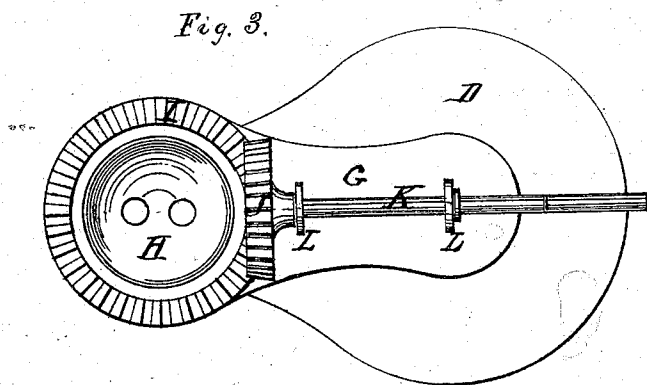
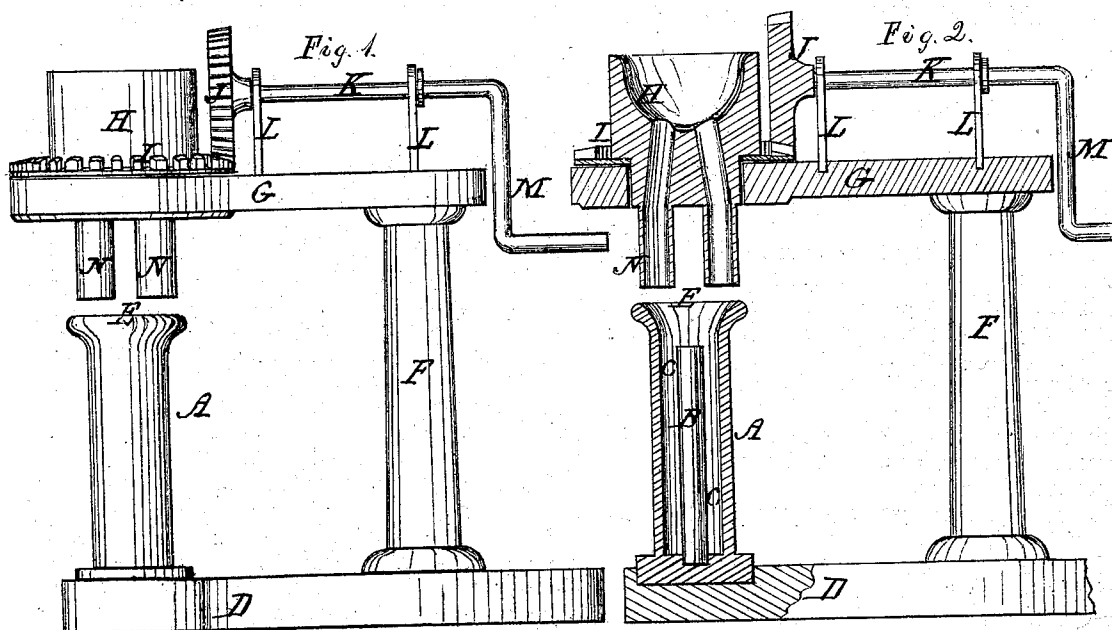


JAMES F. GUTHRIE.
Casting Copper Tubes.

No. 125,044.

Patented March 26, 1872



WITNESSES.

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UNITED STATES PATENT OFFICE.

JAMES F. GUTHRIE, OF SOUTH BRIDGEWATER, MASSACHUSETTS.

IMPROVEMENT IN CASTING COPPER TUBES.

Specification forming part of Letters Patent No. 125,044, dated March 26, 1872.

To all persons to whom these presents shall come:

Be it known that I, JAMES F. GUTHRIE, of South Bridgewater, in the county of Plymouth and State of Massachusetts, have invented a new and useful Improvement in Casting Copper Tubes, Cylinders, &c.; and that the following description, taken in connection with the accompanying drawing hereinafter referred to, forms a full and complete specification of the same.

