J. R. ROGERS.

LINE CASTING MACHINE.

APPLICATION FILED FEB. 20, 1909.

945,609.

Patented Jan. 4, 1910.

2 SHEETS—SHEET 1.

Fig. 1.

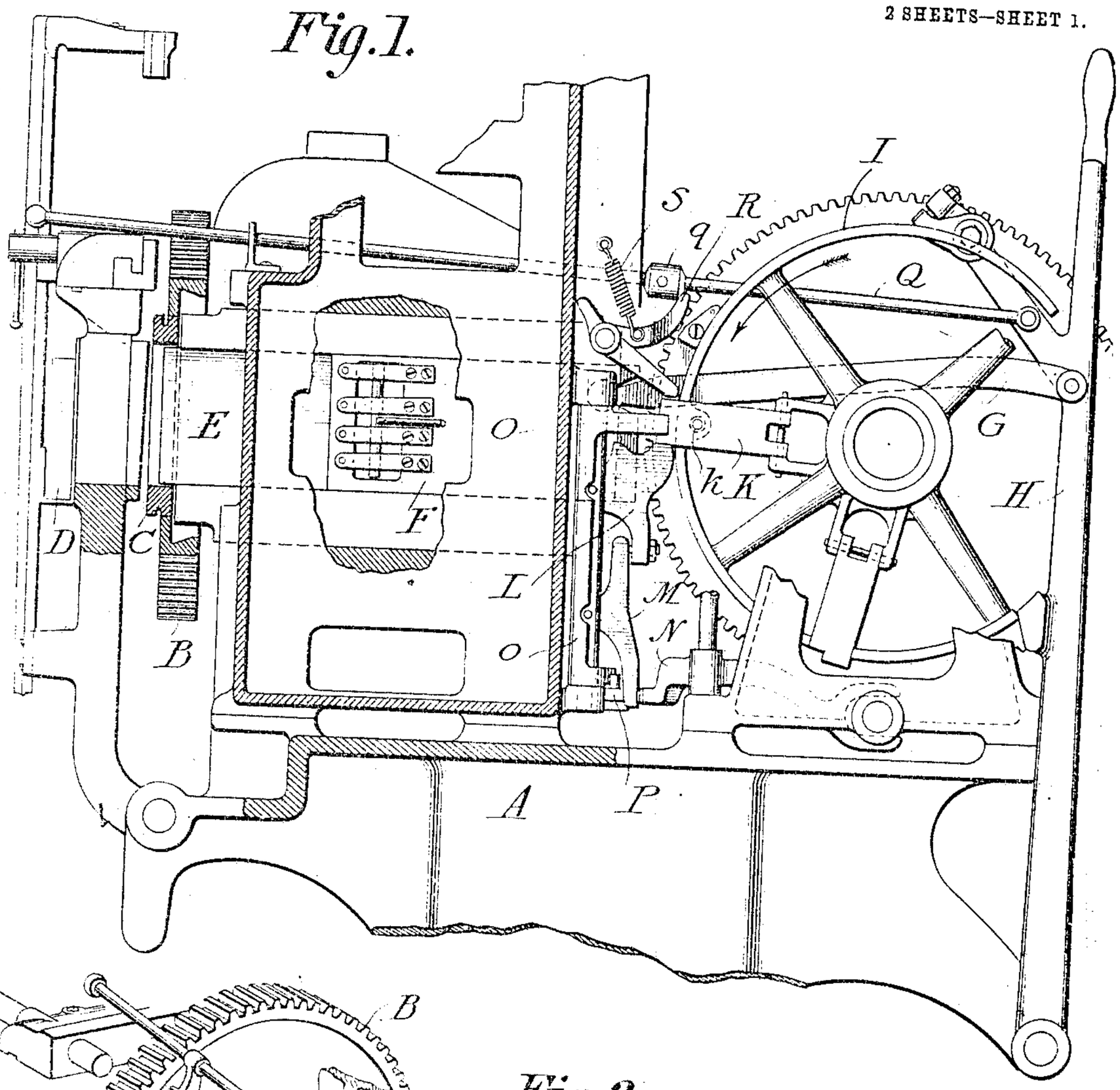
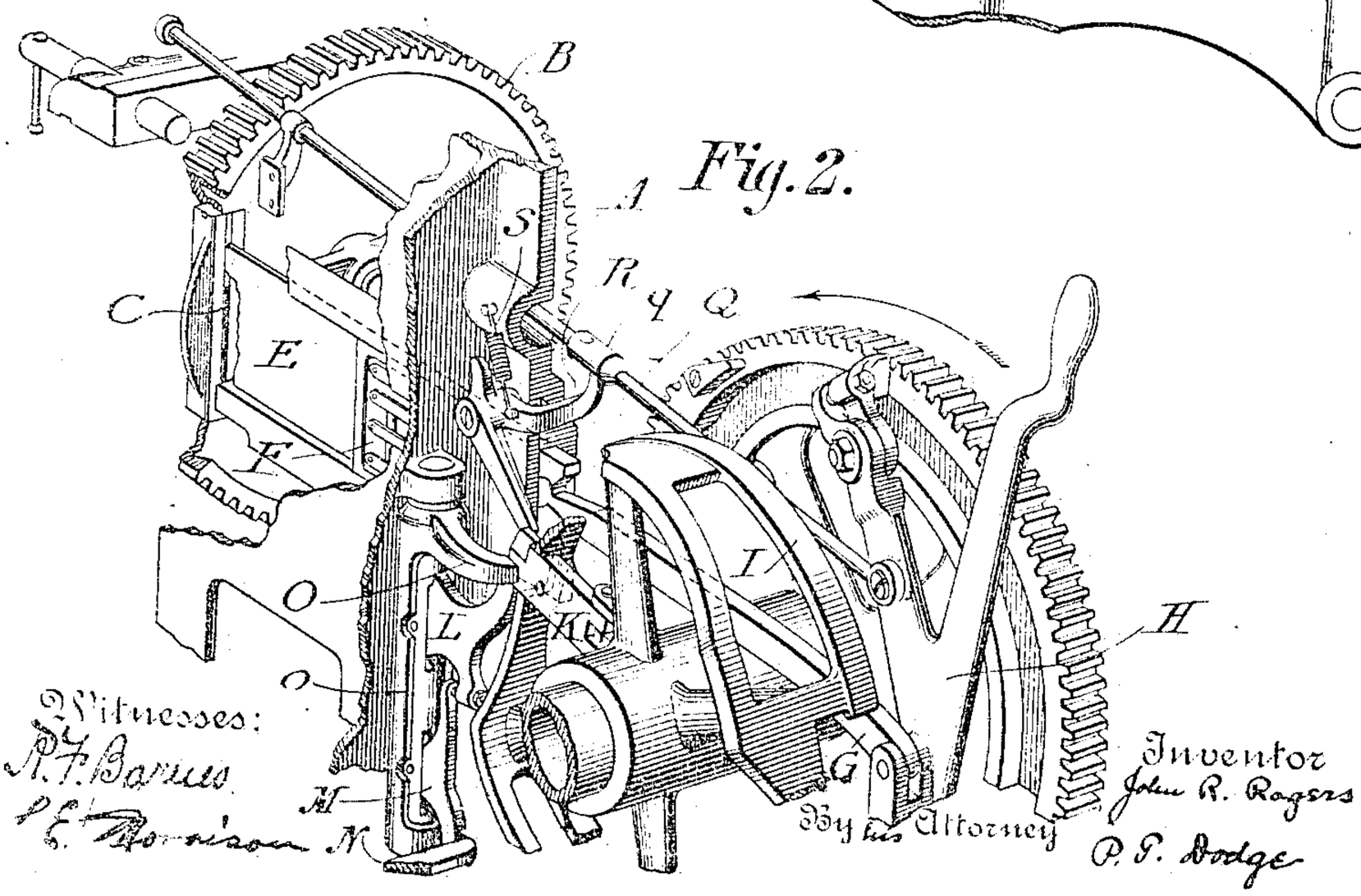


