

D. N. HUNT.
 MEANS FOR REGULATING THE SUPPLY OF AIR TO SULFUR OR LIKE FURNACES.
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1,053,915.

Patented Feb. 18, 1913.

Fig. 1.

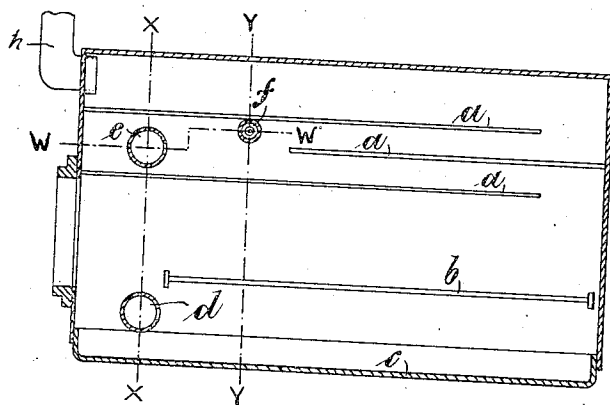


Fig. 2.

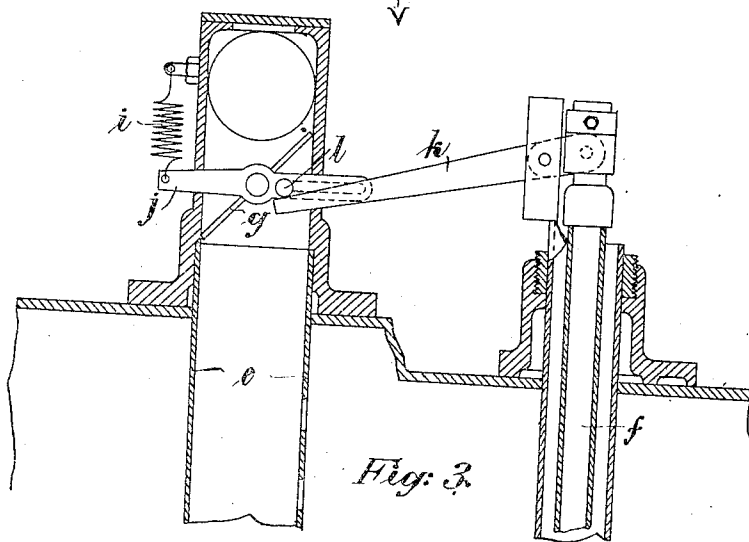
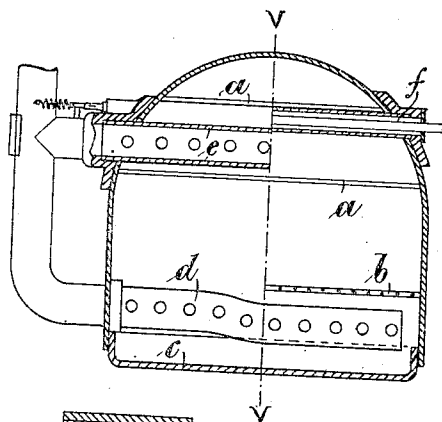


Fig. 3.

WITNESSES:

John C. Sanders
 Chauncey R. R. R.

INVENTOR.

BY David Noel Hunt
 M. McLean Hunt ATT'Y.

UNITED STATES PATENT OFFICE.

DAVID NOEL HUNT, OF CHESHAM, ENGLAND.

MEANS FOR REGULATING THE SUPPLY OF AIR TO SULFUR OR LIKE FURNACES.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, DAVID NOEL HUNT, a subject of the King of Great Britain and Ireland, residing at St. Teilo, White Hill, Chesham, in the county of Buckingham, England, have invented new and useful Improved Means for Regulating the Supply of Air to Sulfur or Like Furnaces, of which the following is a specification.

The present invention relates to improved means for automatically regulating the supply of air to sulfur or like burning furnaces for controlling the strength of the gas particularly for preventing the sublimation of the sulfur, the object being to overcome the defect existing in such furnaces at present in use. According to known constructions any variation in the air intake of the main supply for combustion purposes causes also a varying effect in the usual independent auxiliary intake and produces unsatisfactory working of the furnace.

