(No Model.)

W. M. BOWMAN.

DEVICE FOR OPENING AND CLOSING FURNACE DOORS.

No. 361,394. Patented Apr. 19, 1887.

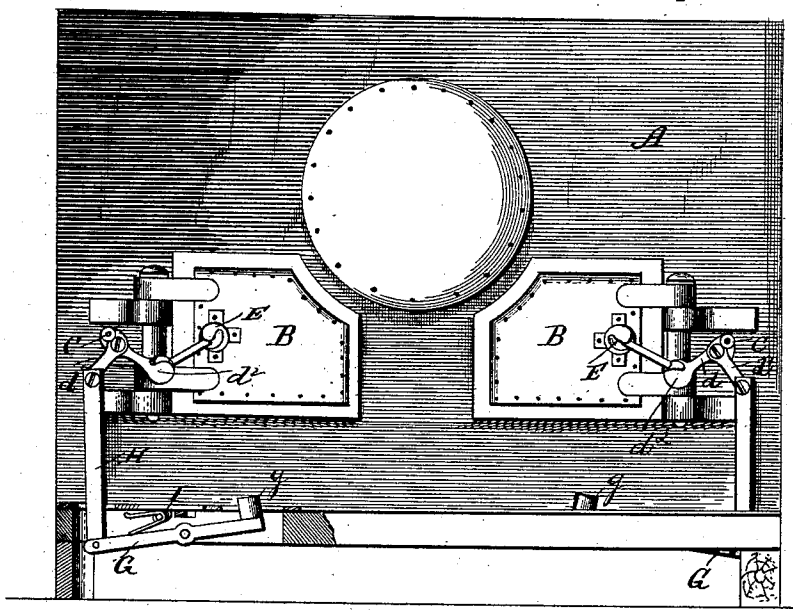


Fig. 1.

Fig. 2.

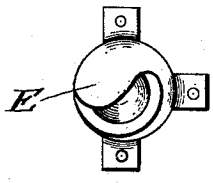


Fig. 3.

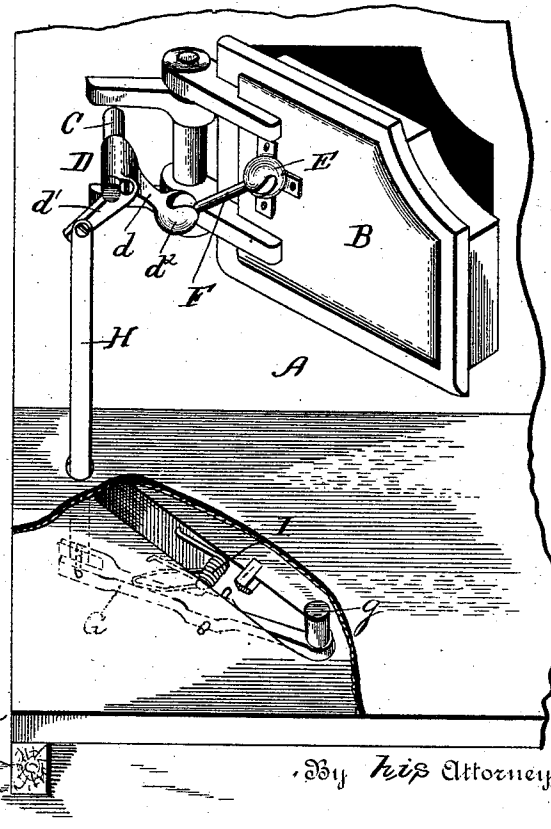




Fig. 4.

Witnesses
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UNITED STATES PATENT OFFICE.

WILLIAM M. BOWMAN, OF PALO PINTO, ASSIGNOR OF ONE-HALF TO WILLIAM J. COLBOW AND CHARLES P. LEWIS, OF WINDSOR, MISSOURI.

DEVICE FOR OPENING AND CLOSING FURNACE-DOORS.

SPECIFICATION forming part of Letters Patent No. 361,394, dated April 19, 1887.

Application filed February 21, 1887. Serial No. 228,382. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM M. BOWMAN, a citizen of the United States, residing at Palo Pinto, in the county of Benton and State of Missouri, have invented certain new and useful Improvements in Devices for Opening and Closing Furnace-Doors; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to devices for mechanically opening and closing furnace-doors, and has for its object to produce a simple and compact construction by which the same can be accomplished in a convenient and efficient manner.

To this end the invention consists in the novel construction and combination of parts, which will be more fully hereinafter set forth and claimed.

In the drawings, Figure 1 is a front view of a furnace embodying my invention. Fig. 2 is a perspective detail view, showing the door open. Fig. 3 is a detail view, on an enlarged scale, of the ball-socket casting which is attached to the door, and Fig. 4 is a detail view of the link which connects the door and bell-crank lever.

The furnace may be of any approved or desired type. That shown is built in, and the front wall, A, is provided with two openings, which are closed by the hinged doors B B, arranged to swing horizontally. To one side of the hinge, and at a short distance from the axis of the door, the stud or shaft C is located, and upon this shaft is mounted the bell-crank lever D, the arms *d* and *d'* of which normally incline to a horizontal plane and extend downward. The arm *d* is provided with a ball-socket, d^2, at its end, and the door is provided with a corresponding ball-socket casting, E, which is connected with the socket d^2 by the link F, having a ball at each end fitted in the respective sockets. The link has a universal connection at each end with the door and bell-crank lever, respectively, and the sockets have their adjacent sides slotted or opened to permit the passage of the link, as will be readily appreciated. The end of the arm *d'* is connected with the inner end of the foot-lever G by the rod H. The foot-lever is located beneath the bed or surface upon which the furnace is built, and its outer end is provided with the foot-rest *g*, which projects a short distance above the bed. The spring I, pressing upon the rear end of the lever, holds the same down and exerts a force to turn the bell-crank lever about its support by pulling down upon the arm *d'* thereof, which has a tendency to correspondingly elevate the arm *d* and hold the door closed without any other fastening devices.

In practice, when it is desired to replenish or view the fire, the attendant treads upon the foot-piece of the lever, which elevates the rear end thereof, the rod H, and the arm *d'* of the bell-crank lever and depresses the arm *d* and pulls open the door. The pressure being removed, the lever is returned to its normal position by the spring, which also serves to hold the door closed, as previously intimated.

The opening and closing devices above described can be readily applied to any furnace-door, as will be readily understood, and is simple and compact in construction and efficient and durable in use.

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

1. The combination, with the door and foot-lever, of the bell-crank lever connected at one end with the foot-lever, and a link connected at one end with the door and at the other end with the free end of the bell-crank lever by universal joints, substantially as described.

2. The combination, with the door and the foot-lever, of the bell-crank connected at one end with the foot-lever and having a ball-socket at its opposite end, and the link having a ball at one end fitted in the socket of the lever and having its opposite end connected with the door by a universal joint, substantially as set forth.

3. The combination, with the door and foot-lever, of the bell-crank lever connected at one end with the foot-lever and having a ball-

socket at its opposite end, the ball-socket casting secured to the door, and the link having a ball at each end fitted in each of said ball-sockets, substantially as specified.

4. The combination of the door, the foot-lever, the bell-crank lever connected at one end with the door and the other end connected with the foot-lever, and the spring for returning the lever to a normal position, closing the door and holding it closed, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM M. BOWMAN.

Witnesses:

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