

G. J. PATITZ & C. SIPPEL.  
MANURE AND GARBAGE INCINERATOR.  
APPLICATION FILED APR. 26, 1909.

986,853.

Patented Mar. 14, 1911.

2 SHEETS—SHEET 1.

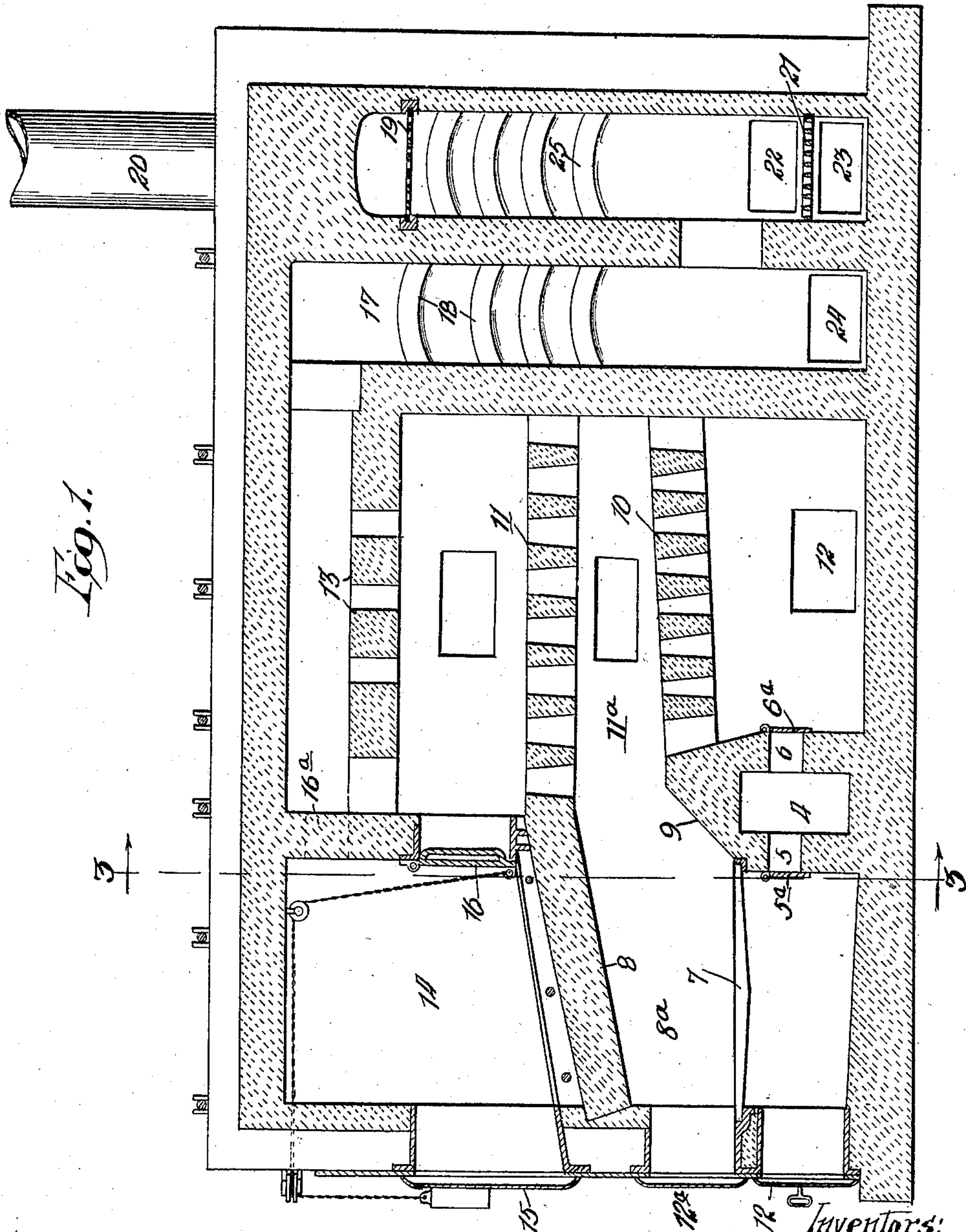


Fig. 1.

