

K. L. LANDGREBE.
STOVE FOR BLAST FURNACES AND THE LIKE.
APPLICATION FILED NOV. 20, 1909.

992,884.

Patented May 23, 1911.

2 SHEETS-SHEET 1.

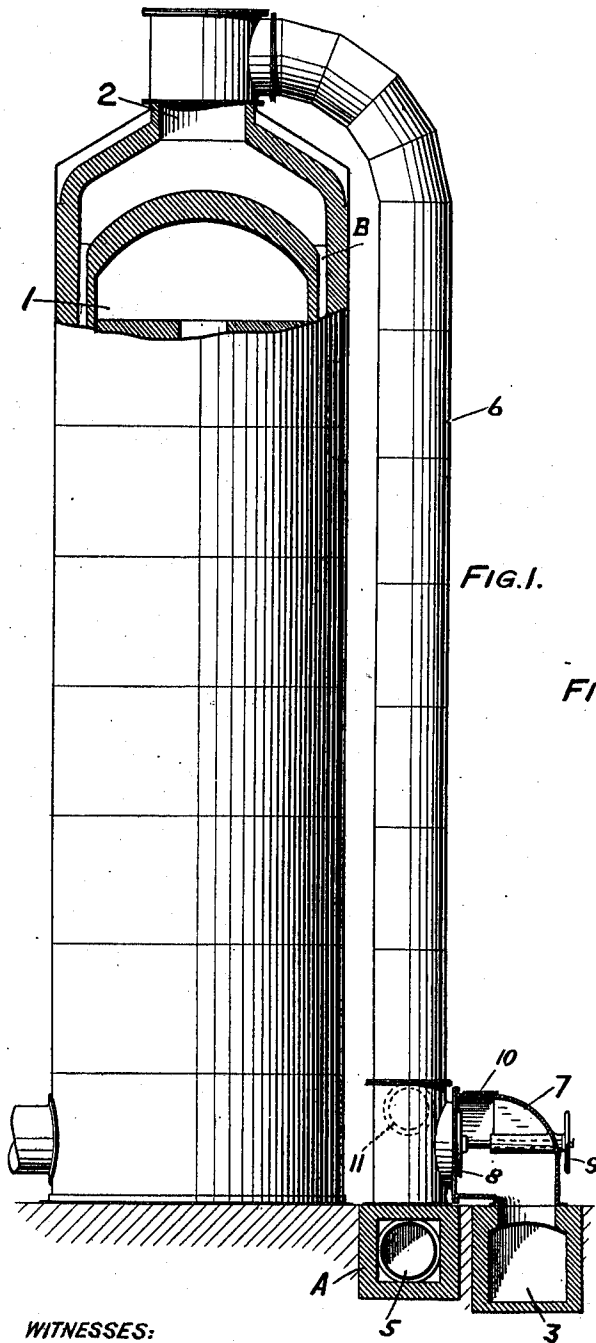


FIG. 1.

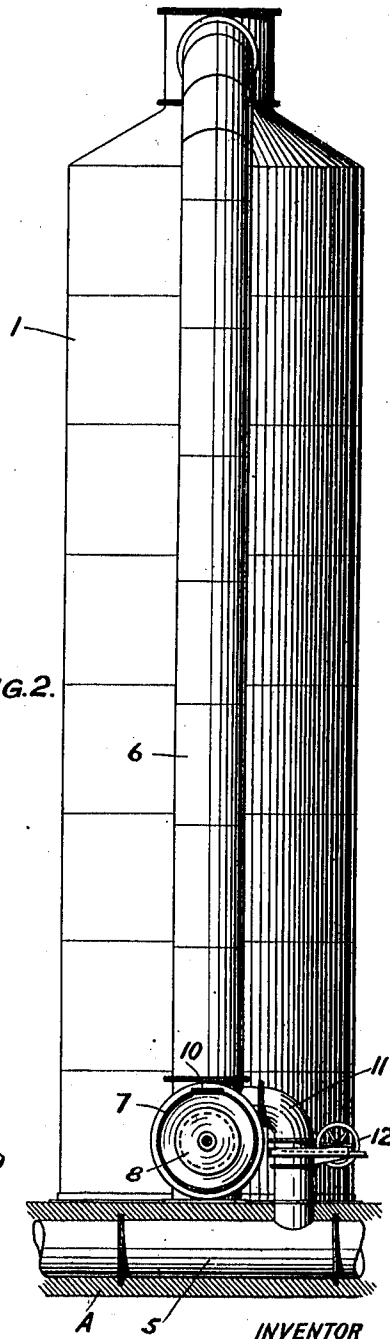


FIG. 2.

