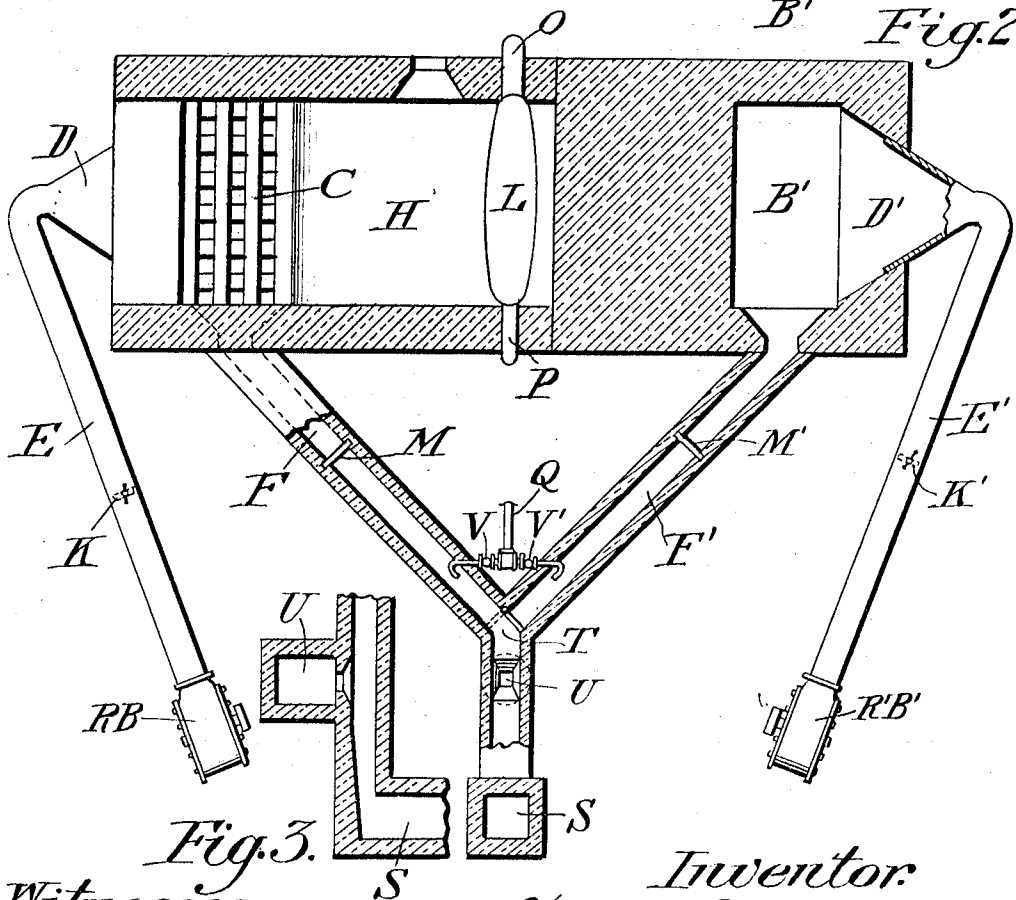
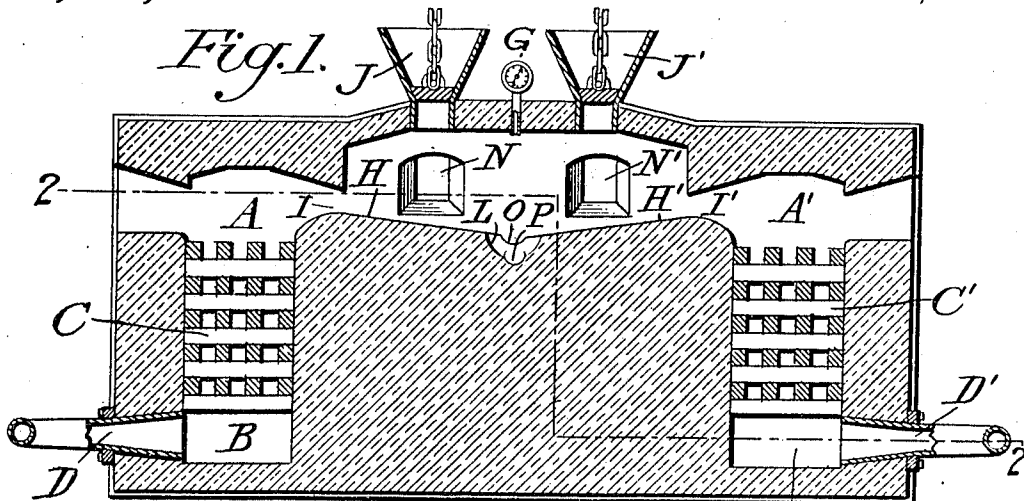


W. F. TAYLOR.
 FUME ARRESTER FOR REGENERATIVE MATTING FURNACES.
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1,040,460.

