(No Model.)

E. BERTRAND.

PROCESS OF REPAIRING CONVERTER BOTTOMS.

No. 405,392. Patented June 18, 1889.

Fig. 1.

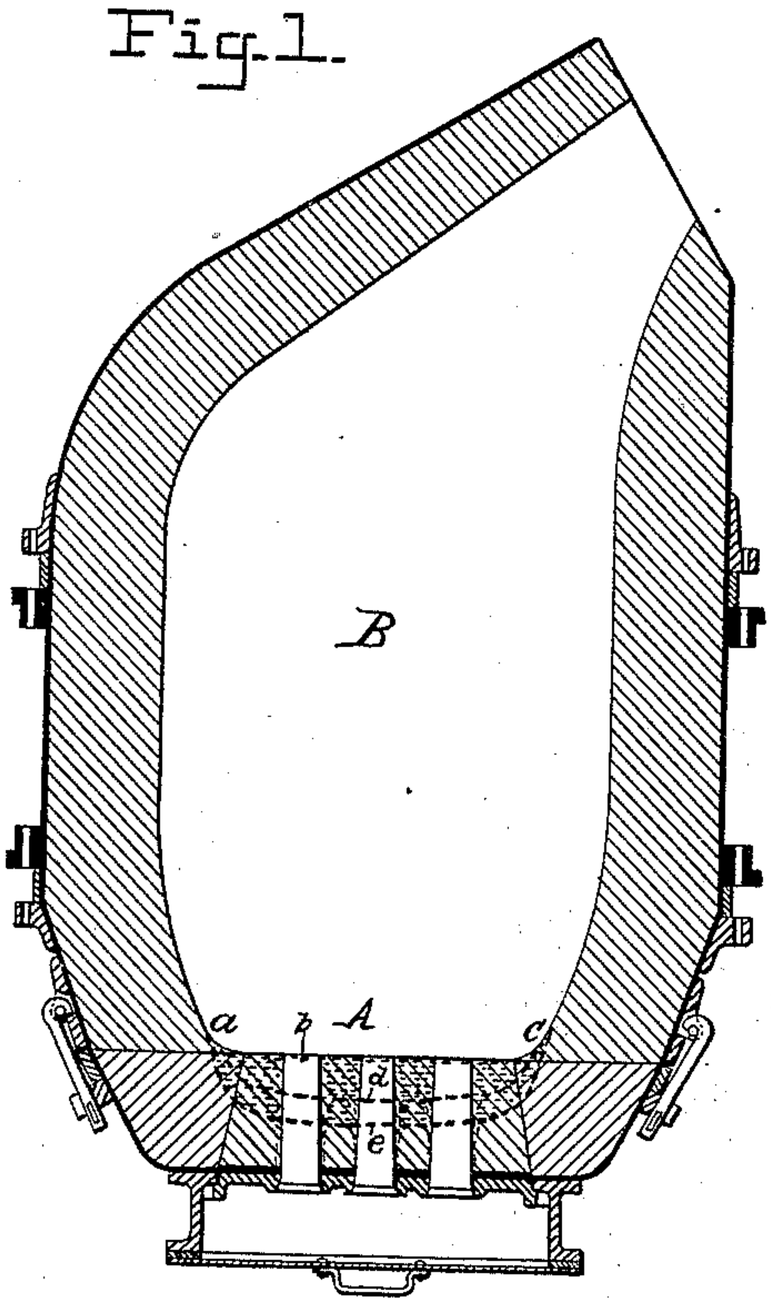
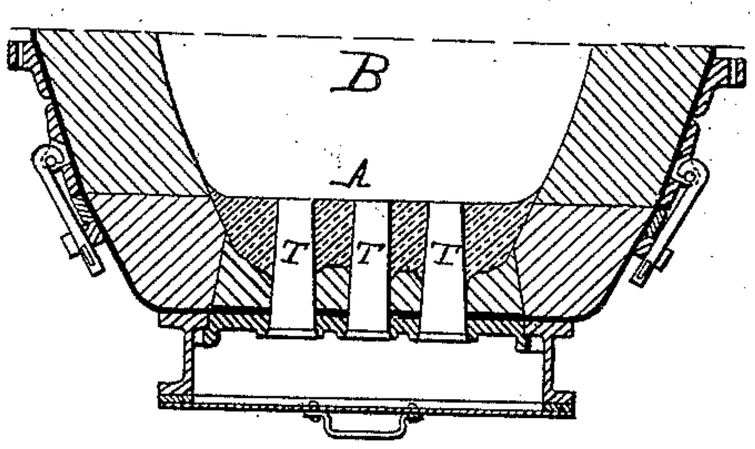


Fig. 2.



