

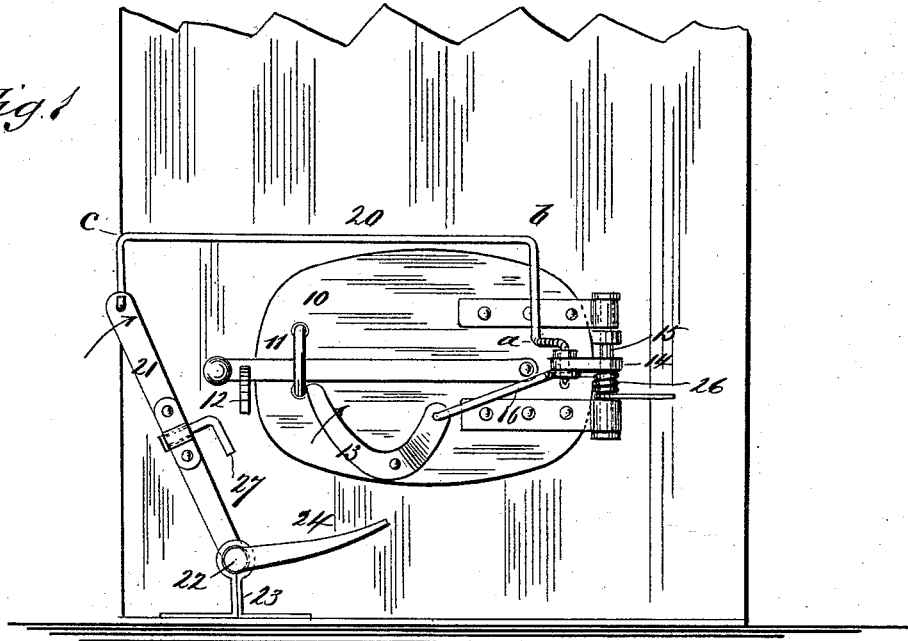
(No Model.)

A. H. BALLAGH.  
FURNACE DOOR OPENER.

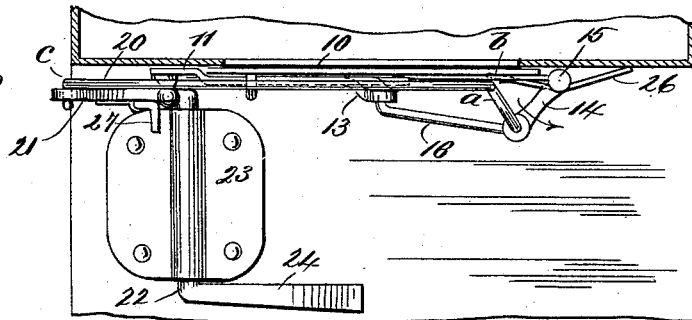
No. 419,748.

Patented Jan. 21, 1890.

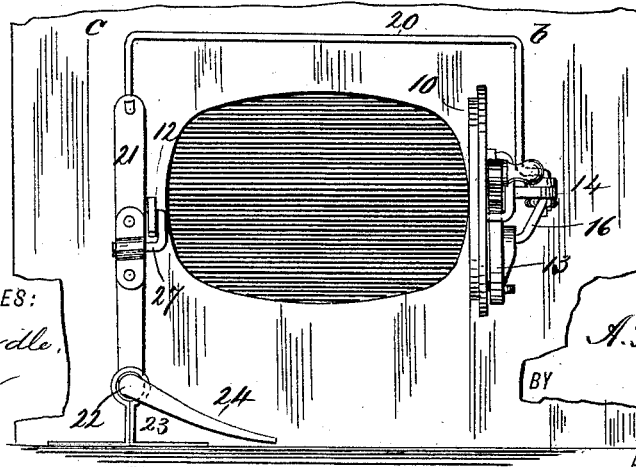
*Fig. 1*



*Fig. 2*



*Fig. 3*



WITNESSES:

*J. M. Apple*  
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INVENTOR:

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BY

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# UNITED STATES PATENT OFFICE.

ANDREW H. BALLAGH, OF MACON CITY, MISSOURI.

## FURNACE-DOOR OPENER.

SPECIFICATION forming part of Letters Patent No. 419,748, dated January 21, 1890.

Application filed May 11, 1889. Serial No. 310,366. (No model.)

