

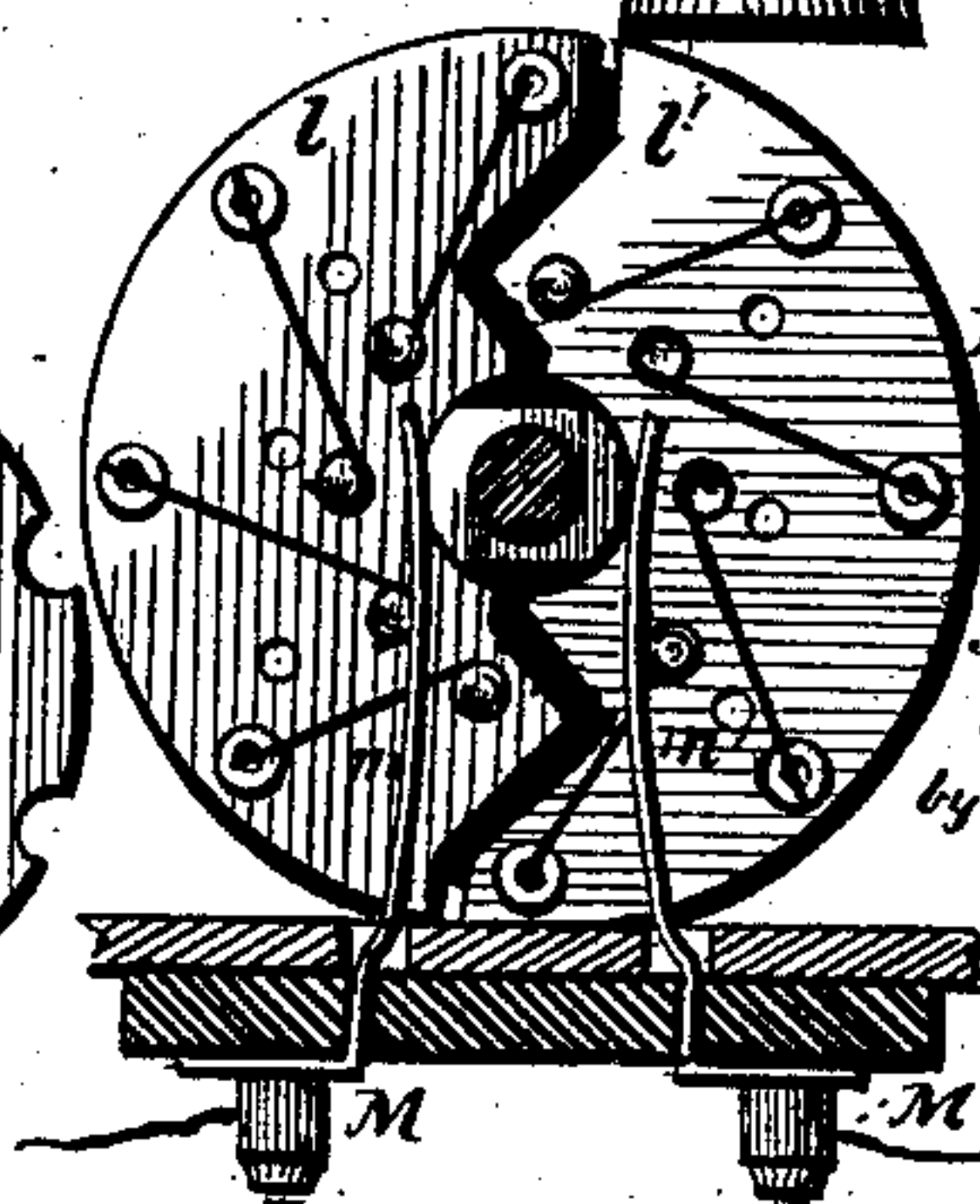
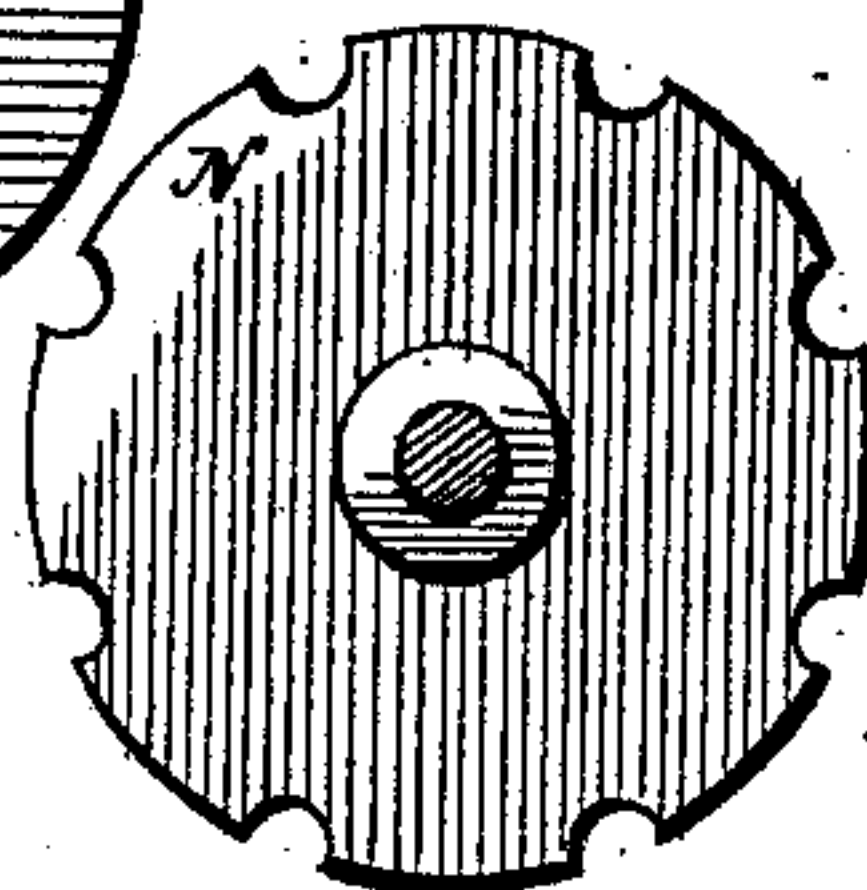
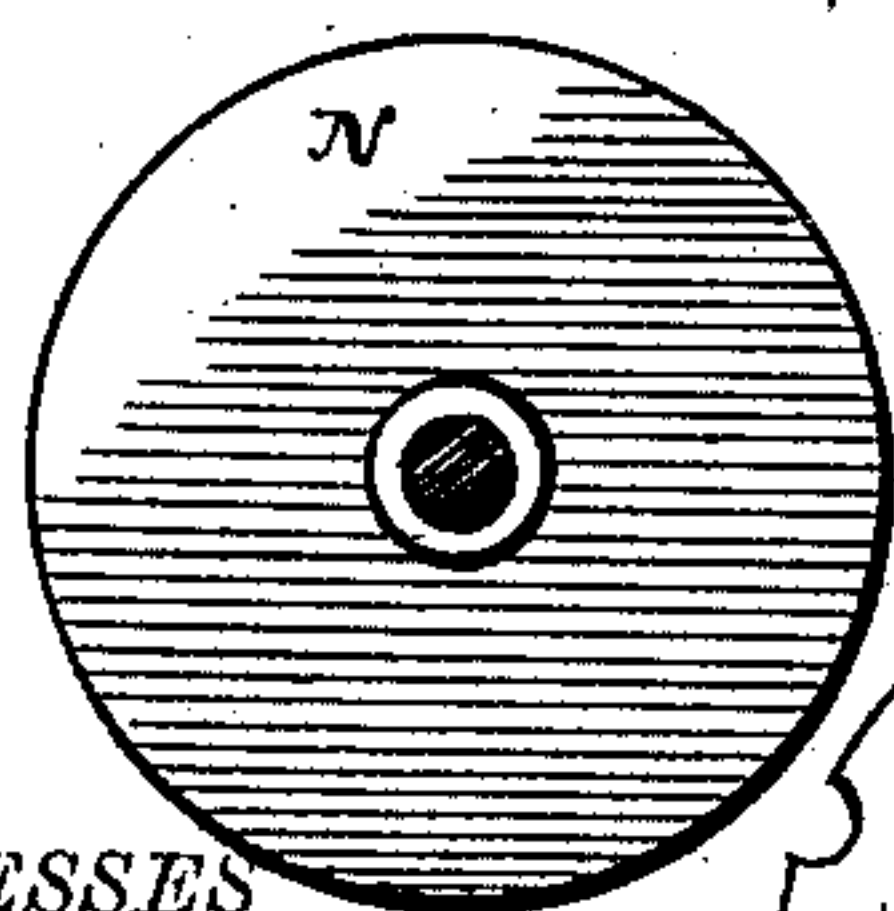
