

W. J. PERRY.
MOLDING MACHINE.
APPLICATION FILED JAN. 29, 1919.

1,320,910.

Patented Nov. 4, 1919.
2 SHEETS—SHEET 1.

Fig. 1.

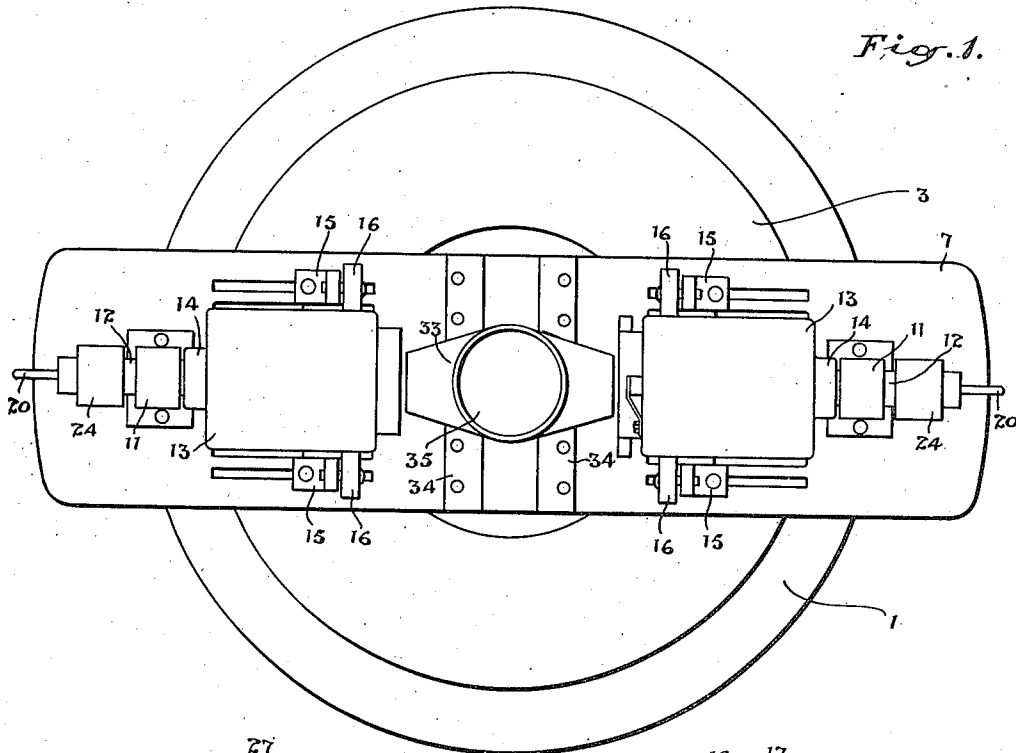
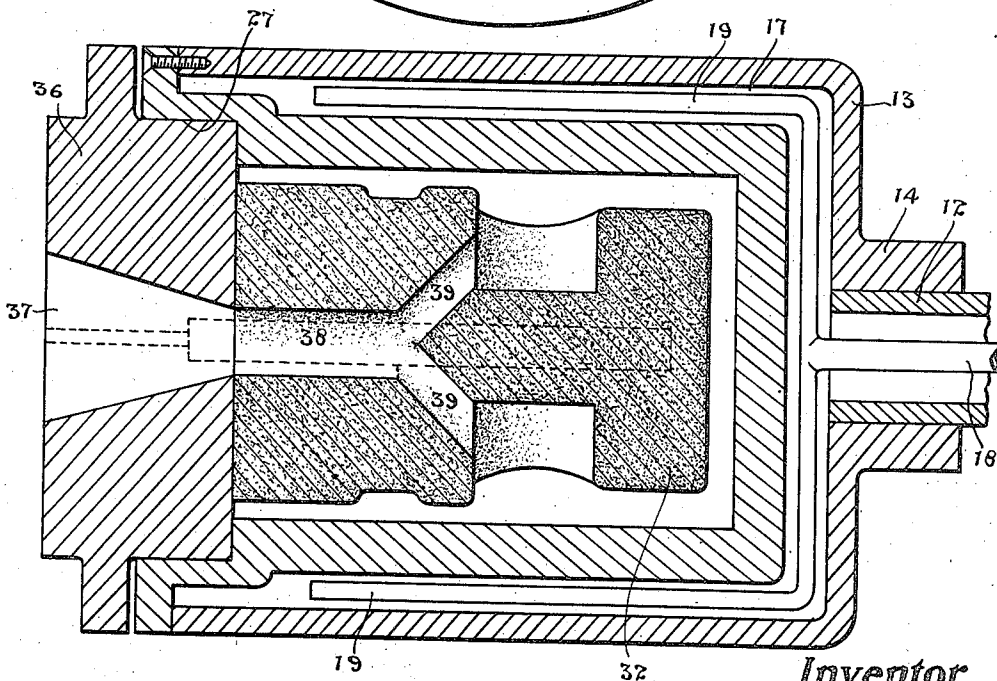


Fig. 4.

