

No. 740,986.

PATENTED OCT. 6, 1903.

J. O. MORRIS.

SPRAYING ATTACHMENT FOR FURNACES.

APPLICATION FILED OCT. 18. 1902.

NO MODEL.

2 SHEETS—SHEET 2.

Fig. 2

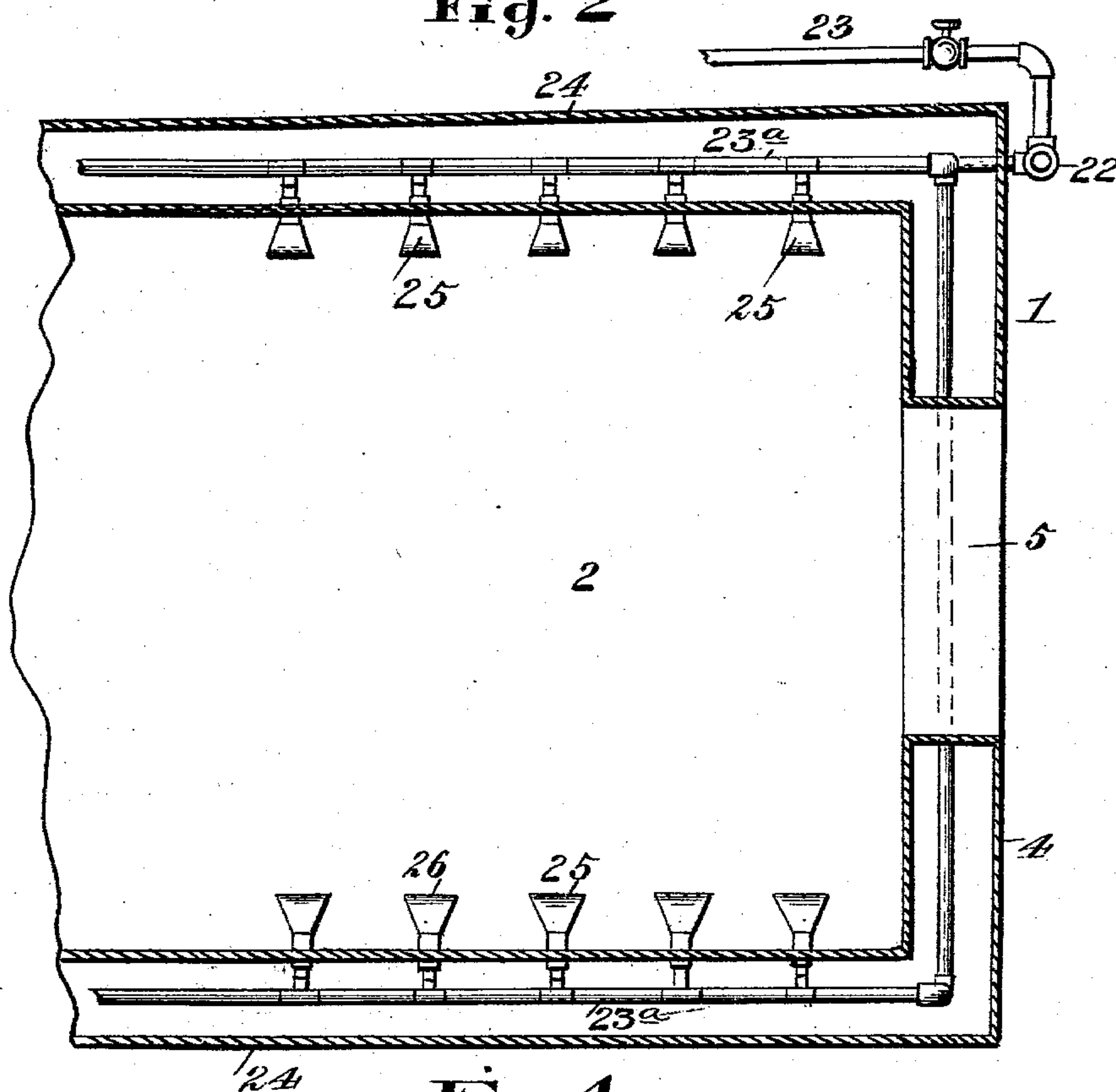
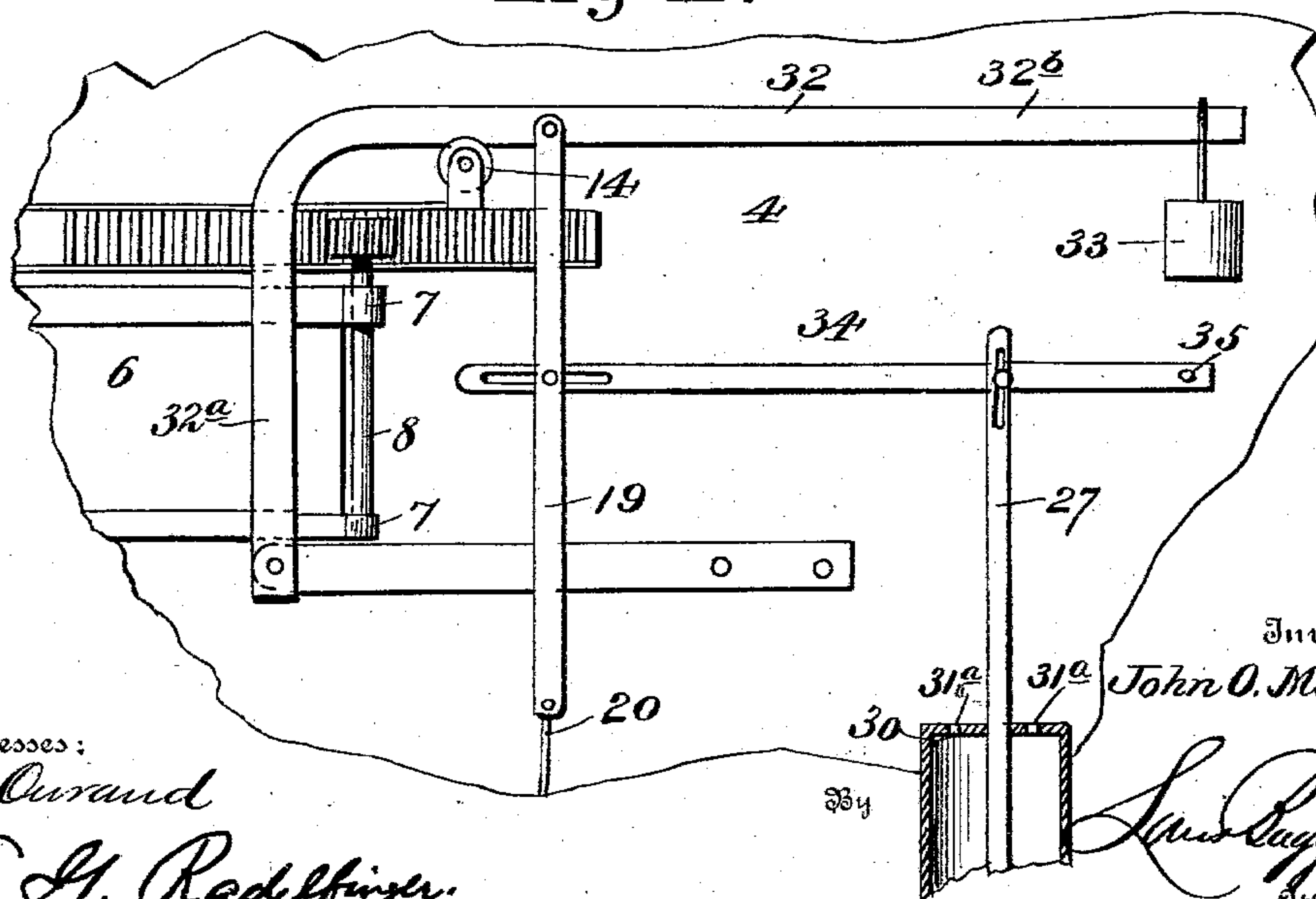


