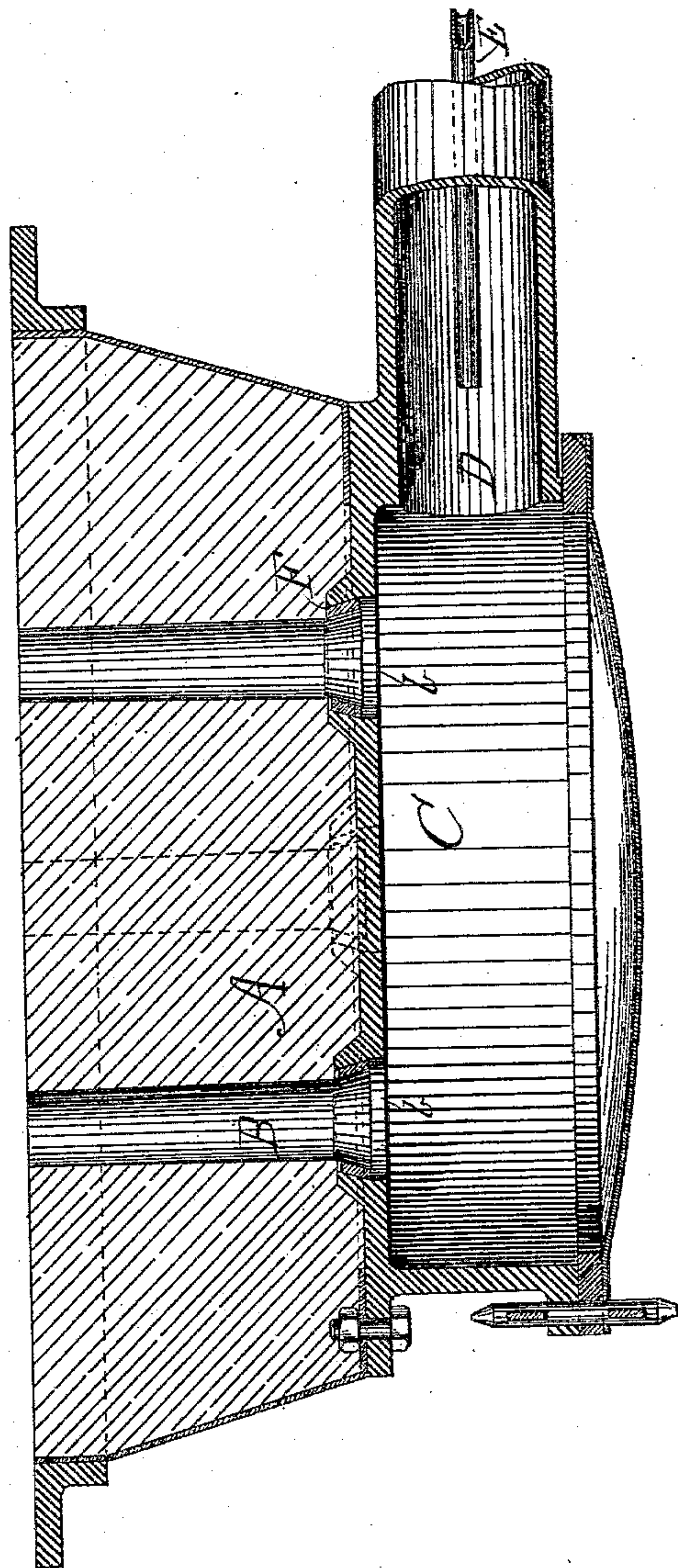


(No Model.)

T. CROWE.
BESSEMER CONVERTER.

No. 283,577.

Patented Aug. 21, 1883.



WITNESSES

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UNITED STATES PATENT OFFICE.

THOMAS CROWE, OF SOUTH CHICAGO, ILLINOIS.

BESSEMER CONVERTER.

SPECIFICATION forming part of Letters Patent No. 283,577, dated August 21, 1883.

Application filed April 5, 1883. (No model.)

To all whom it may concern:

Be it known that I, THOMAS CROWE, a citizen of the United States, residing at South Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Bessemer Converters, of which the following is a full, clear, and exact description.

A recent important advance made in the Bessemer process of steel-making consists in the use of steam, in connection with the air-blast, as a substitute for scrap, for the purpose of preventing the formation of smoky vapors, which would interfere with an accurate determination of the condition of the metal during the blow, and for the further purpose of so cooling the charge of metal prior to the casting operation that it can be run into the ingot-molds without danger of burning out the same. A difficulty met with in the successful practice of this improvement is that the steam and its water of condensation tend in a very short time to disintegrate the luting of clay which is placed around the tuyeres of the converter-bottom for the purpose of forming a tight joint, and thus destroy the joint, attack the bottom lining, and, unless the clay luting is constantly renewed, endanger the blowing of the bottom lining into the metal, and otherwise injuring both the charge and the converter.

My present invention has for its object to provide a joint for the tuyeres of the converter-bottom which shall successfully withstand the action of the steam and its water of condensation; and to this end it consists in the combination, with the tuyeres, of a luting of suitable material capable of setting, so as to form a tight joint that will not be destroyed by the use of a steam-blast in the converter.

In the accompanying drawing, A designates the bottom lining of a Bessemer converter embodying my invention, which is provided with the usual tuyeres, B, wind-box C, and air-blast delivery-pipe D. At some suitable point in

the air-blast pipe or in the pipe leading thereto is connected the steam-pipe E, through which a blast of steam is delivered to the wind-box when the charge of metal in the converter requires to be cooled. In the top of the wind-box are formed the usual inclined openings adapted to receive the expanded ends *b* of the tuyeres, and between the walls of these openings and the sides of the tuyeres' ends is packed the luting F, which serves to form a tight joint about the tuyeres.

The material of which I preferably form the luting is hydraulic cement, either alone or mixed with sand or pulverized iron ore, or a mixture of iron filings and sal-ammoniac, commonly known as a "rust-joint," that will be unaffected by the action of the steam. It is obvious, however, that any other material capable of setting so as to resist the action of steam or water may be used instead of those named, and I do not wish to be understood, therefore, as restricting my invention thereto. If desired, the inner portion of the luting may be formed, as is commonly done, of clay and a protective coating of steam and water resisting substance to be applied to the exposed portion of the same.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

In Bessemer converter apparatus, the combination, with air and steam blast pipes, of a converter having a wind-box and having around its tuyeres a luting of hydraulic cement or equivalent material to form a tight joint and resist the action of the steam, substantially as described.

In testimony whereof I have hereunto set my hand this 24th day of March, A. D. 1883.

THOMAS CROWE.

In presence of—

GEORGE P. FISHER, Jr.,
JAMES H. PEIRCE.