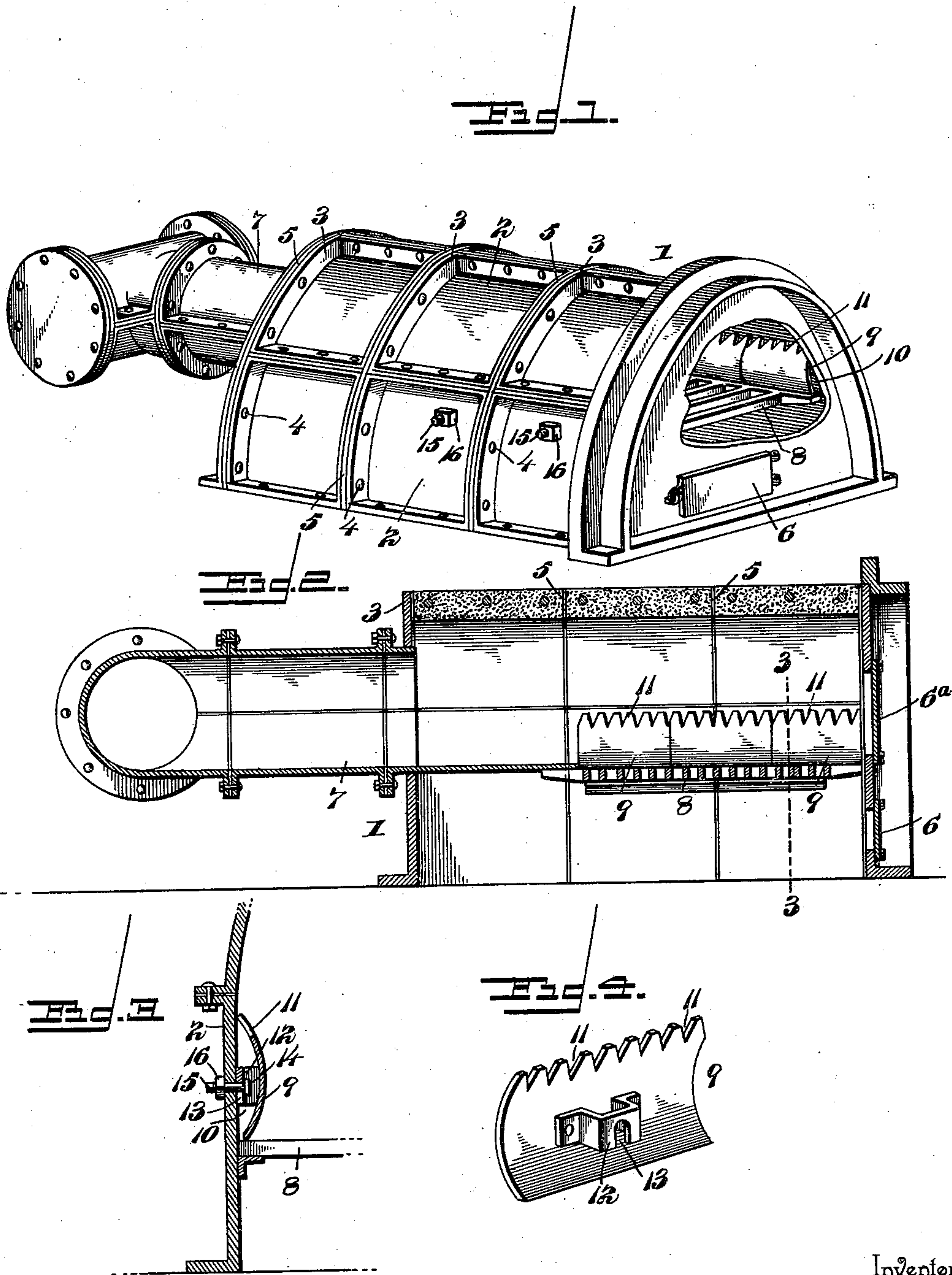


(No Model.)

J. H. JOHNSON & J. MORAN.
FURNACE.

No. 556,098.

Patented Mar. 10, 1896.



Inventors

John H. Johnson

James Moran

By their Attorneys,

C. A. Snow & Co.

Witnesses

E. H. Stewart
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UNITED STATES PATENT OFFICE.

JOHN H. JOHNSON AND JAMES MORAN, OF ORANGE, TEXAS.

FURNACE.

SPECIFICATION forming part of Letters Patent No. 556,098, dated March 10, 1896.

Application filed August 28, 1895. Serial No. 560,804. (No model.)

