed with a flooring 3 on a level with
5 a suitable roadway 4.

The calcinatory proper consists of two batteries 5 and 6, respectively arranged back to back and parallel to one another. Each battery is made up of a series of cells, and each
60 cell consists of a calcining-chamber 7, a drying-chamber 8, and a receiving-chamber 9, the front of the lower portion of the calcining-chamber being extended outwardly and constituting a furnace 10.

Each furnace is constructed with the usual
65 metallic front 12, provided with ash-pit and fire doors 13 and 14, respectively, and a grate-section 15, all of ordinary construction.

The longitudinal outer walls 16 and 17, common to all the cells of the calcinatory, are of
70 sufficient depth to accommodate the furnaces and a series of flues.

Each calcining-chamber 7 has its floor 18 inclined downwardly from the rear thereof
75 to the grate-section 15 of the furnace, while the upper portion of each wall thereof is curved inwardly to form a four-sided arch and contract the upper end of said chamber. This contracted upper end communicates
80 with the lower end of a hollow sheet-metal section 20, preferably square in cross-section and with the sides of its upper end inclined inwardly to constitute the inner walls of a passage 22, triangular in cross-section. A
85 second triangular passage 23 is formed about midway of the height of said sheet-metal section 20 by an angular plate 24 of sheet metal, and a third passage 25 is similarly formed by an angular plate 26 on a level with the top of
90 the arch of the calcining-chamber 7. This sheet-metal section 20 is transversely divided about midway of its height into subchambers constituting the receiving and drying chambers 9 and 8, before mentioned, by a pair
95 of downwardly-opening sheet-metal trap-doors 29, hinged to the apex of the angular plate 24, while the lower end of the lower subchamber 27 is closed by downwardly-opening trap-doors 30, hinged to the apex of the
100 angular plate 26, and the upper end of the upper subchamber 28 is closed by a rigid plate 31, to the edge whereof an upwardly-opening sheet-metal trap-door 32 is hinged. A pair

of chambers 33 and 34, respectively encircling said respective subchambers 9 and 8, are formed by an arch 35 about on a level with the middle triangular passage and an arch 36 about on a level with the top triangular passage, the outer walls of which rest upon said latter arch. The encircling chamber 34 is provided with a baffling-wall 37, and the middle and lower arches 35 have vertical openings cut therethrough in line with one another, while a pair of walls 40 bisect the chamber 33 and extend upwardly at each side of said openings from the lower to the middle arches, thereby forming a flue 41, communicating at its lower and upper ends, respectively, with the calcining-chamber and the upper encircling chamber 34. The latter chamber 34 communicates by a diagonal flue 42 with an auxiliary flue (to be presently described) leading to the main flue, (also to be presently described,) which leads to the chimney 99.

Vertical flues 43 are formed in the outer longitudinal walls 16 and 17, with the lower ends of each communicating with one of the furnaces and controlled by a slide-damper 44 and their upper ends blinded, while a pair of vertical flues 45 are located one on each side of each of the flues 43 and communicate therewith by vents 46 through their dividing-walls. These latter flues have their lower ends blinded, and the upper ends of each pair communicate with the top triangular passage 22 by diagonal flues 47, and the lower ends thereby communicate with the encircling chamber 33 by vents 48. The triangular passages 23 and 25 communicate with the chamber 33 by means of vents 49 and 50, cut in the wall of the sheet-metal section 20, while the calcining-chamber 7, drying-chamber 8, and receiving-chamber 9 each communicate with the respective triangular passages 25, 23, and 22 through slits 51 in the lower inclined wall of the rear portion and the rear half of each of the side portions of said triangular passages.

