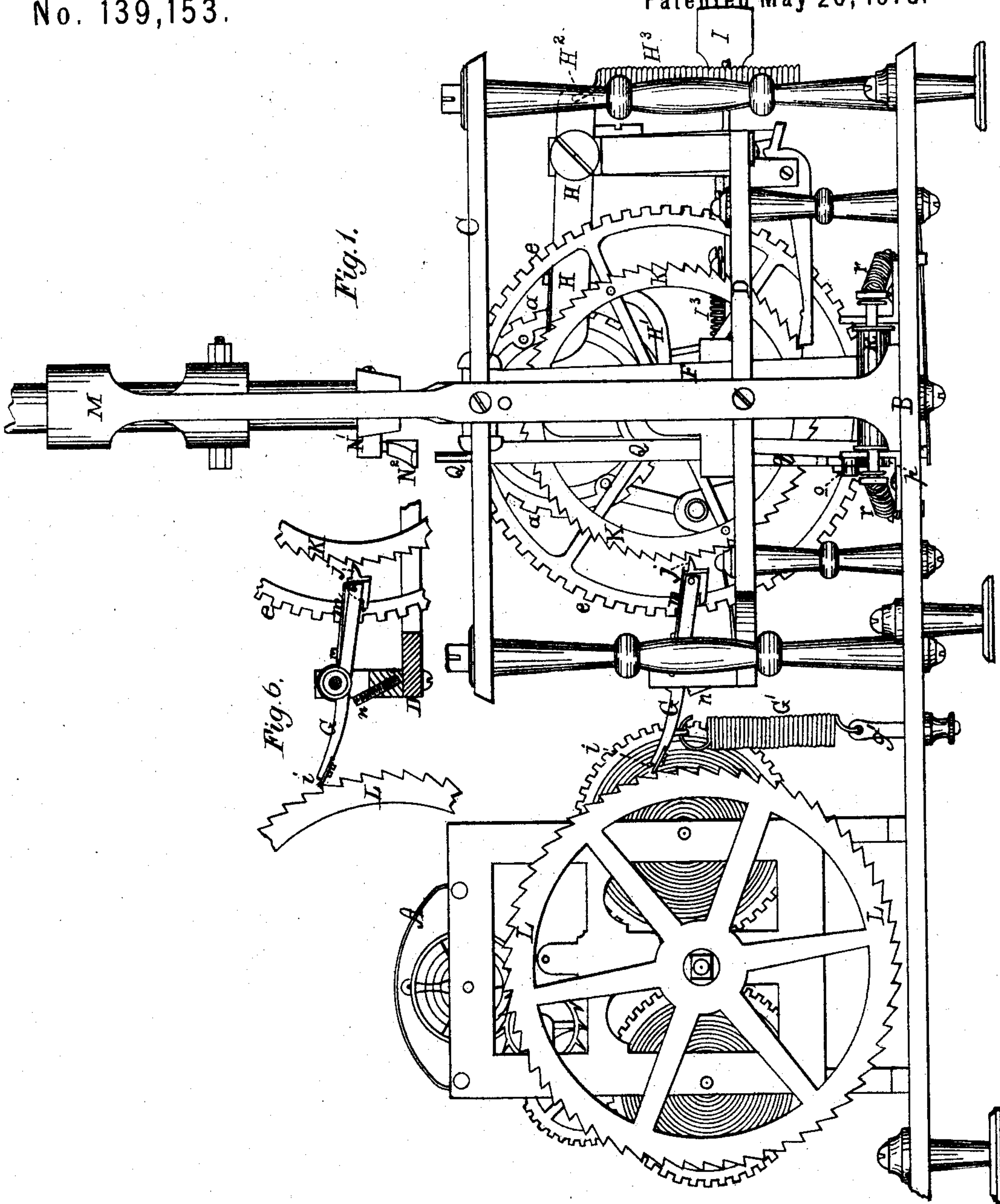


**J. C. HINCHMAN.**

## Automatic Time Printing-Machines.

No. 139,153.

