

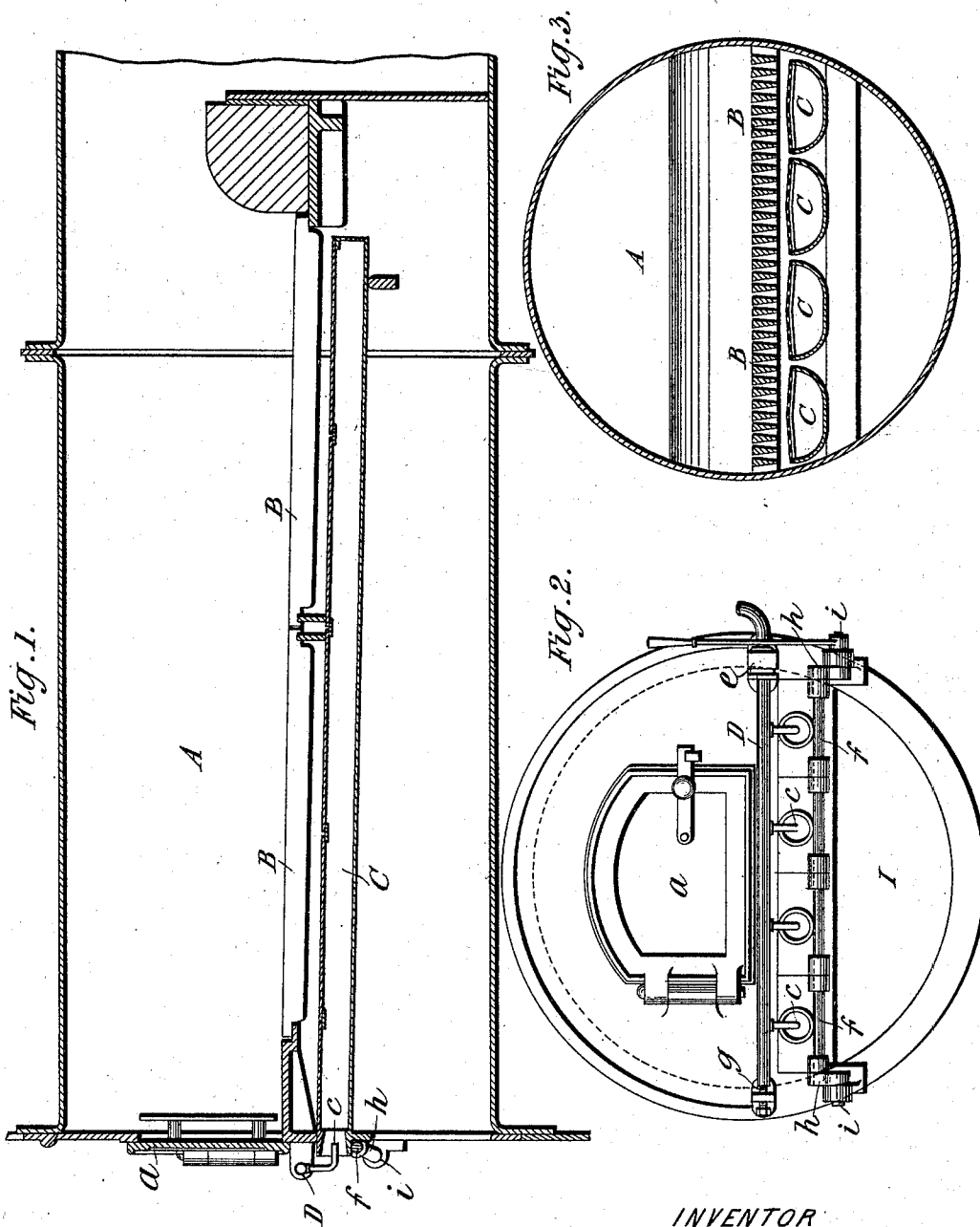
(No Model.)

R. GOSLING.

DRAFT APPARATUS FOR FURNACES.

No. 585,644.

Patented June 29, 1897.



WITNESSES.
Albert Jones.
George Campbell

INVENTOR
Robert Foslings
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UNITED STATES PATENT OFFICE.

ROBERT GOSLING, OF LONDON, ENGLAND, ASSIGNOR TO THE IMPROVED
PATENT FORCED DRAUGHT FURNACE SYNDICATE, LIMITED, OF SAME
PLACE.

DRAFT APPARATUS FOR FURNACES.

SPECIFICATION forming part of Letters Patent No. 585,644, dated June 29, 1897.

Application filed May 23, 1896. Serial No. 592,853. (No model.) Patented in England September 5, 1894, No. 16,910.

