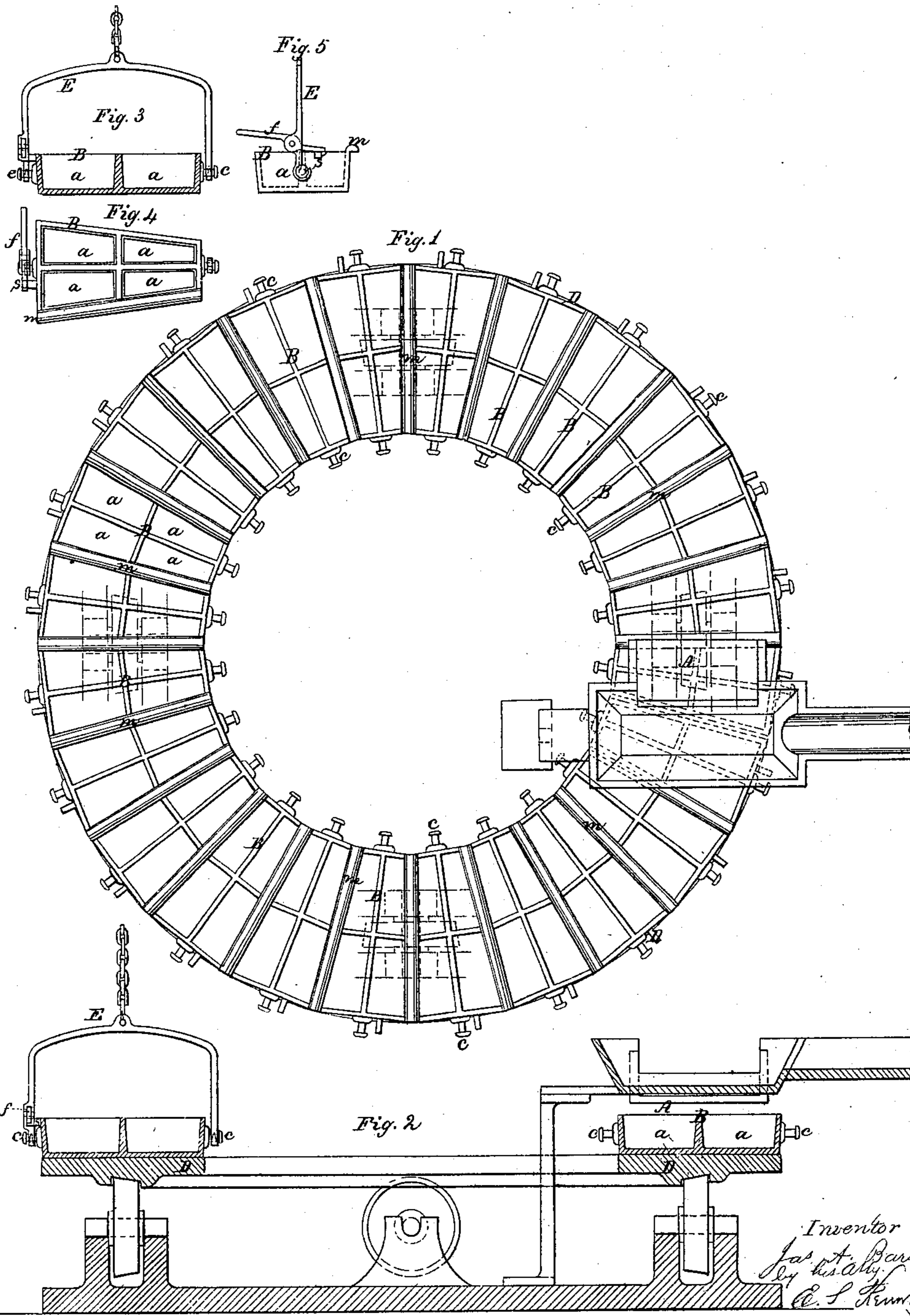


J. A. BURDEN.

APPARATUS FOR MAKING PIG BLOOMS IN THE MANUFACTURE OF IRON.

No. 93,170.

Patented Aug. 3, 1869.



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# United States Patent Office.

JAMES ABERCROMBIE BURDEN, OF TROY, NEW YORK.

Letters Patent No. 93,170, dated August 3, 1869.

## IMPROVED APPARATUS FOR MAKING PIG-BLOOMS IN THE MANUFACTURE OF IRON.

The Schedule referred to in these Letters Patent and making part of the same.

### *To all whom it may concern :*

Be it known that I, JAMES ABERCROMBIE BURDEN, of Troy, in the State of New York, have made an invention of certain new and useful Improvements in the Apparatus for Making Pig-Blooms in the Manufacture of Iron; and that the following is a full, clear, and exact description and specification of my said invention.