Fig. 2.



Witnesses:
A. F. Barnes
E. Morrison

Inventor
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By his Attorney

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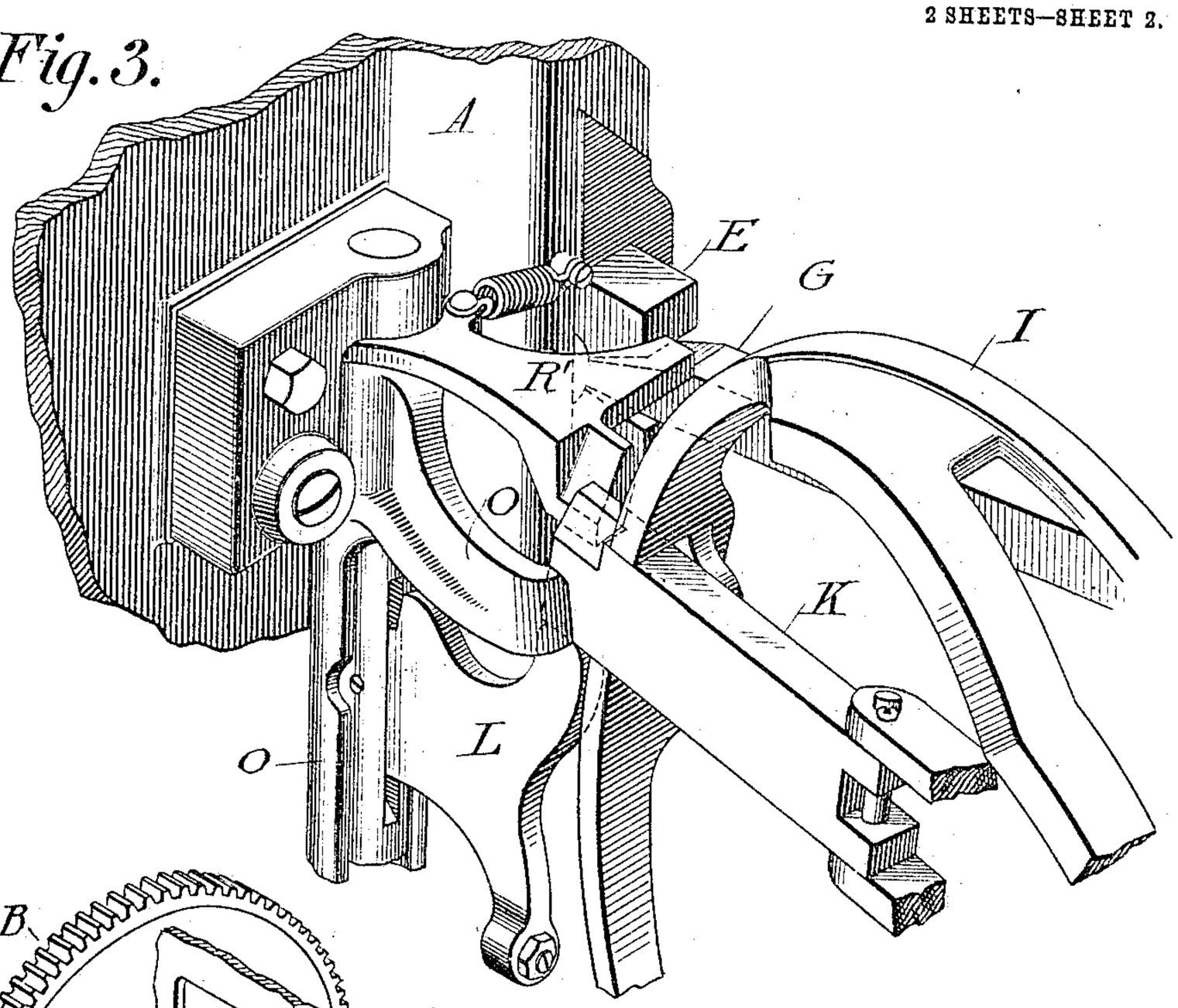
2 SHEETS—SHEET 2.

Fig. 3.



