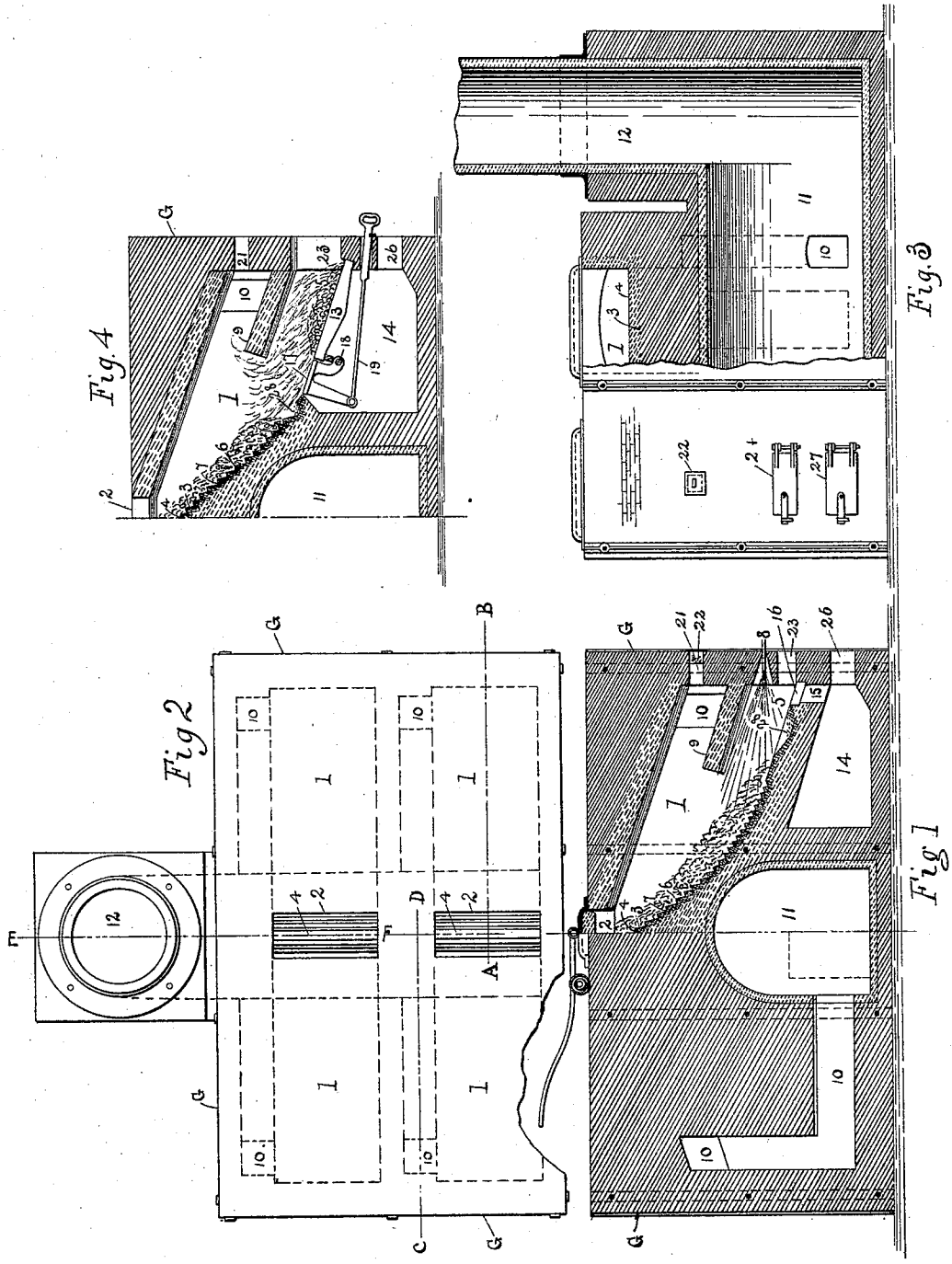
(No Model.) 2 Sheets—Sheet 1.

W. B. WRIGHT.

INCINERATING FURNACE.

No. 575,088. Patented Jan. 12, 1897.



