T. S. HOMANS.

CASTING MECHANISM FOR TYPOGRAPHICAL MACHINES.

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1,290,201. Patented Jan. 7, 1919.

Fig. 1.

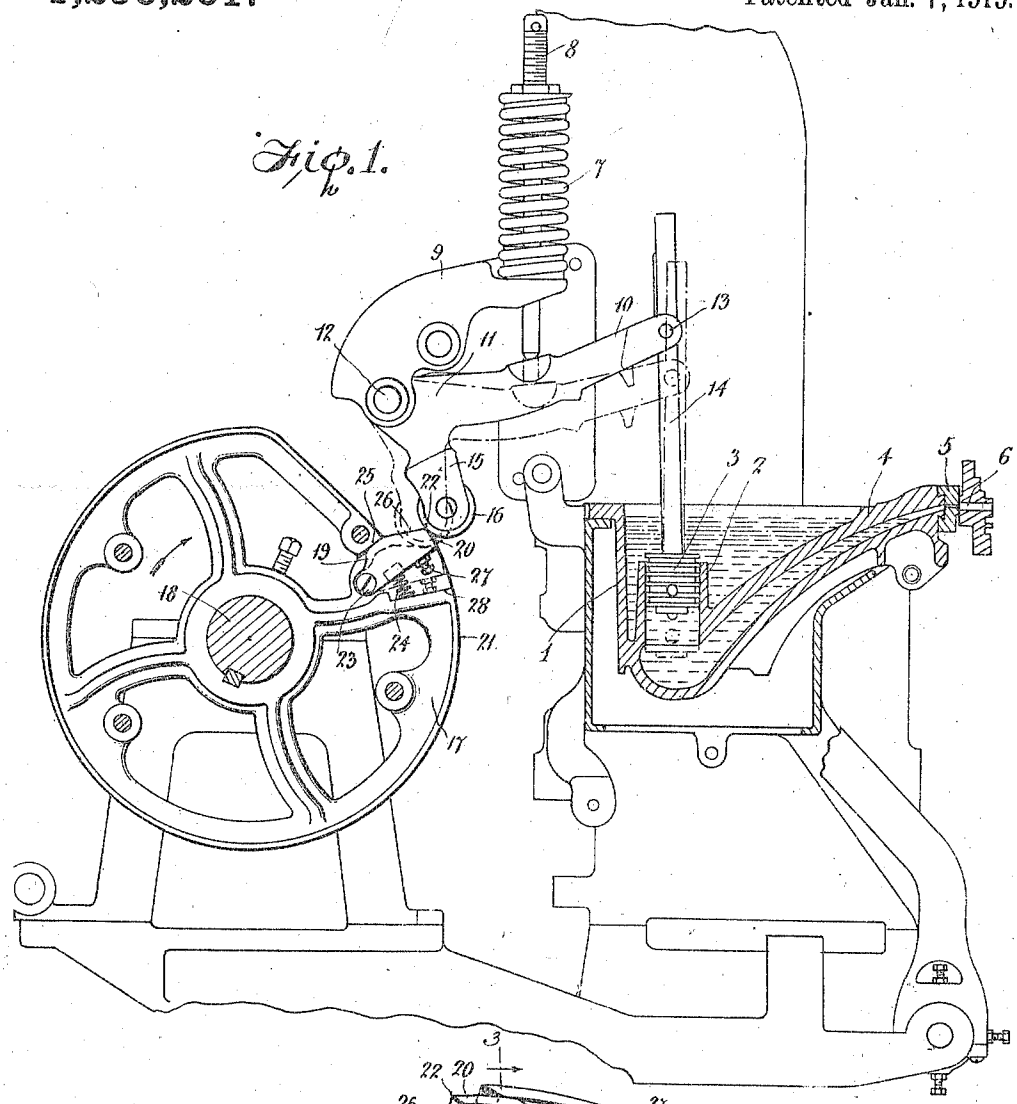


Fig. 2.

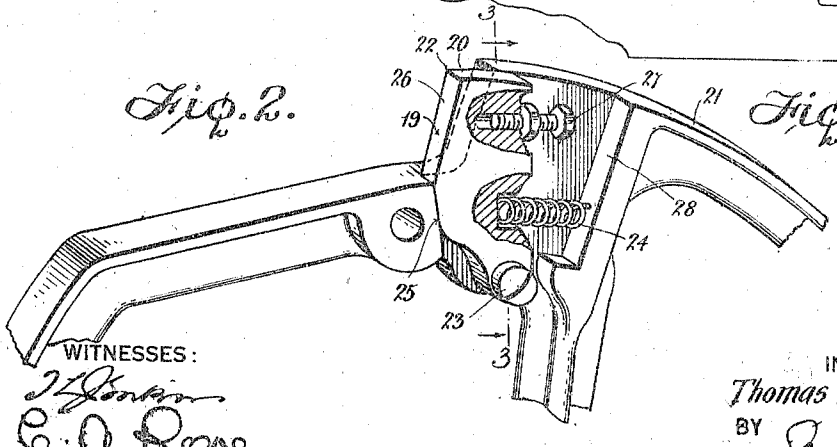
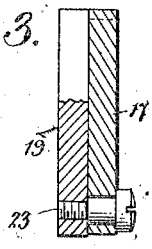


Fig. 3.



