

(No Model.)

4 Sheets—Sheet 1.

T. C. DEXTER.
PAPER REGISTERING MACHINE.

No. 533,789.

Patented Feb. 5, 1895.

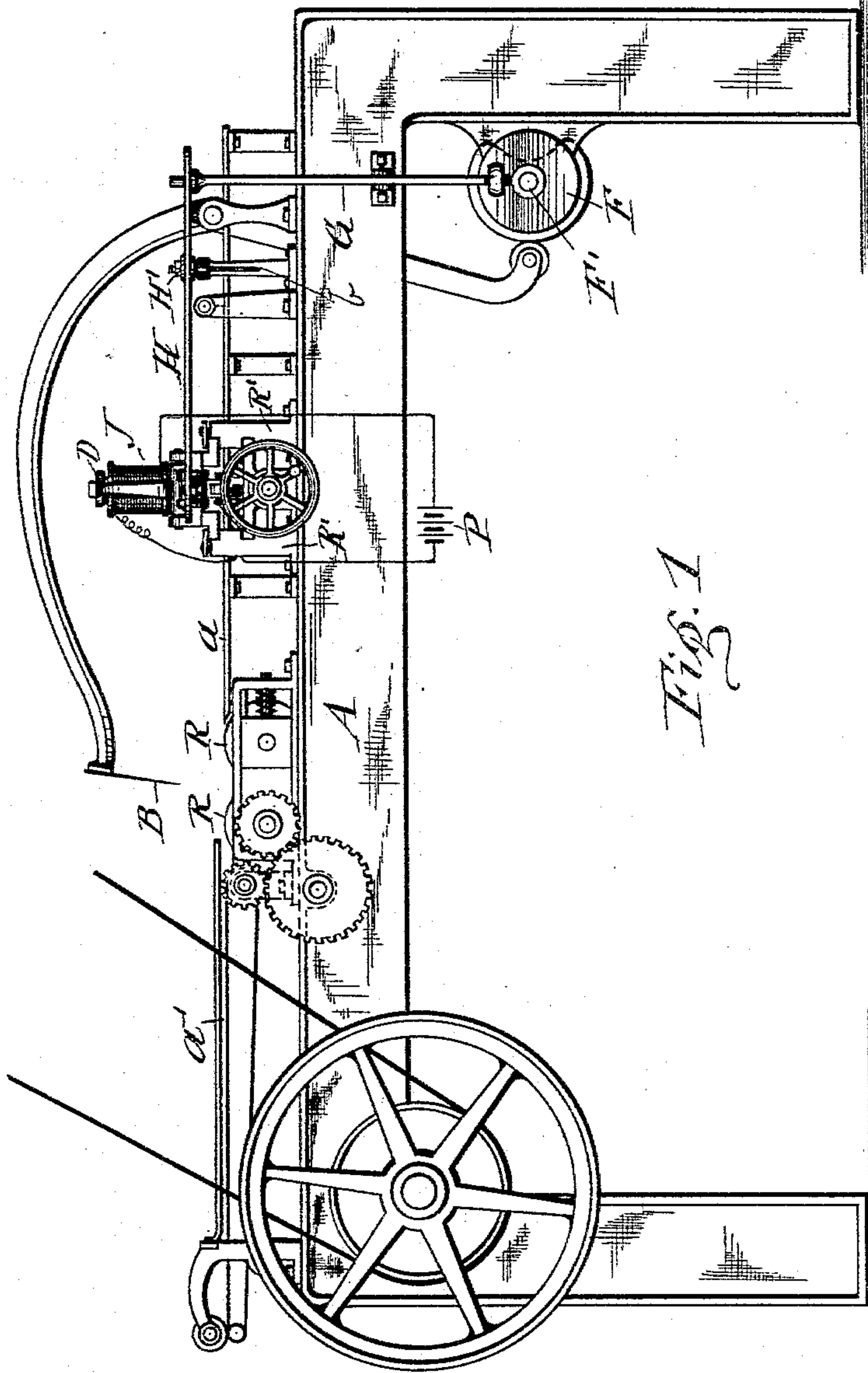


Fig. 1

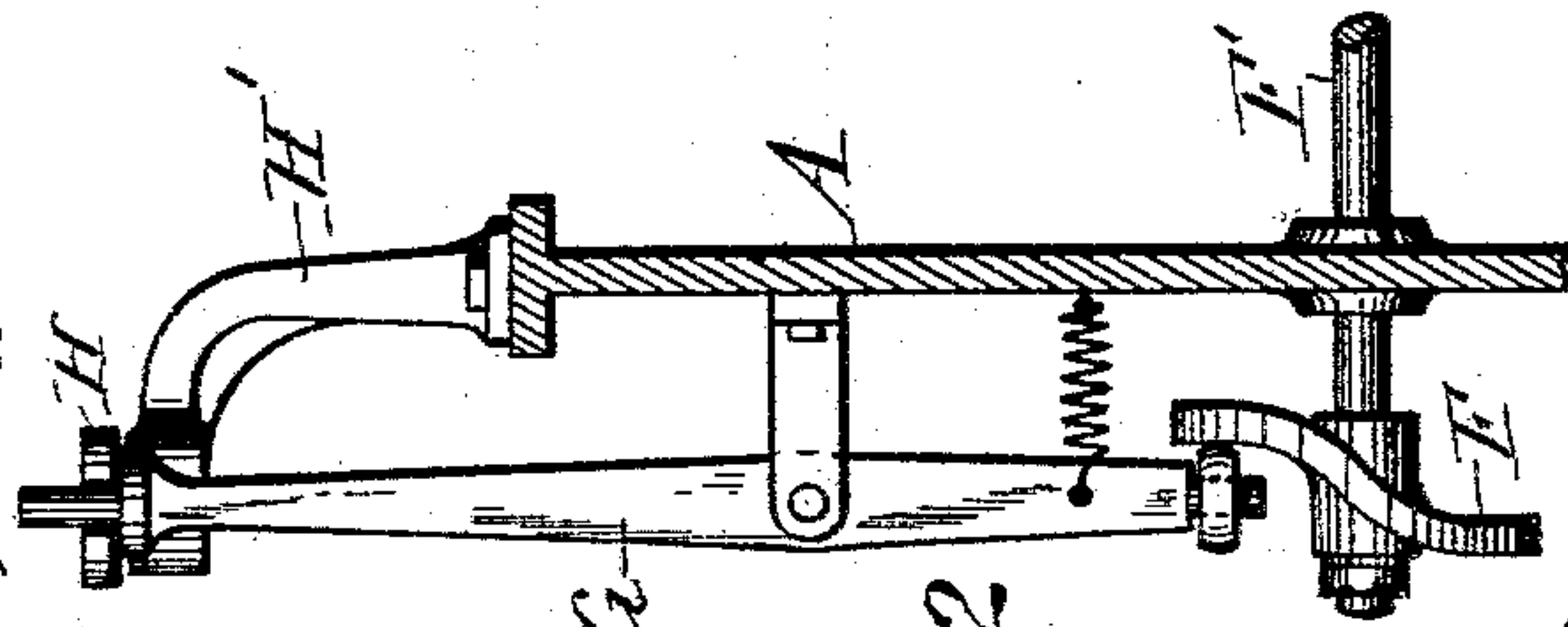


Fig. 2

