

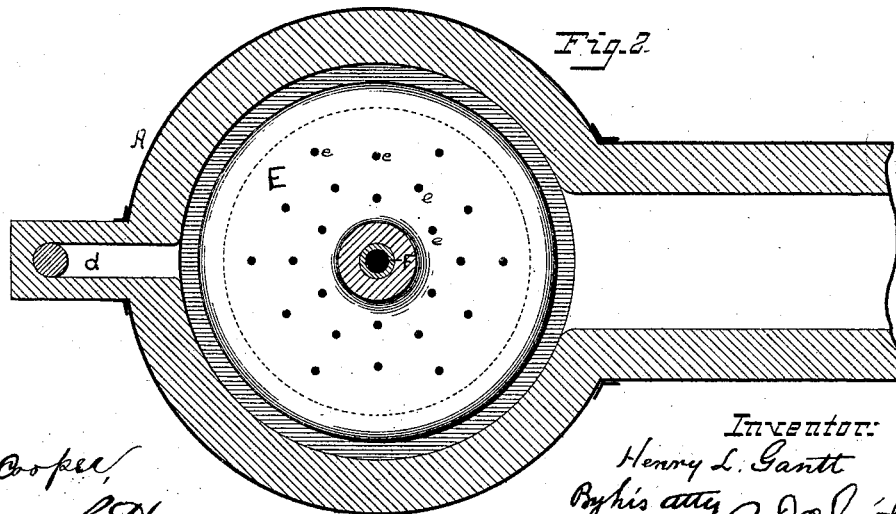
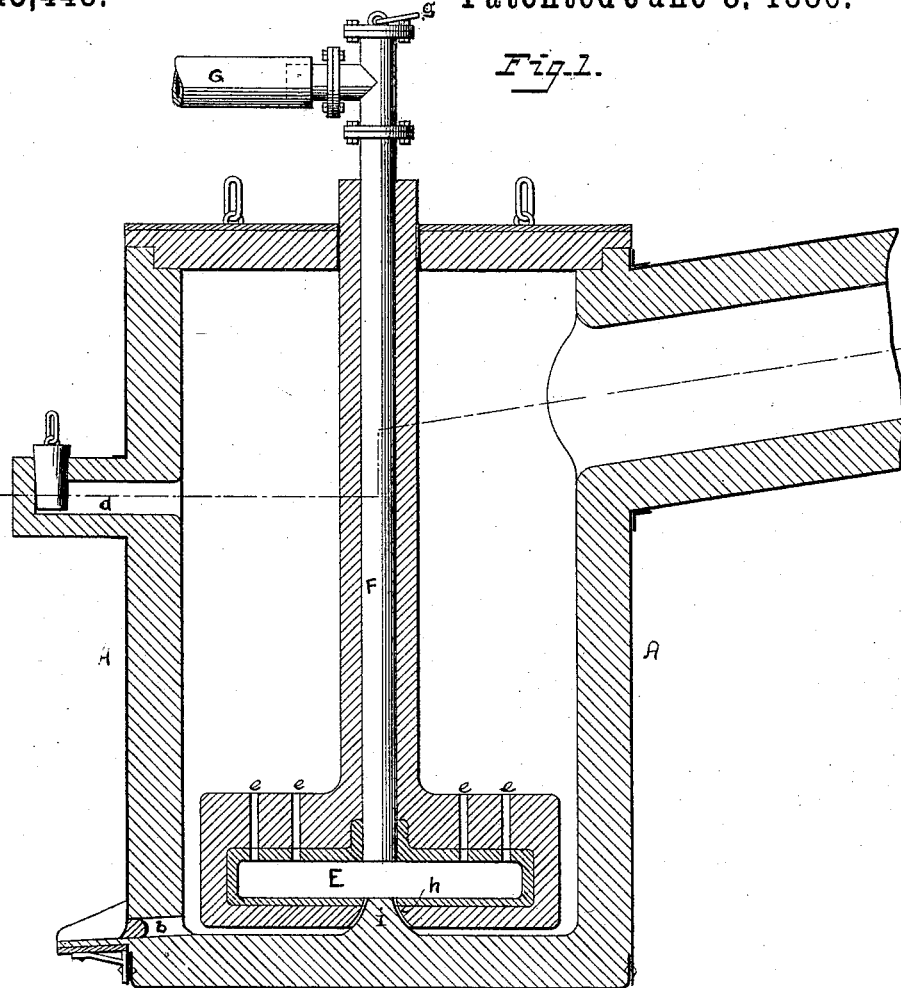
(No Model.)

H. L. GANTT.

CONVERTER FOR MAKING BESSEMER METAL.

No. 343,448.

Patented June 8, 1886.



Attest:

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UNITED STATES PATENT OFFICE.

HENRY L. GANTT, OF BALTIMORE, MARYLAND.

CONVERTER FOR MAKING BESSEMER METAL.

SPECIFICATION forming part of Letters Patent No. 343,448, dated June 8, 1886.

Application filed November 20, 1885. Serial No. 183,442. (No model.)

To all whom it may concern:

Be it known that I, HENRY L. GANTT, of Baltimore, in the county of Baltimore and State of Maryland, have invented new and useful Improvements in Converters for Making Bessemer Metal; and I do hereby declare that the following is a full and accurate description of the same.

