(No Model.)

W. LOWE.

FURNACE FRONT.

No. 310,835. Patented Jan. 13, 1885.

Fig. 1.

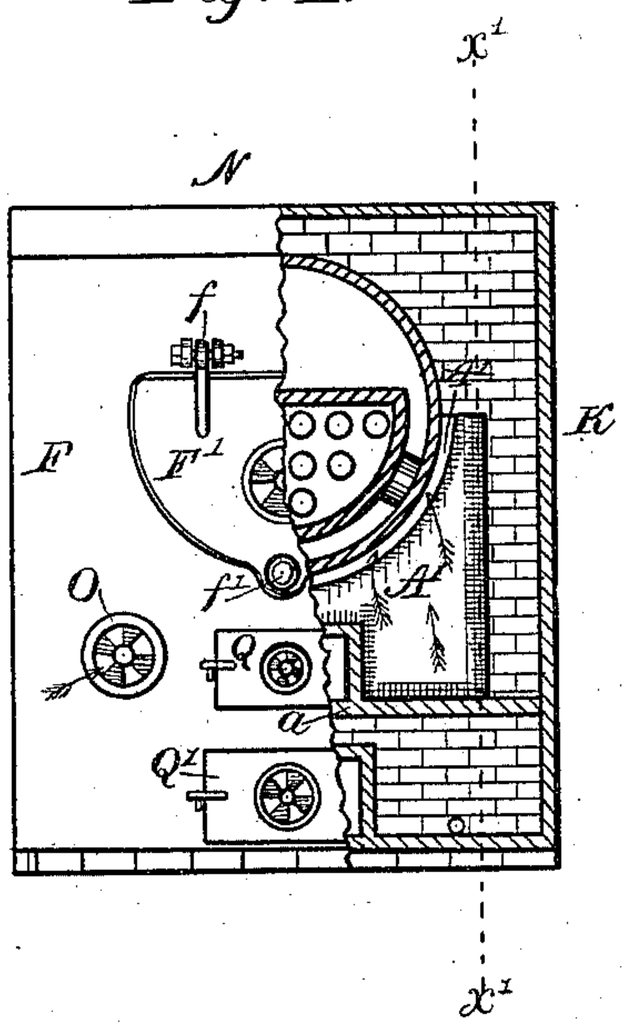


Fig. 2.

