

(No Model.)

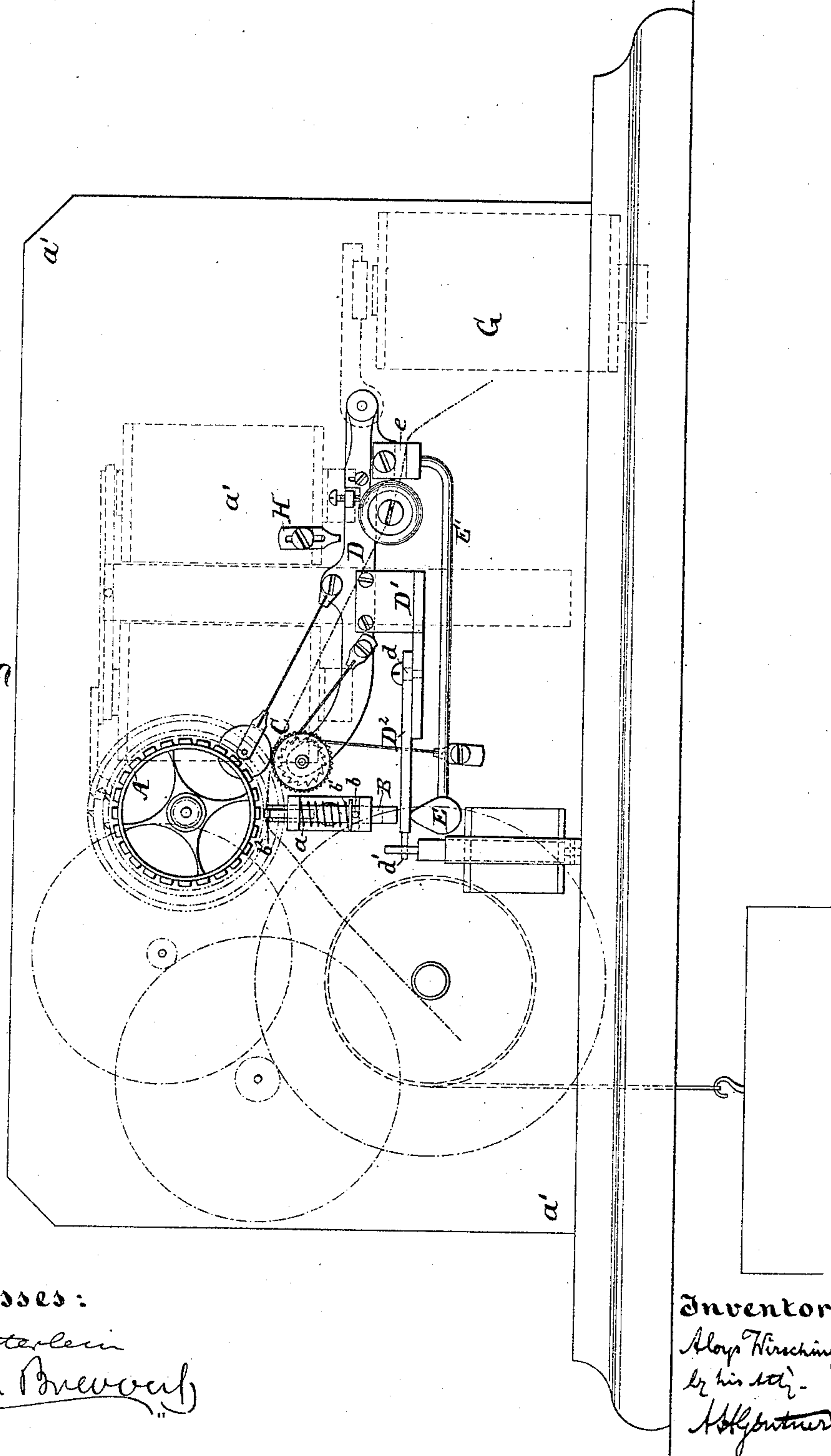
3 Sheets—Sheet 1.

A. WIRSCHING.
PRINTING TELEGRAPH RECEIVER.

No. 327,911.

Patented Oct. 6, 1885.

Fig. 1.



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Inventor:
Alois Wirsching
by his atty-
H. G. Putnam

(No Model.)

