

(No Model.)

G. R. URIDGE.

AIR FEEDING DEVICE FOR FURNACES.

No. 393,800.

Patented Dec. 4, 1888.

Fig. 1

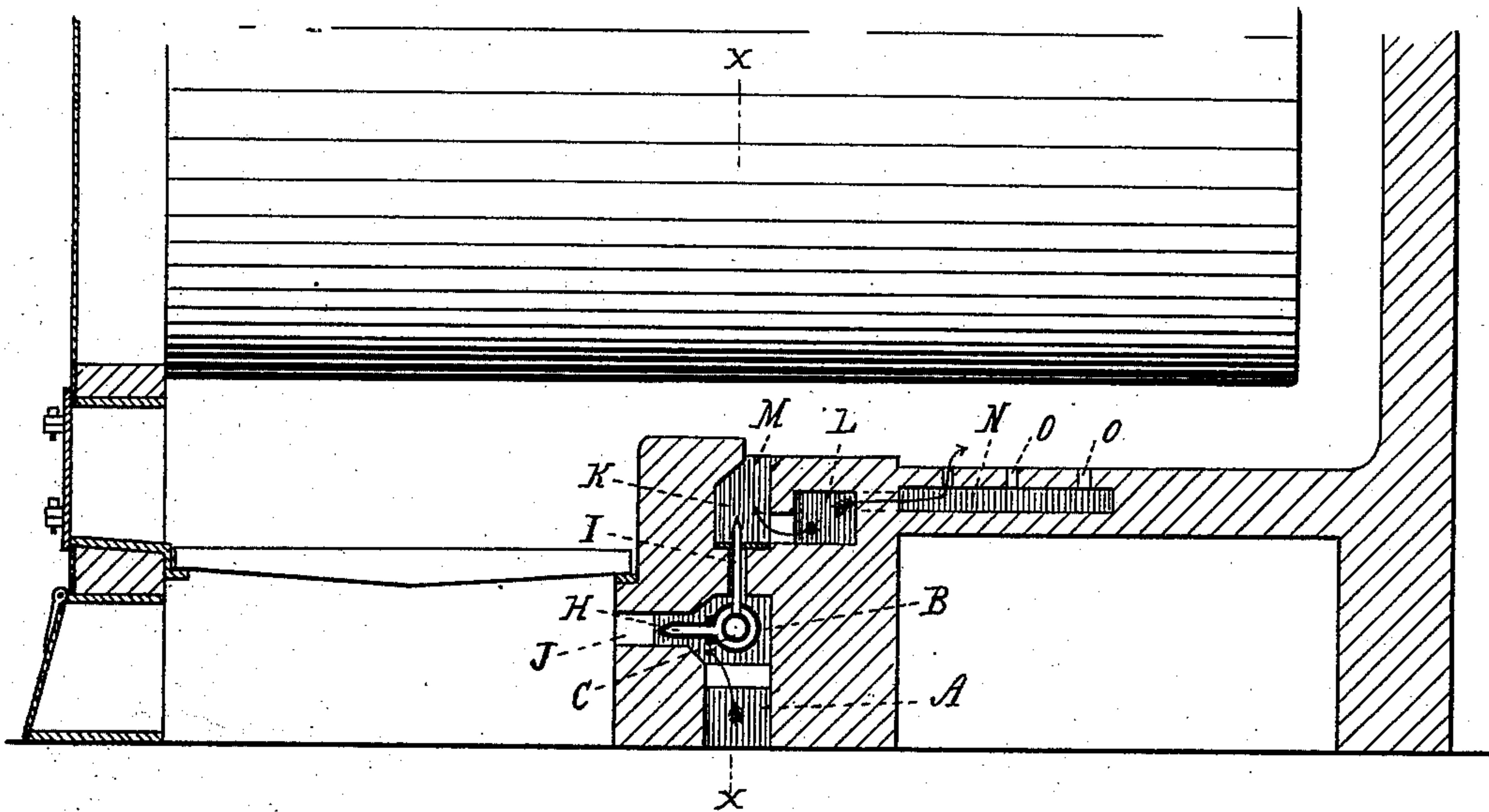
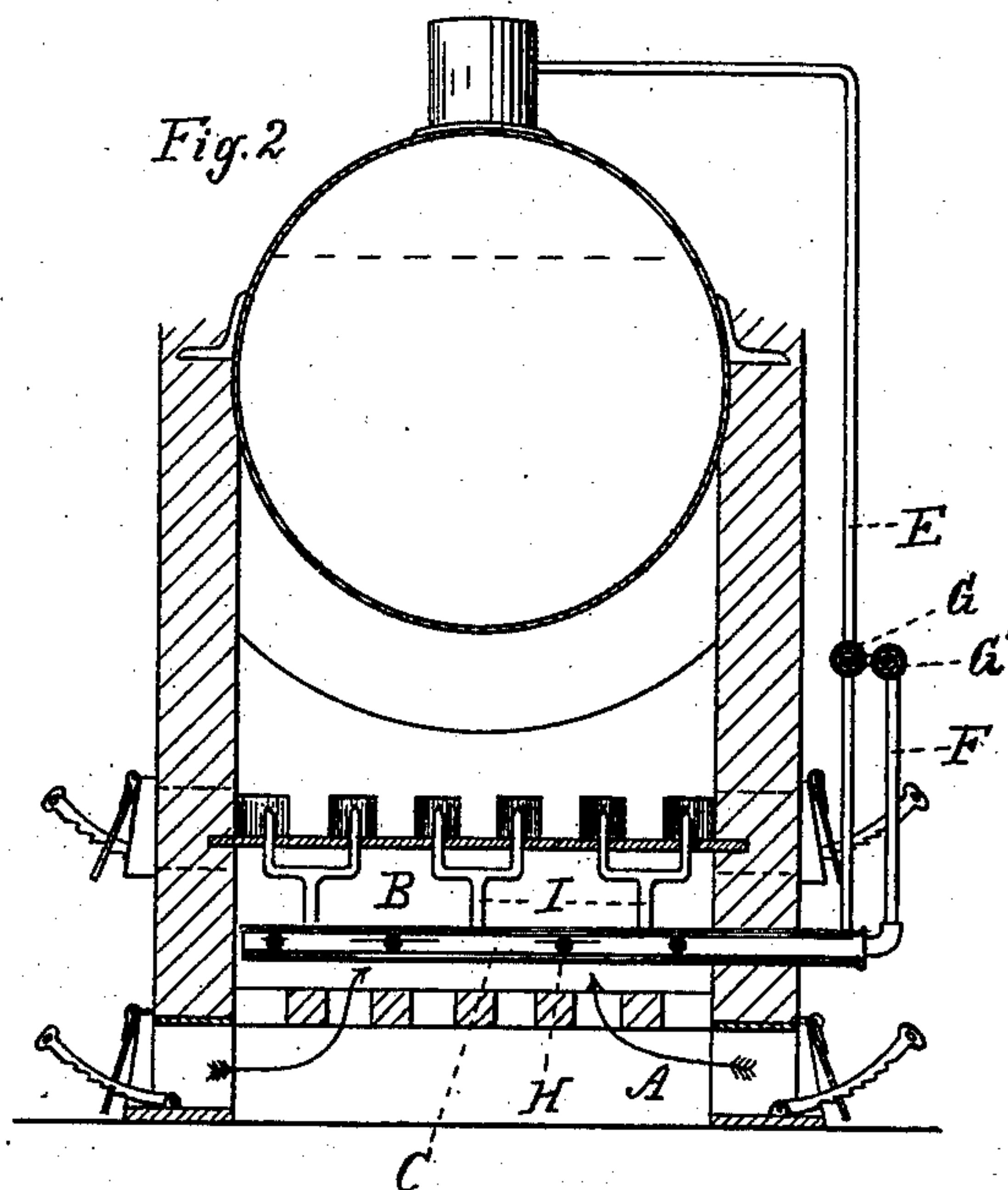