Heretofore for casting copper tubes, &c., and under Letters Patent No. 24,915, issued to Freeborn Adams, a rotary mold has been employed. Practice, however, has shown that the use of a rotary mold did not produce uniform or perfect castings; that its length and weight, and its revolution at a very high speed prevented that accuracy of rotation which is essential for a perfect introduction of the molten copper.

The purpose of this invention is to obviate the disadvantages existing in the use of the Letters Patent aforesaid—or in other words—of a rotary mold, while securing all the advantages which a rotary mold possesses over a stationary one as employed previous to and since said Letters Patent to Freeborn Adams.

The invention consists of an upright mold in combination with a chamber or vessel, into which the molten metal is poured, that has one, two, or more tubes for distributing the molten metal within the mold, and is arranged to be rotated; its axis of revolution and the axis of the mold being in the same vertical line and plane. By this combination, a conveyance and introduction of the molten metal to the mold is secured, without injury or disturbance to the core of the mold or the mold itself, and with the utmost accuracy and most uniform and perfect results, as practice and use has demonstrated.

In the accompanying drawing the present improvement in casting copper tubes, cylinders, &c., is illustrated—

Figure 1 being a side view of a mold and chamber with distributing tubes or pipes. Fig. 2, a central vertical longitudinal section; and Fig. 3, a plan view.

A in the drawing, represents a mold-case, having a central core, B, with an equal and uniform space, C, around it. This mold A with the core B is fixed in an upright position up-

on a base-plate, D, and the mold A at its lower end is closed, but open at its upper end where it enlarges forming a wide mouth, E. F, a standard fixed to base-plate D. This standard at its upper end has a horizontal arm, G, fixed to it, which arm is extended over the top of the mold-case A, in a plane somewhat above it. Within the outer end of arm G and in a plane directly over the mold-case A, is arranged a receptacle, H, so as to be free to turn. This receptacle H has a horizontal bevel-gear wheel, I, surrounding it, with which wheel meshes a smaller bevel-gear wheel, J, attached to a horizontal shaft, K, arranged to turn in bearings of posts L of arm G, and to be driven through a winch-handle, M. The receptacle H at its bottom side has two pipes, N, diametrically opposite to each other, which pipes communicate with the interior of receptacle, and extend below the arm G in a plane, that, as the receptacle revolves, they will describe a circle about the axis or core of the mold-case A—this circle being within the scope or circumference of the enlarged mouth E to mold-case A.

With arrangement of parts, such as above described, the molten metal is cast within the mold-case A about its core B, by pouring the molten metal into the receptacle H, to which a rotary movement is given by the driving mechanism described, from which receptacle it is distributed and conducted into the mold-case A through the pipes N thereto. By providing more than one distributing-pipe N for the molten metal into mold-case A, the speed may be reduced at which the distributing-receptacle is to revolve, for with two or more pipes the molten metal is delivered as it were in an almost continuous stream relative to any part or point of the mold-case, and sufficiently quick, with a comparatively slow revolution of the receptacle, to overcome the possibility of the metal delivered by the one tube becoming so cooled as to prevent the requisite union and evenness in texture or character of the metal tube, &c., being obtained, and the formation of lines, or seams, or air-holes. By distributing the metal through the medium of a revolving receptacle or hopper, H, leaving the mold stationary, no disturbance of the molten metal as it settles within the mold-case is occasioned, which, with a revolving mold would occur, more especially if revolved with

any degree of speed. In lieu of two distributing-pipes for the revolving molten-metal receptacle or hopper H, only one or more than one may be used, but two are preferable, and are found sufficient to secure a most perfect casting of tubes, &c., from molten metal. The arrangement and construction of parts embraced herein, although particularly described in connection with casting copper tubes, cylinders, &c., may be employed for casting tubes, &c., from other molten metals.

Having thus described my improvement in casting copper tubes, &c., I shall state my claims as follows:

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

1. A mold-case, in combination with a revolving distributing chamber or hopper for conducting the molten metal to the mold, substantially as and for the purpose described.

2. The revolving distributing-hopper for conducting the molten metal to the mold, when provided with two or more distributing-tubes, substantially as described, for the purpose specified.

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