

(No Model.)

3 Sheets—Sheet 1.

DE HAVEN LANCE.
GARBAGE FURNACE.

No. 535,292.

Patented Mar. 5, 1895.

FIG. 2.

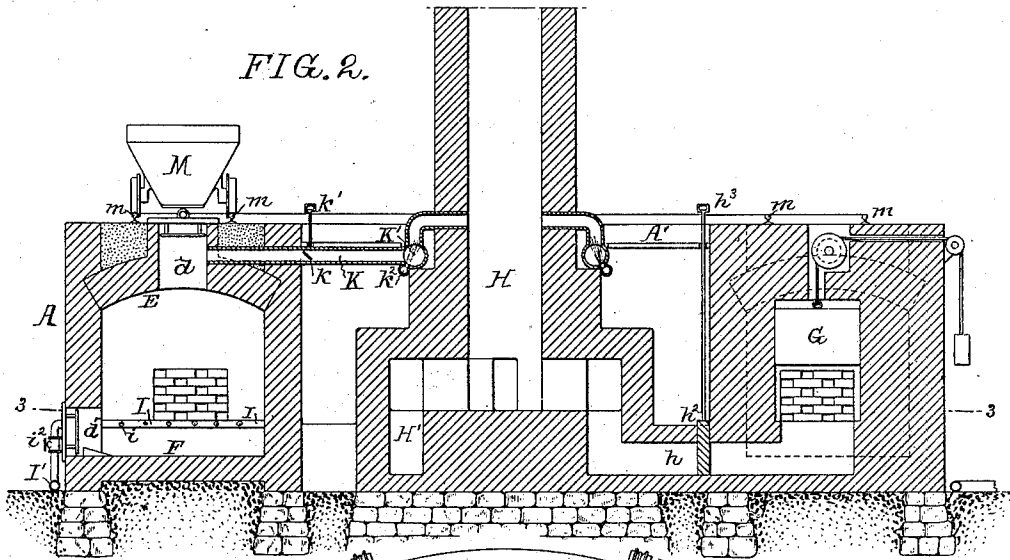
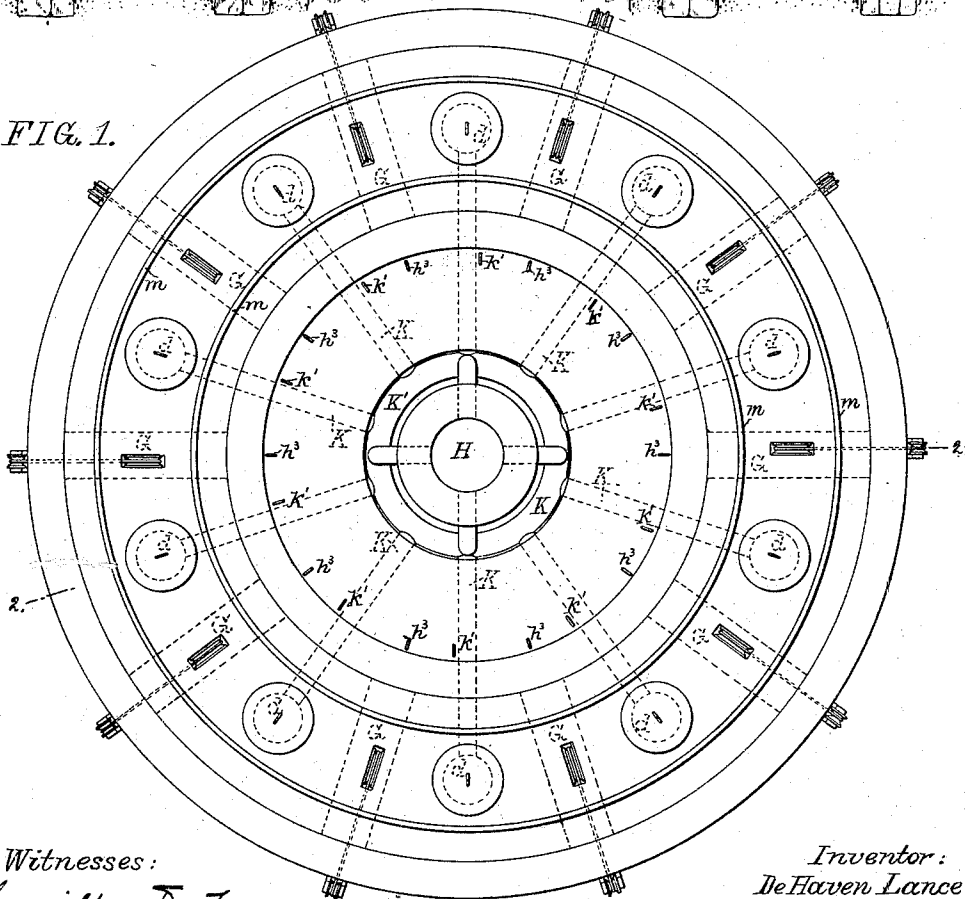