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By E. Laasg
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(No Model.)

4 Sheets—Sheet 2.

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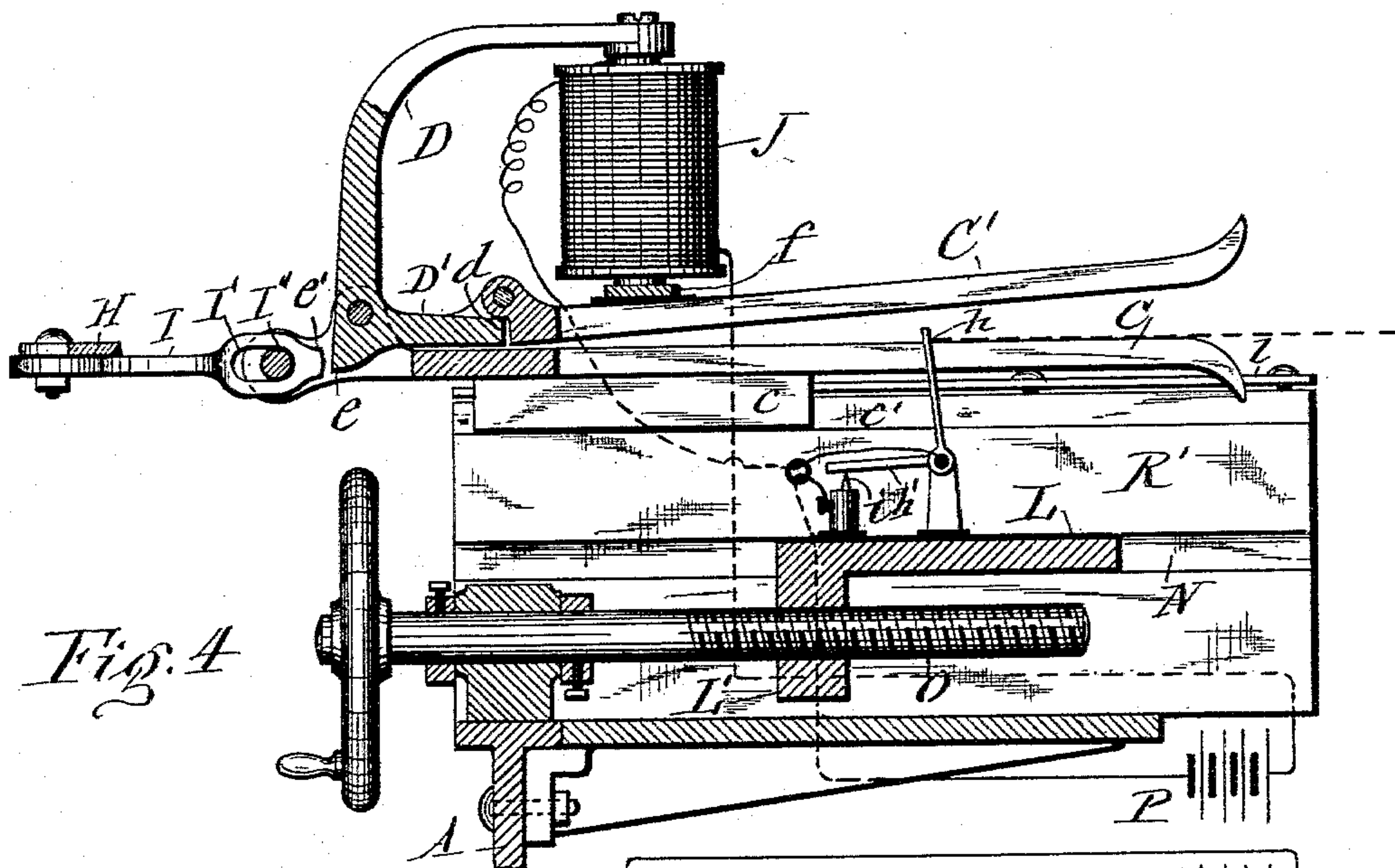