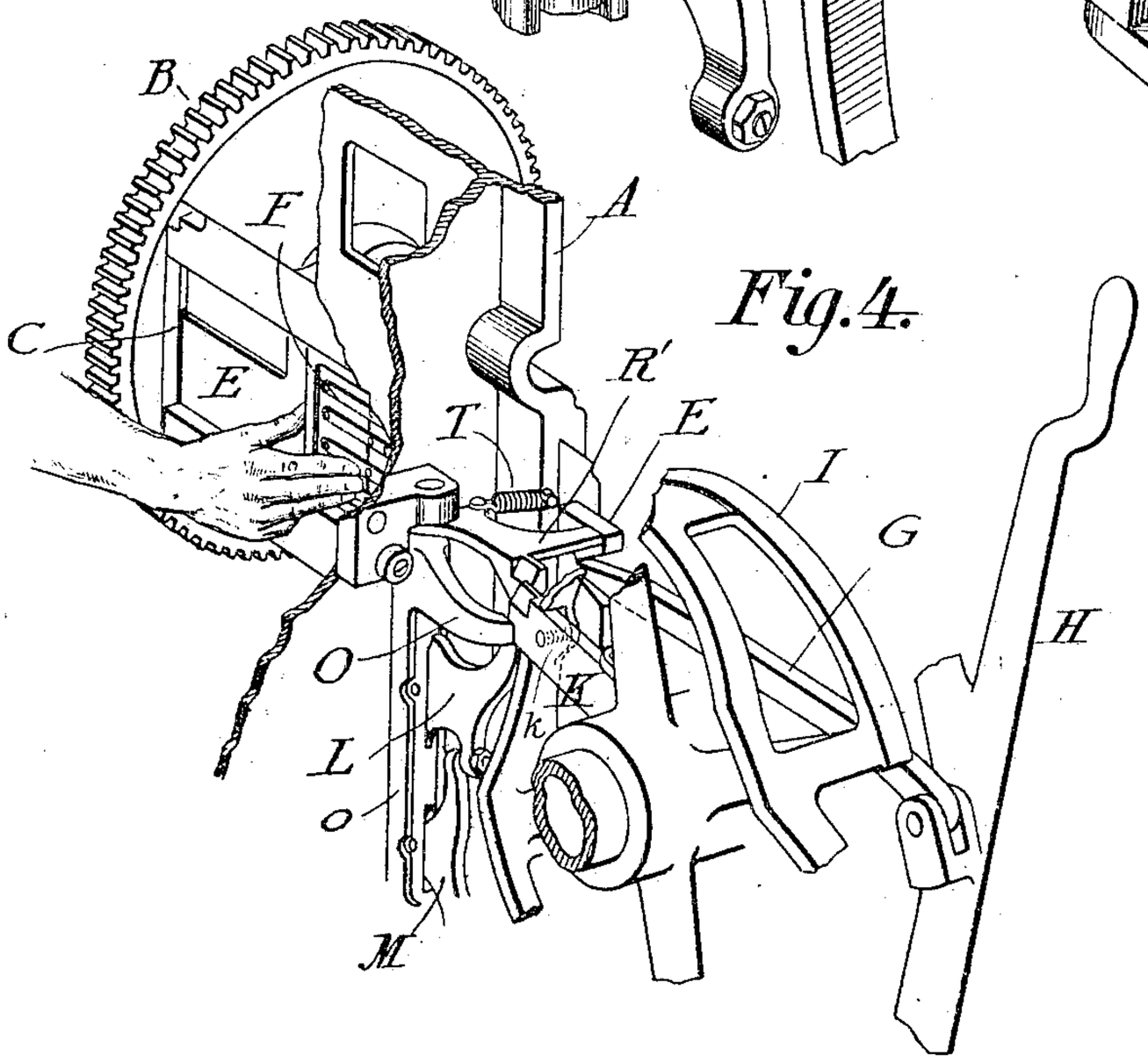


Fig. 4.

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UNITED STATES PATENT OFFICE.

JOHN R. ROGERS, OF BROOKLYN, NEW YORK, ASSIGNOR TO MERGENTHALER LINOTYPE COMPANY, A CORPORATION OF NEW YORK.

LINE-CASTING MACHINE.

945,609. Specification of Letters Patent. Patented Jan. 4, 1910.

Application filed February 20, 1909. Serial No. 479,106.

To all whom it may concern:

Be it known that I, JOHN R. ROGERS, of the borough of Brooklyn, county of Kings, and State of New York, have invented a new and useful Improvement in Line-Casting Machines, &c., of which the following is a specification.

