D. S. KENNEDY.

LINE CASTING MACHINE.

APPLICATION FILED APR. 25, 1910.

975,434.

Patented Nov. 15, 1910.

5 SHEETS—SHEET 1.

Fig. 1.

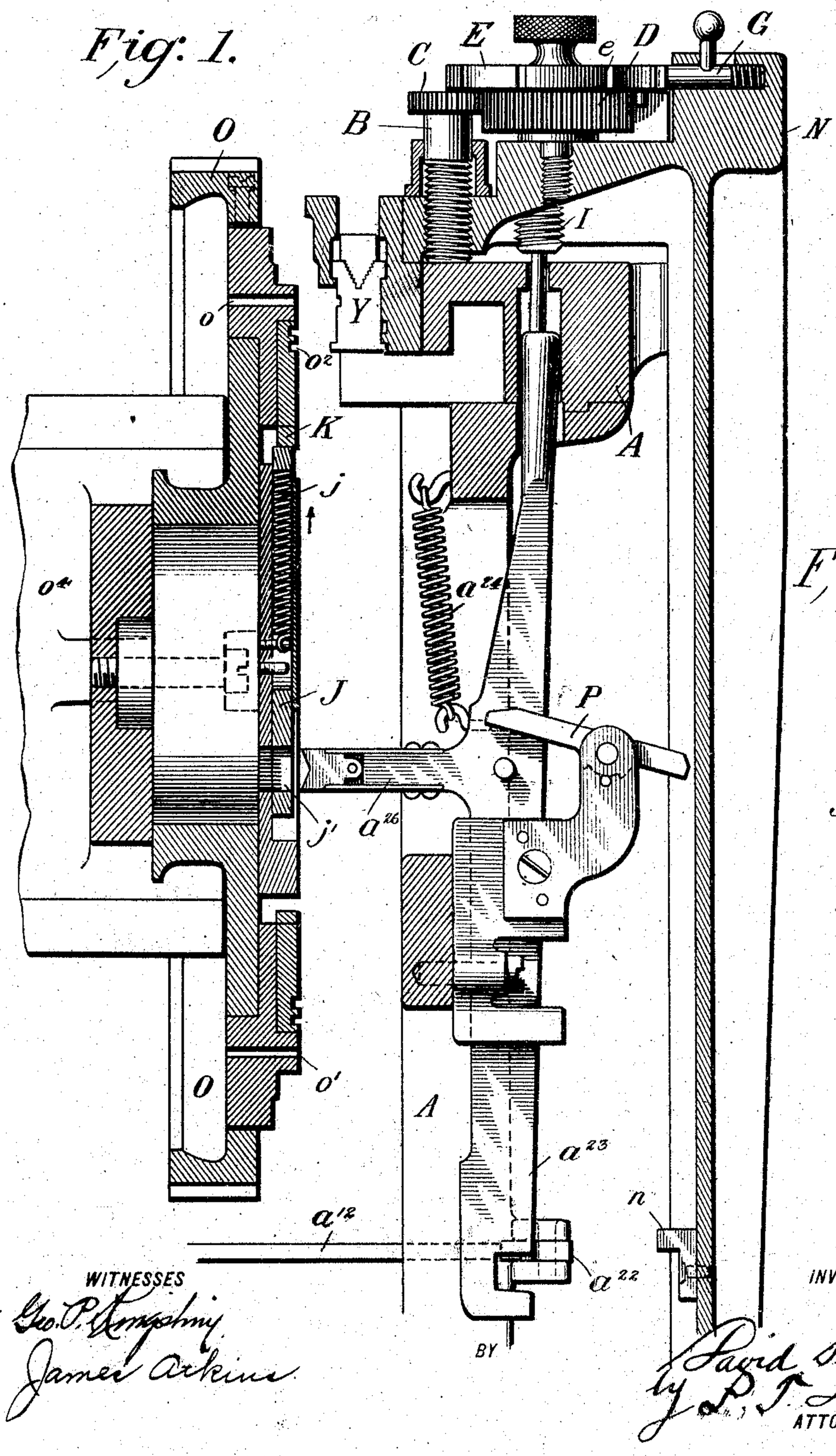
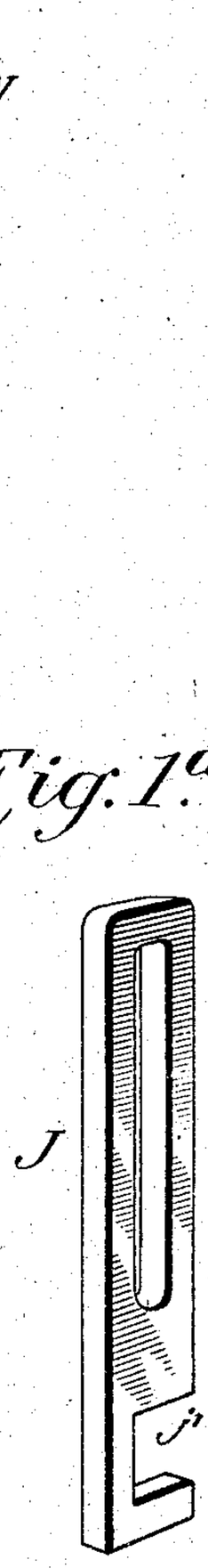


Fig. 1ª



WITNESSES

Geo. P. Kingsbury

James Atkins

INVENTOR

David S. Kennedy

by D. T. Lodge

ATTORNEY

D. S. KENNEDY.

LINE CASTING MACHINE.