Witnesses:

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Gerhardt J. Patitz and Cornelius Sippel

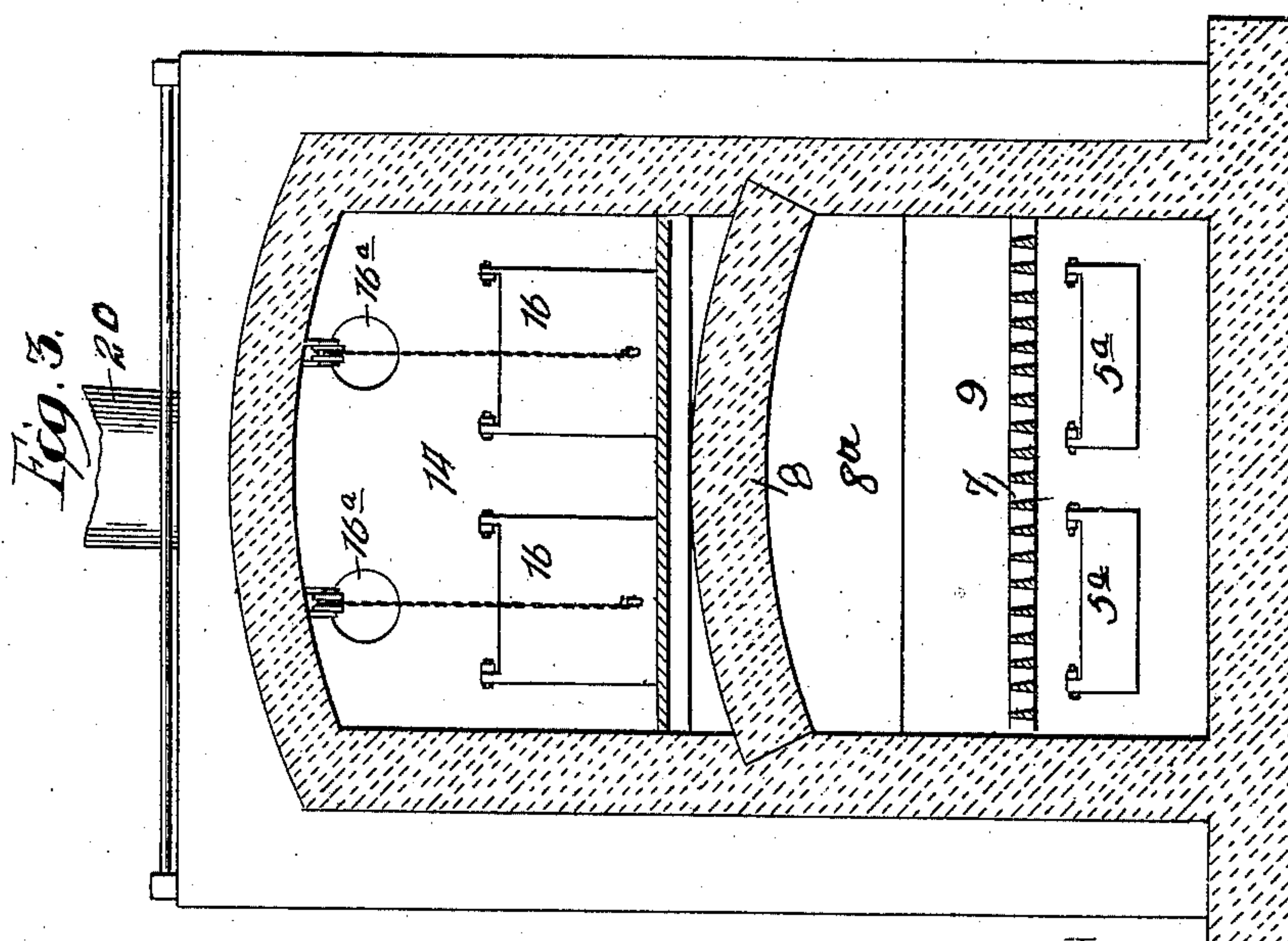
