# J. DUFF.

## Casting Apparatus.

**No. 204,307.** **Patented May 28, 1878.**

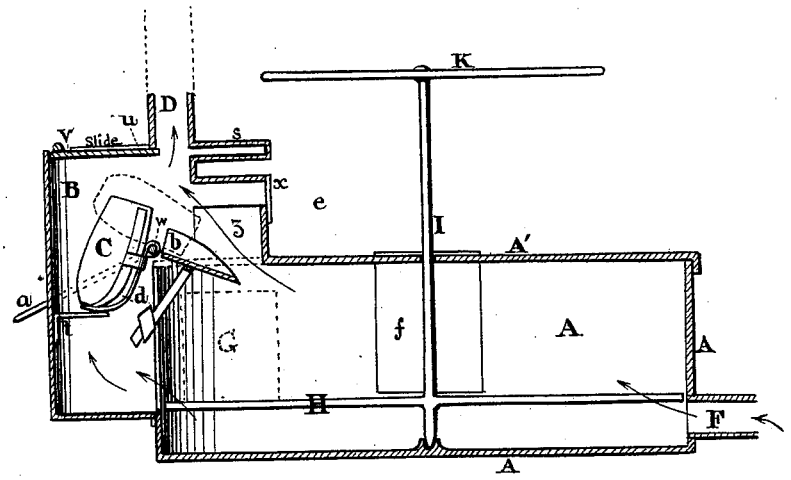


*Fig. 1.* (vertical sec. on line "a a" fig 2.)

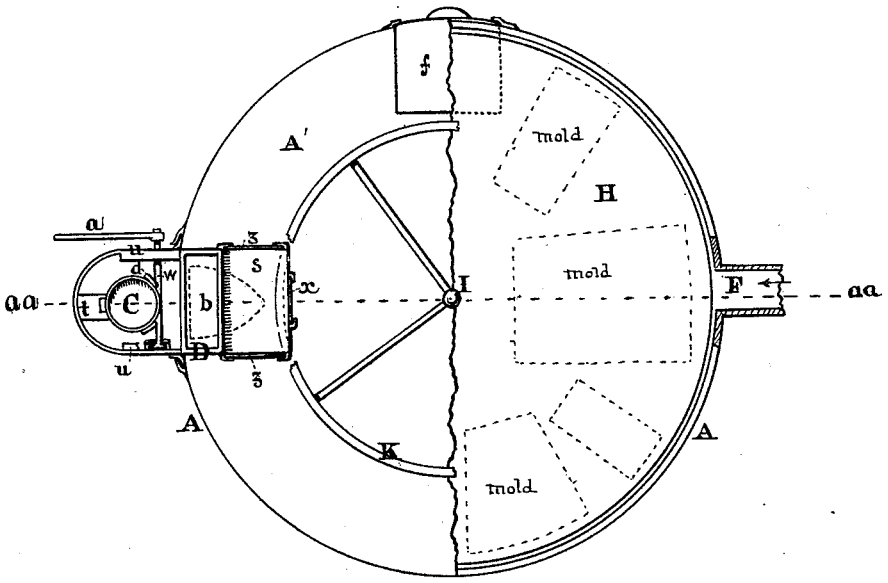


*Fig. 2.*

(Superficial view of half of cover, or "top" removed.)

Witnesses
H. W. Wells
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# UNITED STATES PATENT OFFICE.

JAMES DUFF, OF PEORIA, ILLINOIS.

## IMPROVEMENT IN CASTING APPARATUS.

Specification forming part of Letters Patent No. **204,307**, dated May 28, 1878; application filed November 3, 1877.

*To all whom it may concern:*

Be it known that I, JAMES DUFF, of the city of Peoria, in the county of Peoria, in the State of Illinois, have invented an Improvement in Casting Apparatus; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the annexed drawings, making a part of this specification, in which like letters of reference refer to like parts, and in which—

Figure 1 represents a vertical cross-section; Fig. 2, a superficial view, with cover removed.

This invention relates to a casting apparatus constructed to exclude the air and permit the introduction of gas or vapor therein, and provided with a revolving table to receive the molds in which the molten metal is poured or cast, the object being to protect the molten metal from the injurious effects of common air, and facilitate the process of casting the metal.