WITNESSES.
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Wm. Hendrickson

INVENTOR.
Walter B. Wright
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his attorney

(No Model.) 2 Sheets—Sheet 2.

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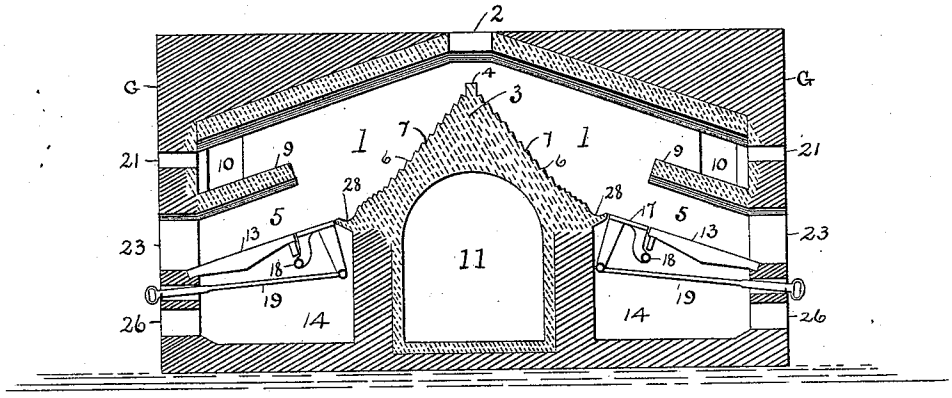

Fig. 5

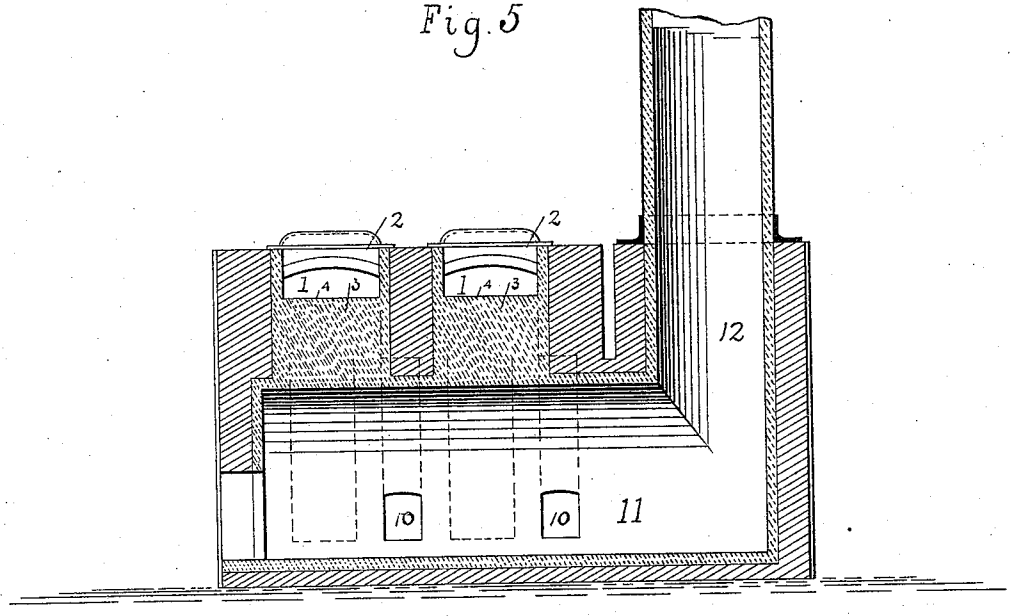

Fig. 6

WITNESSES
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UNITED STATES PATENT OFFICE.

WALTER B. WRIGHT, OF PHILADELPHIA, PENNSYLVANIA.

INCINERATING-FURNACE.

SPECIFICATION forming part of Letters Patent No. 575,088, dated January 12, 1897.

Application filed May 4, 1895. Serial No. 548,135. (No model.)

To all whom it may concern:

Be it known that I, WALTER B. WRIGHT, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Incinerating-Furnaces; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

The object of my invention is to construct a furnace, or a series of furnaces, that shall effectually burn and destroy city garbage and the odors and gases that may arise from it or be generated therefrom while the operation of destruction is in progress. Each furnace is arranged and constructed with means for firing each end of it and is independent of the adjacent one. A battery of furnaces can be extended by adding additional ones when the demand for their use becomes necessary, and so made that repairs and relining can be done at any time to any one of the battery without impairing the use of any other member of the battery, or one or more can be used, according to the demand for their use.

