

No. 698,966.

Patented Apr. 29, 1902.

I. KITSEE.

MACHINE FOR PRODUCING MATRICES FOR STEREOTYPE PLATES.

(Application filed Nov. 20, 1895.)

(No Model.)

5 Sheets—Sheet 1.

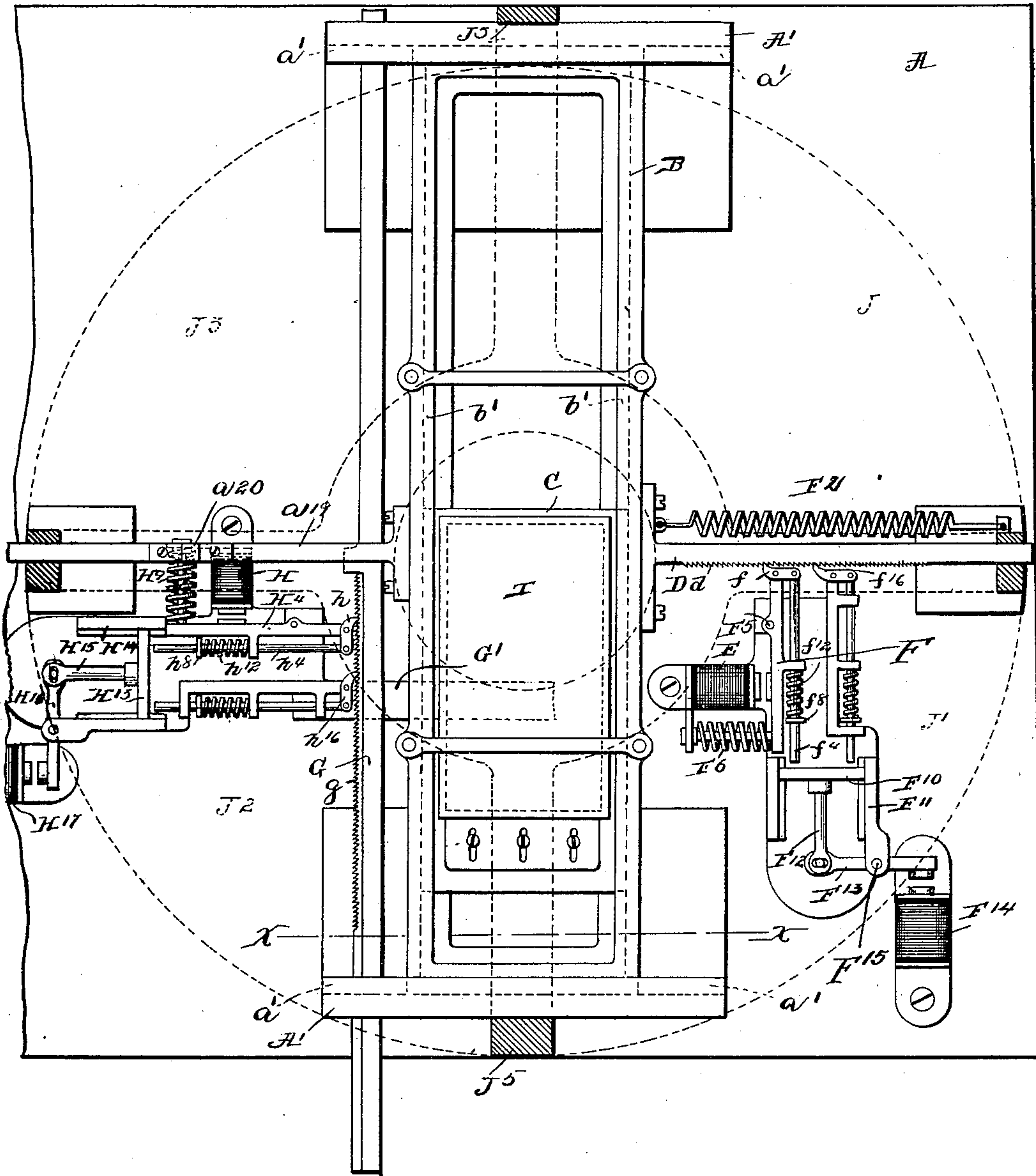


Fig. 1.

Witnesses.

Jesse B. Steller,  
Mallan B. Eldridge

Inventor.