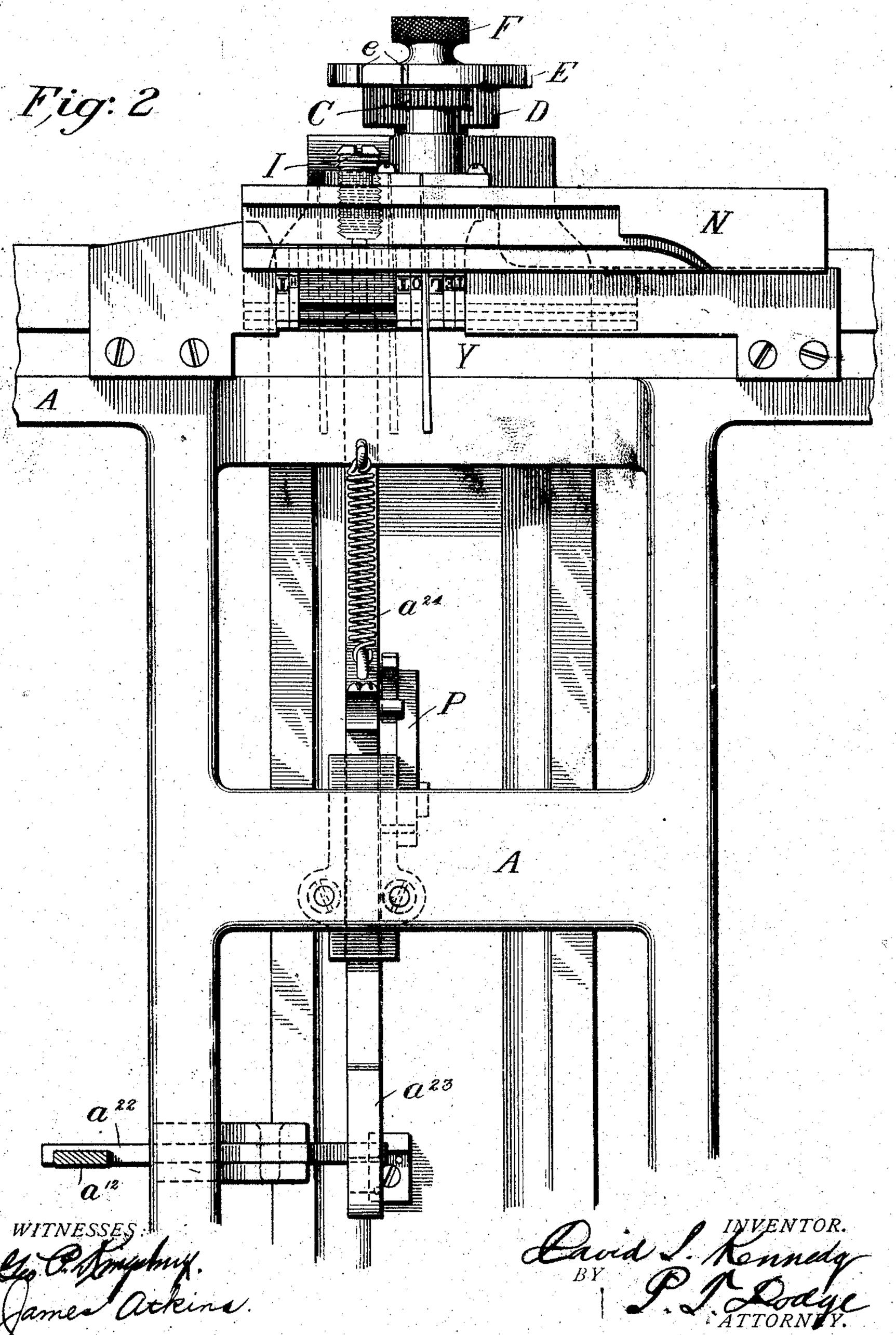
APPLICATION FILED APR. 25, 1910.

975,434.

Patented Nov. 15, 1910.

5 SHEETS—SHEET 2.

Fig: 2



WITNESSES:

Geo. P. Dorsey.

James Atkins.

INVENTOR.

David L. Kennedy

BY

P. T. Dodge

ATTORNEY.

D. S. KENNEDY.

LINE CASTING MACHINE.

APPLICATION FILED APR. 25, 1910.

975,434.

Patented Nov. 15, 1910.

5 SHEETS—SHEET 3.

Fig. 3.

