July 31, 1928. 1,678,899

A. E. BAILLOT

CUPOLA

Filed March 5, 1926 2 Sheets-Sheet 1

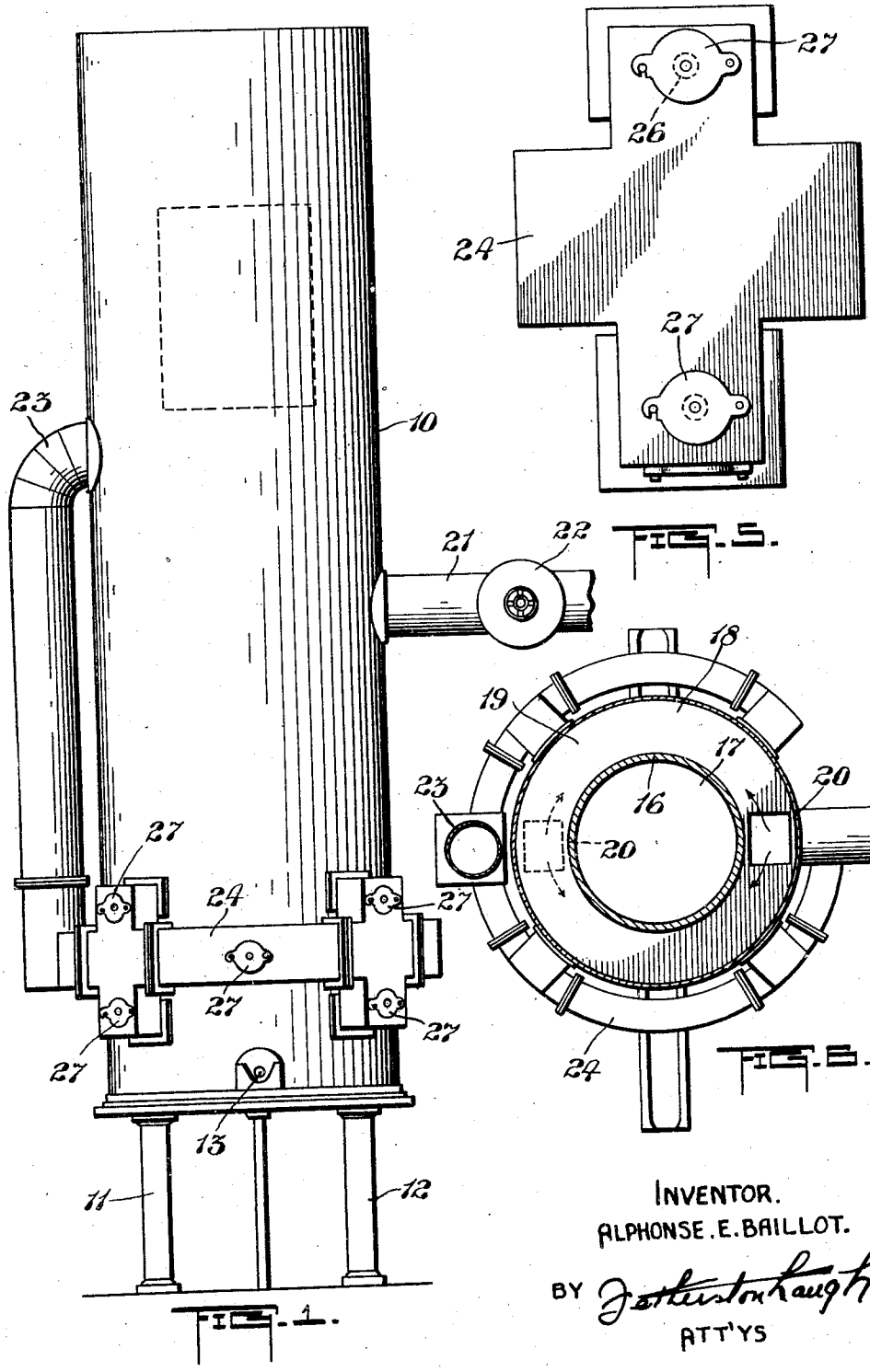


FIG. 1.

FIG. 5.

FIG. 6.

