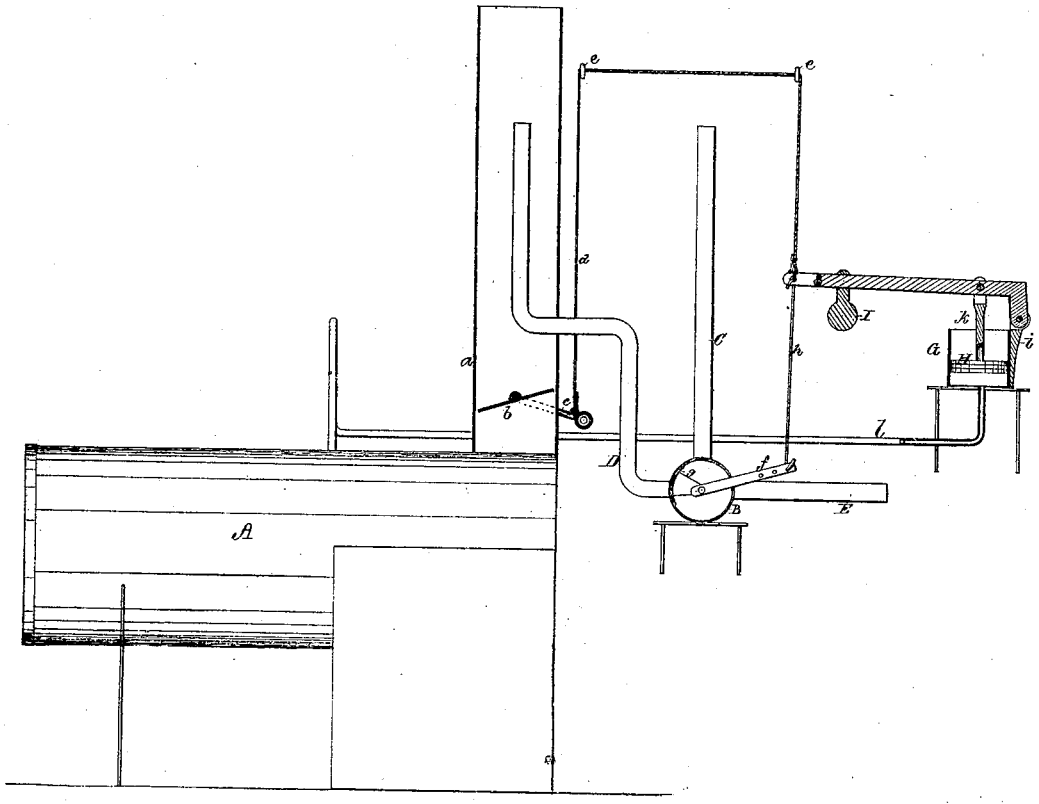
WILLIAM E. PEARSON.

Improvement in Boiler-Furnace Draft-Regulators.

No. 114,965. Patented May 16, 1871.



Witnesses,

S. N. Pipes

L. N. Möller

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by his attorney

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United States Patent Office.

WILLIAM EVERETT PEARSON, OF EAST BOSTON, ASSIGNOR TO HIMSELF AND JAMES C. WILSON, OF LYNN, MASSACHUSETTS.

Letters Patent No. 114,965, dated May 16, 1871.

IMPROVEMENT IN BOILER-FURNACE DRAUGHT-REGULATORS.

The Schedule referred to in these Letters Patent and making part of the same.

To all persons to whom these presents may come:

Be it known that I, WILLIAM EVERETT PEARSON, of East Boston, of the county of Suffolk and State of Massachusetts, have invented a new and useful Apparatus or Governor for Regulating the Pressure of Steam within a Boiler; and do hereby declare the same to be fully described in the following specification and represented in the accompanying drawing, which exhibits a sectional elevation of such apparatus as applied to a steam-boiler and its furnace and chimney.

In such drawing—

A denotes the boiler, and

a the chimney of its furnace, provided with a damper, *b*.