An arched passage divides the batteries from one another and is divided about midway of its height by an arch 52 into a main smoke-flue 53 and an air-chamber 54. The main smoke-flue 53 abuts at one end against one (55) of the side walls of the calcinatory, and its opposite end is offset to partially inclose an animal-crematory, to be hereinafter described, and then communicates with the chimney. A space 56 is provided between the said wall 55 and the adjacent ends of the batteries, and spaces 57 similar to the space 56 divide the cells of each battery from one another and from the opposite side wall 58 of the calcinatory. A portion of each of these spaces 57 is cut off by a partition 59 to form an auxiliary flue 60, before mentioned, communicating with the chamber 34 through the said vent 42 and with the main flue by a vent 61, controlled by a hanging or flap damper 62, actuated by a chain 63 or other suitable means. The air-chamber 54 opens at one end into the space 56, which incidentally consti-

tutes a passage from one to the other of the furnace-rooms 65, and each of the spaces 57 communicates with the main air-chamber 54 by ports 67, thereby constituting a series of auxiliary air-chambers. These auxiliary air-chambers 57 supply air to the furnaces through a series of tapered twyers 68 and to the adjoining calcining-chambers, and at the rear of said calcining-chambers through twyers 70, leading from air-passages 71, communicating with the ports 67.

The sheet-metal trap-doors 29 and 30 are raised and lowered and supported in their raised position as follows: A chain 75, equal in length to the space between the free ends of each of said pairs of doors when open, takes through a ring 76 upon the end of a main length of chain 77, and the ends of said small chain are connected to the said free ends of the said doors, while said main length of chain takes through an opening in the rigid plate 31 and over a pulley 78 and has a handle 78^x upon its free end. An enlarged link 79 in each chain prevents its being drawn too far through the opening in the rigid plate, and said doors are supported in their raised positions by pins 80, passed through a link of each main length and resting upon said rigid plate.

The animal-crematory, before mentioned, consists of a rectangular chamber 81 with a dumping trap-door 82 in its roof and a fire-door 83 opening into a furnace-room 84. An air-passage 85 extends longitudinally through the rear wall 86, and one (87) of the walls of the animal-crematory, and the wall 88, that separates the offset portion of the main flue from the said furnace-room 84. One end of this passage 85 communicates with said furnace-room through a series of air-inlets 89, and the opposite end supplies air to the crematory through twyers 90, while flues 94 and 95 in the rear and inside end walls, respectively, of the crematory effect a communication between said crematory and the main flue 53.

In calcining with the above-described calcinatory fires are first started in the furnaces. A quantity of the substance to be calcined is then dumped into the receiving-chambers, the doors 32 closed, and the slide-dampers 44 opened sufficiently to cause a draft from the space above the floor 3 through each of said receiving-chambers, their slits 51, passages 22, and flues 47, 45, 46, and 43 to the furnaces. The main draft through each cell of the calcinatory (which is the efficient cause of the draft just mentioned) is from the ashpit of the furnace through the grate-section to the fire-chamber thereof, thence through the calcining-chamber 7, up flue 41, to chamber 34, around which it is caused to travel by baffling-wall 37, and then by diagonal flue 42 to auxiliary flue 60 and main flue 53 to the chimney. The suction from this draft will, as before mentioned, draw the gases rising from the substance in the drying-chamber 9,

through slits 51 in the inner wall of the upper triangular passage 22, into said passage 22, and thence through flues 47, 45, 46, and 43 to the furnace 10, where said gases will mingle with pure heated air from the twyers 68, and simultaneously a downdraft will be caused from the room 2 through the crevices between the top trap-doors and between the doors and the surrounding portions of the floor 3, and at the same time the gases rising from the substance in chamber 8 and a small proportion from the calcining-chamber 7 will be drawn through slits 51 into the passages 23 and 25, thence to encircling chamber 33, and from there through flues 48, 45, 46, and 43 to the furnace 10, said gases being then mingled with pure heated air from the twyers 68 and subjected to an intense heat and all poisons contained therein destroyed, while the calcination of the substance in the calcining-chambers 7 is augmented by the pure heated air from the twyers 69.

What I claim is as follows:

1. A calcinatory having a calcining-chamber, means for generating an intense heat in said chamber; a drying-chamber to receive the substance to be calcined and located above said calcining-chamber; a chamber encircling said drying-chamber; a sheet-metal partition separating said drying-chamber and said calcining-chamber; and means for emptying the contents of said chamber into said calcining-chamber; a flue leading from the rear of said calcining-chamber to said encircling chamber and thence to the chimney connection; a flue leading from the top of said drying-chamber to the front of said calcining-chamber, substantially as described and for the purpose set forth.

