

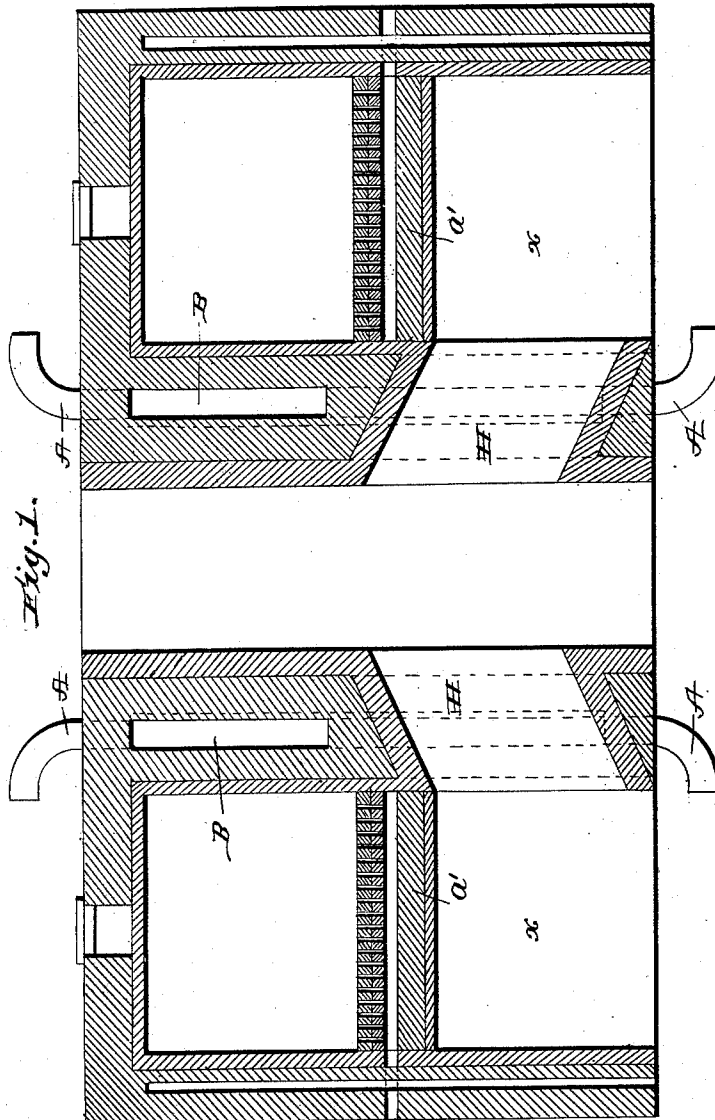
(No Model.)

5 Sheets—Sheet 1.

L. METESSER.
FURNACE.

No. 483,570.

Patented Oct. 4, 1892.



Witnesses:

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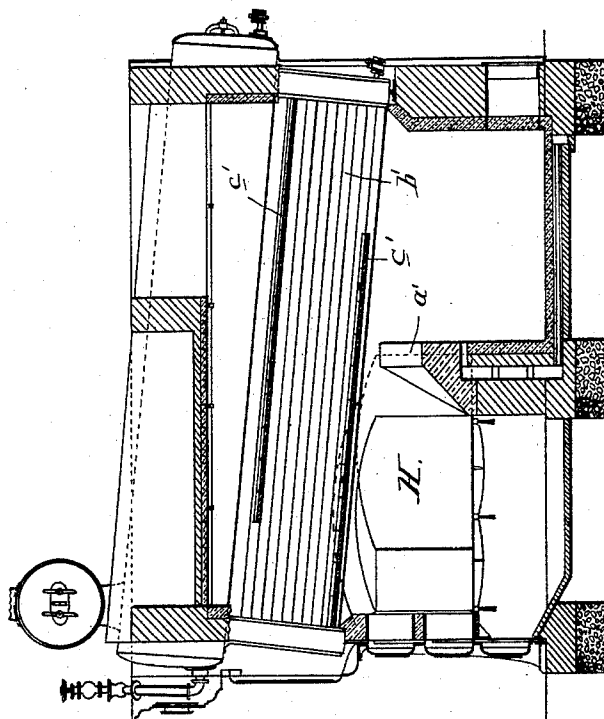
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Fig. 2.