3 Sheets—Sheet 2.

A. WIRSCHING.
PRINTING TELEGRAPH RECEIVER.

No. 327,911.

Patented Oct. 6, 1885.

Fig: 2.

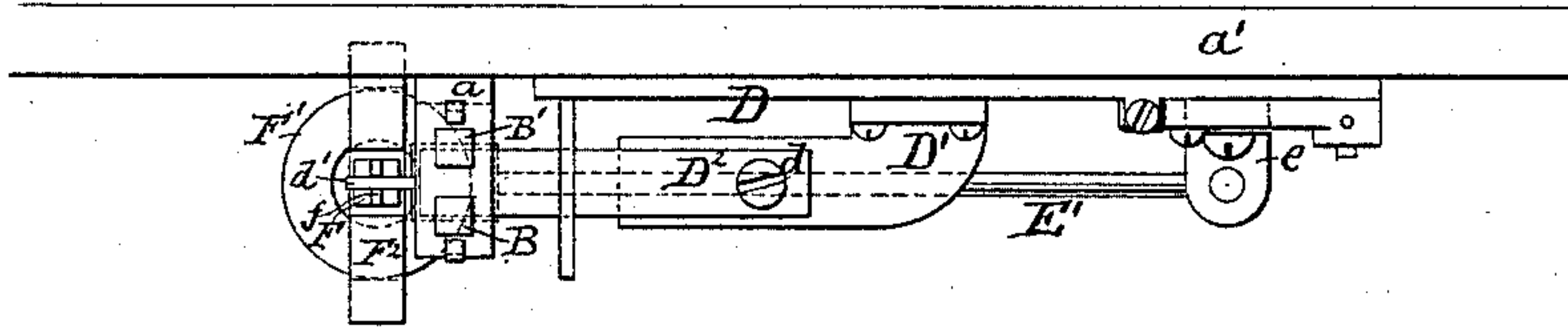
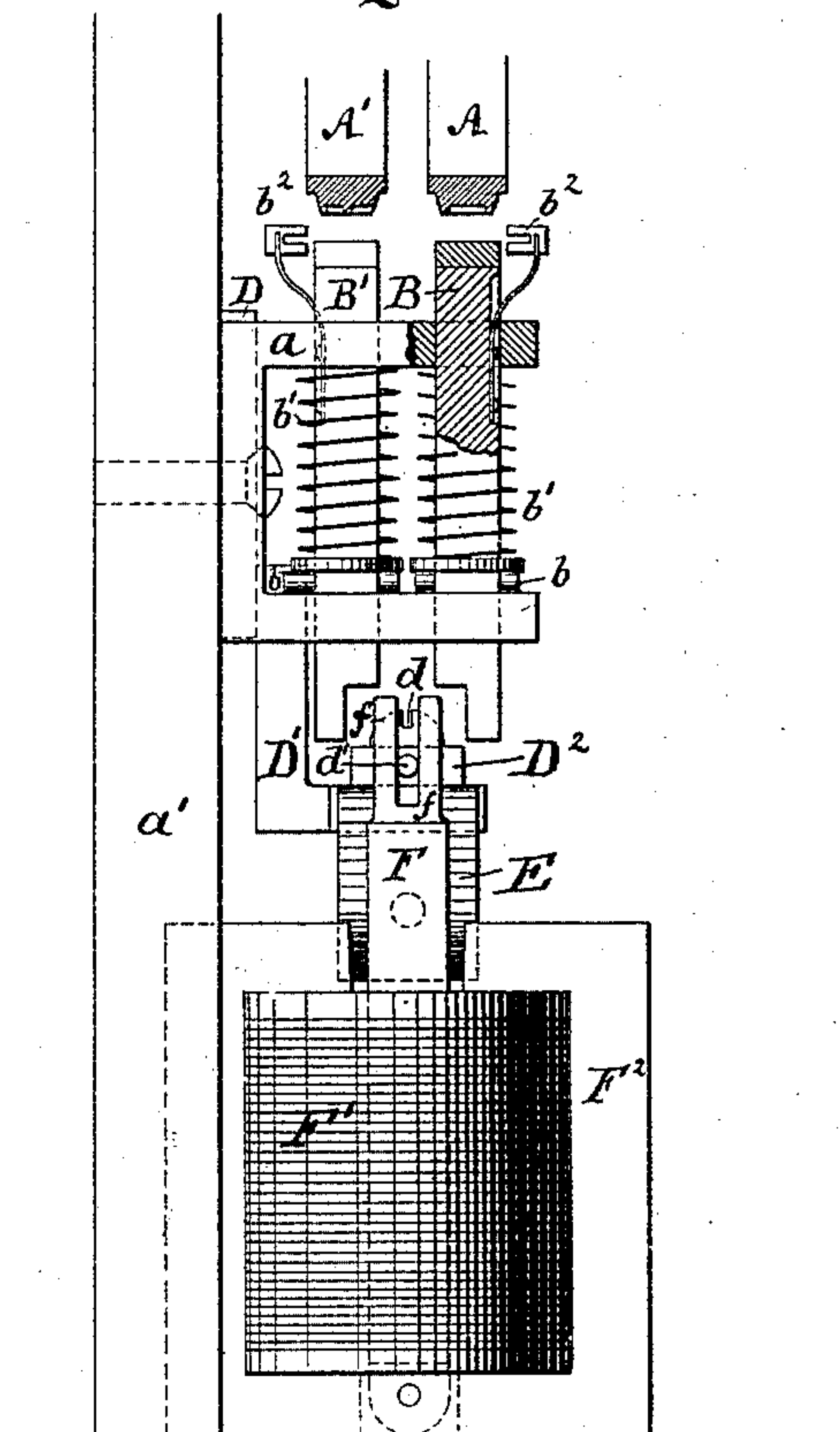


