J. R. ROGERS.

LINOTYPE MACHINE.

APPLICATION FILED APR. 8, 1908. RENEWED APR. 5, 1909.

930,693. **Patented Aug. 10, 1909.**

5 SHEETS—SHEET 1.

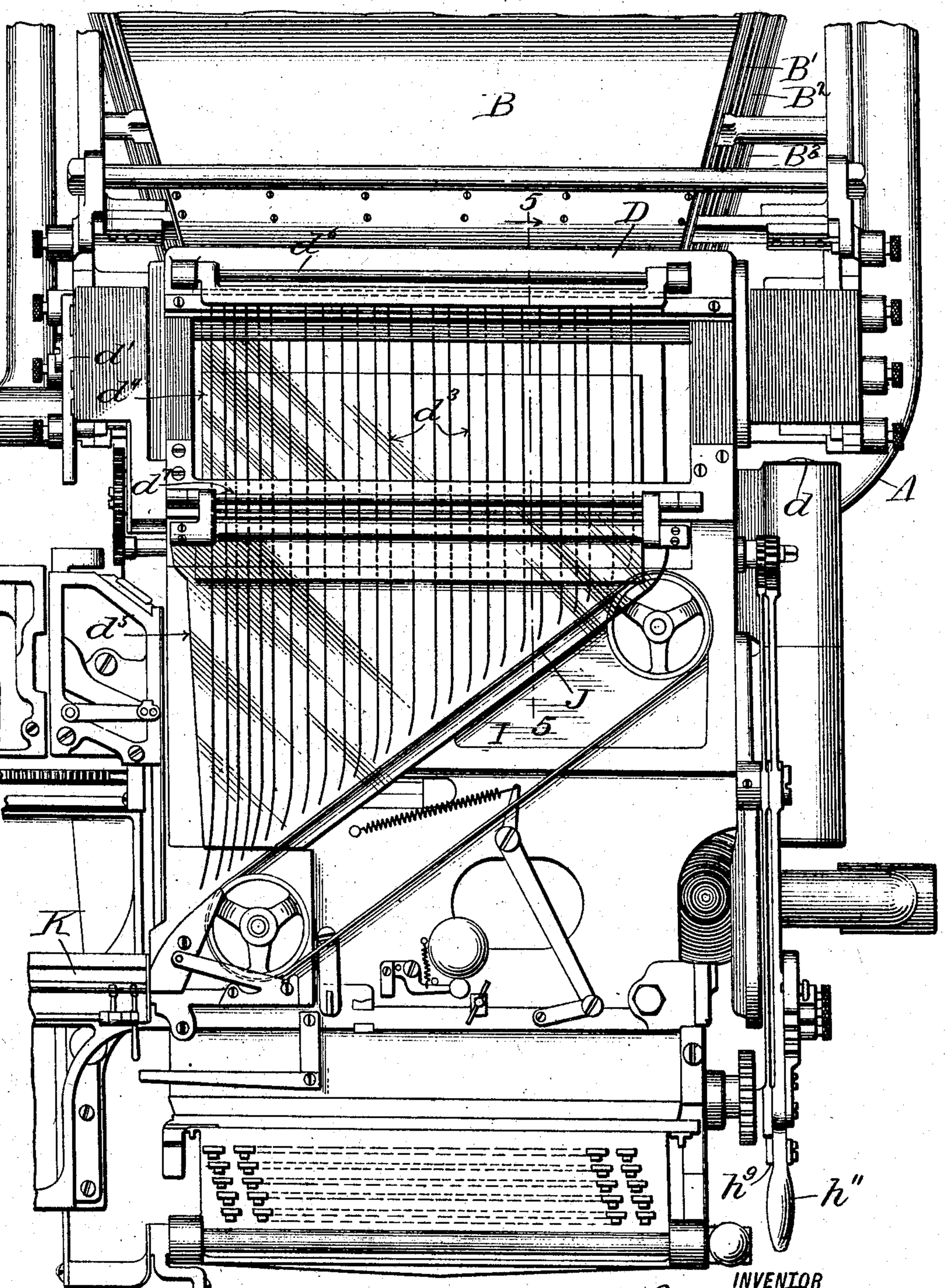


Fig. 1.

WITNESSES:
L. E. Bradley.
L. E. Morrison.