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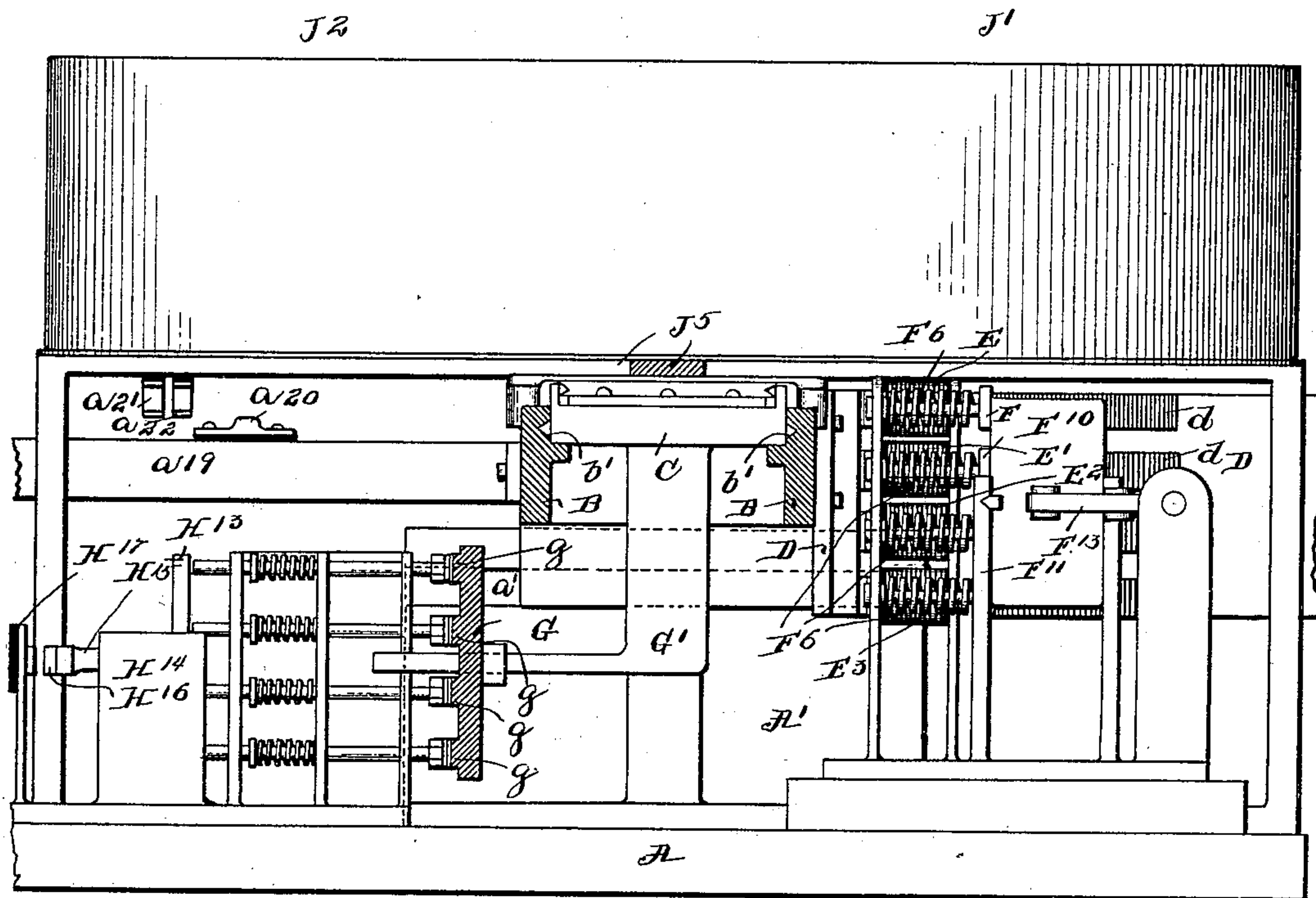


Fig. 2.

Witnesses.

