(No Model.)

W. HAINSWORTH.

CASTING APPARATUS.

No. 260,388. Patented July 4, 1882.

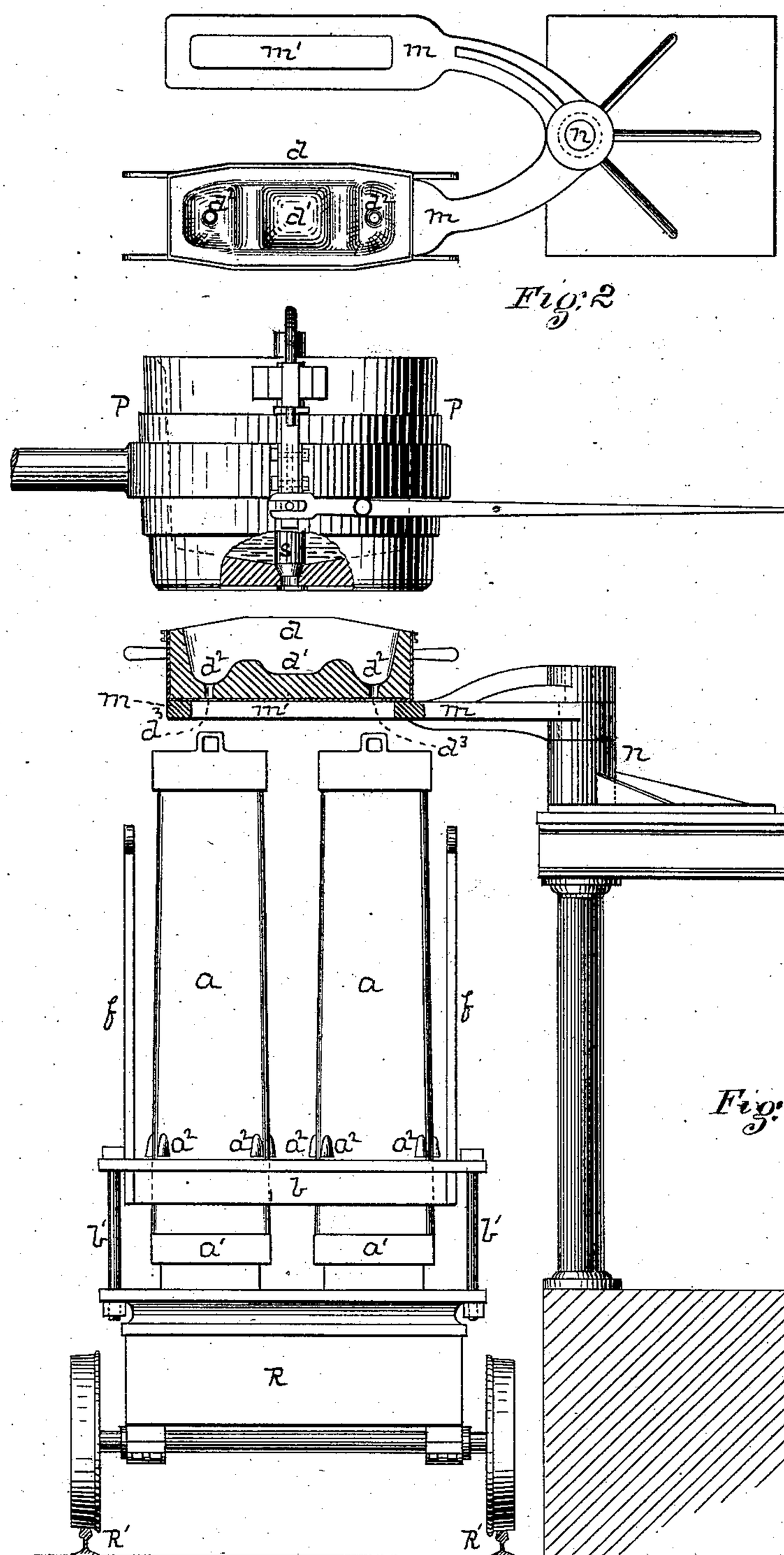

Fig. 2

Fig. 1.

Witnesses
R. H. Whittlesey
Warren L. Clark

Inventor William Hainsworth,
By Attorney George H. Christy

UNITED STATES PATENT OFFICE.

WILLIAM HAINSWORTH, OF PITTSBURG, PENNSYLVANIA.

CASTING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 260,388, dated July 4, 1882.

Application filed January 24, 1882. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM HAINSWORTH, of Pittsburg, Allegheny county, Pennsylvania, have invented a new and useful Improvement in Casting Apparatus; and I do hereby declare the following to be a full, clear, and correct description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a view in elevation of my improved ingot-casting apparatus, but sectioned in some parts for better illustration; and Fig. 2 is a top or plan view of the brackets and a runner-box thereon.