Heretofore the converter has generally been in the form of a flask hung on trunnions and provided with a tuyere-box rigidly attached at the outside in the bottom of said flask. The refractory material with which the converter is lined, being subjected at the tuyere-holes to the mechanical action of the air-blast, and to the effects of unequal temperature of the molten iron on the one side and the cooler air-blast on the other side, is disintegrated more rapidly than at other points on the inner surface of the converter, and requires more frequent repair around the tuyere-holes than elsewhere.

The cost of constructing and maintaining the ordinary trunnioned-flask converter has made it desirable to substitute a stationary converter from which the metal may be discharged by an ordinary tap-hole. Such converters have been made, and the air-blast has been introduced through a blast-pipe projected through the open top of the converter downward to the bottom of the molten metal contained therein and with a horizontal projection of the air-blast.

My invention relates to this class of converters, and the object of it is to secure with a stationary converter and a detached tuyere-box the same efficient distribution of the blast and uniform conversion of the metal that has been obtained with the ordinary trunnioned-flask converter having tuyere-holes in its bottom with a projection of the air-jets.

That others may fully understand my invention, I will more particularly describe it, having reference to the accompanying drawings, in which—

Figure 1 is a vertical central section of a stationary converter containing my invention. Fig. 2 is a horizontal section on line *xx*.

A is the converter, composed, as usual, of an iron shell lined with ganister or other proper refractory material. It is permanently located on a proper foundation, and is provided at its

bottom with a tap-hole, *b*, through which the charge may be drawn off when desired. For convenience I also provide a charging-hole, *d*, on the side slightly above the level of the liquid iron undergoing conversion. When not in use, the charging-hole *d* may be stopped with a plug, if desired.

The tuyere-box E is a metallic box, circular in horizontal section, and its top perforated with numerous small holes, *e*, for the escape of air upward. An induction blast-pipe, F, descends into and is solidly connected with the top of the box E, to convey the air-blast thereto for distribution through the holes *e* to the molten metal. The exterior surfaces of the box E and pipe F are covered with ganister or other refractory material, the same as the interior surface of the converter. Preferably the box E is of a diameter sufficient with its refractory coating to easily fill the interior diameter of the converter, so that in effect it forms an inner or false and removable bottom for the converter. Preferably the blast-pipe is attached to the box E centrally, so that the upward or buoyant thrust on said box while submerged will be uniformly distributed to the joint connecting said pipe and box. The blast-pipe F extends above the open mouth of the converter a distance sufficient to guard the lateral hose or pipe G from the flame escaping from converter; or a cover-plate may be employed and a side hole provided for the escape of the burning gases, and the workmen protected thereby.

At the top of the pipe F a ring, *g*, or other means of attaching a hoisting apparatus is provided, whereby the pipe and tuyere-box may be hoisted out of the converter. I contemplate weighting the pipe F and tuyere-box sufficiently to cause it to sink into the molten metal to the bottom of the converter; but that is not a material point, because it can be otherwise caused to sink by mechanical means familiar to every mechanic.

A hole, *h*, may be made in the bottom of the tuyere-box for the escape or removal of any metal which may find its way into said box through the tuyere-holes *e*. Said hole *h* may be stopped with a plug of clay, or it may be left open for the escape of a part of the blast under and around the tuyere-box. If desired,

a plug, *i*, may be permanently built of the converter-lining to project into and stop said hole *h* when the tuyere-box is in its place.

I am aware that stationary converters and removable tuyere-pipes have heretofore been employed; but in all such cases, so far as I know, the blast has escaped from the tuyere-pipe into the molten metal in a horizontal direction radiating from the center of said pipe. As is well known in physics, gaseous jets so projected into a heavier liquid will immediately change their direction to a vertical course, and it follows that the action of such currents will be limited to the vicinity of the blast-pipe unless by some means such a circulation of said liquid is produced as will within the time of action bring all parts of the liquid to the vicinity of the blast-pipe.

My invention differs from that alluded to above, in the distribution of air-jets over the whole horizontal area of the converter and the discharge of the air-jets in a vertical direction into the mass of metal.

Having described my invention, I claim as new—

1. A stationary converter, combined with an unattached removable tuyere-box correspond-

ing in horizontal dimensions with the interior of said converter at its bottom, said tuyere-box being provided with a conduit blast-pipe and in its top with a series of tuyere or jet holes for the discharge of the air-jets in a vertical direction.

2. A stationary converter, *A*, combined with a tuyere-box, *E*, adapted to fit the interior of said converter at its bottom, and provided with upwardly-directed tuyere-holes *e*, distributed over all the cover of said box, and a blast-pipe, *F*, inserted at the center of said box, the whole being weighted sufficiently to cause it to sink into and to the bottom of the molten metal in said converter.

3. The flat-topped tuyere-box *E*, corresponding in diameter with the internal diameter of the converter at its bottom, provided with tuyere-holes *e*, distributed over its cover, a hole, *h*, in its bottom, and an induction blast-pipe, *F*, substantially as and for the purpose set forth.

HENRY L. GANTT.

In presence of—

A. EDWARDS,
JOHN A. FINNEY.