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CUPOLA

Filed March 5, 1926 2 Sheets-Sheet 2

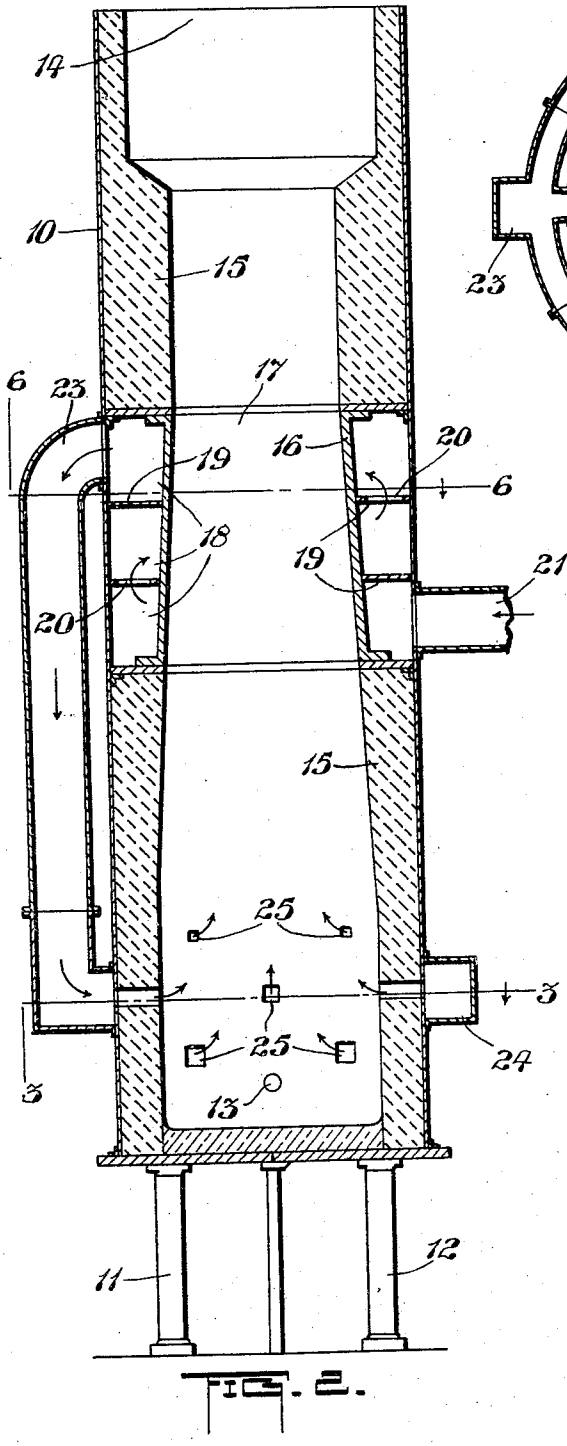


FIG. 2.

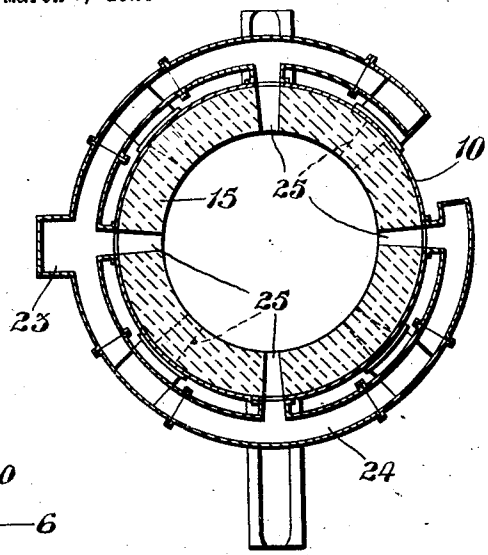


FIG. 3.

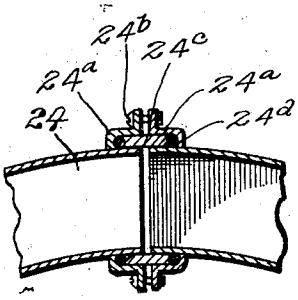


FIG. 4.

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Patented July 31, 1928. 1,678,899

UNITED STATES PATENT OFFICE.

ALPHONSE EDWARD BAILLOT, OF HULL, QUEBEC, CANADA, ASSIGNOR OF FIFTY-ONE ONE-HUNDREDTHS TO ARCHIBALD HAROLD COPLAN, OF OTTAWA, ONTARIO, CANADA, AND FORTY-NINE ONE-HUNDREDTHS TO ARCHIBALD HYMEN COPLAN, OF HULL, QUEBEC, CANADA.