### *To all whom it may concern:*

Be it known that I, ANDREW H. BALLAGH, of Macon City, in the county of Macon and State of Missouri, have invented a new and  
5 Improved Furnace-Door Opener, of which the following is a full, clear, and exact description.

This invention relates to furnace-door openers, the object of the invention being to provide an attachment for furnace-doors by  
10 means of which the door may be opened by depressing a treadle, thus leaving the hands of the operator free to throw on coal or rake the fire, a spring being arranged so that the door will close the moment the pressure upon  
15 the treadle is released, and an attachment being provided by means of which the door may be held open against the tension of the spring when it is desired to so hold the door open.

Reference is to be had to the accompanying  
20 drawings, forming a part of this specification, in which similar figures and letters of reference indicate corresponding parts in all the views.

Figure 1 is a face view of a furnace-door,  
25 representing the same as it appears when provided with my improved opening attachment. Fig. 2 is a plan view of the attachment, and Fig. 3 is a view representing the parts as they appear when the door is held in the open position by the attachment above referred to.

In the drawings, 10 represents a furnace-door that is provided with a latch 11, which engages a keeper 12, the latch being pivotally connected to the door. Beneath the latch 11,  
35 I pivotally mount a bell-crank tripping-lever 13, which is connected with an arm 14, that is loosely mounted on the door-hinge pintle 15 by a connecting-rod 16. To the arm 14, I pivotally connect a rod 20, which extends inward from the arm to a point marked *a*, then  
40 upward to a point indicated at *b*, then laterally over the top of the door 10 to *c*, and finally downward to connect with a lever 21, that is rigidly connected to a rock-shaft 22,  
45 said rock-shaft being mounted in a bracket 23, that is secured to the flooring in advance of the furnace.

To the outer end of the rock-shaft 22, I secure a treadle 24, the arrangement being such  
50 that by depressing the treadle the lever 21 will be thrown in the direction of its arrow and will carry the rod 20 so that the arm 14

will be moved in a proper direction to throw the tripping-lever 13, as indicated by its arrow, (shown in Fig. 1,) which movement of  
55 the tripping-lever will raise the latch 11 from engagement with the keeper 12, any continued depression of the treadle drawing upon the tripping-lever 13 and moving the door to the position in which it is shown in Fig. 3. 60 After the pressure upon the treadle has been relaxed a spring 26, which is coiled about the pintle 15 and bears upon the furnace-wall and upon the door, will act to return the door to its closed position. 65

In order that the door may be held in the open position, I provide the lever 21 with a pivotally-mounted catch 27, which catch, when the lever has been moved to the position in which it is shown in Fig. 3, may be  
70 turned up to engage the keeper 12.

By means of the door-operating attachment above described I provide for the opening of the door for a period just long enough to supply the furnace with coal or to rake the  
75 fire, as will be readily understood, and thereby obviate the necessity of opening the door by hand, then seizing the shovel or other implement, and in finally closing the door, whereby I prevent the checking of the fire  
80 and the consequent loss of steam.

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

1. The combination, with a furnace-door, of a tripping-lever pivotally connected thereto,  
85 an arm mounted on the pintle of the door-hinge, connections between the lever and the arm, a treadle, a lever arranged to move therewith, and a rod 20, which connects said lever with the arm, substantially as described. 90

2. The combination, with a lever 13, arranged for connection with a furnace-door, of an arm 14, loosely mounted on the pintle of the door-hinge, a link or rod connecting the arm and the lever, a lever 21, a treadle connected thereto, and connections between the lever 21 and the arm 14, substantially as described. 95

3. The combination, with a furnace-door, of a spring 26, arranged in connection therewith, 100 a tripping-lever 13, pivotally connected to the door, an arm 14, loosely mounted on the pintle of the door-hinge, connections between the lever 13 and the arm 14, a lever 21, a

treadle arranged in connection therewith, and a connection, substantially as described, between the lever 21 and the arm 14, as and for the purpose stated.

5 4. In a furnace-door-operating attachment, the combination, with a lever 21, of a treadle 24, connected thereto, a latch 27, carried by the lever 21 and arranged to engage the keeper of the door-latch, a spring 26, arranged  
10 in connection with the furnace-door, a trip-

ping-lever 13, pivotally connected to the door, an arm 14, mounted upon the pintle of the door-hinge, connections between the tripping-lever and the arm, and a connection, substantially as described, between the lever 21 15 and the arm 14, as and for the purpose stated.

ANDREW H. BALLAGH.

Witnesses:

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