My invention has reference to line casting machines in which a type metal slug or printing bar is cast in a slotted mold against the composed line of matrices presented temporarily to the front of the mold and serving to form the type characters in relief on the edge of the slug.

In this class of machines, represented for example in United States Letters Patent 436,532, to Mergenthaler, the slug is delivered from the mold by a reciprocating ejector blade connected to an operating slide which advances from the rear, driving the slug before it, out of the mold and into a receiving galley at the front.

In order to adapt the machine for producing slugs of different lengths the mold slot is made variable in length by the use of interchangeable filling pieces or liners, or by the use of a liner arranged to slide endwise. When the length of the mold slot is changed the ejector should be detached and replaced by another of a width corresponding to the length of the slot.

In practice it occasionally happens that the attendant, through ignorance or carelessness, will reduce the length of the mold slot but leave in the machine an ejector of excessive width. In such case the ejector, advancing in due time against the mold liner, is liable to cause fracture or injury of the liner or mold body, or the ejector will itself be fractured or broken.

The aim of my invention is to prevent accidents of this character by preventing the operation of the machine unless the ejector blade is of such width that it will pass through the mold.

My invention is susceptible of embodiment in various alternative or equivalent forms, as will appear to the skilled mechanic after reading this specification.

In the drawings I have shown the invention in two forms adapted for application to the well known Mergenthaler machine, commercially known under the trademark "Linotype" and represented as to its essential features in United States Patent 436,532.

In the drawings: Figure 1 is a side elevation showing the ejecting mechanism and various attendant parts of a Mergenthaler machine with my improvements incorporated therein. Fig. 2 is a perspective view of the same. Figs. 3 and 4 are perspective views showing an alternative form.

Referring to Fig. 1, A represents the main frame of the machine; B the vertical mold wheel or disk having the usual slotted mold, C, secured firmly therein; D the galley into which the slugs are delivered from the mold; E the reciprocating ejector blade which passes through the mold from the rear to deliver slugs therefrom. F is the actuating slide to which the rear end of the ejector blade is detachably connected by means of spring fingers, as practiced in the commercial machines and shown in United States Letters Patent 560,537, although any other suitable form of connection may be used. G is a link through which the ejector slide F is actuated from an upright lever, H, which receives motion in turn from a cam wheel, I, on the main driving shaft, J. K is a laterally swinging stop dog carried by the cam wheel I, and acting, when the machine has completed its cycle of operations, on a lever, L, which, through an intermediate lever M, actuates the clutch controlling lever N, which throws the main driving clutch out of action to arrest the motion of the casting mechanism. The stop dog K is acted upon by a spiral spring, *k*, and stands normally in a position to encounter the lever L, and stop the machine. The machine cannot be started so long as the dog K remains in the outer position, over the lever L. O is a so-called "starting-lever" for moving the stop dog K laterally away from the lever L when the machine is to be started or when its rotation is to be continued so as to cast an additional slug or slugs from the one line of matrices. This starting lever O is mounted on the upper end of a vertical rock shaft, *o*, acted upon at the lower end by a stud on a sliding bar, P, which extends to the front of the machine so that it may be operated by hand or by an automatic starting device.

So far as described the foregoing parts are all of the ordinary construction, and their

operation is as follows: After the casting action, and after the mold wheel has been turned to carry the mold from the horizontal casting position to the vertical ejecting position shown in Figs. 1 and 2, the ejector slide is advanced through the action of the cam and intermediate connections to deliver the slug, after which the ejector is retracted. In carrying my invention into effect I form the ejector actuating lever H in such manner that the machine stops before the ejector is wholly withdrawn from the mold, as shown in Fig. 1. In other words the machine is stopped with the forward end of the ejector in the mold. To the ejector actuating lever H I connect a bar, Q, which is carried forward to the front of the machine in convenient reach of the attendant. On this bar I provide a sleeve or projection, *q*, and on the main frame I pivot an angular lever, R, of the form shown, urged upward by a spring, S. When the machine stops, and when the parts are in their normal positions this lever is inactive. When, however, the ejector is moved fully backward out of the mold, the rod Q is carried rearward by the ejector lever, and the projection Q is caused to depress the lever R until its lower end stands alongside of the stop dog K, the projection holding the lever down, as shown in Fig. 2, thus locking the dog in such position as to prevent the starting of the machine. When the length of the mold slot is to be reduced it is necessary to first remove the ejector E therefrom; and this is accomplished by the attendant standing in front of the machine and pushing the rod Q backward. He then changes the length of the mold slot as usual, at the same time replacing the ejector by another of corresponding width. If, however, he fails to change the ejector and leaves in place one wider than the length of the slot, it will be impossible for the ejector to advance through the mold, and the ejector, being thus held back by the mold, serves in turn, through the intermediate parts, to hold back the rod Q, thus locking the lever R and the dog K, so that the starting of the machine is impossible. In this manner the attendant is compelled to insert an ejector of suitable width before the rod Q can be moved forward in order to permit the starting of the machine.

