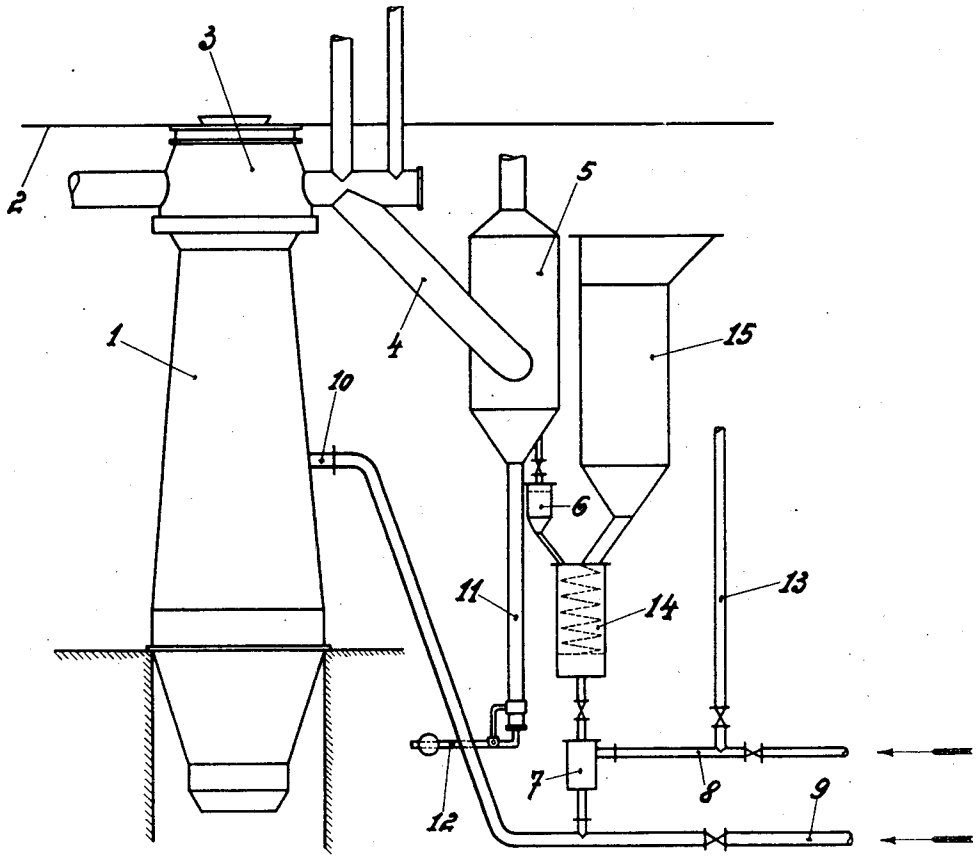
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METHOD OF WORKING BLAST FURNACES

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METHOD OF WORKING BLAST FURNACES.

Application filed November 5, 1926, Serial No. 146,563, and in Germany September 8, 1926.

This invention relates to an improved method of blowing various charging materials into blast furnaces above the smelting zone therein with the aid of non-oxidizing gases, while furthermore said materials, prior to their being blown-in, can be intimately mixed with furnace dust, suitably during their required crushing.

Above the already known proposals of blowing the various charging materials (fuels as well as the materials to be smelted) into the smelting zone with the aid of the blower air, the improved method has the advantage that an undisturbed introduction of all said materials is ensured and, before all, a clogging of the feed nozzles is impossible due to their cold working, so that even those materials can be blown-in which must not be supplied to hot nozzles owing to their strong inclination of sintering.

A further advantage of the improved method consists in the fact that for each single charging material the most favourable place for blowing it into the shaft furnace can be chosen at will.

As a further improvement, the various charging materials are intimately mixed with furnace dust, whereby disturbances due to baking or caking of said materials are effectively avoided. This is of particular importance inasmuch as the blowing-in of the charging materials can be effected with the aid of comparatively cold gases into comparatively cool zones of the furnace by means of rather primitive blowers such as, for instance, known as sand blast apparatus or the like and which work undisturbedly without artificial production of static pressure of the materials supplied, as long as care is taken for a good feeding capacity of the blowing agent.

Of course, the improved method can also be employed for introducing particularly valuable additions or brittle additions in such a way that they pass without any material loss with the descending charge to the reaction zone in the furnace.

Suitably, the intimate mixing of the various charging materials with furnace dust, for ensuring their uniform feeding capacity, can take place during their crushing, if this is required, a particularly sharp drying of the materials, prior to their being blown-in, being then unnecessary.

The accompanying drawing shows, in a diagrammatical side view, by way of example how the invention can be put into practice.

The reference numerals therein designate: 1 the blast-furnace, 2 the upper edge of the charging gallery, 3 the gastake, 4 the gas conduit, and 5 the dust pocket, from which the furnace dust passes through the straining box 6 into the mixing vessel 14, in which it is mixed with the charging materials arriving from the hopper 15, said mixing being effected by an agitator or the like indicated by dotted lines in the vessel 14 and which can be such that it simultaneously crushes the charging materials therein. From the mixing vessel 14 the mixture passes into the container 7, from which it is blown by compressed blast-furnace gas through the pipes 8 and 9 at 10 into the blast-furnace 1 above the smelting zone into zones, from which it cannot escape with the gas current.

In order to prevent a destruction of the dust pocket 5 by explosions therein, said dust pocket is fitted with a let-off pipe 11 carrying an explosion flap 12 through which explosion gases can escape into the open air.

A branch pipe 13 of the pipe 8 serves for letting-off any excessive gas pressure in said pipe.

It must be noted that due to the feed nozzles remaining cold and due to the lack of oxidizing gases in and in front of the nozzles, no regard need to be paid, when composing the mixture, to the behaviour of the latter in the heat, as would be required when blowing it into the combustion zone.

What I claim, is:—

1. Improved method of charging blast furnaces with various charging materials, consisting in blowing the same with the aid of non-oxidizing gases into the furnace shaft above the smelting zone.

2. A method as specified in claim 1, consisting in intimately mixing the materials with furnace dust prior to their being blown-in.

3. A method as specified in claim 1, consisting in intimately mixing the materials with furnace dust prior to their being blown-in and during their required crushing.

In testimony whereof I have hereunto set my hand.

PAUL HESKAMP.