INVENTOR
J. R. Rogers
BY
P. T. Dodge
ATTORNEY

J. R. ROGERS.

LINOTYPE MACHINE.

APPLICATION FILED APR. 8, 1908. RENEWED APR. 5, 1909.

930,693. Patented Aug. 10, 1909.

5 SHEETS—SHEET 2.

Fig. 2.

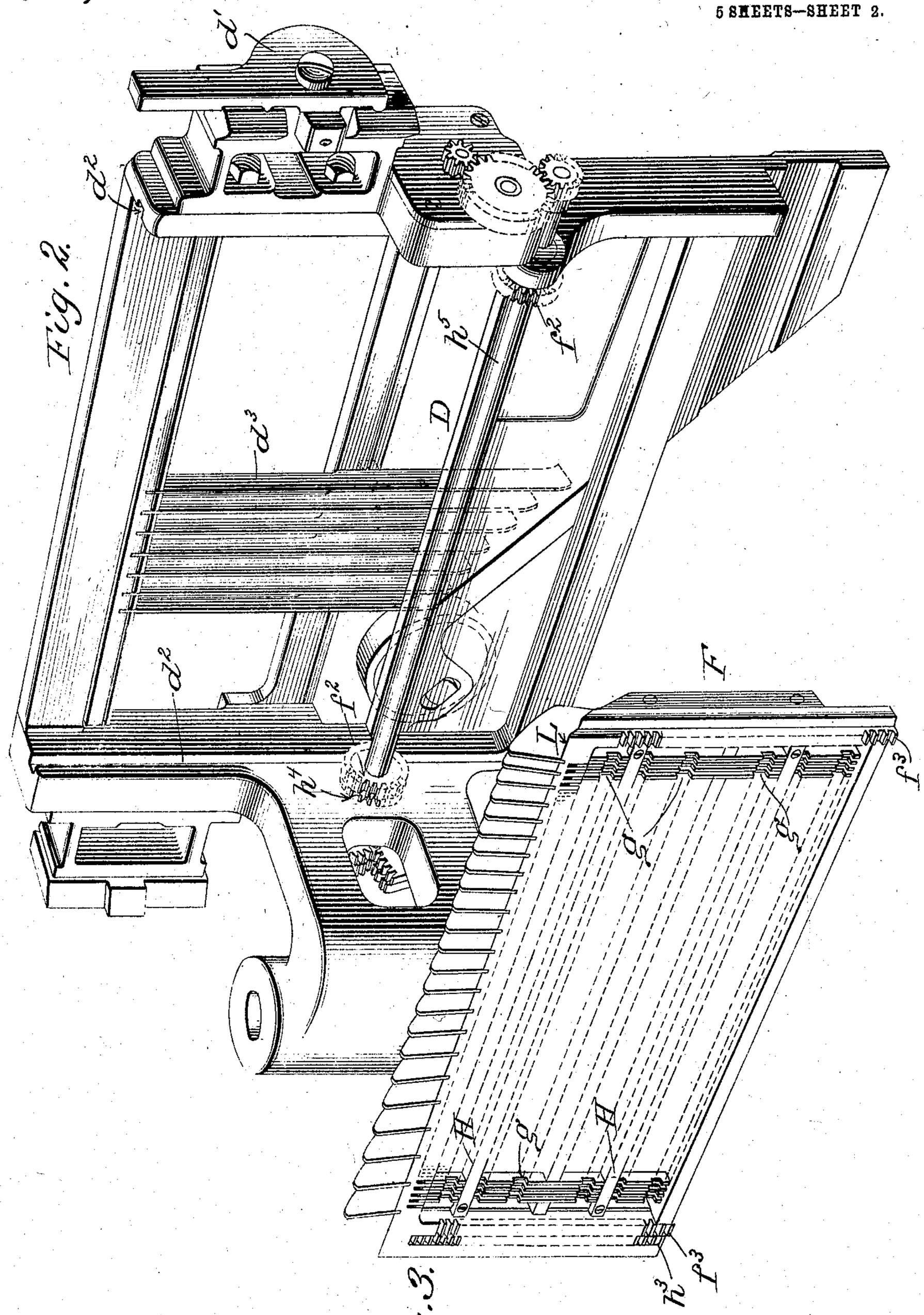


Fig. 3.

Witnesses:
W. E. Burdett
L. E. Morrison

Inventor
J. R. Rogers
By his Attorney
P. F. Dodge

J. R. ROGERS.

LINOTYPE MACHINE.

