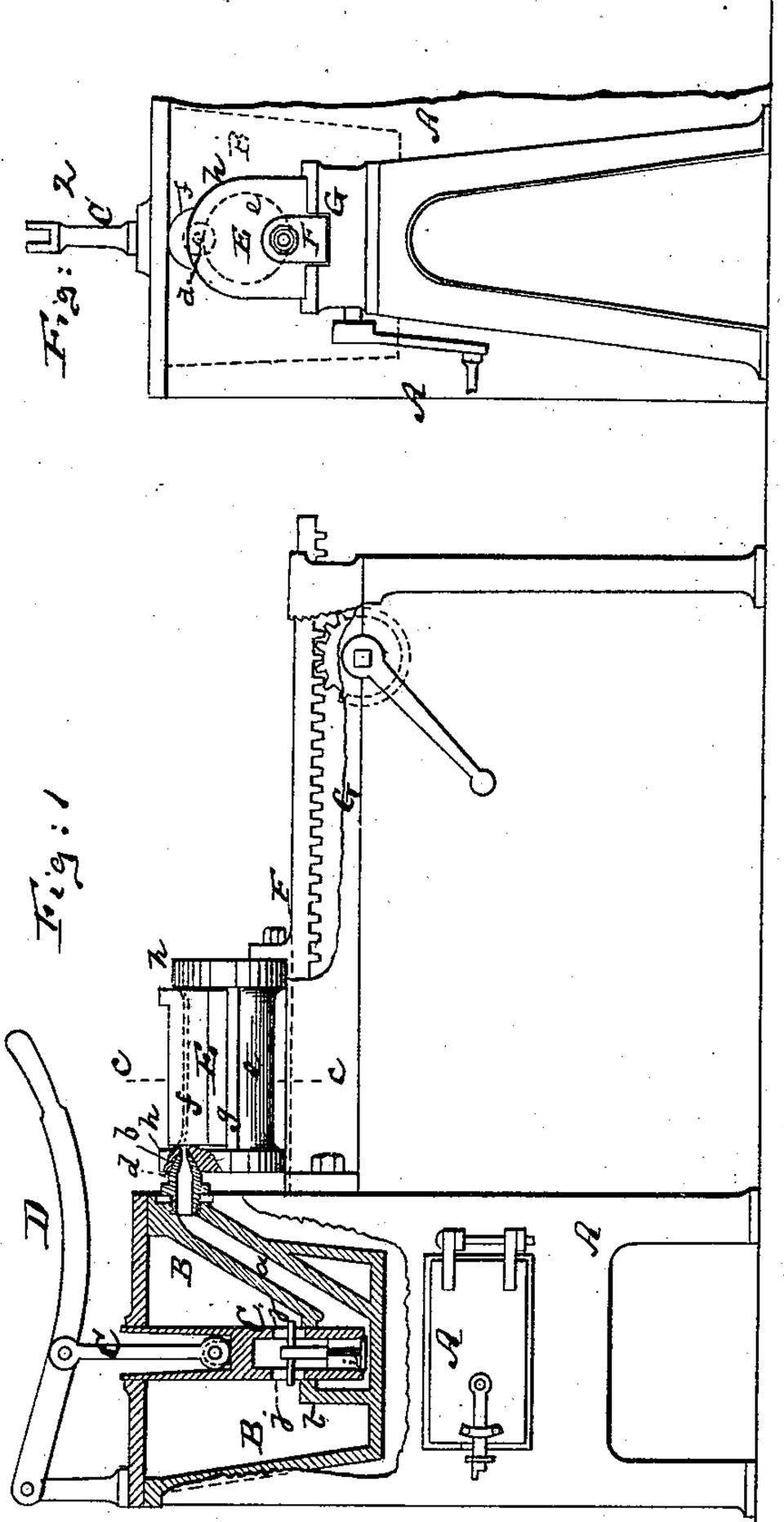
C. & B. H. DUSENBURY.

APPARATUS FOR CASTING METALS.

No. 189,090. Patented April 3, 1877.



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IMPROVEMENT IN APPARATUS FOR CASTING METALS.

