

No. 650.855.

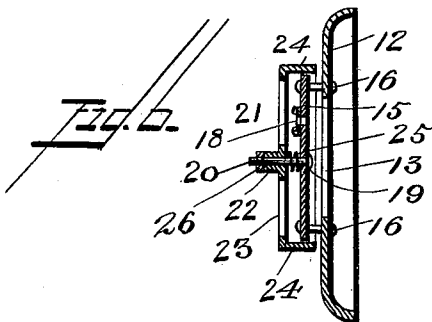
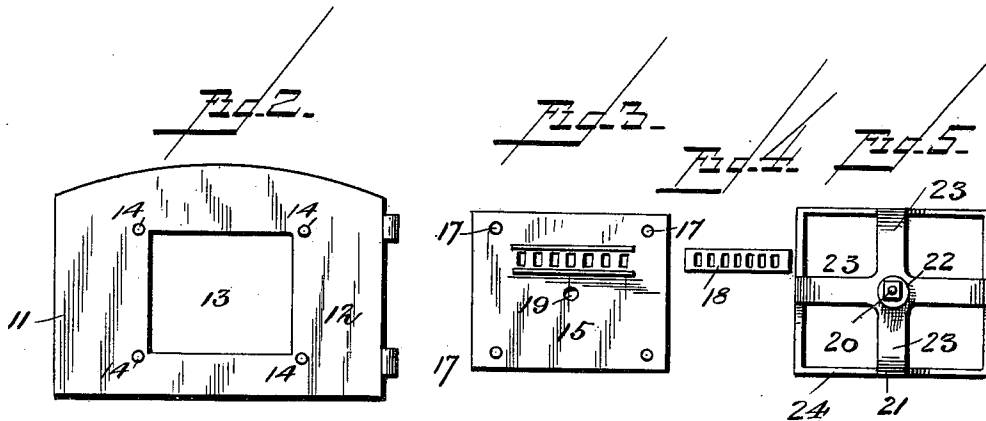
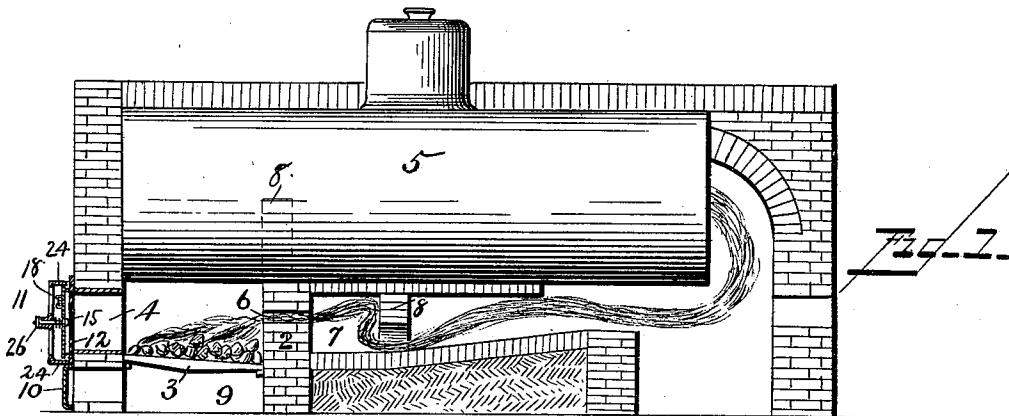
Patented June 5, 1900.

J. O. MORRIS.

STEAM BOILER FURNACE AND DOOR THEREFOR.

(Application filed Oct. 11, 1899.)

(No Model.)



WITNESSES:

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UNITED STATES PATENT OFFICE.

JOHN ODEN MORRIS, OF RICHMOND, VIRGINIA, ASSIGNOR OF TWO-FIFTHS
TO EDWIN T. WADE, OF SAME PLACE.

STEAM-BOILER FURNACE AND DOOR THEREFOR.

SPECIFICATION forming part of Letters Patent No. 650,855, dated June 5, 1900.

Application filed October 11, 1899. Serial No. 733,251. (No model.)

