(No Model.) 2 Sheets—Sheet 1.

S. JOHNSTON.

APPARATUS FOR THE MANUFACTURE OF SMALL CASTINGS.

No. 303,645. Patented Aug. 19, 1884.

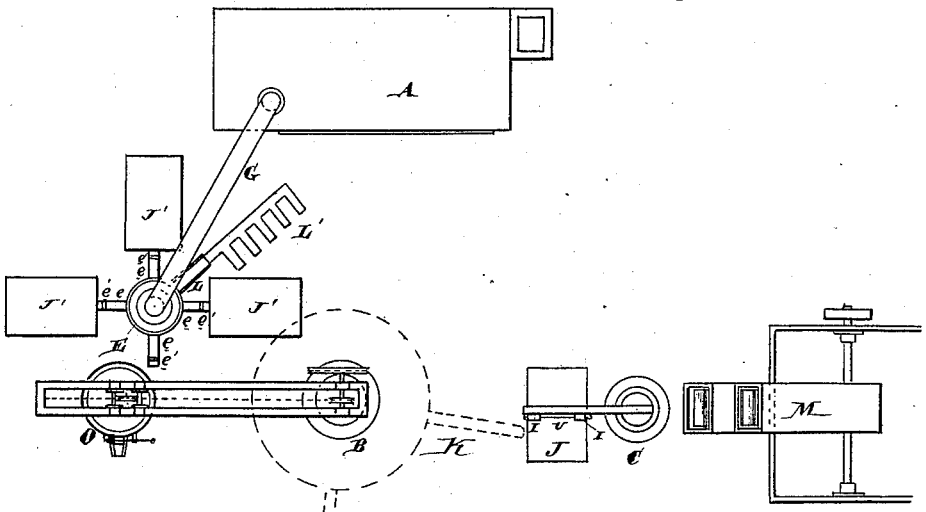

Fig. 1.

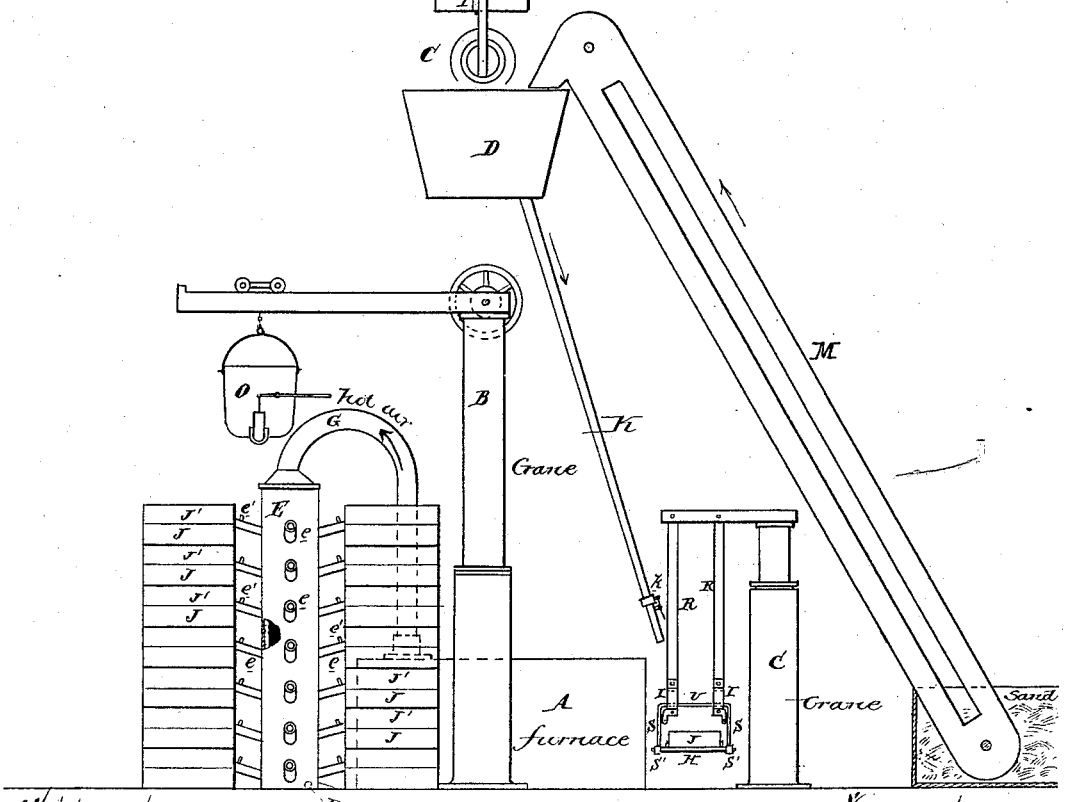

Fig. 2.

