

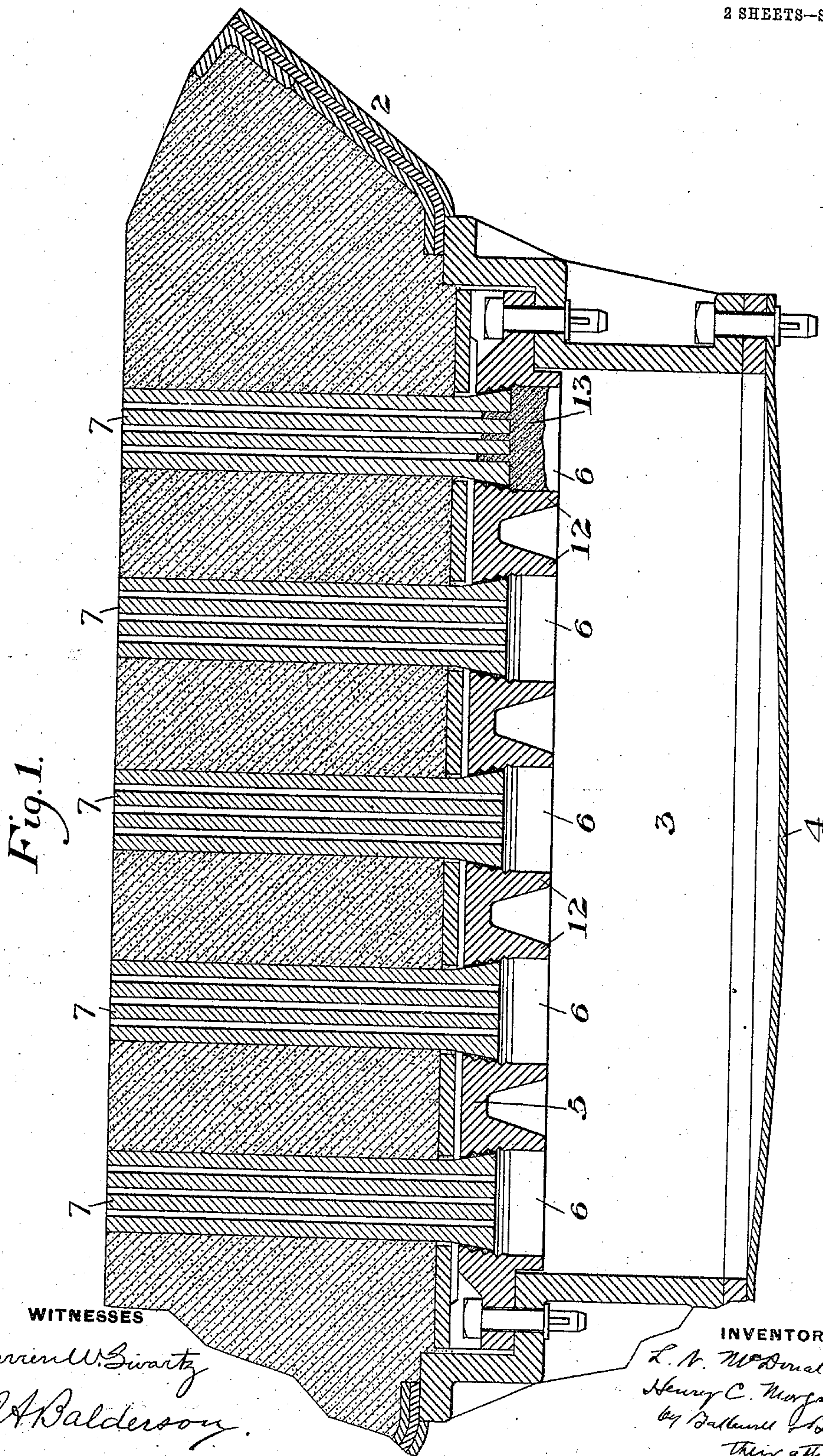
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PATENTED NOV. 28, 1905.

L. N. McDONALD & H. C. MORGAN.
TWYER PLATE FOR BESSEMER CONVERTERS.

APPLICATION FILED AUG. 10, 1905.

2 SHEETS—SHEET 1.



UNITED STATES PATENT OFFICE.

LOUIS N. McDONALD AND HENRY C. MORGAN, OF YOUNGSTOWN, OHIO.

TWYER-PLATE FOR BESSEMER CONVERTERS.

No. 805,931.