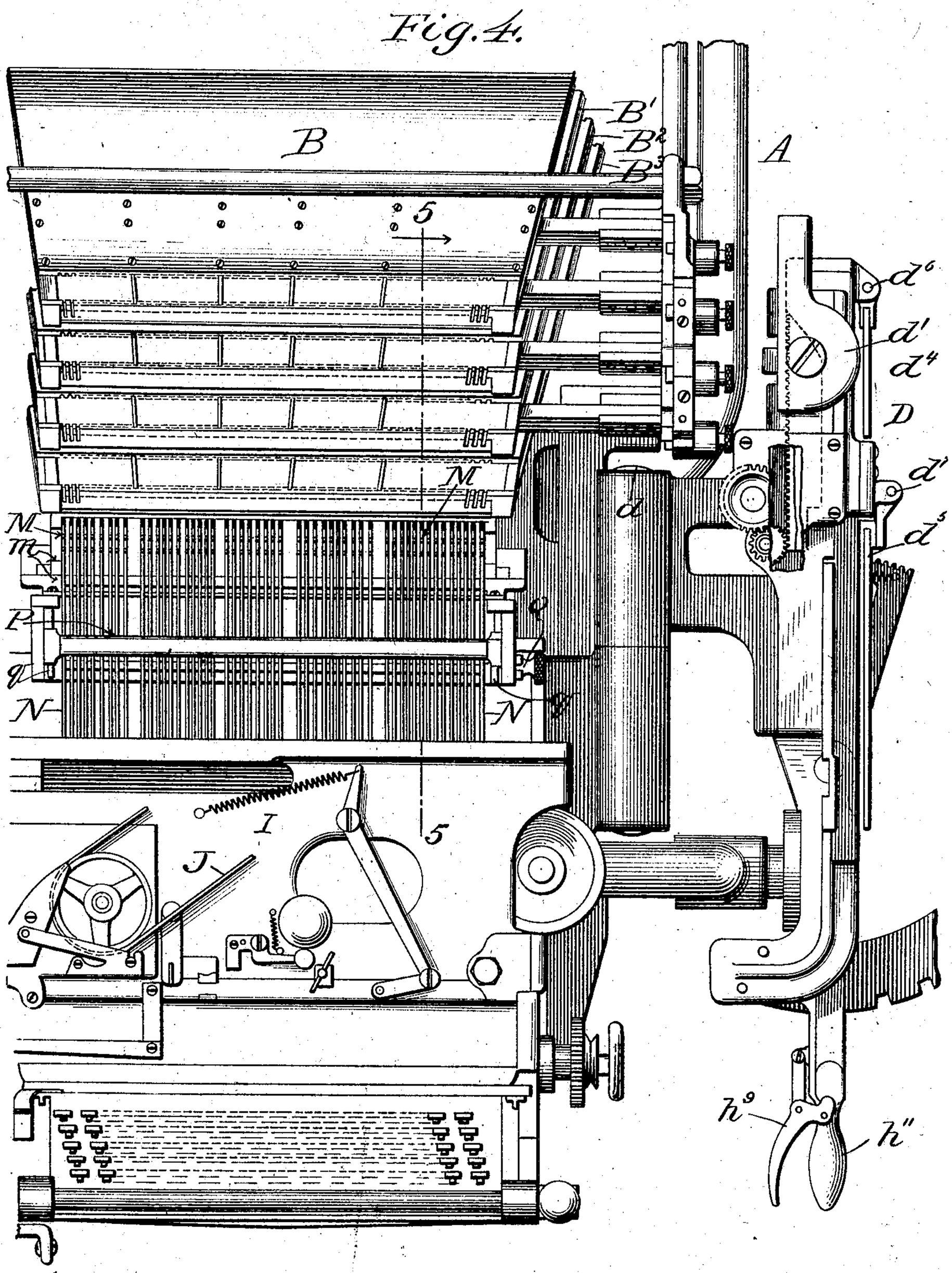
APPLICATION FILED APR. 8, 1908. RENEWED APR. 6, 1909.

930,693.

Patented Aug. 10, 1909.

5 SHEETS—SHEET 3.

Fig. 4.



Witnesses:

W. E. Bundick

L. E. Morrison

Inventor

J. R. Rogers

By his Attorney

P. J. Dodge

J. R. ROGERS.

LINOTYPE MACHINE.

