(No Model.)

S. G. THOMAS.

BESSEMER CONVERTER.

No. 274,055. Patented Mar. 13, 1883.

Fig. 1.

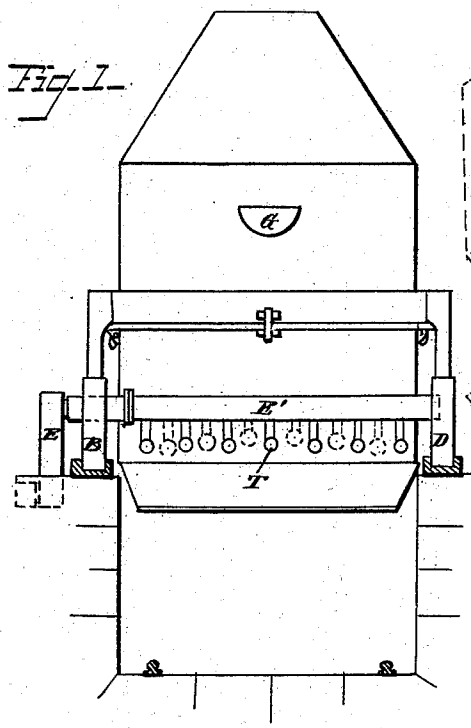


Fig. 2.

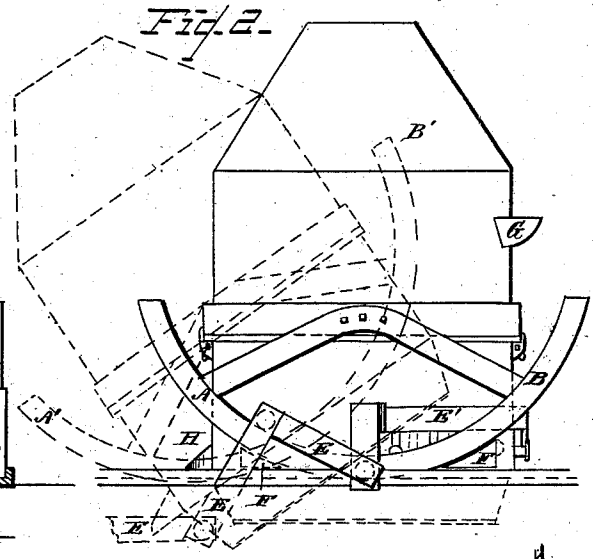


Fig. 4.

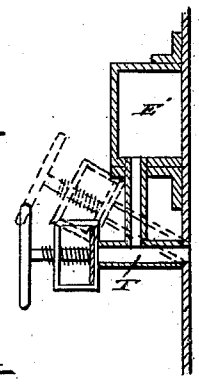
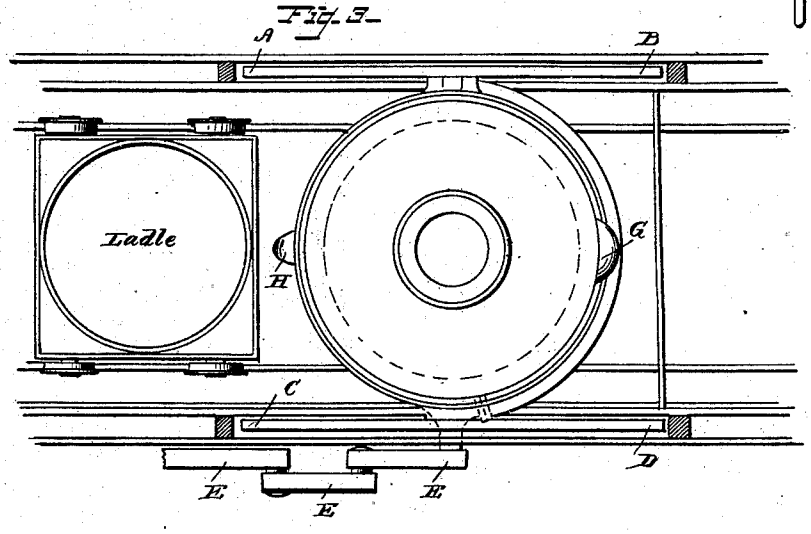


Fig. 3.



WITNESSES

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BESSEMER CONVERTER.

SPECIFICATION forming part of Letters Patent No. 274,055, dated March 13, 1883.

Application filed April 17, 1882. (No model.)

To all whom it may concern:

Be it known that I, SIDNEY GILCHRIST THOMAS, a subject of the Queen of Great Britain, residing at Tedworth Square, in the county of Middlesex, England, have invented a certain new and useful Improvement in and connected with Bessemer Converters, of which the following is a specification.

