F. H. WOLKENHAUER.

FURNACE.

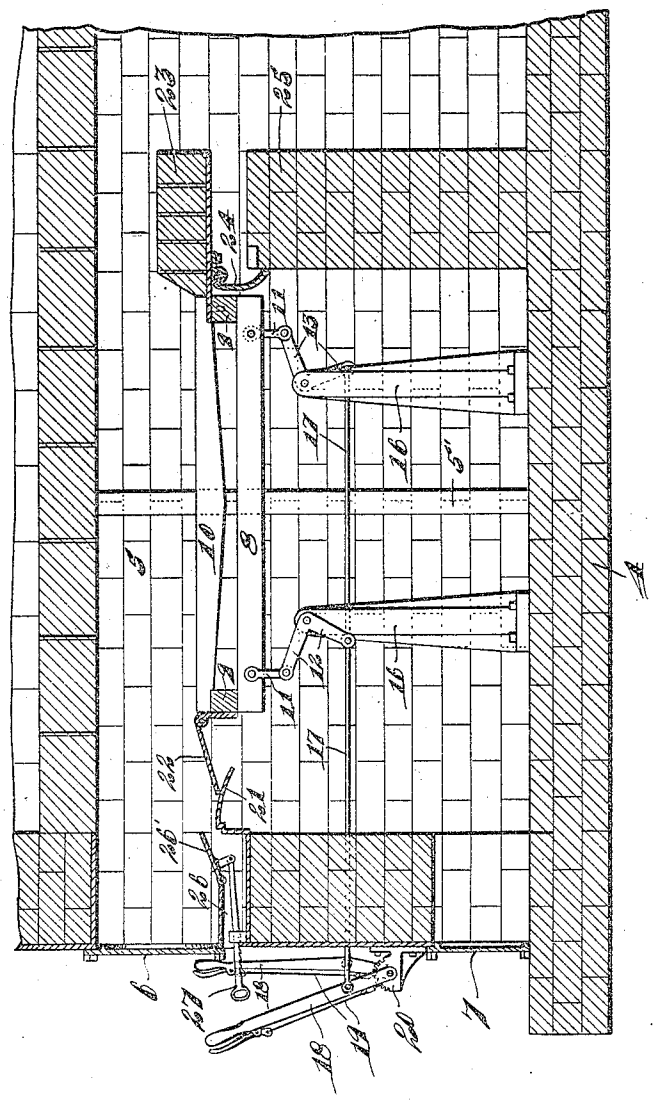
APPLICATION FILED AUG. 17, 1914.

1,160,233.

Patented Nov. 16, 1915.

2 SHEETS—SHEET 1.

Fig. 1.



Witnesses:

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B. J. Richards

Inventor:

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2 SHEETS—SHEET 2.

Fig. 2.