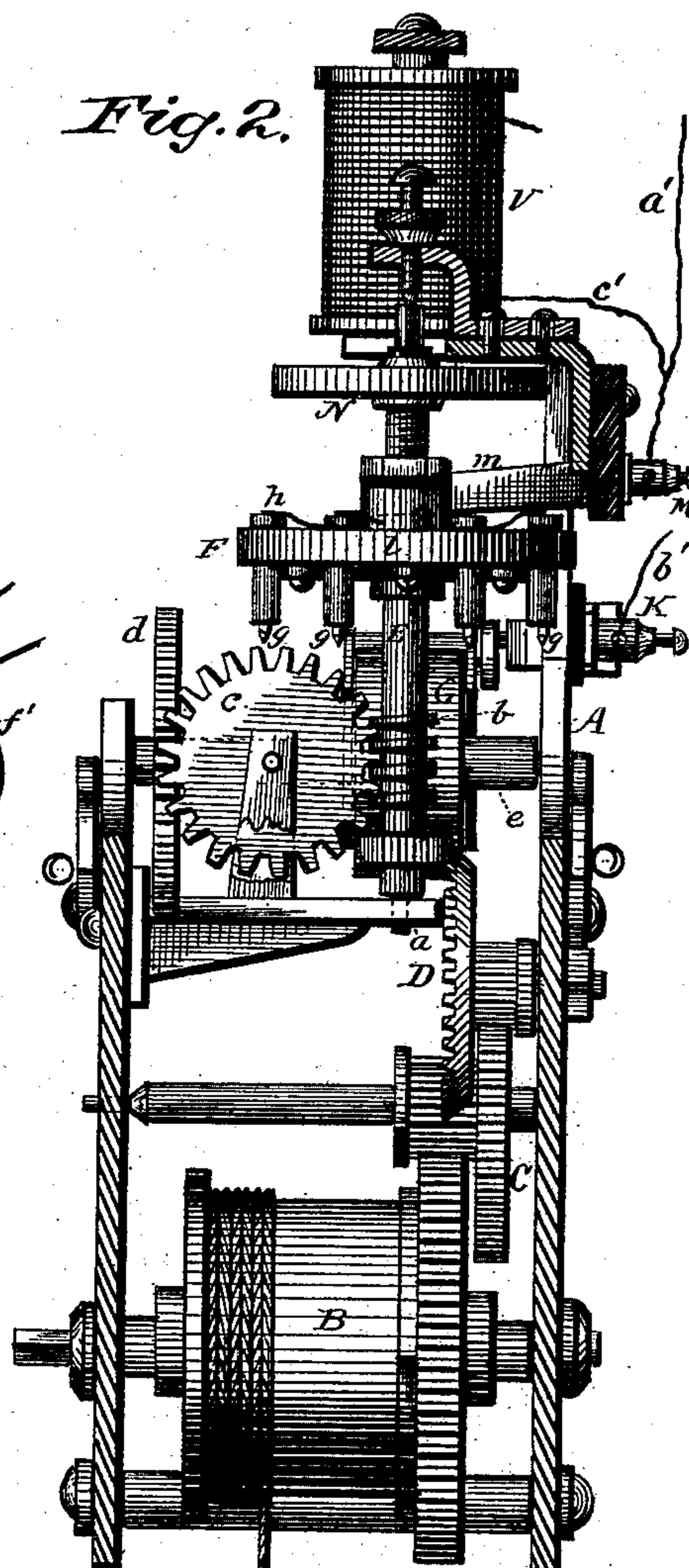
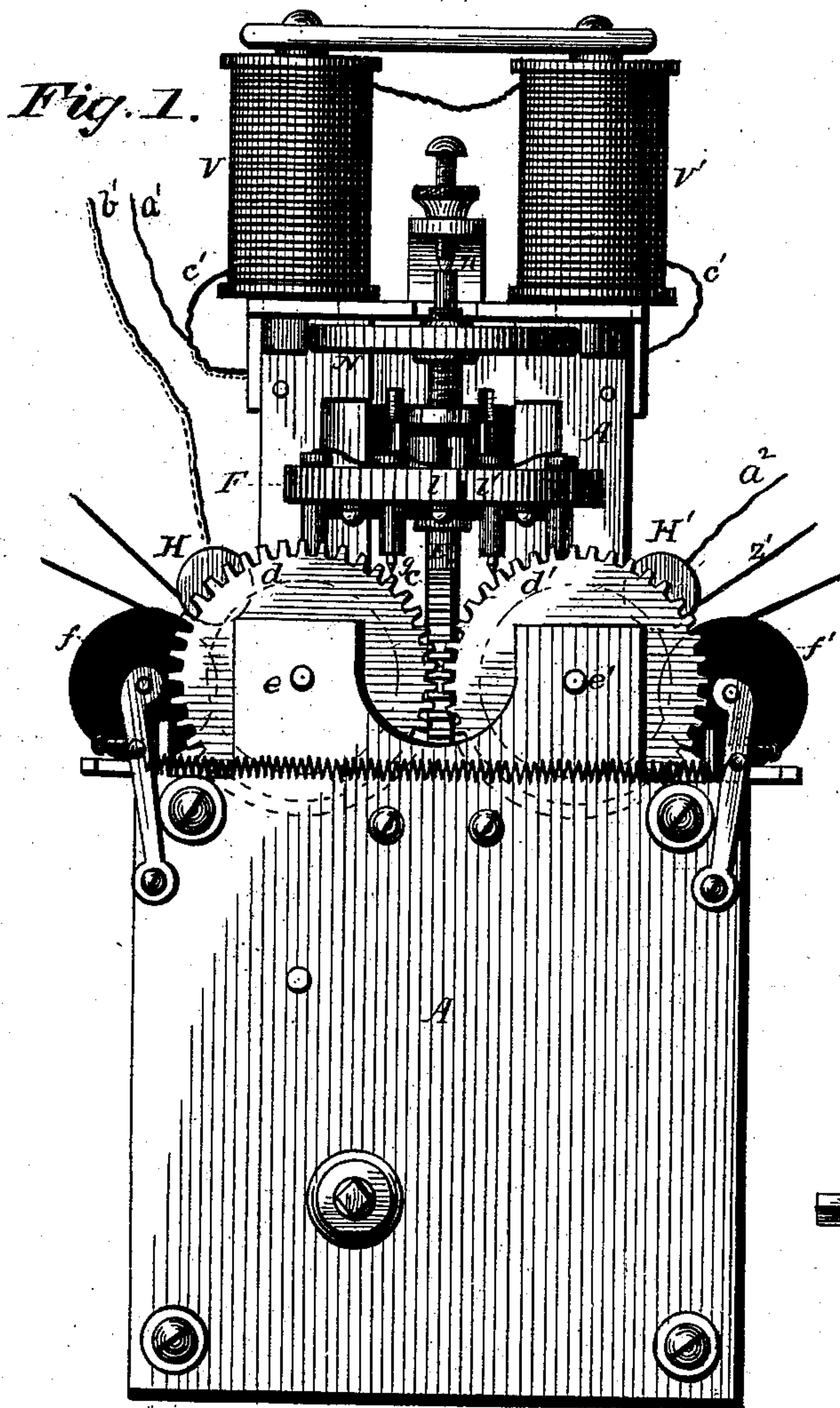
(No Model.)

