Jan. 8, 1929. 1,697,889

J. H. UHRIG

COVERED TROUGH

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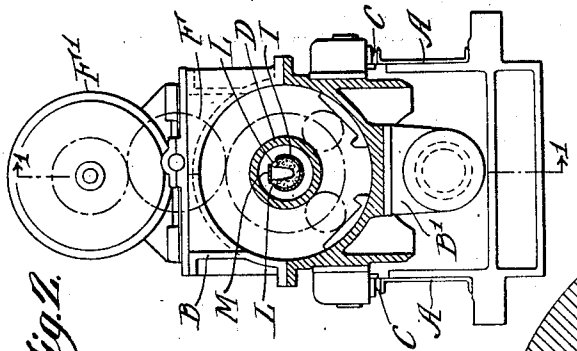


Fig. 2.

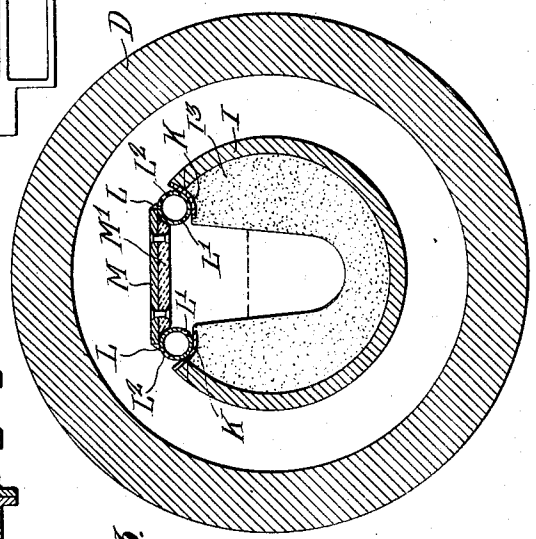


Fig. 3.

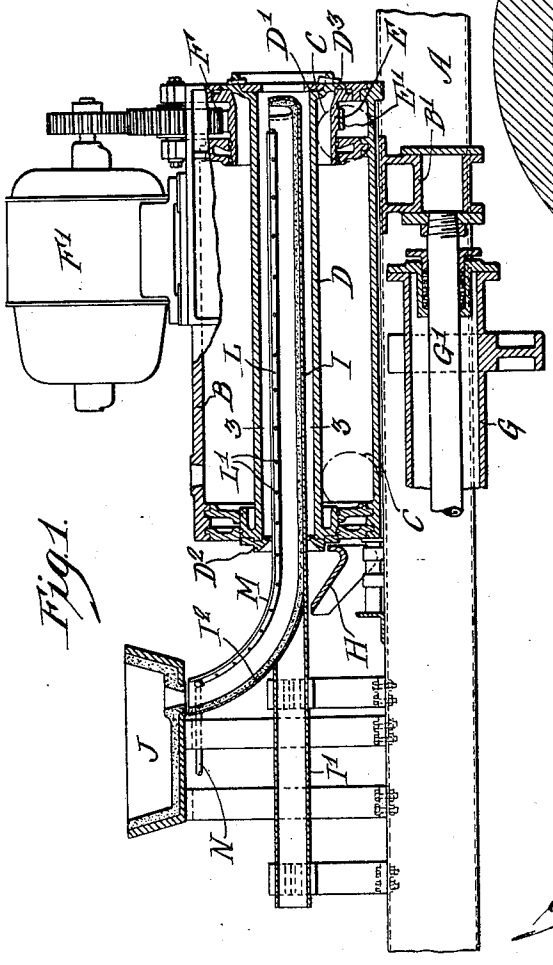


Fig. 1.

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UNITED STATES PATENT OFFICE.

JOHN H. UHRIG, OF BEVERLY, NEW JERSEY, ASSIGNOR TO UNITED STATES CAST IRON PIPE & FOUNDRY COMPANY, OF BURLINGTON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

COVERED TROUGH.

