

(No Model.)

2 Sheets—Sheet 1.

J. F. McLAUGHLIN.

AUTOMATIC ELECTRIC SPACING MECHANISM FOR TYPE WRITERS.

No. 379,406.

Patented Mar. 13, 1888.

Fig. 1.

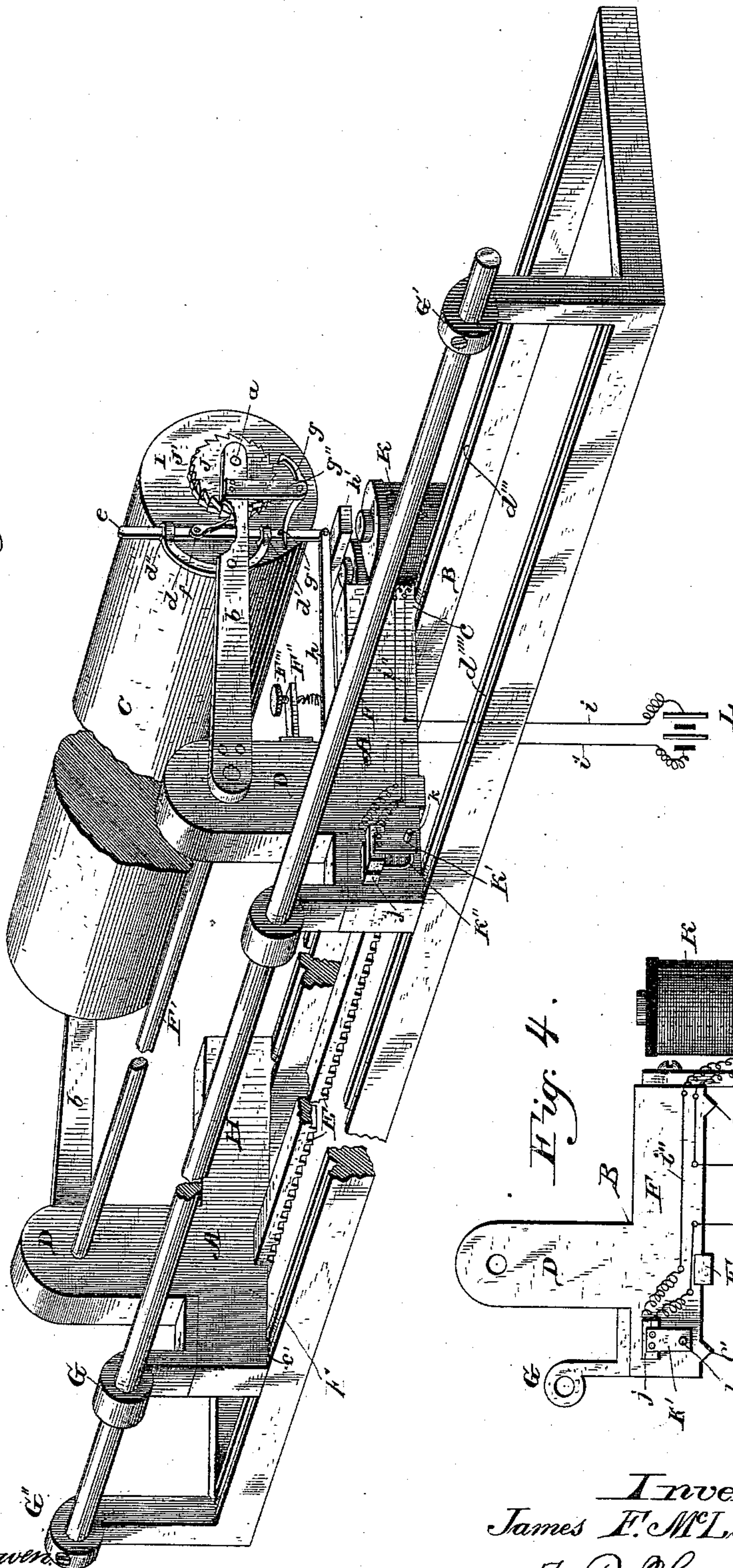
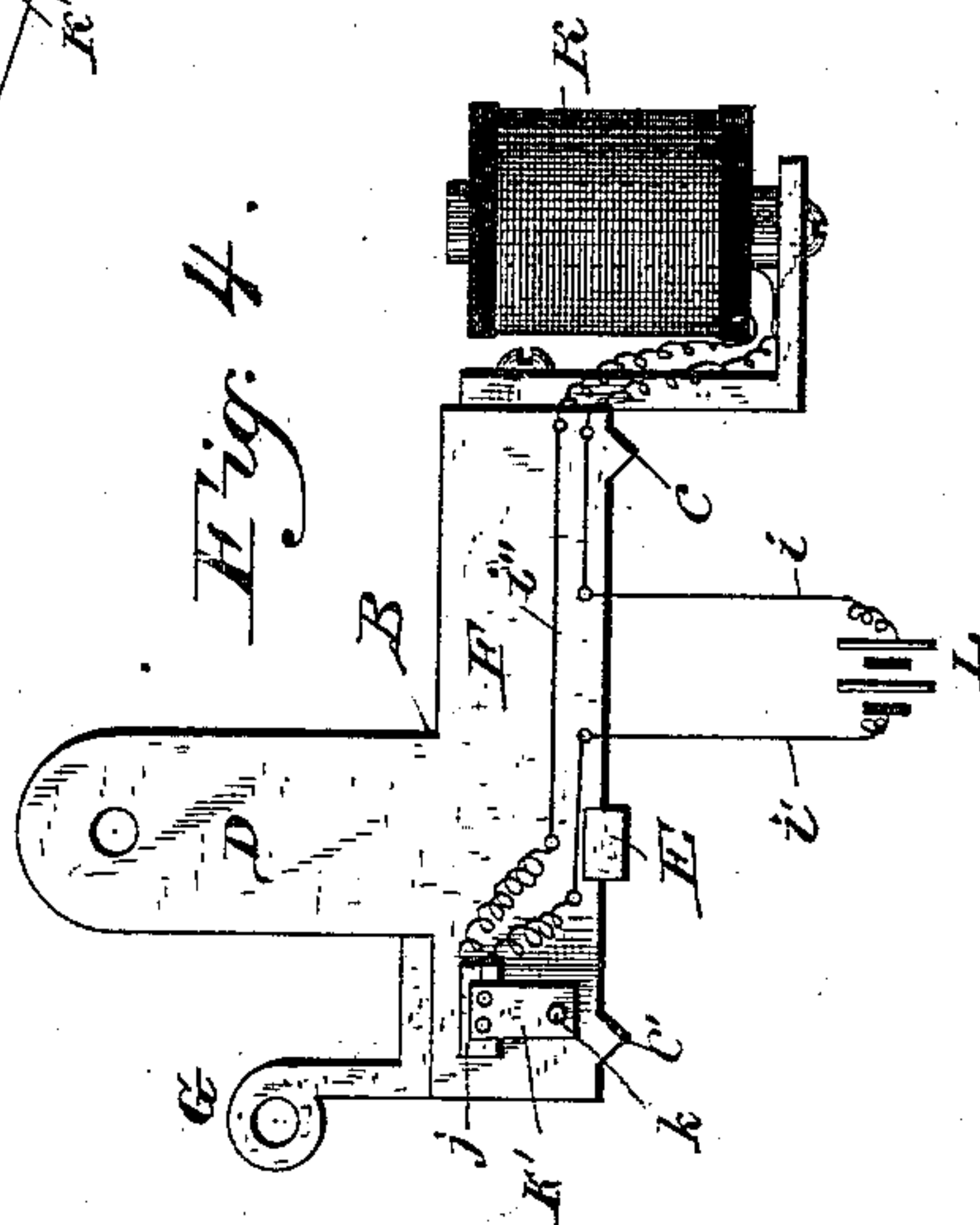