To all whom it may concern:

Be it known that we, JOHN H. JOHNSON and JAMES MORAN, citizens of the United States, residing at Orange, in the county of Orange and State of Texas, have invented a new and useful Furnace, of which the following is a specification.

This invention relates to furnaces; and it has for its object to effect certain improvements particularly in furnaces of the character set forth in our former patent, No. 485,762.

To this end the invention primarily contemplates an attachment for the inner side walls of the furnace for the purpose of protecting and preserving the side walls at the points most exposed to the fire within the furnace.

With these and other objects in view, which will readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination, and arrangement of parts hereinafter more fully described, illustrated, and claimed.

In the drawings, Figure 1 is a perspective view, partly in section, of a furnace embodying the improvements contemplated by this invention. Fig. 2 is a vertical longitudinal sectional view thereof. Fig. 3 is an enlarged detail sectional view on the line 3 3 of Fig. 2. Fig. 4 is a detail in perspective of one of the inner metallic lining-plates.

Referring to the accompanying drawings, 1 designates the furnace-casing, which is illustrated as consisting essentially of a series of rectangular metal plates 2, having exterior registering-flanges 3, connected together by the bolts 4 and having interposed therebetween asbestos or other suitable packing 5. This construction of furnace-casing is substantially the same as that set forth in the patent referred to, and at its front end the said furnace-casing is provided with the usual fire-box and ash-pit doors 6 and 6^a, respectively, and at its rear end the said furnace-casing has connected therewith one end of the circulating-flue 7, which is arranged to extend in any suitable direction, according to the requirements of the particular drying-kiln or drying-house in connection with which the furnace may be employed.

The furnace-casing 1 has arranged therein

the usual horizontal fire-grate 8, which separates the ash-pit from the fire-box and extends nearly the entire length of the casing. In the present invention the furnace-casing has arranged therein a series of inner metallic lining-plates 9. The inner metallic lining-plates 9 are arranged at opposite inner sides of the furnace-casing directly above and adjoining the grate 8, so as to provide means for protecting and preserving the opposite inner sides of the furnace at the points which are most exposed to the fire by reason of the continuous bed of coals which rests on and accumulates at the opposite side edges of the fire-grate 8.

The series of inner metallic lining-plates 9 extends the entire length of the grate 8, at opposite sides thereof, and the said lining-plates are concavo-convex in shape and are arranged with their concaved sides disposed next to the sides of the furnace-casing in order to form air-circulating chambers 10 between the lining-plates and the sides of the furnace-casing, which air-circulating chambers prevent the direct transmission of heat to the metallic sides of the furnace-casing, and thereby preserve and protect the said metallic sides from readily burning out or becoming impaired by being subjected to the intense heat of the fire at the edges of the grate. The said concavo-convex metallic lining-plates 9 rest at their lower edges on the grate and at their upper edges are provided with a longitudinal series of air-circulating notches 11, which series of notches serve to ventilate the chambers 10, and allow a continuous circulation of air from the ash-pit therethrough, in order to supplement the function of the plates 9, by preventing the direct heat from the fire materially affecting the metallic sides of the furnace-casing. Each of the lining-plates 9 is provided on its outer concaved side next to the inner sides of the casing with an offset hollow boss 12, provided in its lower edge with a slot or notch 13, adapted to receive the T-head 14 of a bolt 15, the threaded shank of which bolt is passed through one of the metallic plates forming the furnace-casing and receives a fastening-nut 16, which is screwed up on the outside of the furnace-casing and is thereby prevented from being burned out by the heat within

the furnace. The T-headed bolt 15, in connection with the boss 12, for each of the lining-plates serves to firmly secure such plates in position, while at the same time admitting of the ready independent removal and replacing of each plate when necessary, without disturbing any other part of the furnace.

Changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

Having thus described the invention, what is claimed, and desired to be secured by Letters Patent, is—

In a furnace, the combination with the metallic casing, and a horizontal fire-grate therein; of an aligned series of concavo-convex metallic lining-plates arranged at opposite inner sides of the furnace-casing directly above and adjoining the grate, said lining-plates being disposed with their concaved

sides next to the sides of the furnace-casing to inclose air-circulating chambers and provided at their upper edges with a series of ventilating-notches for the air-circulating chambers, each of said lining-plates being provided on its concaved side with an off-standing hollow boss having a notch in its lower edge, and a separate fastening-bolt for each lining-plate secured in the sides of the furnace-casing and having T-heads engaging in the notches of said bosses whereby each lining-plate may be removed and replaced independently of the others, substantially as set forth.

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in the presence of two witnesses.

JOHN H. JOHNSON.

JAMES MORAN.

Witnesses:

P. LAUSEN,

G. H. POND.