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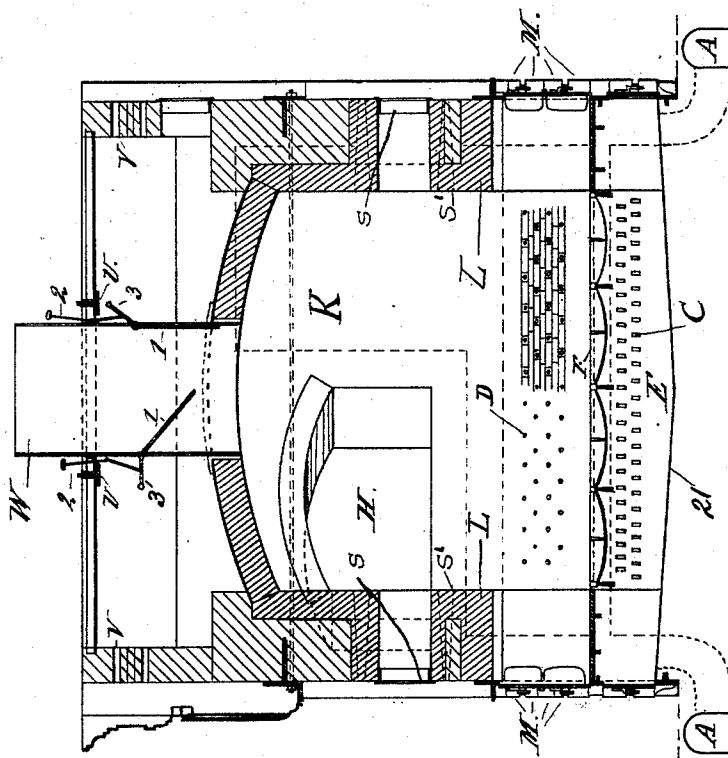
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Fig. 3.