Fig. 4.



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(No Model.)

2 Sheets—Sheet 2.

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Fig. 2.

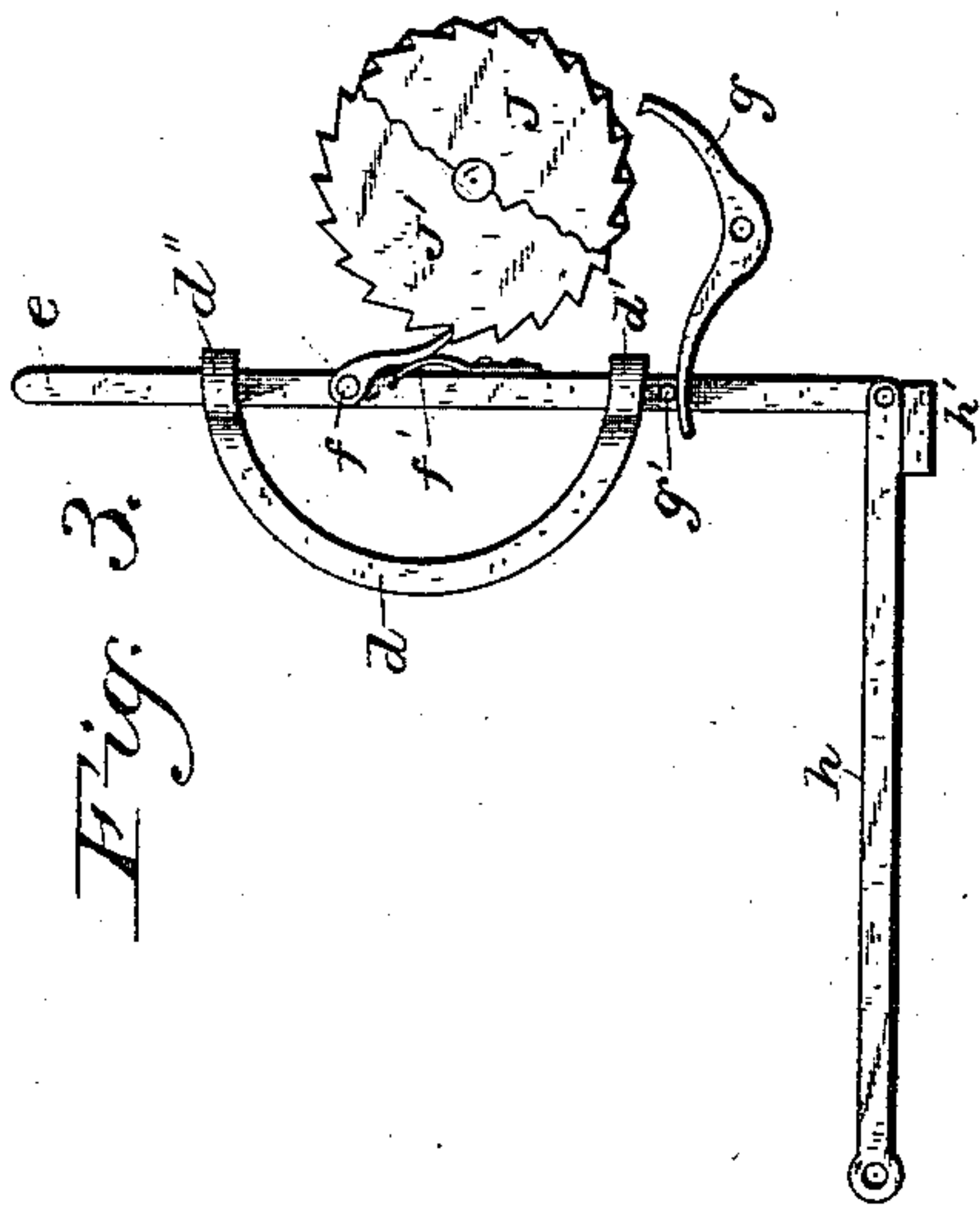
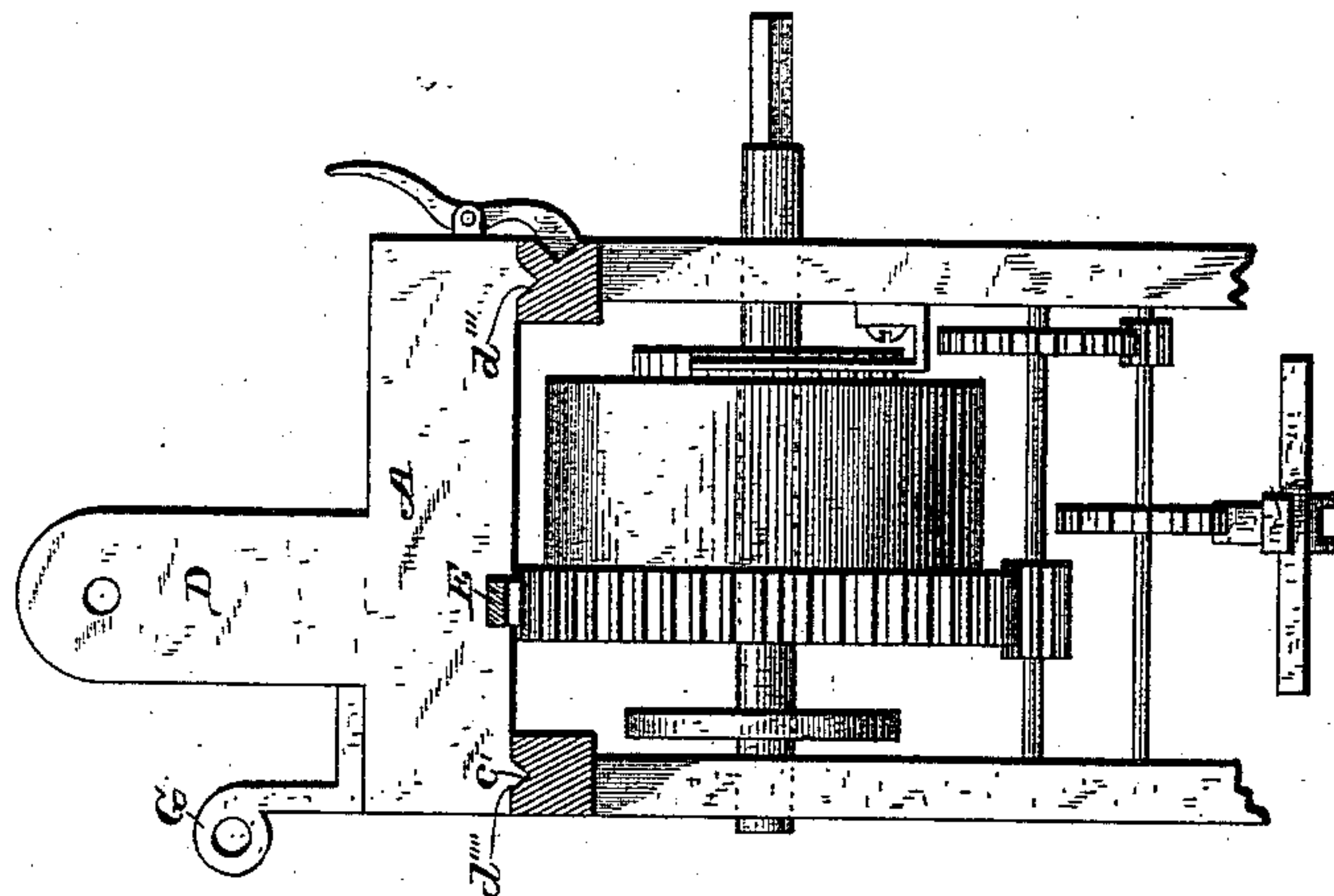