Patented Oct. 8, 1912.



Witnesses.
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UNITED STATES PATENT OFFICE.

WILLIAM FREDERICK TAYLOR, OF TACOMA, WASHINGTON.

FUME-ARRESTER FOR REGENERATIVE MATTING-FURNACES.

1,040,460.

Specification of Letters Patent.

Patented Oct. 8, 1912.

Original application filed June 12, 1908, Serial No. 438,247. Divided and this application filed October 23, 1911. Serial No. 656,322.

To all whom it may concern:

Be it known that I, WILLIAM FREDERICK TAYLOR, a citizen of the United States, residing at Tacoma, in the county of Pierce and State of Washington, have invented certain new and useful Improvements in Fume-Arresters for Regenerative Matting-Furnaces, of which the following is a specification.

10 The objects of the invention are, first, to provide a regenerative furnace with a fume arresting device, as illustrated in the accompanying drawing in which—

15 Figure 1 is a vertical section lengthwise through the furnace; Fig. 2 is a plan section on the line 2—2; Fig. 3 is a sectional part of the flue to the smoke stack and contains the condenser.

20 Similar letters refer to similar parts in the several views.

25 Fire-boxes or combustion chambers are indicated at A A' and are designed to be used alternately. Each fire-box is located over a chamber of flues C C', or checker-work, constructed of refractory materials, which open at the bottom into flues B B', connected with the smoke stack S through external flues F F', which are provided with dampers M M' with which to regulate and alternate the draft. Each fire-box is provided with a forced draft by means of air flues D D', which open the full width of the bottom into the flues B B' and which are supplied with air from the Root blowers at R B and R' B' through the pipes E E' connected therewith. The force and quantity of air is regulated by machinery which operates the Root blowers. The heat indicator G shows the desired amount of heat required. Each fire-box is connected with smelting hearths H H' by means of ports I I'. The furnace is heated by starting a fire in one of the fire-boxes as A, the dampers M K' being closed and M' K being open. This causes the products of combustion to pass through the smelting chamber over the hearth H H, through the fire-box A' to the flues B' C' and F' to the smoke stack S. When the furnace and flues become well heated by the products of combustion, a fire is started in fire-box A' and the dampers reversed, and the fire in A is allowed to go down when the flues D and

C become heated and the furnace is ready for use.

55 Ore is put in the furnace through the charging hoppers J J', the ore being spread and stirred through the doors N N'. The hearths are designed to be charged alternately, the fresh ore being deposited on the hearth farthest from the fire-box in use, so that the ore will be roasted preparatory to being subjected to the intense heat of the nearest fire-box when the fire is alternated to it. The fires thus alternated and the ores being exposed to the products of combustion alternately from the opposite ends of the furnace, the ores soon become reduced to matte and slag, which readily collects in the lead well L and is drawn off, the slag at the upper tap hole O, and the bullion at the lower tap hole P.

60 In connection with the foregoing construction I employ my fume arrester as follows: At Q is located a cold water pipe having outlets designed to discharge alternately into the flues F and F', each outlet being operated by a valve V V'. The spray of cold water discharged from these outlets condenses or precipitates all volatilized metals from the smoke and gases passing through the flue. A receptacle or well U collects these metals and they are thus saved.

85 Under the construction described a forced spray of water is injected into the flues leading from the superheating chambers or flues at a point between the passage of the products from the superheaters and the smoke stack, and a well is provided to receive the precipitated materials at a point in advance of the escape of the products into the smoke stack. In other words a forced draft of air is driven directly into a flue at the bottom of the superheating flues and is supplied through a flue independent of the flue by which the products are carried from the superheating flue to the smoke stack, and this makes it possible to precipitate and collect valuable precipitates from the products which pass from the superheating flue through an independent flue leading therefrom to the smoke stack.

100 This application is filed as a division of my application filed June 12, 1908, Serial

Number 438,247 and is designed to cover the fume arresting feature of the invention.

Having described my invention what I claim is:—

- 5 In a regenerative furnace having valve controlled flues leading from the lower part of the super-heating flues and merging into a smoke stack, means for injecting a spray of water into the escaping gases at a point
10 between the bottom of the super-heating flues and the smoke stack for precipitating

volatilized metals carried off from the smelting hearths, and a well in that portion of the flue opening into the smoke stack for receiving the precipitated metals, substantially as described. 15

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

WILLIAM FREDERICK TAYLOR.

Witnesses:

I. H. HILL,
E. T. MOCK.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."