J. ENRIGHT.

STEAM-BOILER FURNACE.

No. 169,531. Patented Nov. 2, 1875.

Fig. 1.

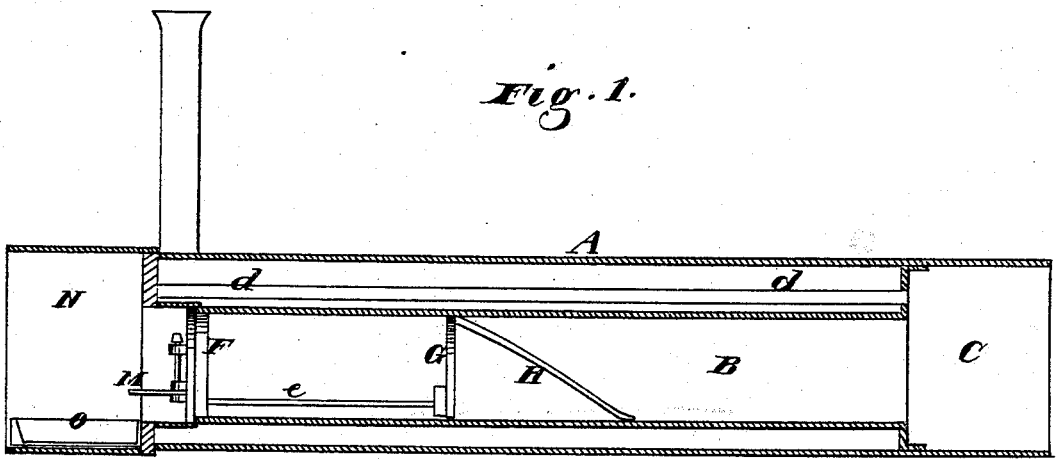
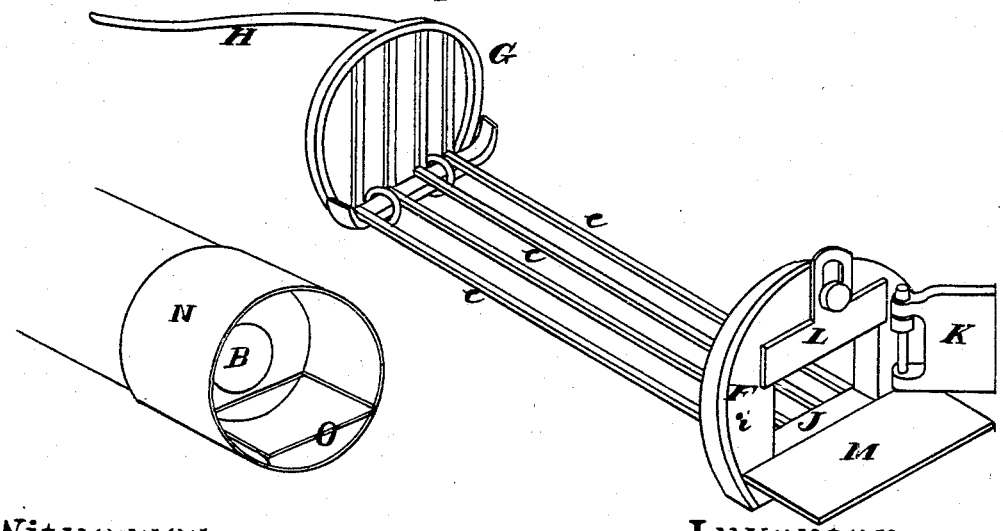


Fig. 2.



Witnesses

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JOSEPH ENRIGHT, OF SAN JOSÉ, CALIFORNIA.

IMPROVEMENT IN STEAM-BOILER FURNACES.

Specification forming part of Letters Patent No. **169,531**, dated November 2, 1875; application filed July 23, 1875.

To all whom it may concern:

Be it known that I, JOSEPH ENRIGHT, of San José, Santa Clara county, State of California, have invented an Improvement in Steam-Boiler Furnaces; and I do hereby declare the following description and accompanying drawings are sufficient to enable any person skilled in the art or science to which it most nearly appertains to make and use my said invention or improvement without further invention or experiment.

