

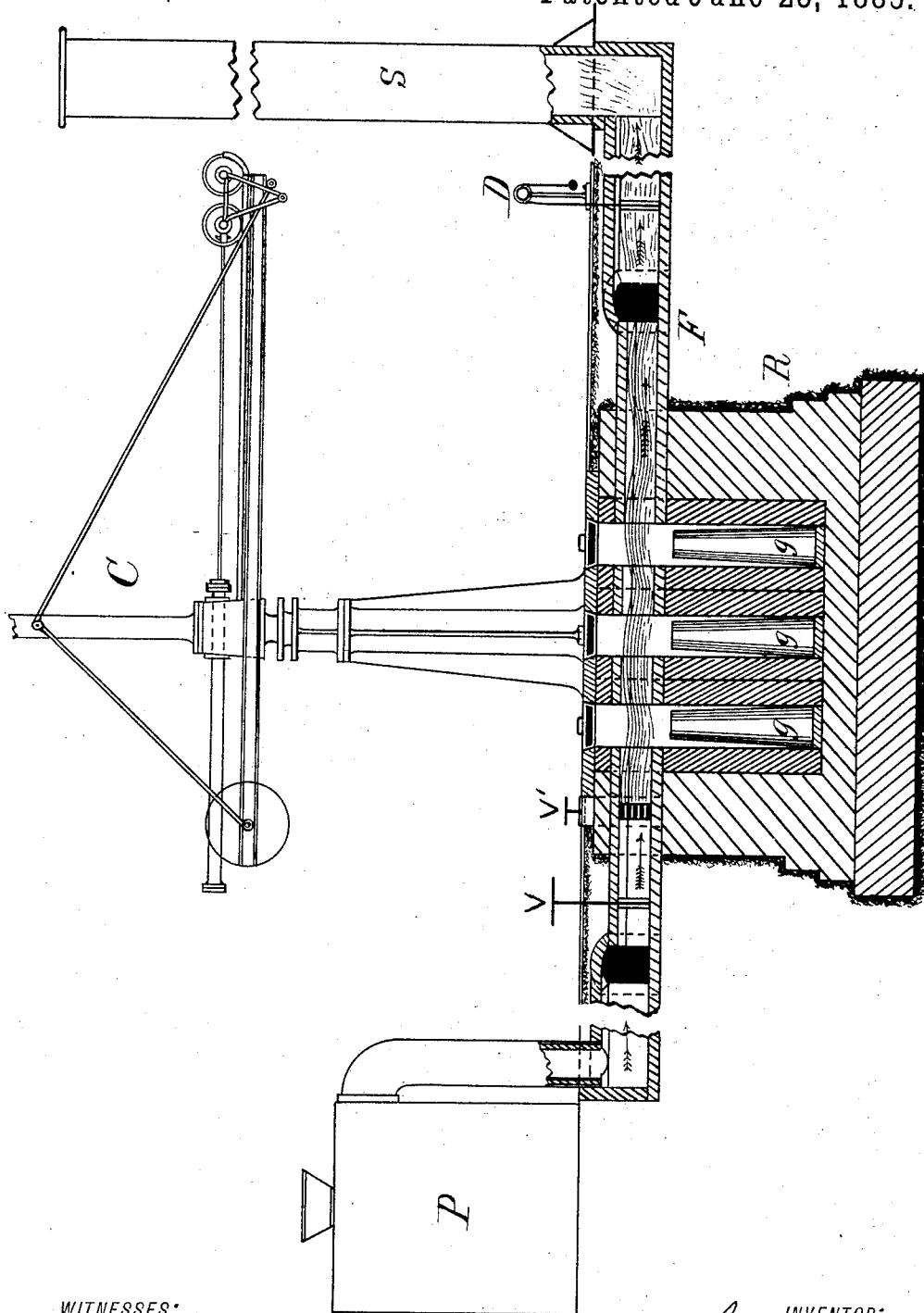
(No Model.)

J. GJERS.

METHOD OF TREATING STEEL INGOTS.

No. 320,780.

Patented June 23, 1885.



WITNESSES;

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# UNITED STATES PATENT OFFICE.

JOHN GJERS, OF MIDDLESBROUGH-ON-TEES, NORTH RIDING, COUNTY OF YORK, ENGLAND.

