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Patented Nov. 7, 1899.

D. Z. BORNE & J. FREY.
TYPE CASTING MACHINE.

(Application filed Apr. 29, 1899.)

(No Model.)

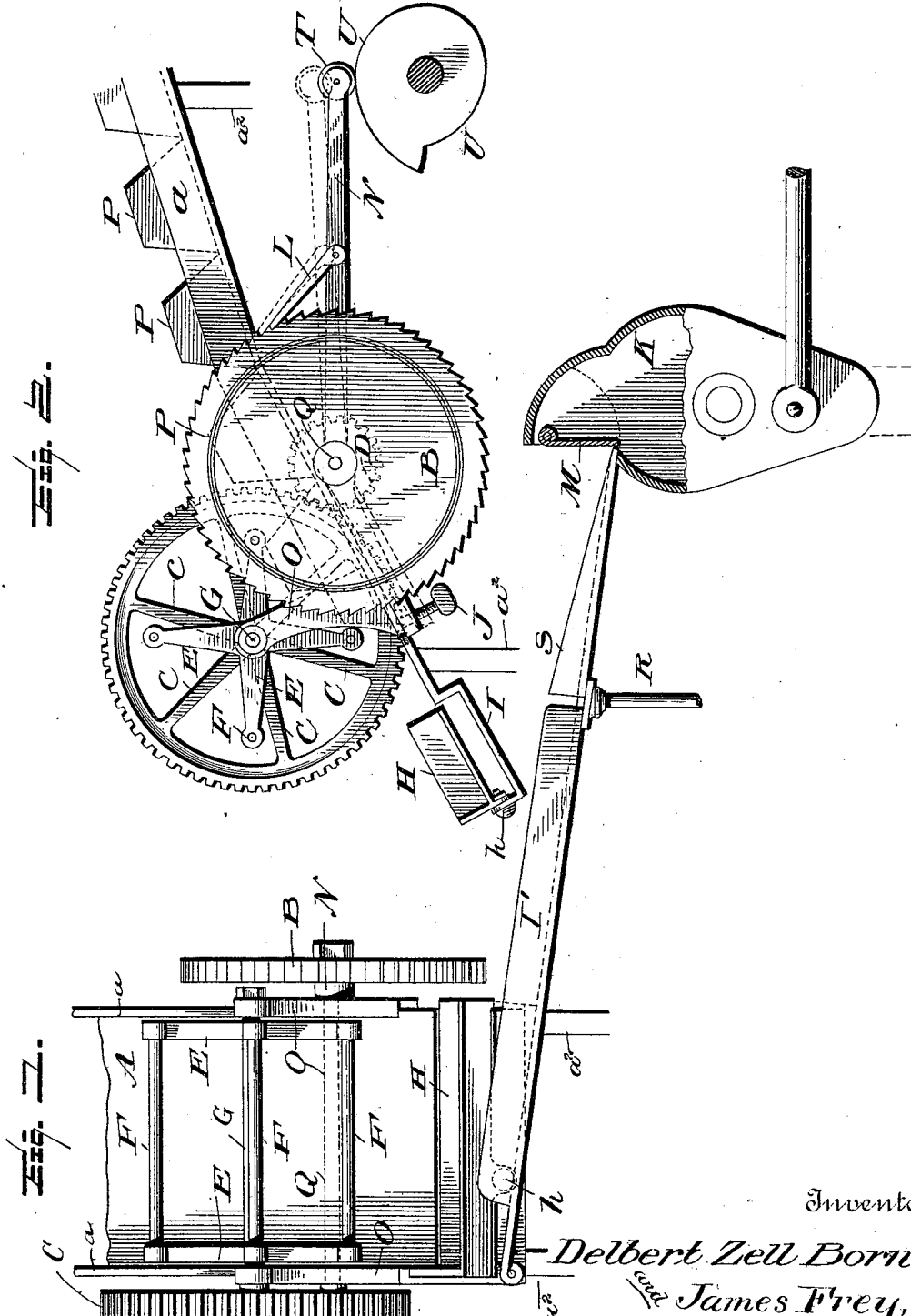


Fig. 1.

Fig. 2.

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TYPE-CASTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 636,622, dated November 7, 1899.