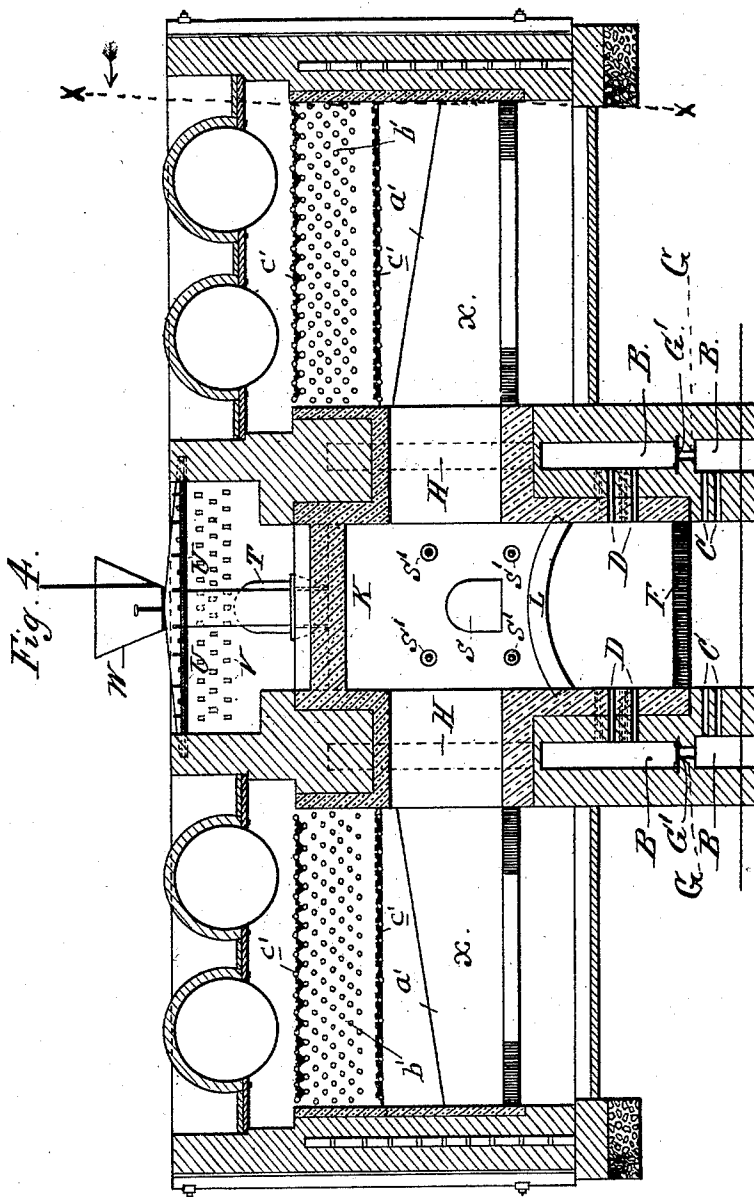
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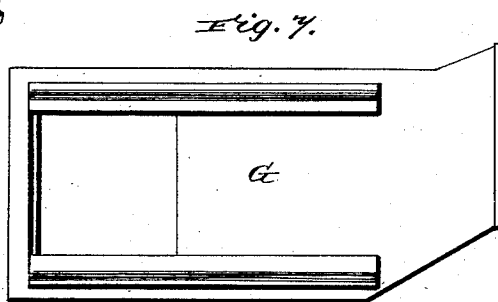
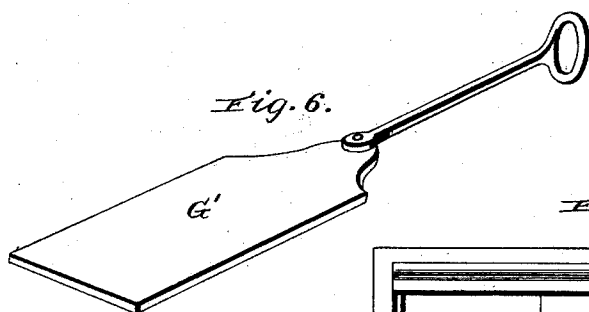
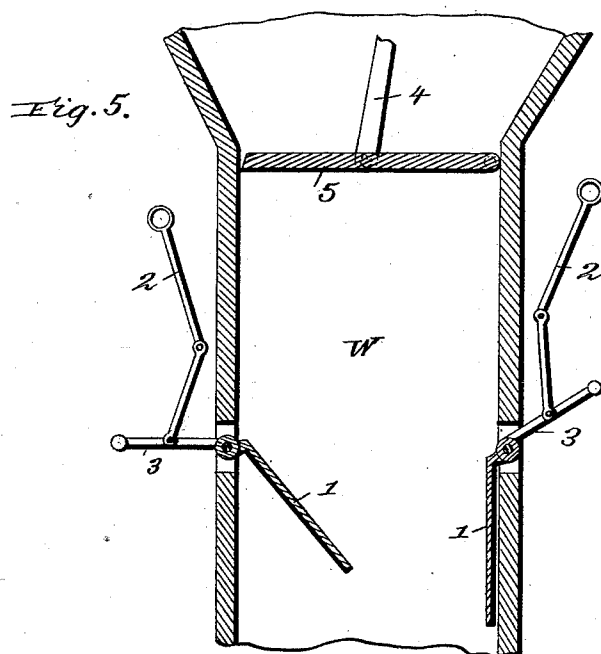
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UNITED STATES PATENT OFFICE.

LEWIS METESSER, OF NEW ORLEANS, LOUISIANA.

FURNACE.

SPECIFICATION forming part of Letters Patent No. 483,570, dated October 4, 1892.

Application filed June 30, 1891. Serial No. 398,043. (No model.)