APPLICATION FILED APR. 8, 1908. RENEWED APR. 6, 1909.

930,693. **Patented Aug. 10, 1909.**

5 SHEETS—SHEET 4.

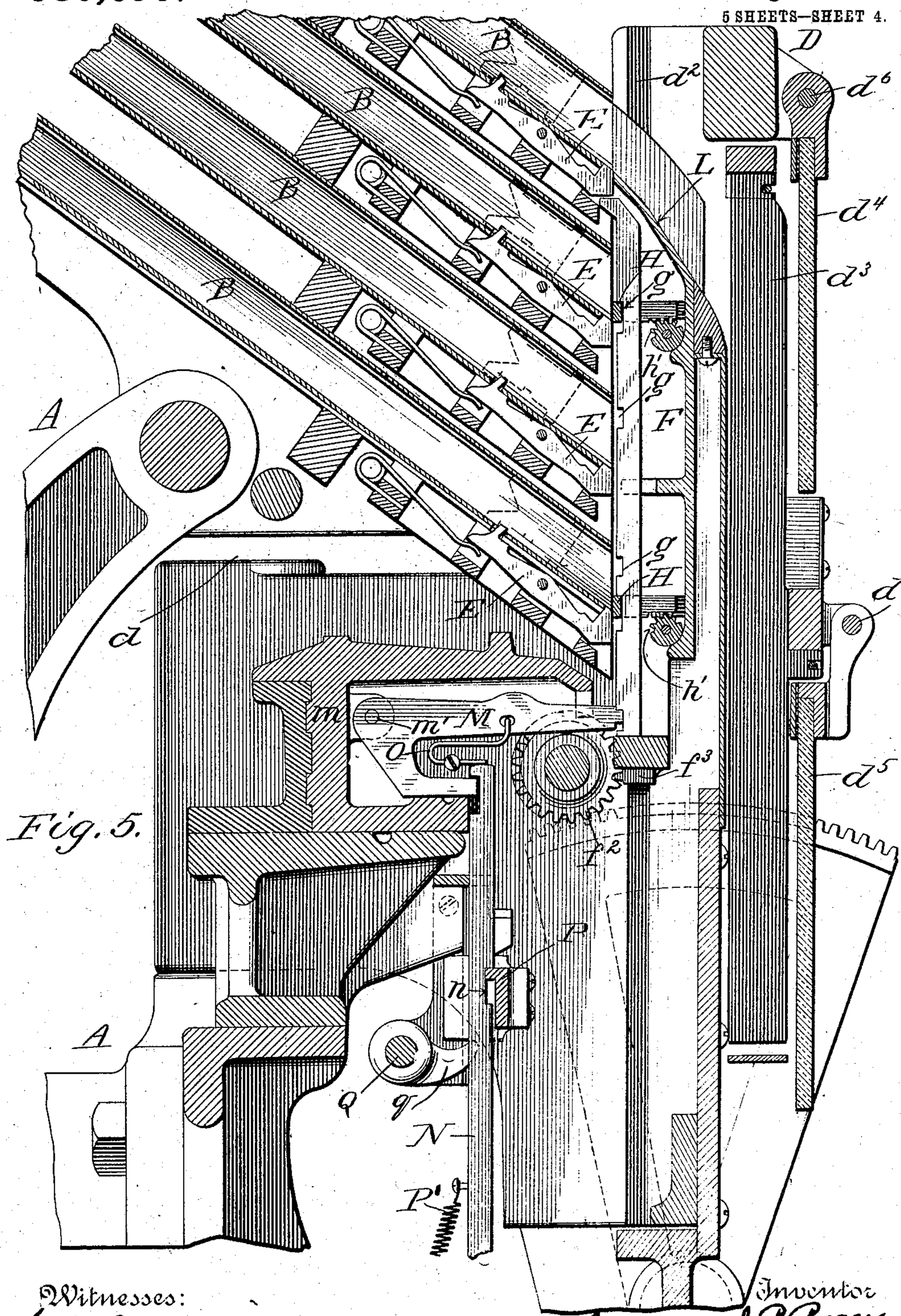


Fig. 5.

Witnesses:
W. E. Burdine
L. B. Harrison

Inventor
J. R. Rogers
by C. F. Dodge
By his Attorney

J. R. ROGERS.

LINOTYPE MACHINE.