Heretofore in constructions for the purpose of burning garbage it has been necessary to introduce expensive and complex machinery to dessicate the mass after its introduction into the furnace. In order to enable the fire to act upon the material to be consumed, and to separate the liquids held in suspense by the solid body, long hollow cylinders have in some cases been used, they being inclined and made with spiral partitions, when, by revolving the cylinder, the mass was slowly carried forward and along and gradually dried to enable its consuming. Revolving screw-grates have also been used, as well as other devices, in many instances separate steam-engines and other complicated machinery being necessary, but by my invention such complication and expense are avoided, as I project the mass, without machinery, upon brick set to form serrations and gutters, which is comparatively inexpensive and easily renewed.

In my invention the garbage, by being projected upon an elevated dividing and serrated ridge, is by its own gravity disintegrated by the projecting serrations, the liquid collected in the pockets or grooves, and there retained upon the intensely-heated bricks until evaporated. Should more liquid be released than would fill the pockets formed by the serrations, the excess will run down the declivity and be received in a large lower pocket, where it is caught and is retained until evaporated, and should any round or rolling parts be liberated they will roll down to the outer edge of the furnace and there be retained by a grating until consumed, so that whatever enters the furnace has no means of escape and is either consumed or evaporated. Any gases which may be unconsumed and escape the first fire will enter the central flue, which is also a combustion-chamber, where the gases can expand and where also a burner may be introduced to effectually consume them, thus providing a further means to prevent their escape to the atmosphere and from a sanitary point of view affording nearly absolute immunity from the possibility of an injurious effect on the surrounding atmosphere and the community liable to be injured thereby. The bottom of the central flue and combustion-chamber lies below the bottom of the entrance of the side flues for the purpose of forming a receptacle or pocket for the retaining of any light substances, such as paper, &c., which might possibly pass through the side flues, thus preventing their being carried out to the atmosphere. The central mouth or opening through which the garbage is introduced has a removable cover or means of closure arranged so as to be readily adjusted as desired. An entrance into the central flue and combustion-chamber is provided, through which any deposit may be removed.

My invention is illustrated by the following drawings, in which—

Figure 1 is a vertical central section through one half of one of the furnaces, they being made in a battery on line A B, Fig. 2, and one half a section of the side draft-flue on

line C D, same figure. Fig. 2 is a plan view of my system of furnaces. Fig. 3 is an elevation of the outer end of one of the furnaces and a section through the center of another of the furnaces on line F E, Fig. 2, and also through the central flue and combustion-chamber, as well as through the chimney or stack. Fig. 4 is a vertical central section through one half of one of the furnaces on line A B, Fig. 2, showing the arrangement of my furnace when arranged to burn coal fuel. Fig. 5 is a longitudinal central section through one entire double-ended furnace. Fig. 6 is a transverse section through the dividing-ridges, the combustion-chamber, and chimney.

I have shown only two furnaces in the figures, but they can be extended to any number required.

By reference to Figs. 1 and 5 it will be seen my furnace reaches entirely across the inclosing structure between its outer walls G, each furnace being double-ended, that is, having fire at each end to enable perfect contact of the fire with all sides of the mass of garbage, which is dumped through the opening 2, between the two fires, upon an elevated ridge 3, constructed midway between the ends of the furnace. The mouth or opening 2 is central over the ridge 4, which is quite sharp and narrow at its apex, as seen at 4, and much higher than the end 5 of the furnace, toward which it is curved and sloped downward and outward. The serrations also tend to tear and break apart the mass of material after it falls through the opening 2, where it strikes the ridge 4 and is divided, parted, and precipitated upon the serrations, thus disintegrating it and better enabling the flames to penetrate and destroy it. The mass also resting upon steeply inclined surfaces or declivities, the solid particles naturally fall toward each fire by gravity, and as the outer particles are consumed the remaining mass moves toward the fire, thus gradually feeding the material to the flames.

