

F. F. CORLISS.

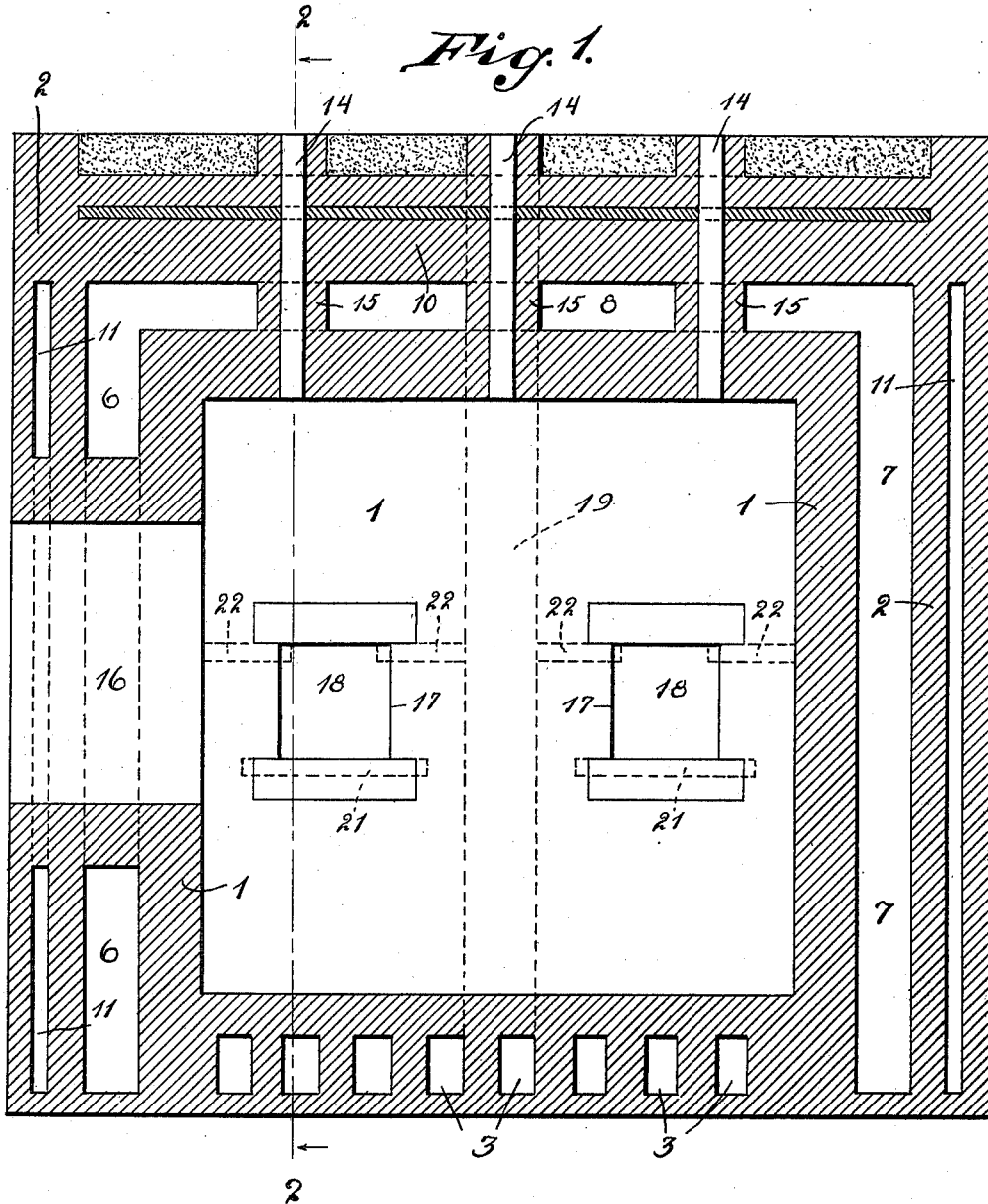
FURNACE.

APPLICATION FILED FEB. 1, 1911.

1,039,101.

Patented Sept. 24, 1912.