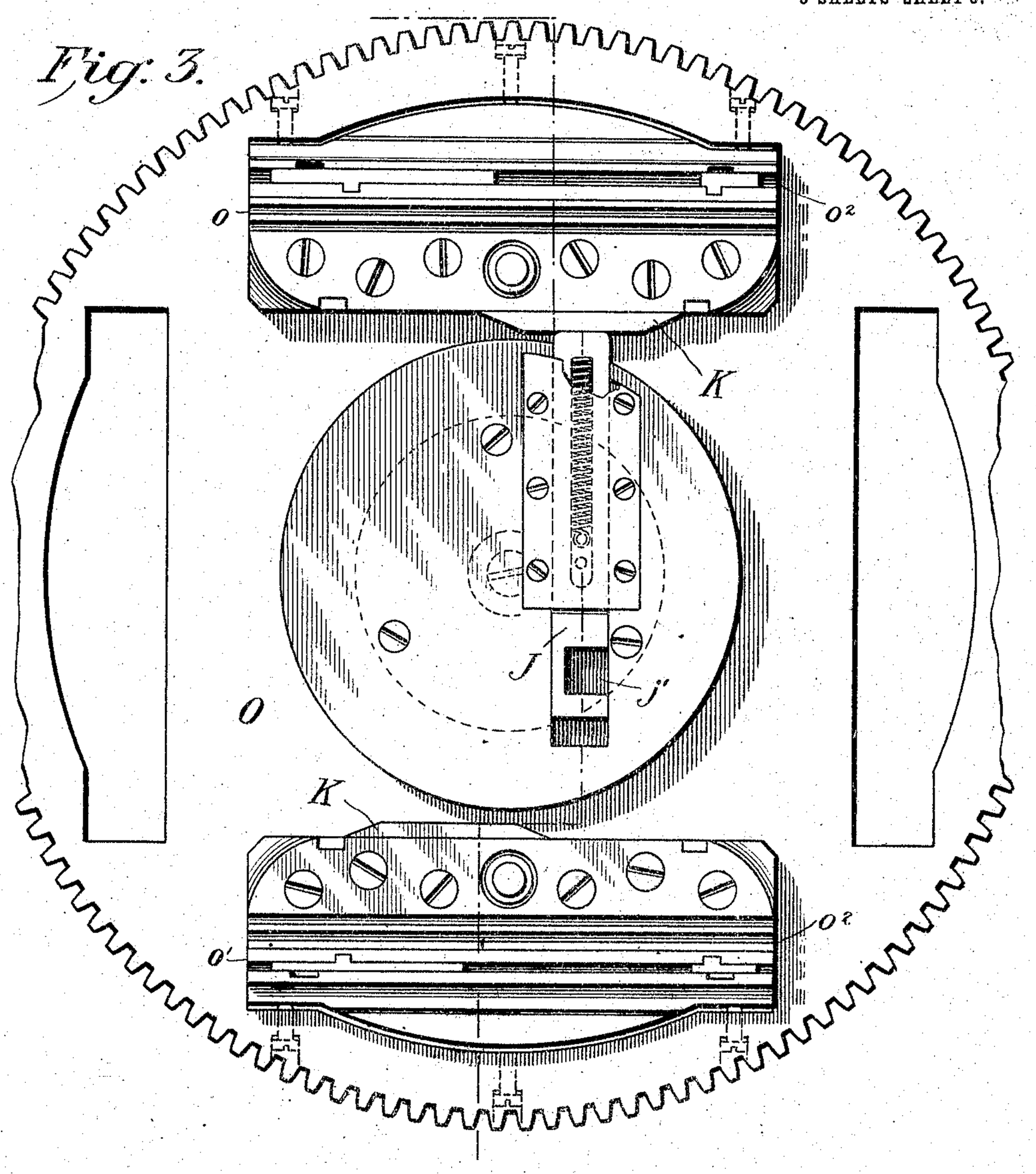
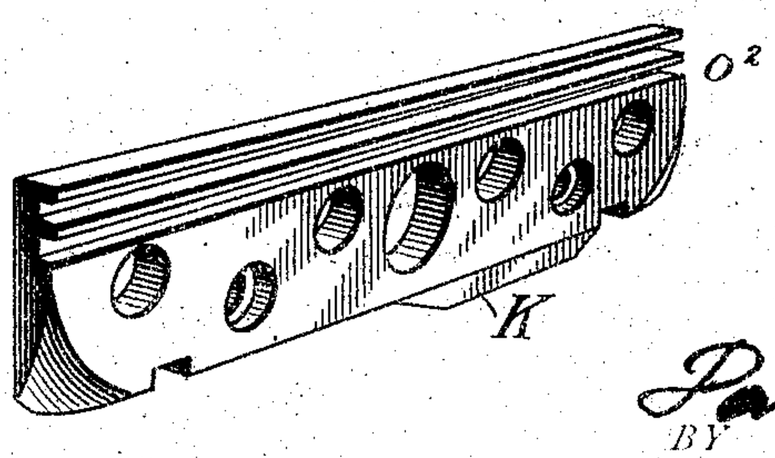


Fig. 4.



WITNESSES.

Geo. P. Kingsbury.

James Atkins.

INVENTOR.

David S. Kennedy

BY P. T. Dodge

ATTORNEY.

D. S. KENNEDY.

LINE CASTING MACHINE.

APPLICATION FILED APR. 25, 1910.

975,434.

Patented Nov. 15, 1910

5 SHEETS—SHEET 4

Fig. 5.

