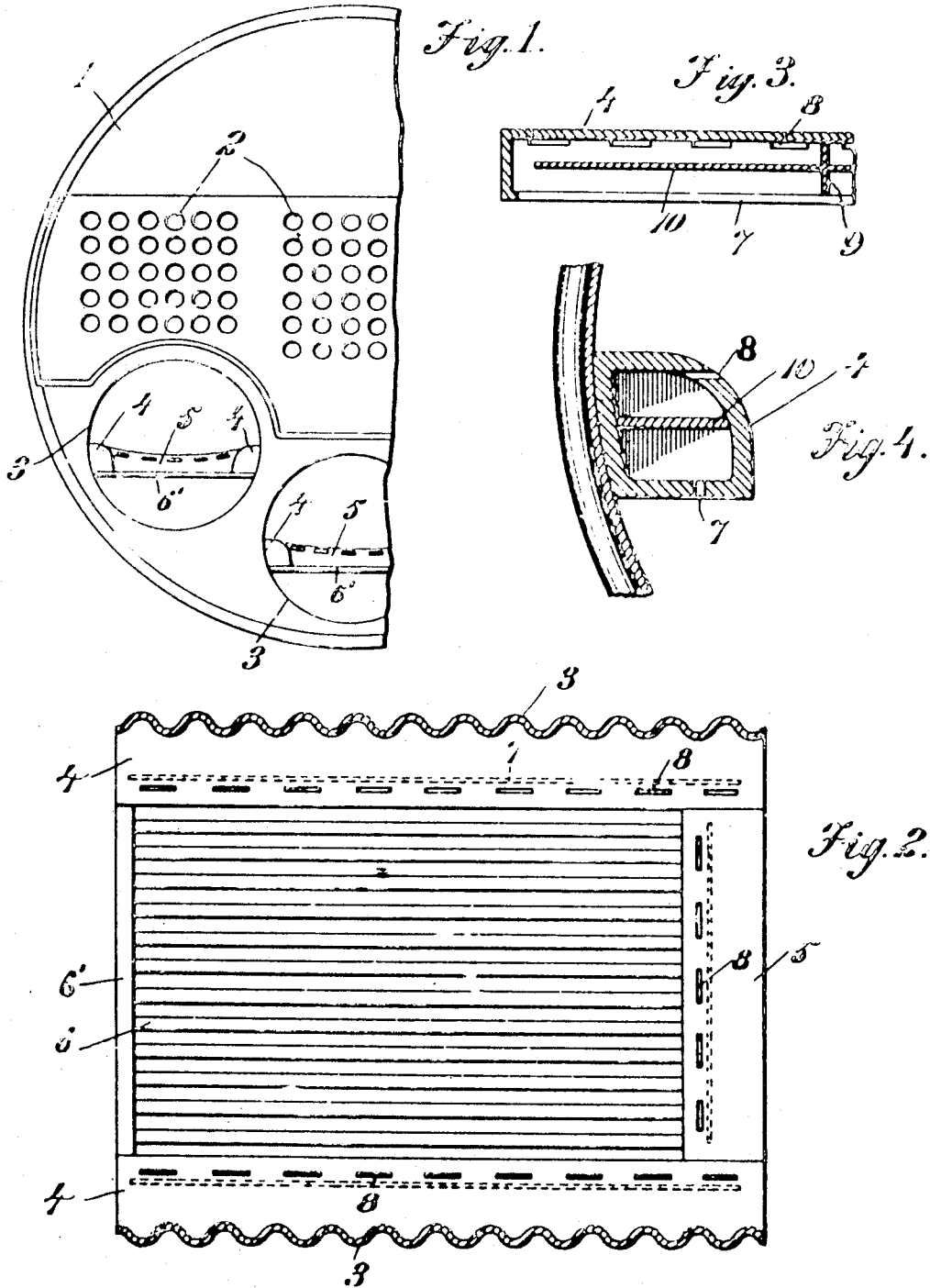


P. H. BAGLEY.
HOT BLAST FOR BOILER FURNACES.
APPLICATION FILED DEC. 18, 1907.

955,573.

Patented Apr. 19, 1910.



WITNESSES

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UNITED STATES PATENT OFFICE.

PERKINS H. BAGLEY, OF SAN FRANCISCO, CALIFORNIA.

HOT BLAST FOR BOILER-FURNACES.

955,573.

Specification of Letters Patent.

Patented Apr. 19, 1910.

Application filed December 18, 1907. Serial No. 406,604.

To all whom it may concern:

Be it known that I, PERKINS H. BAGLEY, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented a new and useful Hot Blast for Boiler-Furnaces, of which the following is a specification, in such full and clear terms as will enable those skilled in the art to construct and use the same.

