No. 875,021. PATENTED DEC. 31, 1907.

W. D. WESTBROOK.

FIRE BOX DOOR.

APPLICATION FILED JULY 25, 1906.

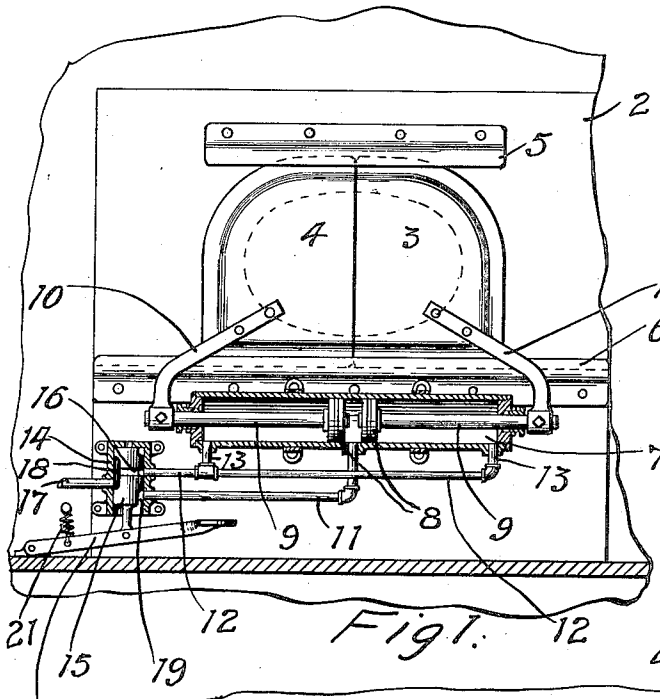


Fig 1.

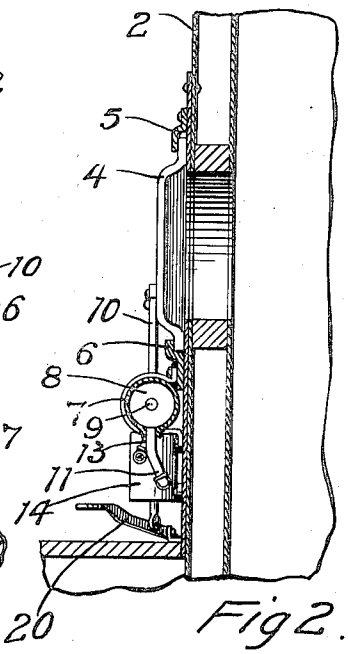


Fig 2.

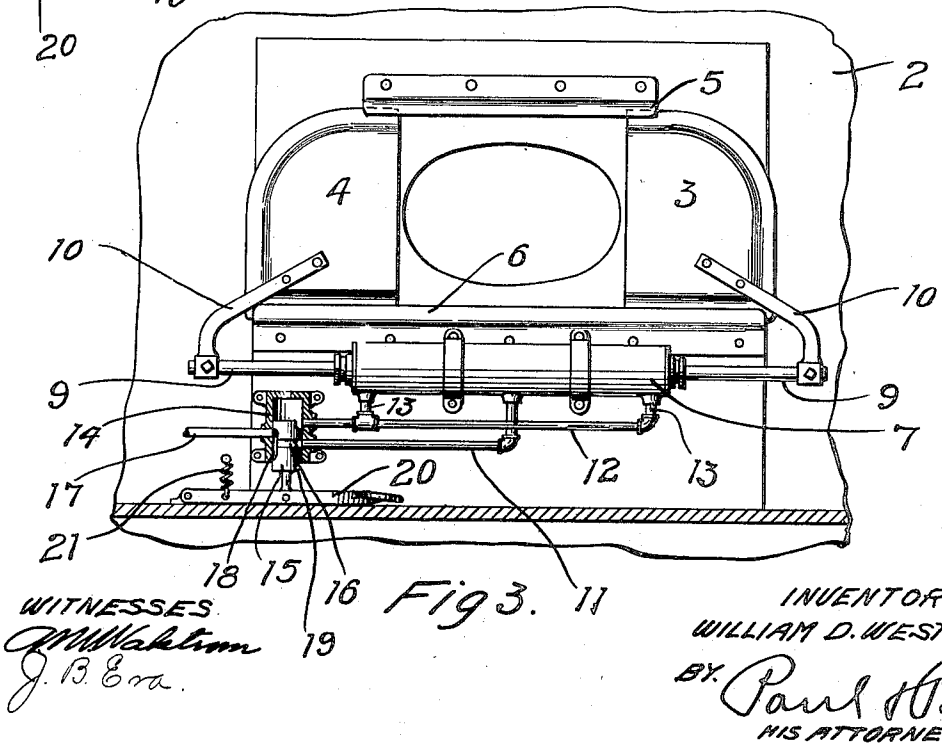


Fig 3.