Patented May 20, 1873.



**Witnesses:**

J. West Wagner.  
E. C. Adams  
E. Davis

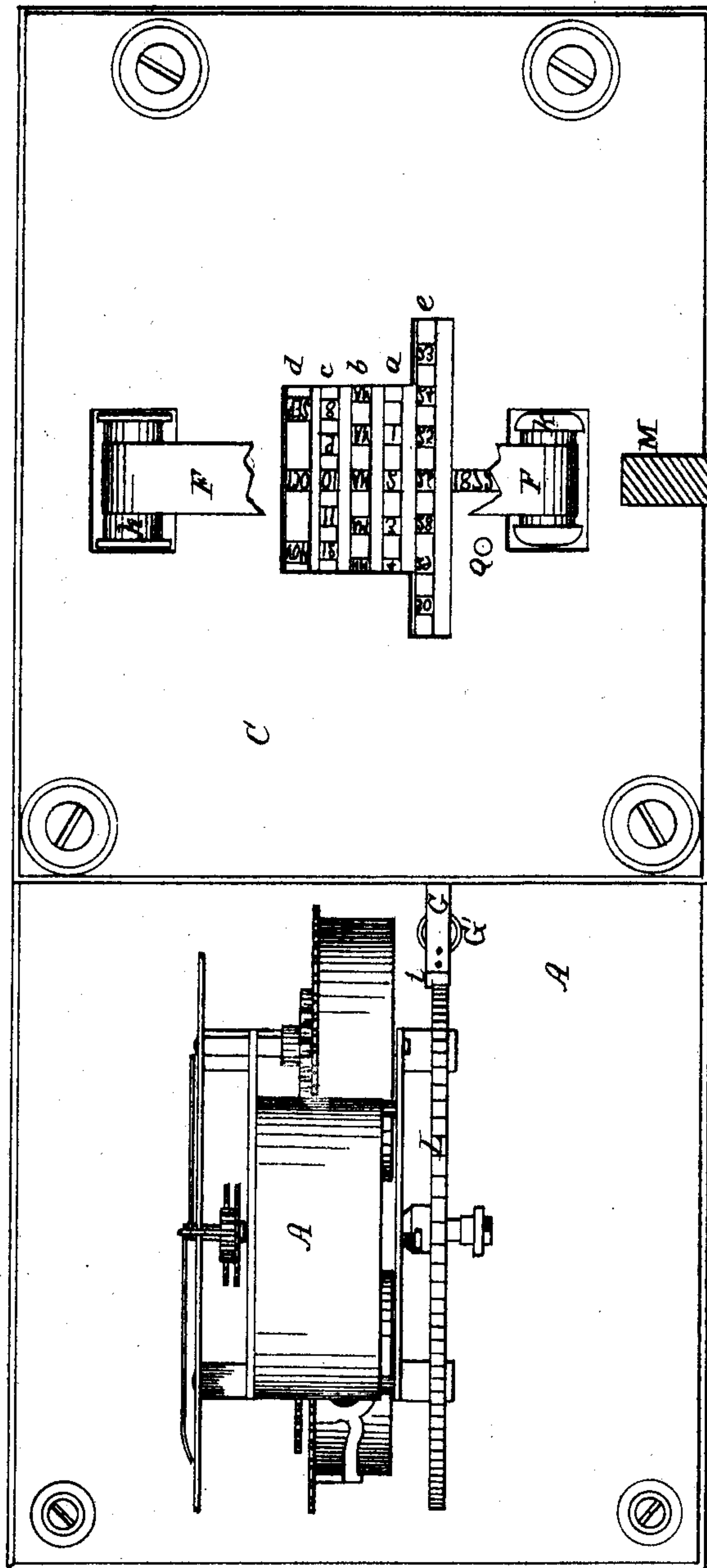
**Inventor:**

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Fig. 2.