Inventor.
William John Perry
by *H. J. Demme*

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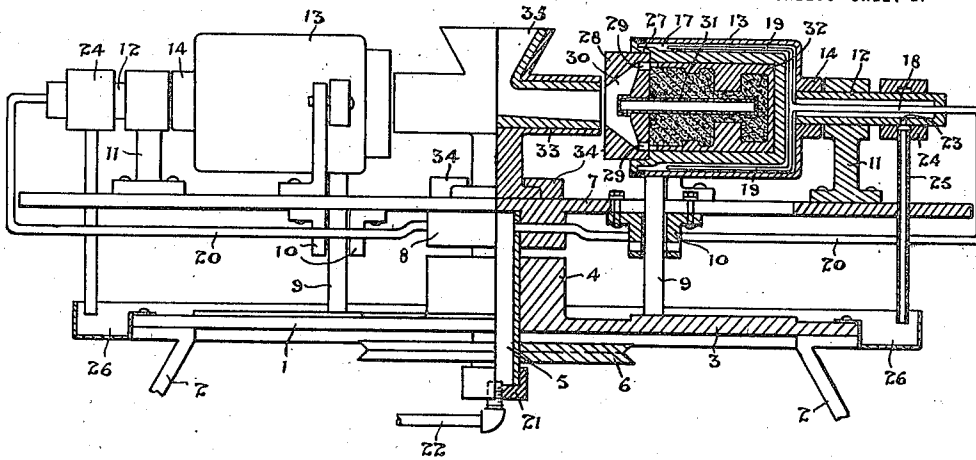


Fig. 2.

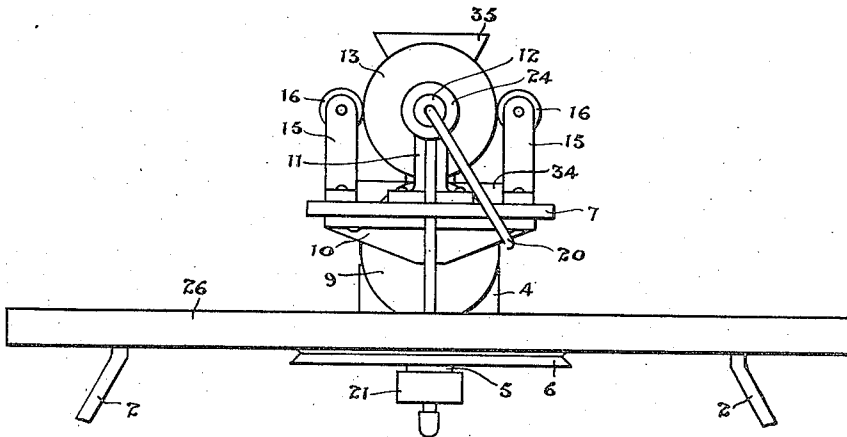


Fig. 3.

Inventor.
William John Perry
by H. J. Derricks
att.

UNITED STATES PATENT OFFICE.

WILLIAM JOHN PERRY, OF TORONTO, ONTARIO, CANADA.

MOLDING-MACHINE.

1,320,910.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, WILLIAM JOHN PERRY, a subject of the King of Great Britain, and resident of the city of Toronto, county of York, Province of Ontario, in the Dominion of Canada, have invented certain new and useful Improvements in Molding-Machines, described in the following specification and illustrated in the accompanying drawings, that form part of the same.

The principal objects of this invention are, to reduce the cost of production of cast metal articles and to enhance their quality, producing a more uniform texture of material free from blow holes and unequal porosity.

A further and important object is to devise a machine which will be an active agent in the increase of quantity production and which may be adjusted to suit varying conditions of material and the shape of article being made.

The principal feature of the invention consists in the novel construction of the device, whereby the molds are rotated about their own axes and are coincidentally revolved radially as the metal is poured.

In the drawings, Figure 1 is a plan view of my improved molding machine.