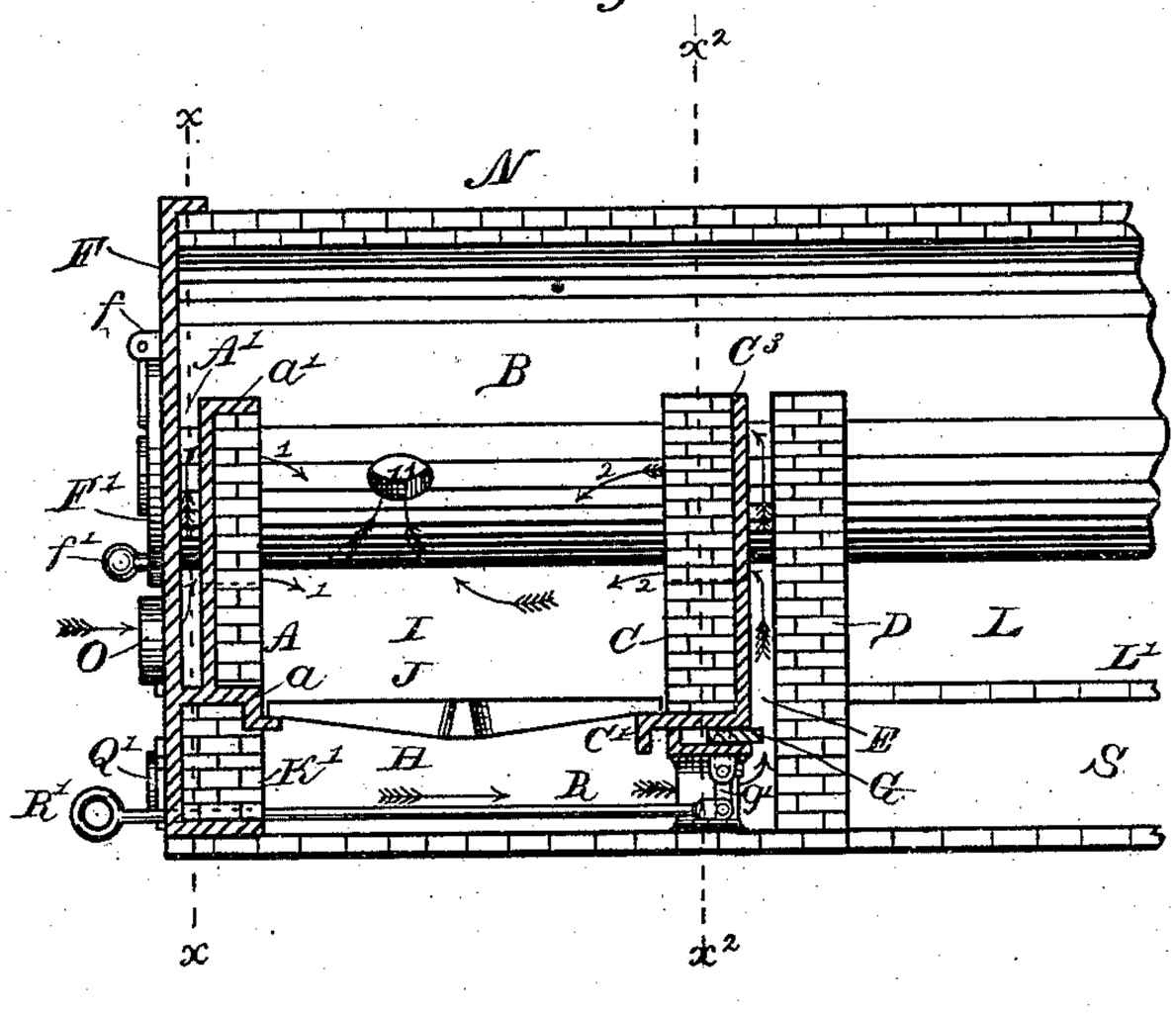


Fig. 4.