Fig: 3.



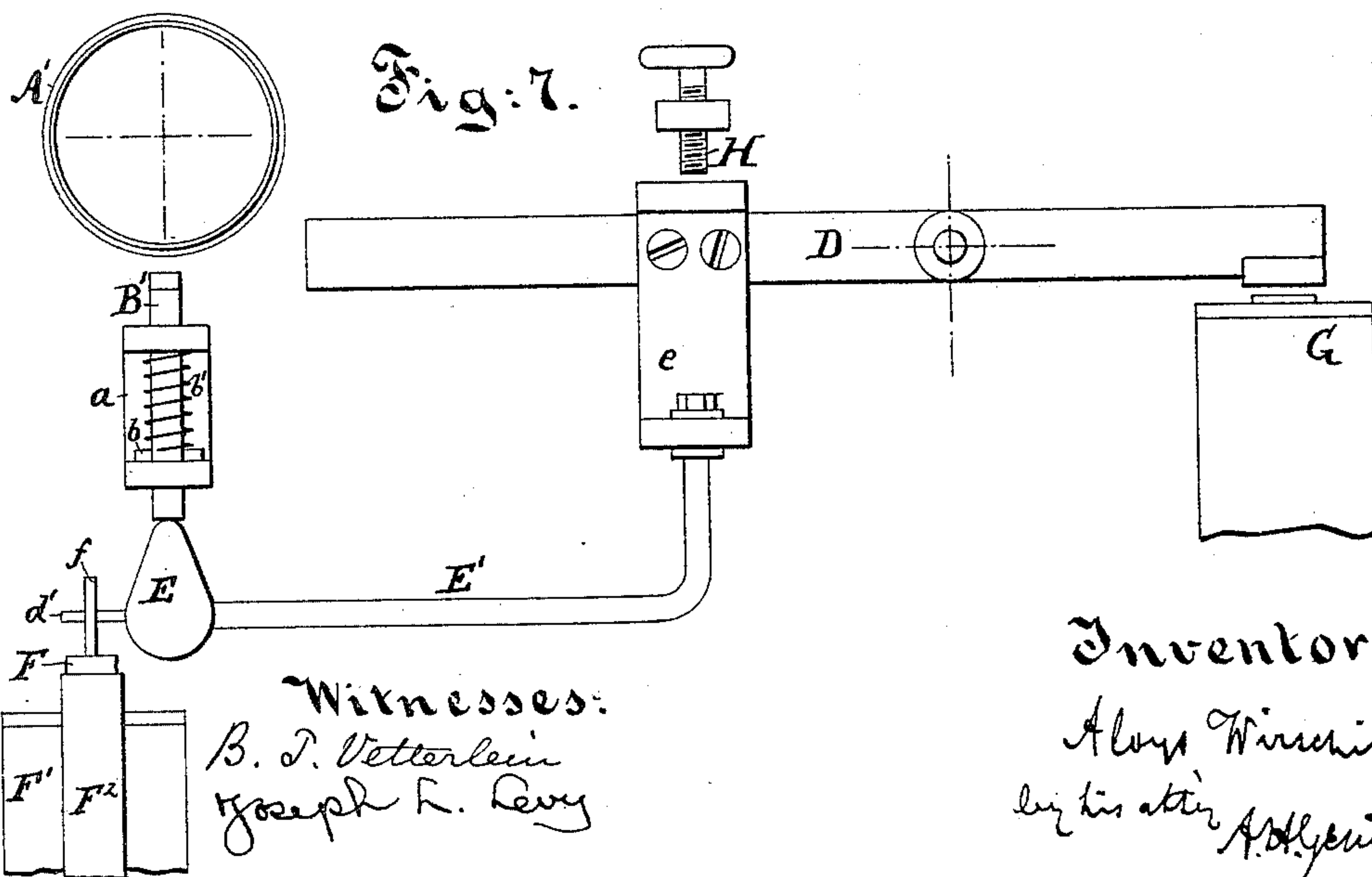
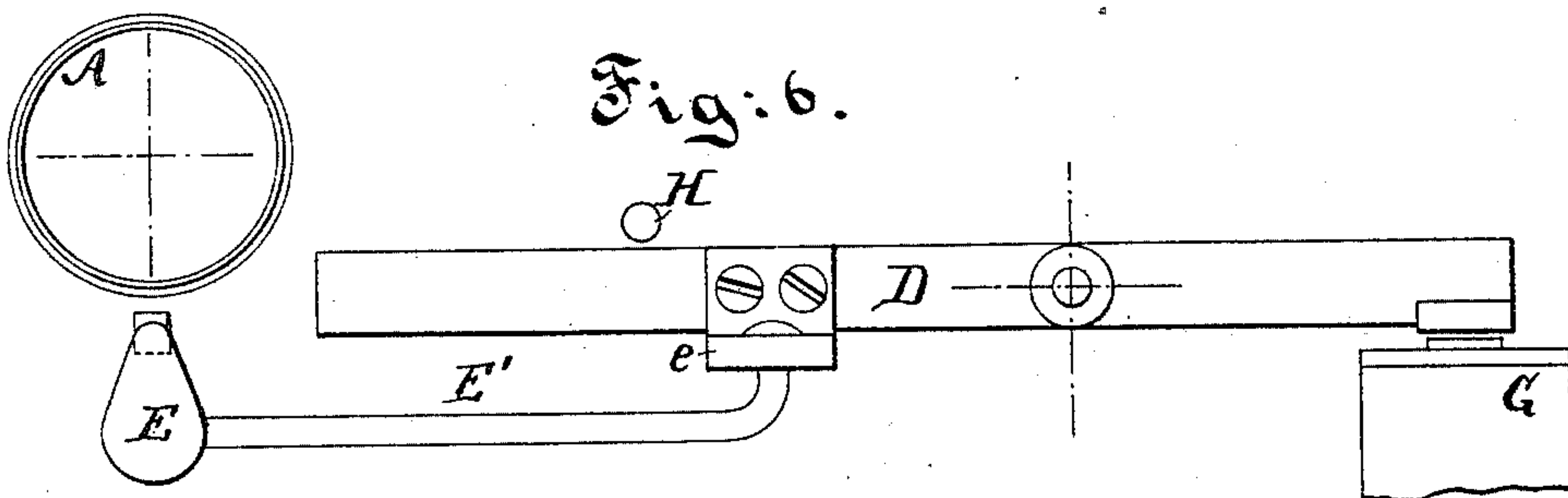