Fig. 3.

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UNITED STATES PATENT OFFICE.

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AUTOMATIC ELECTRIC SPACING MECHANISM FOR TYPE-WRITERS.

SPECIFICATION forming part of Letters Patent No. 379,406, dated March 13, 1888.

Application filed October 27, 1886. Serial No. 217,338. (No model.)

To all whom it may concern:

Be it known that I, JAMES F. McLAUGHLIN, a citizen of the United States, and a resident of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Automatic Electric Spacing Mechanism for Type-Writers; and I do hereby declare that the following is a full, clear, and exact description of the invention, which 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 the letters of reference marked thereon, which form part of this specification.

This invention relates to an electrical automatic line-spacing device for type-writers; and it has for its object to provide an electro-mechanical device which will automatically operate the platen of the machine when the sliding carriage carrying said platen reaches the end of the line, whereby the said platen is caused to revolve the desired distance upon its axis for making a line-space by means of a magnet, armature, battery, and suitable mechanical devices arranged to co-operate therewith and convey the electrical impulse caused by the closing of the circuit to the roll.

With this end in view my invention consists in certain details of construction, arrangement, and combination of parts, which will be more fully described hereinafter, and the points of novelty in which will be designated in the appended claims.

Referring to the accompanying drawings, Figure 1 is a perspective view of the sliding carriage, the frame-work therefor, the platen provided with certain devices hereinafter explained, and the magnet and armature suitably arranged upon said frame-work. Fig. 2 is a view, partly in section, of a suitable motor for imparting motion to the traveling carriage. Fig. 3 is a detail end elevation of the end of the platen and its actuating mechanism. Fig. 4 is a detail end elevation of the traveling carriage with platen removed, showing the spring circuit-controller, the battery, electro-magnet, and the electrical connections.

Like letters of reference mark the same parts in all the figures of the drawings.

Referring to the drawings by letter, A designates the frame-work of the traveling

carriage, and B the frame-work of the platform upon which said carriage runs.

C is the platen, having short shafts *a a* secured centrally in each end thereof, which are each journaled suitably in the horizontal rods or arms *b b*, pivoted to the turrets or pillars D D of the carriage.

E is a toothed rack horizontally secured between the side bars, F F, of frame-work A, and F' is a longitudinal bar arranged above and parallel to said rack between the pillars D D, the object of said rod being to give rigidity and support to the frame.

G G are two sleeves arranged back of pillars D D, and serve both as guides and fastenings for the carriage upon the longitudinal guide-rod H, secured by small screws in the sleeves G' G'' at each end of the platform of frame-work B.

On the under side of the carriage, on the bottom of each end of sill F, is formed one of two V-shaped guide-rests, *c c'*, which slide in angular surface recesses *d''' d''''* of the platform B.

The platen C, previously described as mounted in the supporting rods or arms *b b*, may be of any suitable material, and is provided at the end I with the two ratchet-wheels J J', rigidly keyed to the shaft *a*, between the arm *b* and the end of the platen. These two ratchet-wheels are of the same diameter; but the teeth are arranged in opposite directions, as shown.

d is a semicircular guide secured to arm *b* by a suitable screw or pin, and is formed at each end *d' d''* with an aperture, through which is guided the upright rod *e*, having the pawl *f* pivoted thereupon between the ends of said guide, which pawl works in the teeth of ratchet-wheel J', and has the spring *f'* secured to rod *e* to prevent said pawl from pulling out. Near the forward end of arm *b* is secured a downwardly-projecting strip, *g''*, to which is pivotally secured the pawl-lever *g*, one end of which works in the teeth of ratchet-wheel J, and the other free end is limited in its vertical movement by the pin-projection *g'* on rod *e*. The rod *e* is secured at its lower end to the rod or arm *h*, having the armature *h'* secured thereto at outer end, and said arm *h* is pivoted at its inner end to the side bar, F, of the frame.

F'' designates a plate secured at right angles

to and on the inside of pillar D, which carries the tension-spring F''', secured at its lower end to the arm *h*, the object of said spring being to bring the arm *h* back to its original position when the magnet K releases its armature *h'*.

K designates a magnet suitably secured to the frame-work B (see Fig. 4) of the platform, arranged under and in proximity to the armature *h'*, and is connected to springs K' and K'' and battery L, respectively, by wires *i*, *i'*, and *i''*, the wire *i'* leading from the battery to spring K', and the wire *i''* leading from magnet-coil K to spring K''.

The springs K' and K'' are secured upon the outer side of the sill F, between the pillars D and the sleeve G, and *h* is a pin projection on spring K' and engages with post G' to press said spring inwardly.

The battery L is not designed to move with the carriage, and in order to effect this result suitable electrical connections are made between said battery and the springs K' K'' by copper or other strips of metal (not shown) fastened to the guiding bar or rod H and connected to the battery, and the springs K' K'' are connected with said rod H by a suitable traveling device for giving electrical contact. (Not shown.)

