March 11, 1930. E. L. HAUMAN 1,750,468

METHOD OF AND APPARATUS FOR TREATING REFRACTORY MATERIAL

Original Filed Oct. 11, 1926 2 Sheets-Sheet 1

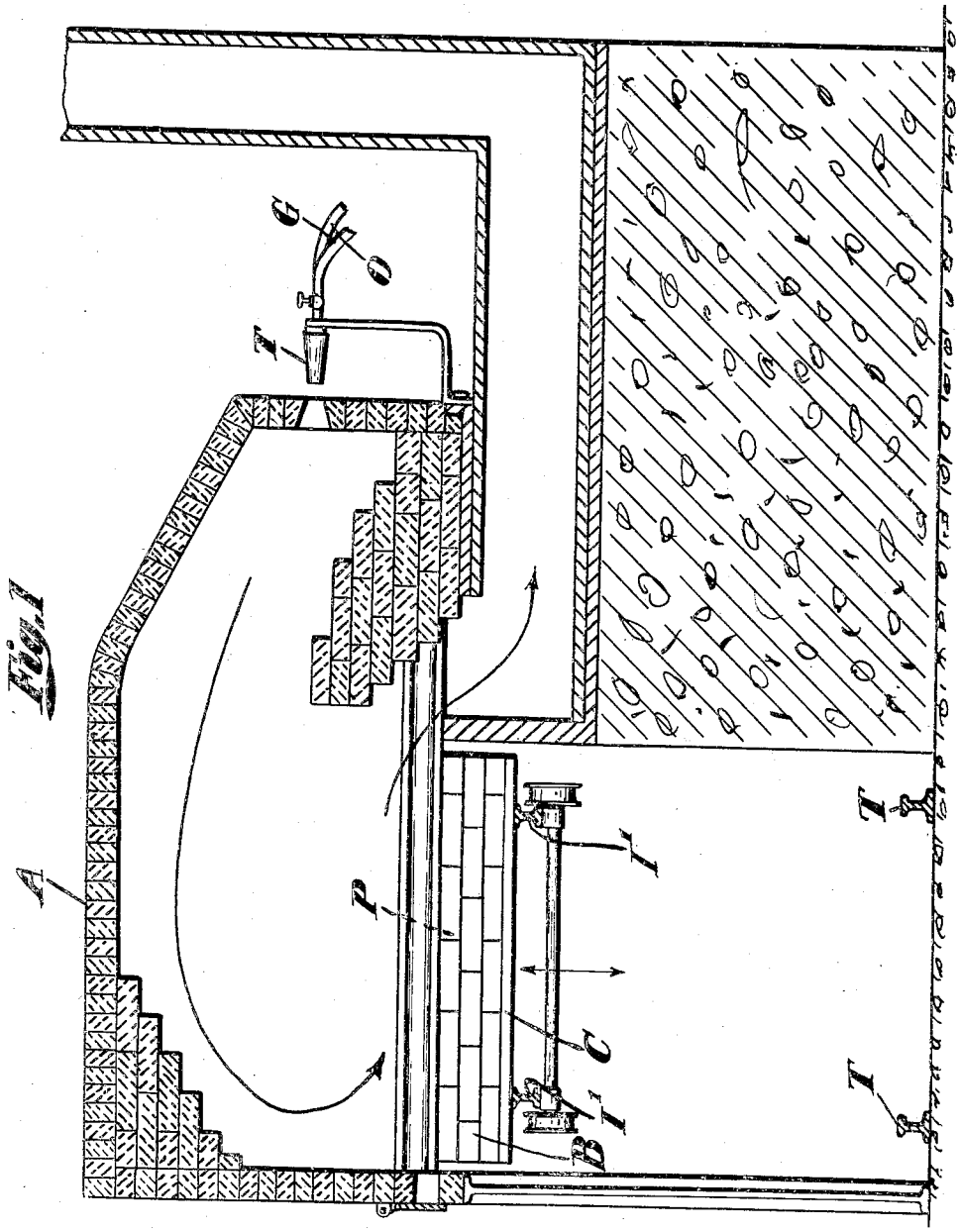


Fig. 1

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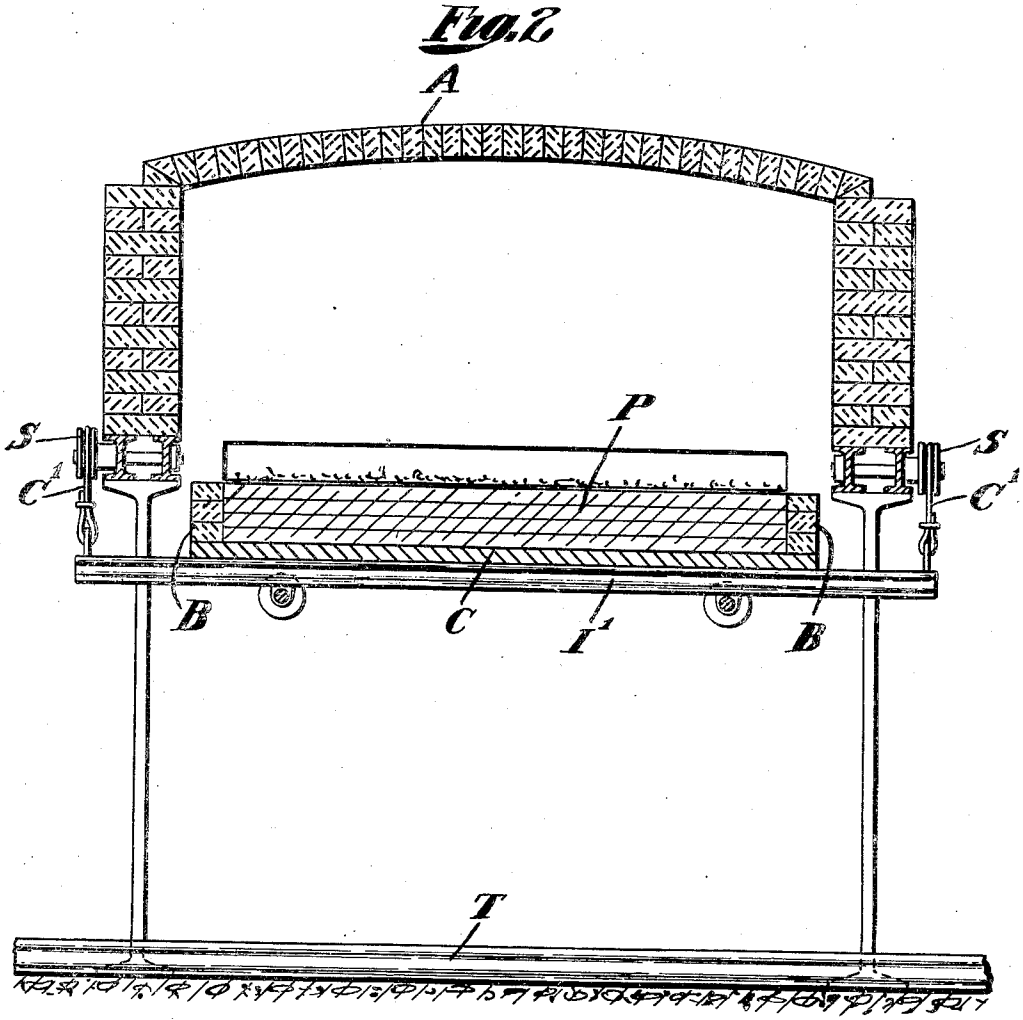
By Attorney

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Fig. 2.



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UNITED STATES PATENT OFFICE

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METHOD OF AND APPARATUS FOR TREATING REFRACTORY MATERIAL

Original application filed October 11, 1926, Serial No. 141,021. Divided and this application filed January 31, 1929. Serial No. 336,813.

This invention relates to the treatment of refractory materials and is a division of my prior application Serial No. 141,021, which has become Patent No. 1,702,942, to which reference is made as containing a full discussion of the problems of the art.

In the accompanying drawings:—

Fig. 1 is a side elevation of one form of retort having a fixed arch.

Fig. 2 is a somewhat diagrammatic transverse section of the same showing the progressive building of the pig.

The pig P is built up in successive layers or accretions on a pig support or car C which is mounted within the furnace for movement towards and from the arch A thereof, as indicated by the arrow in Fig. 1. The car C travels on two horizontally disposed I beams I^1, which extend underneath and beyond the outside of opposing fixed walls a predetermined distance, and each carries an eye-bolt at its end. Cables C^1 passing over corresponding pulleys S and fast to said eye-bolts, furnish means for vertical adjustment of the car C.

The fire brick walls B for retaining the charges for the pig P are built up as the successive layers of material are added to form the ultimate pig. When the pig is completed the car is lowered and run out on the track T and a new car run in for the next operation.

The heat supplied to the charge may be reflection from a refractory roof or by radiation from a radiant surface. In the apparatus shown I have indicated a torch T fed by an oil conduit O and an air supply G.

When the initial charge is treated to fuse the bond with the borax, borate or other agent to reduce it to a frangible glass and the initial pig P is still in its heated condition, I lower the car C to produce a separation between the pig surface and the heat surface.