Fig. 2 is an elevational view of the machine shown one-half in vertical mid-section.

Fig. 3 is a detail end elevation of the rotatable carriage showing a mold supported thereon.

Fig. 4 is a longitudinal vertical sectional view of a mold showing a modified arrangement for pouring the metal.

The art of distributing molten metal circumferentially around a cylindrical shaped mold by centrifugal action obtained through the axial rotation of the mold, has been thoroughly demonstrated. The present invention has been devised for the purpose of utilizing centrifugal force in the distributing of the metal in transverse areas as well as circumferentially.

The device shown in the accompanying drawings illustrates a practical embodiment of this invention.

Referring to the drawings, a base 1 is supported upon suitable leg supports 2, said base being of circular formation having a circular track way 3 on the upper face and a central boss 4.

A vertical shaft 5 is rotatably mounted in the boss 4 and upon the lower end of this

shaft is secured the grooved pulley 6. A table 7 provided with a central boss 8 is secured to the upper end of the shaft 5 above the base 1 and is adapted to be rotated by said shaft, said table being supported by the wheels 9 mounted in brackets 10 secured to the underside of the table and running upon the trackway 3.

The brackets 10 are adapted to be adjusted radially outward or inward from the axis of rotation of the table for a purpose that will appear hereinafter.

Journal standards 11 are secured upon the table 7 with their bearings in radial alignment and in these standards are journaled the hollow shafts 12.

13 are cylindrical shaped molds having the boss ends 14 mounted upon the shafts 12, said molds resting upon the perimeter of the wheels 9 and being rotated by the contact of said wheels as the wheels travel around the trackway 3.

Brackets 15 are arranged in pairs at each side of the molds and support the steadying rollers 16 which engage the perimeter of the molds at a point about opposite the axial center.

The molds are preferably formed of a double walled construction inclosing a water space 17 and a water pipe 18 supported centrally within the hollow shaft 12 extends into the water space having branch ends 19 projecting well into the head end.

Water supply pipes 20 are connected with the pipes 18 and lead to the boss 8 where they connect with the hollow shaft 5. The bottom end of the shaft 5 is closed by a cap 21 to which is connected a suitable water supply pipe 22.

A constant supply of water is thereby directed to the inward ends of the rotatable molds. The water thus directed inwardly flows backwardly around the branch pipes 19 and out through the hollow shaft 12. These shafts are perforated with outlet holes 23 and the water flowing through said holes flows into the sleeves 24 from which it is conducted by the waste pipes 25 to a trough 26 extending around the base 1.

Each of the molds 13 is formed with a counter bored inner end 27 in which is secured a head 28. The head is formed with a plurality of holes 29 placed in circular arrangement with their outward sides close to the inner wall of the mold. These holes lead inwardly to a converging recess 30

which opens centrally at the inner side of the head.

A perforated tube 31 is secured centrally in the head and extends into the mold and forms the support for the core 32 and provides a vent for the gases liberated from the metal in pouring.

A trough-shaped member 33 is supported in transverse guides 34 on the table 7 and is secured in central alinement with the axis of rotation of said table and may be moved laterally to discharge the molds. The metal is poured into the hopper 35 and flows outwardly from the ends of the trough into the recesses 30 in the heads of the molds. The centrifugal action throws the metal well into the recesses 30 and passing through the holes 29 in the head the metal is projected to the far end of the molds in such a manner as to fill up the end space between the core and the mold wall and also to fill up all recesses in the core or wall of the mold.

This radial centrifugal action effectively distributes the metal endwise in the mold and as the molds are concurrently rotated upon their own axes there is a coincident centrifugal rotation effecting the uniform distribution of the metal around the circumference of the cylindrical portion of the mold.

The axial rotation of the molds insures the liberation of the gases from the metal and these find their way out through the core and the perforated vent tube.

The peculiar double movement thus described results in the molding of an article of very fine tough texture and of a very uniform quality throughout and enables the rapid casting of cast iron pistons and similar articles in much lighter dimensions than is possible by the ordinary methods of casting and the resultant texture of the metal is extremely strong.

In the modification shown in Fig. 4 the mold head 36 is formed with a central opening 37 which directs the molten metal into a passage 38 in the core and it is conducted from this central passage through angularly disposed branch passages 39 to the mold cavity between the core and the wall of the mold. In such construction the core is supported by a pair of perforated vent tubes indicated in dotted lines.