3 SHEETS—SHEET 1.



Inventor

F. F. Corliss.

Witnesses

J. Milton Jester.

R. H. Kuhlmann

By

C. L. Parker.

Attorney

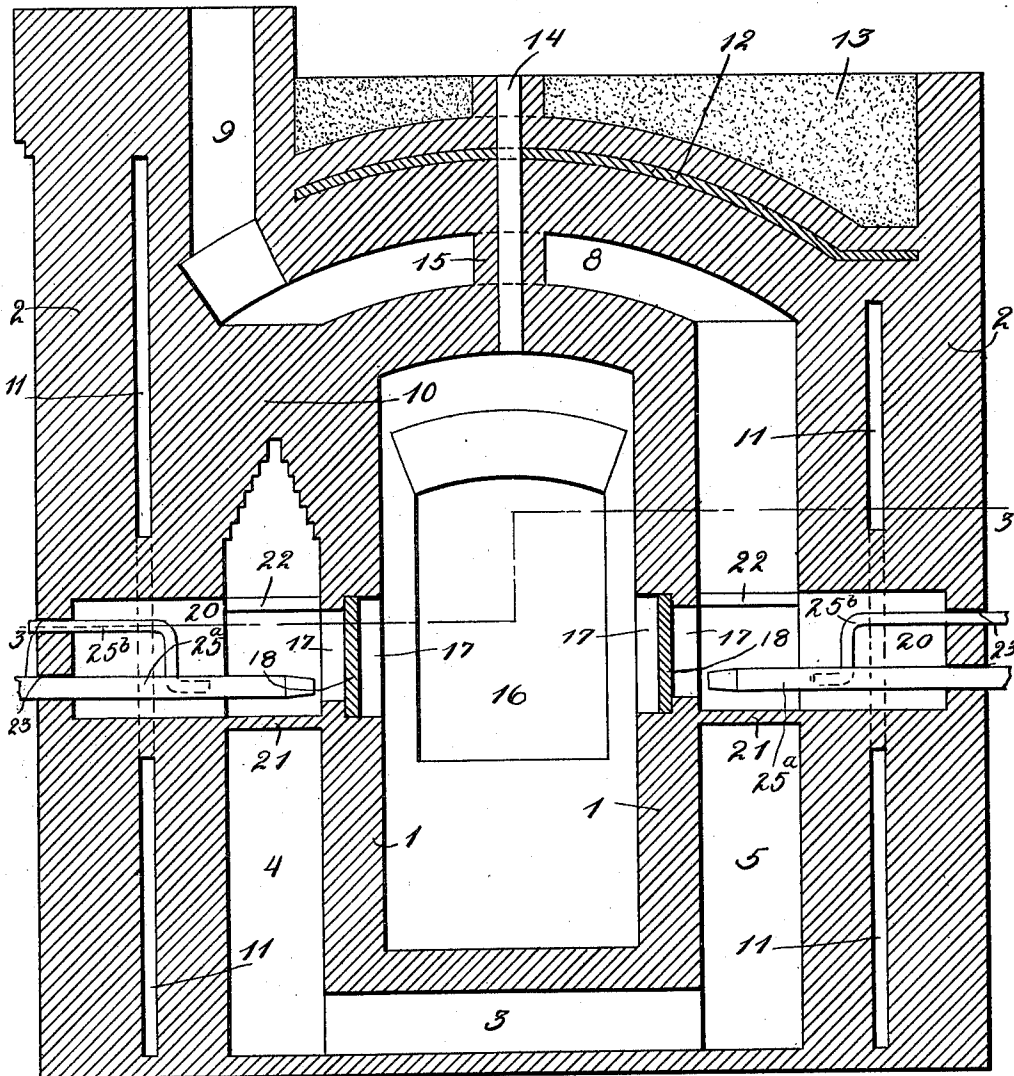
F. F. CORLISS.
FURNACE.
APPLICATION FILED FEB. 1, 1911.

1,039,101.

Patented Sept. 24, 1912.

3 SHEETS—SHEET 2.

Fig. 2.



Witnesses

J. Milton Jester
B. M. Hinkley

By

Inventor

F. F. Corliss

C. L. Parker
Attorney

F. F. CORLISS.

FURNACE.