FIG. 1.



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Inventor:
De Haven Lance
by his Attorneys
Bosworth & Sons

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FIG. 3.

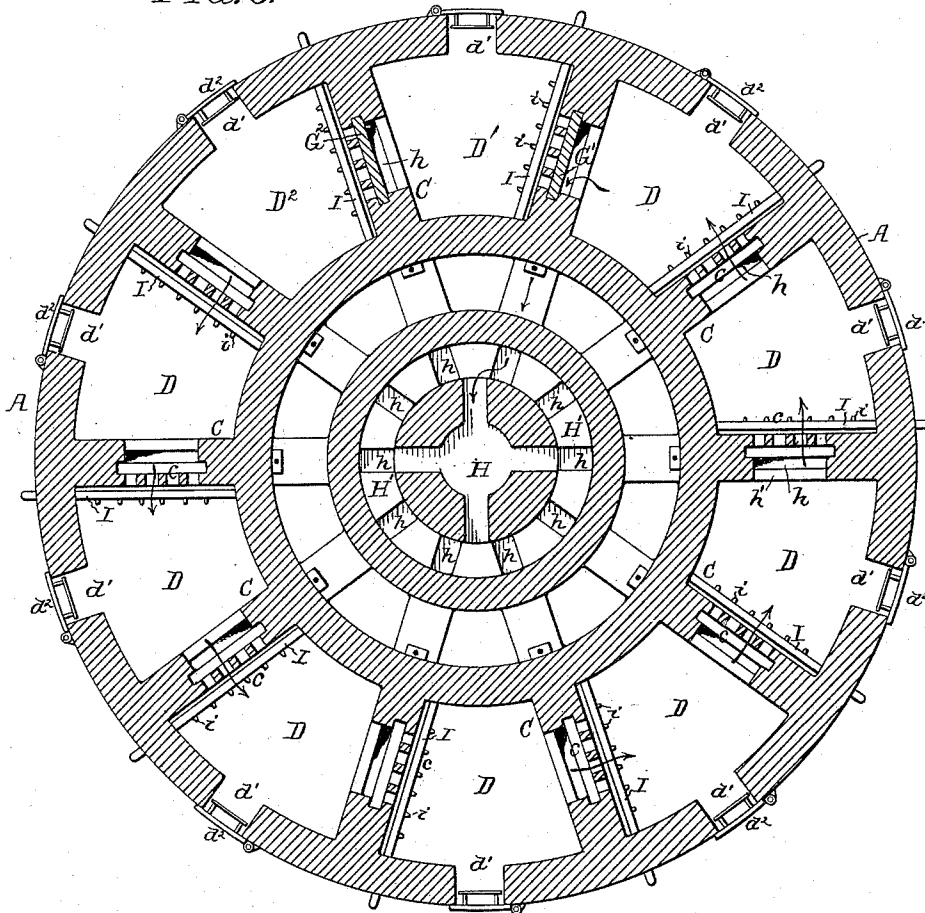
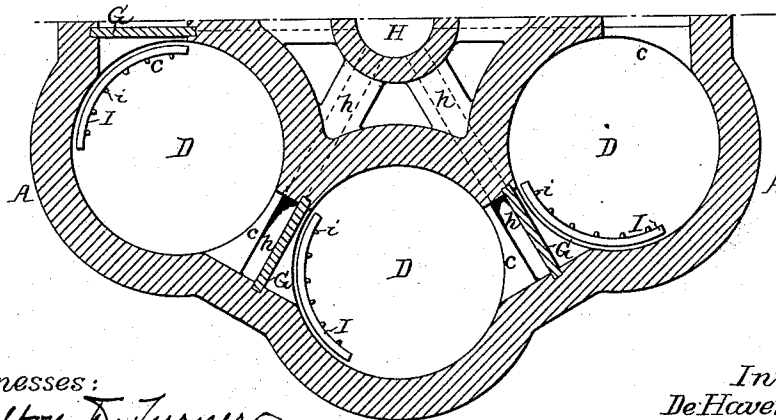


FIG. 6.