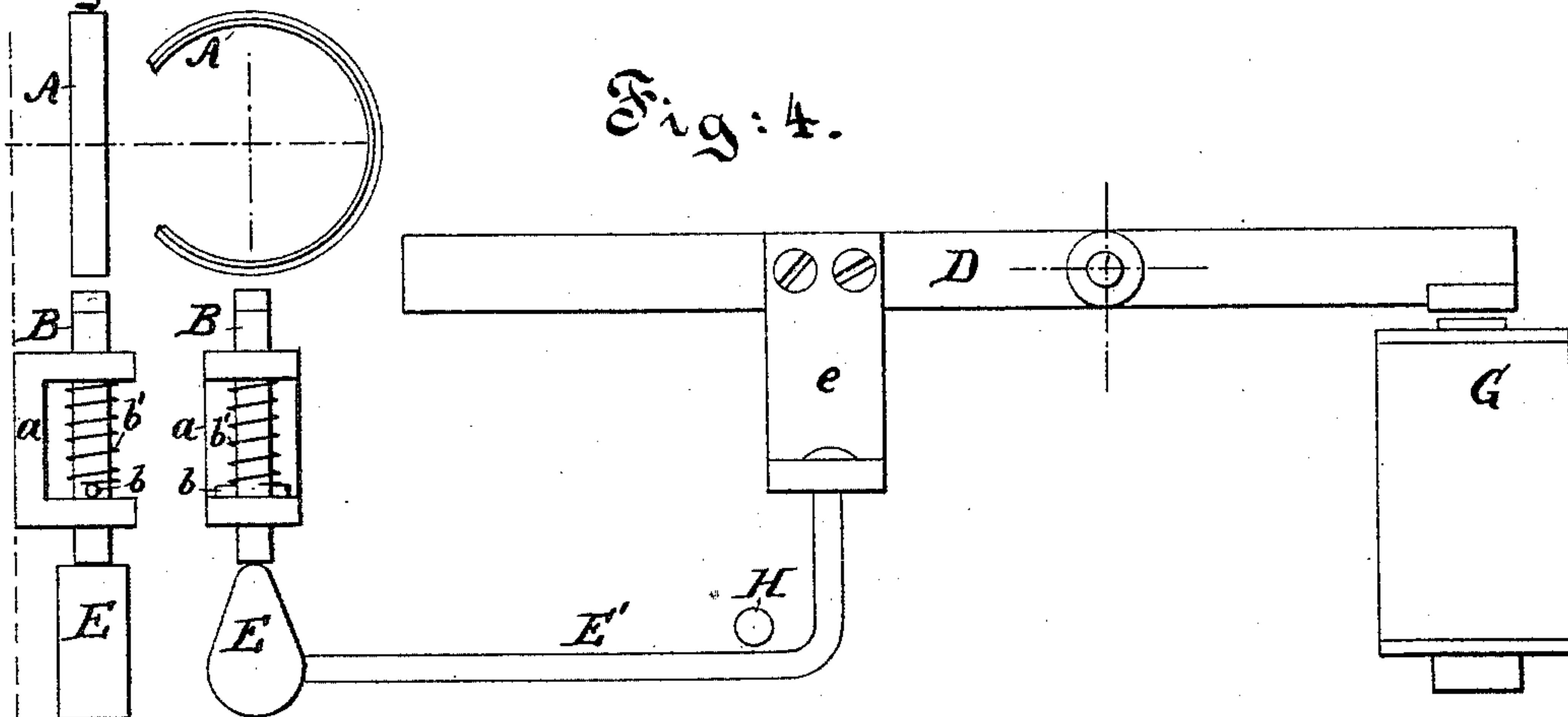
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A. WIRSCHING.
PRINTING TELEGRAPH RECEIVER.

