(No Model.)

H. H. DREYER.

DEVICE FOR OPENING AND CLOSING FURNACE DOORS.

No. 313,304. Patented Mar. 3, 1885.

Fig. 1.

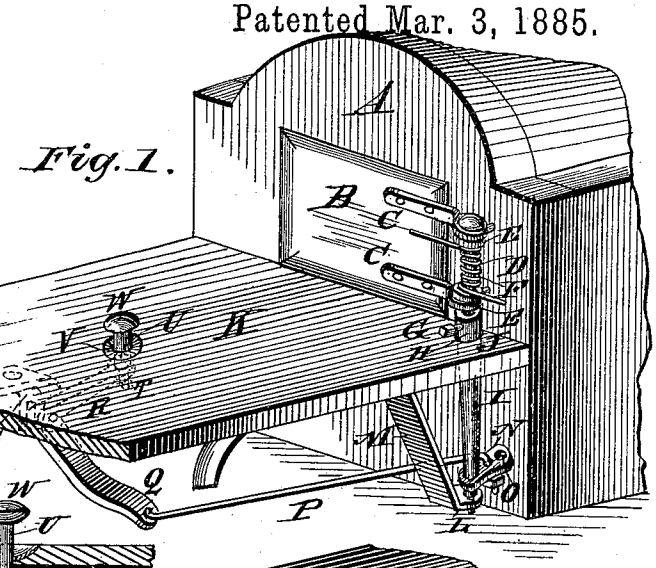


Fig. 3.

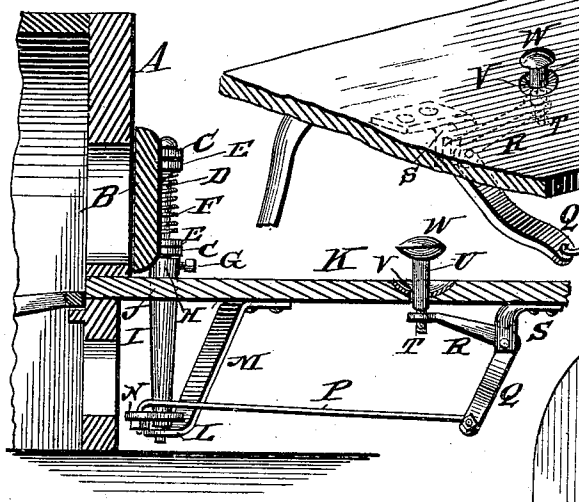


Fig. 2.

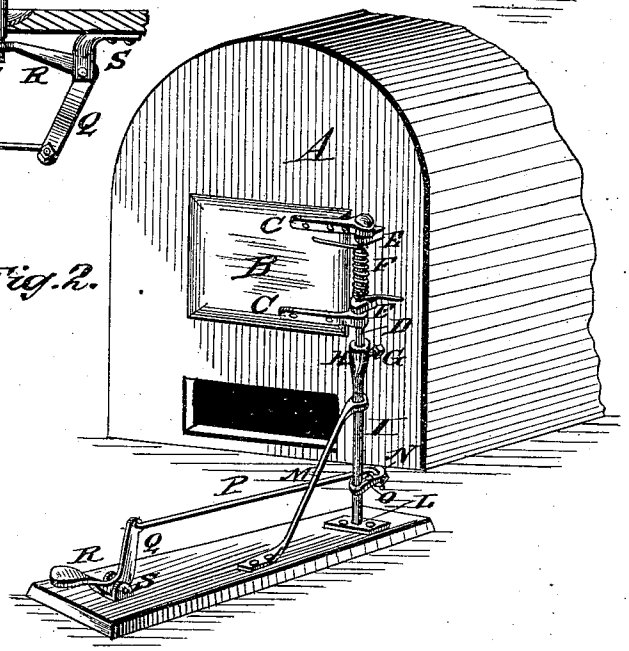
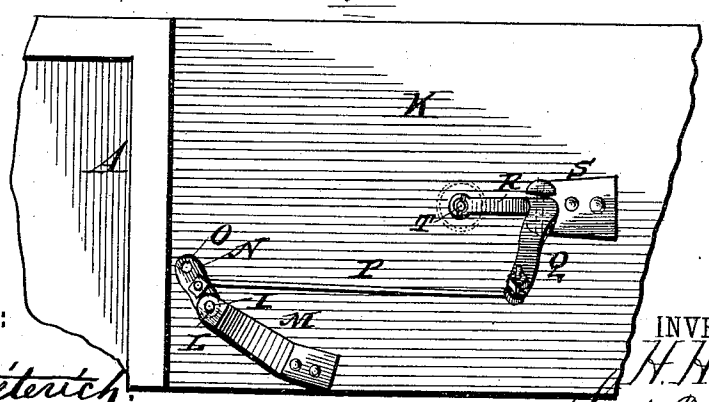


Fig. 4.



WITNESSES:

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UNITED STATES PATENT OFFICE.

HERMAN H. DREYER, OF GENOA, OHIO, ASSIGNOR OF ONE-HALF TO JOHN H. H. UTHOFF, OF SAME PLACE.

DEVICE FOR OPENING AND CLOSING FURNACE-DOORS.

SPECIFICATION forming part of Letters Patent No. 313,304, dated March 3, 1885.

Application filed October 11, 1884. (No model.)