## METHOD OF TREATING STEEL INGOTS.

SPECIFICATION forming part of Letters Patent No. 320,780, dated June 23, 1885.

Application filed May 19, 1885. (No model.) Patented in England March 5, 1884, No. 4,425; in France March 8, 1884, No. 160,807; in Belgium March 10, 1884, No. 64,448; in Luxemburg March 20, 1884, No. 371; in Austria October 24, 1884, No. 11,409, and in Sweden January 23, 1885.

*To all whom it may concern:*

Be it known that I, JOHN GJERS, a citizen of Great Britain, residing at Middlesbrough-on-Tees, in the North Riding of the county of York, England, have invented a certain new and useful Improvement in the Methods of Treating Steel Ingots; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to the method of treating steel ingots preparatory to their manufacture into finished or partially-finished articles, and this application is a division of my application No. 126,962, filed April 7, 1884, which embraced both the present process and the apparatus for carrying it out.

In treating steel ingots in soaking-pits according to my Patent No. 283,755, dated August 21, 1883, I find that the success is complete whenever the works are laid out favorably or approximately favorably to the object in view; but there are works of old and defective construction where the place of the casting of the ingots is situated at a great distance from the rolling-mill or hammers, and sometimes also aggravated by the use of very small ingots, where a difficulty is found in retaining a sufficient margin of heat successfully to treat the ingots in the soaking-pits. This difficulty and margin of heat is always felt, principally, in the extreme top of the ingot.

The object of my present invention is to remedy this difficulty; and it consists in conducting a gas-flame over, but not impinging upon, the top of the ingots while the same are undergoing a soaking process in previously heated soaking-pits.

The soaking process referred to, as set forth in my before-mentioned patent, consists in placing the ingots in pits or cells built in a mass of brick-work or other heat-absorbing and sufficiently refractory material, which, acting as an absorber and accumulator of heat, receives and radiates heat back to the ingot, and which material remains while at work at a temperature as high as is necessary for the rolling or hammering of the ingot. The

means I employ, as before stated, form the subject of my pending application No. 126,962, and are here reproduced.

Referring to the drawing, the view is an elevation and part vertical section of the apparatus.

I have shown a set of soaking-pits constructed in a mass of refractory material similar to those described in my before-mentioned patent, except that they are much deeper, so as to allow a gas-flue, F, to pass from pit to pit, somewhat above the top of the heated ingots, which are marked *g g g*, and are shown placed in the soaking-pits. I show a crane, C, which is a well-known useful appliance for transferring the ingots, and also I show a gas-producer, P, (which may be situated at any convenient distance and be of any form,) and a main gas-flue which branches into as many separate smaller flues as there are rows of ingots, (in this case three.) Each has its separate shut-off valve V, and inlet V', for air where the gas is simply ignited and passes as flame over the top of the rows of ingots and out at the other end into a chimney, S, (which may be at any distance and have the draft regulated by a damper, D.) It will be seen, therefore, that I employ an ordinary soaking pit or pits, as described in my before-mentioned patent, with a comparatively small gas-flue passing over, but not impinging upon, the top of the ingots, which radiates a part of the heat to the top of the ingot, and also keeps the brick-work hot in the top part of the pit at a point where it is most likely to lose heat from being near to the floor-level. The gas is only kept burning when necessary—that is, when the ingot-tops are deficient in heat—or it may be kept burning when there is any cessation of work, or when preparing the pits for work. The gas may also be kept burning when the lid is opened to put ingots in or take them out, or at such times the gas may be shut off the particular row where the work is going on. It will be noticed that I keep the top of the ingot slightly below the sheet of gas-flame, so that it may not directly impinge upon the ingot-top and thereby cause oxidation.

I use the above means simply as an auxiliary to be employed in case of need, and not in any way interfering with the soaking process which is going on in the pit, as usual. It should also be remarked that the same object can be obtained by a suitably-arranged fire-grate burning coal, instead of employing the gas-producer, as shown, and that it may also be wholly or partially above ground, as in my before-mentioned patent, but that I recommend the below-ground arrangement in practice.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

The auxiliary process of supplying additional heat to steel ingots while undergoing a soaking process in previously-heated soaking-pits, consisting in conducting a gas-flame or heated products of combustion over, but not directly impinging upon, the extreme tops of the ingots, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN GJERS.

Witnesses:

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