3 Sheets—Sheet 1.

J. E. WATSON.
AUTOGRAPHIC TELEGRAPHY.

No. 372,245.

Patented Oct. 25, 1887.



WITNESSES

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Fig. 3.

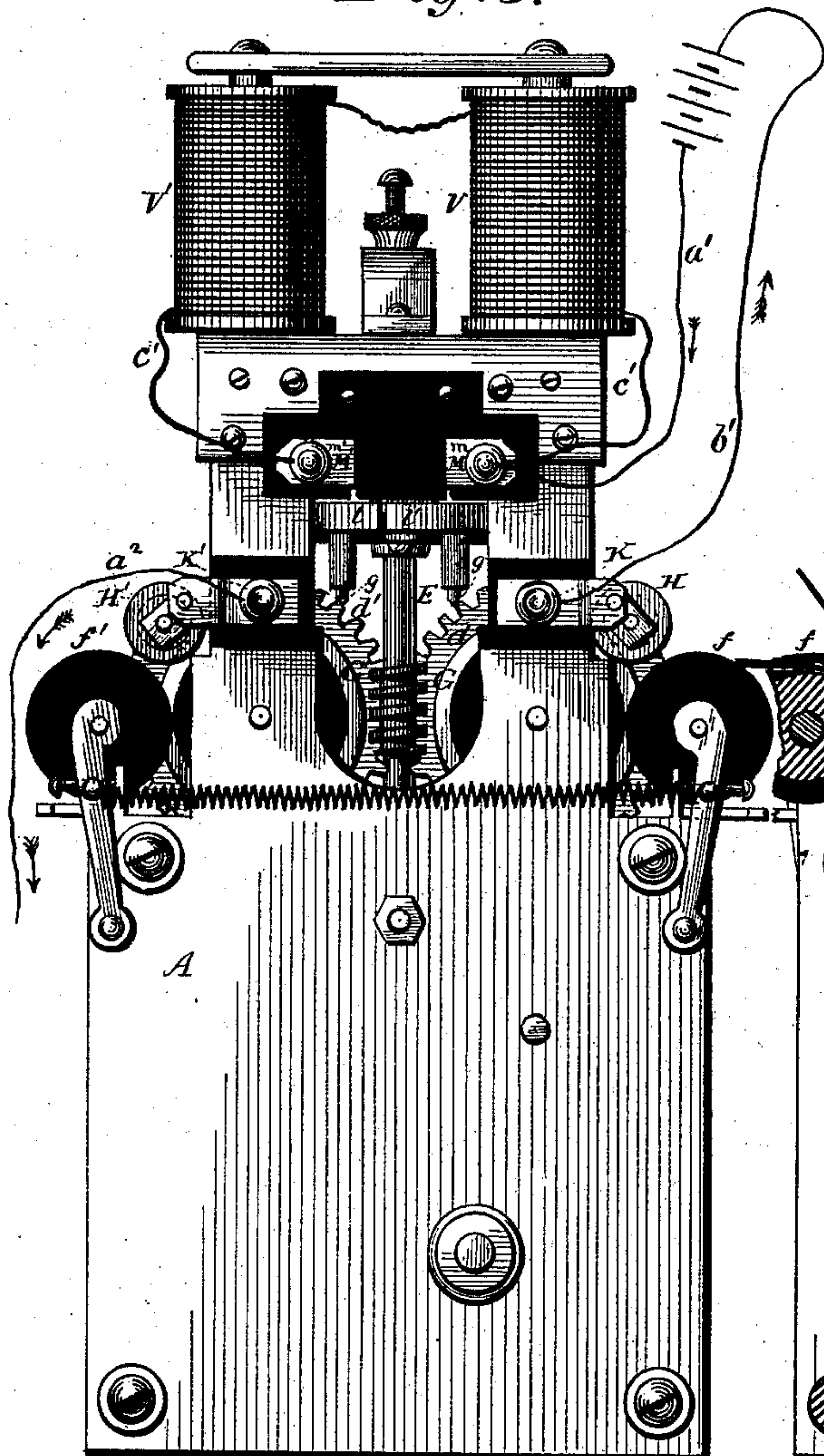


Fig. 4.