Fig. 4.



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UNITED STATES PATENT OFFICE.

JOHN ODEN MORRIS, OF RICHMOND, VIRGINIA.

SPRAYING ATTACHMENT FOR FURNACES.

SPECIFICATION forming part of Letters Patent No. 740,986, dated October 6, 1903.

Application filed October 18, 1902. Serial No. 127,899. (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 Spraying Attachments to Furnaces, of which the following is a specification.

My invention relates to improvements in furnaces; and the object of the same is to provide simple and efficient means for turning on a steam-spray by the opening of the furnace-door, which means is arranged to continue the spray in operation for a predetermined interval after the door has been closed.

The novel construction employed by me in carrying out my invention is fully described in this specification and claimed and illustrated in the accompanying drawings, forming a part thereof, in which—

Figure 1 is a front elevation of a furnace equipped with my device. Fig. 2 is a horizontal section of the same. Fig. 3 is a detail of one of the spray-nozzles. Fig. 4 is a front elevation of a furnace equipped with a modified form of my device.

The numeral 1 designates a furnace which has a fire-box 2, and ash-pit 3 and a front plate 4, having an aperture 5 therein connecting with the fire-box 2, which aperture is closed by a door 6, bearing straps 7, rigidly secured to a vertical shaft 8. Keyed on the upper end of the shaft 8 is a pinion 9, which meshes with a rack 10, mounted to slide between parallel guides 11, secured to the front plate 4. The rack 10 carries an arm 12, in which a pin 13 is seated, which pin serves as an axle for a sheave 14, which engages the enlarged beveled end 15 of a lever 16, fulcrumed on a pin 17^a, seated in a bracket 17. A coiled spring 18, attached at one end to a hook seated in the front plate 4 and at the other to the lever 16, holds the lever down and in engagement with the sheave 14.

Pivoted to the lever 16 is a connecting-rod 19, which is oppositely pivoted to the prolonged stem 20 of a valve 21, mounted in a casing 22, connected in a steam-pipe 23, which is connected to a boiler. (Not shown.)

The pipe 23 extends from the valve-casing 22 to and into the ash-pit 3, where it divides into two branches 23^a, which extend into the

walls 24 of the furnace. A set of spray-nozzles 25 are rigidly mounted in apertures 26 in the pipe 23^a and extend through the walls 24 and project beyond the same into the fire-box 2. The heads of the nozzles 25 are flattened on the sides at 23^b and are rounded off on the front 26^a, which is pierced by a series of perforations 26^b. Also connected to the lever 16 is a piston-rod 27, which is connected to a piston 28, snugly fitting a cylinder 29. The cylinder is closed at its lower end by a head 30, in which is mounted a cock 30^a for the admission of air to the cylinder. The upper end is closed by a head 31, having small apertures 31^a therein to permit the air to escape and return slowly.

The operation of my device can now be described. When the furnace-door 6 is opened, the pinion 9 will be actuated and will in turn operate the rack 10 to raise the lever 16 to raise the valve 21 to permit steam to flow from the boiler to the nozzle 25, located in the fire-box 2. The piston 28 will also be operated simultaneously with the valve 21 and will be raised to the top of the cylinder, thereby forcing the air out of the upper part of the cylinder through the small apertures 31^a therein. As soon as the furnace-door is closed again the lever 16 will be released, but will still be held up by the piston-rod 27 until the air can enter through the apertures 31^a and force the piston 28 down. The time the lever 16 remains up after the furnace-door has been closed can be regulated by admitting air into the bottom of the cylinder 29 by means of the cock 30^a or by plugging some of the apertures 31^a.

In the modified form illustrated in Fig. 4 an elbow-lever 32 is employed instead of the lever 16, which lever has a vertical arm 32^a, which is pivoted to the front plate 4, and a horizontal arm 32^b, which is located to be engaged by the sheave 14, mounted as in my preferred form. A weight 33, suspended from the arm 32^b, serves to restore the lever to its initial position after displacement. The piston-rod 27 is operated through the medium of a lever 34, which is fulcrumed at 35 and is pivoted to the connecting-rod 19, which is connected to the lever 32. In operation the arm 32^b is raised by the sheave 14 every time the furnace-door 6 is opened and is held in

its raised position for a time by the action of the compression-cylinder 29.

I do not wish to be limited as to details of construction, as these may be modified in many particulars without departing from the spirit of my invention.

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

- 10 1. In a device of the class described, the combination with a furnace, of a shaft carrying a door for said furnace, a pinion secured on said shaft, a rack slidingly mounted in guides and located to mesh with said gear, a
15 sheave carried by said rack, a lever engaged by said sheave to be operated thereby, and a valve connected to be operated by said lever as said furnace-door is opened and closed, substantially as described.
- 20 2. In a device of the class described, the combination of a furnace-door carried by a shaft bearing a pinion, a slidingly-mounted rack engaged by said pinion, a sheave carried by said rack, a lever engaged by said
25 sheave, a piston, a spring connected to said lever to operate it in opposition to said sheave,

a valve connected to said lever to be operated thereby, and an apertured cylinder having a piston carrying a piston-rod connected to said lever to retard the action of said spring, substantially as described. 30

3. In a spray control, the combination of a shaft carrying a furnace-door, a gear secured on said shaft, a slidingly-mounted rack meshing with said gear, a sheave journaled in an arm carried by said rack, a lever having an arm extending obliquely to the direction of movement of said rack, and located to be engaged by said sheave when said door is opened, a spring connected to said lever to act in opposition to said sheave, means for retarding the action of said spring, a valve connected to said lever, and a spray-pipe connected to said valve, substantially as described. 35 40

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses. 45

JOHN ODEN MORRIS.

Witnesses:

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BENNETT S. JONES.