Specification of Letters Patent.

Patented Nov. 28, 1905.

Application filed August 10, 1905. Serial No. 273,551.

To all whom it may concern.

Be it known that we, LOUIS N. McDONALD and HENRY C. MORGAN, of Youngstown, Mahoning county, and State of Ohio, have invented a new and useful Improvement in Twyer-Plates for Bessemer Converters, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a sectional elevation of a converter-bottom showing our improved twyer-plate in place on the bottom. Figs. 2 and 3 are detail views on a larger scale, showing the twyer-openings in our improved twyer-plate and also showing one of the clamping yokes and screws in place on the twyer-plate as it is used when constructing the lining for the bottom.

During the operation of Bessemer converters a portion of the twyers will become damaged by burning out, while the balance of the twyers remain in good condition. In order to prevent loss of time in the blowing operation of the converter that would be caused by removing the damaged bottom from the converter and replacing it with a new one, the cover is removed from the wind-box of the converter, and the damaged twyers are closed or blanked by putting fire-clay or other refractory material on the ends of the twyers and holding the clay in contact with the twyers by means of blanking-plates and adjusting-screws on the twyer-plate. This operation is preferably performed while the converter is being emptied of a heat of steel. By closing or blanking a portion of the twyers in the converter-bottom which have become damaged instead of removing the bottom and replacing it with a new one the life of such bottoms is greatly increased and the time lost in the operation of the converter is greatly reduced.

The object of our invention is to provide means on the twyer-plates by which the twyer-blanking operation is performed more effectively and with greater rapidity and ease than has heretofore been possible, and the necessity of using blanking-plates is avoided.

Another object of our invention is to provide improved means for attaching the removable clamping-yoke to the twyer-plate.

In the drawings, 2 is the converter-bottom, having a wind-box 3, which is provided with the usual removable cover or lid 4 and with our improved twyer-plate 5. The twyer-plate 5 is provided with a series of twyer-openings

6, in which openings the refractory twyers 7 are placed with their inner ends projecting upwardly into the converter-bottom 2. The space in the bottom between the twyers is filled and rammed with a suitable refractory lining. While the lining is being constructed in the bottom, each twyer is held in position in the twyer-plate by means of a removable yoke 8 and adjusting-screw 9. In our improved construction the yoke 8 is provided with lugs 10 10, which fit into suitable recesses 11 11, located on the twyer-plate.

The outer face of the twyer-plate is provided with flanges or collars 12 around each of the twyer-openings 6, which are concentric with the openings and provide recesses which are filled with clay or other refractory material 13 when it is desired to close or blank any of the twyers.

In the operation of blanking damaged twyers the wind-box cover is removed and clay is easily inserted and rammed into the recess formed by the collar, effectively closing the openings in the twyer and preventing the blast from entering the twyer when the blowing operation is resumed in the converter. The cover is then replaced on the wind-box, and the apparatus is ready for use.

The advantages of our invention will be apparent to those skilled in the art. The time required to blank the twyers is lessened and the necessity for using blanking-plates to hold the clay in place against the end of the twyer is avoided. Our improved clamping-yoke is easily and quickly attached and detached from the twyer-plate and is securely held while in place.

Variations in the arrangement and construction of the parts may be made without departing from our invention. The recess formed by the flange around the twyer-opening may be tapered instead of parallel, as shown, within the scope of our invention, since

What we claim is—

1. A twyer-plate for Bessemer converters comprising a plate having openings adapted to receive the twyers, said openings having recesses extending beyond the end of said twyers; substantially as described.

2. A twyer-plate for Bessemer converters comprising a plate having openings adapted to receive the twyers, said openings having annular flanges forming recesses extending beyond the end of said twyers; substantially as described.

3. A twyer-plate for Bessemer converters comprising a plate having openings adapted to receive the twyers, said openings having annular flanges forming recesses extending 5 beyond the face of said plate; substantially as described.

4. A twyer-plate for Bessemer converters comprising a plate having openings adapted to receive the twyers, said openings having 10 annular flanges forming recesses extending beyond the end of said twyers, recessed slots in the outer surface of said flanges, a yoke

having projections on its ends adapted to be removably held in said recessed slots and an adjusting-screw on said yoke; substantially 15 as described.

In testimony whereof we have hereunto set our hands.

LOUIS N. McDONALD.
HENRY C. MORGAN.

Witnesses:

HORACE T. SMITH,
BENJAMIN G. JONES.