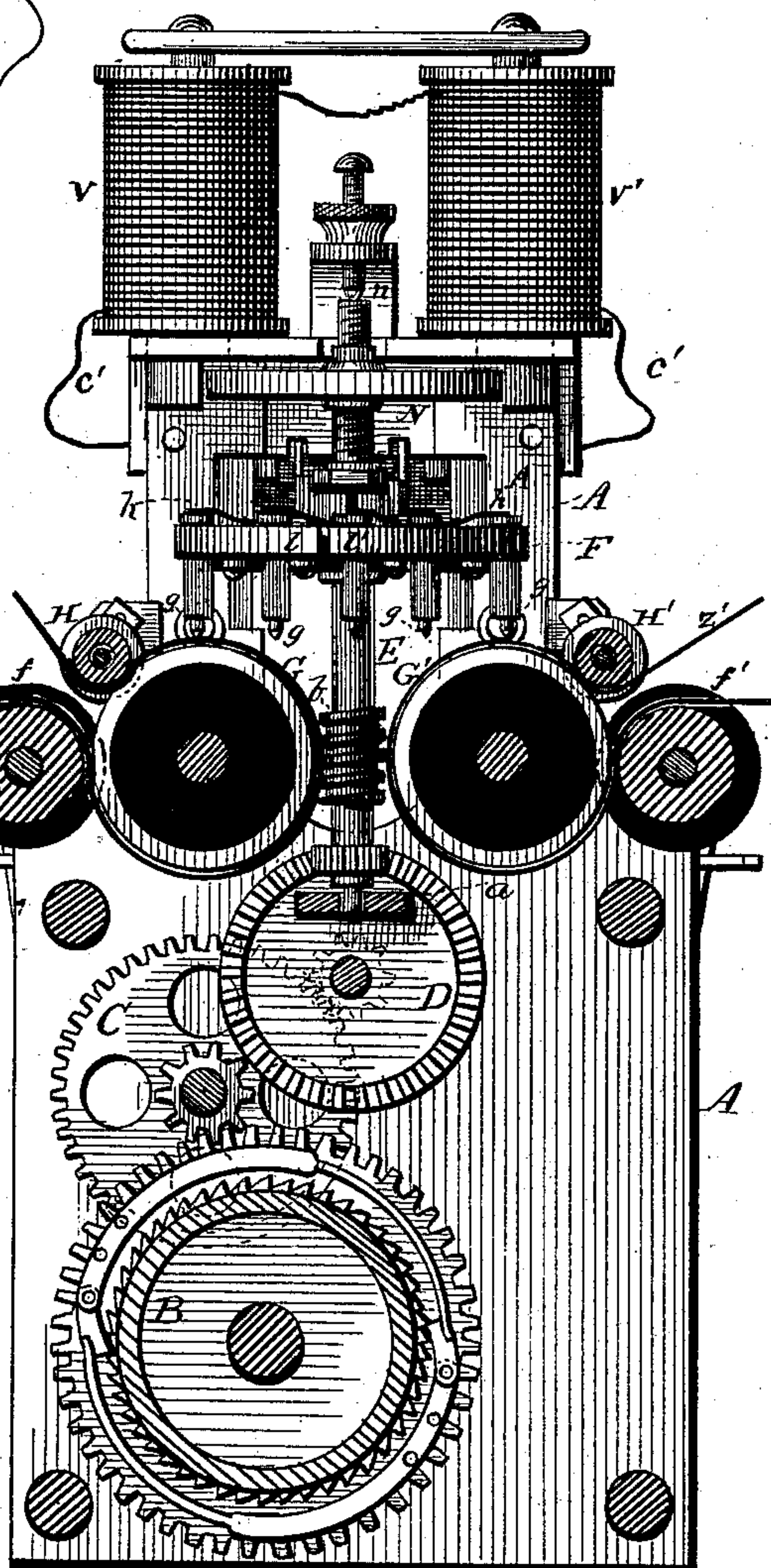
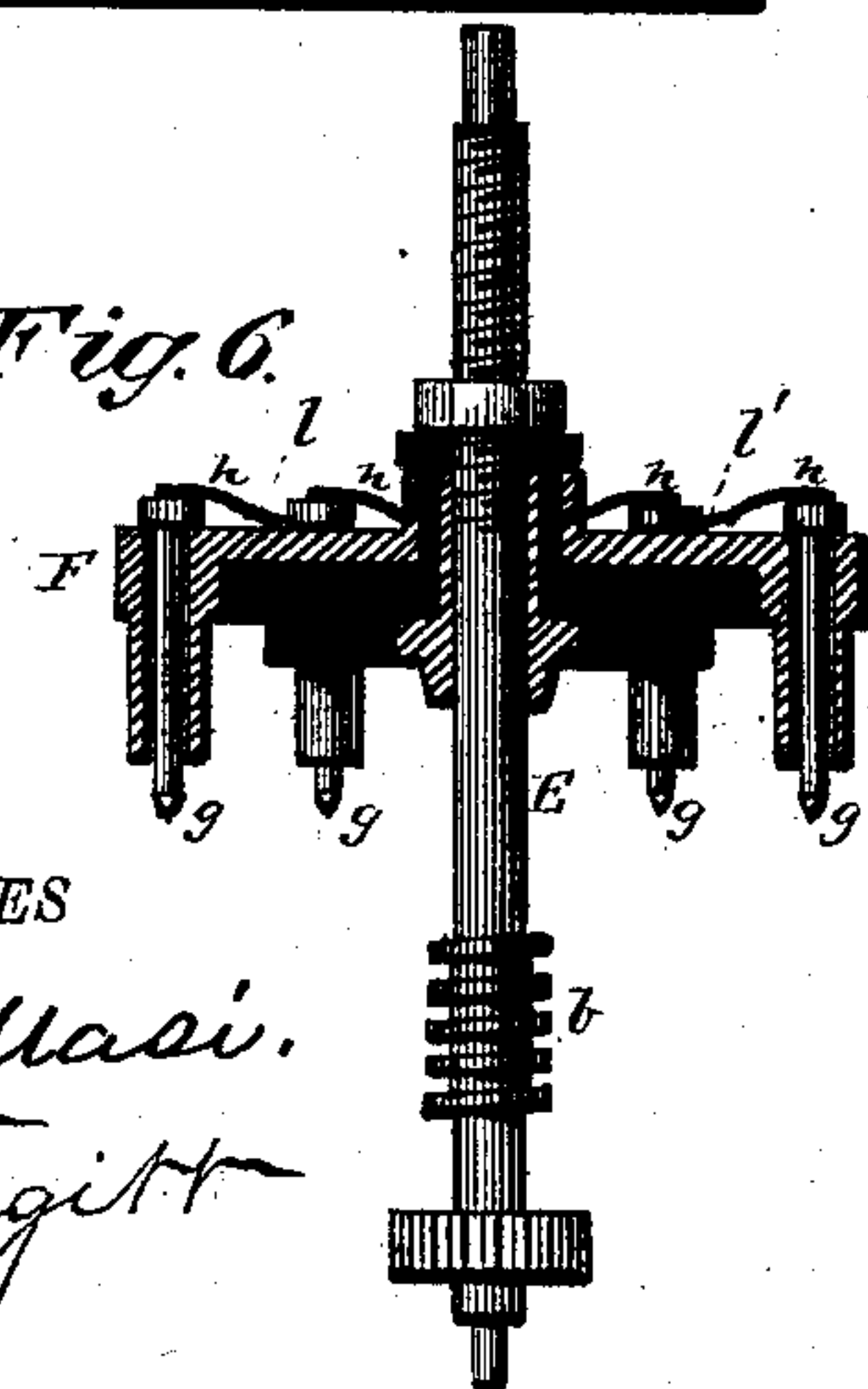
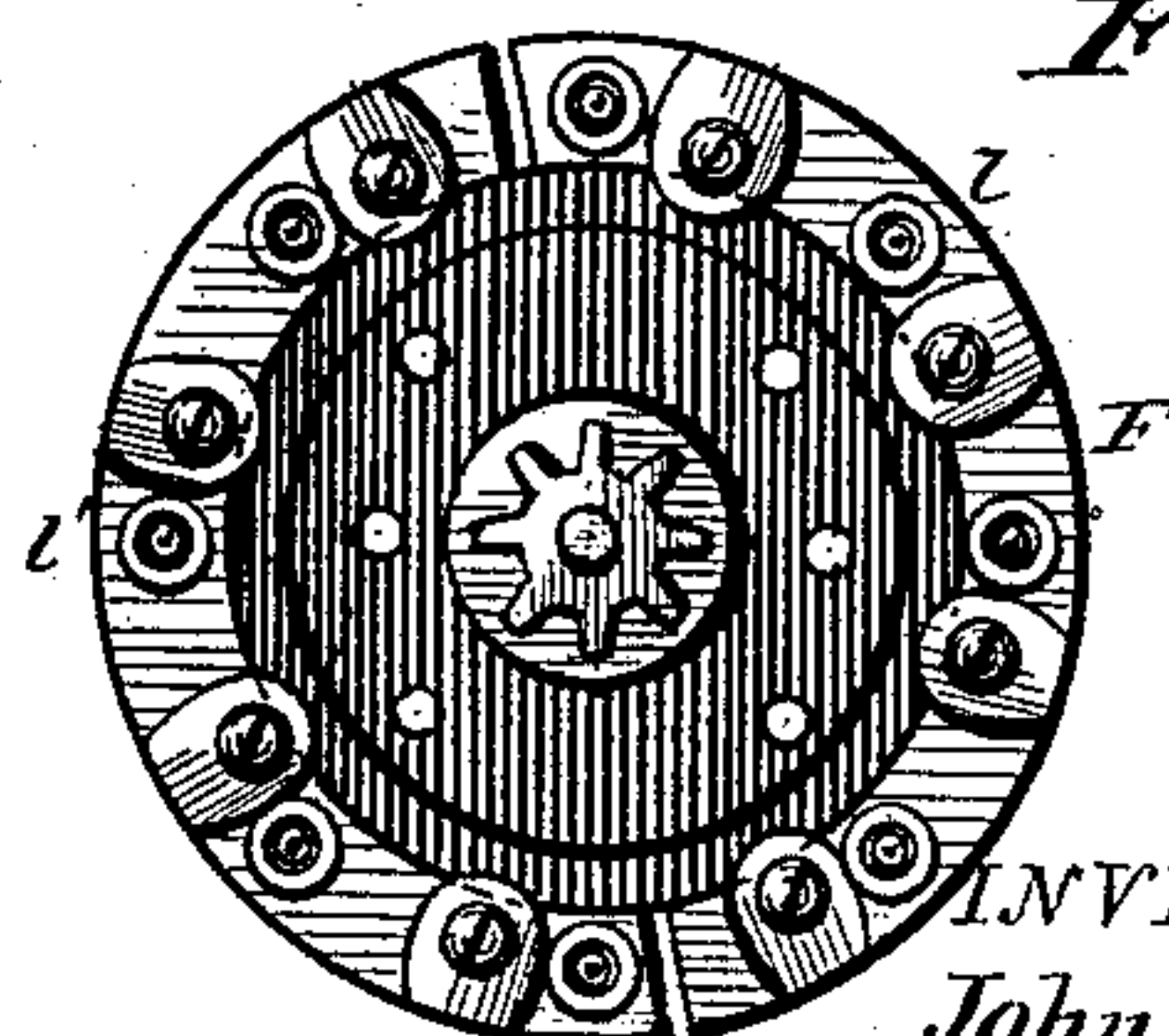