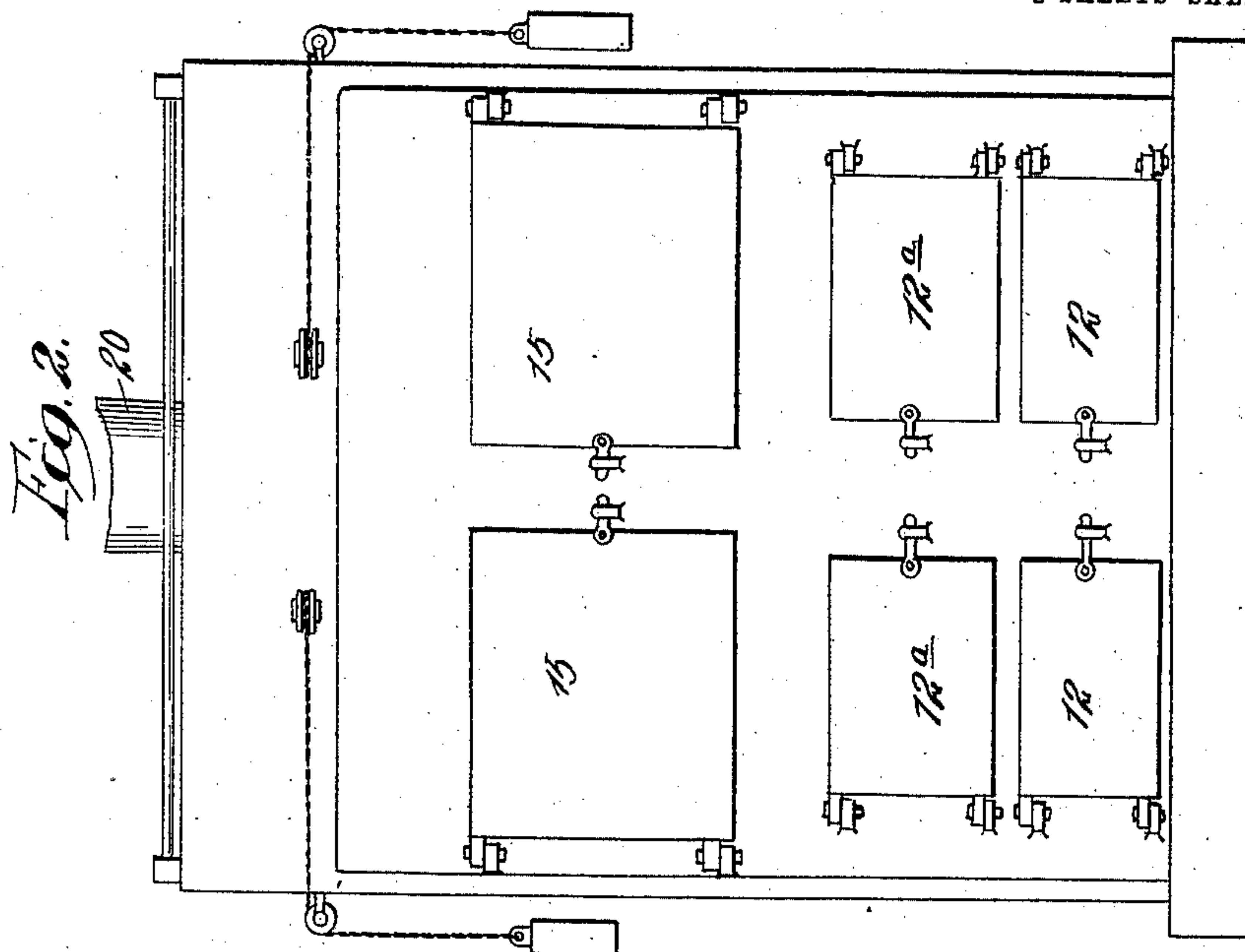
*by* *Samuel J. Banning*  
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# UNITED STATES PATENT OFFICE.