Fig. 4

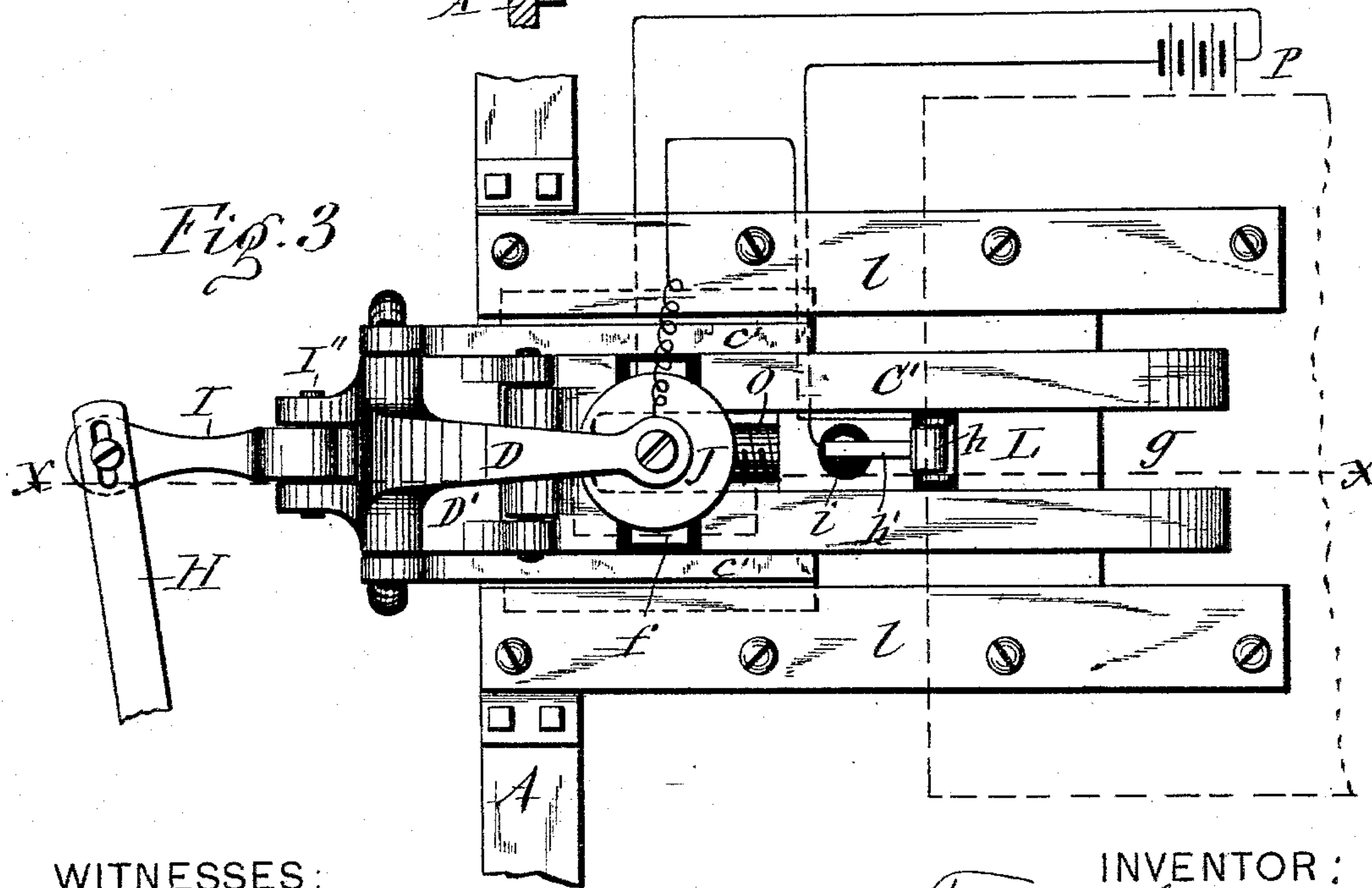


Fig. 3

