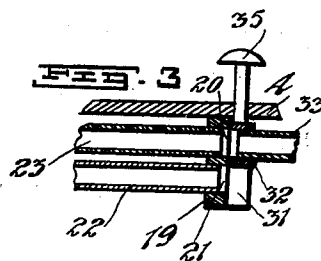
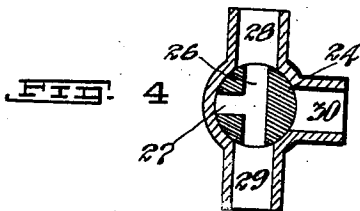
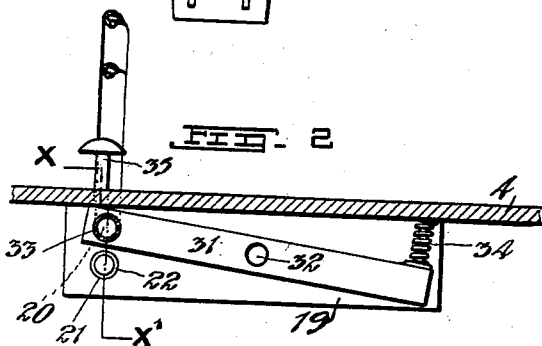
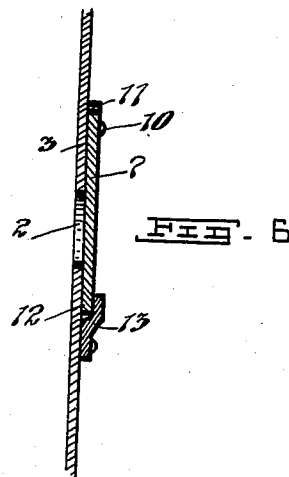
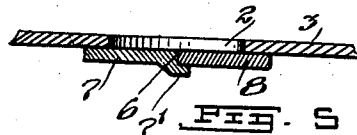
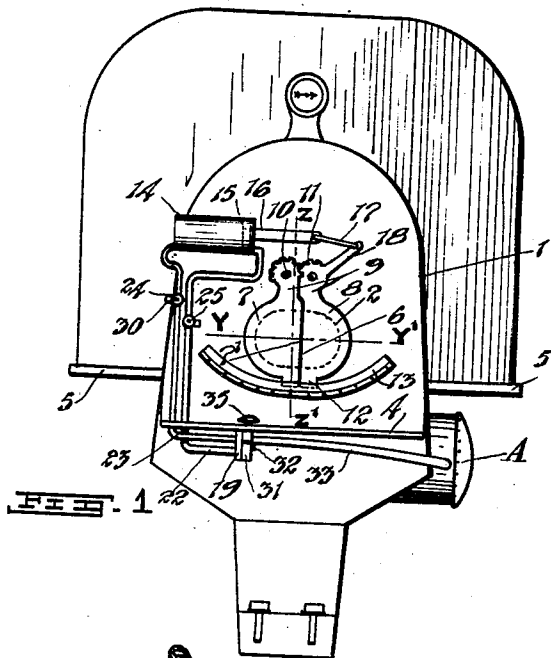


B. GRANT & C. E. SLOMKE.
FURNACE DOOR.
APPLICATION FILED DEC. 19, 1910.

1,055,629.

Patented Mar. 11, 1913.



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UNITED STATES PATENT OFFICE.

BERT GRANT AND CHARLES ERNEST SLOMKE, OF BOISSEVAIN, MANITOBA, CANADA.

FURNACE-DOOR.

1,055,629.

Specification of Letters Patent.

Patented Mar. 11, 1913.

Application filed December 19, 1910. Serial No. 598,187.

To all whom it may concern:

Be it known that we, BERT GRANT and CHARLES ERNEST SLOMKE, both of the village of Boissevain, in the Province of Manitoba, Canada, have invented certain new and useful Improvements in Furnace-Doors, of which the following is the specification.

Our invention relates to attachments to furnace doors, and the object of the invention is to provide a device by which the door can be automatically opened and closed without the operator having to actually touch the door with his hands as is customary.

It consists essentially in the arrangement and construction of parts hereinafter more fully described and later pointed out in the appended claim.

Figure 1 represents an end view of an engine boiler showing the furnace door opening and our attachment, Fig. 2 is an enlarged detail side elevation of the pivoted bar and adjoining parts. Fig. 3 is a vertical sectional view through the bar and adjoining plate, the section being taken in the plane denoted by the line X X', Fig. 2. Fig. 4 is an enlarged detail vertical sectional view through one of the valves. Fig. 5 is an enlarged detail horizontal sectional view through the furnace door, the section being taken in the plane denoted by the line Y Y', Fig. 1. Fig. 6 is an enlarged detail vertical sectional view through the door, the section being taken in the plane denoted by the line Z Z', Fig. 1.