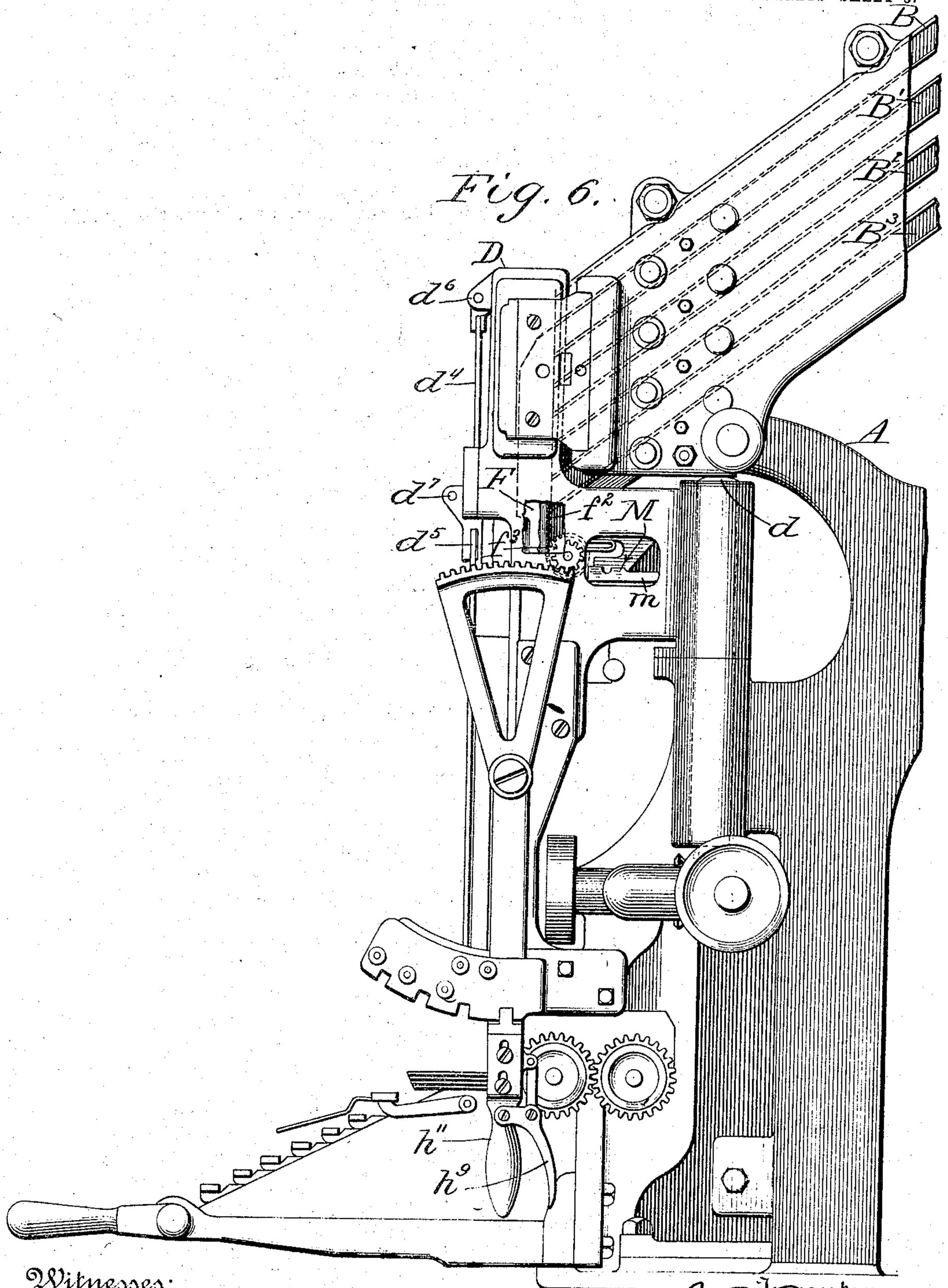
APPLICATION FILED APR. 8, 1908. RENEWED APR. 5, 1909.

930,693.

Patented Aug. 10, 1909.

5 SHEETS—SHEET 5.

Fig. 6.



Witnesses:

W. E. Bundick

L. E. Morrison

Inventor

J. R. Rogers

By his Attorney

P. G. Dewey

UNITED STATES PATENT OFFICE.