2. A calcinatory having a calcining-chamber, means for generating an intense heat in said chamber; a drying-chamber to receive the substance to be calcined and located above said calcining-chamber; a chamber encircling said drying-chamber; a pair of sheet-metal trap-doors separating said drying-chamber and said calcining-chamber; and means for supporting said doors and allowing them to open; a flue leading from the rear of said calcining-chamber to said encircling chamber and thence to the chimney connection; means for supplying air to said calcining-chamber; a flue leading from the top of said drying-chamber to the front of said calcining-chamber, substantially as described and for the purpose set forth.

3. In a calcinatory a calcining-chamber; means for generating an intense heat in said calcining-chamber; a vertical chamber located above said calcining-chamber; a partition pervious to heat and dividing said vertical chamber into upper and lower subchambers; an encircling passage at the upper end of the upper subchamber, the upper portion of the walls of said upper subchamber having a series of slits effecting a communication between said upper subchamber and the en-

circling passage a second passage encircling the upper end of said lower subchamber, the upper portion of the walls of said lower subchamber having a series of slits effecting a communication between said lower subchamber and said second encircling passage; a vertical flue extending from the front of said calcining-chamber to the first-mentioned encircling passage; a flue extending from said second encircling passage to said vertical flue, substantially as described and for the purpose set forth.

4. In a calcinatory a calcining-chamber; a vertical chamber located above said calcining-chamber; a partition pervious to heat and dividing said vertical chamber into upper and lower subchambers; an encircling passage at the upper end of the upper subchamber, the upper portion of the walls of said upper subchamber having a series of slits effecting a communication between said upper subchamber and the encircling passage; a second passage encircling the upper end of said lower subchamber, the upper portion of the walls of said lower subchamber having a series of slits effecting a communication between said lower subchamber and said second encircling passage; a vertical flue extending from the front of said calcining-chamber to the first-mentioned encircling passage; a chamber encircling said lower subchamber and communicating with the encircling passage at the upper end of said lower subchamber; a flue extending from said encircling chamber to said vertical flue, substantially as described and for the purpose set forth.

5. A calcinatory having a chimney connection; a calcining-chamber the front whereof is extended; a furnace formed in said extended front; a hollow vertical sheet-metal section having its upper end inwardly inclined and its lower end extending downwardly into said calcining-chamber; a series of walls secured to said upper inclined end to form an encircling passage triangular in cross-section, said walls having a series of slits effecting a communication between the rear portion of said encircling passage and the upper portion of said hollow vertical sheet-metal section; an angular plate having a series of slits at the rear of its lower sides and secured to the interior of said hollow section midway of its height to form an encircling passage triangular in cross-section, said slits effecting a communication between said last-mentioned encircling passage and the upper end of the lower half of said hollow vertical sheet-metal section, an angular plate having a series of slits at the rear of its lower sides and secured to the interior of said hollow section adjacent to its lower end, said slits effecting a communication between said last-mentioned encircling passage and the top of the calcining-chamber; a pair of sheet-metal trap-doors hinged respectively to the apex of one of a pair of opposite walls of the lowermost encircling passage; a pair of sheet-metal trap-doors

hinged respectively to the apex of one of a pair of the opposite walls of the middle encircling passage; a rigid sheet-metal plate covering the rear half of the opening encircled
5 by said top encircling passage; a door hinged to the edge of said plate and closing the other half of said opening; means for supporting and operating said doors; a smoke-chamber formed in the walls of the calcinatory and
10 encircling the upper portion of said hollow section; a second chamber formed in the walls of the calcinatory and encircling the lower portion of said hollow section and communicating with said middle and lowermost encircling passages; a flue extending from the calcining-chamber to said upper encircling chamber; a flue extending from said upper encir-

cling chamber to said chimney connection; a vertical flue extending from the upper encircling passage to the top of the furnace; a
20 damper for controlling the lower end of said vertical flue; a branch flue extending from the lower encircling chamber to said vertical flue; a hot-air chamber; a series of twyers
25 extending from said hot-air chamber into the calcining-chamber; and a series of twyers extending from said hot-air chamber into the furnace, substantially as described.

In testimony whereof I have affixed my signature in presence of two witnesses.

CHARLES THACKERAY.

Witnesses:

FRED. J. SEARS,
ARTHUR H. EVANS.