No. 327,911.
Fig. 5.

Patented Oct. 6, 1885.



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UNITED STATES PATENT OFFICE.

ALOYS WIRSCHING, OF BROOKLYN, NEW YORK.

PRINTING-TELEGRAPH RECEIVER.

SPECIFICATION forming part of Letters Patent No. 327,911, dated October 6, 1885.

Application filed September 25, 1884. Serial No. 143,916. (No model.)

To all whom it may concern:

Be it known that I, ALOYS WIRSCHING, of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Printing-Telegraph Instruments; and I do hereby declare that the following is a full and exact description thereof.

This invention relates to means for taking the impression from the type-wheel or type-wheels of printing-telegraph instruments. Heretofore the printing from such instruments has been effected by means of a printing platen or pad supporting the paper and mounted upon a printing-lever, which, when operated by means of an electro-magnet, raised and pressed the paper against the type-wheel and held it in contact therewith until the current energizing said electro-magnet was interrupted, whereupon the printing-lever, and with it the paper, receded from the type-wheel under the influence of a suitable retractor. The impressions thus obtained are liable to be more or less blurred in consequence of this comparatively prolonged period of contact of the paper with the type-wheel, and I have found that clearer impressions can be produced when the paper is brought into contact with the type-wheel at a high velocity and instantaneously retracted, the action being similar to that of a sufficiently-strong tap or blow given with a hammer, instead of a pressure lasting any appreciable length of time. For these reasons I arrange the printing-pad with relation to the printing-lever, and with a positive stop for the latter, so that when said printing-lever is operated slowly in the direction for producing an impression the paper cannot rise sufficiently to come in contact with the type-wheel, while, when the printing-lever is operated with sufficient velocity, as it is when attracted by an electro-magnet, the momentum acquired by the parts at the moment the printing-lever reaches the positive stop is sufficient to throw the printing-pad with the paper into forcible but instantaneous contact with the type-wheel, the immediate retreat of the paper preventing the blurring of the impression thus taken. It is evident that in order to secure the proper

working of such mechanism the parts must not be absolutely rigid, but that a sufficient looseness or elasticity must be provided to allow the desired play of the parts in obedience to the force of inertia.

The construction of the devices whereby this peculiar hammer-like action is effected may vary somewhat, according to the nature of the telegraph-instrument to which said devices are to be applied. I will in the following describe my invention as applied to a telegraph-instrument having two type-wheels upon a common axis, from either of which impressions may be taken at the will of the operator at the transmitting-station, and will thereupon point out in what manner the invention may be applied to other kinds of instruments. For the purposes of my description I have chosen the instrument described in the United States Patent, No. 286,667, granted to me October 16, 1883.

In the accompanying drawings, which form a part of this specification, Figure 1 is a front view illustrating my invention and its application to an instrument shown in outline, with some of the operating parts in dotted lines. Fig. 2 is a plan view of the novel parts, and Fig. 3 is a side view of Fig. 2 on a larger scale, and showing also a portion of the type-wheels in section. The remaining figures are diagrams illustrating certain modifications. Fig. 4 is a front view corresponding to Fig. 1, showing the invention as applied to an instrument having but one type-wheel. Fig. 5 is a side view of some of the parts shown in Fig. 4. Fig. 6 is a front view corresponding to Figs. 1 and 4, and illustrating a variation of Fig. 4. Fig. 7 is a front view corresponding to Fig. 1, and illustrating a modification thereof.

A A' are the type-wheels, mounted upon a common shaft and revolved by suitable clock-work, the motion being controlled by an escapement operated by electro-magnets in the usual or any suitable manner.

B B' are printing-pads arranged one under each type-wheel. They are held in the yoke *a*, the latter being attached to the side plate, *a'*, of the instrument. The pads B B' are held against turning by their shape, being prefer-

ably of square section, but they are capable of sliding in the yoke a , their downward motion being limited by the pins b bearing against the lower branch of the yoke. Light springs b' , surrounding the pads above the pins b , serve to normally hold the pads down out of contact from the type-wheels. The paper strip upon which the impressions are to be made passes through suitable feed mechanism, (marked collectively C) upon the printing-lever D, and thence over the rubber-tipped surfaces of the pads, as indicated in Fig. 1, and its edges are preferably supported in guide-pieces b^2 , one of which is mounted on the outer side of each pad, as clearly shown in Fig. 3. The printing-lever D carries an extension, D' , upon which is hinged, so as to swing in a horizontal plane, the tongue D^2 , which extends under and between the cut-out lower portions of the printing-pads B B'. The joint d between D' and D^2 is made sufficiently loose to allow the tongue D^2 , besides its horizontal motion, to assume a slightly-inclined position with relation to the part D' . The front end of the tongue D^2 , or that portion which is immediately under the pads, rests upon a hammer, E, the elastic stem E' of which is fastened to a suitable knee, e , secured to the printing-lever D, as shown.

