

- [54] **AIR SUPPLY MEANS FOR A FURNACE**
 [75] Inventor: **Hans Stenlund**, Molndal, Sweden
 [73] Assignee: **Gotaverken Angteknik AB**,
 Goteborg, Sweden

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[56] **References Cited**

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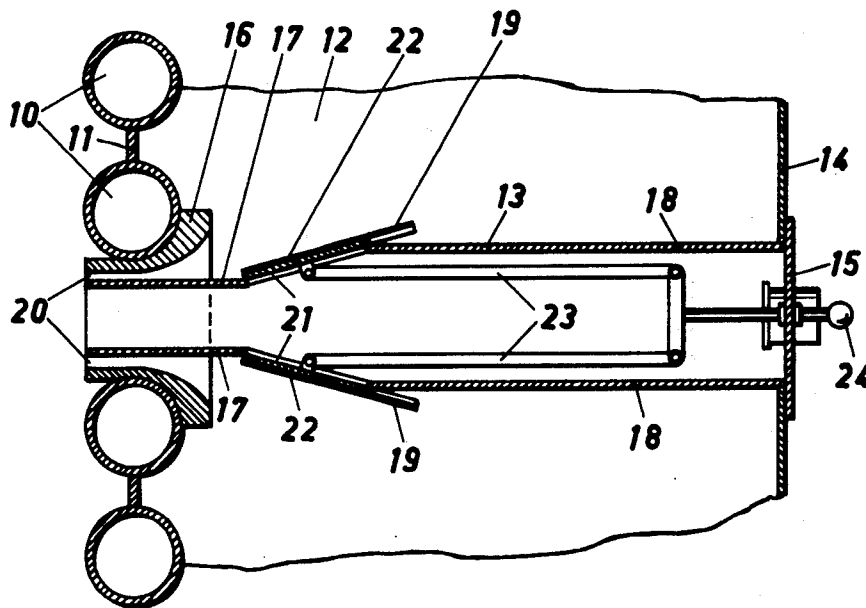
Primary Examiner—Kenneth W. Sprague
Attorney, Agent, or Firm—Holman & Stern