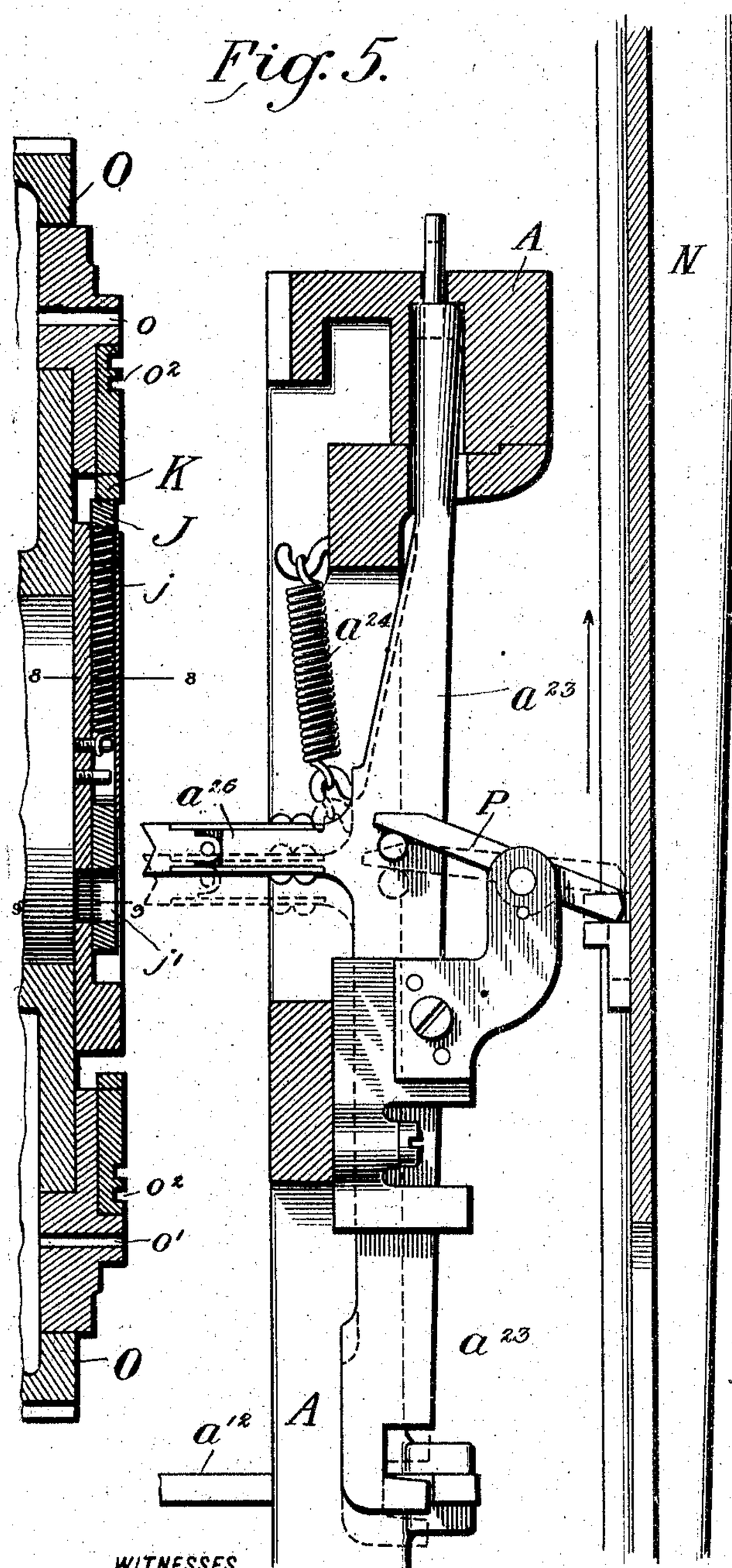


Fig. 8.

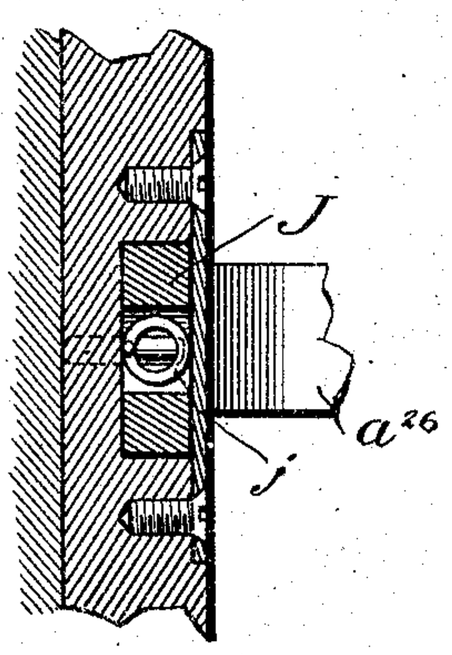
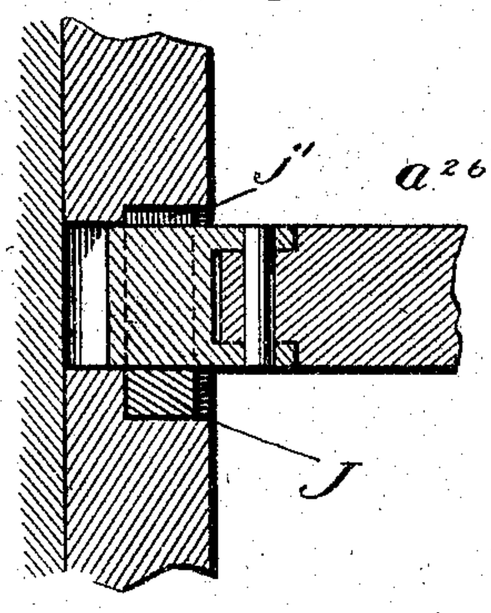


Fig. 9.