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PROCESS OF REPAIRING CONVERTER-BOTTOMS.

SPECIFICATION forming part of Letters Patent No. 405,392, dated June 18, 1889.

Application filed July 19, 1888. Serial No. 280,437. (No model.)

To all whom it may concern:

Be it known that I, ERNST BERTRAND, a citizen of the United States, at present a resident of Kladno, Bohemia, Austria-Hungary, have invented a Process of Repairing Converter-Bottoms, of which the following is a specification.

The object of my invention is to so repair the bottoms of converters for the basic process that the said bottoms will last for a greater number of heats than in the ordinary practice.

In the accompanying drawings, Figure 1 is a vertical section of a converter, illustrating the manner in which the bottom and tuyeres of a converter ordinarily become burned or cut out by the molten charge; and Fig. 2 is a sectional view of the bottom of a converter, illustrating the manner in which I repair the bottom.

In practice, when a new bottom A is put in a basic converter B, the surface-level of the bottom is at the dotted line *a b c*, Fig. 1; but after a few heats it is burned out or cut away by the intense heat of the molten charge to the line *a d c*, say, and after one or two heats it gets cut down to, say, the line *a e c*. The tuyeres T T are, as a rule, cut or burned away faster than the material of the bottom itself in the basic process, so that if burning out is allowed to continue the bottom could be used only for perhaps five heats before it became necessary to replace the bottom by a new one.

It was the custom at one time in the acid process to introduce new tuyeres before the bottom was burned out and to put in a small quantity of ground ganister mixed with water in the annular space left between the newly-inserted tuyeres and the bottom, but only up to the burned-out level, no attempt being made to build up to the original surface-level or otherwise repair the bottom of the converter. This practice was, however, abandoned, because it was found that the ground ganister would not adhere properly, except where wedged in around the tuyeres, and it saved time to continue to use the bottom of the converter until it with its tuyeres became so far burned down that it was necessary to remove the entire bottom and replace it by a new one.

I have found that by rebuilding the bottom with basic lining material up to the original surface-level after each heat the life of a basic converter-bottom can be greatly prolonged, so much so, in fact, as to equal the life of the vessel itself. This repairing I effect *in situ* without removing the bottom from the converter, so that during the whole life of the vessel it is unnecessary to change the bottom.

In carrying out my invention I proceed as follows: After each heat is blown (except where in some cases the first two or three heats do not make serious inroads into the bottom of the converter) the bonnet-plate D is taken off and all the tuyeres which are too short to last through the next heat are removed by any suitable means. New tuyeres are then placed in the bottom, the bonnet-plate is replaced, and the converter turned up to the position shown in Fig. 1. A mixture of tar and ground dolomite or other known basic lining material out of which to build up the bottom is then thrown in at the nose of the converter, so that it falls on the bottom in the desired place. After, say, fifteen seconds, the blast is turned into the converter in order to clear the holes of the tuyeres from any of the tar and dolomite or other material which may have fallen thereon. More of the mixture is then thrown in and the tuyere-holes cleared by the blast, and the operation is repeated until the bottom has been built up to the original line or surface-level *a b c*. The converter is then allowed to stand for, say, ten to twenty minutes, to give the tar an opportunity of becoming cooked and the mixture thoroughly solidified. The converter is then ready for the next blow, and in this way the blowing of a heat and the repairing of the bottom follow each other alternately.

I claim as my invention—

The mode herein described of prolonging the life of a basic converter-bottom, said

mode consisting in alternately blowing a heat and then inserting new tuyeres and rebuilding with basic lining material the partially-burned bottom up to the original surface-level, whereby the bottom is so rebuilt after each heat, all substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ERNST BERTRAND.

Witnesses:
GUSTAV MUCHY,
ADOLF FISCHER.