Projecting from the end of the tongue D^2 is a pin or stud, d' , which is engaged in a fork, f , upon the end of the hinged core F of the polarized electro-magnet F', the permanent magnet of which, F^2 , in the shape of a horse-shoe, incloses the bobbin F', its poles acting on the core F in the well-known manner.

H is a stop, so arranged with relation to the printing-lever D that the latter, when operated, comes in contact therewith, and is arrested thereby before it has moved upward to an extent sufficient to cause by its connections one or the other of the pads B B' to be brought in contact with the corresponding type-wheel by a positive motion. The polarized magnet F' and the printing-magnet G are both connected in a single circuit.

The operation of this mechanism is as follows: An electrical impulse received in the magnets F' and G will make itself felt first in the sensitive device F F' F², throwing the armature or core F in one direction or the other, according to the polarity of the current, and consequently the tongue D^2 will be moved laterally, so as to catch on its upward stroke one or the other of the pads B B'. The continued action of the current causes also the magnet G to be energized, whereby the printing-lever D and all its attachments are moved forcibly in the direction for effecting an impression, the tongue D^2 raising that one of the pads B B' under which it has been moved by the action of the armature or core F; but before the lever D has risen sufficiently to cause the paper strip to come in contact with the type-wheel, its motion is suddenly arrested by a suitably-located positive stop, H, and now the mo-

mentum alone of the tongue D^2 and hammer E carries these parts, and with them the desired pad and paper, farther upward, thus causing the paper to come into instantaneous contact with the type-wheel for receiving the impression. It will be noticed that although the printing lever will remain in the elevated position for an appreciable length of time, the paper retreats from the type-wheel immediately after striking the same, in consequence of the parts D^2 E returning to their normal position with relation to the printing-lever immediately after the expenditure of the energy acquired during the upward movement of the lever.

The slotted pieces b^2 serve not only to guide the paper strip in its longitudinal movement, but, being connected to the pads, serve to hold the paper stretched over and raise it with that pad which rises to effect an impression, while, on the other hand, the paper is held down and prevented from coming accidentally into contact with that type-wheel the pad of which is to remain stationary for the time being.

Many modifications may be made in the details of construction, according to the type of instrument to which the invention is to be applied. When only a single type-wheel is employed, the mechanism may be considerably simplified. In such case it is evident that only a single pad will be used. The tongue D^2 and extension D' , as also the polarized magnet F', will be dispensed with, and the hammer E may be made to operate directly upon the printing-pad. (This arrangement is indicated in Figs. 4 and 5.) A still simpler mode of carrying out the invention in connection with a single type-wheel would be to face the hammer E, Fig. 6, so as to enable it to perform the function of a printing-pad and cause it to strike directly the under surface of the paper strips, thus throwing the latter into contact with the type-wheel. Even in the mechanism shown in the drawings the tongue D^2 may, if desired, be dispensed with, in which case the hammer E itself should be made to swing laterally and be controlled by the polarized electro-magnet or other means for moving it into position to strike either printing-pad, as indicated in Fig. 7. Again, the hammer E may be dispensed with and the tongue D^2 made sufficiently heavy to perform also the function of a hammer.

The stop H is preferably so arranged that it may be readily adjusted in order to be able to regulate with the utmost exactitude the point at which the upward movement of the printing-lever shall be arrested to insure the most perfect result in printing. (This feature is indicated in Fig. 7.) But it is evident that the location of the stop and its special construction may be varied in many ways, so long as due care is taken to insure its efficiency at exactly the required moment.

I am aware of the patent granted by the

French Government to G. A. Cassagnes, April 5, 1884, No. 161,385, and of the United States Patent No. 313,175, dated March 3, 1885, granted to the same Cassagnes. I am aware that this inventor describes in said patent a mode of printing somewhat similar to the mode herein described; but the apparatus described in said patents consists of a number of styles placed alongside of each other in a straight line or row, across which row, and transversely thereto, the paper strip is caused to move. The printing is effected by raising one of said styles at a time, and allowing it to complete its motion by inertia. The natural result of this arrangement is that the characters are printed upon the paper strips upon different longitudinal lines, compelling the eye, when reading the message, to follow a very irregular zigzag line. This is exceedingly difficult, and the apparatus is therefore in many cases undesirable.