To all whom it may concern:

Be it known that I, ROBERT GOSLING, a subject of the Queen of Great Britain and Ireland, residing at 73 Queen Victoria Street, in the city of London, England, have invented certain new and useful Improvements in Forced-Draft Apparatus for Destructor or other Furnaces, (for which I have obtained a patent in Great Britain, No. 16,910, dated September 5, 1894;) 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.

This invention relates to an improved device for equalizing the forced draft for destructor or other furnaces, and has for its object the promotion of a uniform combustion of the fuel by a more perfect and equal distribution of the draft under the area of the fire.

In other forced-draft furnaces the air is forced in by an injector simply to the under part of the grate area, which is closed in, so as to form a chamber. The injector usually consists of a nozzle through which a jet of steam is injected into a vent, with an air-space surrounding the said nozzle, the jet of steam forcing in a considerable amount of air to the chamber below the fire-grate area. The space beneath the fire-bars is thus charged with air and vapor at a pressure and it is found causes the air to blow through to a great extent in the weakest part of the fire and that which offers the least resistance, increasing the rapidity of combustion at that point to the detriment of the remainder of the fire and frequently resulting in the fire being blown right through, the unconsumed fuel being carried into the flue and thereby causing a vent, while the heat is so intense at that point as to seriously injure the fire-bars. To overcome these drawbacks, I provide the furnace with several air-chests, each of which consists of a suitably-shaped box, preferably closed at one end and provided with slots or apertures on the face thereof. These air-chests are placed near the under side of the fire-bars, and air is forced into them by any of the ordinary and well-known methods, preferably by means

of an injector of a suitable pattern. By this means the air is impinged upon every part of the fire, the draft is more equally distributed, and the fuel is uniformly consumed, thus effecting a large saving in the cost of production of steam and entirely preventing unconsumed fuel being carried away from the fire.

In order that my invention may be more readily understood, reference is made to the accompanying drawings, in which—

Figure 1 is a longitudinal section of a portion of a furnace with my improvements applied thereto. Fig. 2 is an elevation of the front of the furnace, and Fig. 3 is a transverse section of the same.

A is the furnace, having the usual door *a* for the introduction of the fuel.

B are the fire-bars, which, as seen in Fig. 3, are placed closely adjacent to each other, only a small space being left between the bars. Beneath the said bars B are placed the chests C, which are preferably semielliptical in cross-section, and into the front ends of which the steam-injectors *c* are introduced. The tops of the said chests C, which are preferably ridged longitudinally, as shown in Fig. 3, are perforated with a series of holes and slots through which the air issues in jets against the under side of the fire.

The injectors *c* are attached to a steam-pipe D, passing horizontally across the front of the furnace, the said pipe D having a joint at one end, as at *e*, and a center *g* at the other, so as to allow of its being rotated and the injector-nozzles withdrawn from the mouths of the chests C. The front of chests C are supported on a rod *f*, which is carried by arms *h* from the center *i*, so that the rotation of the said rod *f* about the centers *i* will allow the fore ends of the chests C to be lowered and allow a space for a natural draft for the purpose of lighting the fires, or at other times when a forced draft is not required it also affords a space for the removal of any fine ash or other debris from the furnace which may have fallen through the interval of the fire-bars and settled on the upper side of the air-chests.

The space I beneath the chests is prefer-

ably open at the front end, as shown, but it may, if desirable, be inclosed by a door or other means.

What I claim, and desire to secure by Letters Patent, is—

1. In a forced-draft apparatus for furnaces, the combination with the furnace, and the fire-bars, of a series of air-chests arranged beneath the fire-bars, each of said chests extending longitudinally and substantially the entire length of the fire-bars and having a perforated top, a steam-pipe extending transversely across the front of the furnace, and injectors secured to said pipe and projecting into the ends of the chests, and having air-spaces surrounding said injectors as described.

2. In a forced-draft apparatus for furnaces, the combination with the furnace, and the fire-bars, of a series of air-chests arranged beneath the fire-bars, each of said chests extending longitudinally of the fire-bars and having a perforated top, a rod extending across the front of the furnace and adapted to have a swinging movement, and with which

rod the front end of the chests have a pivotal connection, and means for injecting steam and air into the chests, as specified.

3. In a forced-draft apparatus for furnaces, the combination with the furnace, and the fire-bars, of a series of air-chests arranged beneath the fire-bars, each of said chests extending longitudinally of the fire-bars, and having a perforated top, a steam-pipe extending transversely across the front of the furnace and being pivotally mounted, so as to adapt it to be turned as described, and injectors secured to said pipe and projecting into the ends of the chests and having air-spaces surrounding said injectors, said injectors adapted to be withdrawn from the chests when the steam-pipe is turned, as specified.

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

ROBERT GOSLING.

Witnesses:

WALTER J. SKERTEN,
GEO. J. B. FRANKLIN.