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TYPE SETTING AND LINE CASTING MACHINE

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Fig. 1.

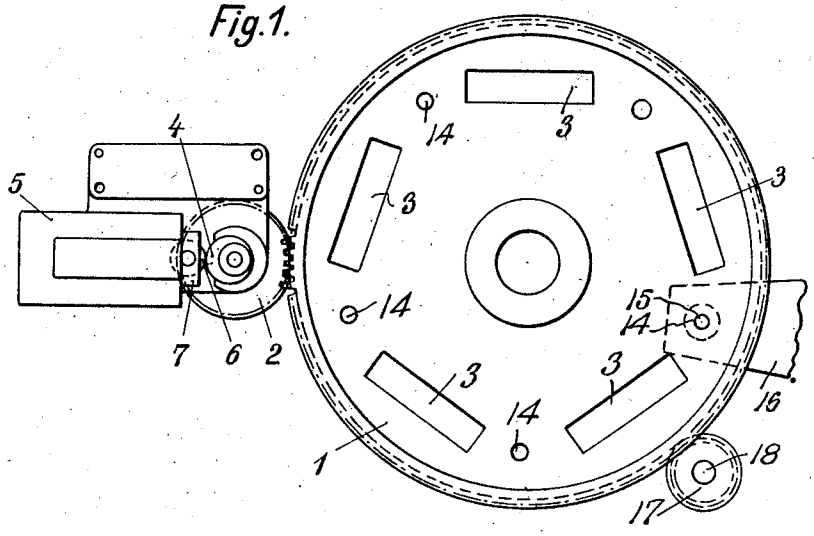
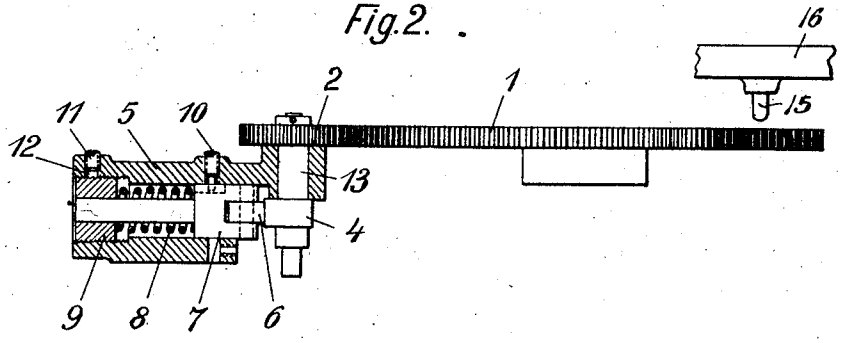


Fig. 2.



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UNITED STATES PATENT OFFICE.

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TYPESETTING AND LINE-CASTING MACHINE.

Application filed January 10, 1925, Serial No. 1,598, and in Germany February 14, 1924.

This invention relates to type setting and type bar casting machines embodying a rotatable mold carrier in the form of a toothed wheel and driven by a toothed wheel meshing with the teeth of said carrier and operative to intermittently advance the carrier to position the molds relative to the casting means and to means to eject the cast type bars from the molds. As is well known there is more or less lost or idle motion between a toothed driver and a toothed driven member and this lost motion becomes more pronounced when the teeth become worn. It is therefore impossible to accurately and correctly position the carrier relative to the casting means and ejecting means which results in defects in the cast type bars and moreover an inaccurate casting position results in a premature wearing out of the matrices.

It is the object of the present invention to overcome the above disadvantages and to provide means for accurately positioning the carrier relative to the casting means and to the means for ejecting the cast lines by the provision of braking mechanism which is operative when the casting wheel approaches either the casting position or the ejecting position, which braking mechanism is gradually applied and is most effectively applied when said wheel reaches said position, thereby maintaining the sides of the teeth of both driving and driven wheels in constant contact so that there will be no free movement of the casting wheel and assuring the accurate positioning of said wheel.

In the drawing accompanying and forming a part of this specification there is shown an embodiment of the invention in which Figure 1 is an elevational view of the casting wheel of a type bar casting machine and the driver therefor, and showing the braking mechanism in connection with the latter, only so much of the machine being shown as is essential to an understanding of the invention; and

Figure 2 is a plan view, partly in section, of the parts shown in Figure 1.