WITNESSES

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UNITED STATES PATENT OFFICE.

WILLIAM D. WESTBROOK, OF GLENWOOD, MINNESOTA.

FIRE-BOX DOOR.

No. 875,021. Specification of Letters Patent. Patented Dec. 31, 1907.

Application filed July 25, 1906. Serial No. 327,757.

To all whom it may concern:

Be it known that I, WILLIAM D. WESTBROOK, of Glenwood, Pope county, Minnesota, have invented certain new and useful Improvements in Fire-Box Doors, of which the following is a specification.

My invention relates to fire-box doors and particularly to those of a locomotive.

The object of my invention is to provide means for easily and quickly opening and closing the fire-box doors to prevent, so far as possible, the entrance of cold air into the fire box and to facilitate the operation of firing.

The invention consists generally in various constructions and combinations, all as hereinafter described and particularly pointed out in the claims.

In the accompanying drawings, forming part of this specification; Figure 1 is a sectional view of a fire-box door operating means, embodying my invention. Fig. 2 is a similar view on a section line substantially at right angles to the section line of Fig. 1. Fig. 3 is a front view showing in section, the valve mechanism for controlling the admission of air to the cylinder.

In the drawing, 2 represents the end wall of the boiler furnace and 3 and 4 the fire box doors arranged to slide horizontally between guides 5 and 6 and adapted to close the opening to the fire box or expose it for convenience in feeding fuel in upon the grates. These doors usually swing and each time the fireman fills his shovel with fuel the door should be closed to prevent, so far as possible, the entrance of cold air to the fire. It is, however, a tedious and laborious operation for the fireman to open and close the door each time a shovelful of fuel is placed on the fire. I therefore, provide a cylinder 7 beneath the doors 3 and 4 having pistons 8 provided with stems 9 connected at their outer ends by the straps 10 with the doors 3 and 4. A pipe 11 communicates with the space in the cylinder between the pistons and a similar pipe 12 communicates through branches 13 with each end of the cylinder. The pipes 11 and 12 lead from a valve casing 14 wherein a valve 15 is arranged. An annular groove 16 is provided in said valve near the middle thereof communicating with the pipe 17 which leads from the air reservoir. The groove 16 communicates with a recess 18 in the surface of the valve and when the parts are in the position shown in Fig. 1, air will flow in through the pipe 17 and through the annular groove to the pipe 12 and entering the ends of the cylinder will cause its pistons to travel toward one another and close the fire box door. As soon, however, as the valve is depressed so that the said groove will register with the pipe 11, then the air will be admitted into the cylinder between the pistons and instantly open the doors.

A recess 19 is formed in the lower end of the valve normally communicating with the pipe 11 so that said pipe will be on the exhaust when the air is being admitted to the cylinder through the pipe 12. To operate the valve 15, I prefer to provide a treadle 20 normally held in a raised position by a spring 21 but adapted to be depressed by the foot of the fireman for the purpose of admitting air or other fluid pressure through the pipe 11 for the purpose of opening the doors while the fuel is being thrown in. As soon as the fireman removes his foot from the treadle the spring 21 will return to its normal position, raise the valve, allow the exhaust of the air through the pipe 11 from between the pistons and admit air to the ends of the cylinder to move the pistons toward one another and close the doors. This operation can be easily and quickly performed each time the fireman throws a shovelful of fuel in upon the fire. When the fireman approaches the fire-box with a shovelful of fuel, he will place his foot on the treadle 20, depress the valve and admit the fluid pressure to the space between the pistons 8, whereupon the doors will be instantly opened and as soon as the fuel is thrown in, the fireman will remove his foot from the treadle and the doors will instantly close.

I claim as my invention:

The combination, with a locomotive boiler firebox having a fuel opening, of doors 3 and 4 arranged to close said opening, guides 5 and 6 between which said doors are slidable in a vertical plane, a cylinder 7 horizontally arranged beneath said doors and near the same, said cylinder having pistons 8 and stems 9 therefor projecting through the ends of said cylinder, straps connecting the outer ends of said pistons with said doors respectively, whereby when said pistons are separated said doors will be opened, and closed when said pistons are moved toward each other, there being a space provided between said pistons near the middle of said cylinder, a pipe 11 communicating with said space, a

pipe 12 having branches leading to the ends of said cylinder, a valve casing 14 communicating with said pipes 11 and 12 and with a source of fluid supply, a sliding valve within said casing and arranged to alternately admit fluid pressure through said pipes 11 and 12 to the middle of said cylinder and to the ends thereof and a treadle connected to said valve and whereby the fireman can control the opening and closing of said doors, substantially as described.

In witness whereof, I have hereunto set my hand this 18th day of July 1906.

WILLIAM D. WESTBROOK.

Witnesses:
RICHARD PAUL,
J. B. ERA.