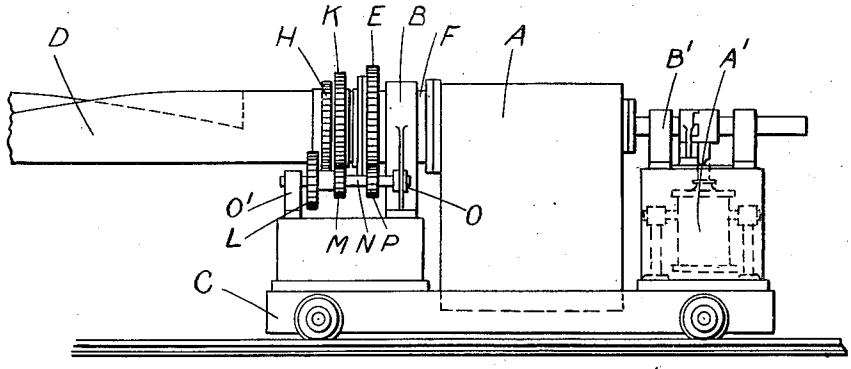
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J. E. HURST ET AL.

METAL POURING APPARATUS FOR CENTRIFUGAL CASTING MACHINES

Filed Aug. 24, 1925

FIG. 1.



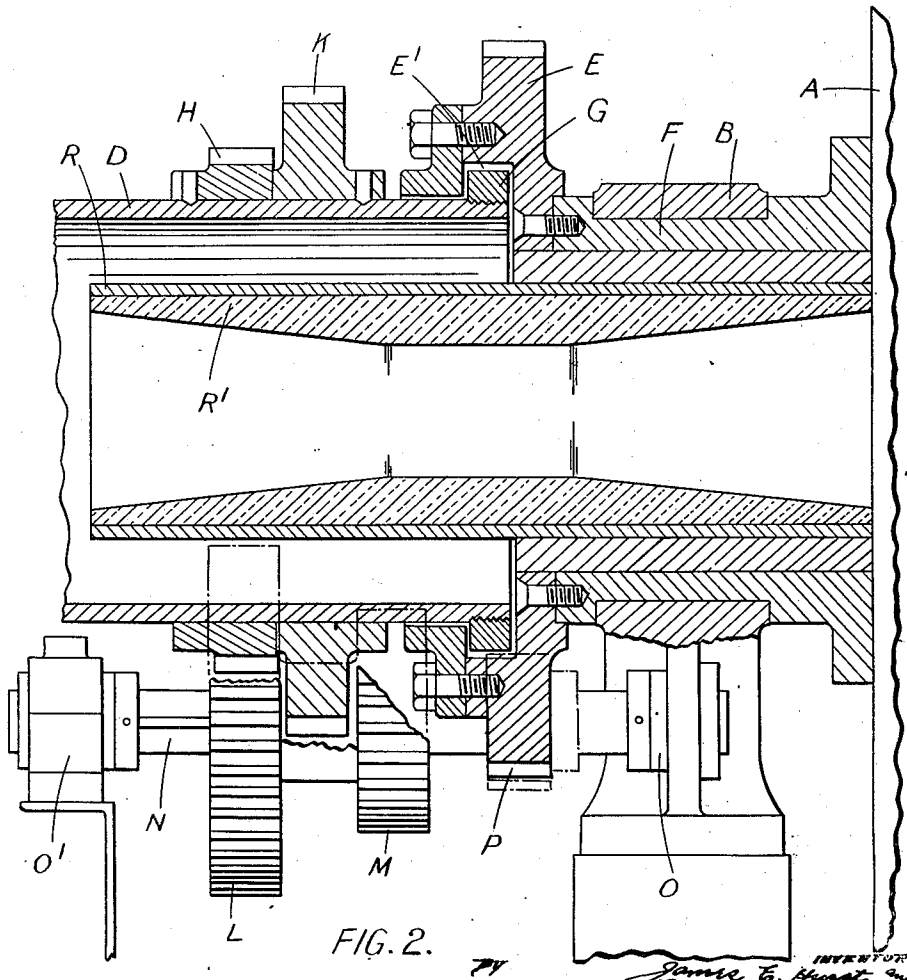


FIG. 2.

INVENTORS
James E. Hurst and
Edmund B. Ball.
BY
Watson, Cole, Morse & Grindle.
ATTYS.

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UNITED STATES PATENT OFFICE.

JAMES EDGAR HURST AND EDMUND BRUCE BALL, OF KILMARNOCK, SCOTLAND, ASSIGNORS TO CENTRIFUGAL CASTINGS LIMITED, OF KILMARNOCK, SCOTLAND, A COMPANY OF GREAT BRITAIN.