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

LINOTYPE-MACHINE.

No. 930,693. Specification of Letters Patent. Patented Aug. 10, 1909.

Application filed April 8, 1908, Serial No. 425,940. Renewed April 5, 1909. Serial No. 488,071.

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 Linotype-Machines, of which the following is a specification.

This invention has reference more particularly to improvements in the machine represented in Letters Patent of the United States #848,771, issued to me on the 2nd day of April, 1907. In this machine, a series of superimposed magazines, each containing a set or font of circulating matrices, are arranged to deliver these matrices over an intervening bridge into vertical channels, through which they descend at the front of the machine to the assembling mechanism, in which they are assembled or composed in lines for presentation to the casting mechanism, where they form type characters in relief on type metal slugs cast in a slotted mold. In this machine, each magazine is provided with a series of escapements to control the delivery of the matrices therefrom. All these escapements are actuated by a single series of reeds mounted in a vertically sliding frame and movable upward and downward at the will of the operator, so as to engage the escapements of one magazine or another, as demanded. These movable or subsidiary reeds are coupled in their different positions to receive motion from a series of main reeds mounted in the main-frame and operated through suitable connections from the keyboard.

In the original machine, the subsidiary reeds and adjacent parts were mounted permanently in the main-frame so that in order to gain access to the interior of the machine, it was necessary to unbolt and disorganize the parts.

The present invention has in view a more convenient access to the various operative parts, and consists essentially in mounting the front channel-plates, the auxiliary reeds, and the reed-adjusting mechanism in a frame or support hinged to the main-frame and adapted to be swung away from the operative position in such manner as to expose the front ends of the magazines and all the adjacent parts.

I have shown my improvements incorporated in a machine essentially like that shown in Patent #848,771, and it is to be understood that as to all parts not shown or described, they may be identical with those shown in said patent, or with any other equivalent construction. The drawings are limited to those parts of the machine immediately associated with my improvements.

In the drawings,—Figure 1 is a front view of the assembling portion of the machine, including the magazine, the face-plate, the keyboard, etc., with the parts in operative position. Fig. 2 is a perspective view of the swinging frame, in which the reeds, matrix-channels, etc., are sustained, the view being taken from the rear side. Fig. 3 is a perspective view from the rear side of the frame carrying the matrix-supporting shelf, the subsidiary reeds, and associated parts, this frame when in use being mounted to slide vertically in the swinging frame shown in the preceding figure. Fig. 4 is a front view of the parts shown in Fig. 1, with the swinging frame thrown open at angles to its operative position. Fig. 5 is a vertical section from front to rear on the line 5—5 of Figs. 1 and 4. Fig. 6 is a side elevation of the parts shown in Fig. 1, looking from the right, with portions broken away.

Referring to the drawings, A represents the main frame, and B, B′, etc., a series of superimposed inclined magazines fixed in the top of the frame, and each designed to carry a set or font of matrices C, as usual.

E, E, are pivoted escapements mounted in the under sides of the magazines at their lower ends, to control the escape of matrices therefrom, each magazine having a complete set of escapements.

F is a vertically movable sash-frame containing a set or a series of vertical subsidiary reeds G designed to connect with and actuate one set of escapements at a time. The reeds are guided in bars H mounted in the sliding frame F and movable forward and backward therein. This forward and backward movement engages the reeds G under and disengages them from the adjacent escapements, while the vertical movement of the frame F will place the reeds in position to be engaged with the escapements of one magazine or another, as required.

I is the raceway or face-plate divided by vertical partitions into a series of channels to receive the matrices from the magazines and direct them downward to the usual as-

sembling-belt J, which delivers them one after another into the channeled assembler K, in which they are assembled side by side in a common line.

L is a bridge or supporting-plate mounted on top of the reed-supporting frame F, and adapted to receive the matrices from that particular magazine which is in use, and guide them into the channels of the face-plate. This bridge is provided, as shown in Fig. 3, with upright plates corresponding with the partition plates at the front to sustain the matrices on edge and deliver them to the corresponding channels.

When the machine is in action, the frame F remains at rest and the reeds G have a limited vertical motion therein. This motion is imparted to each reed by a horizontal lever M mounted at one end on a fixed pivot m', and engaged at the opposite end in a notch in the reed.

