March 6, 1928. 1,661,476

A. B. HASWELL

METHOD OF DRYING OUT MASONRY

Filed June 29, 1927

Fig. 1.

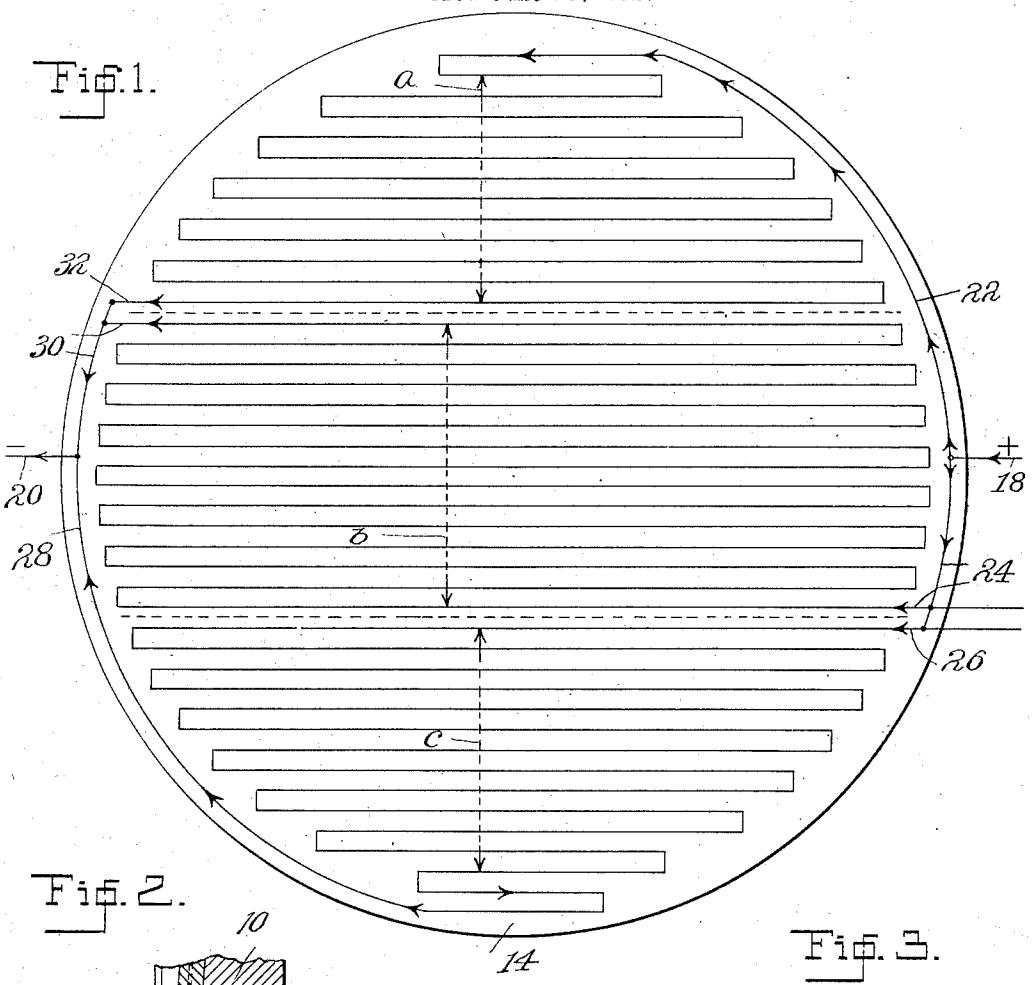


Fig. 2.

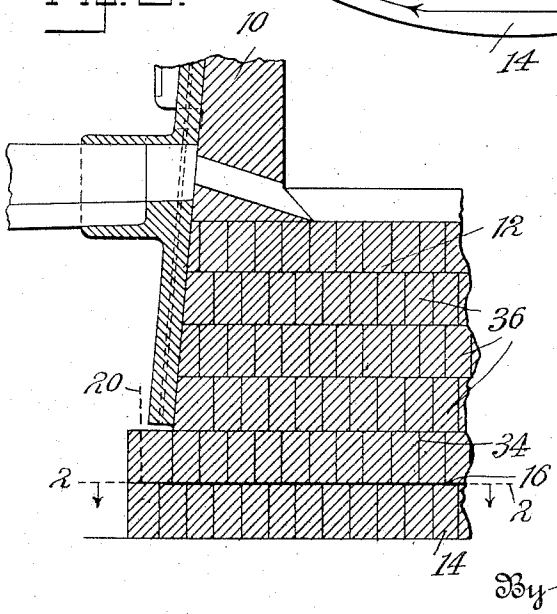
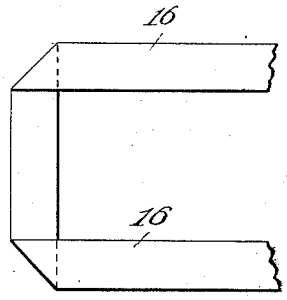


Fig. 3.