Specification forming part of Letters Patent No. **189,090**, dated April 3, 1877; application filed March 3, 1877.

To all whom it may concern:

Be it known that we, CHARLES DUSENBURY and BENJAMIN H. DUSENBURY, both of New York city, in the county of New York and State of New York, have invented an Improved Apparatus for Casting Metal, of which the following is a specification:

Figure 1 is a side elevation, partly in section, of our improved apparatus for casting metal. Fig. 2 is an end elevation of the same. Fig. 3 is a detail cross-section on the line *c c*, Fig. 1.

Similar letters of reference indicate corresponding parts in all the figures.

This invention relates to the casting of metal under pressure; and consists in the use of a peculiar pump, having a hollow plunger and a valve in said plunger, and combined with a tank containing the molten metal, and with the mold, so that by means of the pump the metal will be forced into the mold. By this means the formation of air-holes in the casting is prevented, and a result obtained which is far superior to that obtained by pouring the molten metal into the mold. Not only is the surface and the interior of the casting far superior, if produced under pressure by means of the direct-acting pump-plunger, but time is also economized by placing the pump-plunger and its valve directly into the tank containing the molten metal, and forcing the latter thereby into the mold.

The invention also consists of other features of improvement, which are hereinafter more clearly pointed out.

In the drawing, the letter A represents a suitable furnace, carrying, or united to, a suitable tank, B, which is to contain the metal to be melted and cast. Into this tank B is inserted a hollow pump-plunger, C, containing at its lower end an upwardly-closing valve, *i*, and made with inlet-apertures *j j* above said valve. This plunger is fitted through, and capable of playing up and down in, a partition, *l*, which separates the body of the tank from its discharge-spout *a*, that extends from said tank. The outer end of the spout *a* terminates in a tapering nozzle, *b*. This nozzle is inserted, through a tapering hole, *d*, into the mold E. The plunger C can be moved up and down by a suitable handle, D.

For casting, the fire in the furnace is started to melt the metal contained in the tank B, and when the same is molten, and the nozzle *b* has been duly introduced in the mold, the plunger C is moved up and down to pump the metal into the mold, and to compress it therein while in a fluid or semi-fluid state. At every downward motion the plunger presses the metal up into the spout and mold, while at the upward motion of the plunger the valve *i* opens, to let a new supply of molten metal flow from the hollow of the plunger into the space beneath the partition *l*, to be ejected at the next downward stroke.

The mold may have a small vent-hole, to allow the inflowing metal to discharge all the air from the mold.

A casting made by this process will be found to be practically without air-holes, both on the surface and in the interior, and to be compact and well finished throughout.

The mold E we prefer to make sliding by fastening it upon a suitable slide, F, which is supported on a table, G, and can be moved thereon by rack and pinion or other means. When the mold has been filled from the tank the slide F is moved to draw the mold away from the tank, and then the mold may be removed from the slide, wholly or in part, and replaced, and the slide then moved back again, to connect the mold once more with the tank, and so forth.

In the drawing we have represented the mold to be composed of two parts, *e* and *f*. The lower part, *e*, is a shaft or convex body, and the upper part, *f*, a journal-box for railroad-cars. The journal-box is supported on ledges or ribs *g g*, which are formed on the convex body *e*. The latter has upwardly-projecting plates *h h*, which fit close against the ends of the journal-box. The tapering hole *d* is formed in one of the said plates *h*, to enable the lining metal to be applied without perforating the journal-box. This construction of mold is used to line the concave face of the journal-box with the soft metal forced between said box and the shaft *e* by the pump

C, and when one box has been thus lined the entire mold may be drawn away from the tank with the slide F, the box taken off, another box put on, &c.; but the invention will also be operative if the mold is not made to slide.

We claim as our invention—

1. The tank B, having partition *l* and spout *a*, and combined with the hollow pump-plunger C, having the valve *i* and the aperture *j* above said valve, substantially as herein shown and described.

2. The shaft *e*, made with the projecting ribs *g g* and plates *h h*, one of the plates *h* having the hole *d*, all arranged for combination with the solid journal-box *f*, and constituting a mold for lining said journal-box, substantially as herein shown and described.

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