WITNESSES

Geo. P. Kingsbury

James Atkins

BY

INVENTOR

David S. Kennedy

by D. T. Lodge

ATTORNEY

D. S. KENNEDY.

LINE CASTING MACHINE.

APPLICATION FILED APR. 25, 1910.

975,434.

Patented Nov. 15, 1910.

5 SHEETS—SHEET 5.

Fig. 6.

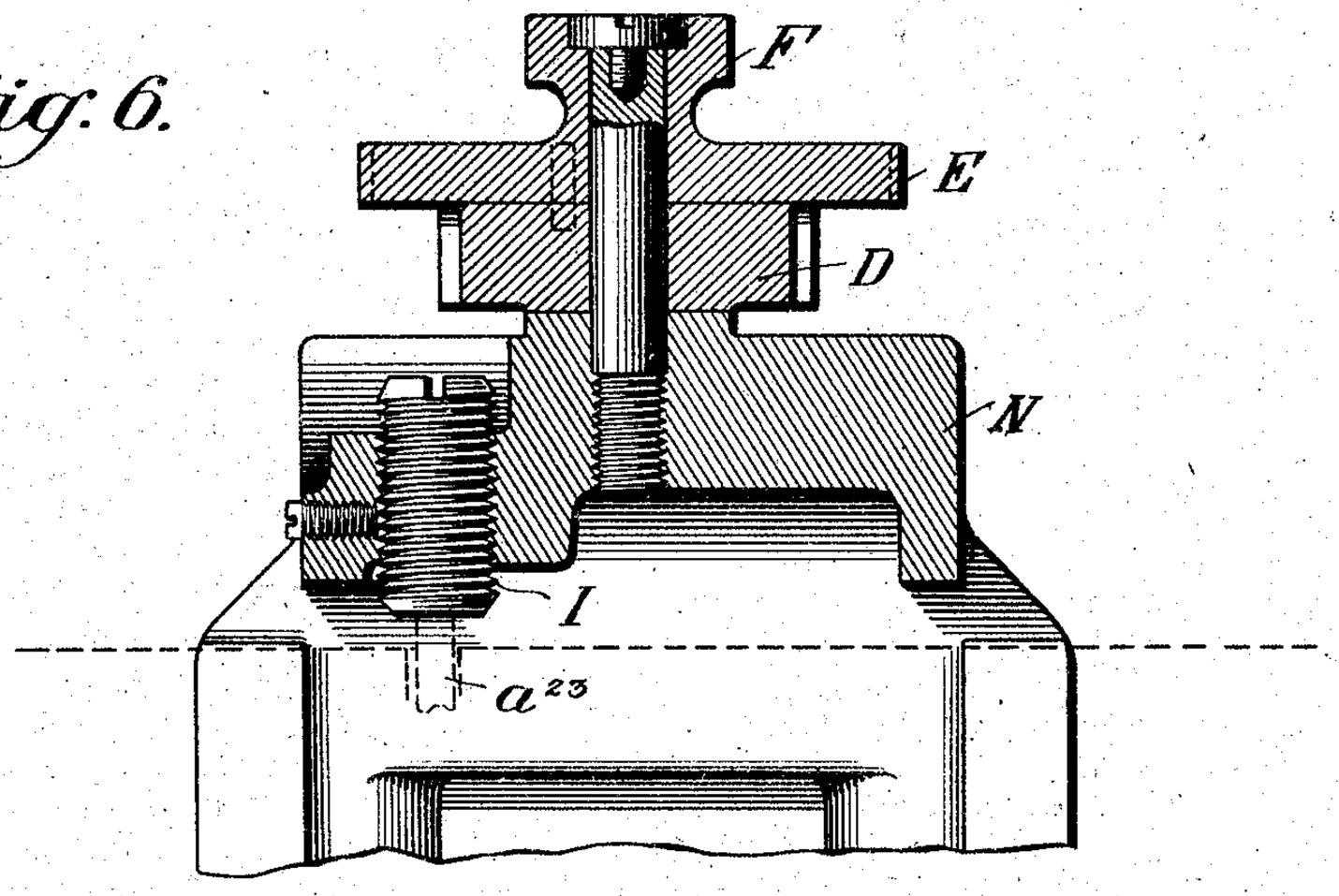
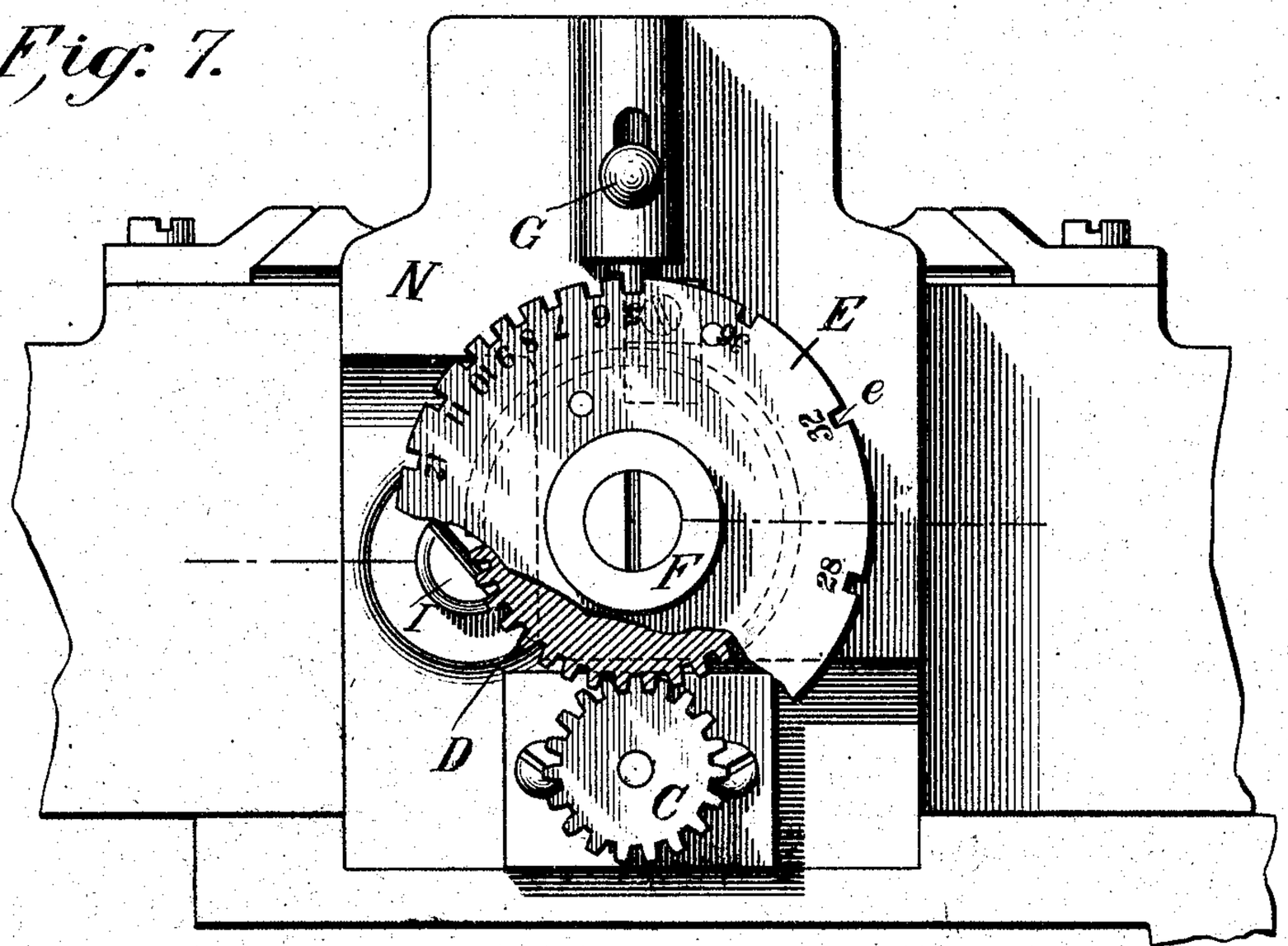