Each lever is acted upon at the middle by a vertical reed N, the rising movement of which is effected by a finger-key mechanism preferably such as that shown in U. S. Patent #530,931.

The levers M are each urged upward by a spring O, but held normally downward by the reed N, which is in turn urged downward by spring P'. When a finger-key is actuated, the corresponding reed N is lifted, releasing the lever M, which is lifted by the spring O, causing the reed G to shift the escapement E from its normal position against the resistance of spring *e*.

As the actuating levers M are fixed in position, while the reeds G are adjustable upward and downward with the frame F from one magazine to another, it follows that the levers must engage the reeds at one point or another, according to the height at which the reeds are adjusted. To this end each reed is provided with several notches *g*, one for each magazine.

Preparatory to shifting the frame F and its reeds upward and downward, the reeds must be disengaged from the escapements. This is effected by moving their guide-bars forward in the frame F. These bars are provided with horizontal racks engaged by pinions h' on two horizontal shafts in the frame F. These pinions are actuated by a vertically sliding rack-bar h^3 which slides vertically in the frame F.

After effecting the vertical movement of the frame F and the contained reeds, it is provided, as shown in Fig. 3, with vertical racks f^3 engaged by pinions f^2 on the ends of a shaft h^5. The rack-bar h^3 for shifting the reeds forward and backward, receives motion from a pinion h^4. This pinion and the pinions for raising and lowering the frame F, are actuated through intermediate connections from hand-levers h^9 and h^{11}.

All of the foregoing parts, including connections from the hand-levers to the mechanism for shifting the reeds, are or may be of the same construction and arrangement as the parts disclosed in my previous patent above referred to. Instead, however, of mounting the subsidiary reeds, their supporting-frame F, and the channel-plate on the main-frame as before, I now provide a supplemental front frame D, such as shown more particularly in Fig. 2, and hinge the same at one end on a vertical pintle d fixed in the main-frame. This frame D, which lies normally across the front of the machine, is provided at one end with an eccentric d' which engages the main-frame and locks it rigidly in position. When this eccentric is turned about its pivot, it releases the frame so that it may be swung backward away from the front of the main-frame.

The frame D, which is made preferably of skeleton form, is provided with vertical grooves d^2 to receive and guide the ends of the reed-supporting frame F. It is also adapted to sustain the horizontal shaft h^5 through which the frame F and the reed-guides H are controlled and adjusted. At its front, the frame D contains the vertical partition plates d^3, between which the matrices received from the bridge L, descend to the assembler belt. The frame D also carries at its front the glass front-plates d^4 and d^5, suspended on pivot-rods d^6 and d^7, around which they may be turned to gain access to the matrix channels. The hand-levers h^9 and h^{11}, and all the coöperating parts and connections to the frame F and guides H, are also mounted on the frame D. In short, all of the parts forward of the magazine, designed to coöperate with the escapements and with the reed-actuating devices, are mounted on the frame D so that when this frame is swung forward from its normal position, as shown in Fig. 4, the forward ends of the magazines, their escapements, the reed-actuating levers M, the reeds N, and all the other parts on the front of the main-frame, are exposed to view and made easily accessible. The opening of the front frame also exposes in its back the subsidiary reeds and the parts coöperating therewith, so that they may be readily inspected, adjusted and cleaned.

It will be observed that the opening of the frame does not disturb the adjustment of the subsidiary reeds G, so that whenever it is necessary to gain access to the magazines or escapements, the front may be opened and instantly closed, leaving all the parts in the positions they previously occupied, so that composition may proceed without delay and without danger of delivering matrices from the wrong magazine.

It will be manifest to the skilled mechanic that the frame D may be modified in form at will; that the hinged connections or sup-

ports may be varied; that the locking devices may be changed; and that any other modifications within the range of mechanical skill may be made without changing the mode of action or passing beyond the scope of my invention.

The magazines instead of being combined with mechanism for lifting them preparatory to removal, are now mounted at their sides in vertical grooved plates forming parts of the main-frame, so that each magazine may be slid into and out of the machine at the front, the front frame D being first turned backward out of the way. As all the parts at the front are mounted on the frame, it will be seen that they are carried away from the path of the magazine by the swinging movement of the frame, and that consequently it is not necessary to lower the frame F, the reeds, or the bridge L in order to permit the removal or introduction of any magazine. This is advantageous, first, because it admits of the front frame being opened at any instant without stopping to adjust the other parts, and second, because the return of the frame to its operative position restores all the parts to the positions they originally occupied, so that the reeds are certain to continue the delivery of matrices from the particular magazine which was in use when the frame was opened.