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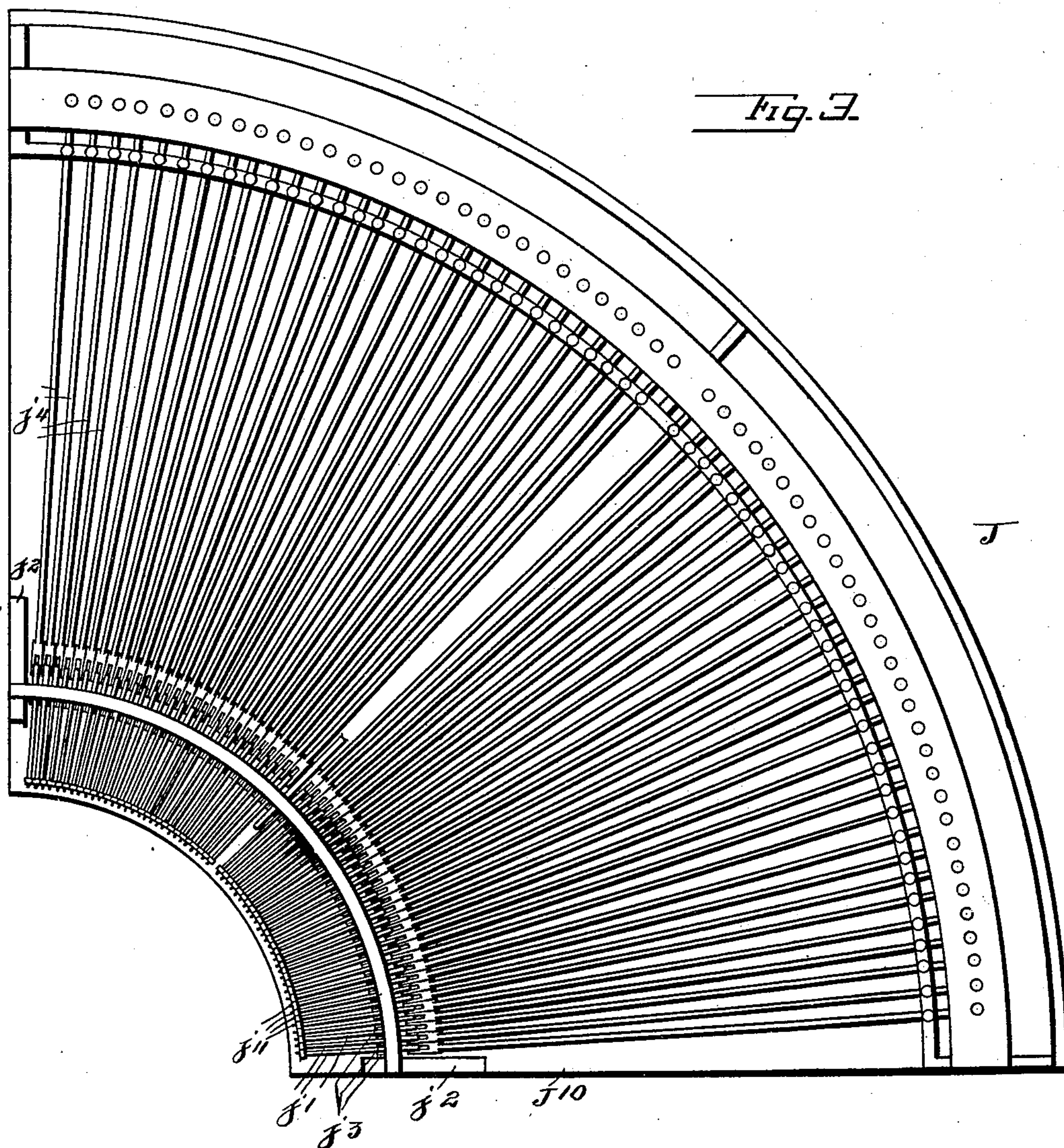
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(Application filed Nov. 20, 1895.)

(No Model.)

5 Sheets—Sheet 3.



Witnesses.