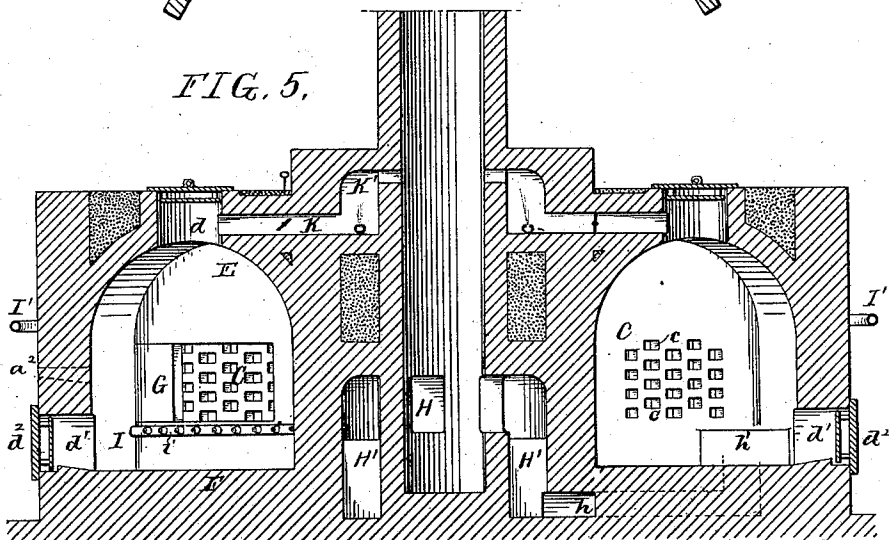
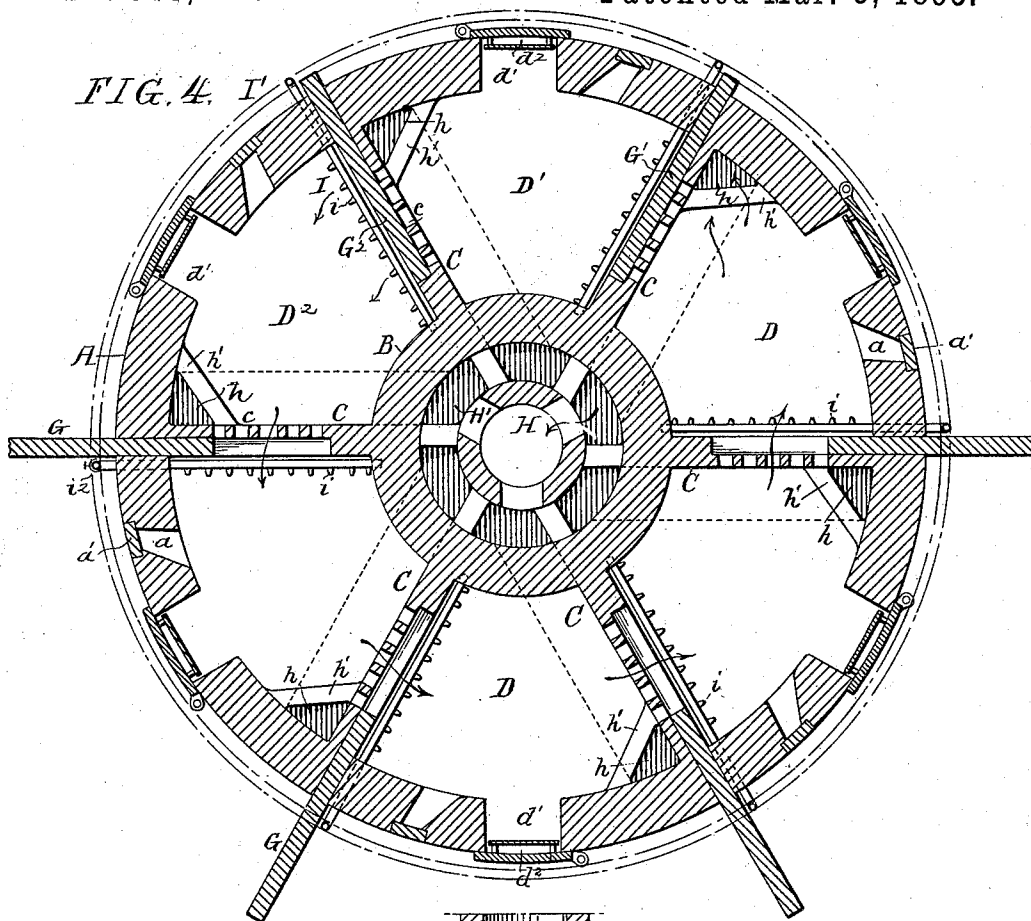
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UNITED STATES PATENT OFFICE.