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My invention relates to centrifugal casting machines of the type in which the molten metal is introduced into the rotating mold by means of a trough and in which the trough and mold are relatively retractable and particularly, although not exclusively, my invention relates to the DeLavaud type of machines in which the trough is a runner or conduit through which the molten metal is delivered to the mold at the end of the trough or runner. The object of my invention is, primarily, to exclude oxygen from contact with the metal in the trough and also from contact with the molten metal delivered into the rotating mold and a further object which I have in view is to impart heat to the molten metal in the trough and to a certain extent to the metal delivered into the mold and also to internally heat to a certain extent the mold itself and my invention consists, generally speaking, in providing a cover for the trough and in providing means for adding a non-oxidizing and, preferably, a combustible gas into the upper part of the trough and also for delivering such gas into the mold itself.

The nature of my improvements will be best understood as described in connection with the drawings which illustrate a DeLavaud pipe casting machine provided with my improvements, and in which

Figure 1 is a sectional elevation of a machine on the line 1—1 of Fig. 2.

Figure 2 a view taken partly on the transverse section 2—2 of Fig. 1, and

Figure 3 a cross section on the line 3—3 of Fig 1.

A indicates portions of the framing of the machine; B the usual water box supported and longitudinally movable on the framing by means of the supporting wheel C—C. D is the rotating mold having, as shown, rings D^1 and D^2 secured to its ends. D^3 is a flange extending from one end of the mold to which is secured the driving ring E, having gear teeth E^1 engaged by gear train F driven by the motor indicated at F^1. B^1 is a downward extension from the water box B, which is engaged with a piston G^1 actuated by a piston, not shown, situated in the hydraulic cylinder indicated at G. H indicates a receptacle secured to the end of the water box and provided to catch any metal which may run out of the trough when the mold no longer surrounds it. I is the trough supported in fixed position by the extension indicated at I^1 and provided with an upwardly extending portion I^2 by means of which it communicates with a metal receptacle indicated at J.

To the upper edges of the trough I, I secure plates indicated at K, K, upon which plates are secured cast pipes L, L, having in them a series of burner openings or nozzles L^1 which open into the top of the trough and L^2 which open outside of the trough and into the mold when the mold surrounds the trough. M indicates a cover conveniently supported on the pipes L, as shown, and provided with a refractory lining M^1, I^3 indicating the refractory lining of the trough. N indicates a gas pipe through which gas, preferably combustible gas, is supplied to the pipes L, L.

It will be obvious that the gas introduced into the top of the trough will, if combustible, combine with any oxygen in the trough producing a thorough non-oxidizing atmosphere therein and by its combustion will impart heat to the trough and to the molten metal therein. It will also be obvious that the gas issuing from the nozzles L^2 will ignite immediately on issuing so that as the trough is projected into the mold any oxygen therein will combine with the gas producing a non-oxidizing atmosphere in the mold and also imparting heat to the mold and to its contents. In effect the trough may be considered as a torch which as it moves into and out of the mold will eliminate oxygen and prevent the injury to the surface of the casting which is incident to the presence of oxygen and which is particularly harmful in the case of non-ferrous metals, although it is also injurious with iron.

Having now described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In a centrifugal casting machine comprising a centrifugal mold and a relatively retractable trough for delivering molten metal to the mold, the combination therewith of a cover for the trough and means for introducing a gas into the covered trough.

2. In a centrifugal casting machine comprising a centrifugal mold and a relatively retractable trough for delivering molten metal to the mold the combination therewith of a cover for the trough, a gas pipe supported by the trough and a series of gas burner nozzles extending from said pipe into the upper part of the trough.

3. In a centrifugal casting machine com-

prising a centrifugal mold and a relatively retractable trough for delivering molten metal to the mold the combination therewith of a cover for the trough, one or more gas conduits supported by the trough and two series of gas burner nozzles one series opening into the top of the trough and the other series opening from the gas pipe or pipes outside of the trough so as to deliver gas to the mold when it extends over the trough.

4. In a centrifugal casting machine comprising a centrifugal mold and a relatively retractable trough for delivering molten metal to the mold the combination therewith of two gas pipes supported on the edges of the trough, a trough cover supported on the gas pipe and two series of gas burner nozzles opening from the gas pipes into the trough.

5. In a centrifugal casting machine comprising a centrifugal mold and a relatively retractable trough for delivering molten metal to the mold the combination therewith of two gas pipes supported on the edges of the trough, a trough cover supported on the gas pipe, a series of gas burner nozzles opening from each pipe into the trough and a series of gas burner nozzles opening from the gas pipe outside of the trough.

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