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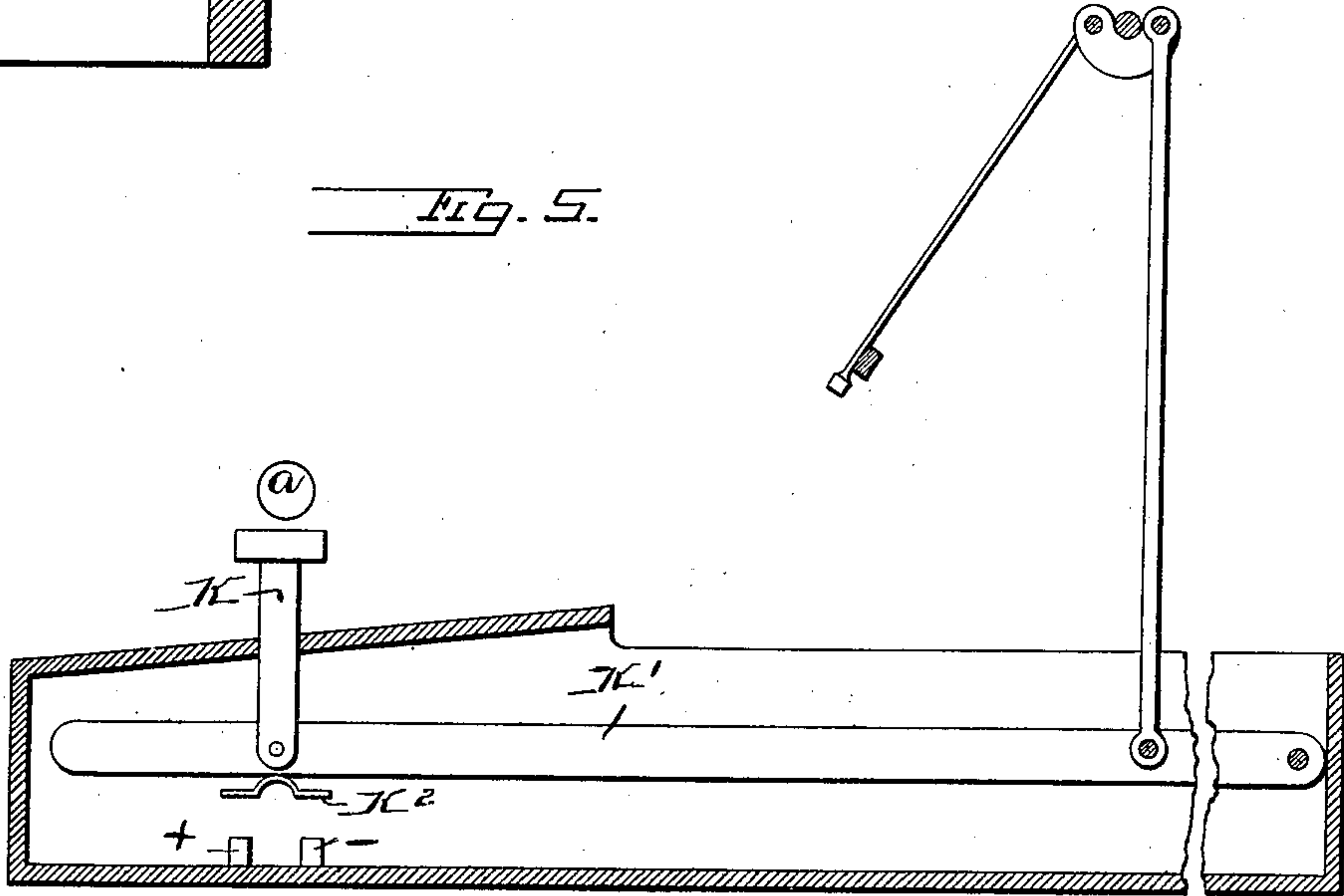
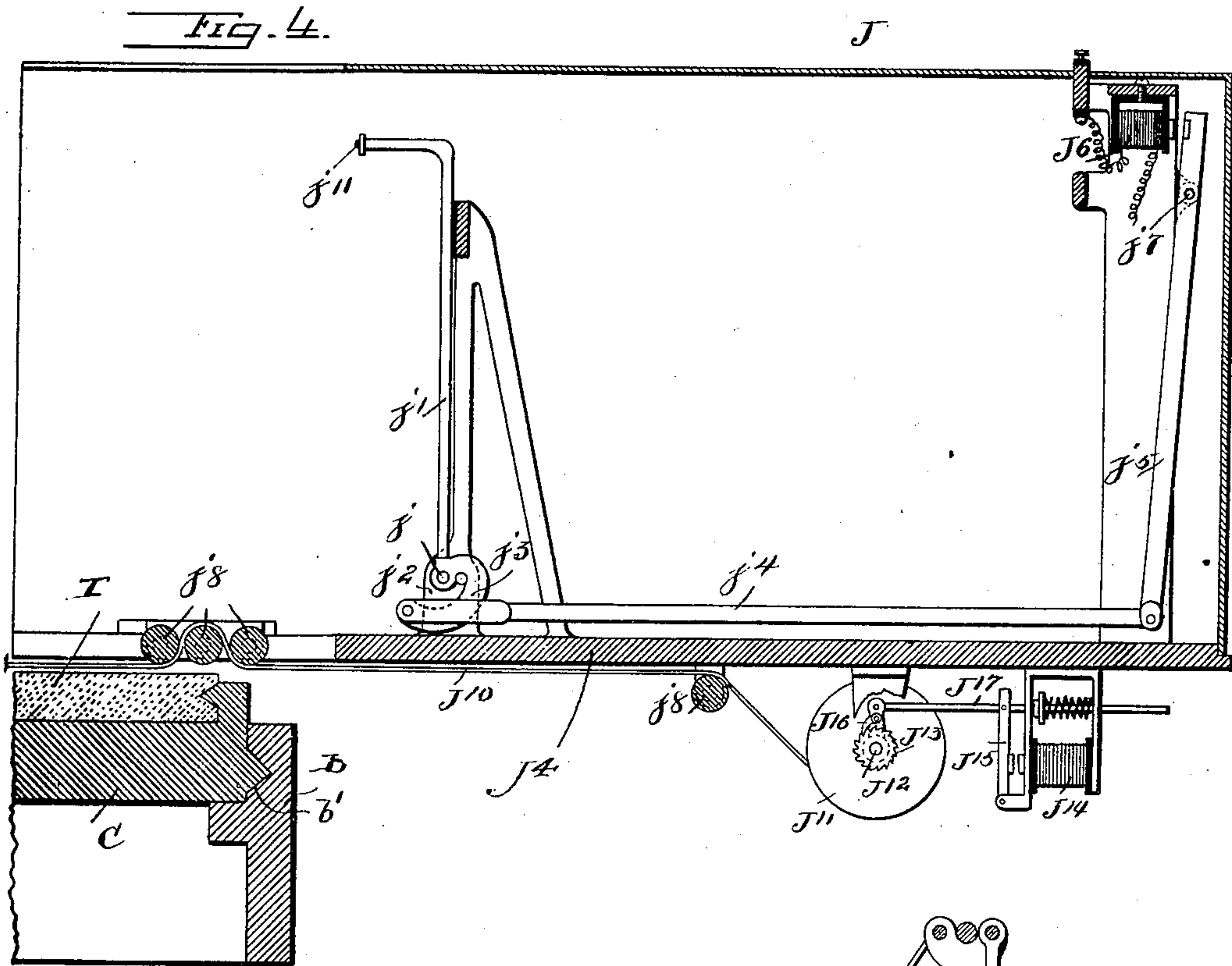
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(Application filed Nov. 20, 1895.)

