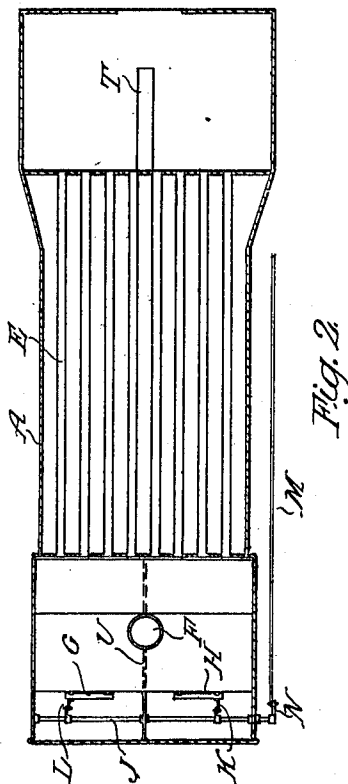
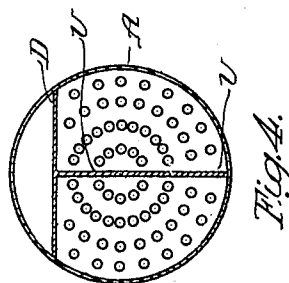


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Patented May 9, 1911.

2 SHEETS--SHEET 1.



Dudley R. Ward.
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per
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992,122.

Patented May 9, 1911.

2 SHEETS-SHEET 2.

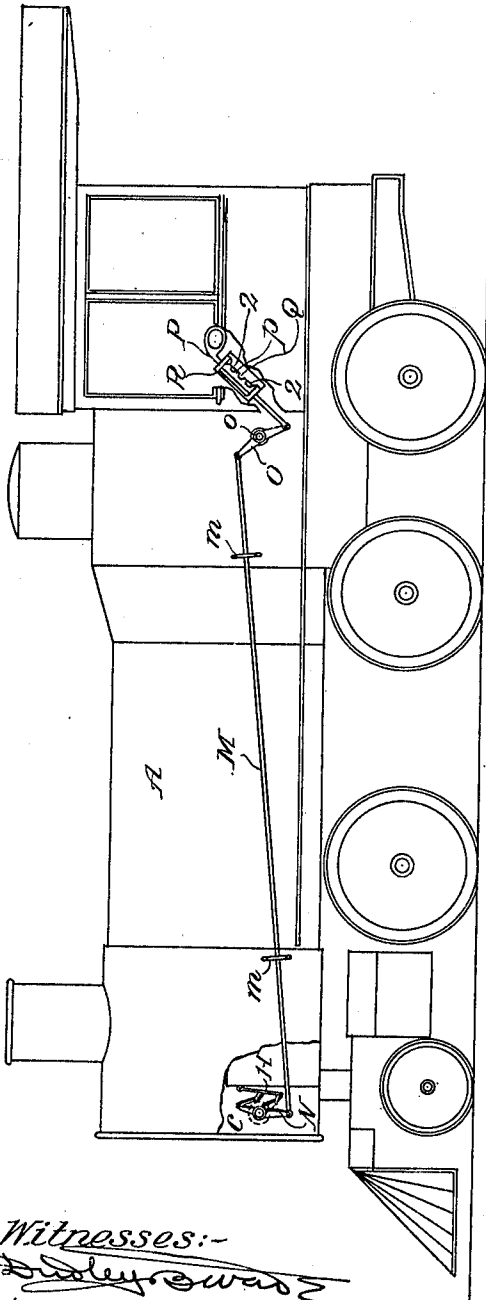


Fig. 5.



Fig. 6.

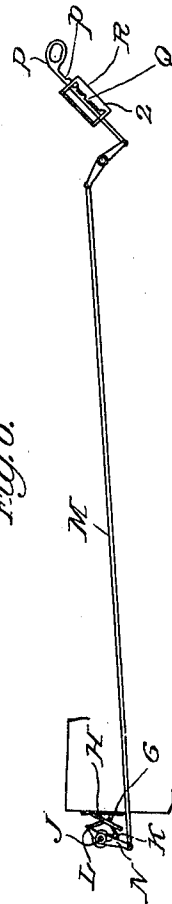


Fig. 7.

Witnesses:-

[Signature]
Lettie Brown.

Inventor
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per
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Attorney.

UNITED STATES PATENT OFFICE.

JOHN FOURNIA, OF ALBANY, NEW YORK, ASSIGNOR OF ONE-HALF TO FREDERICK R. GREENE, OF ALBANY, NEW YORK.

BOILER-FURNACE.

992,122.

Specification of Letters Patent.

Patented May 9, 1911.

Application filed December 30, 1907. Serial No. 408,484.

To all whom it may concern:

Be it known that I, JOHN FOURNIA, a citizen of the United States, residing at the city of Albany, in the county of Albany and State of New York, have invented certain new and useful Improvements in Boiler-Furnaces, of which the following is a specification.