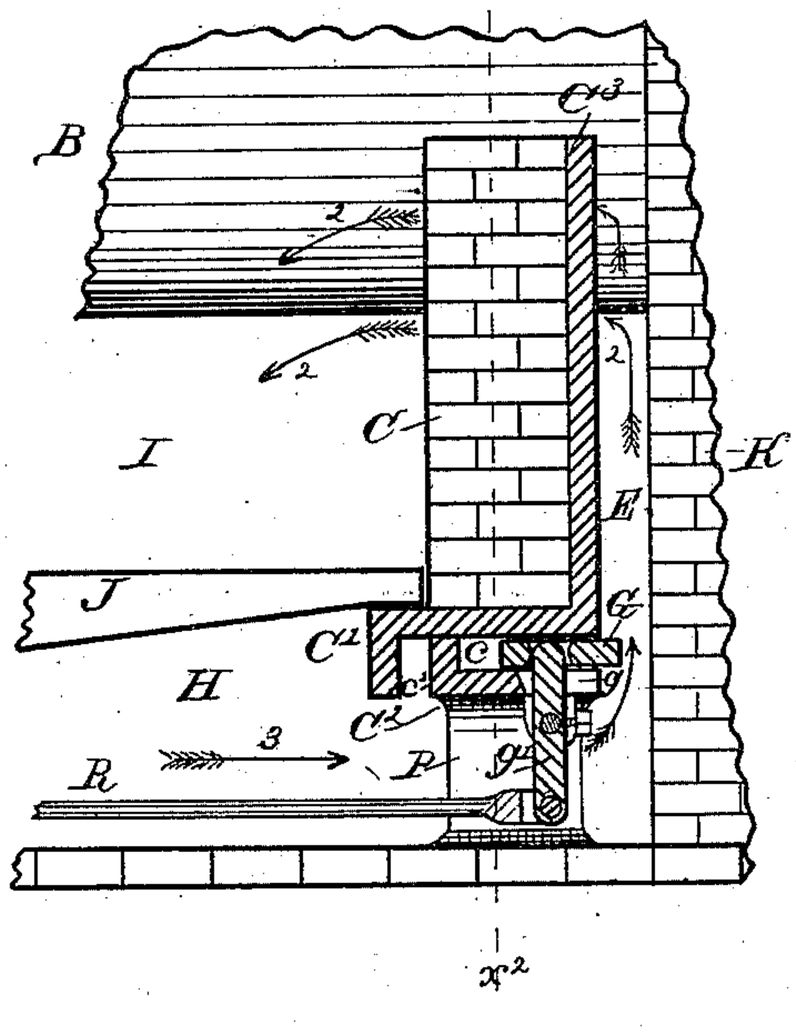
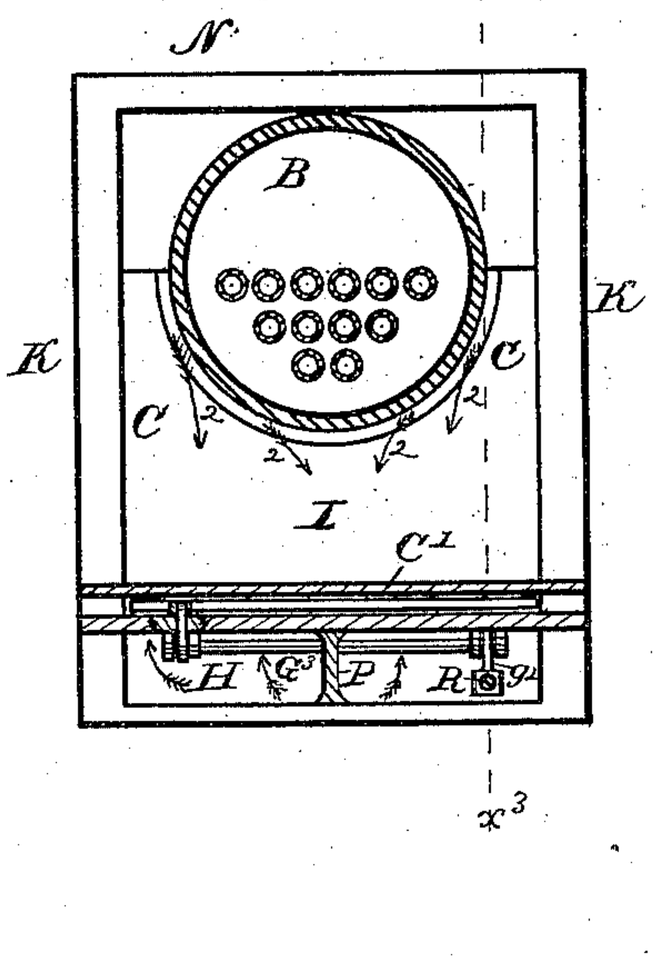


Fig. 3.



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UNITED STATES PATENT OFFICE.

WILLIAM LOWE, OF BRIDGEPORT, CONNECTICUT.

FURNACE-FRONT.

SPECIFICATION forming part of Letters Patent No. 310,835, dated January 13, 1885.

Application filed June 7, 1884. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM LOWE, a citizen of the United States, residing at Bridgeport, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Furnace-Fronts; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The objects of this improvement are, first, a furnace-front for preventing the warping, cracking, and premature destruction characteristic with furnace-fronts of usual construction, and which is caused by the frequent expansion and contraction of the metal composing the same by reason of the part which covers the furnace getting hotter than those portions which cover the brick-work and the end of the boiler, smoke-stack, or combustion-chamber; and, secondly, to obtain a more effective combustion of fuel, from supplying the usual deficiency of oxygen by means of air introduced into the furnace over the top of the fuel, over the whole width of the furnace, both at its front and rear ends. These results are attained by the mechanism illustrated in the drawings herewith filed as part hereof, in which the same letters of reference denote the same parts in the different views.