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UNITED STATES PATENT OFFICE.

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METHOD OF DRYING OUT MASONRY.

Application filed June 29, 1927. Serial No. 202,265.

This invention relates to an improved method for drying out masonry. While not limited thereto, the method is particularly adapted for driving off moisture from a blast furnace hearth while the same is in the course of construction.

Heretofore, in the building of blast furnaces, it has been almost universal practice to lay up the brickwork course by course and when the furnace was completed a fire has been built therein to dry out the hearth and other parts of the furnace as a whole. The moisture carried by the water or cement used as a binder between the bricks in each course and the bricks in the adjacent courses is naturally turned to steam. This results in spalling the brickwork and weakening the bond between the several bricks and courses of brick.

My improved method overcomes this disadvantage and results in producing a blast furnace or other hearth whose life it is believed will be materially lengthened.

The invention will be apparent from the following specification when read in connection with the accompanying drawings and the novel features thereof will be pointed out with particularity in the appended claims. In the drawings—

Fig. 2 is a vertical section on a small scale of part of a blast furnace built in accordance with my improved method;

Fig. 1 is an enlarged horizontal section taken on line 2—2 of Fig. 1, the electrical heating element, however, being shown diagrammatically;

Fig. 3 is an enlarged fragmentary view of a portion of the heating element shown in Fig. 2.

Referring to the drawings, 10 represents the bosh of a furnace and 12 represents the hearth.

In building a furnace according to my improved method, a suitable foundation is made and I lay up thereon a first course of brick indicated at 14. On top of this I place a suitable heating element indicated at 16. The heating element in the arrangement illustrated consists of an electrical conductor bent in zig zag form designed to cover substantially the entire area of the course of brick forming the first layer of the hearth of the furnace. In order to reach the proper temperature with the voltage available, the strips may be so connected as to form either one continuous circuit or they may be arranged as illustrated to form several continuous circuits connected in parallel between the positive and negative cables 18 and 20. As illustrated, supply cable 18 has connected thereto branches 22, 24 and 26. Similarly, the supply cable 20 has connected therewith branches 28, 30 and 32. This divides the heating element into three sections indicated roughly by the dimension lines A, B and C, the convolutions of these three sections being connected in parallel with the positive and negative supply wires 18 and 20. On top of the first course of brick 14, I next lay another course of brick indicated at 34. The electric current is then turned on and the heating element is maintained in operative condition throughout the building up of the successive layers of brick indicated at 36.

The resistance of the zig zaged electrical conductor is sufficient to drive off moisture from the mortar or cement as the work progresses. That is to say, each successive layer or course of brick is heated from the hot layer below and thus most of the moisture from each layer is driven off before the next layer is placed on top of it. Thus, there is a continuous driving off of the moisture simultaneously with the construction of the furnace. In this way, the masonry is uniformly dried out or baked out as the work progresses. Hence, there is no spalling or warping nor are any uneven internal stresses set up such as are produced in the methods heretofore in general use. The electric heater illustrated may be formed of ordinary wire of round cross-section or it may be of flat ribbon-like wire formed as illustrated in Fig. 3. It may be covered with a suitable cotton insulating material or it can be insulated by the use of various insulating compounds known to those skilled in the art.

Various modifications may be made by those skilled in the art without departing from the invention as defined in the appended claims.

What I claim is:—

1. In the building of furnace hearths, the method which consists in first laying a lower course of brick for the hearth, secondly, placing a heater thereon, thirdly, laying a course of brick over said heater and then continuing the work under influence of said heater so that the moisture is driven from the structure as the work progresses.

2. In the building of furnace hearths, the method which consists in first laying a lower course of brick for the hearth, secondly, placing an electric heater thereon, thirdly, laying a course of brick over said heater and then continuing the work under influence of said heater so that the moisture is driven from the structure as the work progresses.

3. In the building of masonry structures, the method which includes the steps of combining a heating element with the lower part of the structure and operating the same to drive off moisture.

4. In the building of masonry structures, the method which includes the steps of incorporating a heating element in the lower part of the body of masonry as the latter is built and the step of operating said heating element to drive off moisture.

5. In the building of furnace hearths, the method which includes the steps of placing a heater between lower courses of the hearth and building up the latter in separate courses under the influence of the heater to successively drive off moisture as the work progresses.

In witness whereof, I have hereunto signed my name.

ARTHUR B. HASWELL.