It will be observed that it is impossible to start the machine or to drive the ejector mechanically toward the mold until an ejector of suitable width has been inserted, and that the mold is utilized as a means of controlling or throwing into action the parts which prevent the operation of the ejector. In other words, the length of the mold slot determines, through the intermediate parts, the width of the ejector which must be employed before the machine can be set in action.

In Figs. 3 and 4 I represent an alternative form of device operating on the same principle as the one shown in the preceding figure. In this example a plate R′, having in outline a triangular form, is mounted to swing independently on a horizontal pivot above the starting lever, subject to the influence of a spring, T, which tends to urge it to the right. This plate is acted upon by the rear end of the ejector slide F. When the latter is moved rearward sufficiently to withdraw the ejector from the mold it throws the plate R′ to the left, causing it to lock the stop dog K in the operative position over the lever L, so that the starting of the machine is prevented. When this form of mechanism is employed the ejector slide will be moved to the rearward to carry the ejector out of the mold by hand in the manner shown in Fig. 4, the rod Q being unnecessary. This rearward movement of the slide is that commonly practiced in commercial machines of the present day preparatory to the exchanging of ejector blades.

I believe the present to be the first instance in which the driving mechanism of a line casting machine has been controlled in any form or manner by the ejector which delivers the slugs from the mold.

It will be apparent to the skilled mechanic that the connections between the ejector and the clutch or equivalent driving device may be widely modified in form and arrangement without changing the general principle of action or passing beyond the scope of my invention.

Having described my invention, what I claim is:

1. In a line casting machine, the combination of a mold, an ejector for delivering the slugs, and intermediate mechanism to prevent the advance of the ejector if larger than the mold.

2. In a line casting machine, a slotted mold, a sliding ejector, mechanism to advance the ejector through the mold, and means for locking the operating mechanism out of action when the ejector is withdrawn from the mold.

3. In a line casting machine, a mold, an ejector, and ejector operating devices which stop with the ejector in the mold, in combination with means for preventing the action of the machine until the ejector is withdrawn from the mold.

4. In a line casting machine, a mold, an ejector, and operating mechanism arranged to stop automatically with the ejector in the mold; whereby a reduction of the mold to a size less than that of the ejector is prevented.

5. A line casting machine in which the retractable ejector stops automatically in the mold, in combination with a manual device to carry the ejector out of the mold,

and means actuated by the latter to control the driving mechanism of the machine.

6. In a line casting machine, a mold, a reciprocating ejector, a clutch for driving the casting mechanism, and a clutch controlling device controlled in turn by the ejector; whereby the starting of the machine is prevented if the ejector is too large to enter the mold.

7. In a line casting machine of the class described and in combination, the ejector lever H, rod Q, and lever R, controlled by the rod and in turn controlling the stop devices.

8. In a line casting machine of the class described, the ejector cam, the ejector slide actuated thereby and capable of a limited independent motion, and a dog controlled by the slide and in turn controlling the motion of the machine.

9. In a line casting machine, driving mechanism therefor in combination with an adjustable mold, an ejector and means controlled by the ejector to prevent the operation of the machine.

10. In a line casting machine, a reciprocating ejector in combination with a machine stop operated by the manual backward movement of the ejector.

In testimony whereof I hereunto set my hand this eighth day of February, 1909, in the presence of two attesting witnesses.

JOHN R. ROGERS.

Witnesses:

DAVID S. KENNEDY,

LUCY E. SMITH.