Fig. 6.



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Fig. 7.



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(No Model.)

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Fig. 9.

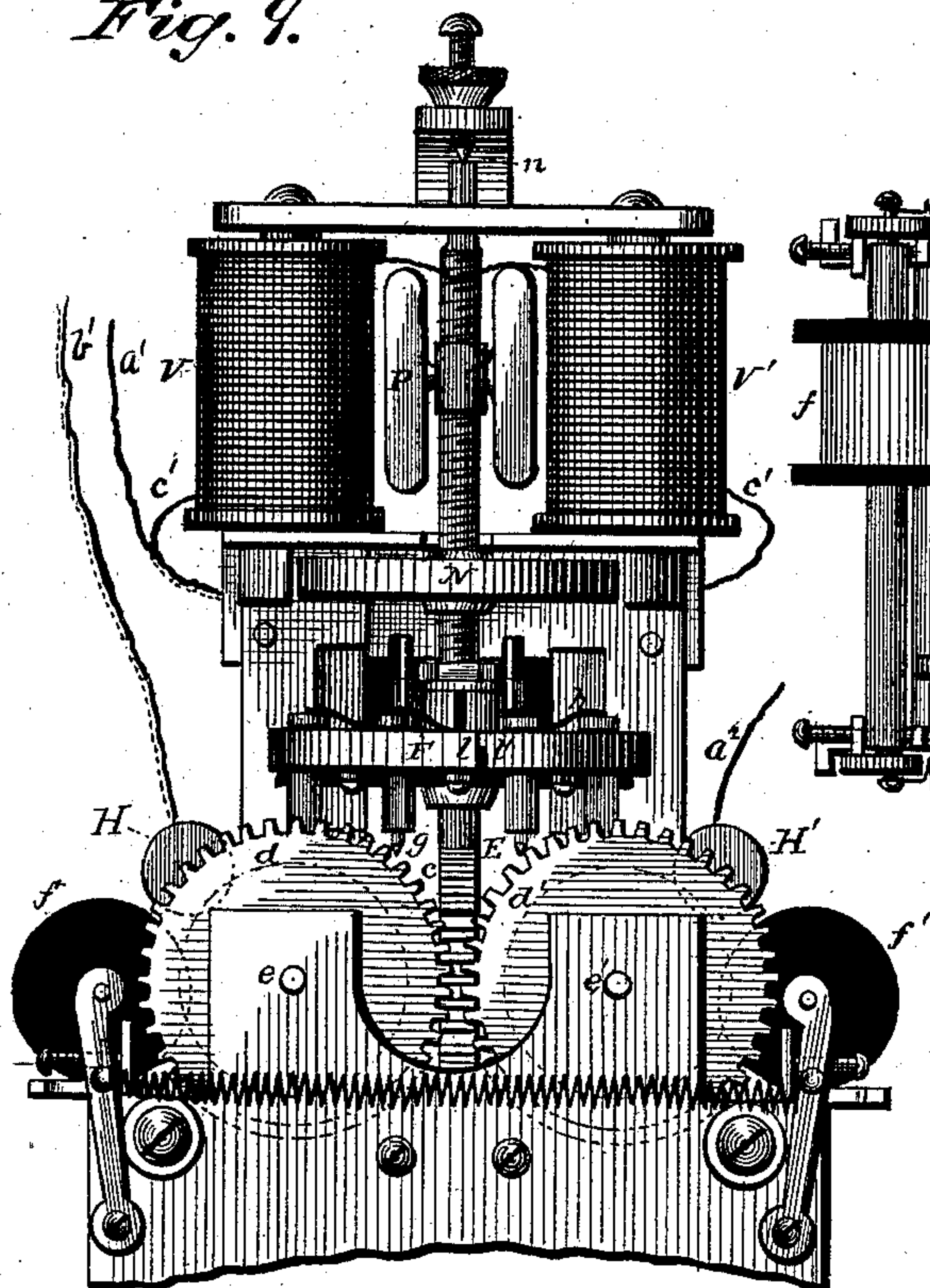


Fig. 10.

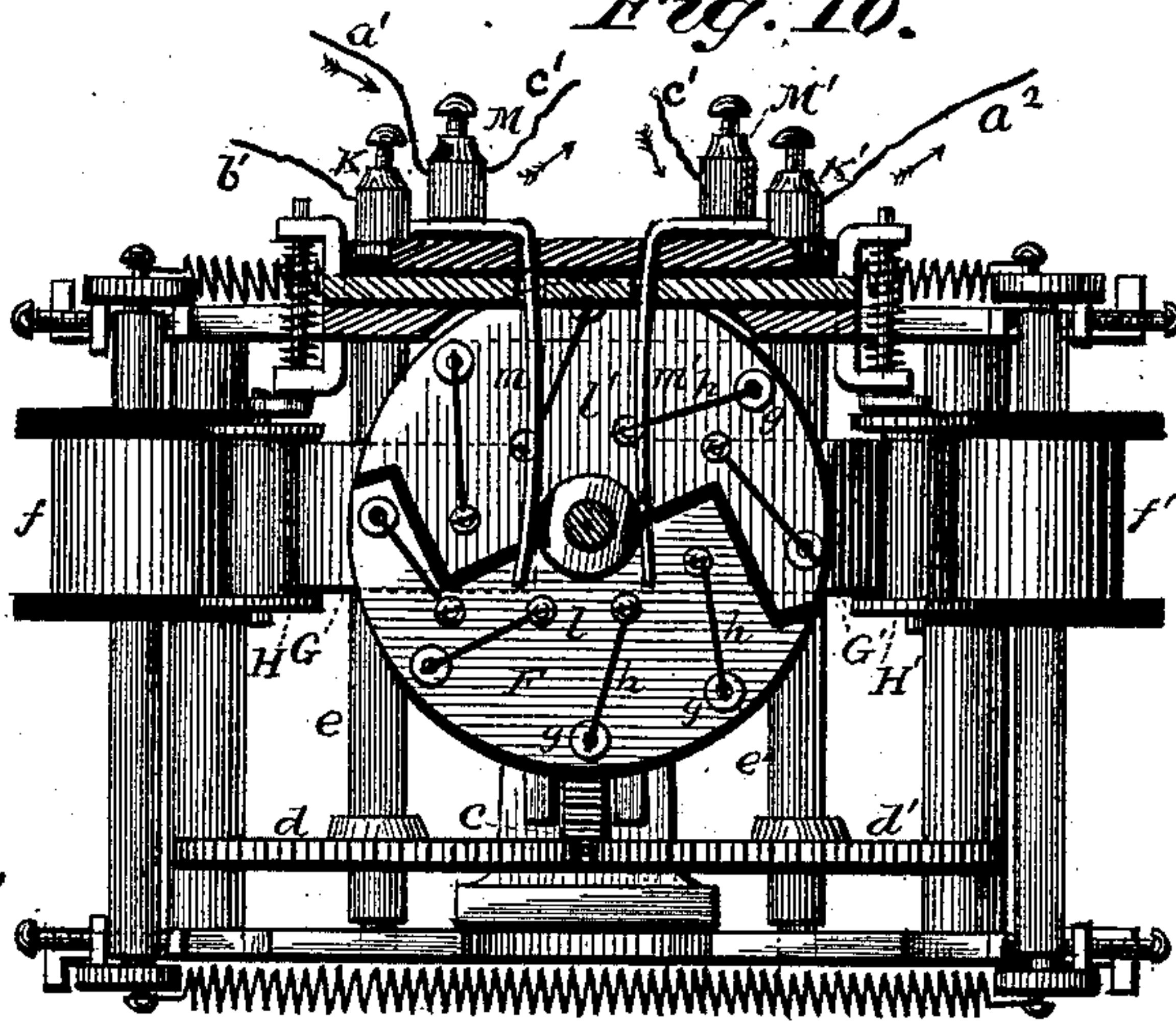
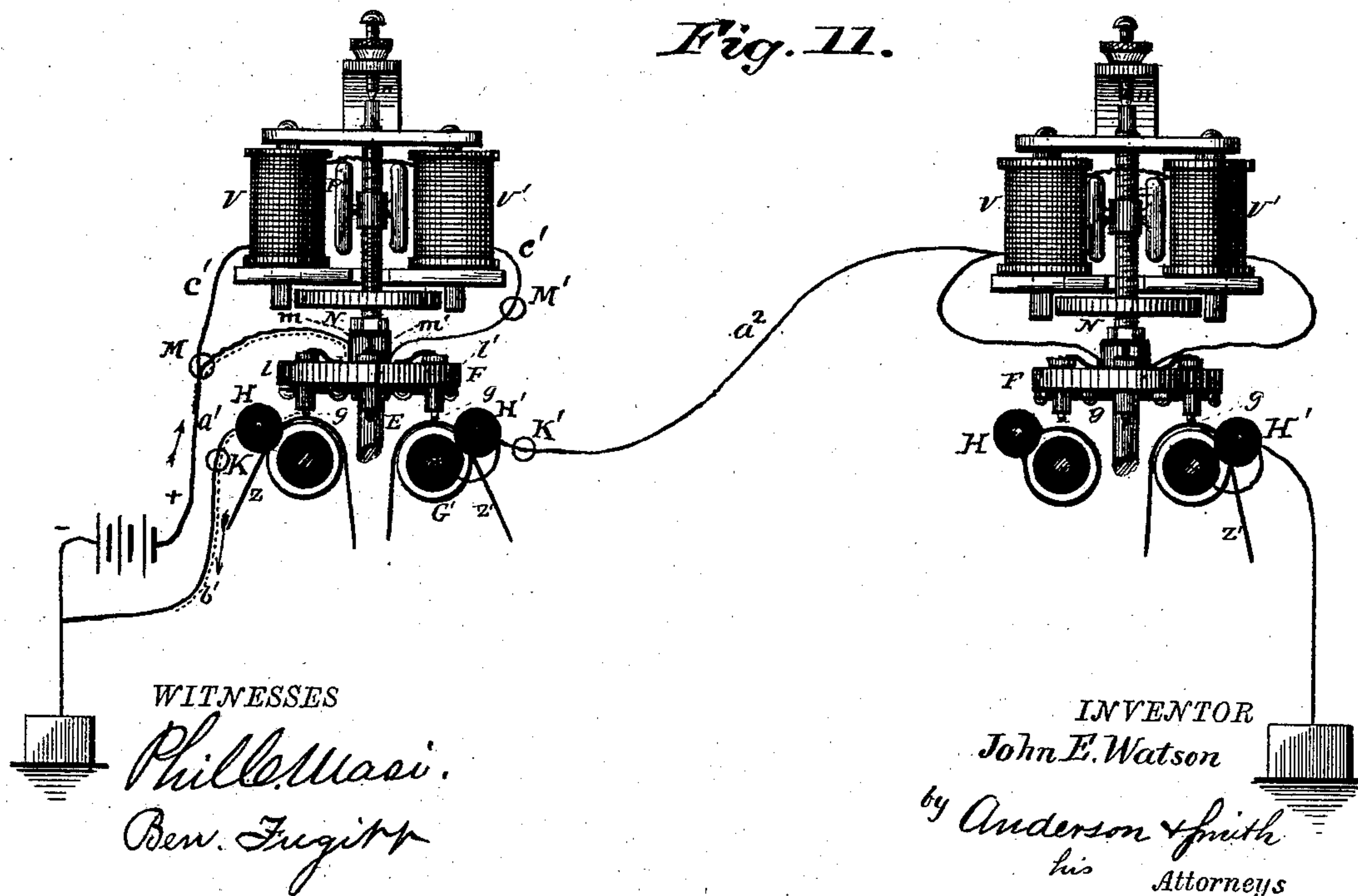