Fig. 2



Attest:
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Att'y.

UNITED STATES PATENT OFFICE.

GEORGE R. URIDGE, OF DETROIT, MICHIGAN.

AIR-FEEDING DEVICE FOR FURNACES.

SPECIFICATION forming part of Letters Patent No. 393,800, dated December 4, 1888.

Application filed March 27, 1888. Serial No. 268,628. (No model.)

To all whom it may concern:

Be it known that I, GEORGE R. URIDGE, a citizen of the United States, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Air-Feeding Devices for Furnaces, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to new and useful improvements in air-feeding devices for furnaces, especially intended for steam-generators, for the purpose of producing a smokeless combustion.

15 The invention consists in the peculiar arrangement and construction of air-feeding devices in the bridge-wall, by means of which air is introduced from the outside underneath the fire, as well as back of the bridge-wall, in connection with mechanical means comprising a series of steam-jets for forcing such air to the points desired and in such quantities as to effect the purpose of smokeless combustion.

25 To this end my invention consists in the construction and arrangement of the parts, as more fully hereinafter described, and shown in the accompanying drawings, in which—

30 Figure 1 is a longitudinal central section of a steam-generator furnace with the bridge-wall constructed to embody my invention. Fig. 2 is a cross-section thereof on line *xx* in Fig. 1.

35 A represents a transverse air-flue built in the bridge-wall, and provided on one or both sides of the furnace with an adjustable door or doors to control the admission of air into said flue. This flue continues into the flue B and connects therewith by proper passages, and 40 in that flue is located the steam-head C, which I preferably construct in the form of two pipes, one inside the other, and forming an interior and exterior steam-chamber, separated from each other, connected to the steam-supply pipes E and F, and provided with regulating-valves G G', by means of which either one of the steam-chambers can be independently connected with steam-supply from the steam-dome or other source. This steam-head C has 50 two sets of nozzles or jets, H and I, the former of which discharges the steam through the apertures J in the bridge-wall directly under-

neath the fire-grate, which is of any suitable construction; but instead of having the usual air-supplies from the front of the boiler 55 through the ash-pit doors it is supplied with oxygen by the pressure of the steam injected through the apertures J, which draw the air in through the flue A into the flue B, and thence underneath the grate, where a plenum 60 of air is maintained, which passes through the interstices in the grates to the fire to maintain the combustion. The other set of steam nozzles or jets, I, take the steam from the other chamber of the steam-head, and, 65 passing in an upward direction, discharge it into a flue, K, into which the air is conducted through a separate inlet-flue, L, from the outside, and which flue is also provided with a suitable draft-door for regulating the admis- 70 sion of air thereto. From this flue K the passage or discharge-opening M on top of the bridge-wall forces the air underneath the boiler at such point where it strikes the heated gases escaping from the grate at their 75 point of greatest heat, and commingling therewith produces entire combustion of all gases not consumed, producing thereby an extended flame passing rearwardly under the generator, and from there on following the draft. To 80 further admit air into this flame or combustion, I preferably discharge air from the flue L into the rearward flue, N, which has suitable apertures, O, to discharge an amount of air back of the bridge-wall to further support 85 combustion.

What I claim as my invention is—

1. In an air-feeding device for furnaces, the combination, with the bridge-wall and the steam-head provided with two independent 90 steam-chambers, of two air flues or passages from said steam-head, each independent of the other, one discharging into the furnace below the grate and the other on top of the bridge-wall into the sheet of flame or gases of 95 combustion passing over that bridge-wall, substantially as described.

2. In an air-feeding device for furnaces, the combination, with the bridge-wall, of two air flues or passages, each independent of the 100 other, one discharging into the furnace below the grate and the other on top of the bridge-wall into the sheet of flame or gases of combustion passing over that bridge-wall, and

the steam-head common to both and provided with independent means of control, substantially as described.

3. In an air-feeding device for furnaces, the
5 combination, with the bridge-wall, of the air-flues A B, the draft-door controlling the admission of air thereto, the steam-head C, provided with two independent steam-chambers, the passages J, leading into the furnace, and

the passages leading through the top of the bridge-wall, substantially as described.

In testimony whereof I affix my signature, in presence of two witnesses, this 14th day of March, 1888.

GEORGE R. URIDGE.

Witnesses:

P. M. HULBERT,

JOHN SCHUMAN.