In the embodiment of the invention illustrated there is provided a carrier for the mold, herein termed the "casting wheel", whereby the molds are positioned relative to the casting means and means to eject the cast typebars from the carrier, the carrier being in the form of a rotatable toothed wheel 1 arranged with circularly disposed and equi-distantly spaced mold openings 3. The casting wheel is intermittently rotated through a pinion 17 meshing with the teeth of said wheel, said pinion being fixed to a shaft 18 driven from suitable means. The casting wheel is also adapted to have axial movement to position the same relative to the fused metal carrying pot and away from said position, but as this does not constitute an essential part of the invention illustration and description thereof is not deemed necessary to an understanding of the invention by one versed in the art. Assuming the casting wheel, as shown in Figure 1, has been moved to position relative to the casting means, in which position axial movement is imparted thereto to move it toward a fixed stop member 16. During such movement of the casting wheel one of a series of perforations 14 in the casting wheel intermediate the mold openings 3 is slidably engaged by a pin 15 carried by the stop member whereby the casting wheel and the mold is guided in its movement toward and away from the casting means. In order that the casting wheel will be brought to rest with a perforation 14 in alinement or register with the positioning pin 15, and to assure the accurate positioning of the mold relative to the casting means and the ejecting means for the cast typebar, braking means is provided. This braking means comprises a pinion 2 meshing with the teeth of the casting wheel in somewhat opposed relation to the pinion 17, said pinion 2 being fixed upon a spindle 13 rotatably mounted in a fixed part of the framework. The ratio between the pinion 2 and casting wheel or carrier in the present instance is 5 to 1, although this may be of any desired ratio to suit a particular condition. A cam or eccentric 4 fixed to the pinion shaft 13, which cam is engaged by a roller 6 carried in a bifurcation at the end of a plunger 7 slidably mounted in an extension 5 of the bearing support for the pinion 13, the opposite reduced end of the plunger slidably engaging in a bearing 9 threaded into the end of the plunger support 5. The plunger is forcibly though yieldingly urged in a direction with the roller 6 to engage with the eccentric 4 by a spring 8 enclosed in the plunger support 5 and confined between the shoulder formed by the reduced end of the plunger and the plunger supporting bearing

9. The pressure with which the roller is urged into engagement with the eccentric 4 may be increased or decreased by screwing the bearing 9 into and out from the plunger support 5 thereby increasing and decreasing the tension of the spring 8, the bearing being locked in adjusted position by a set screw 11 threaded into an opening 12 in the plunger support 5 engaging the thread of the bearing. To prevent rotation of the plunger should the same be made of circular form in cross section a set screw 10 is provided with a part to engage in a longitudinal slot in the plunger.

During the initial movement of the driving pinion from the position of rest as indicated in the drawing the roller 6 will ride off from the high portion of the cam gradually reducing the force with which the spring urges the roller into engagement with the cam, which will continue until the pinion has moved through an arc of 180 degrees thereby permitting free and easy rotation of the pinion. After the pinion has been rotated through an arc of 180 degrees the roller 6 will be caused to gradually ride up the high portion of the cam with a consequent gradual increase of pressure of the roller on the cam due to the compression of the spring with the result that there will be a gradual increasing force applied to retard the rotation of the pinion and the maximum force will be applied when the pinion has been given a rotation of 360 degrees or a complete revolution and it reaches its position of rest thereby precluding any independent movement of the casting wheel or carrier and assuring an accurate positioning of the carrier 1 with a perforation 14 therein in alinement with the positioning pin 15 and the molds relative to the casting means and the means to eject the cast type bar from the mold.

Having thus described my invention, I claim:

1. In typebar casting machines and the like, a rotatable toothed mold carrying wheel, means to rotate said wheel relative to the casting and ejecting positions, and means to co-operate with the mold carrying wheel operative to forcibly and yieldingly retard the movement of said wheel as it approaches the casting and ejecting positions.

2. In type bar casting machines and the like, a rotatable toothed mold carrying wheel, a pinion to mesh with the teeth of said wheel, and means to co-operate with said pinion to forcibly and yieldingly retard the movement thereof and of the mold carrying wheel as it approaches its casting or ejecting position.

3. In type bar casting machines and the like, a rotatable toothed mold carrying wheel, a pinion to mesh with said wheel, an eccentric rotatable with the pinion, and means to engage the eccentric to exert a retarding force to the movement of the pinion at a predetermined point in the rotation thereof.

4. In type bar casting machines and the like, a rotatable toothed mold carrying wheel, a pinion to mesh with the teeth of said wheel, and braking means operative to exert a retarding force to the rotation of the pinion at a predetermined point in the rotation thereof, comprising an eccentric rotatable with the pinion, a plunger carrying an eccentric following roller mounted to have movement toward and away from the eccentric, a spring to urge the plunger in a direction to engage the roller with the eccentric, and adjustable means to increase or decrease the tension of the spring.

5. In type bar casting machines and the like, a rotatable toothed mold carrying wheel, a pinion to mesh with said wheel, and means to exert a retarding force upon the pinion to the movement thereof at the termination of each revolution thereof.

6. In type bar casting machines and the like, a rotatable toothed mold carrying wheel, a pinion to mesh with said wheel, and braking means to retard the rotation of the pinion, said braking means being of gradually increasing force and of greatest force when the pinion approaches the termination of a revolution thereof and the mold carrying wheel rotated a predetermined distance, and said braking force being gradually reduced during the initial portion of a successive revolution of the pinion.

7. In type bar casting machines and the like, a rotatable toothed mold carrying wheel, a pinion to mesh with the teeth of said wheel, and braking means to exert a retarding force to the rotation of the pinion at a predetermined point in the rotation thereof, comprising an eccentric rotatable with the pinion, a plunger yieldingly urged in a direction toward the eccentric, and a roller carried by said plunger to engage the eccentric.

8. In type bar casting machines and the like, a rotatable toothed mold carrying wheel, a pinion to mesh with the teeth of said wheel, and braking means operative to exert a retarding force to the rotation of the pinion at a predetermined point in the rotation thereof, comprising an eccentric rotatable with the pinion, a slidably supported plunger to have movement toward and away from the eccentric and carrying a roller to engage the eccentric, and a spring to yieldingly urged the plunger in a direction toward the eccentric.

Signed at Bridgeport in the county of Fairfield and State of Connecticut this 5th day of January, 1925.

WALTER BUSWELL.