My present invention relates to the construction and arrangement, in an ingot-casting apparatus, of a slotted or open bracket swinging on a vertical post in such position relative to the casting-pit that a runner-box may be set thereon and supported thereby beneath the ladle and directly over the ingot-molds; and as the ingot-molds may not be exactly in line with the bracket-arms, I make the slot somewhat wider than the diameter of the sprue-holes, so that when the bracket is swung out over the ingot-molds and the line of the slot happens to be oblique to a vertical plane passing through the centers of the mold-cavities room or space will be provided, so that the runner-box may be set on the bracket-arm with the line joining its sprue-holes in or nearly in the vertical plane referred to, and thereby get a central run or flow of the metal in casting. In other words, the sprue-holes of the runner-box may be brought directly over the centers of the mold-cavities, even though the molds be a little forward or back of their intended position. In practical use I prefer to mount the ingot-molds *a*, two or more in number, side by side, on a car, R, and run them on track-rails R′ in a pit, into position. Each mold *a*, when mounted in place, is closed at its lower end by the stool *a′*, on which it rests. The lower ends of the molds also pass through holes of size to correspond in a heavy cast-iron frame, *b*, and the latter may be secured in place, if need be, by clamps or bolts and nuts *b′*.

Stirrups *f* are attached to the frame, and are of such construction that when connected with a crane the frame *b* may be lifted off the car, and the edges of the holes around the molds engaging shoulders on lugs a^2 on the molds, the latter will also be lifted, and so stripped clear of the ingots cast therein.

Among other difficulties experienced in the casting of heavy ingots, it sometimes happens in running the metal out of the ladles that a stopper will break, and a portion of it sticking in the stopper-hole or other obstruction lodging therein, the stream of molten metal, instead of flowing straight down, will be deflected to one side, so as to strike the inside vertical wall of the mold. Fluid steel thus striking cast-iron cuts it away with great rapidity, and the result in such case is that an enlargement is formed on the side of the ingot in the recess thus cut away, which, when the ingot becomes solid, renders it utterly impossible to remove the ingot from the mold, except by hydraulic pressure; but while this can be done, the mold is spoiled for further use. To remedy this I interpose a runner-box, *d*, between the ladle P and the molds. The latter are arranged in nests or series, say, of two or four, more or less. The box *d* is lined with refractory material in such manner as to give a central depression, *d′*, into which the metal is discharged by raising the stopper *s* in the usual way. This gives a pocket of metal for the stream to run into. The metal overflows into the surrounding depressions d^2, and thence through the sprue-holes d^3, one of which is over each ingot-mold cavity, and these holes being made smooth and regular, the metal will flow down straight and fill the molds, without danger of spoiling them in the way mentioned, and any lateral deviation of the stream from the ladle will do no damage, as it will flow into the runner-box in any event. As soon as the ladle is empty the runner-box may be tilted so as to run all the metal out of the central depression, *d′*, into one of the molds, or it may be left to solidify and form a button to be thrown out and remelted.

The runner-box may be set loosely on a bracket, *m*, slotted as at *m′*, or may constitute the bracket itself. Such bracket may be pivoted to a post, *n*, so as to be in convenient position for use, and be swung out of the way as required. For practical purposes I prefer to use a bracket and runner-box for each two molds, as represented in the drawings. The runner-

boxes being removable, and the slot m' of considerable width as compared with the diameters of the sprue-holes d^3, the runner-boxes may be set angling or diagonally as regards the swinging brackets if the two molds to be filled do not happen to come directly beneath the bracket when standing at right angles to the track; or, in other words, if the brackets have to be swung to a diagonal position as regards the alignment of the molds, the runner-box may be set thereon so as to be in line with the molds, so that both can be filled, as described. In this way I the better insure the flow of the molten metal down the axial line of the mold-cavity and avoid to a like extent the danger of the cutting away of the inside walls of the mold-cavity by the stream of metal striking it, which, when it occurs, virtually results in the spoiling of the mold and renders it necessary to resort to hydraulic pressure in order to remove the ingot. The slot m' need not extend the entire length of the bracket m. In fact, its middle part may be entirely closed, provided only that end openings be made larger than the diameter of the sprue-holes d^2, so as to regulate the alignment of the runner-box, as above described.

The construction of the molds, mold-frame, &c., will be included in a separate application.

I claim herein as my invention—

A swinging bracket, m, having one or more slots or openings, as described, in combination with runner-box d, substantially as set forth.

In testimony whereof I have hereunto set my hand.

WILLIAM HAINSWORTH.

Witnesses:
R. H. WHITTLESEY,
GEORGE H. CHRISTY.