To all whom it may concern:

Be it known that I, LEWIS METESSER, a citizen of the United States, residing at New Orleans, in the parish of Orleans and State of Louisiana, have invented certain new and useful Improvements in 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.

My invention relates to an improvement in a furnace, and its novelty will be fully understood from the following description and claims, when taken in connection with the annexed drawings; and the objects of my invention are to provide a furnace which is especially designed for burning damp bagasse, sawdust, tanbark, or other fuels to use in connection with the Heize or other pattern of boilers; also, for kilns, hot-air drying and ventilating, &c., giving a uniform diffusion of the heat, regulating the feed of the fuels, and obviating the necessity of shutting down for cleaning out the furnace, the same being an improvement upon a furnace for which Letters Patent were granted to me on the 23d day of September, 1884, and numbered 305,461. I attain these objects set forth by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a horizontal section of a furnace embodying my improvements. Fig. 2 is a transverse sectional view of a boiler and furnace outlet, taken in the plane indicated by the line xx of Fig. 4, looking in the direction of the arrow. Fig. 3 is a transverse sectional view of furnace and fuel-feeding mechanism. Fig. 4 is a longitudinal section of furnace and fuel-feeding mechanism. Fig. 5 is an enlarged transverse section of the fuel-feed hopper. Fig. 6 is a perspective view of one of the slides, and Fig. 7 is a plan view of one of the slide-frames.

Similar letters and figures refer to similar parts throughout the several views.

In constructing my furnace I provide same with air-tunnels, as designated by A and shown in Figs. 1 and 3, which tunnels may be located in rear or in front of furnace-walls and below bottom of water-tight ash-pit, connecting with the air-spaces B in side walls, which are divided on line with grate-bars.

At a point designated by C and as shown in Fig. 4 I place air-openings, said openings leading into water-tight ash-pit below grate-bars. I also provide air-openings, as shown by D, which lead into combustion-chamber above grate-bars, said openings connecting with the upper portion of the air-spaces B.

The water-tight ash-pit E is constructed, as shown in Fig. 3, with a bottom 21, sloping from front and rear of the furnace to the center thereof. The grate-bars F cover full area of furnace and are supported at suitable intervals by bearing-bars placed at right angles to grate-bars. At a point shown by G in Fig. 4 I place metal guides or slide-frames, which may be located on either or both sides of furnace and in rear and front walls above the horizontal division in the air-space and which are provided with openings which are controlled by the slides G'. These slides G' rest within the guides or slide-frames and are designed through the medium of suitable mechanism to be drawn back and forth, and thus regulate the flow of air into space of upper chamber B. I also provide outlets for the products of combustion, as shown by H in Figs. 1, 2, 3, and 4, said outlets permitting the products of combustion to extend under the boilers, kilns, driers, &c., said outlets or openings deflecting toward front of boilers or suitable parts of kilns, driers, &c., and are protected by arches.

The transverse arches of combustion-chamber K have a central opening for the feed-hopper. I also place arches in front and rear walls over fire-doors, (shown by L.) The fire-doors M (shown in Fig. 3) are full width of combustion-chamber.

I place in front and rear walls above arches over fire-doors inlet-doors and sight-openings, as designated by S and S'. Located in rear wall above longitudinal arch forming top of combustion-chamber is a cleaning-door, as shown by T in Fig. 4.

Over top of furnace and in line with top of walls I place bearing-bars and cover-plates constructed of metal, as designated by U. Situated between longitudinal arch and covering-plates U are ventilating-openings V.