Fig. 11.



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UNITED STATES PATENT OFFICE.

JOHN E. WATSON, OF LOUISVILLE, KENTUCKY, ASSIGNOR TO THE INTERNATIONAL ELECTRIC COMPANY, OF SAME PLACE.

AUTOGRAPHIC TELEGRAPHY.

SPECIFICATION forming part of Letters Patent No. 372,245, dated October 25, 1887.

Application filed April 27, 1886. Serial No. 200,337. (No model.)

To all whom it may concern:

Be it known that I, JOHN E. WATSON, a citizen of the United States, residing at Louisville, in the county of Jefferson and State of Kentucky, have invented certain new and useful Improvements in Autographic Telegraphy; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

Figure 1 of the drawings is a front view of the instrument, showing the transmitting and receiving mechanism. Fig. 2 is a vertical transverse section of the same. Fig. 3 is a back view of the same instrument. Fig. 4 is a front view, partly in section, of the same. Fig. 5 is a plan view of the stylus-wheel, showing the brushes. Fig. 6 is a vertical section of the stylus-wheel. Fig. 7 is a bottom view of the same. Fig. 8 shows plan views of synchronizing-armatures employed with this instrument. Fig. 9 is a partial front view showing fan or regulator. Fig. 10 is a horizontal section above the stylus-wheel. Fig. 11 is a diagram representing two instruments in circuit.

This invention relates to autographic or facsimile telegraphic apparatus.

The invention consists in the novel construction and combinations of devices, as hereinafter set forth.

In the accompanying drawings I have illustrated a form of instrument which is designed to carry out the objects in view; and, premising that, I do not desire to confine the invention to the precise form of instrument shown, I will now describe its parts and mode of operation.

The letter A of the drawings designates a frame-work, which may be of any convenient form.

B represents a motor drum or cylinder, adapted to be turned by means of a weight suspended by a cord or chain passing around the drum. Instead of this motor one may be used which is operated by a spring, or any common form of motor constructed to work

in a steady continuous manner may be employed. By intermediate gearing motion is communicated to a wheel, C, which in turn serves to rotate the wheel D, which turns the shaft E of the stylus or stylus-wheel F, said shaft being stepped in a pivot-bearing, a, which may be jeweled.

On the shaft E is a worm, b, which engages the wheel c, which is common to and turns the wheels d and d' of the feed-shafts e and e' in exact, continuous, and steady manner, so that the feed-rollers G and G' move in unison and are directly and positively governed in their motion by the movement of the stylus or stylus-wheel. The spring bearing-rollers ff' are properly arranged to keep the message and copy slips (indicated, respectively, at z and z') firmly on the rollers, so that slipping is obviated and the steady feed of the rollers subserved.

H and H' indicate conductors which bear on the transmitting and receiving slips, for the purposes hereinafter mentioned, these conductors respectively having electric communication with the binding-posts K and K' and with the peripheral portion of the respective feed-rollers, said feed-rollers being insulated from the shafts on which they are mounted, as also are the pressure-rollers ff'.

F represents an insulated stylus-disk or stylus-wheel, multi-pointed, its points being indicated at g. These points are, as usually constructed, arranged in bearings of the wheel and are capable of rising and falling motion in said bearings, and weights or springs h are preferably employed to hold them down to their work in the delicate manner required to insure electrical conduction and to enable them to accommodate varying thicknesses of the slips employed in transmitting and receiving to avoid any break in the current which might otherwise be consequent thereon. The points g are arranged at proper distances from each other, so that at one time only one of the points can be brought into action in transmitting and one in receiving. As usually constructed the conducting portion of this wheel on one side (indicated at l) is insulated from the conducting portion l' on the other side, so that when the current is not shunted back to the battery it

will be sent through the synchronizing-helix of the instrument before passing to the main line; and in order to accomplish this in a convenient manner the body of the wheel
 5 may be of rubber or other non-conducting substance and the conducting sides connected thereto. The wheel is insulated from the shaft and each conductor side is provided with a bearing for the commutator-brushes, which
 10 are indicated at m and m' . The commutator-brushes, respectively, are provided with binding-posts M and M' and are properly insulated. The upper bearing of the stylus shaft, which is vertical in this form of machine, is
 15 indicated at n .