WITNESSES:

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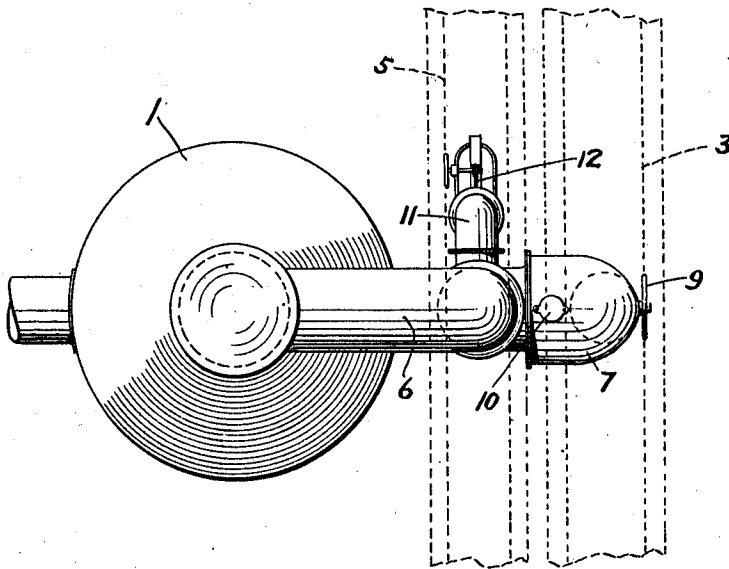


FIG. 3.

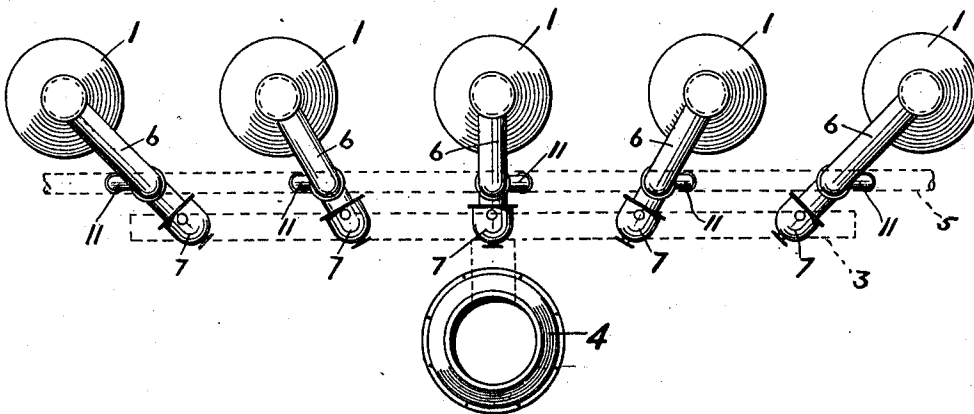


FIG. 4.

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KARL L. LANDGREBE, OF BETHLEHEM, PENNSYLVANIA.

STOVE FOR BLAST-FURNACES AND THE LIKE.

992,884.

Specification of Letters Patent.

Patented May 23, 1911.

Application filed November 20, 1909. Serial No. 529,015.

To all whom it may concern:

Be it known that I, KARL L. LANDGREBE, a citizen of the United States, and a resident of Bethlehem, in the county of Northampton and State of Pennsylvania, have invented certain new and useful Improvements in Stoves for Blast-Furnaces and the Like, of which the following is a specification.

One object of the present invention is to obviate leakage of cold air as it enters the stove, which leakage is not only wasteful of power at the blowers but also interferes with the metallurgical process, in that the quantity of air upon which the other proportions or ingredients are based is not present, an unknown quantity having been lost in the leakage.

Another object of the invention is to firmly support the various pipes, flues and the like and their valve or valves so that they are protected against such leakage and damage as would occur if they were not so supported.

Another object of the invention is while minimizing the need for repairs to provide for making such repairs as are necessary in a rapid and convenient manner and without the delay incident to waiting for the stove to cool.

Another object of the invention is to avoid subjecting the chimney valve and its accessories to the action of a blast of cold air and to effect an economy in the heating of the air.

Another object of the invention is to protect the outlet valve of the stove from receiving a coating or deposit of carbon such as is thrown down from the oil contained in the air or blast.

Other objects of the invention will appear from the following description taken in connection with the accompanying drawings in which I have illustrated an embodiment of the invention chosen for the sake of description, and in which—

Figure 1, is a side view partly in section of a stove known as the "McClure stove". Fig. 2, is a similar view taken at right angles to the plane of Fig. 1. Fig. 3, is a top or plan view, and Fig. 4, is a similar view showing a battery or group of stoves arranged for cooperation with a single stack.

In the drawings 1, is a hot air or blast

stove, shown as of the McClure type, but my invention is not limited to that type of stove as it is or may be applicable in whole or in part to other types of stoves.

2, is the opening at the top of the stove through which gas or products of combustion pass out and air passes in, alternately.

3, is a flue which communicates with a stack 4 and may communicate with a group of stoves and through which gas or products of combustion pass.

5, is a cold air blast main to which the air blast is supplied by appropriate means, not shown, and from which the cold blast is supplied to the stove or stoves. Inasmuch as the cold blast main 5 and flue 3 are arranged conveniently near the base of the stove it is evident that they can be rigidly supported or anchored, for example, the cold blast main 5 can be set in a concrete foundation, as A. Since these parts, more especially the cold air blast 5, are anchored, it follows that vibration and the disadvantages thereof are avoided. Furthermore the parts are readily accessible for

repairs the top 2, of each stove extends upward from the body of the stove and can be opened so as to provide means for entering the stove and making repairs. Normally this opening through the upper part of the top is closed but it is obviously important that free access be afforded to this opening.