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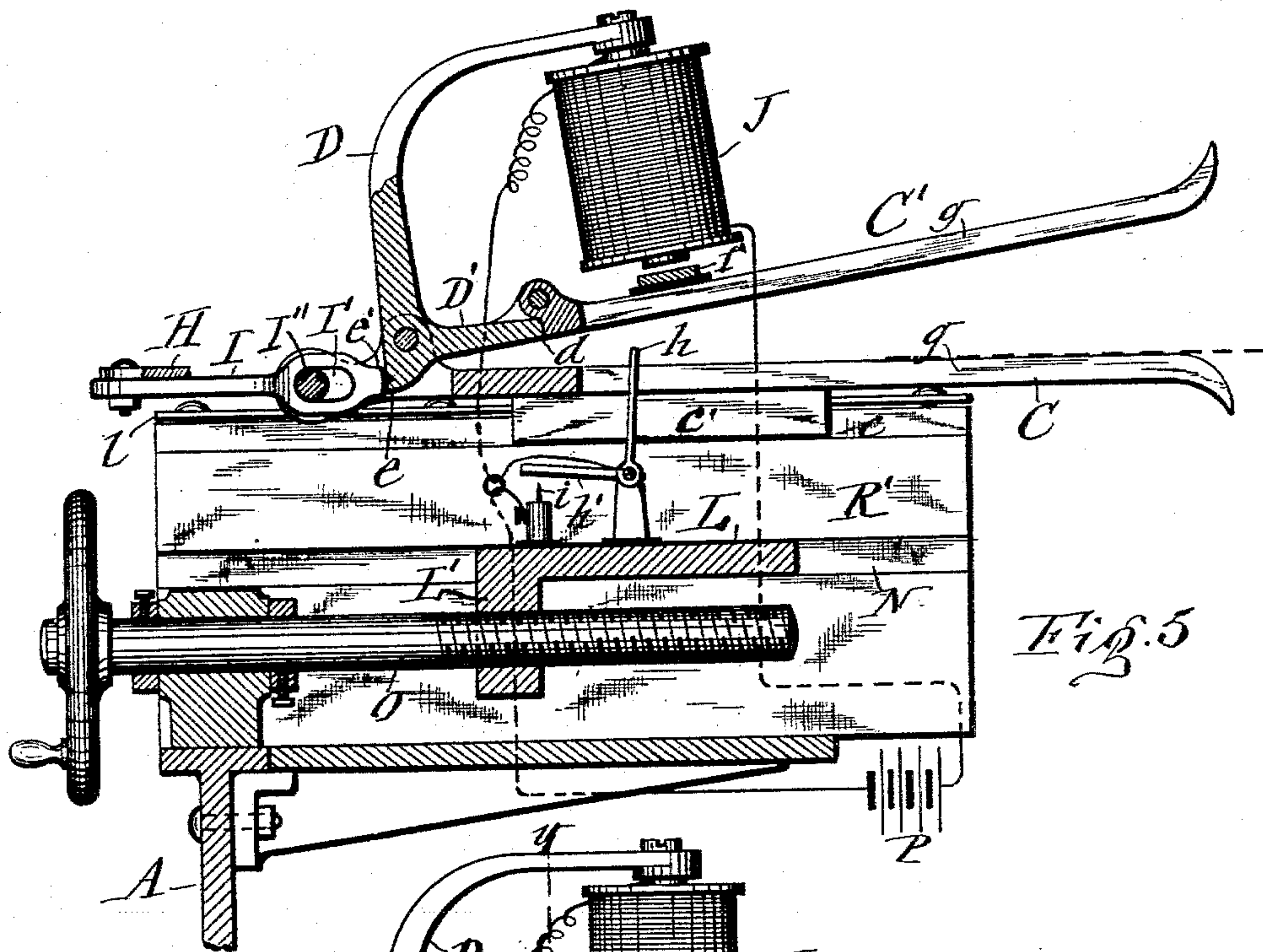