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CASTING MECHANISM FOR TYPOGRAPHICAL MACHINES.

1,290,201. Specification of Letters Patent. Patented Jan. 7, 1919.

Application filed August 25, 1917. Serial No. 188,171.

To all whom it may concern:

Be it known that I, THOMAS S. HOMANS, a citizen of the United States, residing at Hempstead, in the county of Nassau and State of New York, have invented new and useful Improvements in Casting Mechanism for Typographical Machines, of which the following is a specification.

This invention relates to improvements in typographical machines, and more especially to those of the class having a mold to which a line of composed matrices is presented and a metal pot which injects a charge of molten metal into the mold to cast a slug having a type face bearing characters corresponding to those of the matrices.

The primary object of the invention is to provide improved actuating or controlling means for the metal injecting means whereby the metal will be introduced quickly into the mold thus insuring complete filling of the mold before solidification of the metal can occur. This will cause the molten metal also to conform minutely to the character faces of the matrices and hence the slug will have a character face which is complete and conforms sharply to every detail of the character faces of the matrices. This quick injection of the molten metal is accomplished by the present invention although the controlling cam or equivalent part has a relatively slow movement and moreover it does not interfere with the backward rotation of the controlling cam or equivalent part, as sometimes becomes necessary in machines of this class.

To these and other ends the invention consists in certain improvements and combinations and arrangements of parts, all as will be hereinafter described in detail, the features of novelty being pointed out particularly in the claims.

In the accompanying drawing:—

Figure 1 represents a section taken through the casting portion of a typographical machine embodying the present invention.

Fig. 2 is a perspective view partly in section, of a portion of the controlling cam for the metal injecting pump, and

Fig. 3 represents a section on the line 3—3 of Fig. 2.

Similar parts are designated by the same reference characters in the several views.

The present invention is applicable generally to typographical machines of different classes employing a pump or equivalent means for introducing the molten metal into a mold to form a slug. In the present instance the invention is shown applied to a machine of the linotype class and the preferred embodiment of the invention is shown and will be hereinafter described in detail. It is to be understood, however, that the invention is not restricted to the precise construction and arrangement shown, as equivalent constructions are contemplated and will be included within the scope of the claims.

In the present instance, 1 represents a metal pot, such as commonly used in machines of the linotype class, this pot containing a supply of molten metal which is used in the casting of the slugs and the metal pot has a cylinder 2 and a piston 3 reciprocable therein, this cylinder and piston operating upon the descent of the piston to force a body of the molten metal through the spout 4 and the mouth 5 of the pot into a mold 6, it being understood that the mold is adapted to receive a line of composed matrices at the side thereof opposite to the mouth 5 of the metal pot.

In machines of this class the metal injecting piston 3 is caused to reciprocate at appropriate intervals to inject molten metal into the mold by a spring 7, the upper end of which is attached to the rod 8 and the lower end of which is attached to a part 9 of the stationary frame of the machine. The lower end of the rod 8 depends on an arm 10 of a bell crank lever 11, this lever 11 being pivoted at 12 to the frame 9 and the outer portion of the arm 10 is pivoted or otherwise relatively connected at 13 to the actuating rod 14 for the metal injecting piston 3. The other arm 15 of the bell crank lever carries a roller 16 which in machines of this class coöperates with a cam 17 mounted on the main cam shaft 18 of the machine, this cam rotating slowly in the direction indicated by the arrow in Fig. 1. In machines of this class as usually constructed, the cam 17 has a depression in its periphery into which the roller 16 moves when the depressed portion of the cam reaches the roller. The depressed portion of the cam in such machines as heretofore constructed was an integral part of the cam and the slope of its wall, which controlled the movement of the roller 16, was necessarily gradual in order

that it would not interfere with the backward rotation of the cam shaft when such became necessary, and owing to the relatively slow speed at which the cam rotated the descent or metal injecting stroke of the piston was necessarily slow. Experience showed that in such machines frequently the mold was only partially filled be ause the relatively slow injection of the molten metal permitted the metal to solidify before filling of the mold, and hence an imperfect slug resulted. Furthermore, in such machines the type face of the slug which was cast against the character faces of the matrices lacked sharpness of detail and was otherwise imperfe t owing to the chilling or solidification of the metal prematurely during the relatively slow introduction of the metal into the mold.