Fig. 7.



WITNESSES:

Geo. P. Langhmy

James Atkins

INVENTOR.

BY David S. Kennedy

P. T. Dodge

ATTORNEY.

UNITED STATES PATENT OFFICE.

DAVID S. KENNEDY, OF BROOKLYN, NEW YORK, ASSIGNOR TO MERGENTHALER LINOTYPE COMPANY, A CORPORATION OF NEW YORK.

LINE-CASTING MACHINE.

975,434. Specification of Letters Patent. Patented Nov. 15, 1910.

Application filed April 25, 1910. Serial No. 557,495.

To all whom it may concern:

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

This invention has reference to line-casting machines of the type shown in Letters Patent of the United States No. 436,532, wherein a composed line of matrices suspended in a "first elevator," so-called, is lowered to the casting level in front of a horizontal slotted mold, which mold is advanced facewise against the matrices so that a horizontal shoulder or keeper on the mold overlies ears projecting edgewise from the lower end of the matrices, after which the elevator is urged upward, in order that the ears of the matrices may be forced against the under side of the shoulder or keeper to effect the vertical alinement of the matrices, so that the characters therein will be presented properly in front of the mold slot, to form type characters on the slug cast in said slot.

In the patent referred to the first elevator in lowering the matrix line to the mold acts upon and controls a mechanism which in turn controls the main driving clutch of the machine, so that if the line is not lowered to the proper level the clutch will be thrown out of action and the machine stopped.

The patented mechanism contemplated the use of a single mold, mounted in a vertical carrier wheel. At the present date it is customary to provide the wheel with two, three or four molds, for producing slugs of different thicknesses, in connection with corresponding fonts of matrices producing characters of different sizes. The aim of the present invention is to provide for the speedy and certain adjustment of the stop devices according to the size of the mold and the matrices in use for the time being, so that the stoppage of the machine will be effected if matrices of any size are not properly presented to the mold. To this end it consists in quickly adjustable means for definitely controlling the descent of the elevator which presents the matrix line before the mold, and in devices automatically adjusted by which the mold when it is in the casting position is caused to determine the action of the clutch-controlling device. With the exception of the parts specifically described herein, the machine may be constructed and arranged as in the Patent No. 436,532, or in any equivalent manner.