My invention relates to that class of apparatus commonly known as "Bessemer converters," employed for the manufacture of iron and steel.

The Bessemer process is at present carried out almost exclusively in so-called "tipping vessels," which are rotated on trunnions by rack-and-pinion or screw-and-worm-wheel motions. These arrangements entail the use of costly gearing and machinery. The simpler and cheaper form of fixed converter has been almost entirely abandoned on account of the difficulty of stopping the blow and tapping the metal exactly at the right moment. The steel produced in the fixed converter is therefore extremely irregular in quality.

My invention consists of an arrangement of parts by which the simplicity and economy of the fixed vessel are combined with the advantages and facility of stopping the operation at exactly the right period of the tipping vessel, substantially as hereinafter specified and claimed. For this purpose I use a converter of any convenient shape, but preferably of the shape shown in the accompanying sheet of drawings, in which—

Figure 1 represents an elevation of the converter seen from behind. Fig. 2 represents a side elevation; Fig. 3, a plan of the vessel and ladle; Fig. 4, a sectional view of the blast-box and a tuyere.

This converter, which, instead of being of the shape shown, may be bulged or bellied out on the tapping side, is mounted on rockers A B and C D, Figs. 1 and 2. The point at which these rockers are attached to the vessel may be above or below that shown in the drawings, according as it is desired to facilitate the motion of the vessel more or less. The vessel is provided with tuyeres on one side only of the circumference, the side of the vessel on which the tapping takes place being without tuyeres. The blast can be introduced through a jointed or flexible pipe, E, to the blast-box E′. I prefer that the lower section of the converter should be attached to the body of the converter by bolts and cotters, as shown; but this is not indispensable, nor do I claim it as part of my invention.

The tuyeres T should be of large size, the blast-openings being preferably of one inch or more in diameter. The line of tuyeres may be either parallel to the bottom of the converter or inclined to it, as shown in dotted lines in the drawings. In the latter case the vessel, when blowing, should be inclined in the opposite direction to that at which the vessel is inclined for tapping, so that all the tuyeres may be at the same depth from the surface of the metal. The tilting of the vessel on its rockers may be effected either by hand, by means of a long lever, or by a small hydraulic ram, or a rack and pinion, or other simple analogous contrivance. A catch or wedge, F, is arranged so as to hold the vessel at any required angle.

In blowing a charge of metal, the pig-iron having been run into the vessel through the opening G, (the blast being previously turned on,) the iron is blown either in a vertical position, or, if the tuyeres are arranged in the inclined position, as just mentioned, the vessel is kept tilted to the right. When the flame indicates that the blow is finished, the vessel is rapidly rocked or tilted over to the position A′ B′, so that the tuyeres are lifted clear of the metal and the blast turned off. The metal is then tapped from the tap-hole H. This tap-hole may be immediately above the level of the bottom, or somewhat higher, in which latter case the stopping of the tap-hole may be lighter and therefore more easily opened. If, however, it be found, before tapping, that the blower has been misled by the flame indication, the vessel may be rocked back again to the blowing position and blown again till finished. In working my basic dephosphorizing process it is very desirable to be able to do this. It is also sometimes desirable to rock over the vessel into such a position that while the majority of the tuyeres are blowing under the metal one or two are blowing across the surface of the metal, so as to rapidly consume

the carbonic oxide liberated and keep the slag in an oxidizing atmosphere. The rockers may have rails or other suitable supports.

It will be seen that by the aid of this invention, first, the blow can be stopped at the exact moment desired; second, a blow having been stopped to test a sample, it may be resumed and finished with perfect facility; third, the position of the tuyeres with relation to the surface of the bath may be varied as required; fourth, no expensive machinery is required to effect the tipping of the vessel.

I do not claim to be the first to provide a blast arrangement in Bessemer vessels whereby the direction of the blast may be regulated by the position of the converter, nor do I claim to be the first to arrange the blast at one side of the vessel. Furthermore, I am aware that a reverberatory furnace has been mounted on rockers; but such furnace employs a different mode of operation from mine, and resembles it in the one single feature only of having rockers.

Having thus described the nature of my invention, what I claim, and desire to secure by Letters Patent, is—

A Bessemer converter having the tuyeres and tuyere-holes arranged at one side thereof, and a tap-hole at the opposite side, in combination with rockers, to which said converter is rigidly fixed, and suitable supports for the rockers, whereby the converter may be tipped or oscillated, substantially as and for the purpose specified.

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