My invention relates to certain improvements in the furnaces of steam-boilers, in which a large central flue is employed having a grate in its front end, and a combustion-chamber behind with small return-flues.

My invention is especially intended to fit the furnace for using straw as a fuel, and it contemplates the use of what I call a ring-grate behind the ordinary grate, so that I am enabled to do away with the extension mouth-piece, which is now attached to the furnace-doors for that purpose. My invention further consists in an adjusting-plate, by which I vary the size of the door-opening to fit the furnace for burning straw or wood; and, lastly, in the use of a cylindrical extension or shield containing a water hearth or floor, so that the loose straw is prevented from being blown about by the wind, and any cinders or burning straw which may drop will be extinguished by the water.

Referring to the accompanying drawings for a more complete explanation of my invention, Figure 1 is a longitudinal section of my boiler. Fig. 2 is a perspective view of the grates and door.

A is the shell of my boiler; B is the central flue; C is the combustion-chamber, and *d d* are the small return-flues. Within the large flue B are placed the grate-bars *e*, one end of which rests in depressions made for the purpose in the lower part of the head F, which serves to close the front end of the flue. The rear end of these grate-bars rests upon a bar or plate, which closes the lower part of the flue, and thus causes all the draft of air to pass up through the grate-bars.

In order to make my furnace capable of burning straw as a fuel, I have constructed what I call a ring-grate, G. This grate stands vertically in the tube B at the rear end of the horizontal grate, and it may be made in any suitable manner.

In the present case I have shown vertical grate-bars secured in or formed with a ring, which fits the interior of the tube. This ring-grate prevents the straw and cinders from being carried back into the combustion-chamber, and, as it may be desirable to remove this grate when wood is to be used as a fuel, I have shown a supporting-brace, H, which extends back into the flue, and, resting upon the bottom, steadies the ring-grate. The front plate or head F may be secured by bolts through holes *i i* in it, and by releasing these the head, grate-bars, and ring-grate can all be removed for cleaning or for other purposes. The door-opening J in the front F is closed by an ordinary door, K, and is made of a sufficient size to admit of the use of wood when desired; but when I employ straw as a fuel I find it better to have a smaller opening, so as to prevent too much cold air entering. To regulate the size of this opening I fit a thin metal slide, L, to the front F, and this slide is slotted or guided so as to be moved down more or less to close the opening. Being thin, it will in no way interfere with the closing of the door at any time. Upon a line with the bottom of the door-opening I make an extended hearth, M, which serves as a support for the wood or straw which is being introduced, and also prevents the straw from falling among the cinders.

In order to protect the door from the effects of wind, which is liable to blow the light straw about, and also to prevent any burning straw from falling upon the ground, where it might do considerable damage, I construct a cylindrical extension or shield, N, which may be bolted upon the end of the boiler, and is long enough to protect the door and catch any falling cinders.

In the bottom of this extension in front of the door-opening I form a receptacle, O, for water, and any cinders which may fall from the furnace will be extinguished and prevented from doing damage.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a straw-burning furnace, the combination of horizontal grate *e e*, and vertical grate G with the fire-box front, said parts being connected to be readily detached from the fire-box, substantially as shown and described.

2. In combination with the ring-grate G, horizontal grate *e*, and front F of the flue C, the adjustable slide L, for diminishing the door-opening independently of the door K, substantially as and for the purpose herein described.

3. In combination with the flue C of a boiler, provided with the vertical and horizontal grates and door-opening, as shown, the cylindrical extension or shield N, substantially as and for the purpose herein described.

4. The receptacle O, for receiving water to form a water-floor to the extension N, substantially as herein described.

5. The fixed horizontal hearth N, upon a line with the bottom of the door-opening, to serve as a support and guide for the fuel, and to prevent the straw from falling among the cinders, substantially as herein described.

JOSEPH ENRIGHT.

Witnesses:
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