Fig. 5

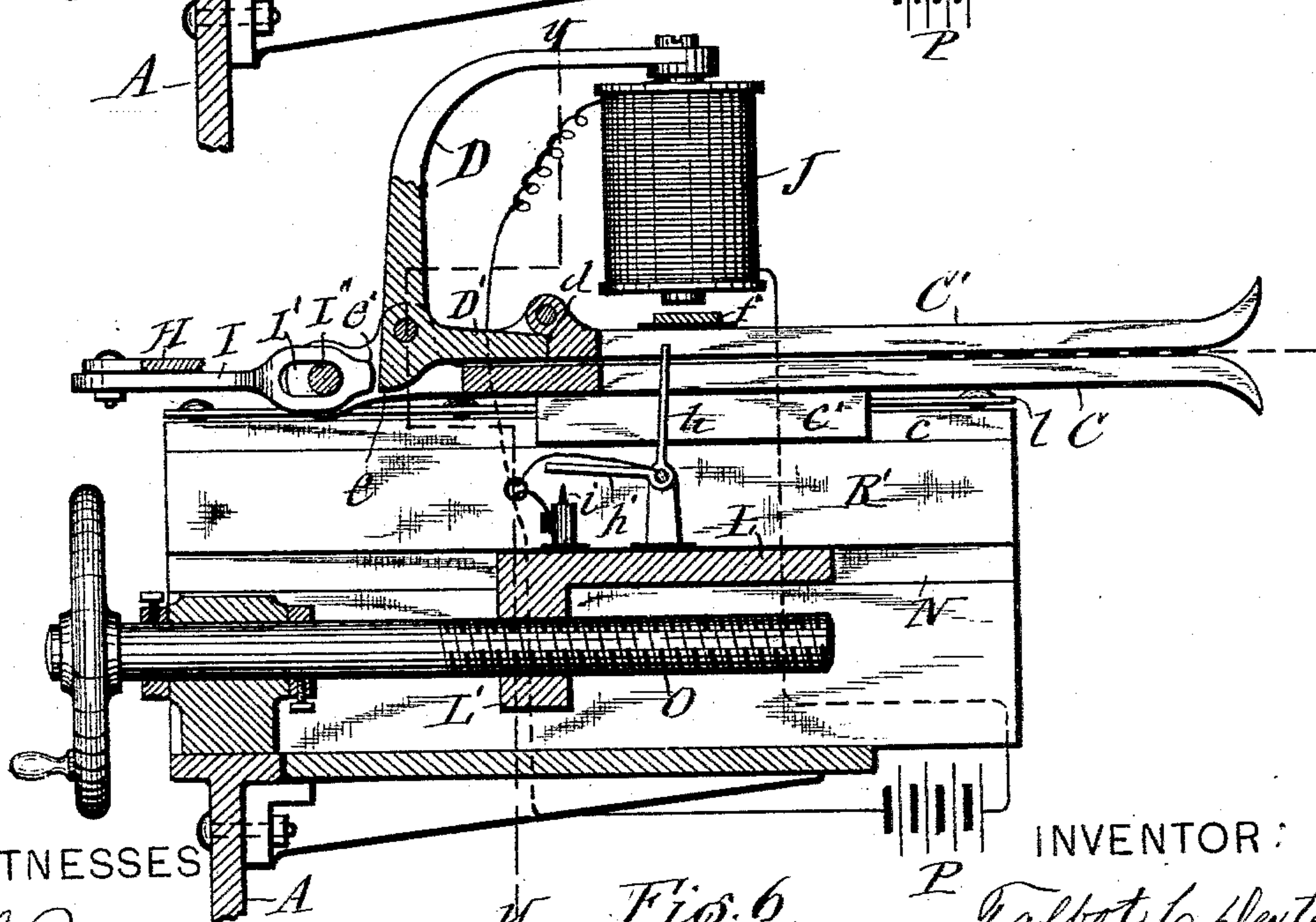


Fig. 6

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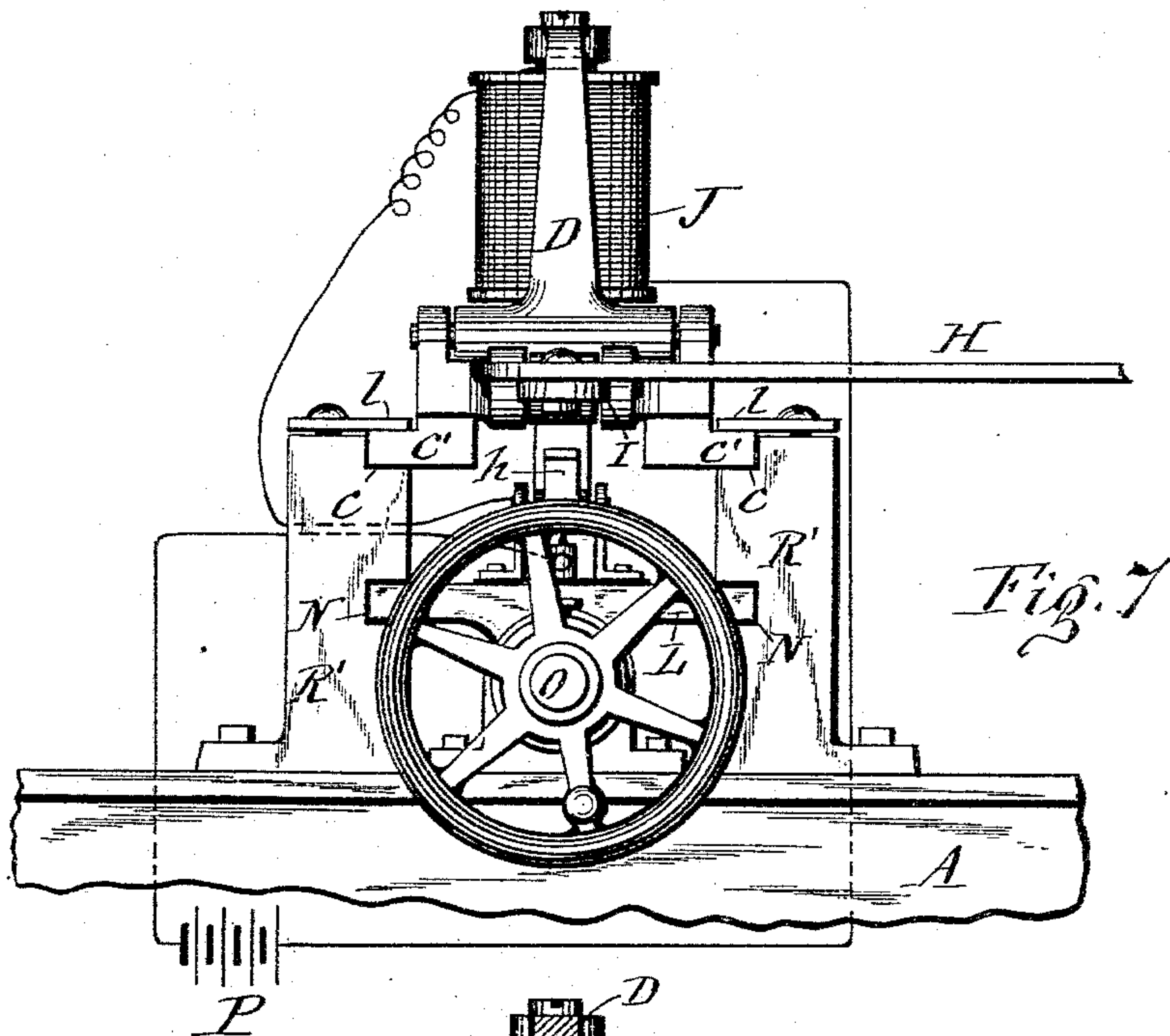