The table 7 may be rotated at any desirable speed through a belt connected with the grooved pulley 6. This pulley may of course be substituted by a suitable gear if desired and the speed of rotation of the individual molds may be regulated by shifting the wheels 9 outwardly or inwardly in relation to the center of rotation of the table.

What I claim as my invention is:—

1. A method of molding consisting in pouring the molten metal into molds while

said molds are rotated about their own axes and are coincidently revolved radially.

2. A molding machine comprising a mold rotated upon its own axis and revolved radially, and means for pouring molten metal into the moving mold.

3. A molding machine comprising a revolving table, a mold rotatably mounted upon said table, means for rotating said mold coincident with the revolving of the table, and means for feeding the molten metal to the mold as it is rotated.

4. A molding machine comprising a table adapted to be rotated about a vertical axis, a mold radially journaled on said table, means for rotating said mold in its journal coincident with the rotation of the table, and means carried by the table for feeding molten metal to the mold during its rotation.

5. A molding machine comprising a horizontally arranged table adapted to be revolved around a vertical axis, a plurality of molds mounted in radial relation to the axis of rotation of the table, means for rotating said molds on their individual axes, and a pouring trough centrally arranged on the table and adapted to direct the molten metal into the rotating molds.

6. A molding machine comprising a circular base, a horizontally arranged table supported upon rollers resting upon said base, said table being adapted to revolve around a vertical axis, molds horizontally journaled on said table and engaging said rollers and adapted to be revolved thereby upon their individual axes coincident with the rotation of the table, and a pouring trough supported in the axis of rotation of the table and directing the molten metal into the molds.

7. A molding machine comprising a base having a central vertical shaft and a horizontal circular trackway, a horizontally arranged table secured to said shaft, rollers resting upon said trackway and supporting said table, cylindrical molds supported upon said rollers and held in radial relation to the axis of rotation of the table and adapted to revolve upon their individual axes, means for adjusting said rollers to vary the speed of rotation of the molds, and means for pouring metal into the molds during rotation.

8. A molding machine comprising a table mounted to rotate upon a vertical axis, a mold horizontally journaled in radial relation to said axis upon said table and having an opening at the inner end, a core supported within said mold, and a pouring trough centrally arranged upon said table and directing molten metal into the open end of said mold.

9. A molding machine comprising a horizontal table adapted to rotate about a vertical

cal axis, a cylindrical mold rotatably mounted upon said table and having its axis radial to the axis of rotation of the table, a head arranged in the inner end of the mold and formed with an opening leading to the cavity of the mold, a perforated tube supported in said head and extending into the mold and supporting a core, a pouring trough centrally supported on the table and directing the molten metal into the head, and means for revolving the mold coincident with the rotation of the table about its axis.

10. A molding machine comprising a horizontally rotatable table, a cylindrical mold horizontally journaled upon said table in radial arrangement, means for directing the molten metal into the mold during the rotation of the table, means for rotating the mold coincident with the rotation of the table, and means for circulating water around the mold.

11. A molding machine comprising a horizontally rotatable table, a cylindrical mold horizontally journaled in radial relation to said table and having a hollow outer wall, means for rotating the mold on its axis coincident with the rotation of the table, a hollow shaft supporting said mold, a water feed pipe carried by said table and extending through said hollow shaft and directing a supply of water to the hollow mold, means for evacuating the water from said mold, and means for pouring the metal into said mold during its rotation.

12. A molding machine comprising a

horizontally rotatable table, a hollow shaft adapted to rotate said table, a water supply connected with said hollow shaft, a horizontal journal support arranged upon said table in radial relation to the axis of rotation of the table, a water jacketed cylindrical mold having a hollow shaft extending through said journal, a water pipe extending through the hollow mold shaft and having branches leading to the cylindrical water chamber of the mold, said water pipe being connected with the vertical hollow shaft, means for rotating the cylindrical mold upon its axis coincident with the rotation of the table, and means for feeding molten metal to the mold.

13. A molding machine comprising in combination, a base having a horizontal circular trackway, a shaft vertically journaled in said base centrally of said vertical track, a horizontal table secured to said vertical shaft, roller supports mounted on said table and running on said circular track, cylindrical molds horizontally journaled and resting upon said rollers and rotated thereby, said molds being arranged in radial relation to the vertical axis of the table, journals supporting said molds, a pouring trough centrally arranged on the table and having extensions directing the molten metal into the molds, means for carrying the molten metal inwardly to the outward end of the mold, and means for cooling the mold.

WILLIAM JOHN PERRY.