In the drawing like characters of reference indicate corresponding parts in each figure.

In the present instance we have shown the attachment as supplied to a railroad engine, but it is to be understood of course that it can be placed upon any engine with equal advantage.

1 represents the boiler of an engine and 2 the furnace door way opening located in the rear plate 3.

4 represents the cabin floor and 5 the seats located at the sides thereof as is customary.

6 is our furnace door which is formed from two similar sections 7 and 8 each of which has a neck 9 extending upwardly therefrom and pivoted at 10 to the end plate 3. The necks are provided with teeth 11 forming partial gear wheels, the teeth intermeshing so that the sections are forced open or closed together. A flange 7' is pro-

vided upon the section 6, which flange overlaps the section 8 when the door is closed. Lugs 12 extend downwardly from the sections and are received by a more or less Z-shaped bar 13 carried by the end of the boiler. This bar forms a guide for the door sections as is readily understood.

14 represents a cylinder located in any convenient position, which cylinder is provided with a piston 15 from which extends a piston rod 16, the rod being connected through a link 17 with an arm 18 passing from the partial gear wheel controlling the door section 8.

19 is a stationary plate firmly secured to the under side of the cabin platform 4. The plate is provided with two vertically aligned openings 20 and 21, which openings receive the threaded ends of pipes 22 and 23, such pipes passing respectively to the opposite ends of the cylinder 14. Valves 24 and 25 are located in the pipes, such valves being of that type which are commonly called three-way valves. If reference be made to Fig. 4 wherein one of the valves is shown it will be seen that the valve is provided with a duct 26 passing diametrically across it and a further duct 27 which communicates with the latter duct. The arms 28 and 29 of the valve casing are continuous with the length of the pipe 24, while the short arm 30 thereof extends to the side and allows steam pressure to be released from the cylinder as desired.

31 is a bar pivotally secured at 32 to the plate 19 and having the face adjoining the plate perfectly smooth so that the two make good contact. The bar carries a flexible tube 33 which is connected through suitable piping with the main reservoir A located beneath the boiler. The tube 33 is adapted to communicate with either one or the other of the pipes 22 or 23 depending on the position of the bar. The bar is retained in the position shown in the drawings by a spiral spring 34, so that the tube 33 makes connection with the pipe 23 thereby holding the door sections closed, the piston being forced to the right hand end of the cylinder by the pressure of the steam in the reservoir.

35 is a pin extending through the cabin floor or platform and resting on the upper edge of the bar 31. When the pin is depressed the bar is carried downwardly so that the tube 33 makes connection with the pipe 22. The steam in the right hand end

of the cylinder consequently escapes through the opening 20 and the piston is forced over by the pressure of the steam in the pipe 22. The door sections consequently open to expose the opening 2.

It will be seen that our invention will save considerable labor as well as a great deal of fuel and will have the effect of keeping temperature in the furnace more even than it can be kept with the usual door, which is regularly left open all the time the fireman is throwing coal into the furnace. With our invention the door is only open for the short time that it is necessary to throw the coal and is not open during the time that the coal is being procured from the tender, as it will be understood each time the fireman is ready to throw in the coal he steps on the pin 23 and the sections fly open. Upon releasing his foot the door sections close. Consequently there is no unnecessary loss of heat and further considerable time is saved as it is unnecessary to grasp the door with the hand to open and close it. The valves 24 and 25 are provided so that the reservoir pressure can be turned off the cylinder at any time and the cylinder opened to atmospheric pressure.

What we claim as our invention is:
In combination with a furnace door of

the type made in two sections, and constructed to simultaneously swing toward or away from each other, of means for automatically controlling and operating same consisting of a suitably located cylinder having an extending piston rod, an arm joining said extending piston rod with one of the door sections, a suitably located reservoir, a stationary plate provided with a set of vertically alined openings, a set of pipes passing from the openings to the opposite ends of the cylinder, a spring pressed bar pivotally secured to the plate and provided with an opening adapted to register with either one of the aforesaid openings depending on the position of the bar, a flexible tube connected to the bar and communicating with the opening, said tube passing to the reservoir, and a foot push-pin engageable with the bar for depressing the same, and thus controlling the opening and closing of the doors, substantially as described.

Signed at Boissevain, in the Province of Manitoba, this 2nd day of August, 1910.

BERT GRANT

CHARLES ERNEST SLOMKE.

In the presence of—

WILLIAM DE MANBEY,
THOMAS J. BRANNEL.