GERHARDT J. PATITZ AND CORNELIUS SIPPEL, OF CHICAGO, ILLINOIS, ASSIGNORS TO  
KAESTNER & CO., A CORPORATION OF ILLINOIS.

MANURE AND GARBAGE INCINERATOR.

986,853.

Specification of Letters Patent. Patented Mar. 14, 1911.

Application filed April 26, 1909. Serial No. 492,401.

To all whom it may concern:

Be it known that we, GERHARDT J. PATITZ and CORNELIUS SIPPEL, both citizens of the United States, and both residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Manure and Garbage Incinerators, of which the following is a specification.

10 This invention relates to an improved construction in a crematory for the incineration of garbage, manure, refuse, and other waste materials.

15 The essential object is to construct a cremator in such manner that the garbage or manure will be thoroughly and quickly cremated, which is accomplished by the provision of a separate drying chamber into which the wet garbage or manure is first  
20 dumped, and dried preparatory to being fed onto the main grate of the furnace for incineration.

25 Other objects will appear from the following description of the invention, which consists in the features of construction and combination of parts hereinafter described and claimed.

30 In the drawings, Figure 1 is a sectional elevation of this improved cremator; Fig. 2 an end view thereof; and Fig. 3 a transverse section, taken on line 3—3 of Fig. 1.

Referring to Fig. 1, an air blast chamber 4 is positioned in the bottom of the cremator, and has oppositely arranged exhaust  
35 ducts 5 and 6, respectively, the duct 5 opening beneath a furnace grate 7 over which is a fire arch 8 the space between the grate and arch constituting a fire chamber 8<sup>a</sup>. Oppositely arranged movable dampers 5<sup>a</sup>  
40 and 6<sup>a</sup> control the travel of the forced air from the air blast chamber 4. This arrangement permits air to be forced up through one or all of the grates, as desired.

45 A hollow bridge wall 9 is formed adjacent to the inner side of the grate 7, and a lower final combustion grate 10 is adjacent thereto, said grate preferably having interstices approximately three inches apart. Directly  
50 above the lower final combustion grate 10 is an upper refuse grate 11, having, for practical purposes, interstices formed four inches apart, the space intermediate the two grates 10 and 11 constituting the lower end

of a combustion chamber 11<sup>a</sup>, the upper end of which extends between the grates 11 55 and 13.

Ash doors 12 open beneath the lower final combustion grate 10; fuel doors 12<sup>a</sup> open into the grates 7; and above the upper garbage grate 11 are fire arches 13 for directing  
60 the travel of the heated gases of combustion, so that they will act upon the walls of the drying chamber and serve to heat it. In other words, the arches 13 serve to retard the outward flow of the heated gases and  
65 keep them confined for a period of time within the combustion chamber, so that they serve to generate more heat.

A drying chamber 14, as indicated, is formed on one side of the cremator in elevated position, and has an outer swinging  
70 feed door 15 and an inner swinging door 16 actuated in any approved manner, and this chamber separates the manure or garbage from the original fuel bed so as not to  
75 quench or destroy the source of combustion. The drying chamber has usually a steel lined bottom which serves as an igniting arch for the furnace below and at the same time  
80 furnishes heat for drying the wet manure or garbage within. It is obvious that the manure or garbage can be fed into the drying chamber through its top wall instead  
85 of through the side doors. The arising vapors are drawn off through a vent hole 16<sup>a</sup> near the top of the chamber communicating with a flue leading to the smoke stack. After the greater part of the moisture in the  
90 manure or garbage has been evaporated in the drying chamber, the hinged doors are opened and the material is pushed onto the upper grate 11 for combustion.

The heated gases of combustion follow an upward path through the upper grate 11, upon which the waste material has been  
95 spread, and entirely reduces the same to a mineral ash which falls to the bottom of the combustion chamber for removal. The gases of combustion travel farther horizontally, again heating the walls of the drying  
100 chamber, and finally enter a vertical up and down flue 17 which is provided with a series of resistance or staggered baffle arches 18, which, when heated to a high temperature, arrest the minute particles for final  
105 combustion. As usual, a removable heavy



metal screen 19 serves to arrest any sparks that might escape to the atmosphere through the stack 20.

If desired, there may be a stench fire in the bottom of the stack, but it is not essential in cremating manure. The stench fire grate is indicated at 21, above which is a fire door 22, and beneath is an ash door 23, as usual. A cleaning door 24 is located in the bottom of the flue 17 beneath the staggered baffle arches 18. Staggered stench bars 25 are placed within the flue 17 above the stench fire.

As manure contains a great amount of nitrogenous matter, and, owing to its impervious nature, it becomes tightly packed in layers on the grate, and as it is, in fact, an insulator against heat or cold, this invention contemplates the use of a hollow bridge wall to permit the introduction of air under slight pressure, such as is furnished by a fan blower. It has been found that a fan blower furnishes the necessary amount of oxygen for combustion; that it breaks up and prevents the tight packing of manure in layers; and that it creates a higher temperature of combustion within the furnace to more economically incinerate the manure.