Application filed April 29, 1899. Serial No. 715,072. (No model.)

To all whom it may concern:

Be it known that we, DELBERT ZELL BORNE and JAMES FREY, of Findlay, Ohio, have invented certain Improvements in Type-Casting Machines, of which the following is a specification.

This invention relates to a feed mechanism to be employed in connection with the so-called "linotype-machines" for supplying solid metal to the melting-pot to replace the molten metal discharged therefrom.

Among other objects it is the object of the invention to provide a new and improved mechanism for accomplishing this purpose which will be automatic and require no attention except at long intervals of time, which will be positive and efficient in operation, and which will be simple and inexpensive.

A further object is to so construct the mechanism that it will be readily applicable to known linotype-machines—such, for instance, as the Mergenthaler machine, described in Letters Patent No. 436,532, granted September 16, 1890.

A further object is to provide means for regulating the speed of feed relative to the discharge of molten metal from the melting-pot.

A further object is to so construct the mechanism and melting-pot that the former can be located wholly without the latter and the melting-pot be kept closed except at the moment of entrance thereto of a pig of metal.

A further object is to generally improve and simplify the construction of such mechanism.

With such objects in view the invention is embodied in the parts, arrangement, and combinations of parts hereinafter described, and particularly set forth in the claims.

In the accompanying drawings we have shown a form of mechanism embodying our invention, but desire it to be understood that we do not limit the improvements in their useful applications to the particular construction which for the sake of illustration we have therein delineated.

In said drawings, Figure 1 is a front elevation of mechanism illustrating the invention. Fig. 2 is a side elevation thereof.

Referring to the drawings, A indicates an

inclined plane or slide in or upon which the pigs of metal to be fed to the melting-pot are placed and in or on which they slide by gravity toward the delivery-transmitter, (indicated at E.) The slide A is shown provided with side retaining flanges or pieces *a*. Any suitable support may be provided for the slide A to hold it in proper relation to the melting-pot of the machine with which the feed mechanism is to be used. In the drawings we have shown simply uprights *a*². Journalled in brackets *o*, conveniently supported by the slide at or near its lower end and located above the same, is a shaft G, to which is fixed at one end a gear-wheel C. Fixed on said shaft between said brackets *o* is a delivery means in the form of a turnstile, comprising the separated spiders E and bars or rods F, connecting the ends of the arms of the spiders. This turnstile is rotated step by step and admits one bar or pig of metal at a time to each of its sections in the course of each revolution and answers the double purpose of forcing the pig admitted between its bars F forward to final delivery and holding back the other pigs on the slide A until proper time for their delivery.

Q indicates a shaft journalled in suitable bearings conveniently supported by the slide A beneath the same. On this shaft is fixed a gear-pinion D, which meshes with the gear-wheel C for rotating the same. Also fixed on the shaft Q, but readily removable therefrom, conveniently at the end opposite the pinion D, is a ratchet-wheel B, and loosely fulcrumed on the shaft adjacent the ratchet-wheel is a lever N, carrying a pawl L, engaging the teeth of the ratchet-wheel. The lever carries at or near its outer end an antifriction-roller T, adapted to be engaged to rock the lever on its fulcrum by a suitable means, such as a cam U. This cam may be one of the cams forming part of the operating mechanism of the linotype-machine, with which the mechanism is to be employed. The lever at its inner end extends beyond the fulcrum and carries a set-screw J, adapted to engage a fixed part, such as the slide A, and limit the downward movement of the outer end of the lever toward the cam U. By this means it will be seen the length of movement of the

lever can be regulated, and consequently the amount of rotation imparted to the ratchet-wheel B, thus adapting the latter to be moved the space of one or more teeth each time, according to the adjustment of the screw J.

At the end of the slide A and adapted to receive the pigs delivered therefrom by the turnstile is a tray H, which is eccentrically pivoted at *h* and which is so weighted as to normally maintain the substantially horizontal position indicated in full lines in Fig. 1. The tray when it has received a pig is thereby tilted, when the pig is precipitated by gravity onto an inclined way I, which leads to the melting-pot, (indicated at K.)