The present invention provides relatively simple and efficient means for causing a relatively rapid or quick injection of the metal into the mold, notwithstanding the relatively slow speed at which the actuating or controlling cam rotates, and this is accomplished without interfering with backward rotation of the cam when su h becomes necessary. Preferably, and as shown, the cam is provided with a pawl 19, the outer end, 20, of which forms a continuation of the higher part 21 of the cam and is arranged to receive the roller 16, and this pawl is movable relatively to the cam under the influence of the spring 7 which acts to force the roller 16 inwardly or toward the center of the cam, whereby when the roller 16 passes the edge or corner 22 of the pawl the latter will swing aside and permit the roller 16 to move quickly toward the center of the cam, and in consequence causing a quick metal-injecting stroke of the piston 3. As shown, the pawl is pivoted to the cam at 23, and a compression spring 24 acts on the pawl to move it to its normal operative position and to yieldingly retain it in such position. The pawl is limited in its motion under the influence of the spring 24 by the wall 25 of the cam, which serves as an abutment for the pawl and the surface of the pawl with which the roller coöperates after the roller has passed the corner 22 thereof slopes at a suitable angle. The spring 24 which acts on the pawl to yieldingly hold it in its normal position is of such a strength that it will be overcome by the superior power of the spring 7 the moment the engaging portion of the roller 16 passes the edge or corner 22 of the pawl, and hence the pawl will be pushed aside by the roller 16 as this roller rides inwardly along the sloping surface 26 of the pawl. This results in a quick stroke of the metal injecting pump whereby the advantages hereinbefore referred to are secured. The extent of deflection of the pawl by the roller 16 is limited, preferably, by an adjustable stop or set screw 27 which, as shown, is threaded in the pawl and is arranged to abut against a shoulder 28 on the cam. Should reverse rotation of the cam shaft be necessary, the roller 16 will be brought against the sloping surface 26 of the pawl, and continued reverse rotation of the cam will cause the pawl to swing about its pivot 23 in opposition to the spring 24 until the stop 27 abuts against the shoulder 28. Further deflection of the pawl will then be prevented, but the surface 26 of the pawl will be sloped at such an angle as will permit the roller 16 to ride outwardly thereon until it reaches the high part 21 of the cam.

What I claim is:

1. In casting mechanism for typographical machines having a pump for injecting metal into the slug casting mold, the combination of means normally tending to actuate the pump, a controlling member therefor, and a device carried by said controlling member and movable relatively to said member under the influence of said actuating means for causing a quick stroke of the pump.

2. In casting mechanism for typographical machines having a pump for injecting metal into a mold, the combination of pump actuating means, a controlling cam, and means located at a predetermined point on said cam and movable relatively thereto to cause a quick operation of the pump actuating means.

3. In casting mechanism for typographical machines having a pump for inje ting metal into a mold, the combination of pump actuating means, a controller cam coöperative therewith, and a device carried by the cam and movable relatively thereto under the influence of the pump actuating means to cause a quick operation of the pump.

4. In casting mechanism for machines of the linotype class having a slug mold and a pump for injecting metal into the same, the combination of means normally tending to operate the pump, a controlling cam coöperative with said means, a part carried by the cam and movable relatively to the cam under the influence of said operating means to cause a quick operation of the pump, means for limiting the movement of said movable part in one direction and means for adjusting said limiting means.

5. In casting mechanism for machines of the linotype class, having a slug mold and a pump for injecting metal into the same, the combination of means normally tending to actuate the pump and a coöperative controlling cam having means yieldable under the action of the pump actuating means to permit operation of the pump at a speed greater than that determined by the speed of movement of the cam.

6. In casting mechanism for machines of

the linotype class having a slug mold and a pump for injecting metal into the same, the combination of pump actuating means, and a coöperating controlling cam having a portion of its periphery movable forwardly with respect to the direction of movement of the cam under the influence of the pump actuating means.

7. In a typographical machine having a mold and a pump for injecting metal into it, the combination of pump actuating means, and a coöperative controlling cam having a pawl movably mounted thereon and operative under the influence of the pump actuating means to cause quick operation of the pump.

8. In a typographical machine having a mold and a pump for injecting metal into it, the combination of means tending to actuate the pump, and a coöperative controlling cam having a part yieldable in the direction of movement of the cam under the influence of the pump actuating means.

9. In a typographical machine having a mold and a pump for injecting metal into said mold, the combination of pump actuating means, a cam having a depression, a member located adjacent to said depression and capable of deflection toward an adjacent high part of the cam, and a roller associated with the pump actuating means having means for holding it in coöperation with the cam and operative to deflect said member when the latter is brought into engagement therewith.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

THOMAS S. HOMANS.

Witnesses:
JAMES A. CROMBIE,
HENRY W. COZZENS.