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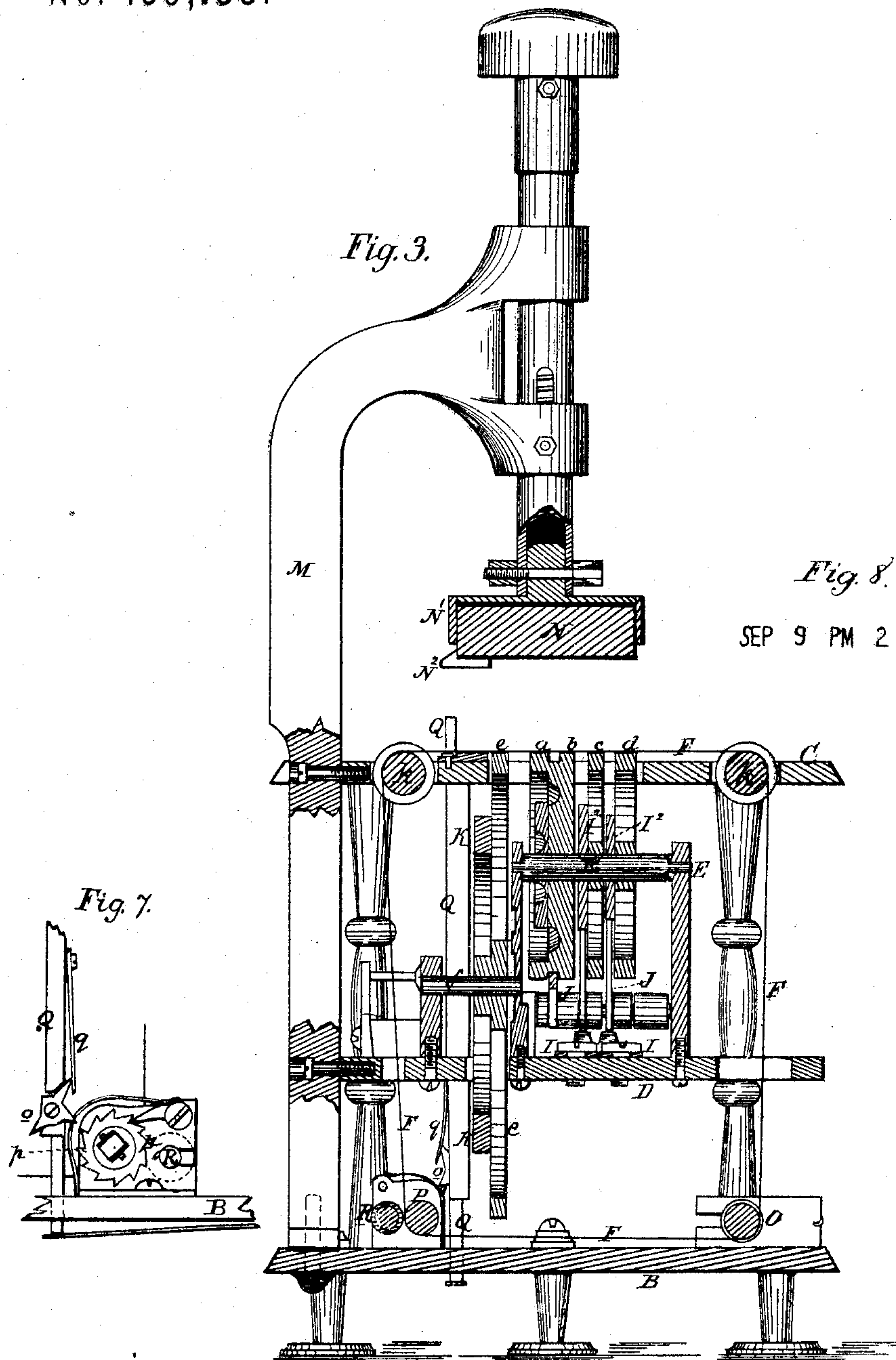


Fig. 8.

