A. W. F. GUEST.

TYPOGRAPHICAL CASTING MACHINE.

APPLICATION FILED MAY 25, 1914.

1,269,598.

Patented June 18, 1918.

2 SHEETS—SHEET 1.

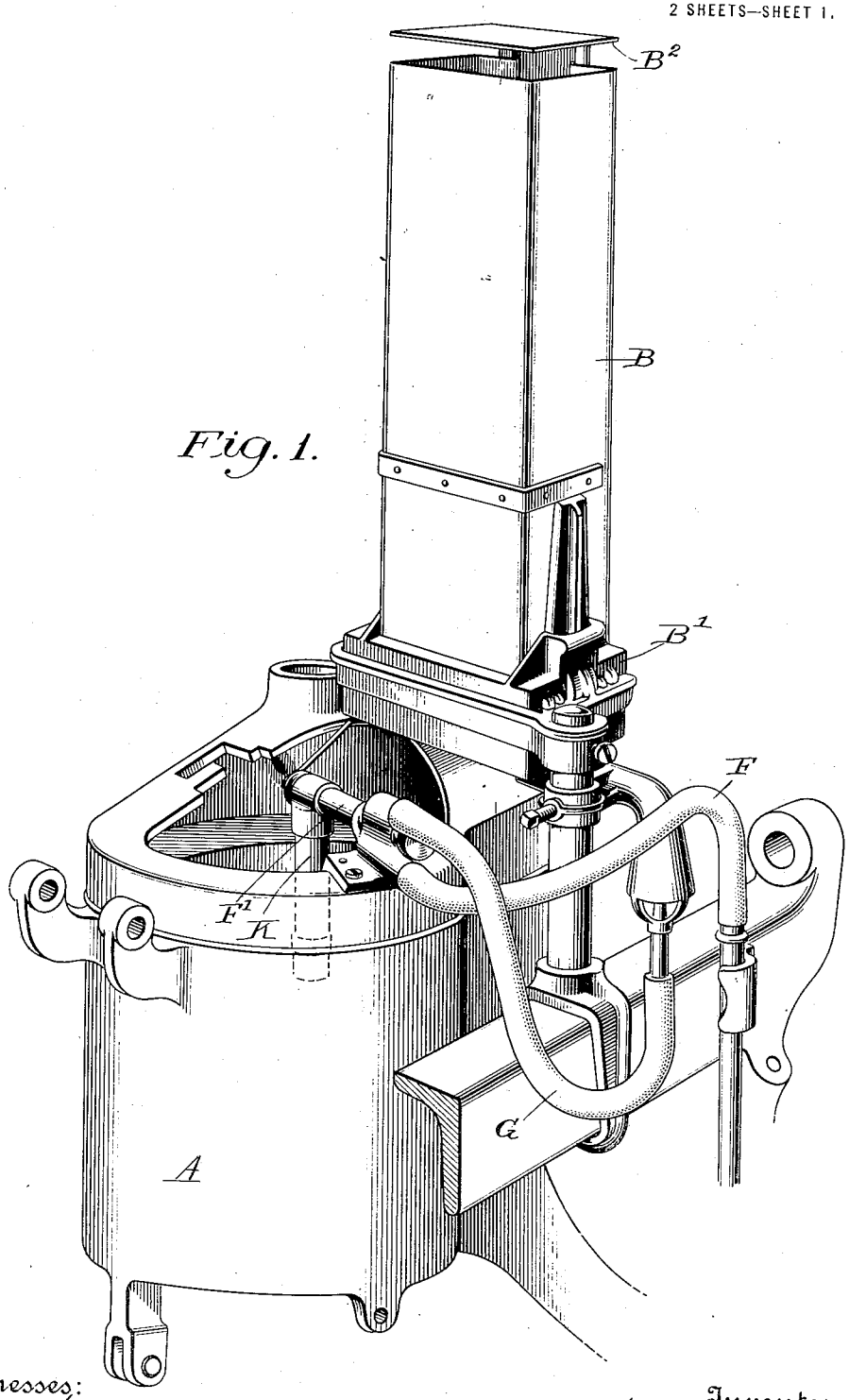


Fig. 1.