I then supply additional material to form a second layer for a secondary strata or pig part fused upon and to the first portion. The second portion is heated by the first from below and by the heat surface from above and is rapidly and economically brought to its desired condition.

In preparing for the second pig, the retaining wall is run up by the addition of bricks to hold the added charge and the steps are similarly continued until a pig of the desired size is completed.

In this way, a pig can be formed of several tons and capable of being efficiently handled and worked. This is broken and crushed and treated as may be desired.

The apparatus may obviously be varied and the pig variously shaped and formed. The pig can be disposed as desired and the heat applied as desired. The utilization of a heat reflecting or radiating surface is of known efficiency but other modes may be employed. All such modifications and variants are to be considered as within the purview of my invention as defined in the appended claims.

What I therefore claim and desire to secure by Letters Patent is:

1. In a step by step retort of the class described, an arch, a material support adjustable relative to said arch, and means for progressively lowering the support to maintain the surface of successive layers of material in predetermined spaced relation thereto.

2. In a step by step retort of the class described, an arch and a material support comprising a car disposable beneath said arch, and means for progressively lowering said car to maintain the surfaces of successive layers of material in predetermined spaced relation thereto.

3. In the reduction of a material in a retort having a heat delivering surface, those steps consisting in building successive layers of the material in superposed relation on a material support which is adjustable relative to said heat delivering surface, and in progressively lowering the material support to

maintain the surface of successive layers of material in predetermined spaced relation thereto.

4. In the reduction of a material in a retort having an arch, those steps consisting in providing a material support which is adjustable relative to said arch and on which successive layers of the material are built up in superposed relation, and in progressively lowering the material support to maintain the surface of successive layers of material in predetermined spaced relation thereto.

In testimony whereof I affix my signature.

EARL LEESON HAUMAN.