(No Model.)

5 Sheets—Sheet 4.



Witnesses.

Jesse B. Heller,  
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No. 698,966.

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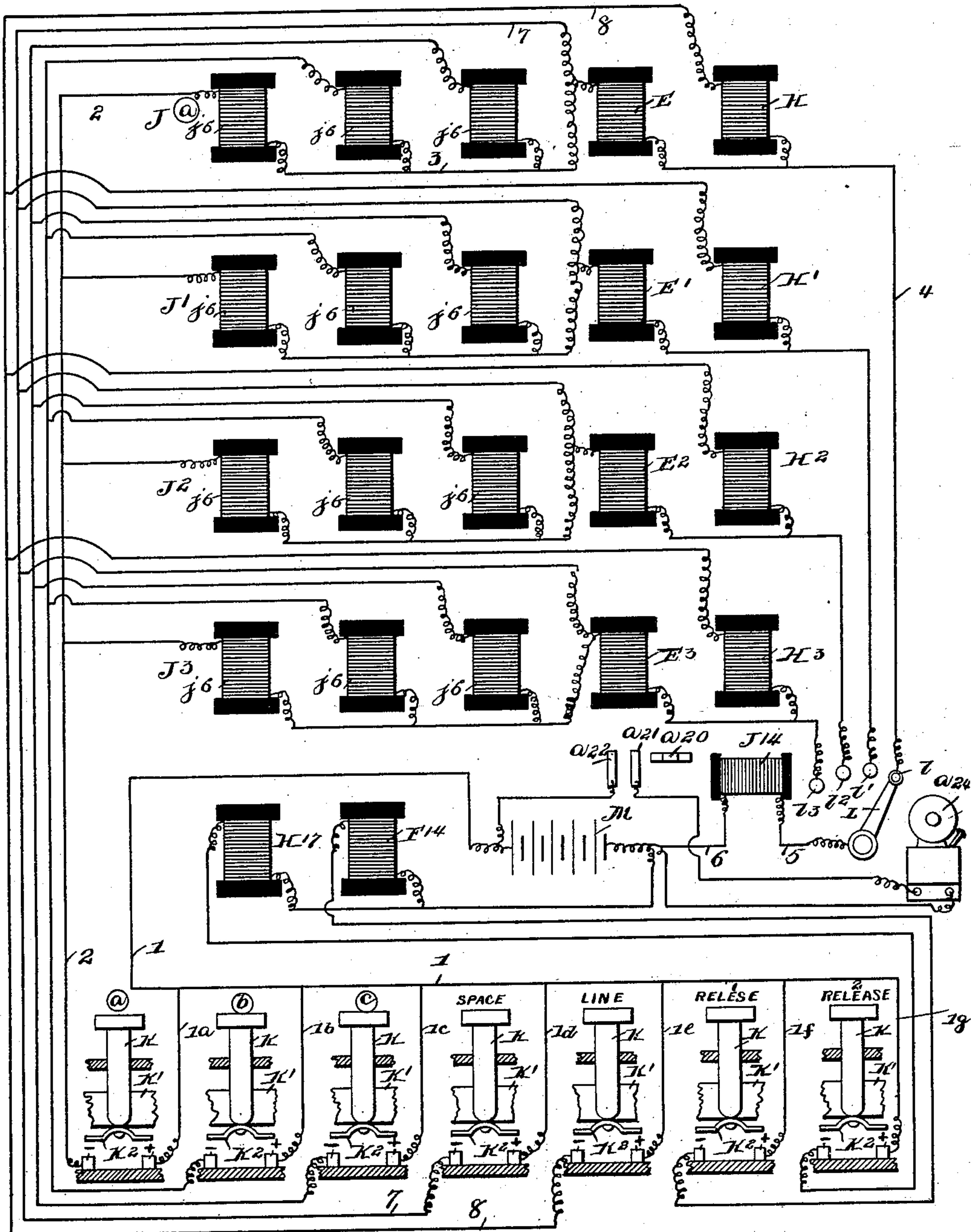
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(Application filed Nov. 20, 1895.)