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(No Model.)

2 Sheets—Sheet 2.

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Fig. 3

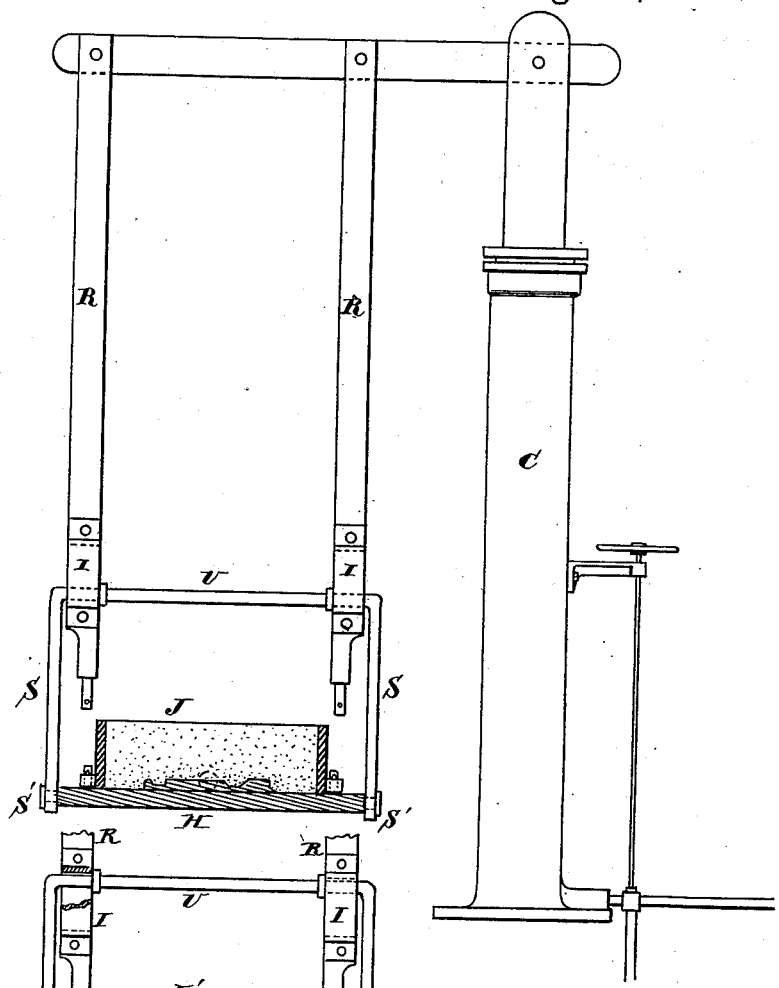


Fig. 4

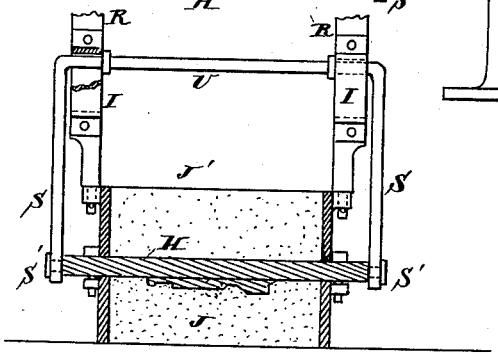
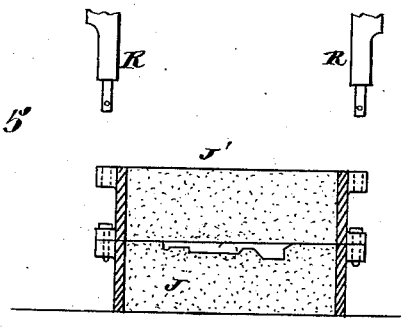


Fig. 5



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UNITED STATES PATENT OFFICE.

SAMUEL JOHNSTON, OF BROCKPORT, NEW YORK.

APPARATUS FOR THE MANUFACTURE OF SMALL CASTINGS.

SPECIFICATION forming part of Letters Patent No. 303,645, dated August 19, 1884.

Application filed June 27, 1883. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL JOHNSTON, of Brockport, county of Monroe, and State of New York, have invented an Improvement in Apparatus for the Manufacture of Small Castings, of which the following is a specification.