This invention relates to a means for the purpose of heating a blast of air for the more complete combustion of fuel in fire boxes of boilers and other furnaces where a thick bed of coal is burning. It is well known that where there is a large amount of coal on fire that the air is with difficulty burned to carbon dioxid, much of it being reduced in its passage through the thick bed of hot fuel to carbon monoxid with a corresponding loss of heat units, since the heat given off by the burning of oxygen to carbon monoxid is only about one third the heat given off by the burning of oxygen to carbon dioxid. This loss is very difficult to avoid for the reason that a large mass of coal must be heated in order that it may be in condition to give out the necessary heat when its time comes to burn to ashes, and this thick bed of fuel is always reducing the burning air and coal to carbon monoxid on its way up through the coal which is heated to such a temperature that the reduction takes place.

The object of this invention is to furnish the air necessary to burn the carbon monoxid, after it has formed, to carbon dioxid, and to heat the air thus furnished to such a temperature that it will easily combine with the monoxid and make certain the liberation of the greatest quantity of heat from the given mass of fuel.

This invention is an improvement on the invention disclosed in patent granted this applicant under Number 566,837, and dated Sept. 1, 1896.

Another object of the invention is to make a device that can be applied to any fire box no special means being necessary to prepare the fire box for the reception of this device.

In the drawings in which the same numerals of reference are applied to the same parts throughout, Figure 1 is a front end view of a marine boiler with the ends of the

fire boxes out to show this device in place, Fig. 2 is a plan view of the fire box in horizontal section, Fig. 3 is a vertical longitudinal sectional view of about one half of one of the hot blast members, and Fig. 4 is a view in vertical section of one of said members and a part of the fire box looking from one end, the three latter figures being on a larger scale than the first figure.

The numeral 1 represents the boiler and 2 the tubes in the same, although it is to be understood that the device may be applied equally well to any boiler even if not of this type. In the lower part of the boiler are placed the fireboxes 3, 3 having the grate bars 6 supported at the front of the fire box by means of a cross bar 6'. This hot blast is shown at 4 and 5 and consists of a large heavy casting of very thick metal and for large boilers weighing about 400 to 800 pounds for each section of which there are three, two side sections and one rear section, the latter extending across the grate bars and holding each of the former in their places at the sides of the fire box. The members 4 and 5 are all precisely alike save for the fact that 5 has its top cut down on a circle as shown in Fig. 1. Each member is hollow and has a vertical partition 9 dividing it longitudinally into two parts, a second partition 10 dividing it vertically into two parts, four compartments being thus formed. Each hot blast member is about ten inches high and the metal in it is about two inches thick, a slot 7 running from end to end of each member on the bottom thereof, and a series of slots 8 are formed in the top of the same. Now it will be noted that the air as it comes into the hot blast from below the fire will come against the hot walls of the members 4 and 5 and will pass along the partition 10 until it can escape around the end of the same and pass to the upper part of said members when it will be heated very hot and as it blasts out of the slots 8 it will cause all the carbon monoxid that has formed in the bed of coal to be at once burned to carbon dioxid with the liberation of a very much larger quantity of heat before its escape from the fire box. One result of this device is that the smoke escaping from the boiler is almost colorless, practically all of the carbon being burned to a gas. This makes the device of very great

use in cities where the laws do not allow the escape of heavy black clouds of smoke from chimneys.

Having thus described my invention what I claim as new and desire to secure by Letters Patent of the United States is as follows, modifications within the scope of the claims being reserved.

1. The combination with a boiler furnace having a firebox of hollow bodies surrounding the firebox at two sides and one end, said hollow bodies comprising a shell having two longitudinal slots in the under side thereof and a plurality of horizontal slots at the top thereof, and also having a vertical web connecting the upper and lower part of said body and the sides thereof near the center of the length of said body, and two horizontal webs connecting the sides of the body and extending from the web at the center toward the ends of said body whereby a passage for air is provided from

below to the top of the body of coal on the grate bars of the fire box, substantially as described.

2. The combination of a furnace having grate bars, a hollow body adapted to be placed on the grate bars, said body having two longitudinal slots in its under side and a plurality of horizontal slots in its upper side a web connecting the top, bottom and sides of said body near the center thereof, and a pair of webs connecting the first web and the two sides of said body and forming with said body a channel wherein air supplied to the furnace is heated before being projected thereinto.

In testimony whereof I have set my hand this 6th day of December A. D. 1907, in the presence of the two subscribed witnesses.

PERKINS H. BAGLEY.

Witnesses:

C. P. GRIFFIN.

W. T. HESS.