From an arm, *c*, extended from the stem or shaft of the damper, a chain or line, *d*, leads upward, and thence over one or more pulleys or through guides *e e*, and thence down to and is fastened to the longer arm of a lever, F, connected by a rod, *h*, with an arm, *f*, of a sectoral valve, *g*, contained within a case or cylinder, B.

From the top of such cylinder an escape-pipe, C, leads.

Another such pipe, D, is led out of one side of the case B to and into and up within the chimney *a*.

A pipe, E, supposed to lead from the exhaust-port of the steam-engine of the said furnace, enters or opens into the case or cylinder B.

A lever, F, is pivoted to a standard, *i*, erected on the side of a short upright cylinder, G, in which is a piston, H, whose rod *k* is pivoted to the lever F.

The cylinder G communicates with the boiler by means of a pipe, *l*, leading from the steam-space of the boiler into the bottom of the cylinder.

There is upon the longer arm of the lever F an adjustable weight, I.

If, now, we suppose it be desirable to maintain the steam in the boiler at or about at a uniform pressure, as, for instance, one hundred pounds per square inch, the valve *g* is to be moved so as to cover the mouth of the blast-pipe D.

The weight I should next be moved on the lever F, to counterbalance the pressure of the steam on the piston H of the cylinder, the steam being supposed to be at the desired tension. Under these circumstances the damper of the chimney is to be supposed to be nearly closed, or sufficiently open to insure the proper combustion in the furnace.

Now, should the boiler not make steam fast enough, or the pressure become lessened or less than the rate prescribed, the piston H will fall, so as to cause the valve *g* to uncover the blast-pipe D and close the lower end of the pipe C.

In consequence of this the exhaust-steam of the engine, instead of escaping into the atmosphere through the pipe C, will be turned into the pipe D, and, rushing up through it and into the chimney, will increase the draught of the furnace. At the same time the damper will be opened or moved so as to increase the opening for the discharge of the draught or smoke.

As a result, the combustion of the fuel will be increased, and the steam will be increased and elevated in pressure.

When the pressure may have attained the normal rate the piston H will be forced upward and the valve *g* will be moved so as to exclude the exhaust-steam from the pipe D and cause it to escape through the pipe C.

In some cases the damper and its connection with the lever F may be dispensed with.

I am aware of the inventions described in the United States patents Nos. 10,387, 12,805, 14,605, 28,675, and 52,114, and I make no claim to any thing, combination, or arrangement of parts described in either of the said patents.

Neither of them shows two exhaust-pipes, a valve-case and valve, (like the pipes C D, the case B, and the valve *g*, hereinbefore explained,) arranged and combined with a boiler and chimney and the damper thereof, or with such and a lever, piston, and cylinder, applied to the boiler, as represented in the accompanying drawing.

By means of the two-branch exhaust C D, the valve-case B, and the valve *g*, the exhaust-steam may be used in the chimney or be allowed to escape into the atmosphere.

Thus, with my apparatus, results follow which are not incident to any apparatus described in either of such patents; therefore,

I claim—

1. The combination of the cylinder G, the piston H, the lever F, the weight I, the case B, the valve *g*, and the blast-pipes C D, all arranged and combined substantially in manner and for the purpose described.

2. The combination of the cylinder G, the piston H, the lever F, the weight I, the case B, the valve *g*, and the two blast-pipes C D with the exhaust-pipe E or passage of a steam-engine, and with a boiler, A, and its furnace or its chimney *a*, all being arranged and combined substantially as and for the purpose described.

3. The combination of the damper *b*, the cylinder G, the piston H, the lever F, the weight I, the case B, the valve *g*, the blast-pipes C D, and the exhaust-pipe, boiler, and furnace of a steam-engine, all being combined and arranged substantially in manner and for operation as and for the purpose as explained.

WILLIAM EVERETT PEARSON.

Witnesses:

R. H. EDDY,

S. N. PIPER.