From the side of the top of each stove there is a down-take pipe or connection 6 fitted at a convenient distance from the ground or base of the stove with a valved by-pass 7. By means of this valved by-pass the down-take 6 is made to communicate with or be disconnected from the flue 3. The by-pass is shown to consist of a casting comprising a valve seat and fitted with a valve 8 cooperating with said seat and operative from the outside of the casting as by means of a hand-wheel 9. On the flue side of the valve there is a hand-hole 10, the purpose of which will be presently described. The casting also comprises a branch 11 which leads to the cold blast main 5 and is fitted with a valve 12 for controlling the admission and exclusion of blast. It is evident that the valves and their connections are conveniently near the ground and can be readily repaired, even though the stove itself may be hot. Furthermore since the valves, more especially

the top 2, of each stove extends upward from the body of the stove and can be opened so as to provide means for entering the stove and making repairs. Normally this opening through the upper part of the top is closed but it is obviously important that free access be afforded to this opening. From the side of the top of each stove there is a down-take pipe or connection 6 fitted at a convenient distance from the ground or base of the stove with a valved by-pass 7. By means of this valved by-pass the down-take 6 is made to communicate with or be disconnected from the flue 3. The by-pass is shown to consist of a casting comprising a valve seat and fitted with a valve 8 cooperating with said seat and operative from the outside of the casting as by means of a hand-wheel 9. On the flue side of the valve there is a hand-hole 10, the purpose of which will be presently described. The casting also comprises a branch 11 which leads to the cold blast main 5 and is fitted with a valve 12 for controlling the admission and exclusion of blast. It is evident that the valves and their connections are conveniently near the ground and can be readily repaired, even though the stove itself may be hot. Furthermore since the valves, more especially

the flue valve 8, are located at a considerable distance from the top of the stove, they are not exposed to an undue degree of heat.

In use when the valve 12 is closed and the valve 8 is open, hot gases or products of combustion from the outlet 2 of the stove descend through the down-take 6, pass through the by-pass 7 and enter the flue 3 from which they reach and escape from the stack 4, in consequence of this the down-take 6 becomes heated. When the valve 12 is open and the valve 8 is closed, blast from the main 5 passes through the connection 11 and up through the down-take 6, entering the top of the stove. In doing this the blast is preheated by reason of the heat previously imparted to the down-take 6. Furthermore the blast does not impinge directly or injuriously upon the valve 8 and any carbon which may be deposited from the oil carried in the blast from the blowing machinery is deposited in the down-take 6 from which it may be removed and is not deposited on the valve 8, so as to interfere with its operation. Inasmuch as the incoming air is preheated in the down-take 6, it does not, when it impinges upon the checker or brick work B of the stove, injuriously chill the latter. Should the valve 8 become leaky or leak, which is unlikely, such leakage may be readily detected by simply opening the hand-hole 10 when the sound of the leak is distinctly audible. This is a matter of recognized importance, because any air that might leak at the valve would, of course, be lost and would to that extent interfere with the ultimate metallurgical process in connection with which the stove is used and would constitute waste of energy, since it requires considerable power to create the cold air blast.

What I claim is:

1. The combination of a stove provided with a top having an upward opening through it, means for normally closing said opening, and an outside down-take from the side of the top below the opening therein provided with a valved by-pass for the cold air blast.

2. In combination a stove having a top provided with an opening therethrough, means for normally closing the opening, a flue and a cold blast main arranged at or near the base of the stove, an outside down-take from the side of the top of the stove below the opening therein, and valved

branches from the down-take to the cold blast main and to the flue, substantially as described.

3. In combination a stove having a top provided with an opening therethrough, means for normally closing the opening, a cold blast main, a flue, a casting having a branch to the main and a branch to the flue and a valve for opening and closing the last named branch, and a down-take from the side of the top of the stove below the opening therein to the casting, substantially as described.

4. The combination of a stove having a top provided with an opening therethrough, means for normally closing the opening, a cold blast main, a flue, a down-take from the side of the top of the stove below the opening therein having valved connection with the main and provided with a valved connection to the flue, and means in the last named connection on the flue side of the valve whereby any leakage that may occur at the valve can be detected.

5. In combination a group or battery of stoves each having a top provided with an opening therethrough, means for normally closing the opening, a cold blast main common to all the stoves and arranged appropriately in respect to the bases thereof, a flue common to all the stoves and provided with a stack, and outside down-takes from the side of the tops of the stoves to near the bases thereof and each provided with a valved branch to the main and a valved branch to the flue, substantially as described.

6. The combination of a stove having a top provided with an opening therethrough, means for normally closing the opening, a cold blast main, a flue, a down-take from the side of the top of the stove, the opening through the top being clear of the down-take, a casting communicating with the down-take and provided with a branch communicating with the cold blast, a branch communicating with the flue and a valve seat arranged transversely of and at the inlet of the last mentioned branch, and a valve adapted to coöperate with said seat, substantially as described.

KARL L. LANDGREBE.

Witnesses:

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