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Fig. 7.

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Fig. 4.

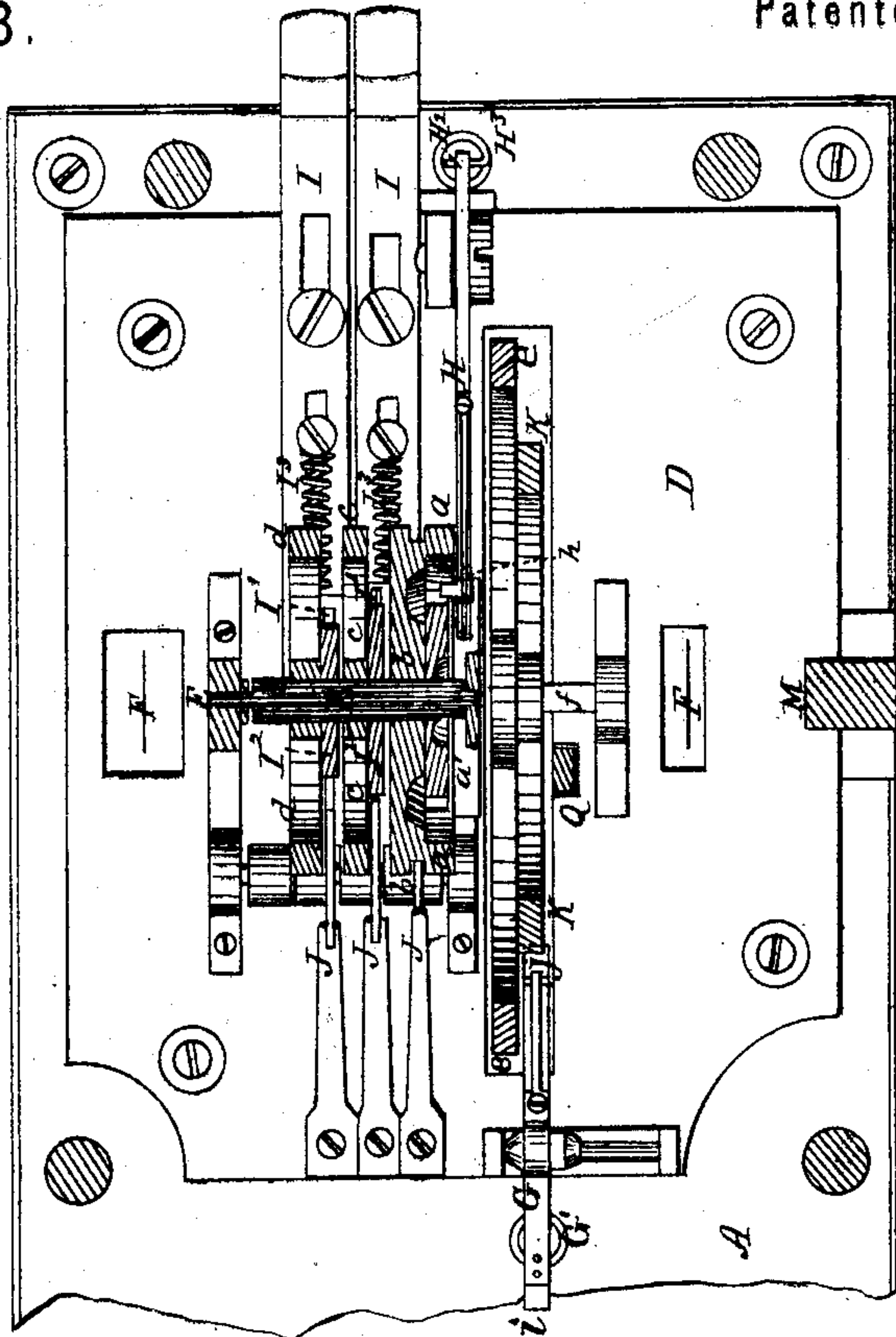
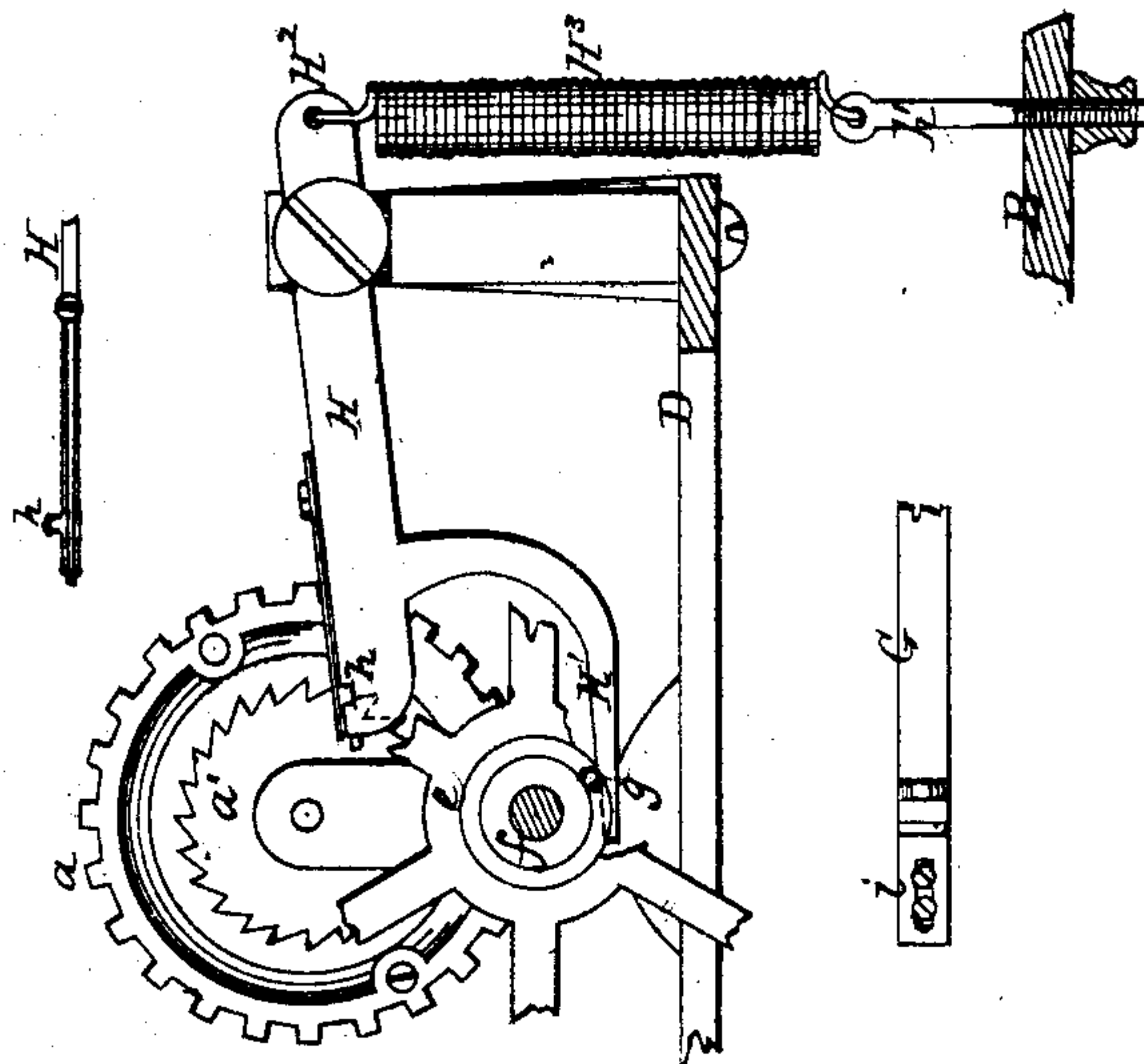


Fig. 5.