Fig. 7

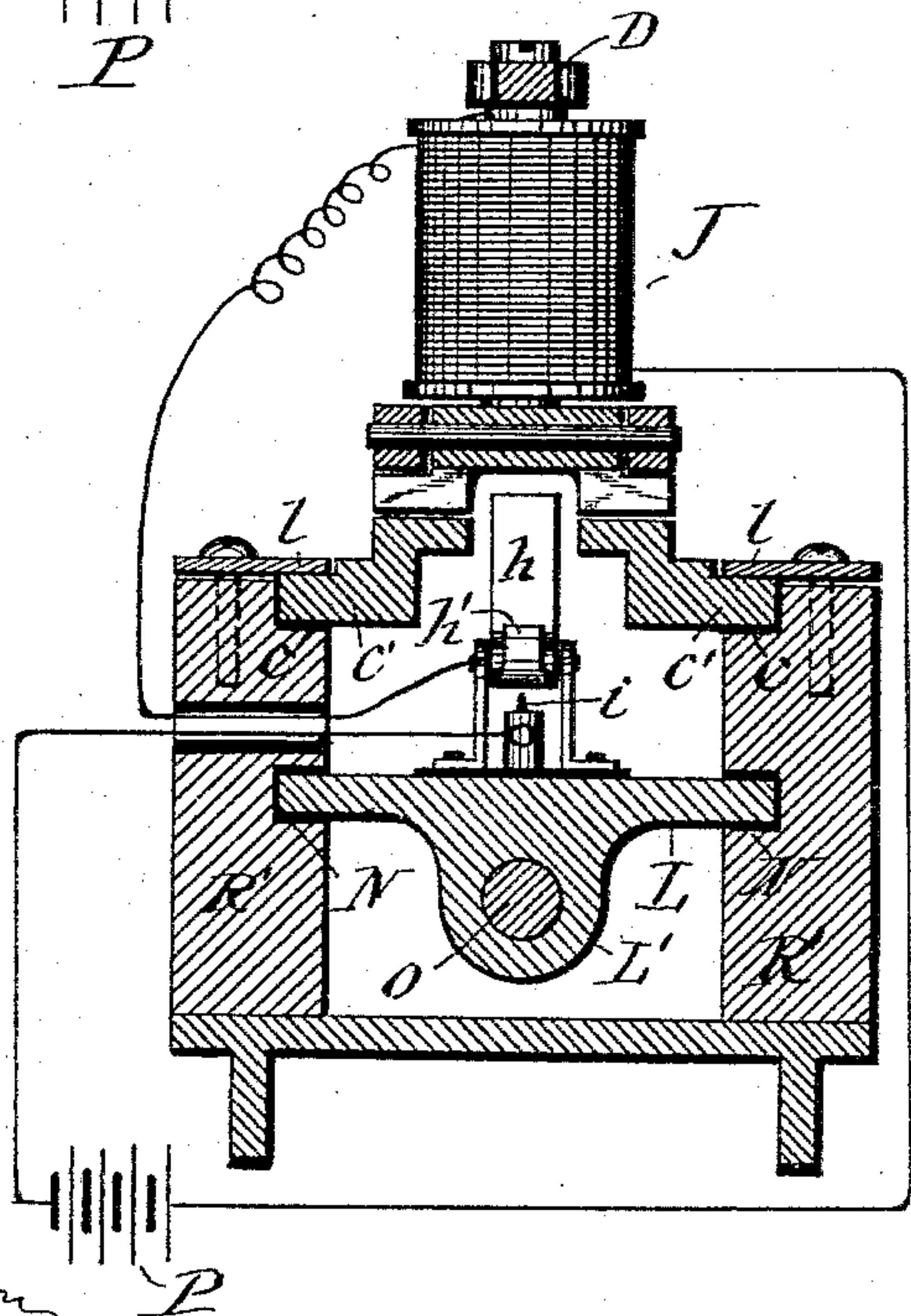


Fig. 8

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UNITED STATES PATENT OFFICE.

TALBOT C. DEXTER, OF FULTON, ASSIGNOR TO THE DEXTER FOLDER COMPANY, OF NEW YORK, N. Y.