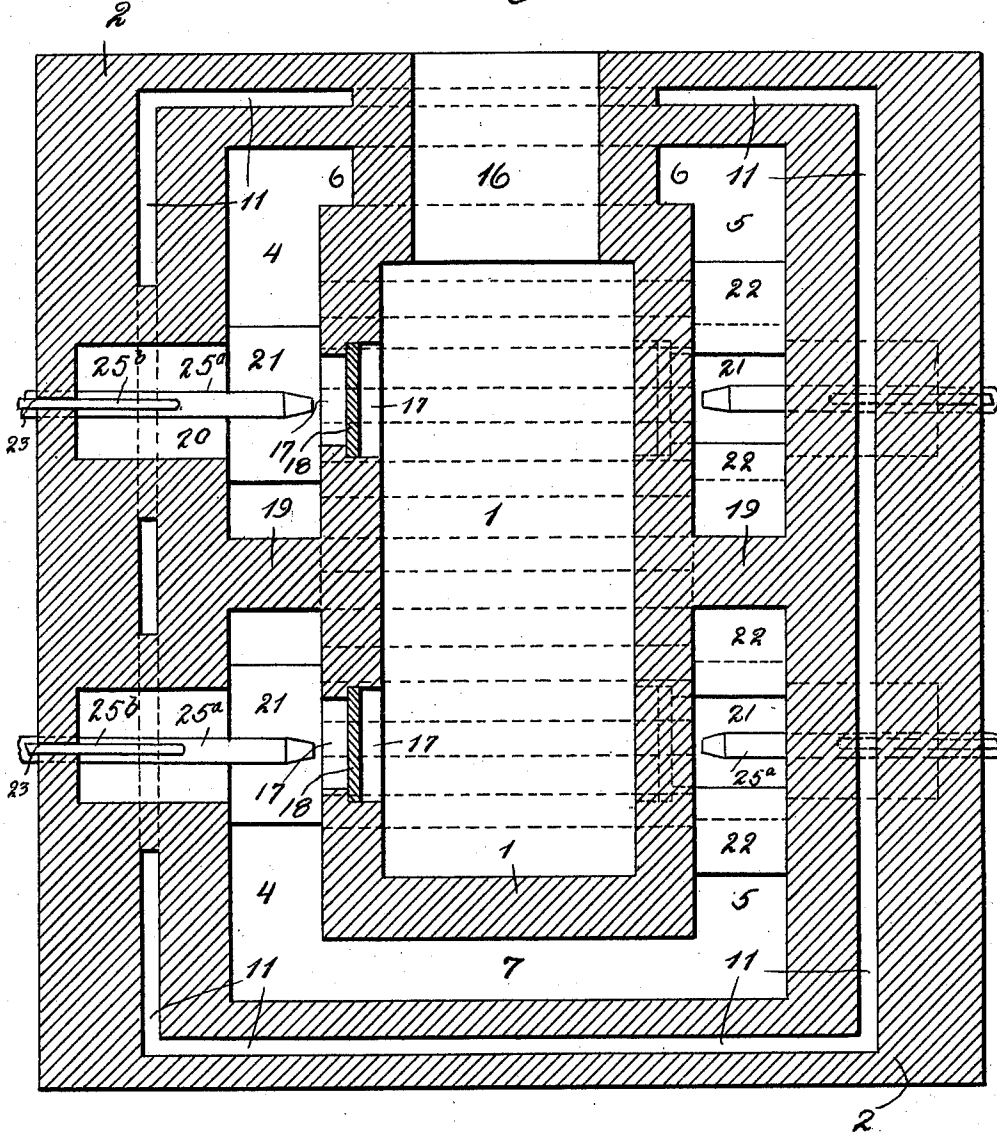
APPLICATION FILED FEB. 1, 1911.

1,039,101.

Patented Sept. 24, 1912.

3 SHEETS—SHEET 3.

Fig. 3.



Inventor

F. F. Corliss

Witnesses

J. Milton Jester
J. M. Jester

By

C. L. Parker

Attorney

UNITED STATES PATENT OFFICE.

FRANK F. CORLISS, OF BRADFORD, PENNSYLVANIA, ASSIGNOR TO CORLISS CARBON COMPANY, A CORPORATION.

FURNACE.

1,039,101.

Specification of Letters Patent.

Patented Sept. 24, 1912.

Application filed February 1, 1911. Serial No. 605,927.

To all whom it may concern:

Be it known that I, FRANK F. CORLISS, a citizen of the United States, residing at Bradford, in the county of McKean and State of Pennsylvania, have invented certain new and useful Improvements in Furnaces, of which the following is a specification.

The present invention relates to furnaces and has particular reference to a double walled furnace provided with novel heating means.

An important object of my invention is to provide a furnace of the above mentioned character, which is economical and thorough in operation.

Other objects and advantages of this invention will be apparent during the course of the following description.

In the accompanying drawings forming a part of this specification and in which like numerals are employed to designate like parts throughout the same, Figure 1 is a longitudinal vertical sectional view taken through the furnace, Fig. 2 is a transverse vertical sectional view taken on line 2—2 of Fig. 1, and, Fig. 3 is a horizontal sectional view taken on line 3—3 of Fig. 2.