My invention has reference to foundry apparatus; and it consists in a central crane adapted to handle the cast ladle and flasks, combined with a stand-pipe having a series of radiating conduits arranged in series, and one above the other; further, in said elements above set forth combined with means to pass air through said stand-pipe and its conduits; further, in combining with the apparatus above referred to molding apparatus within range of said crane; further, in combining with a central stand-pipe and its conduits such as set forth above, flasks arranged about said stand-pipe and piled one upon the other in series; further, in the elements last set forth combined with a valve arranged at the bottom of the said stand-pipe; further, in the combination of the stand-pipe, with its conduits, flasks arranged about said stand-pipe and connected with said conduits, and a hot-air pipe or conduit connecting with the top of said stand-pipe; and, finally, in the combination of a central crane and molding apparatus arranged about said crane and within range of it, an elevated sand-tank, and discharging-chutes provided with valves and terminating over the molding apparatus, all of which is fully set forth in the following specification and shown in the accompanying drawings, which form part thereof.

In the drawings, Figure 1 is a plan view of molding apparatus embodying my improvements. Fig. 2 is an elevation of same; and Figs. 3, 4, and 5 show the process of forming the mold in the flask.

A is the ordinary reverberatory furnace. B is the central crane, so situated as to take the flasks from the smaller cranes and pile them around the pouring stand-pipe.

C are small hydraulic cranes to be used by the molder. The crane C is provided with suitable arms, R R, extending downward from the boom or arm, to which the flask and match are attached during the process of molding.

The manner of molding is as follows: The match H is secured to the rods S S by journals S′, which are attached to the arms R R by the broad loops I I. The match is lowered to the ground or floor. The nowel J is then fastened firmly to the match H. The sand is then drawn down the chutes K from tank D, being regulated by valve *k*, as desired, until the nowel is filled. The bottom board, J^2, is then hooked on and fastened. These are then raised by the crane and turned over. They are then lowered to the ground, so that the cross-rod U, secured to rods S S, comes to the top of the loops I I. The cope J′ is then laid on and fastened to the rods R R by any suitable means, and sand is let in until the cope is filled. The crane then rises, taking with it the cope fastened to R R, thus leaving the match H stationary. When the rod U strikes the bottom of the loops I I, the match begins to rise, and is thus withdrawn from the nowel. The match H is then swung up and fastened to rods R R. The cope is then lowered to the nowel and the mold is finished. The large crane B then takes the flasks and places them in piles F about the central stand-pipe, E, the radial conduits *e* of which enter the cast aperture in the flasks. *e′* are the gates in said conduits *e*. When ready for drying, a pipe, G, connects the furnace A with the stand-pipe E, and hot air is passed through the flasks, drying the molds from the inside out. When dry, this pipe G is removed, and the ladle O of molten iron is raised by the crane B, and the metal is poured into the stand-pipes E and then into the molds. When the casting or pouring operation is completed, the iron in pipe E may be tapped off by discharge-aperture L and run into ingots L′. The sand is raised to the tank D by an elevator, M.

I do not limit myself to the exact apparatus shown, as it may be modified in various ways without departing from my invention.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In foundry apparatus, the combination of central crane, B, adapted to handle the cast ladle and flasks, and stand-pipe E, having a series of radiating conduits, *e*, arranged in series, and equidistant one above the other, substantially as and for the purpose specified.

2. In foundry apparatus, the combination of central crane, B, adapted to handle the cast ladle and flasks, stand-pipe E, having a series of radiating conduits, *e*, and means to pass air through said stand-pipe E and its conduits, substantially as and for the purpose specified.

3. In foundry apparatus, the combination of central crane, B, adapted to handle the cast ladle and flasks, stand-pipe E, having a series of radiating conduits, *e*, means to pass air through said stand-pipe E and its conduits, and molding apparatus within range of said crane B, substantially as and for the purpose specified.

4. The central stand-pipe, E, closed at the bottom and open at the top, and provided with a series of radiating conduits arranged in series one above the other, so as to fit a corresponding series of flasks piled upon each other, in combination with flasks radially arranged about said stand-pipe and piled one upon the other in series, and having their cast holes connected with the conduits, substantially as and for the purpose specified.

5. The central stand-pipe E, closed at the bottom and open at the top, and provided with a series of radiating conduits *e*, inclined upward from the stand-pipe, and provided with valves *e'*, in combination with a series of flasks radially arranged about said stand-pipe, and having their cast holes connected with the conduits, substantially as and for the purpose specified.

6. The central stand-pipe, E, closed at the bottom and open at the top, and provided with a series of radiating conduits, in combination with a series of flasks radially arranged about said stand-pipe, and having their cast holes connected with the conduits, furnace A, and pipe G, substantially as and for the purpose specified.

7. The elevated sand-tank D, its discharging-chutes K, provided with valves *k*, and means to elevate the sand from the ground to said tank, in combination with a central crane and a series of molding apparatus arranged radially about said central crane and within range of it and at the outlets of the discharging-chutes K, substantially as and for the purpose specified.

In testimony of which invention I hereunto set my hand.

SAMUEL JOHNSTON.

Witnesses:

R. S. CHILD, JR.,

WILLIAM MCWADE.