In the drawings,—Figure 1 is a sectional view through the mold wheel, the first elevator, the clutch-controlling devices, and the adjacent parts, with my improvements incorporated therein. Fig. 1ª is a perspective view of the adjustable clutch-controlling plate. Fig. 2 is an inside face view of the first elevator and the adjacent parts, with the matrix line therein. Fig. 3 is an inside face view of the mold wheel with two molds therein, and the clutch-controlling slide. Fig. 4 is a perspective view of one of the keepers or alining plates forming part of each mold, with a projection thereon to adjust the clutch-controlling slide. Fig. 5 is a vertical section through certain of the parts shown in Fig. 1, with the parts in the position they occupy when a slug is to be ejected from the mold. Fig. 6 is a vertical cross section through the upper end of the first elevator. Fig. 7 is a top plan view of the same. Figs. 8 and 9 are horizontal sections on lines 8—8 and 9—9 of Fig. 5.

Referring to the drawings, A represents a portion of the main frame.

N is the vertically movable first elevator, mounted on the main frame and having an overhanging upper end channeled horizontally to receive and sustain the horizontal lines of matrices Y, these matrices being provided at the upper and lower ends with ears which project edgewise therefrom. This elevator receives the composed line of matrices from the composing mechanism and lowers it to the casting level before the mold.

O is the vertical mold wheel or disk carrying on opposite sides of the center the two slotted molds, o and o^1. This wheel is mounted to turn in a journal on a slide o^4, which latter is mounted to move horizontally in the main frame, so that after the line of matrices is lowered to the casting level the slide may be advanced to carry the wheel and the molds forward until that mold which is in operative position is presented facewise against the matrices.

In order to stop the machine if the elevator fails to lower the matrices to the proper level, a bar, a^{12}, which controls the main driving clutch of the machine is con-

nected with an actuating lever, a^{22}, mounted in the main frame in position to be acted upon by a bar, a^{23}, having a vertical motion, and also a horizontal motion, at the lower end. This bar a^{23} is guided at its upper end in the main frame, and is urged constantly upward by a spring a^{24}. When the elevator N descends with the matrix line it acts on the upper end of the bar a^{23} and pushes the same downward. If the elevator and line descend to the proper level the projection a^{26} on the bar a^{23} stands opposite a hole in the mold disk and when the disk advances the arm enters the hole idly and without effect on the bar a^{23}, which remains at rest, and without effect on the main clutch, so that the latter will drive the machine. If, however, the elevator and line fail to descend to the proper level, the end of the arm a^{26} will fail to register with the hole in the mold disk, and when the disk advances with the mold it will push the arm a^{26} and the bar a^{23} forward, and the bar, acting through the lever a^{22} and the bar a^{12}, will throw the main clutch out of action, and stop the machine.

With the exception of minor details hereinafter specified, the foregoing parts may be of the same arrangement and have the same mode of operation as in the Patent 436,532, the principal difference being that in the said patent the arm a^{26} instead of being attached to the bar a^{23} was mounted in the main frame, pushed forward at each advance of the mold wheel, and arranged to act against a projection on the bar a^{23}.

When a mold having a slot of a given thickness and matrices having characters of a corresponding size are replaced by others it is obvious that the parts will need a readjustment, as the first elevator must be arrested at another level. To this end I make the following provisions. For the purpose of arresting the descent of the elevator and line I thread through the top of the elevator N a stop screw B, arranged to contact with the top of the main frame. I provide the upper end of this screw with an actuating pinion, C, engaging a gear wheel D, on the under side of the disk E, mounted to turn on a stud F, fixed on the top of the elevator. The disk E is provided with a knurled handle by which to turn it, and is also provided with a series of peripheral notches e, arranged to receive a horizontal spring-actuated latch G mounted in the elevator. The disk is provided opposite the various notches with numbers or graduations indicating the various sizes of the matrices; and the distances between the notches are such that whenever a given notch is presented to the locking bolt the screw B will arrest the elevator with the matrices at the proper alining level. This arrangement of parts enables the operator to set the stop screw instantly in position to arrest the elevator N at the proper height for the matrices of the particular size or style which are for the time being in use.

The clutch-controlling bar a^{23} may be depressed by direct contact with the head of the first elevator, but I prefer to make use of an adjustable screw or bolt I, seated in the head of the elevator as shown. In order that the arm a^{26}, through which the clutch is controlled, may stand in position to enter a hole in the disk inactively only when a keeper or alining shoulder o^2, is at a proper height with relation to the lower ears of the matrices, I mount on the front of the non-rotating stud which supports the mold wheel a vertical plate J, suitably guided, and urged upward by an internal spring j. The lower end of this plate contains the hole j^1 to receive the end of the arm a^{26} when the clutch is to remain in action. The upper end of the plate J is acted upon as shown in Figs. 1, 3 and 5 by a projection or surface K, on the underside of the mold or its keeper, this surface standing at different levels in different molds. Whenever by the rotation of the mold disk a particular mold is brought into operative position, its projection K will advance the plate J until its hole stands directly opposite the arm a^{26}, provided that the elevator has lowered the matrix line to the proper level and carried the arm a^{26} down accordingly. If the elevator has not presented the line at the proper casting level, or if an improper mold is in position, so that the plate J is not carried down to the proper level, the mold disk in advancing will push the arm a^{26} forward and cause the bar a^{23}, through the intermediate parts, to throw the main driving clutch out of action.