(No Model.)

5 Sheets—Sheet 5.



Witnesses.

Jesse B. Heller?  
Holland B. Eldridge

Fig. 6.

Inventor.

I. Kitsee



# UNITED STATES PATENT OFFICE.

ISIDOR KITSEE, OF PHILADELPHIA, PENNSYLVANIA.

MACHINE FOR PRODUCING MATRICES FOR STEREOTYPE-PLATES.

SPECIFICATION forming part of Letters Patent No. 698,966, dated April 29, 1902.

Application filed November 20, 1895. Serial No. 569,542. (No model.)

*To all whom it may concern:*

Be it known that I, ISIDOR KITSEE, of the city and county of Philadelphia, State of Pennsylvania, have invented certain new and useful Improvements in Machines for Producing Matrices for Stereotype-Plates, of which the following is a specification.

My invention relates to the production of matrices for stereotype-plates.

10 The object of my invention is to produce such matrices in a simpler and quicker way than has been heretofore the case.

It is obvious that the first step in the production of a matrix for stereotype-plates of such a character as will be hereinafter more fully described has to consist of the tracing or printing of the necessary characters or designs on the surface of the matrix-blanks. If the desired matter for the stereotype-plate is a design, then the same can be simply traced upon the surface of the blank with the material hereinafter described; but if such should consist of reading matter, as is the case with stereotype-plates for books, and more especially for newspapers, such matter has to be printed upon the surface.

In newspaper-work the great difficulty of printing with the aid of a common type-writing machine consists in the fact that its reading matter necessitates the employment of such a number of fonts of type as is impossible to be operated on by one operator in the usual manner, and as this my invention has in part more special reference to the production of stereotype-plates for newspaper-work I include herein also the method of producing the imprint of reading matter in the required different types with the aid of a common type-writer machine having only such parts altered as are necessary to carry out with it my invention. The underlying principle in this part of my invention consists in the employment of two machines, the one a usual type-writing machine, with the necessary parts altered, and the other provided with as many different fonts of type as are deemed necessary for the production of the reading matter. The second machine is actuated with the aid of electromagnetic devices through the operation of the first-named machine, and I call the second machine, to distinguish it from the first-named machine, a "printing-machine."

In the drawings I have illustrated the second machine as consisting of four different fonts of type; but it is unnecessary to say that the device may be provided with any number of type-fonts, which addition requires only additional circuits and electromagnetic devices such as are illustrated in the drawings and as I will describe hereinafter.

Referring to the drawings, in which similar letters indicate similar parts, Figure 1 is a plan view of the printing-machine with the four sections of the printing device, each section embracing one type-font in dotted lines. Fig. 2 is a vertical transverse section on the line *xx* of Fig. 1. Fig. 3 is a plan view of the mechanism operating one font of type. Fig. 4 is a side elevation, partially in section, of the same. Fig. 5 is a vertical transverse section of part of a type-writing machine. Fig. 6 is a diagram illustrating the electrical connection between the type-writing machine and the printing-machine.

A is a base, being part of the printing-machine, to which base are attached at opposite ends the two standards *A' A'*.

B is the carriage, loosely mounted in the guide *a' a'* of the standards *A' A'* in such a way as to be capable of a transverse movement for the purpose hereinafter described.

C is the subcarriage, loosely mounted in the guides *b' b'* of the carriage B, allowing said subcarriage C the necessary longitudinal movement, as later on more fully described.

T is the matrix, secured either directly or through the intervention of a containing-pan to the subcarriage C. It is therefore self-evident that the movement of either one or the other of the carriages necessitates a similar movement of the matrix.