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# UNITED STATES PATENT OFFICE.

JOHN C. HINCHMAN, OF BROOKLYN, N. Y.

## IMPROVEMENT IN AUTOMATIC TIME-PRINTING MACHINES.

Specification forming part of Letters Patent No. **139,153**, dated May 20, 1873; application filed October 2, 1872.

A.

*To all whom it may concern:*

Be it known that I, JOHN C. HINCHMAN, of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Automatic Time-Printers, of which the following is a specification:

My invention relates to machines for automatically printing time, the object of which is to indicate the time for all purposes requiring a record or imprint of the time and date desired; and the invention which forms the subject-matter of this patent consists: In combining with an automatic time-printing machine and a clock or watch movement, an intermediate device having no fixed connection therewith, but transmitting from the motor the intermittent movement to the timing-machine, whereby the isolation of the clock-movement from the printing-machine is effected, and it is relieved from the disturbing effects of the blows of the stamp, which is a matter of great importance in preserving the accuracy of the clock-movement and consequently that of the timing-machine; in combining with a timing-machine and a clock-movement motor a minute or fraction of a minute division-wheel with each, and a communicating intermediate device in a manner that the minute or other divisions of one will be transmitted to the other at intervals corresponding to such divisions; in the arrangement and combination of a forked lever with the minute, hour, and meridian wheels, so that its release from the acting point of the minute-wheel will instantly operate the hour and meridian-wheels their respective points; in the combination with a stamp-printing machine of the automatic endless ink-ribbon, the intermittent feed movement whereof is produced by and through the descent of the stamp or presser, and in the devices for effecting such movement; in the arrangement of hand devices for operating the date and month wheels; and, finally, of an automatic time-printing machine, having all its parts constructed and arranged to operate to produce the desired results, as will be more fully hereinafter described.

In the accompanying drawing—

Figure 1, Sheet No. 1, represents an eleva-

tion of a time-printer embracing my invention. Fig. 2, Sheet No. 2, represents a top view thereof. Fig. 3, Sheet No. 3, represents a vertical cross-section of the timing-machine through the axis of the printing-wheels. Fig. 4, Sheet No. 4, represents a horizontal section of the timing-machine, through the axis of the printing-wheels. Fig. 5, Sheet No. 4, represents a sectional elevation, showing the forked lever for operating the hour-wheel by the minute-wheel.

The machine consists of two principal parts, viz., a motor of any suitable clock or watch movement, shown at A in the drawing, and a timing-machine for transferring by impressions a correct record of time. The mechanism of this timing-machine is mounted upon three plates, viz., a bed-plate, B, a top-plate, C, and an intermediate plate, D, the two upper ones being supported a suitable distance apart by pillars. The printing-wheels *a b c d*, indicating the hours, meridian, days, and months, are arranged vertically, side by side, upon a horizontal axis, E, supported upon the middle plate. The hour and meridian-wheels *a b* move together, and the month and day-wheels *c d* have a movement, independent of each other and the wheels *a b*, upon their axis E, and being of equal diameter project above the top plate C sufficient to expose their peripheries, on which are formed the characters indicating time, so as to receive the action of a presser-stamp and transmit their record of time through an inking ribbon, F, under pressure. The minute-wheel *e* is mounted upon a separate axis, *f*, also supported upon the middle plate D, and is twice the diameter of the first-mentioned wheels. This wheel *e* is operated intermittently by a lever device, G, pivoted in suitable bearings on the middle plate, and actuated in a manner to be presently described, while the hour-wheel *a* is operated in an opposite direction by means of a forked lever, H, pivoted to a post on the middle plate D and actuated by the motion of the minute-wheel *e*, a pin, *g*, Fig. 5, from which, as it is revolved, strikes the lower branch H<sup>1</sup> of the lever and presses it down, raising its outer end, H<sup>2</sup>, against the force of a spiral adjustable spring, H<sup>3</sup>, so that the acquired force of the lever H through the spring H<sup>3</sup> will be