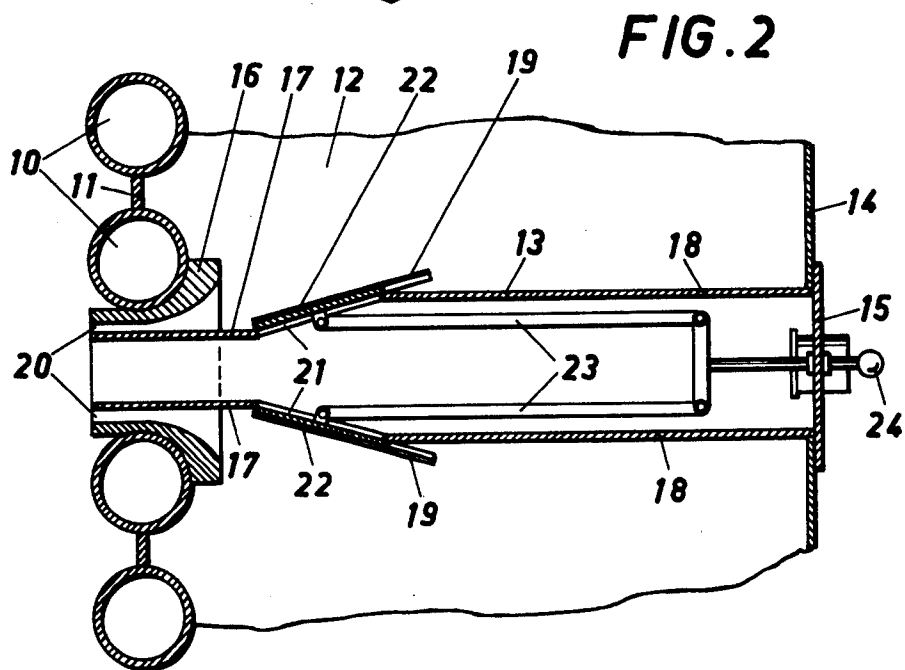
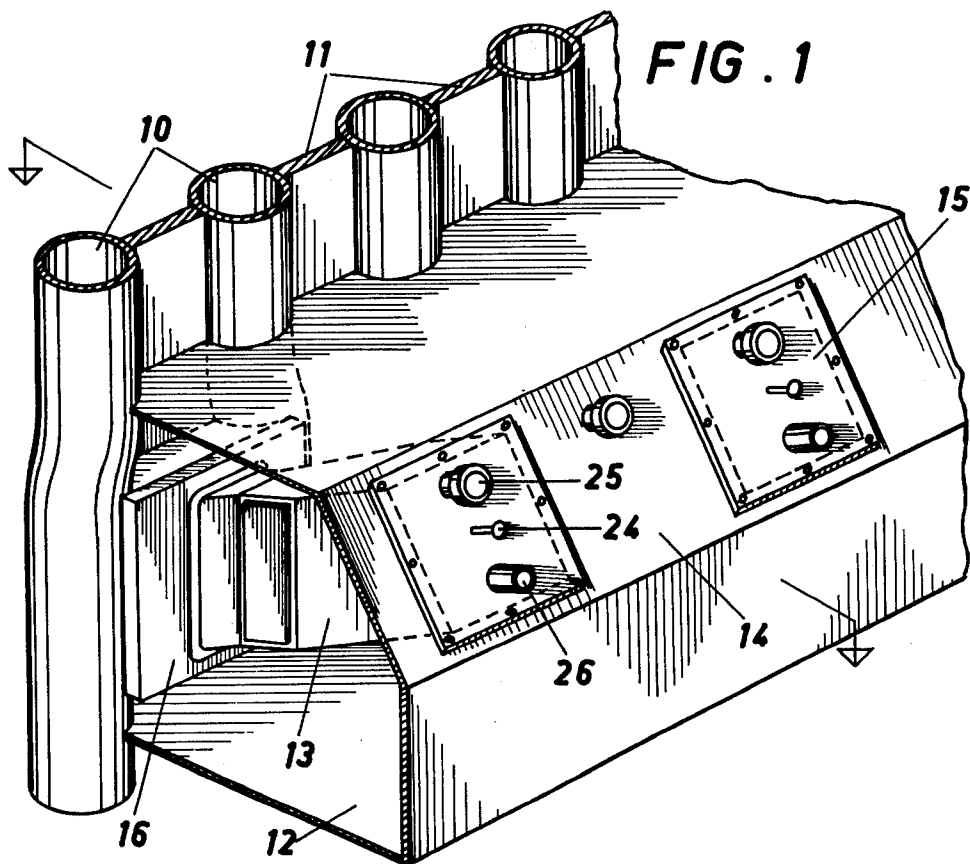
[57] **ABSTRACT**

Ashes and other combustion residues collecting in the air supply passages of a refuse burning furnace can be blasted away by forming the air adjusting means as a sleeve extending into the passage, leaving an annular clearance for the blasting air.

Occasionally molten residues will clog the clearance and it is necessary to remove those obstacles by a lance or some other tool. To facilitate the introduction of such tool the sleeve has a wider outer position and a slanting middle portion, in which openings are provided. These openings normally serve to admit combustion air to pass by way of the sleeve, but their location permits tools to reach the clearance from inside the sleeve.

1 Claim, 2 Drawing Figures





AIR SUPPLY MEANS FOR A FURNACE

BACKGROUND OF THE INVENTION

With furnaces adapted for the combustion of refuse, especially waste liquor from cellulose pulp manufacture, certain difficulties are encountered by combustion residues clogging the air supply passages in the walls of the furnace, which causes an uneven and incomplete combustion.

In order to facilitate the cleaning of the air passages in the furnace walls arrangement where the air is supplied so as to pass outside a sleeve fitted into the air passage in the furnace wall with a peripheral clearance have been proposed. Cinder and ashes are in this manner blasted away from the passage. The combustion within the furnace may be inspected through the sleeve, and occasionally tools may be introduced thereto for breaking away solidified combustion products clogging the air passage, or for lancing the fuel bed.

The clearance around the sleeve is very sensitive to being clogged, which occasionally occurs due to molten combustion residues. A throttling of the flow will disturb the air balance and it is necessary rapidly to remove the obstacle. With the old type of sleeve controlled air means the annular clearance was not available without removing the sleeve.

SUMMARY OF THE INVENTION

The present invention proposes an air supply means of above mentioned type, where the volume of air passing through the clearance remains constant, so a continuous blasting of the passage is obtained, while a regulation of the total volume supplied through the passage is obtained by governing the volume flowing by way of the sleeve. According to a development of the invention the sleeve is designed in such a manner that the clearance around the mouth of the sleeve is accessible for cleaning.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a perspective view of the outside of a furnace wall, and

FIG. 2 shows a horizontal section through an air supply means.