DE HAVEN LANCE, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO THE
NATIONAL SANITARY FURNACE COMPANY, OF PENNSYLVANIA.

GARBAGE-FURNACE.

SPECIFICATION forming part of Letters Patent No. 535,292, dated March 5, 1895.

Application filed September 25, 1893. Serial No. 486,364. (No model.)

To all whom it may concern:

Be it known that I, DE HAVEN LANCE, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain
5 Improvements in Garbage-Furnaces, of which the following is a specification:

The object of my invention is to so construct a garbage furnace that the material can be thoroughly destroyed and that the operation of the furnace will be continuous, as fully
10 described hereinafter reference being had to the accompanying drawings, in which—

Figure 1, is a plan view of my improved furnace. Fig. 2, is a section on the line 2—2, Fig. 1. Fig. 3, is a section on the line 3—3, Fig. 2. Figs. 4 and 5, are views of a small
15 furnace slightly modified; and Fig. 6, is a view of a further modification.

I have shown the furnace built in the form of a cylinder. This is the preferred form but it may be built with independent furnaces arranged in a circle and connected together as shown in Fig. 6.

A is the outer cylindrical wall.

25 B is the inner wall also in the form of a circle and extending from one wall to the other are a series of radial partitions C forming compartments D for the reception of the garbage or other material to be burned.

30 E is the roof, being arched from one wall to the other, and in the roof are a series of openings or man holes d through which the material to be burned is dumped. The material assumes the shape of a cone when dumped on the floor F.

35 In the outer wall are a series of openings d' provided with doors d^2 through which the ashes remaining from the burned garbage are withdrawn. A series of stoke openings a are formed in the outer wall and are covered by a brick a' . A poker may be passed through said openings and the material turned if necessary.

45 a^2 are sight holes suitably protected so that the material in the furnace can be examined during the process of burning.

In each partition are passages c through which the products of combustion pass from one compartment to another. The passages
50 are made in the present instance by staggering fire brick so that the brick will retain heat.

It will be understood that a single passage may be used without departing from my invention as shown in Fig. 6.

G are doors or valves adapted to close the
55 passages in the partitions C and while I have shown these valves as sliding vertically and balanced by weights they may slide horizontally as shown in Fig. 4, extending through the outer wall A, without departing from my
60 invention.

In front of each partition is a gas pipe I having a series of jets or openings i through which the gas escapes into the furnace. These
65 pipes I are connected in the present instance to an annular pipe I' attached to a gas supply pipe. Each pipe I is provided with a valve i^2 so that any one of the pipes can be cut off from the main pipe.

Within the inner wall B is the stack H with
70 which communicates the annular flue space H' at the base of the stack; and extending from this flue space to each compartment are flues h . The openings of the flues in the present instance are in the partitions C as shown
75 in Figs. 2 and 3, but may be in the corners of the compartments and protected by bridge walls h' which extend up from the floor a certain distance so as to prevent the garbage
80 choking the flues, as shown in Figs. 4 and 5.

It will be understood that the flue openings may be made in any portion of the compartment in order to obtain the best results. Each flue is provided with a valve h^2 having
85 a handle h^3 extending up to the platform A' within easy reach of an attendant.