The melting-pot in the linotype-machine above referred to is moved backward and forward a slight distance during the casting part of the machine's functions, and to permit this motion of the pot without affecting the proper delivery of the pig thereto by the slideway I we have shown the latter constructed of a fixed section I', suitably supported, and a movable section S, which latter is attached to and moves with the pot K. Its free end is conveniently supported in proper alinement with the fixed section I by the support R. The pot K is provided with a freely-swinging door or gate M opposite the end of the slideway I, which the pig swings in on entering the pot and which immediately swings back to its normal position, closing the entrance to the pot, thus effectually keeping the entrance closed and avoiding the splashing of the molten metal from the pot and also assisting materially in retaining a uniform degree of heat in the pot.

In the construction shown the pinion D and gear C are proportioned as one to four, and the turnstile has four rods or bars F. Thus the gear-wheel C, and consequently the turnstile, makes one-fourth of a revolution to each revolution of the pinion D. The number of teeth in the ratchet-wheel bears a certain relation to the number of lines of type required to make the same weight of metal as the pig. For example, nonpareil, thirteen-em measure, requires a ratchet of fifty-eight teeth; minion, forty-eight teeth; brevier, forty-four teeth, &c. To meet this requirement, ratchets to suit the several sizes of type will be supplied, one of which will be replaced by another as the machine is changed for different sizes.

If double-measure matter is to be set, the lever N can be so adjusted by the thumb-screw J, as above indicated, that the pawl will ride over two teeth at each return or downward movement of the lever and advance the ratchet the space of two teeth at its next forward movement.

The operation of the machine, it is believed, has been made clear by the above description.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. The combination with a melting-pot, of

mechanism for supplying solid metal to the pot to replace molten metal discharged therefrom, comprising a slide to hold the pigs, a slide adapted to receive the pigs from said first-mentioned slide and convey them to the melting-pot, means for delivering the pigs from said first to said second slide, and means for operating said delivery means, substantially as described.

2. The combination with a melting-pot, of mechanism for supplying solid metal to the pot to replace molten metal discharged therefrom, comprising a slide adapted to hold the pigs, means for delivering a part of the pigs therefrom and holding the other pigs in the slide, and mechanism for operating said delivery means, substantially as described.

3. The combination with a melting-pot, of means for supplying solid metal thereto to replace molten metal discharged therefrom comprising a slide for holding the pigs, a turnstile for delivering said pigs intermittently from said slide, and mechanism for operating said turnstile, substantially as described.

4. In a mechanism for the purpose described, the combination with a slide, adapted to hold the pigs, a turnstile for delivering said pigs intermittently from said slide, and means for operating said turnstile comprising a ratchet, a gear connected with the turnstile and operated by said ratchet, a lever and a pawl for operating said ratchet, and a device for operating said lever, substantially as described.

5. In a mechanism for the purpose described, the combination with a melting-pot and means for discharging molten metal therefrom, of automatic means for supplying solid metal thereto to replace the molten metal discharged, and means for regulating the speed of the supply relative to the discharge, comprising a ratchet, a pawl-lever, a pawl carried thereby, and a stop for limiting the movement of the lever, substantially as described.

6. In a machine for the purpose described, the combination with a movable melting-pot, of a slide for delivering pigs thereto comprising a fixed section and a movable section moving with said pot, substantially as described.

7. In a mechanism for the purpose described, the combination of a slide, a tilting tray, means for delivering the pigs from said slide to said tray and a slide adapted to receive the pigs from said tray, substantially as described.

8. In a mechanism for the purpose described, the combination of an inclined slide, a turnstile for delivering the pigs from said slide, mechanism for operating said delivery means including a ratchet, an operating-lever and a pawl therefor, means for moving said lever, and an adjustable stop carried by the lever and adapted to engage a fixed part for limiting the movement of said lever.

9. In a mechanism for the purpose de-

scribed, the combination with a melting-pot
having a vertical feed-opening, of means for
delivering pigs thereto, and a freely-movable
vertical door adapted to admit the pigs to the
5 pot and then close the entrance-opening, sub-
stantially as described.

In testimony whereof we have hereunto set

our hands, this 19th day of April, A. D. 1899,
in the presence of two attesting witnesses.

DELBERT ZELL BORNE.
JAMES FREY.

Witnesses:

SILAS E. HURIN,
KATHERINE DOWLING.