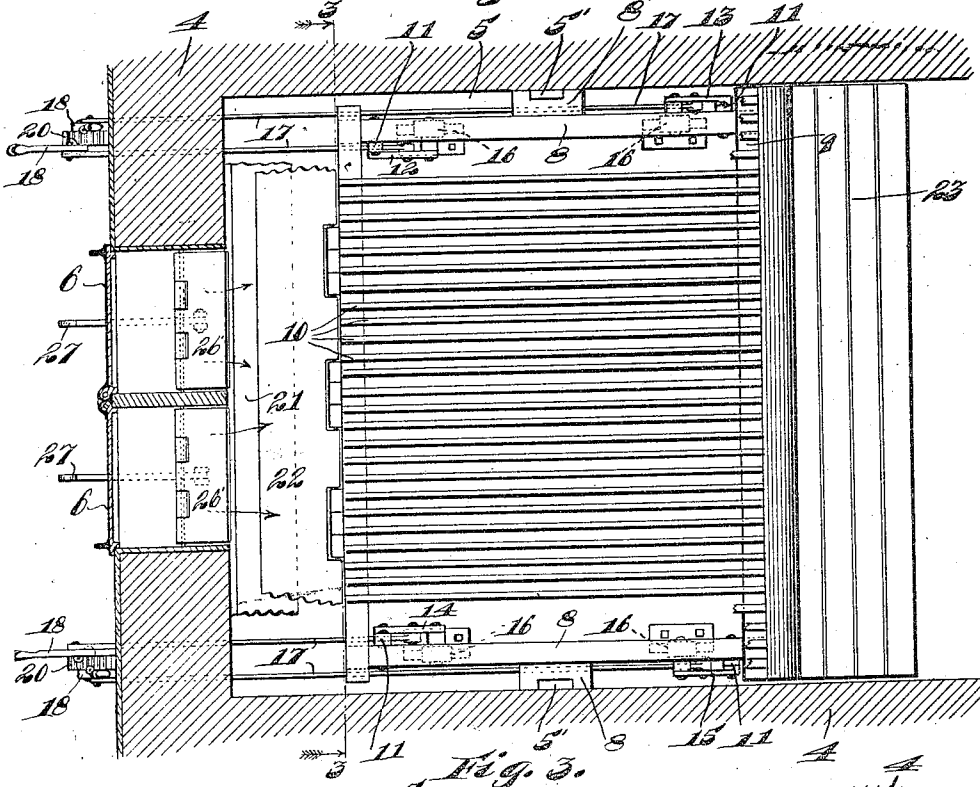
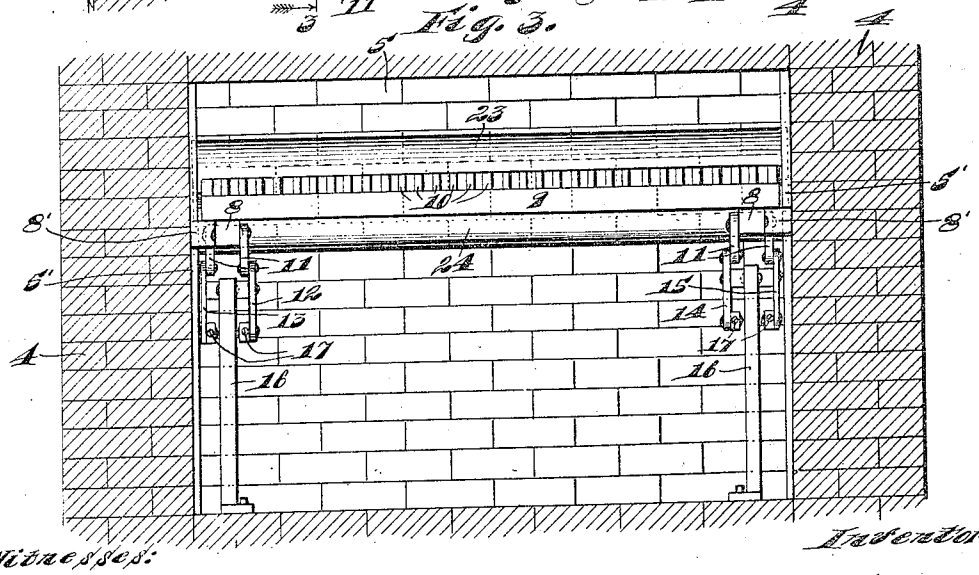


Fig. 3.



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UNITED STATES PATENT OFFICE.

FREDERICK H. WOLKENHAUER, OF BENSONVILLE, ILLINOIS.

FURNACE.

1,160,233. Specification of Letters Patent. Patented Nov. 16, 1915.

Application filed August 17, 1914. Serial No. 857,137.

To all whom it may concern:

Be it known that I, FREDERICK H. WOLKENHAUER, a citizen of the United States, and a resident of the city of Bensonville, county of Dupage, and State of Illinois, have invented certain new and useful Improvements in Furnaces, of which the following is a specification.

My invention relates to improvements in furnaces and has for its object the provision of an improved furnace adapted to consume all gases and fuel particles and thus prevent the production of smoke.

The invention consists in the combinations and arrangements of parts hereinafter described and claimed.

The invention will be best understood by reference to the accompanying drawings forming a part of this specification, and in which—

Figure 1 is a longitudinal section through a fire chamber of a furnace embodying my invention, Fig. 2, a horizontal section through the same, and Fig. 3, a section taken on line 3—3 of Fig. 2.

The preferred form of construction as illustrated in the drawings comprises a furnace 4 of any usual or desired construction and provided with the usual fire chamber 5 therein. Fire chamber 5 is provided with the usual fuel door 6 and ash door 7 provided with adjustable means for admitting air to said fire chamber.