In order that the reed-actuating levers M may be conveniently removed for the purpose of cleaning and lubricating them, they are all mounted on a bar or frame *m*, which is seated in the main-frame in such manner that it may be withdrawn at the rear at will. It will be held in place by thumb-screws, or any equivalent fastening devices.

It will be observed that the lower arms of the levers M enter notches in the reeds N, and that these notches are elongated vertically to permit lost motion between the parts.

The springs O, secured to the levers and seated at their lower ends upon the reeds, maintain a close contact between said parts under normal conditions, so that they will operate silently.

In the event of the escapements or the reeds G meeting with resistance in their upward movement, for example from the presence of a matrix ear directly over the end of an escapement, the springs will yield and permit the reeds N to rise independently, the parts being thus relieved from excessive strain so that breakage is prevented.

It is to be observed that the arrangement of the spring is such that motion is communicated through it to the escapement for moving the latter in the direction which affects the release of the matrix. As the reeds are moved mechanically in all these machines the interposed position of the spring prevents the parts from being strained or broken in the event of the escapement meeting with undue resistance from a matrix, or otherwise.

The main reeds N pass at their upper ends usually through a bar P, having a rib which enters a notch *n* in each reed, the notch being elongated vertically to permit the independent movement of the reeds.

A rock-shaft Q is extended across the frame and provided at each end with a crank or arm *q* bearing against the rock-shaft for the purpose of raising the same and thereby raising the reeds N. This arrangement limits the downward movement of the reeds when the levers M are withdrawn, and admits of the reeds being raised in series under the springs O when the levers are restored to their working position.

The shaft Q may be provided with a handle or any other suitable means for turning it.

Having described my invention, I claim as my invention and desire to secure by Letters Patent:—

1. In a line casting machine, the main frame, and a series of superposed magazines therein, each with a series of escapements, in combination with the hinged front frame containing the vertical channels to receive the matrices, the vertically sliding frame with the bridge thereon, and the escapement-actuating reeds therein.

2. The main frame, the superposed magazines therein, each provided with escapements, and a reed-actuating device also mounted in said frame, in combination with a swinging front frame, D, said frame containing the vertically adjustable reed-supporting frame, F, with bridge, L, thereon, and the front channels to receive the matrices.

3. The main frame, the fixed magazines, each provided with escapements, and a reed-actuating device, in combination with the swinging frame, D, having the adjustable reed-supporting frame, the matrix-supporting bridge, the front channels, and the front plates sustained thereon; whereby said frame, and the members supported thereby, may be permitted to swing away from the front of the machine to expose the magazines, the escapements, and the reed-actuating device.

4. In combination, the main-frame, the series of superposed magazines arranged to slide forward out of the frame, and each provided with escapements, the hinged frame, D, the vertically movable reed-supporting frame, F, mounted on the frame, D, and the mechanism for adjusting the frame, F, also sustained by the frame, D; whereby the entire escapement-actuating mechanism is permitted to swing away from the operative position, and the removal of any magazine permitted without disturbing the vertical adjustment of the reeds.

5. In combination with an escapement, its actuating reed G, the reed-actuating lever M, a reed N for operating the lever, and a spring interposed between the reed N and the lever; whereby the connections are permitted to yield in the event of the escapement meeting with undue resistance.

6. In a machine of the class described, the combination of the main-frame, the escapement-actuating reeds G seated therein, the reed-actuating levers M, and the secondary frame *m* sustaining the series of levers and detachably mounted in the main-frame, substantially as described; whereby the removal of the entire series of levers at will independently of the other parts is permitted.

7. In combination with the removable frame containing the levers, M, the spring, O, the series of reeds, N, and means substantially as shown for raising the reeds in series above their normal positions.

8. In a machine of the class described, an escapement for releasing the matrices, in combination with actuating mechanism, including a spring through which the escapement is moved in the direction necessary to release a matrix.

In testimony whereof I hereunto set my hand this 10th day of March, 1908, in the presence of two attesting witnesses.

JOHN R. ROGERS.

Witnesses:
DAVID S. KENNEDY,
JESSIE S. SMITH.