My invention relates to improvements in steam boiler furnaces, and the objects of my invention are to provide: 1st: a means for increasing the efficiency of a boiler furnace by controlling the draft. 2nd: a means for consuming the smoke and preventing the discharge of cinders from the smoke stack.

I accomplish these objects by means of the mechanism illustrated in the accompanying drawing, in which:

Figure 1 is a longitudinal vertical section showing a locomotive provided with my invention. Fig. 2 is a horizontal section of a locomotive provided with my invention. Fig. 3 is a transverse section along the lines A—A on Fig. 1. Fig. 4 is a transverse section along the lines B—B on Fig. 1. Fig. 5 is a side elevation with parts broken away of a locomotive provided with my invention. Fig. 6 is a detail view in elevation showing the means for opening and closing the damper. Fig. 7 is a detail view in elevation illustrating means for opening and closing the damper and showing the position of the dampers when the operating handle is drawn to the extent of its motion.

Similar letters refer to similar parts throughout the several views.

Forward of the boiler, A, and within the smoke box, C, I place a partition, D, extending across the smoke box from above the flues, E, forward and downward, surrounding the exhaust F and extending forward thereof in preferably a horizontal position, and provided with a vertical portion, *d*, with doors or dampers G and H in said vertical portion, which doors are preferably hinged at their top, as at *g*, *h*, and connected to a rocking arm, J, by means of the toggle levers, K and L, and so adjusted that by the partial rotation of the rocking arm, J, the doors, G and H, will be opened and closed alternately, and when the said rocking arm is moved to a certain position said toggle levers will open both of the dampers to a slight predetermined degree.

For the purpose of operating the rocking

lever, J, I secure near one end thereof a rod, M, which is attached to the rocking lever, J, by means of the link, N, and the opposite end, toward rod, M, which rod passes preferably along the side of the boiler, A, being secured in position by the straps, *m*, *m*, or in any suitable manner, is attached to one end of the bell crank lever, O, pivoted at, *o*, and having its opposite end attached to a handle, P, which may be provided with lugs *p*, adapted to fit in the notch, Q, in the bracket R.

The adjustment of the bell crank lever, toggle levers, rod and rocking lever being such that when the handle projection registers with one of said notches in the bracket the dampers will be either one closed and the other opened, or one slightly opened and the other closed, or both of them partly opened. It is apparent that the arrangement of these toggle levers and bell crank lever may be such that the exact amount of the aperture in the damper may be predetermined, and the timing of the opening or closing of the dampers in relation to each other may be fixed.

I preferably divide the space or compartment formed in front of the flues by the partitions, D and *d*, hereinbefore described, by placing a vertical partition, U, there-through, which is placed about midway between the doors or dampers, G and H.

In the fire box I place a vertical wall, T, extending from the ends of the boiler into the box a short distance, and being placed preferably about midway between the sides of the boiler.

By this arrangement of the attachments to the furnace I may regulate the draft in such a manner that the combustion may be retarded or accelerated and provide for consuming the smoke. Thus when one of the dampers, H, is opened and the other, G, closed, the draft through the flues would be on one side of the furnace and the gases and smoke from the burning coal in the fire box will pass around the wall, T, and out through the side of the boiler which communicates with the open door or damper. It is usual to place a blower, not shown, on the fire, and when it is desired to destroy the black smoke from the fire on the right side of the wall I would blow on that side, which will cause the smoke and gases to pass over the fire around the wall, T, and the smoke

will be consumed, at least greatly reduced in carbon, and driven out through the open door or damper on the left side of the smoke box.

5 What I claim as my invention and desire to secure by Letters Patent is:

1. In combination, a locomotive provided with a boiler; a smoke box forward of the boiler; an exhaust nozzle in said smoke box; 10 a fire box at the rear of the boiler; a compartment in said smoke box immediately forward of the boiler; flues leading from the fire box to the compartment; a partition in said compartment extending from the end 15 of the boiler to the front of the compartment about midway between the sides of the compartment; dampers in the wall of said compartment communicating with the smoke box, one on each side of said partition; 20 means for operating said dampers whereby one may be opened when the other is closed.

2. The combination of a locomotive provided with a boiler; a smoke box forward thereof; an exhaust nozzle in said smoke 25 box; with a compartment in said smoke box

formed by partitions, one of which forms the top of the compartment extending above the flues across the smoke box through which the exhaust extends, and the other forming the front walls extending from the bottom 30 of the smoke box to the top of the compartment forward of the exhaust; a partition sub-dividing said compartment into two portions extending from the bottom of the smoke box to the top of the compartment 35 about midway between the sides of the compartment; flues leading from the fire box to said compartment; dampers placed on each side of said partition in the front wall of said compartment; a means for operating 40 said dampers whereby they may be opened and closed alternately and to such degree as desired.

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

JOHN FOURNIA.

Witnesses:

FREDERICK W. CAMERON,
LOTTIE PRIOR.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."