PAPER-REGISTERING MACHINE.

SPECIFICATION forming part of Letters Patent No. 533,789, dated February 5, 1895.

Application filed April 30, 1894. Serial No. 509,444. (No model.)

To all whom it may concern:

Be it known that I, TALBOT C. DEXTER, of Fulton, in the county of Oswego, in the State of New York, have invented new and useful Improvements in Paper-Registering Machines, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention is designed for paper-folding machines and other machines requiring the introduced sheets of paper to be registered and adjusted to proper alignment preparatory to being folded or otherwise operated on by the machine; and it has special reference to the class of sheet-registering mechanisms in which reciprocating jaws gripe the sheet and draw it laterally to its requisite position. Such grippers have hitherto been operated by merely mechanical contrivances which required the gripper to remain out of the way of the sheet entering the machine until said sheet has reached its position against the first fold-guide, the gripper then advancing and gripping the sheet and drawing it over to register. This delay in the movement of the gripper, consumes considerable time. Besides this the action of said mechanical grippers depend upon their coming in contact with the edge of the sheet to be shifted in order to draw all the sheets to the same point. These defects are obviated by my present invention which consists essentially of a reciprocating gripper opened before it reaches the sheet, and opened again electro-magnetically when the sheet is registered. The action of the magnet is controlled by a circuit maker and breaker in the path of the paper shifted by the gripper all as hereinafter more fully described and summed up in the claims.

In the accompanying drawings Figure 1 is a side elevation of a paper-folding machine equipped with my improved registering apparatus. Fig. 2 is an end view of that portion of the machine from which motion is derived for the mechanical operation of the registering mechanism. Fig. 3 is an enlarged detached plan view of the registering apparatus. Figs. 4, 5 and 6 are vertical longitudinal sections on line —X—X— in Fig. 3 showing the registering apparatus in its different opera-

tive positions. Fig. 7 is an end view of the same, and Fig. 8 is a vertical transverse section on line —Y—Y— in Fig. 6.

Similar letters of reference indicate corresponding parts.

—A— denotes the supporting frame of the paper-folding machine.

—R—R— are the folding-rollers, and —B— the folding-blade, all of which operate in the usual and well known manner not necessary to be here described in detail, especially as their specific construction and combination is immaterial to my present invention.

—a—a— represent the horizontal bars which support the sheet between the folding-rollers and first fold-guide —b— which latter arrests the movement of the sheet carried into the machine by endless tapes —a'—a'—. The contact of the advance edge of the sheet with said guide squares the sheet in relation to the folding rollers, the sheet then requiring more or less lateral shifting to register the same and effect its final adjustment in relation to the folding rollers. This registering of the sheet I accomplish by means of a reciprocating gripper located approximately central between the first fold-guide and folding rollers and consisting of the two jaws —C—C'—. The lower jaw —C— is formed with elongated bearings —c'—c'— by which it slides on horizontal guides —c—c— disposed at right angles to the line of the feed of the paper. The upper jaw —C'— is fulcrumed indirectly on the lower jaw by the medium of the bracket —D— pivoted to the outer end portion of the lower jaw and formed with an elongated base —D'— to which the upper jaw is connected by a knuckle-joint —d— which allows said jaw, to swing upward from a horizontal position as illustrated in Figs. 4 and 5 of the drawings, and when in its horizontal position it bears on top of the lower jaw —C— as shown in Fig. 6 of the drawings.

The described gripper receives intermittent reciprocating motion from a suitable cam —F— attached to a rotary shaft —F'— on the folding-machine. A lever —G— is fulcrumed intermediate its length to the frame —A— and provided on one end with a roller by which it bears on the cam —F—. The opposite end of said lever is connected to

the end of another lever —H— which is pivoted at or near the center of its length to a suitable support —H'— on the frame —A— and has its opposite end connected to a pitman —I— which in turn is connected to the outer end of the lower jaw —C— with a lost motion between them, said lost motion being obtained by a longitudinal slot —I'— in the pitman receiving through it the coupling pin —I''—.

The base of the bracket —D'— is formed with a downwardly projecting heel —e— and the adjacent end of the pitman —I— is formed with a shoulder —e'— which in the inward movement of the pitman strikes the said heel and thereby tilts the bracket on its pivot so as to lift the upper jaw —C'— from the lower jaw. In this open condition, the gripper is retained during the inward movement of the jaw as illustrated in Fig. 5 of the drawings. In the retrograde movement of the pitman, it is drawn out of contact with the heel —e— and thus the upper jaw is allowed to drop into its closed position upon the lower jaw as shown in Fig. 6 of the drawings.

In order to insure the aforesaid lifting and dropping of the upper jaw —C'—, I attach to the tops of the guide-bars —R'— friction-plates —l—l— which bear with sufficient pressure on top of the sides of the lower jaw to resist the movement of said jaw sufficiently to permit the pitman —I— to press on the heel —e— and thereby lift the upper jaw and magnet —J— without moving the lower jaw. To the top of the upper jaw —C'— is secured the armature —f— over which is supported the electro magnet —J— by means of the bracket —D—.