sufficient to impart to its inner end, when released, an upward movement adequate to rapidly carry into position the hour-wheel *a* by means of a small spring pawl, *h*, pivoted to the upper branch of the lever *H* so as to project laterally to engage with the teeth of a ratchet-wheel, *a'*, Fig. 5, affixed to the side of the hour-wheel *a*. By this arrangement one entire revolution of the minute-wheel *e* will turn by its pin, *g*, Fig. 5, the hour-wheel *a* one point, and indicate the hour present, the forked lever *H* being depressed, step by step, by the action of the lever-escapement *G* for about fifteen minutes before flying the minute-wheel. This depression of the lever *H* gives tension to the adjustable spring *H*<sup>3</sup>, and when the lever *H* is finally released the spring *H*<sup>3</sup>, by its acquired force, will rapidly cause the lever *H* to react and fly the hour-wheel by the pawl *h*, shown in Figs. 4 and 5. In this movement the lever-escapement *G* performs the function of raising and storing up force in the spring of the forked lever *H*; the lever-escapement *G* must therefore be adjusted in connection with the spring *H* so as to fly the minute-wheel *e* a single point; and for this purpose both levers *G* and *H* are provided with adjusting-screws *g'* and *h'*, connecting their respective springs *G'* and *H*<sup>3</sup> with the bed-plate. This forked-lever connection, however, may be dispensed with and the proper movement of the hour-wheel effected by the direct action of a separate lever-escapement (like the lever *G*) contacting with the motor-wheel of the clock and turning a ratchet-wheel of sixty divisions, one revolution of which will fly the hour-wheel at each revolution—that is, once in sixty minutes. This arrangement will turn the hour and meridian wheels in the same direction with the others, and thus obtain the proper action of the minute and hour wheels direct from the time-piece, and by the same motor-wheel thereof, a pin from which may operate the second lever-escapement. The meridian-wheel *b* is affixed to and operated by the hour-wheel *a*, and contains twenty-four divisions of time, indicating ante and post meridian, corresponding to the twenty-four hours of the day. The date and month wheels *c* and *d* are operated by hand by means of slides *I* supported upon the middle plate *D*, and provided with spring-pawls *I*<sup>1</sup>, rising therefrom in positions to come in contact with the teeth of ratchet-wheels *I*<sup>2</sup>, carried by the said day and month wheels *c* and *d*, so that as each slide *I* is pushed forward, the proper movement of these wheels will be made, the limit whereof is controlled by spring-pawls *J*, at the opposite sides, and the slides *I* are moved by springs *I*<sup>3</sup> in positions to act again.

Now, it will be observed that the mechanism just described is put in motion and rendered operative by means of clock or watch movement. The connection thereof, however, with such movement is not perma-

nent or uninterrupted, having no fixed connection therewith. This is the distinguishing feature of the invention embraced in this patent, the object whereof being to isolate the two machines, and thus render them distinct and separate from each other to insure no interruption to the clock or watch movement from the blows of the presser-stamp. This is effected by the lever *G*, which spans the space between the two machines, and has an intermittent contact between the two by means of a ratchet-wheel, *K*, on the face of the minute-wheel *e*, and a ratchet-wheel, *L*, on the driving-shaft of the clock-movement. These wheels, *K* and *L*, have equal divisions of teeth or pins, corresponding with the divisions of the hour. The acting-points of the lever *G* are of hardened steel, the one, *i*, which acts upon the teeth of the clock-movement ratchet wheel *L*, is made adjustable by a slot and set-screw to obtain a fine adjustment, while the other, *j*, is pivoted so as to obtain a reactionary movement after flying the minute-wheel, making in effect a flexible acting-point, which yields as it passes over the teeth of the ratchet-wheel *K*, and when passing each tooth, resuming its proper position by a spring, *m*, bearing upon its acting-point, so as to cause it to fall below the tooth over which it passed, and freeing itself from contact therewith; when directly thereafter, the other end of the lever, which had been raised to the limit of its movement, is released from the teeth of the ratchet-movement and falls by the force of an adjustable-spring, *G'*, which causes the first-mentioned end of the lever to come in contact with the teeth of the ratchet, thereby causing the minute-wheel *K* of the timing-machine to fly one point; and so on. The lever *G* oscillates, alternately repeating its function received from the minute-wheel *L* of the clock-movement, and transmitting it to the minute-wheel *K* of the timing-machine, without any fixed connection therewith.