My furnaces are adapted to use either liquid, gaseous, or solid fuel, as shown in Fig. 1, where 8 represents the burner or injector inserted into each end of the furnace under the fire-brick arch 9, constructed over each burner. This arrangement is for liquid fuel, the burner here used having been patented to me August 14, 1894, No. 524,369. The fire-brick arch 9 becomes intensely heated and also deflects the flame to the material to be consumed and assists in consuming any noxious gases and vapors that may be given off before they reach the side flues 10, which open from one side of each end of the furnace 1, above the arch 9, and lead downwardly and inwardly to the central flue and combustion-chamber 11, which connects all the furnaces to the chimney 12, located at one side of the furnace-inclosure, adjacent thereto or removed somewhat and of sufficient height and area to create natural draft. The oil-burner uses a mixture of crude petroleum, air, and steam, and, as already mentioned, is the subject of another invention and patent. It is operated from an oil-reservoir and boiler detached and separated from the furnaces.

In Fig. 4 is shown my arrangement of a grate 13, used when coal is employed as fuel, which it may be desirable to do in some localities. Below the furnaces at each end is an ash-pit 14, used in constructions for either fuel. When oil fuel is used, the furnace end 5 is in communication with the ash-pit 14 through the passage 15, which is covered by a grating 16. This allows the ashes to pass into the ash-pit 14 and air to pass from the ash-pit to the furnace end 5 for combustion, and the grate 16 prevents any rolling particles that may have passed down the incline from going into the ash-pit 14 and holds them in the furnace to be burned. When coal fuel is used, (see Fig. 4,) the grates 13 are carried to the ends of the furnace 5, and at their inner end I place a plate 17, hinged at its outer edge 18 and held up to its place by a rod 19, reaching outside the wall G and secured thereto. This plate 17 covers an opening connecting the furnace 1 with the ash-pit 14 for the purpose of allowing ashes to be removed to the ash-pit 14.

Above and over the grate 13 and above and over the burner or injector 8 is the fire-brick arch 9, extending inwardly and upwardly toward the center of the furnace, one being over each grate 13 or burner 8. Above and over the arch 9 is an opening 21 through the outer wall G. It is closed by a brick stopper 22. Through this opening 21 the work of combustion may be observed. Under the brick arch 9 is an opening 23 through the outer wall G, as shown in Fig. 1. This opening is closed by a hinged door 24, through which the fire can be operated or the grate scraped. The ash-pit 14 has an outer opening 26 through the outer wall G, closed, ordinarily, by a hinged door 27, after the usual method well known in boiler and furnace practice. The top of the furnace 1 is higher at the center than at the ends or sides, where it comes up to the central aperture 2, through which the garbage is fed. The serrated bottom forms at the center a ridge directly across the furnace, the raised bottom having two opposite sides exact duplicates.

In each of the serrated bottoms there is a trough 28, scooped out just below the serrations to catch any excess of liquid or moisture not retained by the ridges, pockets, or gutters 7, formed by the serrations 6. The trough 28 extends across each end of the furnaces.

My furnaces are constructed without any moving mechanisms, being of brickwork with fire-brick lining, which is readily and cheaply renewed, the walls G being held and retained by the usual binders and bolts. The fire-brick lining when once heated retains its

temperature for a long time, and is thus economical in fuel and always ready, having no complicated machinery to get out of order.

I claim as my invention—

1. A doubly-fired furnace, having an upwardly-sloping bottom from each end, a dividing-ridge across the furnace under the feeding-mouth, serrations across the furnace, solid gutters for liquid retaining, across the furnace and an arch over each fire deflecting its flames to the central ridge, and thereafter passing them above and over the arch to flues connecting with the chimney, substantially as described.

2. A doubly-fired furnace, a grate for each furnace, a drop-plate communicating with an ash-pit for each furnace, an upwardly-inclining bottom from each end of the furnace terminating in an elevated central cross-ridge, serrations and gutters across the bottom and means to deposit the material to be consumed upon the central ridge where it may be parted and fall toward each fire, substantially as specified.

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

WALTER B. WRIGHT.

Witnesses:

GEO. W. REED,

R. C. WRIGHT.