A grate frame is arranged in fire chamber 5, said grate frame consisting of longitudinal side rails 8 and transverse end rails 9. Grate bars 10 are arranged longitudinally of said frame resting at each end upon cross rails 9 as shown. The grate frame is supported upon links 11 carried by bell cranks 12, 13, 14 and 15 mounted upon suitable standards 16 arranged in the fire chamber 5 as shown. Each of said bell cranks is operated by a link 17 extending through the front wall of the furnace and there connected with an operating lever 18 provided with a pawl mechanism coöperating with a toothed segment 20 to lock said lever in any desired position. Each of the rails 8 carries a shoe 8′ running upon a guide 5′ on the corresponding wall of chamber 5 to guide the grate in its vertical movement. By this arrangement it will be observed that the grate 10 may be readily adjusted vertically in fuel chamber 5 and locked in adjusted position.

A rearwardly extending downwardly curved guard 21 is arranged in the forward portion of fuel chamber 5 substantially opposite the grate 10 therein and a leaf 22 is hinged to the forward portion of said grate to rest loosely upon said guard, this arrangement being provided to seal the gap between the forward end of the grate and the rear of the front wall of the fuel chamber while permitting of vertical adjustments of the grate.

A bridge top 23 is arranged at the rear of grate 10 and is secured to the grate frame so as to be adjusted therewith and a depending swinging leaf 24 is arranged under the forward portion of bridge top 23 to rest against the front face of bridge wall 25 so as to seal the gap between the bridge top 23 and the bridge body 25 due to adjustment therebetween. By this arrangement it will be observed that a constant bridge wall is provided for the grate 10 irrespective of its different positions after adjustment.

Two air passages 26 are arranged through the front wall of the furnace under the fire doors 6 and are provided at their inner ends with upwardly swinging valves 26′ controlled by handle bars 27 protruding through the front face of the furnace. By this arrangement ample air may be introduced into the furnace above the grate 10 and the quantity of such air introduced readily controlled.

In operation just sufficient fire is maintained on the grate 10 to drive the gases from the coal therefrom, this being accomplished by regulating the amount of air introduced below the grate. Then the quantity of air introduced above the grate is regulated to thoroughly consume the gases and particles of coal given off from the grate thus preventing smoke. The proper regulation of the air above the grate is greatly facilitated by vertical adjustments of said grate toward and away from the fire arch forming the top of fire chamber 5, such adjustments controlling the velocity of the air passing through the upper part of said fire chamber above said grate as will be readily understood. Also by reason of the independent adjustment afforded by the bell crank levers 12, 13, 14 and 15 through tilting of the levers 18, the grate may be adjusted to any angular or inclined position which may be found desirable or advantageous.

While I have illustrated and described the preferred form of construction for carrying my invention into effect, this is capable of variation and modification without departing from the spirit of the invention. I, therefore, do not wish to be limited to the precise details of construction set forth, but desire to avail myself of such variations and modifications as come within the scope of the appended claims.

Having described my invention what I claim as new and desire to secure by Letters Patent is:

1. A furnace comprising a vertically adjustable grate; and a bridge wall top secured to said grate and adjustable therewith, substantially as described.

2. A furnace comprising a vertically adjustable grate; a bridge wall top secured to said grate and adjustable therewith; and means for admitting air both above and below said grate, substantially as described.

3. A furnace comprising a fire chamber having a bridge wall at the rear thereof; a vertically adjustable grate in said fire chamber; a rearwardly extending guard at the front of said fire chamber opposite said grate; a swinging leaf pivoted to said grate and resting upon said guard; and a swinging leaf at the rear of said grate resting upon the front of said bridge wall, substantially as described.

4. A furnace comprising a fire chamber having a bridge wall at the rear thereof; a vertically adjustable grate in said fire chamber; a rearwardly extending guard at the front of said fire chamber opposite said grate; a swinging leaf pivoted to said grate and resting upon said guard; a swinging leaf at the rear of said grate resting upon the front of said bridge wall; and a bridge wall top carried by the rear of said grate, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

FREDERICK H. WOLKENHAUER.

Witnesses:
BENJ. H. SCHMIDT,
F. H. VOLBERDING.