CUPOLA.

Application filed March 5, 1926. Serial No. 92,619.

This invention relates to improvements in cupolas and the objects of the invention are to provide a cupola with which a saving in the amount of coke and consequent reduction of sulphur will be obtained.

Further objects are to provide an improved cupola in which the slag is prevented from clogging the tuyères and sticking therearound.

Another object is to provide an improved cupola which can work continuously for hours and even days and which, after the heating, will be just as clean as when started, all that is needed being to daub or replace a part of the lining according to the length of time the cupola has been at work.

With the foregoing and other objects hereinafter more fully referred to in view, the invention consists essentially in the combination with a heat resisting steel chamber beneath the charging door, of an air blast and means for delivering said air when preheated to the tuyères.

Referring now to the drawings, in which like characters of reference indicate corresponding parts in each figure,

Figure 1 is a front elevation of the improved cupola complete,

Figure 2 is a vertical section of Figure 1,

Figure 3 is a section on the line 3—3 of Figure 2,

Figure 4 is a section detail of the hot air conduit.

Figure 5 is a plan view of a section of the conduit,

Figure 6 is a section on the line 6—6 of Figure 2.

Referring more particularly to the drawings, in which a preferred form of my invention is disclosed, 10 designates the outer casing of a cupola mounted on suitable standards 11 and 12 and provided with the usual discharge opening 13 in the base and adapted to be fed from the top, as at 14, the interior of the casing being provided with a suitable refractory lining 15.

Substantially midway in the casing is arranged a heat resisting circular chamber 16 provided with a central opening 17 and designed to take the place of the lining 15. This chamber is formed with a plurality of air passages 18 therearound, one above the other, formed by suitable partitions 19 having circulation openings 20 therein.

These air passages communicate with an intake pipe 21 in which is provided a fan 22 to draw the air from the atmosphere and force it through the passageways.

Also communicating with the air passages 18 is a discharge pipe 23 leading downwardly to communicate with an airtight conduit or casing 24 on the outside of the cupola casing, almost completely therearound, and in turn communicating with a plurality of tuyères 25.

From the foregoing it will be seen that in operation air from the atmosphere is forced through the intake 21 into the lowermost of the air passageways 18 in the chamber 16 and that as it travels therearound it is heated and ascends through the openings 20 to the air passageway thereabove, as indicated by the arrow, and from thence it travels around the chamber 16 to ascend through the opening 20 in the next partition to the topmost passageway, which communicates directly with the discharge pipe 23, through which the air, now thoroughly preheated, travels downwardly and into the airtight conduit or belt member 24, which, as particularly indicated in Figures 3 and 6, is made in sections, from whence it is automatically delivered to the cupola through the tuyères 25.

In the member 24 are provided a plurality of spy holes 26 with pivotally mounted airtight closure clips 27.

It will be seen from the foregoing that the preheating of the air in this manner and delivering it while preheated to the tuyères will provide for the more efficient performance of the cupola's functions and also considerably reduce the cost of operating, both in regard to fuel and in wear and tear.

As many changes could be made in the above construction and many apparently widely different embodiments of my invention, within the scope of the claims, constructed without departing from the spirit or scope thereof, it is intended that all matter contained in the present specification and accompanying drawings shall be interpreted in an illustrative and not in a limiting sense.

What I claim as my invention is:—

1. In a cupola furnace of the character described a built-in tubular metal member replacing sections of the refractory lining of the furnace and in spaced relationship to

the wall of the furnace to form a heating chamber encircling the interior of the furnace, a plurality of superimposed spaced partitions in said chamber forming annular air passageways, said passageways communicating with one another through suitable non-aligning openings arranged to cause the air to travel the full extent of each passageway before entering the adjoining passageway and to reverse the direction of the air flow as it passes from one air passageway to another, an air blast intake at one end of the chamber and a preheated air discharge outlet at the other end of the chamber, a plurality of spaced substantially cone-shaped tuyères in the furnace wall, an adjustable air belt communicating with the tuyères, and a conduit without the furnace connecting the air belt with the preheated air discharge outlet.

2. The invention according to claim 1 in which the air belt is formed of a plurality of sections adjustably connected to one another to conform to the dimensions of the furnace.

In witness whereof I have hereunto set my hand.

ALPHONSE EDWARD BAILLOT.