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MACHINE FOR MOLDING PRINTING BLOCKS.
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1,020,023.

Patented Mar. 12, 1912.

Fig. 1.

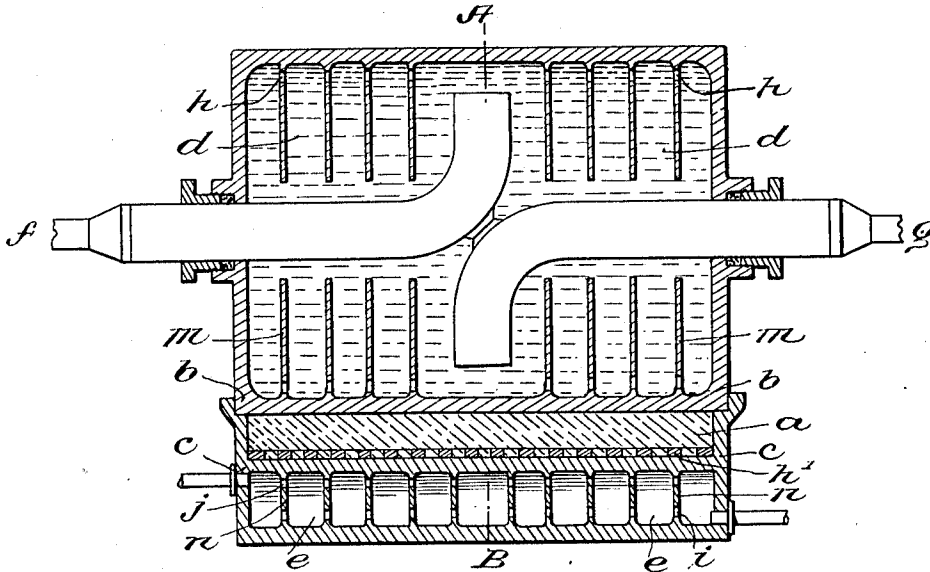
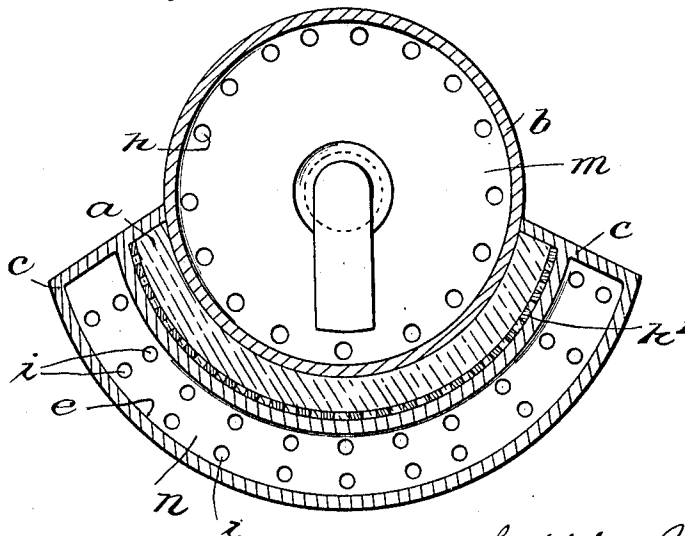


Fig. 2.



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PHILIPPE BUNAU-VARILLA, OF PARIS, FRANCE.

MACHINE FOR MOLDING PRINTING-BLOCKS.

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Specification of Letters Patent.

Patented Mar. 12, 1912.

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To all whom it may concern:

Be it known that I, PHILIPPE BUNAU-VARILLA, a citizen of the Republic of France, residing at Paris, France, have invented
5 Improvements in Machines for Molding Printing-Blocks, of which the following is a specification.

This invention relates to improvements in printing plate casting machines such as
10 autoplates and the like, and particularly to the cooling means used therein and has for its object to accelerate the exchange of heat between the metal in the mold and the cooling medium whereby the output of such machines may be increased while producing
15 better and more uniform plates.

In my prior Patent No. 912,228, dated Feb. 9, 1909, on which the present invention is an improvement, I have described and
20 claimed a machine for casting printing blocks in which there is a revoluble hollow cooling cylinder provided with internal radial longitudinally extending ribs and forming one wall of a mold and a concave
25 member adjacent thereto forming a space between its concave surface and the exterior wall of the cylinder for receiving the molten metal. While this construction produces plates or blocks of particularly uniform
30 character and free from blow-holes, yet the rapidity with which the printing blocks can be turned out is not all that is desired. In this construction the cooling chamber is subdivided by plates arranged radially and
35 longitudinally of the axis of the cooling chamber with the result that the ascension of the warm water and vapor to the highest point in the chamber is retarded and the rapid cooling of the mold is prevented.
40 Since the rate of output of the mold depends on the rate of cooling, it is apparent that the output is also retarded by this form of construction.