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By his Attorneys
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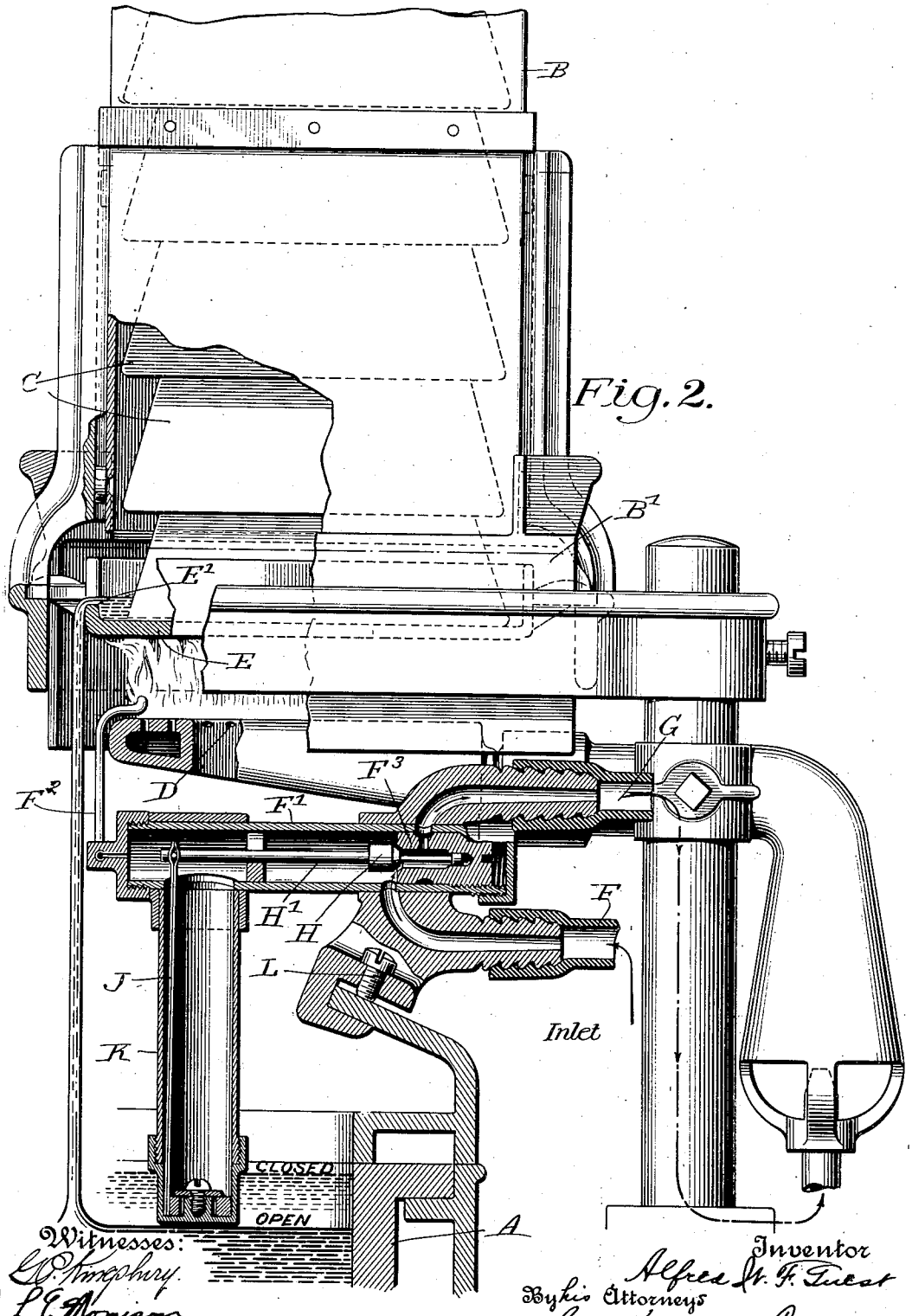


Fig. 2.