DESCRIPTION OF A PREFERRED EMBODIMENT

The air supply means shown in the drawing is adapted to be used with a furnace for the combustion of cellulose black liquor. The walls of the furnace are defined by water cooled tubes 10, which are interconnected by fins 11 welded together to form a gas tight wall. By bending apart two adjacent tubes an opening for supplying air to the furnace will be obtained. A number of such openings are located in a row and are connected to an air box 12 fitted along the outside of the furnace wall.

At each opening in the furnace wall there is a sleeve 13, which extends from the furnace wall right through the air box, being hermetically fitted to an opening in the wall, 14, of the air box remote from the furnace wall. A lid 15 is fitted to close said opening.

Within each passage in the furnace wall there is an insert 16, having smooth internal walls defining a passage facilitating the flow of air. As the basic opening is formed between two sidewardly bent tubes the shape of the passage will be elongated, and the mating sleeve

will mainly be defined by its two side walls. The upper and lower walls interconnecting the side walls are comparatively unimportant.

Each side wall includes an inward portion 17 and an outward portion 18. The said portions of the two side walls are mutually parallel and the inward and the outward portions of a side wall are interconnected by an intermediate wall portion 19 located at an angle to the other portions.

The distance between the two outward portions 17 is somewhat less than the breadth of the passage through the insert 16, whereby clearances 20 are formed. Similar clearances are also provided along the upper and the lower walls of the sleeve. These clearances communicate with the air box, and in use a steady flow of air is obtained therethrough, which blasts away cinder and ash particles collecting in the passage. The width of the clearances, is initially selected with due consideration to known parameters, so a high degree of blasting efficiency is obtained.

In order to make possible an individual adjustment of the total volume of air each sleeve, within its oblique, intermediate wall portions 19 is provided with an opening 21 through which air may flow into the sleeve. These openings are provided with throttling devices, here dampers 22, which are movable forwards and backwards by means of a mechanism 23 including rods and a handle 24 extending outside the lid 15.

The lid, further, is provided with an inspection window 25, and an opening 26 for the introduction of tools, said opening having an automatically closing cover.

When it is desirable to lance the fuel bed both dampers 22 are moved to closed position. The air will then pass through the clearances 20 only, which causes a sub-pressure within sleeve 13. This will prevent the pre-heated combustion air from blowing backwards through the sleeve, towards the operator.

The outer wall portions 18 are located at such distance from each other that the intermediate wall portions will be sufficiently angled to permit the introduction of a tool for clearing the clearances 20, from inside the sleeve, the tool passing through the nearest opening 21 along the outside of the inward wall portion 17. Clotted residues may occasionally collect in the clearances 20 and will not be removed merely by blasting. During such clearing operation it is preferable, momentarily to lower the pressure within the air box.

The details of the invention may be varied in many ways within the scope of the appended claims. Instead of axially displaceable dampers 22, rotatable valve members may be used.

What I claim is:

1. In an air supply means for a furnace defined by walls having air passages, at least one air box fitted outside one of said walls and defined by at least one wall remote from the said one furnace wall for supplying air to a number of said passages, a control means at each of said passages including a sleeve having an end portion extending into the passage and having a narrower cross sectional area than that of the passage, to leave an annular clearance around its perimeter through which the air box communicates with the furnace, each of said sleeves extending from the said furnace wall to the said one air box wall, means for hermetically attaching each of the sleeves to the associated air box wall, an inspection opening being provided in the said

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one air box wall within the location where a sleeve is attached as well as means to close said inspection opening, air passage openings being provided in respective walls of each of said sleeves, adjustable closure means provided on each of the sleeves for cooperating therewith for regulating the flow of air to the furnace by way of the sleeve, wherein each passage is elongated, being considerably higher than wide, and two of its side walls defining a mating sleeve being substantially parallel, said substantially parallel side walls including inward, parallel portions located at a distance corresponding to the width of the passage, less the clearance, as well as two outward portions located within the air box, and spaced a distance considera-

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bly bigger than the distance between the first mentioned portions, said inward and outward portions of each side wall being joined by an intermediate wall portion located at an angle to the said inward and outward portions an air passage opening of the sleeve being located in each of said inclined wall portions, the inclination of said intermediate wall portions being sufficient to permit a cleaning tool insertable through the pertaining inspection opening in the said air box wall to reach the clearance between the sleeve and the passage from inside the sleeve.

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