According to the present invention I take an auxiliary pipe from the main air supply pipe at a point preferably near the furnace and connect it directly to the combustion chamber and I provide such auxiliary pipe with a thermostatically controlled automatic valve, and, in order to accentuate its effect, the controlling or auxiliary air supply may be led into the furnace in such a manner that it is caused to impinge on the thermostat contained in the furnace and by which the automatic valve is operated.

In the accompanying drawing which illustrates this invention:—Figure 1 is a longitudinal section, on line V—V Fig. 2, through the furnace. Fig. 2 is a view taken on the left side as a section on line X—X and on the right side as a section on line Y—Y Fig. 1, and Fig. 3 is a part sectional plan on line W—W Fig. 1, on an enlarged scale.

The furnace generally is of the usual construction and is provided with baffle plates *a* and furnace bars *b* upon which the sulfur is placed and ignited. Air for combustion purposes is supplied through inlet pipe *d* in the usual way. A thermostat *f* is provided in the upper part of the furnace and means are provided for mechanical connection with the valve *g* for controlling the auxiliary air supply.

The auxiliary air supply pipe *e*, according to this invention is taken off the main supply pipe at a point preferably near the furnace (Fig. 2) and introduced into the

furnace at a point preferably near the thermostat *f* so that the secondary combustion takes place in close proximity to the thermostat *f*. The valve *g* situated within the auxiliary supply pipe is maintained in a normally closed condition by a light spring *i* connected at one end to a fixed part of the furnace and at its other end to a bar *j* secured to the spindle of the valve *g* passing to the outside of the pipe *e* the other end of the bar *j* being operated by an arm *k* carried by the thermostat *f*. A stud *l* is adjustably mounted in a slot formed in the bar *j* for determining the commencement and extent of operation of the valve *g*.

The operation of a furnace constructed in accordance with this invention is as follows:—Sulfur is placed on the bars *b* and ignited, as the burning progresses the temperature increases and the sulfur falls from the bars to the bottom *c* of the furnace where it continues to burn and generate gas, and, due to the combination of the air with the burning sulfur, the latter is raised above its ignition point to its boiling or vaporizing point, when in this state all or nearly all the oxygen of the main air supply combines with the sulfur. The thermostat *f* due to the heat of the furnace, expands, and the arm *k* is caused to bear against the stud *l* and turn the bar *j* thus opening the valve *g*. The auxiliary air supply is thus gradually admitted into the furnace and the vapor is caused to burn up while it is still above its ignition point. The heat of the auxiliary combination is formed in close proximity to the thermostat *f* and causes an intensification of its action. In this manner a rise of temperature within the furnace due to the combustion of the sulfur causes air to be admitted through the auxiliary pipe, which air causes a secondary combustion to take place in proximity to the thermostat thereby preventing any sublimation of the sulfur. Should an excess of air be admitted through valve *g* it tends to cool the thermostat *f* which then contracts and allows valve *g* to close and thus reduce the supply of air.

The auxiliary air supply being obtained from the main air supply pipe will not vary in its proportion to the main supply even should there be fairly wide changes in the main air supply pressure. If this automatic control of the auxiliary supply were not used a vaporized portion of the sulfur

would rise in the furnace and pass over through the outlet $\frac{1}{2}$ becoming deposited as a solid in the outlet passages beyond the furnace to prevent which skilled supervision
5 has to be employed whereas with my invention an unskilled person can work the plant as its effective working is entirely under control automatically regulated by the temperature of the furnace.

10 Having thus fully described my invention, I claim as new and desire to secure by Letters Patent:—

In combination, a sulfur or like burning furnace comprising a casing, furnace bars or
15 grating, a main air supply pipe extending within the furnace and disposed between the furnace bars or grating and the furnace floor, an auxiliary air supply pipe leading from the main air supply pipe into the upper
20 part of the furnace and formed with a

row of longitudinally disposed ports, a controlling valve in the auxiliary pipe, a thermostat arranged in the upper part of the furnace in a position to be influenced by the air issuing from the ports of the auxiliary
25 air supply pipe, and means connecting the thermostat with the controlling valve adapted to regulate said auxiliary valve so as to increase or decrease the flow of air through the auxiliary air supply as the temperature
30 of the thermostat rises and falls respectively, substantially as described.

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

DAVID NOEL HUNT.

Witnesses:

RICHARD A. HOFFMANN,
WALTER CARVER.