P is a fan or regulator usually employed to regulate approximately the speed of the motor. I have also provided a synchronizing-armature, N , which is usually of disk form, and is
 20 adapted to be secured to the shaft of the stylus-wheel or carrier device, and is designed to rotate in close relation to the polar extensions of the oppositely-placed electro-magnets V and V' .

25 The parts of an instrument of this character may be constructed differently by those skilled in the art, and yet so as to fully accomplish the objects of the invention. It is designed to secure a positive feed in direct and positive connection with a continuously-moving
 30 stylus or stylus-carrier, and in this relation it must be borne in mind that the wheel or disk form of stylus or stylus carrier is not essential, as an equivalent device may be used.

35 In the operation of this instrument the electrical action may be described as follows, two or more instruments being in circuit: The current entering by the wire a' from the battery passes to the binding-post M' , and thence,
 40 if the point of the stylus is on the conducting-surface of the transmitting-slip, the current passes on the shunt-circuit by the commutator-brush m , by said conducting-surface, and by the roller or brush H of this side to the
 45 binding-post K , and thence back to the battery by the wire b' ; but when the stylus-point is on the insulated writing or marking of the transmitting or commutator slip z the current cannot pass on the shunt, and instead it
 50 passes by the wire c' of the electro-magnets and commutator-brush m' of the opposite side to the stylus-point on the chemically-prepared copy-paper or slip z' , and through the same
 55 by the roller G' and roller or brush H' to the binding-post K , and thence out by the main line or circuit a'' to the synchronizing-helix of the distant receiving-instrument. In passing through the copy or receiving slip, which is a suitably-prepared paper sufficiently moistened
 60 to form an electrolyte, the electrical action causes decomposition and discoloration, and in this manner the automatic writing or marking is executed by the stylus-point. The receiving operation is precisely the same in the
 65 distant or receiving instrument, which may be, and is preferably, similar to the transmitting-

instrument, and is designed to act as a transmitting-instrument when so required. When, however, such an instrument is used in receiving a message from a distant point, the shunt-circuit is closed at the switch H , and the current, being then received by the main line and the synchronizing-helix, passes by the commutator and stylus-point through the chemically-prepared receiving-slip and the
 75 conducting roller and brush to the binding-post K' to ground.

It is designed that the instrument shall act either as a transmitter or receiver, and preferably that it shall be so coupled as to give a
 80 copy of the message or marking in the transmitting-instrument, said copy serving as a check and insuring that the distant instrument is receiving the message or marking.

The instrument may be used without the
 85 synchronizing device described; but the result will not be as perfect. The very simple device of synchronous regulation by electrical impulses caused to occur in unison in the transmitting and receiving instrument is regarded
 90 as of very great importance in securing the perfect results which I have in view in effecting rapid and exact autographic telegraphy. This is materially facilitated by the mode of moving the stylus-points continuously in the
 95 same direction, which conduces to ease and rapidity of motion with marked steadiness or freedom from vibration. Under these or like favorable mechanical conditions the operations of the electro-magnetic synchronizing device are complete, leaving nothing to be desired. The stylus holding devices, whether they be themselves the armatures or whether separate armatures be employed in the instruments, as illustrated in the drawings, are under the control of the electro-magnets, which are simultaneously operated throughout the circuit by the current which passes by the main line at every passage of the stylus-point of the transmitter over the non-conducting
 100 marking of the transmitter-slip. By the rapid succession of momentary electrical checks occurring in unison in the transmitting and receiving instruments when their respective stylus-points are in similar positions, respectively, in the transmitting and receiving slips it is designed to hold the receiving-instrument to its work.

It is readily seen that it is my design to use the insulated markings of the transmitter-slip
 120 as a commutator or key for the synchronizing regulation of the instruments in circuit.

Having described this invention, what I claim, and desire to secure by Letters Patent, is—

1. An autographic telegraphic instrument having a constantly-rotating stylus-carrier and mechanism to turn the same, substantially as specified.

2. An autographic telegraphic instrument
 130 having a constantly-rotating stylus-carrier having a series of points following each other

always in the same direction of rotation, and mechanism to turn said carrier, substantially as specified.

3. In an autographic telegraphic instrument, the combination, with a continuously-rotating stylus-carrier, of positive continuous-feed mechanism operated directly by the stylus-moving mechanism, substantially as specified.

4. In an autographic telegraphic instrument, the combination, with a transmitting-stylus and a receiving-stylus, of a continuously-rotating stylus carrier for both, separate tape-carriers for the respective transmitting and receiving sides, and feed mechanism common to both of said tape carriers and engaging the stylus-moving mechanism, substantially as specified.

5. In an autographic telegraphic instrument, the rotary stylus-carrier having its two sides insulated from each other and carrying their stylus-points in corresponding consecutive position, substantially as specified.

6. In an autographic telegraphic instrument, the combination of a continuously-rotating stylus-carrier and its shaft, tape-carriers, and connecting mechanism between said shaft and tape-carrier, whereby both message and copy slips are fed in a continuous and uniform manner at a rate of speed corresponding to that of the stylus-carrier, substantially as specified.

7. In an autographic telegraphic instrument, the combination, with a continuously-rotating stylus-carrier and its shaft, of screw-

gearing and mechanically-connected tape-carriers, substantially as specified.

8. The combination, with the shunt-circuit, of the continuous feed and the transmitter-slip fed thereby in one direction, the continuously-rotating stylus moving thereon in a direction transverse to the movement of said slip, and a pressure-conductor on said slip extending across the slip, substantially as specified.

9. In an autographic telegraphic instrument, the combination, with a rotating stylus-carrier and its shaft, of the rotating armature on said shaft, its electro-magnet and circuit, and the transmitting-slip forming a commutator, whereby the circuit is either shunted or passed through said electro-magnet, according to the position of the stylus on said slip as it passes over the same, substantially as specified.

10. In autographic telegraphy, the combination, with the electric circuit, of a combined transmitting and receiving instrument carrying the transmitting and receiving stylus-points on a common continuously-rotating carrier having its two sides insulated from each other, and having its shaft in mechanical connection with the feed, the transmitting-slip, and a commutator to pass the current through both sides of the stylus-carrier, substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN E. WATSON.

Witnesses:

THEO. MUGEN,
PHIL C. MASI.