Figure 1 is a front elevation, partly in section, of a furnace embodying the features of my improvement. Fig. 2 is a sectional side elevation. Fig. 3 is a transverse vertical section. Fig. 4 is a longitudinal vertical section on an enlarged scale.

A is a wall forming an inner front for the furnace I, and having a semicircular or concaved top, the curve of which is greater than the diameter of the boiler B, between which and the wall A there is an air or draft space, as indicated by the arrows numbered 1, and shown in Figs. 1 and 2. This wall A is built upon a transverse plate, *d*, made integral with or suitably secured to the furnace-front F. It also rests on and is additionally supported by the front portion, K′, of the furnace-wall K. The plate *a* has a vertical extension, referred to at *a′*, Fig. 2, having the same profile as the wall A, and is to be set at a distance of several inches from the front F, to form a suitable air-space or vertical draft-course adjoining the inside of the boiler-front, as shown at A′, Figs. 1 and 2.

D represents the usual bridge-wall of an ordinary furnace.

C is an auxiliary or special bridge-wall, constructed in the same manner as the wall A in the front end of the furnace I, being built on a transverse plate, C′, supported by the furnace-wall K, and additionally supported by a transverse plate, C^2, having vertical flange *c′*, and both plates are braced by a central stand-piece, P. The plate C has a vertical extension, C^3, for better preserving the structure C, and has a profile corresponding to the semicircular or concaved top of the latter, between which and the boiler there is a suitable air-space or draft-course, indicated by the arrows numbered 2, and which is approached through the recess or air-space E between the structure C and the usual bridge-wall, D.

G is a gate arranged to slide between the transverse plates C′ and C^2 by means of lever *g′*, supported by a transverse rod or rock-shaft, G, secured by any suitable means to plate C^2.

R is a rod connecting with the lower end of the lever *g′*, and extending through the furnace-front, where it is provided with an eye or handle, R′, for operating the lever *g′*, and thereby partially or entirely opening or closing the draft-course E by moving the gate G out from or back into the recess *c* between the plates C′ C^2.

L is the space between the rear portion of the boiler and the floor or ground L′.

S is the earth or filling below the floor.

J represents the usual grate-bars.

Q is the furnace-door.

Q′ is the door to the ash-pit H.

F′ is a draft-door or flue-cap secured to the front F by hinges *f*, and provided at its lower part with a handle, *f′*, for operating the same. The front F is provided with one or more registers, O, controlling the admission of air into the furnace. The inner front wall, A, with the intermediate air-space, A′, will prevent the uneven heating of the furnace-front F, and its premature destruction from frequent contraction and expansion, and by reason of the space between the top of the wall A and the boiler B the air-space A′ is made additionally useful for introducing air into the furnace

above the fire entirely across the furnace, and as the same operation of air accrues from the similarly-constructed auxiliary bridge-wall at the rear end of the furnace, the character and efficiency of the combustion can be greatly improved, and the same governed at will by means of the gate G and the registers O.

Having explained the construction and operation of my improvement, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, in a boiler-furnace, of a front consisting of a metallic facing, and having a rearwardly-extending horizontal ledge, and an inner brick wall built upon said ledge to form an intermediate air-space, substantially as set forth.

2. The combination, in a boiler-furnace, of a front consisting of a metallic facing having a rearwardly-extending horizontal ledge and a vertical portion forming an intermediate air-space, and an inner brick wall built upon said ledge to re-enforce said vertical portion, substantially as set forth.

3. The combination, in a boiler-furnace, of an auxiliary bridge-wall, C, consisting of a metal plate provided with a horizontal ledge, and a vertical portion and brick wall built upon said ledge, substantially as set forth.

4. The combination, in a boiler-furnace, of a main bridge-wall, an auxiliary bridge-wall arranged to form an intermediate air-space, E, a gate, G, and means for operating the same, substantially as set forth.

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

WILLIAM LOWE.

Witnesses:
E. WILMOT,
GEO. W. WARNER.