The gripper jaws —C—C'— are provided with corresponding longitudinal slots —g— as shown more clearly in Fig. 3 of the drawings, and through these slots protrudes one end of the circuit making and breaking lever —h— which is pivoted to a support beneath the gripper. In order to allow said circuit maker and breaker to be adjusted in its position so as to be actuated by sheets of different lengths, I mount the aforesaid support on a slide —L— riding in guides —N—N— which are parallel with the guides —c—c— of the gripper. Said slide has affixed to it or formed integral with it a nut —L'— in which works a screw —O— journaled in the side of the main frame —A— so as to prevent it from moving longitudinally. By turning said screw the aforesaid slide can be moved forward or back as may be desired.

—i— is one of the terminals of the circuit and the finger —h'— of the make-and-break-lever —h— is the other terminal of the circuit.

—P— represents the battery of said circuit.

In the operation of the machine the lever —H— by means of the pitman —I— opens the gripper to the extent shown in Fig. 5 of the drawings, and then pushes the same forward by the time the paper has been arrested by the

first fold-guide —b—. The lower jaw —C— is carried immediately beneath the paper and the upper jaw is then caused to drop by gravity by the reverse movement of the aforesaid lever and pitman releasing the heel —e—. The gripper is thus closed to take hold of the paper and by the further movement of the pitman the gripper is drawn toward the side of the machine and carries with it the aforesaid paper to its requisite position for being folded by the rollers —R—R—. In this movement the edge of the paper encounters the upper end of the circuit making and breaking lever —h— which is thereby thrown in contact with the terminal —i— and thus closes the circuit. This energizes the magnet —J— and causes the same to attract the armature —f— and thereby lift the upper jaw from its closed position as illustrated in Fig. 4 of the drawings. The paper is thus released and allowed to pass between the folding-rollers —R—R—.

What I claim as my invention is—

1. A paper-shifter comprising a longitudinally reciprocating gripper, an electric circuit, an electro-magnet for opening the gripper, and a circuit maker and breaker actuated by the sheet moved by the gripper as set forth.

2. A paper-shifter comprising longitudinally reciprocating paper-gripping jaws, an electric circuit, an armature attached to the upper jaw, an electro-magnet over said armature, and a circuit maker and breaker actuated by the sheet moved by said jaws.

3. An electrically controlled paper registering apparatus comprising paper-gripping jaws disposed at right angles to the line of feed, a lever moving the jaws to and from said line of feed and opening and closing the same, during said movement an electric circuit, an electro-magnet opening by its energy the jaws independently of the aforesaid lever, and a circuit maker and breaker actuated by the sheet drawn laterally by the aforesaid jaws.

4. An electrically controlled paper-transferrer comprising a longitudinally reciprocating paper-gripping jaw, a bracket pivoted to said jaw, a companion jaw connected to said bracket by an upwardly movable knuckle-joint, an armature attached to the top of the latter jaw, an electro-magnet supported over the armature by the aforesaid bracket, a lever tilting the bracket from the lower jaw, an electric circuit, and a circuit maker and breaker actuated by the sheet moved by the jaws as set forth.

5. The combination with the lower jaw, of a bracket pivoted to said jaw and provided with a downwardly projecting heel, the upper jaw connected to the base of the bracket by an upwardly movable knuckle-joint, an armature attached to the top of the upper jaw, an electro-magnet supported over said armature by the aforesaid bracket, a pitman connected to the lower jaw with a lost motion between them to allow said pitman to engage and release the aforesaid heel, an electric circuit,

and a circuit maker and breaker actuated by the sheet moved by the aforesaid jaws as set forth.

6. The combination of the paper-gripping jaws provided with corresponding longitudinal slots, a lever moving the jaws to and from the line of feed of the paper an armature attached to the top of the upper jaw, an electro-magnet supported over said armature, an electric circuit, and a circuit making and breaking finger protruding through the slots of the jaws to come in contact with the sheet moved by said jaws as set forth.

7. In combination with the longitudinally movable jaw and its guides, friction-plates bearing on said jaw to retard the movement thereof, a bracket pivoted to said jaw and provided with a downwardly protruding heel beneath the pivot, the upper jaw connected to the base of said bracket by an upwardly movable knuckle-joint, a pitman connected to the lower jaw with a lost motion between them to allow said pitman to engage and release the aforesaid heel, an armature attached to the top of the upper jaw, an electro-magnet supported on the bracket over the arma-

ture an electric circuit, and a circuit maker and breaker actuated by the sheet moved by the jaws substantially as set forth.

8. In combination with the reciprocating gripper electric circuit and the electro-magnet for opening said gripper, the circuit maker and breaker supported adjustably along a line parallel with the gripper and independently thereof.

9. In combination with the reciprocating gripper electric circuit and the electro-magnet for opening said gripper, guides under the gripper and parallel therewith, a slide riding on said guides and detached from the gripper, a nut on said slide, a screw journaled in the main frame, and working in said nut, and the circuit maker and breaker mounted on said slide substantially as and for the purpose specified and shown.

In testimony whereof I have hereunto signed my name, this 2d day of April, 1894.

TALBOT C. DEXTER. [L. S.]

Witnesses:

JOHN J. LAASS,
C. L. BENDIXON.