METAL-POURING APPARATUS FOR CENTRIFUGAL CASTING MACHINES.

Application filed August 24, 1925, Serial No. 52,202, and in Great Britain March 9, 1925.

This invention relates to pouring apparatus for centrifugal casting machines of the kind comprising a trough-like member having a weir edge which varies in height along the length of the trough so that, as the trough is partially rotated, the molten metal is progressively deposited from one end of the mould to the other, without relative longitudinal movement between the mould and the trough.

In producing castings by means of such apparatus, and in particular in the production of castings of considerable length, it is important to ensure that a constant quantity of metal is deposited in a given unit of time and at some predetermined initial velocity and the object of this invention is to provide means to secure this result.

According to this invention mechanism is provided by means of which the trough can be rotated and the reservoir tipped at interdependent speeds, the ratio of which can be varied. The particular means employed to secure the desired result will vary but in the case of a reservoir which is coaxial with the pouring trough a variable speed gear is conveniently used to connect these two members together so that they can be caused to rotate at interdependent speeds the ratio of which can be varied.

When the bearings of the reservoir and trough are concentric, a refractory funnel or nozzle is preferably provided between the reservoir and pouring trough, this nozzle being conveniently of venturi shape.

The venturi-shaped nozzle serves to control the amount of molten metal supplied to the trough at any given velocity, and the diameter of the nozzle or its refractory liner can be changed to vary the quantity delivered to the spout while the initial head of the metal remains unchanged or approximately constant.

Figure 1 shows in elevation a construction in which the reservoir is coaxial with the pourer, and

Figure 2 is a part sectional elevation on a larger scale, of part of the apparatus shown in Figure 1, showing the venturi nozzle inside the gears.

In the drawings, referring to Figure 1, the reservoir A is rotatably mounted in bearings B B^1 which are formed on a movable base or carriage C. The tilting of the reservoir is preferably effected by means of a hydraulic cylinder A^1 supplied from any suitable source of pressure and mounted on the movable carriage C. The pouring trough D, which has a weir edge varying in height along the length of the trough, is mounted concentric with the reservoir A, in a bearing formed inside the gear wheel E, and the other end of the pouring trough is supported by means of a tail rod bearing (not shown).

Referring now to Figure 2 the gear wheel E is rigidly secured to the hollow shaft F projecting from the reservoir A and supported in the bearing B. One end of the pouring trough D carries a bearing ring at G mounted to rotate within a bearing E^1 formed in the gear wheel E.

Secured to the trough D are two gear wheels H and K of unequal diameter, which, with two other gear wheels L and M mounted on a countershaft N, are arranged to form a change-speed gear. The countershaft N is supported in bearings O O^1 and carries a pinion P engaging the gear wheel E. As the wheel E is keyed to the hollow shaft F of the reservoir when the latter is tilted the pouring trough D is rotated at a speed depending upon which of the two pairs of gear wheels H and L or K and M are in engagement.

Within the hollow shaft F, rigidly secured to the reservoir and communicating with the interior thereof, is a nozzle R having a refractory liner R^1 of venturi shape. This nozzle extends into the interior of the pouring trough far enough to carry the molten metal past the gears in order to avoid overheating them and the bearing G E^1. Further the refractory liner R^1 may be interchangeable so as to vary the amount of molten metal delivered to the trough with the same initial velocity or head.

What we claim as our invention and desire to secure by Letters Patent is:—

1. In metal pouring apparatus for centrifugal casting machines the combination of a pouring trough having a weir edge varying in height along the trough, a reservoir adapted to deliver molten metal into the trough, means for rotating the trough, mechanism for simultaneously tipping the reservoir to an extent dependent upon the speed at which the trough is rotated and

means for varying the ratio of these interdependent speeds.

2. In metal pouring apparatus for centrifugal casting machines the combination of a pouring trough having a weir edge varying in height along the length of the trough, a reservoir for molten metal coaxial therewith, a refractory nozzle of venturi shape connecting the reservoir with the adjacent end of the pourer spout and means for rotating the trough and tipping the reservoir at interdependent speeds of variable ratio.

3. In a metal pouring apparatus for centrifugal casting machines, the combination of a pouring trough having a weir edge varying in height along the length of the trough, a reservoir for molten metal coaxial therewith, a refractory nozzle connecting the reservoir with the adjacent end of the pourer spout, means for tipping the reservoir, and a variable speed gear connecting the reservoir and the trough.

In testimony whereof we have signed our names to this specification.

JAMES EDGAR HURST.
EDMUND BRUCE BALL.