Turning now to my apparatus it will be seen immediately that the raising of my printing-pad corresponds to the raising of the several styles, one at a time, in the Cassagnes patents, and in order to effect the printing in one straight continuous line I have been obliged to add a new element—viz., the movement imparted to the characters to bring them one at a time in the proper position for printing. Of course it is old to print from a type-wheel; but it is new to print from a type-wheel by means of the inertia of a part of the apparatus, which, again, is the only method of producing a clear and distinct print in a straight line upon a paper strip.

I claim as my invention—

1. The combination of a type-wheel, mechanism for moving and controlling the same, a printing pad, a printing electro-magnet and intermediate devices, and a positive stop for the latter, whereby said printing electro-magnet, when energized, imparts the motion for the taking of an impression, while the printing itself is effected by the inertia of the pad or intermediate parts, substantially as specified.

2. The combination, with a type-wheel, mechanism for moving and controlling the same, and a printing-pad, of electro-magnetically controlled devices and a positive stop for the latter arranged to partially raise said pad and impart to it sufficient momentum to complete its rising movement by inertia, substantially as herein specified.

3. The combination of a type-wheel, mechanism for moving and controlling the same, an electro-magnet or electro-magnets serving to control said mechanism for moving the type-wheel, and a printing-pad with a printing electro-magnet and connecting devices, and a positive stop for the latter, so arranged as to partially raise said pad and impart to it sufficient momentum to complete its rising movement by inertia, substantially as herein specified.

4. The combination of a type-wheel, mechanism for moving and controlling the same, an electro-magnet or electro-magnets serving to control said moving mechanism, and a printing-pad with devices for partially raising said pad and imparting to it sufficient momentum to complete its rising movement by inertia, and with a stop to positively arrest the motion of said raising devices at the required moment, substantially as herein specified.

5. A printing-pad and a device for guiding the same in its rectilinear motions radially relatively to a type-wheel, the whole shaped or arranged to positively prevent any turning motion of said pad, in combination with a type-wheel, devices for operating the latter, and devices for operating the pad, substantially as herein specified.

6. The combination of a type-wheel, a sliding printing-pad, a device for guiding said pad in its rectilinear motions radially relatively to the type-wheel, and a retractor for said pad with mechanism constructed and arranged to act by contact upon said pad, substantially as described.

7. The combination of two or more type-wheels, a printing-magnet, a printing-lever, and a stop for the latter with a hinged part or tongue carried by said printing-lever and adapted, when the latter is operated, to cause the paper to rise and strike one of the type-wheels (according to the position of said hinged part) by the force of inertia exerted or transmitted through the hinged tongue, substantially as herein specified.

8. The combination of two type-wheels, two printing-pads, a printing electro-magnet, a printing-lever, and a stop for the latter with a hinged tongue carried on said printing-lever and an electro-magnet capable of placing said tongue under either printing-pad, according as said magnet is energized, substantially as specified.

9. The combination, with two type-wheels, two printing-pads, a printing electro-magnet, and a printing-lever, of a hinged tongue carried on said printing-lever, an electro-magnet and devices controlled thereby, whereby said tongue is placed under either printing-pad, according as said magnet is energized, and of a stop for arresting the upward motion of the printing-lever before the paper comes in contact with the type-wheel, the printing being effected by the inertia of parts connected with the printing-lever, substantially as herein specified.

10. The combination, with two type-wheels, two printing-pads, a printing electro-magnet, a printing-lever, and a stop for the latter, of a hinged tongue carried on said printing-lever, devices whereby said tongue may be placed under either printing-pad, and of a hammer acting on the under side of said tongue, all constructed and arranged so that the printing is effected by the inertia of the hammer acquired in the upward movement

of the printing-lever, substantially as herein specified.

11. The combination, with a type-wheel, of a printing-pad carrying on one or both sides
5 a guide for the paper strip.

12. The combination, with two type-wheels, of two printing-pads and of guides for the paper strip carried one on the outer side of each pad, substantially as specified.

In witness whereof I have hereunto set my hand in the presence of two subscribing witnesses.

ALOYS WIRSCHING.

Witnesses:

A. H. GENTNER,
JAS. E. WIRSCHING.