

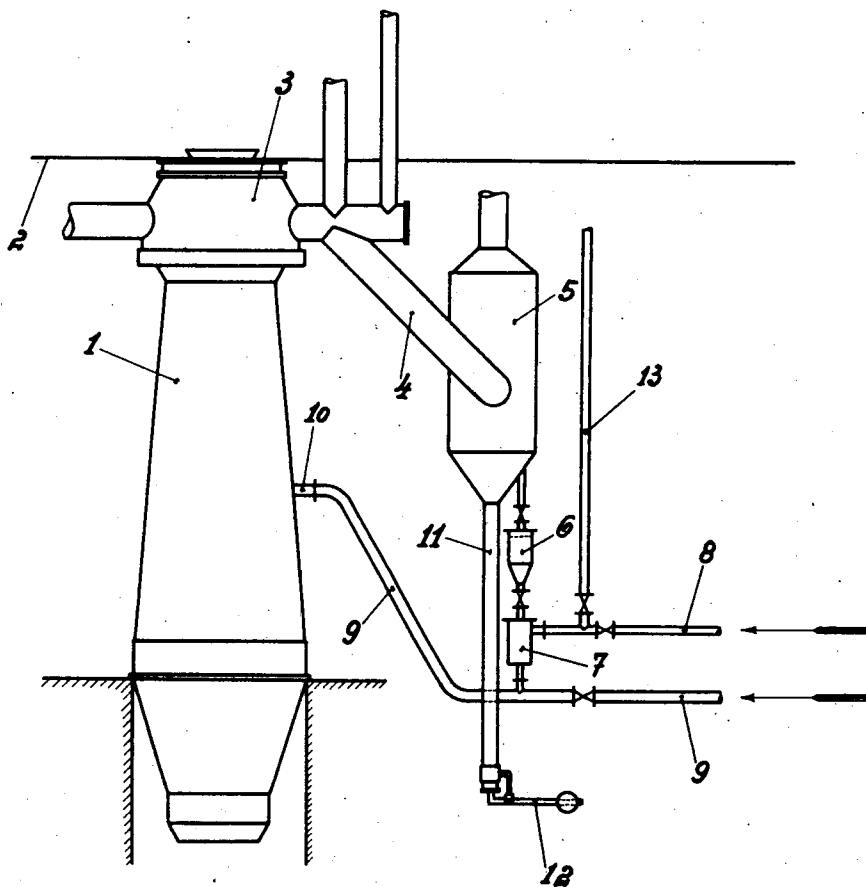
May 14, 1929.

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1,713,435

METHOD OF WORKING BLAST FURNACES WITH THE AID OF FURNACE DUST

Filed Nov. 5, 1926



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METHOD OF WORKING BLAST FURNACES WITH THE AID OF FURNACE DUST.

Application filed November 5, 1928, Serial No. 146,562, and in Germany April 6, 1928.

In the working of blast furnaces or similar shaft furnaces, a considerable part of the charge or burden escapes with the gases in the form of dust. Thereby, on the one hand the composition of the burden is highly disturbed while on the other hand a considerable loss of material occurs, which can be compensated only by re-gaining the dust, agglomerating or briquetting it, and again supplying the same to the furnace. Attempts have been made to re-gain the furnace dust, without agglomerating or briquetting it, for the furnace burden by blowing the same into the tuyères. Thereby, however, the important conditions of temperature in front of said tuyères are considerably disturbed, heat being absorbed from the furnace at a place where it is urgently wanted. These difficulties were tried to be overcome by blowing simultaneously with the furnace dust coal dust or oxygen through the tuyères. All these known methods have proved to be unsatisfactory, because they either disturb the uniform working of the furnace or they are too cumbersome and time-wasting.

By experiments, it has been found out that the furnace dust escapes with the gas current mainly from the uppermost layers of the burden. In the deeper zones thereof, however, it travels with the burden downwards and is worked by the furnace without difficulty. For this reason, according to the present invention, the furnace dust is blown into the furnace shaft above the smelting zone therein, from which it cannot escape with the gas current. If the dust is, however, blown-in with air, a fresh smelting zone is produced and the furnace is clogged at this place. As a further improvement, therefore, the blowing-in of the dust is effected, not with air but, with a non-oxidizing gas, for instance in a simple way with blast-furnace gas. As then the dust is blown into a zone with a comparatively low temperature, the construction of the blower can be essentially simplified. For instance, the furnace dust can be taken directly from the dust pockets of the furnace and blown into one or a plurality of nozzles in the shaft with

the aid of blast-furnace gas compressed by a compressor. By employing this method, the largest part of the furnace dust is worked with the burden in the furnace.

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 container 7 from which it is, according to the invention, again 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.

The advantages of the improved method are, first, that the furnace dust, that could hitherto be re-utilized at particular costs only, can be directly used again in the furnace. Furthermore, the burden is worked by the furnace in the ratio as it is being charged at the top, so that a constant working of the furnace is ensured. The gas used for blowing-in the dust does not get lost but it participates in a circulation only.

What I claim, is:—

1. Improved method of blowing furnace dust into blast furnaces by means of gases, consisting in using non-oxidizing gases and blowing the furnace dust into the furnace shaft above the smelting zone therein.

2. A method as specified in claim 1, consisting in using blast-furnace gas as a non-oxidizing gas.

In testimony whereof I have hereunto set my hand.

PAUL HESKAMP.