The object of my invention is to economize labor in the manufacture of pig-blooms.

Previous to my invention, such blooms have been cast in moulds formed by applying detached iron plates to a revolving turn-table. After the casting, the whole set of moulds is pulled apart, to get out the blooms, and consequently the detached plates forming the moulds have to be set up at every operation. As the resetting of the plates has to be done by hand, the operation requires much labor. The object of my invention is to save labor, and to enable the pig-blooms to be discharged by the use of machinery operated by power. To this end,

My invention consists of the combination of a spout for delivering the molten iron, with a series of removable box-moulds, by means of a revolving table or chain, or some equivalent or substitute therefor, which operates to traverse the series of box-moulds in succession beneath the spout, so that each box-mould in succession can receive a portion of the molten iron. When the box-moulds are filled, each may be removed separately and successively by a crane, and reversed so as to drop out its contents, and may then be immediately replaced by the crane in its first position.

My invention consists, further, of the combination of each box-mould with a bridge suitable for covering the crevice between it and the adjacent box-mould, so that the molten iron cannot enter said crevice.

In order that my invention may be fully understood, I will proceed to describe in detail one mode in which I have contemplated its application, and will refer to the accompanying drawing, in which—

Figure 1 represents a plan of an apparatus embodying my invention;

Figure 2 represents a vertical section of the same, with the crane-yoke applied to one of the removable box-moulds; and

Figures 3, 4, and 5, represent detached views of one of the box-moulds and the crane-yoke.

The spout A, for the delivery of the molten iron, is supported at a sufficient distance above the base of the apparatus to permit the series of box-moulds to pass beneath it.

The box-moulds B B B each consist of a box of cast-iron, having, in this example, four mould-cavities, *a a a a*, for the pig-blooms, and the sides of said cavities are constructed slightly flaring, so that the pig-blooms will readily discharge themselves when the box-mould is turned upside down.

In this example, the series of box-moulds is combined by means of the turn-table D, upon which the whole series is supported, and as this table is circular, the box-moulds are made of a wedge-form, so as to fit upon and cover the surface of the turn-table.

Each box-mould is fitted with two trunnions, *c c*, to which the hooks of a crane-yoke, E, can be applied; and in order to facilitate the turning over of the box-moulds, these trunnions are arranged below the centres of the moulds, so that when they are filled with the pig-blooms, they tend to upset, when suspended on the crane-yoke.

Each box-mould is constructed with a bridge-piece, *m*, or lip, which, when the moulds are set in juxtaposition, bridges over the crevice between the sides of two adjacent moulds, and prevents the molten from running into it.

The box-moulds may be retained in their positions on the table by means of pins projecting upward from the table into sockets in the bottoms of the box-moulds, or in any other convenient way.

In order to remove the box-moulds, I make use of a crane-yoke, E, having a latch, *f*, at one of its sides. This latch engages with a projection, *s*, cast at one end of the box-moulds, and holds the mould top-side up while it is being hoisted by the crane.

When the mould has been swung by the crane over the place where the pig-blooms are to be discharged, the latch *f* is disengaged, and the box-mould turns over and drops the blooms. Afterward it may be swung round to the turn-table, and replaced, top-side up, in its position.

In this manner, each box-mould, in succession, may be removed and replaced by means of a crane. And thus all the pig-blooms may be discharged, and the apparatus may be restored to a condition for receiving a second casting with a very small amount of hand-labor.

If found expedient, the box-moulds may be expeditiously washed with clay-wash after the blooms are discharged, by lowering each, while suspended by the crane-yoke, into a vat of clay-water, and raising it again therefrom.

In casting the blooms, I discharge ground ore into the moulds, by applying to the apparatus a hopper, with a discharge-spout or shoe in the vicinity of the spout A, for the metal.

The discharge of the ore may be facilitated by the use of a vibrating shoe, similar to the shoe of a grain-hopper.

In place of using a turn-table to combine the removable box-moulds with the spout for the metal, I propose, in some cases, to use a reciprocating carriage, moving to and fro under the spout in a straight line, or to combine the box-moulds by links, so as to form them into a chain of box-moulds, which is moved under the metal spout.

The turn-table may be moved by means of a pinion, whose teeth gear into a cog-wheel secured to the under side of the table, or in any suitable manner, and the form and size of the box-moulds may be varied as found expedient.

What I claim as my invention, and desire to secure by Letters Patent, is—

The combination of the spout for delivering the molten iron, with a series of removable box-moulds and a turn-table, substantially as before set forth.

Also, the combination of the box-mould with a bridge-piece, substantially as before set forth.

In testimony whereof, I have hereto set my hand, this 24th day of February, A. D. 1869.

JAS. A. BURDEN.

Witnesses:

E. S. RENWICK,

W. L. BENNEM.