To all whom it may concern:

Be it known that I, HERMAN H. DREYER, of Genoa, in the county of Ottawa and State of Ohio, have invented certain new and useful Improvements in Devices for Opening and Closing Furnace-Doors; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a perspective view of a portion of a portable boiler and platform, illustrating my improved device for opening and closing the door of the furnace. Fig. 2 is a similar view showing the device applied to a stationary boiler. Fig. 3 is a longitudinal vertical section of Fig. 1, and Fig. 4 is a bottom view. Similar letters of reference indicate corresponding parts in all the figures.

My invention has relation to that class of devices for opening and closing the doors of furnaces for portable or stationary steam-boilers or of other furnaces, in which the door may be opened by depressing a treadle, which, by means of connecting-rods and bell-cranks, is connected to the pintle of the door, and in which the door may be closed by a suitable spring when the treadle is released; and it consists in the improved construction and combination of parts of such a device, as hereinafter more fully described and claimed.

In the accompanying drawings, the letter A indicates the front of the furnace. B indicates the furnace-door, which is hinged with its ears C and a pintle, D, upon ears E upon the furnace-front, the ears of the door being secured upon the pintle, which turns in the ears upon the furnace-front.

A spring, F, of any suitable construction, serves to force the door closed, being shown in the drawings as a spiral spring wound around the pintle and bearing with its ends against the outer side of the door and of the furnace-front.

The lower end of the pintle is secured by means of a set-screw, G, in a socket, H, in the upper end of a rod or shaft, I, which is journaled in a bearing, J, in the platform K, and in a bearing, L, in the lower end of a bracket, M, secured to the under side of the said platform and projecting downward from the same, the said bearings and shaft being vertical.

A lever or arm, N, is secured to and projects laterally from the lower end of the vertical shaft immediately above the lower bearing, and is provided with a series of perforations, O, and one end of a connecting-rod, P, is pivoted in one of these perforations, being capable of being changed from one perforation to another, and the other end of this connecting-rod is pivoted in a perforation in the downwardly-projecting arm Q of a bell-crank, R, which crank is pivoted in a bracket or bearing, S, upon the under side of the platform.

The lower reduced end, T, of a rod, U, is loosely secured in a perforation in the end of the other arm of the bell-crank, and slides in a vertical bearing, V, in the platform, forming the shank of the treadle-plate W, which is secured upon the upper end of the rod.

It will now be seen that by depressing the treadle-plate the bell-crank will be tilted, the connecting-rod pulled, and the arm upon the vertical shaft pulled outward, turning the shaft and the door-pintle with it, which will open the door, when the fire may be attended to, and the door may be closed by releasing the pressure upon the treadle, which will allow the spring to force the door closed.

It will also be seen that the throw of the door may be adjusted by changing the end of the connecting-rod from one perforation in the arm upon the vertical shaft to another, the throw being shorter by placing the end of the rod in the outer perforation, and the vertical shaft may be adjusted with its socket to adjust the throw of the door by turning it upon the lower end of the pintle and securing it by means of the set-screw.

In Fig. 2 is shown a modification of the device, showing it applied to the furnace-door of a stationary boiler, where no platform is used, when the treadle and its shank are dispensed with, and the lower end of the vertical shaft is journaled in a bearing in the floor, and the bracket is reversed, projecting upward, when its bearing will support the upper portion of the vertical shaft. The arm of the bell-crank, which in the former device has the treadle-shank attached to it, is formed into a treadle,

and the connecting rod and the bell-crank project upon the upper side of the floor instead of under the platform. It follows that the operation of this device is identical with the operation of the formerly-described device, the treadle-arm of the bell-crank being depressed when the door is to be opened.

As before stated, I am aware that it is not broadly new to construct devices for opening furnace-doors consisting of a treadle connected by bell-cranks and rods to the pintle of the door-hinge, and I do not wish to make broad claims for the said construction; but

I claim—

1. In a device for opening furnace-doors, the combination of the pintle of the door, having the door secured to it, with a vertical shaft having means, as described, for turning it, and formed at its upper end into a socket provided with a set-screw, as and for the purpose shown and set forth.

2. In a device for opening and closing furnace-doors, the combination of the furnace-door, the pintle turning in bearings upon the furnace-front and secured to the door, means, substantially as described, for closing the door, a vertical shaft formed with a socket at its upper end adjustably secured to the lower end of the pintle by means of a set-screw, an arm secured projecting laterally from the lower portion of the said shaft and having a series of perforations, a connecting-rod secured adjustably in one of the perforations in the said arm, and a bell-crank having one arm pivoted to the connecting-rod and having the other arm adapted to be depressed, as and for the purpose shown and set forth.

3. In a device for opening and closing furnace-doors, the combination of the door having ears upon its hinge edge, the furnace-front having vertical bearings, the pintle secured in the ears of the door and turning in the bearings of the furnace-front, the spring forcing the door closed, the platform forming a vertical bearing registering with the bearings of the front and having a vertical sliding bearing, the vertical shaft formed with a socket at its upper end having a set-screw, the perforated arm projecting from the lower end of the said shaft, the connecting-rod pivoted in one of the perforations at one end, the bell-crank fulcrumed upon the under side of the platform and having one end pivoted to the other end of the connecting-rod, and the treadle sliding with its shank in the vertical bearing in the platform, having a plate at its upper end and fitting loosely with its lower reduced end in a perforation in the other arm of the bell-crank, as and for the purpose shown and set forth.

In testimony that I claim the foregoing as my own I have hereunto affixed my signature in presence of two witnesses.

HERMAN H. DREYER.

Witnesses:

ADAM DREYER,

HENRY HAMEL.