I construct my apparatus as follows: A cylindrical chamber is provided with a revolving table, made to nearly touch the sides thereof, and in it and on the table are arranged the molds through a side door in the chamber. Through another door or slide is introduced the crucible or pourer containing the melted metal, which is set in a tilting chair or stand, capable of being tipped from the exterior of the chamber. When the molds are to be filled a slide covers this latter opening, so that all subsequent operation is carried on under closed or tight doors.

The chamber is also provided with an inlet and outlet pipe, by means of which it is charged with such gases or vapors as are least injurious to the molten metal, so as to exclude the atmosphere. Thus enveloped with such gas, the stream of metal from the crucible passes into the molds. The chair is tilted by an exterior appliance into a stationary spout placed over the channel of the mold or molds, so as to fill them as they are successively brought thereunder by the rotating table. Proper windows, opening into the pouring part of the chamber, are so placed as to give the operator full view of the pouring, and another adjacent opening, covered by a door or slide, furnishes opportunity of inserting a skimmer to remove dross or scoria from the molten metal during the pouring. I charge such chamber with non-oxidizing or deoxidizing gases from within, or from a generator attached—as, for instance, carbureted-hydrogen gas, carbonic oxide (or oxide-of-carbon gas) or vapor, ammoniac gas, sulphurous-acid gas, sulphureted-hydrogen gas, chlorine gas, muriatic acid, hydrogen gas, cyanogen gas, &c.

In the drawings, A A A′ is a chamber, cylindrical or cheese-shaped, having a sliding door, *f*, on one side for introducing the molds. B is the pouring-well, an offset of the chamber, covered with a sliding door, *v*. It contains a chair or tilting crucible-holder, *d*, which is pivoted in the sides of said well on a rod, *w*, the end or ends of which pass to the exterior of the chamber, where it is fitted with a handle, *a*, for tilting the crucible into the conducting-spout *b*, (for the molds;) but normally the chair rests upon a bracket, *t*. On one side of said well B is a sliding door, *x*, covering an aperture for the introduction of a skimmer to remove scoria; and on each side of said door *x* are windows *z*, closed with mica, through which to observe and conduct the pouring process; C, crucible or pouring-vessel, introduced through slide *v;* D, chimney or flue to conduct away gases, &c.; F, induction-pipe for gas or vapor; G, position of mold while being filled. These are arranged around the table H. H, circular revolving table, mounted on a central shaft, I, which is crowned with a hand-wheel, K, which may be graded or indexed to indicate the respective mold-channels with reference to the pouring-spout.

The operation has been described above; but, to obviate misconception, I will briefly state that the mold receiver or chamber A A′ is well charged with a gas or vapor which is least injurious or the most beneficial in its effects upon the molten metal, and to the exclusion of common air. Such gas or vapor enters through the duct F, and escapes (to keep up a current) through the flue D, while the metal is introduced from an inserted crucible or pourer C, running thence down spout *b* into the molds. Said crucible is introduced through slide *v*, and is tilted by means of handle *a* on outside of the chamber, while the operation is viewed through the mica windows *z z* as the molds are successively brought un-

der the spout *b* by means of the rotating table H and wheel K.

What I claim as my invention is—

1. In a casting apparatus constructed to exclude the air and admit gas or vapor within the same, a closed case or receptacle having therein a crucible or vessel arranged to pour the molten metal into the mold or molds, substantially as and for the purpose set forth.

2. In a casting apparatus constructed to exclude the air, a closed case provided with a revolving table to receive the molds, and an inlet and outlet passage to admit gas or vapor therein before or during the operation of pouring or casting the molten metal into the molds, substantially as and for the purpose set forth.

3. The closed case, having therein a tilting crucible-holder, and a conducting-spout, by which the molten metal is poured or cast into the molds, substantially as set forth.

4. The closed case provided with a door to admit the crucible or pouring-vessel, and with a rest for the holder, in combination with the tilting crucible-holder, substantially as and for the purpose set forth.

5. The closed case provided with a door to admit the molds, in combination with the revolving table, substantially as and for the purpose set forth.

6. The closed case with gas-inlet F and door *f*, constructed with an offset or pouring-well, B, provided with gas-outlet D, doors *v x*, and windows *z*, in combination with the tilting crucible-holder *d*, conducting-spout *b*, and revolving table H containing the molds, substantially as and for the purpose set forth.

In testimony that I claim the foregoing process of casting metals I have hereunto set my hand this 27th day of October, A. D. 1877.

JAS. DUFF.

Witnesses:
JAS. M. MORSE,
H. W. WELLS.