W. F. DURFEE.

Turning Bessemer Converters.

No. 167,077. Patented Aug. 24, 1875.

Fig. 1

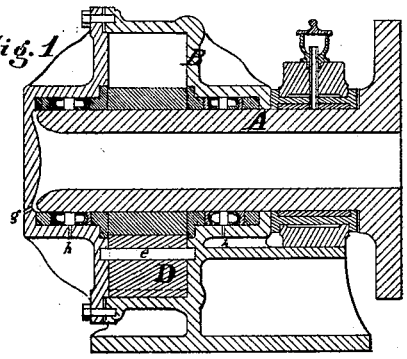
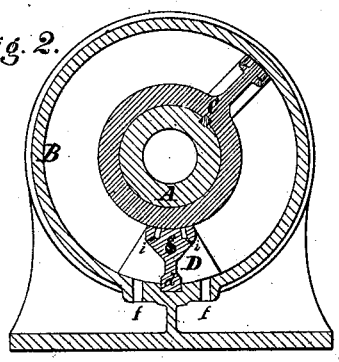


Fig. 2.



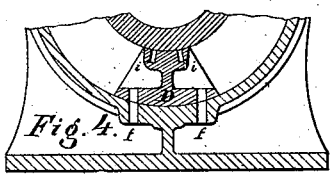


Fig. 4.

Fig. 3.

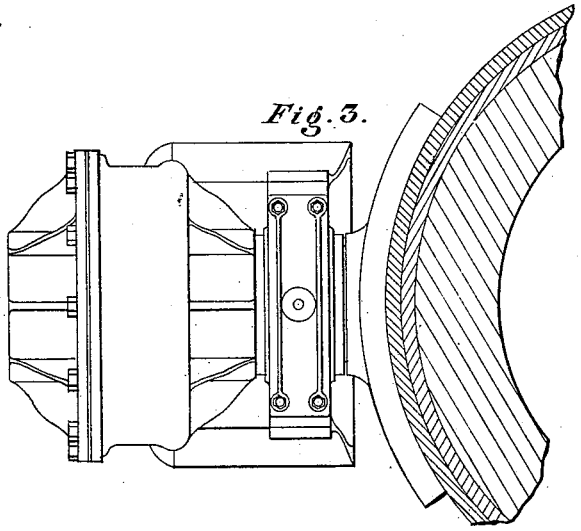


Fig. 5.

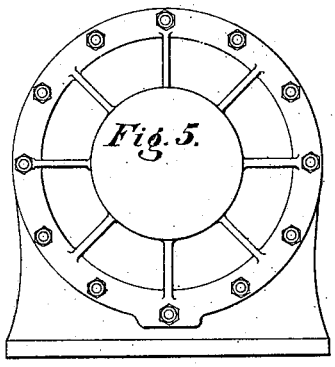


Fig. 6.

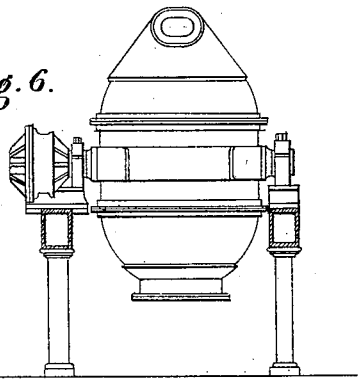
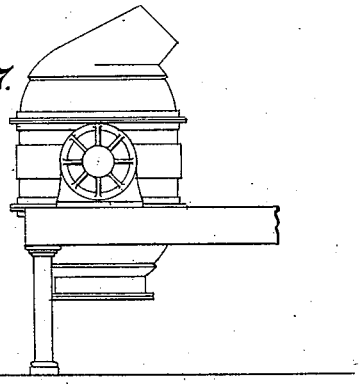


Fig. 7.



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Inventor: William F. Durfee

UNITED STATES PATENT OFFICE.

WILLIAM F. DURFEE, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN TURNING BESSEMER CONVERTERS.

Specification forming part of Letters Patent No. **167,077**, dated August 24, 1875; application filed March 17, 1873.

To all whom it may concern:

Be it known that I, WILLIAM F. DURFEE, of the city and county of Philadelphia, Pennsylvania, have invented an Improvement in Turning Bessemer Converters, of which the following is a specification:

In carrying out my invention I attach to one of the axes of Bessemer converters a radial piston, inclosed in a circular casing attached to the frame-work or supports upon which the converter rests, in such wise that a pressure of water or steam may be brought to bear upon one side or other of the piston at will, and thus the piston, and with it the converter, to the axis of which it is attached, be moved.

Figure 1 is a vertical longitudinal section; Fig. 2, a transverse vertical section; Fig. 3, a plan; Fig. 4, a partial section; Fig. 5, an end view of my new apparatus; and Figs. 6 and 7 are elevations showing the relations of the apparatus to a converter.

A is the axis of the converter; B, the cylinder in which the piston moves; C, the piston, which is shown with a hub or sleeve keyed onto the axis A. D is the abutment of the cylinder, against which the water or steam acting upon the piston reacts. This abutment may be held in place in the cylinder by the tongue *d* and bolt *e*, as is shown in Figs. 1 and 2, or it may be fitted into the cylinder as is shown in Fig. 4, and be held in place by screw-bolts, as will be well understood. *f f'* are the inlet and outlet passages for the water or steam by which the piston is moved, and *g*, Fig. 1, is an outlet for any water which may chance to pass by the packing between the axis A and the cylinder. The packing between the axis and the cylinder consists of double cup-leathers, the effective operation of which may be secured by streams of water or steam of the same pressure as is used in the cylinder B, which may be applied to the insides of the cup-leathers through small holes at *h h*, Fig. 1. The packing of the piston and abutment may be effected by any of the modes commonly used, a good mode being to use metal packing held to its place by springs, and forced to a tight joint against the various surfaces by pressure of the water or steam in the cylinder, let in behind the packing by suitable openings, as at *i i*, Fig. 2.

When using my plan I prefer to have the converter turn on bearings made of Babbitt or anti-friction metal; and in such cases I first make the attachment of the piston C and abutment D to the axis A, and then run the anti-friction metal into the lower box of the journal or axis, so as to cause the abutment D and the sleeve of the piston C to act as part of the bearing of the converter, which can be the more readily done when, as in the plans shown in the drawings, the cylinder B is attached directly to the beam upon which the journal-boxes of the converter rest.

The general features of the invention will be clearly understood from the drawings without further description; and without confining myself to the details therein shown,

I claim—

1. The combination, with the axes of Bessemer converters, of partially-rotating pistons, working in cylinders or segments of cylinders attached to a suitable support, whereby, through the application of suitable pressure upon said pistons, the converters may be turned or tipped, substantially as described and shown.

2. The combination of radial pistons C, attached to the axes of Bessemer converters, with cylinders B and abutments D, attached to the supporting frame-work in which the converters move, and with suitable pipes *f f*, for conducting fluids and vapors, under pressure, to the cylinders, for the purpose of turning or tipping the converters, substantially as described and shown.

WILLIAM F. DURFEE.

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