The provision of a separate drying chamber for the wet manure and garbage is of considerable importance, as it prepares the waste material for incineration, none of the fresh wet material falling onto the primary fuel bed and thus smothering and destroying the source of combustion. The drying chamber is shut off from the upper garbage grate by means of hinged tile lined doors, which are counterbalanced and can be operated from the outside, for protecting the operator from the scorching heat unavoidable in constructions where the waste is dumped directly onto the grate.

What we claim as new and desire to secure by Letters Patent is:

1. In an incinerator, the combination of a drying chamber and a combustion chamber, having a wall therebetween, a fire chamber below the drying chamber communicating with the combustion chamber, said combustion chamber having an auxiliary grate surface forming the bottom thereof and an arch forming the top thereof, said arch having restricted openings in the center thereof, and a relatively enlarged opening at the end thereof, adjacent the wall between the drying chamber and combustion chamber, whereby a ready outlet for the heated gases passing from the combustion chamber is provided adjacent the wall between the combustion chamber and drying chamber, substantially as described.

2. In an incinerator, the combination of a drying chamber and a combustion chamber, a fire chamber below the drying chamber

communicating with the combustion chamber, the top wall of the combustion chamber being spaced away from the roof of the incinerator, providing a passageway therebetween, a flue communicating with said passageway and having a plurality of baffle arches therein to arrest and consume the unburned particles coming from the combustion chamber, a smoke-stack, and a flue communicating with the smoke-stack, the two flues having communication with one another at their lower ends, whereby an extended passageway is provided between the combustion chamber and smoke-stack, to insure the consumption of unburned particles passing from the combustion chamber, substantially as described.

3. In an incinerator, the combination of a drying chamber and a combustion chamber, having a wall therebetween, a fire chamber beneath the drying chamber, communicating with the combustion chamber, said combustion chamber having an auxiliary grate forming its bottom and an arch forming its top, said arch having relatively restricted openings in the center thereof, and a relatively enlarged opening at the end thereof, adjacent the wall between the drying chamber and combustion chamber, whereby a ready outlet for the heated gases passing out from the combustion chamber is provided adjacent the wall between the combustion chamber and the drying chamber, the top of said combustion chamber being spaced away from the roof of the incinerator, providing a passageway therebetween, a flue communicating with said passageway and having a plurality of baffle arches therein to arrest and consume the unburned particles coming from the combustion chamber, a smoke-stack, and a flue communicating with the smoke-stack, the two flues having communication with one another at their lower ends, whereby an extended passageway is provided between the combustion chamber and the smoke-stack, to insure the consumption of unburned particles passing out of the combustion chamber, substantially as described.

4. In an incinerator, the combination of a drying chamber, and a combustion chamber having its top formed of an arch, said arch being spaced away from the roof of the incinerator, thus providing a passageway therebetween, a flue communicating with said passageway and having a plurality of baffle arches therein to arrest and consume the unburned particles coming from the drying chamber, a smoke-stack, a flue communicating with the smoke-stack, the two flues having communication with one another at their lower ends, whereby an extended passageway is provided between the combustion chamber and smoke-stack, to insure the consumption of unburned particles



passing out of the combustion chamber, a fire chamber beneath the drying chamber, a bridge wall between the fire chamber and the lower end of the combustion chamber, 5 said bridge wall having an unimpeded passageway from end to end thereof, forming a main blast chamber, the walls of said bridge wall having oppositely disposed ports for supplying air to the fire chamber and the 10 combustion chamber, and means for controlling the blast to direct it into either the furnace chamber or the combustion chamber, or both, as desired, substantially as described.

15 5. In an incinerator, the combination of a drying chamber and a combustion chamber, having a division wall therebetween, said combustion chamber having its bottom formed of an auxiliary grate surface and 20 its top formed of an arch, said arch having relatively restricted openings in the center thereof, and a relatively unrestricted opening at the end thereof, adjacent the wall of the drying chamber, whereby a ready outlet for the heated gases passing out from 25 the combustion chamber is provided adjacent the wall of the drying chamber, a fire chamber in communication with the combustion chamber, a bridge wall between the fire chamber and the lower end of the combustion chamber, an unimpeded passageway extending from end to end of said bridge wall, 30 forming a main blast chamber, the walls of said bridge wall having oppositely disposed ports communicating with the lower end of the fire chamber and the space below the 35 auxiliary grate surface, and means for controlling the blast to direct it into either the furnace chamber or said space, or both, as desired, substantially as described.

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Witnesses:

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."