As usual in this class of machines, the mold advances facewise not only when in the horizontal casting position, but after it has been turned to the vertical position in which it stands during the ejection of the slug therefrom.

In order to prevent the second advance of the mold disk from operating the devices which throw the clutch out of action, I provide a lever P, pivoted on the main-frame and arranged to be lifted at its outer end by a projection n, on the elevator slide, the inner end of the lever being arranged to act upon a stud n', on the clutch-controlling bar a^{23}. When the elevator N lifts the matrix line after the casting operation the projection n, through the lever P, advances the bar a^{23}, carrying its arm a^{26} down so that it will enter the hole in the slide J, and thus permit the mold-disk and mold to advance without stopping the machine.

While I prefer to apply each of the blocks K directly to the mold or mold keeper, it is manifest that they may be secured to the mold-disk in any suitable manner and that

they may be modified in form at will, provided only that they are adapted to revolve with the disk and act upon the slide J, so that as each mold is brought to its operative position the slide J will receive corresponding and suitable adjustment.

It is to be observed that in the mechanism herein shown there is a double control of the main driving-clutch—the first due to the weight of the matrix-carrying elevator N, and its action on the bar a^{23}; and the second due to the action of the particular block K adjacent to the mold which is for the time being in operative position.

If the matrices are not presented at the proper level, or if an improper mold is presented in front of the matrices, the machine will be stopped.

As before stated, the bar a^{12} controls the main driving-clutch in a manner fully illustrated in Patent 436,532, extensively used in commercial Mergenthaler linotype machines, and familiar at the present date to all persons skilled in the art. For this reason it is deemed unnecessary to describe or illustrate herein the clutch mechanism.

Having described my invention, what I claim is:

1. In a machine of the class described, the combination of a rotary disk provided with plural variant molds, mechanism for controlling the main driving clutch, and variant devices carried by the disk, one for each mold, to control the action of the clutch-controlling devices.

2. In a machine of the class described, the rotary disk provided with variant molds and adjacent surfaces K, peculiar to each mold, in combination with a member a^{23}, controlling the main driving clutch, and an intermediate member J, controlled by the surfaces K.

3. In a machine of the class described, the wheel, provided with variant molds, adapted to rotate and to move facewise, in combination with a non-rotating slide J, members K, peculiar to the respective molds, to adjust the slide J, and a clutch-controlling member a^{23}, actuated by the slide J; whereby the machine is brought to a stop in the event of a wrong mold being presented in the casting position.

4. In a machine of the class described, the rotary wheel provided with a series of molds, in combination with an elevator N for presenting the matrices to the mold, and mechanism for throwing the main driving-clutch out of action, said mechanism subject to the control of the elevator, and also to the control of the members K, peculiar to the respective molds; whereby the stoppage of the machine is effected in the event of a matrix line being presented at an improper level, or in the event of a wrong mold being presented in the casting position.

5. The horizontal slide o^4, the wheel mounted thereon and provided with plural variant molds, and surfaces K, peculiar to the respective molds, in combination with the non-rotating slide J, its actuating spring j, and a clutch-controlling member a^{23}, arranged to be actuated by the slide J; whereby the presentation of a wrong mold at the casting level effects the disconnection of the clutch and the stoppage of the machine.

6. In a machine of the class described, a rotary wheel provided with plural variant molds, a non-rotating member through which the main driving-clutch is controlled, and devices peculiar to the respective molds to adjust said controlling member.

7. In a machine of the class described, a rotary wheel provided with plural variant molds, and with adjacent surfaces K, peculiar to the respective molds, in combination with a clutch-controlling mechanism coöperating with the surfaces K; whereby the presentation of a wrong mold in the casting position is caused to effect the stoppage of the machine.

8. In a machine of the class described, a clutch-controlling member a^{23}, having a vertical and a horizontal movement, in combination with the mold-slide, the mold-wheel having variant molds and corresponding surfaces K, and a member J, carried by the mold slide, to actuate the member a^{23}, and the matrix elevator N, also arranged to actuate the member a^{23}.

9. In a machine of the class described, the first elevator N, adapted to present a matrix line in the casting position, in combination with the stop screw B, the rotary actuating disk E, connected by gears to said screw, and means for locking the disk E in predetermined positions.

10. In a machine of the class described, the bar a^{23}, movable as described, in combination with the mold-supporting slide J, the mold-wheel, and plural molds with corresponding surfaces K, to adjust the slide J.

In testimony whereof I hereunto set my hand this 20th day of April, 1910, in the presence of two attesting witnesses.

DAVID S. KENNEDY

Witnesses:

JOHN R. ROGERS,

LUCY E. SMITH.