The limit of the movement of the lever *G* is effected by means of a screw-stop, *n*, arranged to arrest the descent of the end *i* of the lever, to which the spring *G* is secured, and necessarily the ascent of the end *j*, which operates the minute-wheel *K* of the timing-machine, and thus insures the proper movement each time of one point of said wheel, the screw-stop *n* being adjustable, and the springs *G'* and *H*<sup>3</sup> of the levers *G* and *H*, which fly the minute and hour wheels *e* and *a*, being provided with adjusting-screws *g'* and *h'*, so that the exact adjustment of the operating parts can be obtained.

The stamping device is supported by a socketed standard, *M*, on the frame, directly above the printing-wheels, and its ascent is effected by a spring in the usual manner. The presser-bed *N* consists of a rubber strip equal in length and width to the line of figures to be printed, so as to confine the impression upon the inking-ribbon *F* upon a single straight line. It is secured within a socket made



flaring in its cross-section and carried by the stamp-stem. The inking-ribbon F is endless, and passes over rollers *k k* secured in the top plate, and a torsion and feeding-roller, O and P, upon the bottom plate. It has an automatic intermittent feeding movement over the printing-wheels, effected in the following manner: The presser-stamp N<sup>1</sup> is provided with a foot, N<sup>2</sup>, which, in its descent, strikes the end of a rod, Q, fitted in guides in the top and bottom plates C B, and its lower end has a pivoted pawl, O, which operates a ratchet-wheel, *p*, (as shown in Fig. 7, Sheet No. 3,) on the feed-roller P. The pawl *o* is pivoted so as to be held by a branch and spring, *q*, against the rod Q, and slip over the tooth at every ascent of the rod. An inking-roller, R, is held against the feed-roller P by springs *r*, and the torsion-roller O maintains the proper tautness of the feeding-ribbon. The impressions, as produced by the type-dials, in a straight line, are shown in Fig. 8, Sheet 3, of the drawing.

Having described my invention, I claim—

1. In an automatic time-printing machine, having a clock-movement motor, the combination therewith of an intermediate device, G, having no fixed connection therewith, but transmitting an intermittent time movement of one to the other.

2. In an automatic time-printing machine

having a clock-movement motor, combining with said motor and its transmitting-lever device G, a revolving-toothed wheel, L, having minute or other divisions, and arranged to operate the communicating lever G, in accordance with such divisions.

3. The lever device G, arranged to operate as described, provided with an adjustable-point, *i*, at one end, and a pivoted-pawl, *j*, at the other, and combined with an adjusting-spring, or its equivalent, as and for the purpose set forth.

4. The forked lever H H<sup>1</sup>, in combination with the minute, hour, and meridian wheels *e a b*, and arranged to operate the two latter, as described.

5. The arrangement of the hand-slides I, with their spring-pawls I<sup>1</sup>, for operating and limiting the movement of the date and month printing-wheels *c d*, as described.

6. The automatic time-printing machine having all its parts constructed and arranged for joint operation, as described.

In testimony whereof I have hereunto set my hand this 9th day of September, A. D. 1872.

JOHN C. HINCHMAN.

Witnesses:

A. E. H. JOHNSON,

J. W. HAMILTON JOHNSON.