I will now describe the different mechanism necessary for a transverse movement of the carriage B, and therefore matrix T, and the manner in which such movement is brought about. To the carriage is for such purpose secured the rack-plate D. This plate has to be provided upon its face with as many different sets of rack-teeth as the printing-machine is provided with different type-fonts, and as I have illustrated such machine as being provided with four fonts of types the plate D has cut upon its face four different sets of rack-teeth *d d d d*, each set being of



different size corresponding, as it were, to the different size of space necessary for each type of each of the different type-fonts.

E E' E<sup>2</sup> E<sup>3</sup> are electromagnets, of which F F F F are the armatures secured to F<sup>5</sup>. These armatures have pivotally secured to their ends the spring-actuated pawls *ffff*. These pawls are normally held against their respective rack-teeth through the medium of the rods *f<sup>4</sup> f<sup>4</sup> f<sup>4</sup> f<sup>4</sup>*. To these rods are pivotally secured the heels of their respective pawls. *f<sup>8</sup> f<sup>8</sup> f<sup>8</sup> f<sup>8</sup>* are collars secured to the rods and *f<sup>12</sup> f<sup>12</sup> f<sup>12</sup> f<sup>12</sup>* are springs pressing upon said collars, and therefore upon said rods. The tendency of these springs is to press the rods, with the attached pawl-heels, down or inward, thereby pressing the pawls against the rack-teeth. The armatures F F F F, to which the pawls *ffff* are pivotally secured, are normally kept away from their respective magnets through the springs F<sup>6</sup> F<sup>6</sup> F<sup>6</sup> F<sup>6</sup>. In conjunction with this first series of pawls is the second series of pawls *f<sup>16</sup> f<sup>16</sup> f<sup>16</sup> f<sup>16</sup>*, with their spring-pressed rods. These pawls press always against the rack-teeth, and their office is to prevent the return of the carriage B during the time that the pawls of the first series are actuated. It is therefore obvious that a return or back movement of the carriage B is only possible at the time when both series of pawls are releasing their pressure upon the rack-teeth. As soon as such is the case the tension of the spring F<sup>21</sup> comes into play, and the carriage returns through the action of this spring to its starting-point.

I will now describe the manner in which the two series of pawls are simultaneously released and the mechanism necessary to such operation. As stated above, the pawls are kept up or outward through the action of the springs which press the pawl-heels down or inward, and to release the pressure of the pawls it is only necessary to counteract the pressure of the springs *f<sup>12</sup> f<sup>12</sup> f<sup>12</sup> f<sup>12</sup>*. To this end the frame F<sup>11</sup> in proximity to the spring-pressed rods, as above described, is provided with guides, in which is loosely mounted the plunger F<sup>10</sup>, to which is secured the rod F<sup>12</sup>, pivotally attached to one end of the armature F<sup>13</sup> of the electromagnet F<sup>14</sup>, the armature itself being pivoted at F<sup>15</sup> to a lug projecting from the frame F<sup>11</sup>. Should, therefore, the electromagnet F<sup>14</sup> be energized, it will draw the near end of the armature F<sup>13</sup> toward it, thereby pressing the plunger F<sup>10</sup> against the lower ends of all rods of both series of the pawls, thereby releasing them and allowing the spring F<sup>21</sup> to act, as above set forth.

To secure the longitudinal movement to the carriage C, I have recourse to the following mechanism: The guides of the standards A' A' are provided with the sliding rack-plate G, provided with four different sets of teeth *g g g g*, cut upon its face or surface in a manner similar to the four series of teeth of the rack-plate D. G' is an arm projecting from the carriage C and through an orifice in the

rack-plate G. A longitudinal movement of the rack-plate G will therefore draw the carriage C with it. H H' H<sup>2</sup> H<sup>3</sup> are electromagnets provided each with one of the armatures H<sup>4</sup> H<sup>4</sup> H<sup>4</sup> H<sup>4</sup>, pivoted at H<sup>8</sup>. To the ends of these armatures are pivotally secured the spring-actuated pawls *h h h h*, with their respective rods *h<sup>4</sup> h<sup>4</sup> h<sup>4</sup> h<sup>4</sup>* secured to the heels of said pawls and the collars *h<sup>8</sup> h<sup>8</sup> h<sup>8</sup> h<sup>8</sup>*, against which the springs *h<sup>12</sup> h<sup>12</sup> h<sup>12</sup> h<sup>12</sup>* bear, thereby pressing the pawls against the rack-teeth of the rack-plate G. This series of pawls is normally kept pressing against the rack-teeth *g g g g* by the action of the springs *h<sup>12</sup> h<sup>12</sup> h<sup>12</sup> h<sup>12</sup>*. To prevent the back or return movement of the rack-plate G, and therefore carriage C, during the time that said pawls are actuated, the rack-plate is also provided with a second series of spring-actuated pawls *h<sup>16</sup> h<sup>16</sup> h<sup>16</sup> h<sup>16</sup>*. The armatures H<sup>4</sup> H<sup>4</sup> H<sup>4</sup> H<sup>4</sup> are normally kept away from their respective electromagnets through the action of their respective springs H<sup>9</sup> H<sup>9</sup> H<sup>9</sup> H<sup>9</sup>. The mechanism to release these two series of pawls is considered generally of the same construction as the mechanism described above to release the first two series of pawls. In this case the frame H<sup>14</sup> is secured in proximity to the rods, and mounted in the guides of said frame is the plunger H<sup>13</sup>, having connected to it the rod H<sup>15</sup>, which on its opposite end is pivotally secured to one end of the armature H<sup>16</sup> of the electromagnet H<sup>17</sup>. The armature itself is pivoted to a lug of the frame H<sup>14</sup>. The action of the armature and its connecting-rod and plunger on the spring-pressed rods if the electromagnet is energized is the same as the action of the similar mechanism of the first-described releasing device.