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UNITED STATES PATENT OFFICE.

ALFRED W. F. GUEST, OF BROOKLYN, NEW YORK, ASSIGNOR TO MERGENTHALER LINOTYPE COMPANY, A CORPORATION OF NEW YORK.

TYPOGRAPHICAL CASTING-MACHINE.

1,269,598. Specification of Letters Patent. Patented June 18, 1918.

Application filed May 25, 1914. Serial No. 840,867.

To all whom it may concern:

Be it known that I, ALFRED W. F. GUEST, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Typographical Casting-Machines, of which the following is a specification, reference being had therein to the accompanying drawing.

My invention relates to typographical casting machines, such as linotype machines of the general organization represented in Letters Patent of the United States, No. 436,532, to O. Mergenthaler, wherein molten metal is delivered at intervals by a pump or equivalent mechanism into a mold against a line of matrices to produce printing bars or slugs. In order to secure the most advantageous action of these devices, it is desirable that the molten metal in the pot shall be maintained at a substantially uniform level, and at practically the same temperature.

The purpose of my improvements is to maintain the required level and temperature in the ordinary pot by supplying thereto molten metal at such times and in such quantities as may be required. To this end I provide a supplemental container or receptacle adapted to hold a considerable supply of solid metal and equipped with heating appliances, whereby the metal therein is gradually or progressively melted and permitted to run into the pot. A somewhat similar arrangement is shown in U. S. Letters Patent to J. S. Thompson, No. 723,073, but therein the action of the supplemental melting devices is controlled by a float resting on the metal in the pot, so that the height of the metal governs the delivery of the additional supply. In the present instance I employ thermostatic devices to determine the supply of fuel to the supplemental burner, these devices being preferably arranged so that when the metal is at or below its normal level, the fuel will be supplied freely, and when it rises above its normal level, the supply will be correspondingly diminished.

In the accompanying drawings, I have shown my invention only in preferred form and by way of example, and as applied to the kind of machine already indicated, but obviously many changes and variations may be made therein, and in its mode of application, which will still be comprised within its spirit. Thus, the specific construction may be modified to meet different conditions, and it may be adapted to other forms of typographical machines, such for instance as machines which cast type and the like, instead of slugs or bars. Generally speaking, I desire it to be understood that I do not limit myself to any specific form or embodiment, except in so far as such limitations are specified in the claims.

Referring to the drawings:

Figure 1 is a perspective view of the melting pot, etc., of a linotype machine, having my improvements embodied therein; and

Fig. 2 is a vertical section thereof, on an enlarged scale and partly broken away.

The pot A is of the usual construction and is heated by one or more burners thereunder (not shown) to keep the contained metal in molten condition. The supplemental chamber or magazine B, with its cover B^2, is mounted in a suitable frame B^1 above the pot and is designed to hold a considerable supply of solid type metal in blocks or pigs C, which feed downward by gravity. The lowermost pig rests within the melting cup or plate E, which is subjected to the heating influence of the auxiliary burner D, and the gradually fused metal flows therefrom through the orifice E^1 into the pot A. The parts so far described are or may be of any usual or preferred construction, except as hereinafter specified, and in themselves constitute no part of my present invention.

The fuel or gas for the burner D enters through the pipe system F into the chamber F^1, where it is divided, one portion passing to the constantly burning pilot burner F^2 at one end of the chamber, and the other and greater portion passing through the outlet F^3 and pipe system G to the burner D.

The flow of fuel through the outlet F^3 is governed by the valve H, the stem H^1 of

which is connected to the thermostatic arm or rod J. This thermostat may be of any desired construction, but is preferably constituted of two connected parallel strips of metal (for instance bronze and steel), having different coefficients of expansion, so that as its temperature is varied, the arm will bend to one side or the other, in the manner well understood in the art. The thermostat J is preferably contained in the vertical tube K, which projects partially into the pot A, the tube being adjustably arranged, as for instance by screws L, so that its lower end will be substantially at or slightly above the normal level of the molten metal in the pot. It will be noted that in the present instance the illustrated capability of adjustment of the tube is somewhat limited, but obviously this can be increased to any extent desired to meet the conditions encountered; for instance, the normal level of the metal in the pot may vary considerably in different machines, and this of course would necessitate the location of the thermostat in a higher or lower position to correspond therewith.