The present invention overcomes this objection by providing a particular arrangement of the heat radiating ribs in the cooling chamber whereby they are better adapted to accelerate the exchange of heat between the metal in the mold and the cooling fluid and thereby increase the rate of output of the molding machine, a result which depends upon the rapidity with which the molten metal poured into the mold can be cooled sufficiently to set.

55 According to this invention, the walls of both parts of the mold in contact with the

cooling medium are provided with a plurality of thin vertical radiating plates preferably perforated and formed integral with the said walls and arranged normal or substantially normal thereto so that the cooling medium, such as water, heated by contact therewith and by contact with the wall of the mold left free between consecutive plates, may be carried off by the water rising and giving free access to a fresh supply of cooling liquid.

By way of illustrating one mechanical embodiment of my invention, reference is had to the accompanying drawings, in which,

Figure 1 is a view in longitudinal section of a casting machine or "autoplate" provided with my improvements and Fig. 2 is a transverse sectional view taken on the line A—B of Fig. 1.

The part of the autoplate in which the fused metal *a* is conveyed under pressure is limited above by a convex cylindrical wall *b* and below by a concave cylindrical wall *c*, the said walls respectively combined with those of chambers *d* and *e* for the circulation of cooling liquid. Chamber *d* is capable of turning on a hollow axle *f—g* adapted to receive and deliver the cooling liquid, while the chamber *e* is disposed in such a manner as to be able to be lowered before the rotation of chamber *d*. The imprint *h'* constituting the mold proper is placed in the part *a*.

The radiating plates forming this invention are designated *m* for the chamber *d* and *n* for the chamber *e*. In like manner, the plates *n* are independent and sub-divide the chamber *e* into so many compartments in communication through holes *i* and *j* for the arrival and departure of cooling liquid, but in which the warm water is very rapidly replaced by cooling liquid rising in each of them without any obstacle.

In operation, the cooling liquid enters the stationary conduit *g* from which it is delivered to the lowermost part of the revoluble chamber *d*, there to be distributed over the wall *b* through peripheral openings *h*. This liquid receives heat from the wall *b* of the chamber *d* and also from the vertical heat conducting plates *m* and escapes at the upper part of the chamber *d* through pipe *f*. By reason of the vertical arrangement of these plates the heated liquid and its vapor have an unobstructed passage away from

the source of heat and therefore the removal of heat from the mold is effected to the best advantage by the combined action of the heat conducting plates and connection currents of the liquid. The mold is thus cooled rapidly and in a regular and uniform manner, thereby assuring to the plates hardness, resistance and homogeneity in all its parts.

10 While I have described vertical and parallel plates, the strict vertical position of these plates is not absolutely necessary and in cases where it is not desired to produce same by casting, they may be cut out of the mass itself in the form of a helix of very small pitch. In this case, the interior surface of the part cylinder forming the upper part of the mold will resemble that of a nut. As to the radiating plates formed in one piece with the inner wall of the lower part of the mold, they will likewise be vertical and formed by casting or by being cast out of the mass or metal of the wall.

25 In the case of hand-casting machines where the two walls of the mold are formed by half-cylinders having their axes vertical, the radiating plates are arranged vertically, their principal plane is accordingly parallel to the axis of the cylinder instead of at right angles thereto, as in the case of "auto-plate" machines. In the case of the usual type of hand molds where the fixed part of the mold is formed by a vertical convex half-cylinder along the inner wall of which water conveniently inclosed in a jacket of

suitable form—is arranged to circulate, the vertical radiating plates are fixed to the inner wall of said part and are in the path of the stream of water which is admitted at the bottom and escapes at the top along with the stream that may be evolved. The front wall of such a mold is usually not cooled by water, the air serving as cooling fluid in that case. Vertical plates made in one with the wall in question and in contact with the external air are arranged on such wall.

What is claimed is:—

In a machine for casting printing plates, the combination of a horizontal revoluble cylindrical metal mold section, internal heat conducting ribs dividing said cylindrical section into transverse cooling chambers which communicate with each other through peripherally located openings in said ribs, and means for delivering a cooling liquid to the lower portion and for withdrawing the heated liquid from the upper portion of said section, and a lower mold section adjacent thereto having a cooling compartment, and perforated heat conducting ribs dividing said compartment into vertical chambers through which a cooling liquid is adapted to pass.

Signed at Paris, France, this 18th day of October 1910.

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Witnesses:

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