I prefer to use the furnace with the annular flue space as shown, as it allows a larger
90 area of flue without increasing the area of the stack.

I preferably form in the upper part of the furnace, flues K which communicate, in the present instance, with the openings d and with an annular passage K', which communicates with the stack. This passage will carry
95 off to a great extent, the vapor arising from the material. In each pipe or passage K is a valve k , operated by a handle k' and in the passage K' is a gas jet k^2 which may be used if desired.

The operation of the furnace is as follows:—
100 If, for instance, the furnace is under full

blast and all the compartments are charged, the compartment D', shown in Fig. 3 is cut off by closing the two valves in the partitions and shutting off the gas. The door d^2 at the bottom of the furnace is opened and the ashes remaining from the burned garbage are removed. The door is again closed and a charge of garbage is dumped through the opening d and when the full charge is made the opening d is closed and the valve G' is open, the valve G² remaining closed so that the products of combustion will pass into the chamber D', then through the flue to the stack. While the products of combustion are not as highly heated as in the first compartments the heat is sufficient to draw the moisture from the mass. The gas in the compartment D² is then turned off and the valves closed. The compartment is then emptied and recharged in the manner described above. One after another of the compartments are emptied and recharged in this manner so that it will be seen that the operation is continuous. The flow of gas into the chambers may be so regulated that the proper amount of heat can be obtained without the waste of fuel. For instance, if the compartment D² is the first compartment, as shown in the drawings, Fig. 3, a full head of gas will be turned on in this compartment. In the next compartment the gas will be turned on about three-fourths and the next one half and the next one quarter. In the remaining compartments the gas may be turned off entirely or may be slightly turned on according to circumstances. The regulation of the gas will depend entirely upon the size and construction of the furnace and upon the material under treatment.

The main object of the invention is to allow of the continuous recharging of the furnace and utilizing what may be termed the waste products of combustion to dry out and prepare the garbage for burning.

In the drawings, Figs. 5 and 6, I have shown a furnace with six compartments, but I prefer to use a furnace having ten compartments, as shown in Figs. 1, 2 and 3, but for small plants three or more compartments will answer the purpose. It will also be understood that I can use either gas or oil in the furnace and I can use any of the burners now in common use in place of the pipe with jets. Grates may be built in each compartment and coal or other material may be used as a substitute for gas.

As shown in Figs. 1, 2 and 3, I mount a circular track upon the furnace, one rail m being on one side of the man-holes and the other on the other side and upon this track I mount a movable hopper M, shown in Fig. 2, by which the several compartments can be charged.

A small truck can be used having a lever by which the cover plates may be moved from the openings d .

It will be understood that the several valves illustrated can be modified without departing from my invention, as the construction of valve will depend greatly upon the size and the style of furnace.

The modification shown in Fig. 6, shows the furnace made up of a series of circular chambers connected together by necks in which are the passages and flues and the valves.

I claim as my invention—

1. The combination in a garbage furnace having three or more compartments arranged in circuit, in which compartments the garbage is dried and then burned by a source of heat within the same, partition walls separating the several compartments, a valved passage in each partition wall, a stack, passages connecting each compartment with the stack and valves in the passages, the whole being so arranged that the compartments can be emptied and recharged consecutively without interfering with the passage of the products of combustion through the remaining chambers to the stack, substantially as described.

2. The combination in a garbage furnace, of the cylindrical outer wall A, the inner wall B, partitions extending from one wall to the other, openings in said partitions, valves therefor, gas or oil jets arranged in front of each partition and a flue extending from the back of each partition to a stack, substantially as described.

3. The combination of the cylindrical outer and inner walls, the series of partitions extending from one wall to the other, openings in said partitions, valves for said openings, a central stack, an annular chamber surrounding said stack and communicating therewith and with each of the compartments in the furnace, substantially as described.

4. The combination of the cylindrical outer and inner walls, the series of partitions extending from one wall to the other, openings in said partitions, valves for said openings, a central stack, an annular chamber surrounding said stack and communicating therewith and with each of the compartments in the furnace, vapor flues communicating with the upper portion of each furnace and with the stack, substantially as described.

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

DE HAVEN LANCE.

Witnesses:

FRANK E. BECHTOLD,
JOSEPH H. KLEIN.