In the drawings wherein is illustrated a preferred embodiment of my invention, the numeral 1 designates an inner or heating chamber, which is shown as being in the form of a parallelepiped. I do not wish to restrict myself to any particular shape of this heating chamber, as the same may be formed cylindrical or otherwise. The heating chamber 1 is disposed centrally within and is entirely surrounded by an outer chamber or casing 2. The chambers 1 and 2 may be formed of fire brick or other suitable heat resisting material.

Below the bottom wall of the heating chamber 1 are horizontal flues or ports 3, which establish communication between spaces 4 and 5, disposed between the side walls of said chambers. Spaces 6 and 7 are provided, which are disposed between the end walls of the chambers 1 and 2 and have free communication with the spaces 4 and 5. The end spaces 6 and 7 and the side space 5 have communication with a top space 8. The top space 8 is disposed between the top walls of the chambers 1 and 2 and discharges into a stack 9. The upper end of the side space 4 is closed by an arch 10,

which connects the chambers 1 and 2, as shown in Fig. 2.

The side and end walls of the outer chamber 2 may preferably be provided with air spaces 11. The top wall of the outer chamber is provided with a curved space or opening which may preferably be filled with asbestos 12. The upper surface of the top wall of the outer chamber 2, is preferably covered with sand 13, as shown.

Material is fed into the inner or heating chamber 1 through openings 14, which are preferably vertically disposed and extend through the top walls of the chambers 1 and 2. These openings also pass through cylindrical sections of material 15, which serve to connect the top walls of said chambers. The openings 14 also serve to allow the gases formed in the heating chamber 1 to escape. The material is removed from the heating chamber 1 through an opening 16, which is closed by a suitable door (not shown).

The side walls of the heating chamber 1 are provided with pairs of openings or windows 17, the windows in each pair being in horizontal alinement. Each of the windows 17 is closed by a pane of fused quartz or other suitable translucent material 18. Disposed between the windows 17 are vertical columns 19, which serve to divide the side spaces 4 and 5 into two compartments, as shown. The side walls of the outer chamber 2 are provided with openings 20 formed therethrough, which are in alinement with the openings or windows 17, as shown. Disposed near and below each of the translucent panes 18, is a horizontal baffle plate 21, having connection with the walls of the chambers 1 and 2. Disposed near the upper end of each of the panes 18 is a pair of spaced baffle plates 22, which are also connected with the side walls of the chambers 1 and 2.

The side walls of the outer chamber 2 are provided with openings 23, to receive suitable burners of the hydro-carbon injector type. Each of the burners comprises a lower air supply pipe 25^a and an upper gas supply pipe 25^b, having its inner end extending into the pipe 25^a, as shown. These burners direct flames which impinge against the translucent panes 18.

The panes 18 are formed of material which is not readily affected by the action of heat and are made thin so that the heat from

the flame which impinges against them may readily radiate into the chamber 1.

In the use of my furnace, material is fed into the heating chamber 1 through the
5 openings 14 until this chamber is completely filled. The flames from the burners are then directed to impinge against the translucent panes 18. The products of combustion from
10 these flames are discharged into the spaces surrounding the heating chamber 1, and after passing about said heating chamber on all six sides, said products are introduced into the stack 9. It will thus be seen that
15 the material within the chamber 1 is heated by the products of combustion passing about said chamber and also by the heat radiating from the translucent panes 18.

I wish it understood that the form of my invention herewith shown and described is
20 to be taken as a preferred example of the same and that certain changes in the shape, size and arrangement of parts may be resorted to without departing from the spirit of my invention or the scope of the sub-
25 joined claims.

Having thus described my invention, I claim:—

1. In a furnace of the character described,
30 a heating chamber having its opposing walls provided with horizontally alined openings, fused quartz panes disposed within said openings, and means for holding a suitable

burner which is adapted to provide a flame for impinging against said panes.

2. A furnace of the character described, 35 comprising an outer shell having thick walls formed of a high heat resisting material and being a comparatively poor heat conductor due to said thickness, an inner shell disposed within the outer shell in spaced relation 40 thereto and having its walls formed thick and of a high heat resisting material and being a comparatively poor heat conductor due to said thickness, said inner shell being provided upon its opposite longitudinal walls 45 with horizontally alined openings, relatively thin plates closing such openings and formed of material to withstand the action of heat and to allow of the radiation of the heat through the same to a much greater ex- 50 tent than the walls of the inner shell, a number of openings formed in the side walls of the outer shell and disposed adjacent the openings of the inner shell, and burners of the blowpipe type disposed within the said 55 openings to provide intensely hot flames to impinge against the thin plates which close the openings of the inner shell.

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

FRANK F. CORLISS.

Witnesses:

HENRY BOYER,

OSCAR F. SPENCER.

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