The operation of my invention may be briefly described as follows: When, by manipulation of the keys of the instrument to which my invention may be attached, and the rack-bar is actuated by the usual step-by-step motor, the sliding carriage reaches the end of the line, the springs K' K'' engage against the sleeve G' of the platform B, which causes the contact of the spring K' with spring K'', thereby closing the circuit between said springs, battery L, and magnet K, and causes the attraction of armature *h'* to magnet K, and the rod *e*, to which said armature is attached, is pulled downwardly, being guided through apertures *d'* *d''* of the semicircular guide *d*, said downward movement of rod *e* causing the pawl *f* to rotate the ratchet-wheel J' the distance of one of its teeth, and pin *g'* on rod *e* engages one end of the pawl-lever *g*, causing the other end to engage and hold in one of the teeth of wheel J, thus preventing pawl *f* from actuating the ratchet-wheel more than one space, or, in other words, rotating the platen.

The motor hereinbefore mentioned as actuating the traveling carriage which carries the platen is designed to form the subject-matter of another application, and is therefore not particularly described or claimed herein, and the device for reversing the movement of the traveling carriage is neither shown nor described herein, it being the subject-matter of another application.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. In a type-writer, the combination, with a traveling carriage and a rotatable platen carried thereby, of an electro-magnetic step-by-step paper-feeding device controlling the

rotation of said platen, an electric circuit including the actuating-magnet of said step-by-step device, and a circuit-controller for said electric circuit operated by the traveling carriage when the latter arrives at a predetermined point in its line of travel, substantially as and for the purpose set forth.

2. In a type-writer, the combination, with a traveling carriage carrying a rotatable platen, of a step-by-step paper-feeding mechanism for said platen, comprising ratchet-disks, actuating and check pawls for said ratchet-disks, and an armature for said pawl-and-ratchet mechanism, an electro-magnet controlling the movement of said armature and included in an electric circuit, an electric circuit, and a circuit-controller for said circuit operated by the traveling carriage when the latter arrives at a predetermined point in the line of its travel.

3. In a traveling carriage for a type-writer, the combination, with a rotatable platen, of a pawl-and-ratchet mechanism for actuating said platen in a step-by-step manner, an armature attached to the actuating-pawl of said pawl-and-ratchet mechanism, a retractile spring for said armature, an electro-magnet controlling the movement of said armature and included in an electric circuit, an electric circuit, and a circuit-controller for said circuit operated periodically by the movement of the traveling-carriage.

4. In a traveling carriage of a type-writer, line-spacing mechanism for making required spaces between type-written lines, comprising a rotatable platen, an electro-magnetic step-by-step paper-feeding mechanism, substantially as described, for said platen included in an electric circuit, an electric circuit, and a spring circuit-controller for said circuit actuated periodically by the traveling carriage.

5. In a type-writer, the combination, with a traveling carriage carrying a rotatable platen provided with a step-by-step paper-feeding device and an electro-magnet and armature for operating said step-by-step device, of an electric circuit including said electro-magnet, a circuit-controller for said circuit also carried by the traveling carriage, and a stationary source of electricity feeding said circuit and normally in circuit with said traveling circuit-controller.

6. In a type writer, the combination, with a traveling carriage, of a motor for advancing same, a platen mounted on the said carriage, a step-by-step device for operating said platen, an electro-magnet controlling said step-by-step device, a spring circuit-closer in circuit with said magnet, and a fixed obstruction in the path of the circuit-closer, for the purpose of engaging and operating the same, substantially as specified.

7. In a type-writer, the combination, with a traveling carriage carrying a rotatable platen provided with an electro-magnetic step-by-step paper-feeding device, substantially as described, of an electric circuit including said

electro-magnetic step-by-step device, a circuit-controller for said circuit also carried by said carriage, and a fixed contact arranged to operate said circuit-controller when the latter
5 arrives at a predetermined position in its line of travel.

8. The combination, with the platen, of the ratchet-wheels J and J', having oppositely-inclined teeth, the spring-actuated pawl f, the
10 check-pawl g, the reciprocating rod e, having the pin g' thereon, the arm h, the armature h',

the electro-magnet K, for controlling said armature, and an electric circuit for energizing and de-energizing the said magnet, substantially as specified.

In testimony that I claim the foregoing as
my own I affix my signature in presence of two
witnesses.

J. F. McLAUGHLIN.

Witnesses:

JULIUS SOLGER,
O. E. DUFFY.