Located over center of longitudinal arch and forming an opening in said arch and projecting above covering-plates U, I place a

fuel or feed hopper W, being constructed of any desired shape or of any desired material and provided with adjustable wings, as shown by 1 in Figs. 3 and 5, said wings being provided with a lever or handle 2 and an arm 3, flexibly connected together, which will enable the wings 1 to be placed on an incline or in a vertical position, as shown in Figs. 3 and 5, and enable the operator to deflect the bagasse or other fuel to the front or rear of furnace, as desirable, whereby it will be seen that one-half of the grate-surface may be cleaned without stopping burner. As shown in Fig. 5, I also provide hopper W with an automatic dumping or feed mechanism for supplying furnace regularly with bagasse or other fuel and in suitable quantities, 4 referring to a lever, and 5 a wing or gate, which may be operated by any suitable means. I also provide a separate furnace or burner X under each boiler, kiln, or drier, these auxiliary furnaces having bridge-walls *a'*, which slope from the bagasse or fuel furnace toward the end walls of boiler, kiln, or drier-furnace, as shown in Figs. 2 and 4, and in a plane above these sloping bridge-walls are arranged tubes *b'*, having corrugated deflecting or flue strips *c'*, arranged above and below the tube, as better shown in Figs. 2 and 4 of the drawings.

By reason of the walls *a'* having their upper edges inclined downwardly or sloped from the bagasse or fuel furnace toward the end walls, as described, it will be seen that the space between said walls and the flue-strips *c'* increases in width toward the end walls, whereby an excess of the particles of combustion will be prevented from passing under the flue-strips *c'*, immediately adjacent to the walls of the bagasse or fuel furnace, and will be equally distributed beneath said flue-strips throughout the width thereof.

In practice bagasse or other fuel is fed to hopper W in any desired way to supply the furnace, and by means of lever 4 and wing 5 the fuel is supplied to furnace regularly and in even or graduated quantities. Should it be desired to change the feed to front or rear furnace, or to clean half of grate-surface, one of the wings 1 is placed on an incline, as shown. The wings 1, however, when not in use rest in a vertical position against the inside of hopper. By means of the tunnels A and the air-slides G', I am enabled to force a blast or draft in several directions through openings C, thence upward through grate-bars, and also through openings D. When it is desired to control the air-supply, the slides G' may be shoved into the slide-frame G, and thus cut off the flow of air.

A striking advantage of my invention is the adjustable wings for deflecting the bagasse or other fuel to front or rear of furnace,

thus enabling a cleaning of grate surface without stopping. By the introduction of water into the ash-pit the ashes are cooled at once as they fall from grate-bars, and thus facilitating the cleaning of ash-pits of furnaces and prolonging the life of grate-bars, as they cannot become overheated as long as ash-pit has a supply of water therein; also, the ventilations of the furnace between longitudinal arch K and covering-plates U, by the ventilating-openings V, thereby removing an objectionable feature inherent to all similar burners of heating by radiated heat on top of furnaces, kilns, driers, &c.

I am aware that it is not new to provide air-passages in a bagasse-furnace and to arrange tuyeres connecting the air-passages with the combustion-chamber, and I am also aware that it is not new to arrange a furnace for burning fuel—such as coal or the like—on opposite sides of and in connection with a bagasse-burner, and therefore do not claim such devices, broadly.

Having described my invention and the manner in which the same is or may be carried into effect, I would say, in conclusion, that I do not limit myself to the precise details herein described in illustration of my invention, as the same may be varied to some extent; but

I declare that what I claim is—

1. The bagasse-burner having the air-spaces B on opposite sides of the combustion-chamber and adapted to connect with air-tunnels, as described, said spaces also having partition-walls provided with openings, in combination with the combustion-chamber, the ash-pit having the sloping bottom, as described, the tuyeres connecting the air-spaces with the combustion-chamber and ash-pit, respectively, the slides for regulating the supply of air, and the furnaces on opposite sides of the bagasse-burner, connected by the flues H and having the sloping bridge-walls *a'*, substantially as specified.

2. The combination, with the bagasse-furnace having the arch K, and the radiating-chamber above said arch, of the hopper W, passing through said chamber and arch, the wings pivoted in the hopper and having the arms 3, and the forked levers, also pivoted to the hopper and having their forked ends engaging the arms of the wings and having their handles projecting through the covering-plates, whereby said wings may be manipulated to deflect fuel to the front or rear of the furnace, substantially as specified.

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

LEWIS METESSER.

Witnesses:

HELMUTH HOLTZ,
PERCY D. PARKS.