To all whom it may concern:

Be it known that I, JOHN ODEN MORRIS, a citizen of the United States, residing at Richmond, in the county of Henrico and State of Virginia, have invented new and useful Improvements in Steam-Boiler Furnaces and Doors Therefor, of which the following is a specification.

My invention relates to steam-boiler furnaces and doors therefor; and the object of the same is to provide for the admission of atmospheric air above the fuel-bed and to regulate the force of the draft by a damper mechanism which will insure the complete burning of the products of combustion.

To this end the invention consists in the novel construction and combination of parts hereinafter fully described and claimed.

In the accompanying drawings, Figure 1 is a longitudinal section of a steam-boiler furnace constructed in accordance with my invention. Fig. 2 is a plan view of the furnace-door. Fig. 3 is a plan view of the damper-plate. Fig. 4 is a similar view of the damper-frame or spider. Fig. 5 is a vertical section through the furnace-door, damper-plate, and damper.

Like numerals of reference indicate like parts in the various views of the drawings.

The reference-numeral 1 designates the walls of the furnace; 2, the bridge-wall; 3, the grate; 4, the fire-opening, and 5 a steam-boiler of the horizontal type.

It will be understood, of course, that my improvements may be used with an upright or vertical boiler.

The bridge-wall 2 is provided with an opening 6 for the passage of the products of combustion, and located in the combustion-chambers 7, in rear of the bridge-wall 2, are upper and lower arches 8, which retard the products of combustion in order that they shall be completely consumed.

The numeral 9 designates the ash-pit, and 10 the door thereof.

The furnace-door 11 consists of a door-frame 12, having a central opening 13, which may be rectangular, as shown in the drawings, but not necessarily so. At the corners of the opening 13 bolt-holes 14 are formed, and the damper-plate 15 is secured to the

door-frame by shouldered bolts 16, passing through the bolt-holes 14 and registered bolt-holes 17 in the corners of the damper-plate 15. By means of the shouldered bolts 15 the damper-plate is held at some distance in front of the opening 13 in the door-frame, and by this construction air may enter at all points around the damper-plate, and provision is also made for central draft by means of the usual slide-damper 18. A central bolt-hole 19 is formed in the damper-plate, and a bolt 20, passing through this hole, is connected at its threaded end to a draft-regulator or spider 21. This regulator consists of a central boss 22, formed on the spiders 23, said spiders having formed on their outer extremities a rectangular flange 24, which fits the damper-plate 15. A spiral spring 25 surrounds the bolt 19 between the plate 15 and the regulator 21, and this spring has a tendency to hold the regulator outward away from the plate. A nut 26 on the end of the bolt 20 serves to adjust the flange 24 of the regulator toward and from the furnace-door to regulate the draft by giving more or less space around the plate 15.

From the foregoing it will be seen that air may be admitted above the fuel-bed either by the slide-damper or by the use of the regulator, which gives a draft of greater area and force and can be controlled to the desired degree to consume all the products of combustion and to give the required heat for different conditions and qualities of fuel.

Having thus fully described my invention, what I claim is—

1. The combination with a steam-boiler furnace, of the door-frame having a central opening therein, a plate secured in front of said opening, leaving a space between said door-frame and plate, and a regulator adjustable toward and from the door-frame around said plate to regulate the draft, substantially as described.

2. The combination with a steam-boiler furnace, of a draft-regulator consisting of a door having a central opening, a plate secured in front of said opening, at a distance therefrom, said plate being provided with a slide-damper, and a draft-regulator surrounding said plate and adjustable toward and

from the furnace-door to adjust the draft force, substantially as described.

3. A draft-regulator for furnace-doors consisting of an opening in the door, a plate secured at a distance in front of said opening, a draft-regulator secured to the plate and having a flange which surrounds the plate and is adjustable toward and from the furnace-door to regulate the force of the draft, substantially as described.

4. A furnace-door consisting of a door-frame having an opening therein, a draft-plate secured thereto in front of said opening, a regulator secured centrally to said plate and hav-

ing a flange surrounding said plate, a bolt passing through said plate and regulator, a spring surrounding said bolt, and means for adjusting the draft-opening between the door-frame and the draft-plate, substantially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

JOHN ODEN MORRIS.

Witnesses:

EMMA M. GILLETT,
E. P. BUNYEA.