The operation of the improved apparatus will now be readily understood. When the molten metal is at its proper level (marked "Open" in Fig. 2), the thermostatic arm J occupies its normal position, the valve H is opened, and the fuel passes freely to the burner D. As the lowermost pig C is fused, the metal passes into the pot, and the level of the metal therein rises, say for instance to that indicated by the word "Closed". Thereby the heating effect on the tube K and thermostat J is materially increased, and the latter turns or bends to the right, thereby moving the valve H and closing the orifice F^3. This cuts off the fuel supply to the burner D, the fusion of the pig C is diminished, and the level of the metal in the pot A is again lowered. Thereupon the arm J moves toward its normal position, and gas is again permitted to pass through the orifice F^3. It will be understood that the proper quantities of fuel delivered to the burner D, namely the intermediate quantities between full supply and no supply, depend upon the position of the valve H, this in turn being controlled by the heating effect on the tube K of the molten mass at its different levels in the pot.

It will be noted that in accordance with my invention the orifice E^1 through which the fused metal flows from the melting cup E into the main casting pot A is located a short distance above the bottom of the cup. This is advantageous in that there is produced in the cup a puddle of molten metal in which the solid pigs C are partially immersed, thus greatly facilitating the melting of the solid pigs as the auxiliary burner is turned off and on automatically under the influence of the thermostat.

As previously stated, I have shown my invention only in preferred form and by way of example, and as applied to a particular style of typographical casting machine, but many alterations and modifications therein, and in its mode of adaptation, will suggest themselves to those skilled in the art, without departing from its scope.

Having thus described my invention, its construction and mode of operation, what I claim and desire to secure by Letters Patent of the United States, is as follows:

1. In a typographical casting machine, the combination of a main casting pot, an auxiliary chamber to contain the supply metal, a burner arranged beneath the auxiliary chamber, a fuel supply system for the burner, and means for controlling the flow of the fuel to the burner, the said means including a valve, and a thermostat positively connected to the valve and adapted to move it positively to open and closed positions under the influence of the heat of the molten metal in the main casting pot.

2. In a typographical casting machine, the combination of a main casting pot, an auxiliary chamber to contain the supply metal, a burner arranged beneath the auxiliary chamber, a fuel supply system for the burner, and means for controlling the flow of the fuel to the burner, the said means including a valve, and a thermostat comprising two connected strips of metal having different coefficients of expansion and positively connected to the valve and adapted to move it positively both to open and closed positions under the influence of the heat of the molten metal in the main casting pot.

3. In a typographical casting machine, the combination of a main casting pot, an auxiliary chamber to contain the supply metal, a burner arranged beneath the auxiliary chamber, a fuel supply system for the burner, and means for controlling the flow of the fuel to the burner, the said means including the horizontal tube F^1 having the outlet opening F^3, the vertical tube K communicating with the tube F^1 and disposed within the main casting pot, the valve H slidably arranged in the tube F^1 and controlling the passage of the fuel through the outlet opening F^3 and formed with the elongated stem H^1, and a thermostatic device located within the tube K and comprising the connected strips of metal J having different coefficients of expansion and operatively connected to the valve stem H^1.

4. In a typographical casting machine, the combination of a main casting pot and mechanism for feeding molten metal thereto, said mechanism including a melting cup to contain the supply metal and provided

with a constantly exposed outlet opening extending through the vertical wall of the cup terminating above the bottom thereof, so as to provide a dam over which the molten metal must flow from the melting cup into the main pot, a burner located beneath the melting cup, and means controlled by the level of the molten metal in the main casting pot to regulate the supply of fuel to the burner.

In testimony whereof, I have affixed my signature in presence of two witnesses.

ALFRED W. F. GUEST.

Witnesses:

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MARY BRANDT.