In the printing machine J J' J<sup>2</sup> J<sup>3</sup> are the four sections of the movable type arrangements, each section representing one complete font of type, and as one section is an exact duplicate of the other sections it is only necessary to describe one of these sections. In describing this part of the mechanism I have more specially reference to Figs. 1, 2, 3, and 4 of the drawings, as in such figures the parts referred to are more clearly illustrated. The base of all these sections J<sup>4</sup> is fixedly secured to the frame J<sup>5</sup>, which in turn is secured to the base A. *j* is a rod upon which the type-bar *j'*, carrying the type *j<sup>11</sup>*, is pivoted. This rod is secured in the standard *j<sup>2</sup>*. Depending from the type-bar *j'* is the arm *j<sup>3</sup>*, to the end of which is pivotally secured the arm or rod *j<sup>4</sup>*, which in turn is at its other end pivoted to the armature *j<sup>5</sup>* of the magnet *j<sup>6</sup>*. The armature itself is pivoted at *j<sup>7</sup>*.

J<sup>10</sup> is the ribbon, which passes over the matrix T directly above the dead-center of the machine with the aid of the rollers *j<sup>8</sup>* to the ribbon-take-up mechanism, of which J<sup>11</sup> is the winding-spool fixedly secured to the shaft J<sup>12</sup>, having attached to it the ratchet J<sup>13</sup>, operated by the magnet J<sup>14</sup>, armature J<sup>15</sup>, pawl J<sup>16</sup>, pawl-rod J<sup>17</sup> in a manner well understood.



and equal to the common step-by-step movement.

Referring to Fig. 5, it is only necessary for me to describe such parts of the type-writing machine as will have to be altered, so as to cooperate with and actuate my printing device.

K is the key of an ordinary type-writing machine, attached in the usual manner to the arm K', which operates the type-bar through the medium of the toggle.

K<sup>2</sup> is a spring-contact secured to the bottom of the arm K' in such place and manner that when said arm is depressed it overbridges the space between the two metallic contact-points + and -, thereby establishing a path for the flow of the current if these two contact-points are inserted in a current-carrying circuit.

In Fig. 6 I have shown seven keys of a type-writing machine and their connections with the four sections J J' J<sup>2</sup> J<sup>3</sup> of the printing-machine. These keys perform the following functions: "a" is the key for printing the letter "a;" "b," the key for printing the letter "b;" "c," the key for printing the letter "c." "Space" is the key for moving the matrix a space between letters or words. "Line" is the key for moving the matrix forward a line or two, as desired. "Release 1" is the key for releasing the series of pawls f and f<sup>16</sup>; "Release 2," the key for releasing the series of pawls h and h<sup>16</sup>.

The upper series of magnets marked J are the magnets of section J of the printing-machine corresponding to the keys above described. The second series of magnets marked J' are the magnets of section J' of the printing-machine, the magnets J<sup>2</sup> of section J<sup>2</sup>, and the magnets J<sup>3</sup> of section J<sup>3</sup> of the printing-machine, all corresponding in their respective sections to the keys aforesaid.

L is a hand-switch having the contact-points l l' l<sup>2</sup> l<sup>3</sup>. These contact-points are in electrical connection with the sections J, J', J<sup>2</sup>, and J<sup>3</sup> of the printing-machine, respectively, so that through the shifting of the switch-arm to any of the contact-points the magnets of the corresponding sections are placed in the circuit and can therefore be operated on through the depression of one or the other of the keys of the type-writing machine.

In the drawings the switch is in contact with point l, and the magnets of section J are therefore inserted in the circuit, and as the connections in all the sections are similar to the connections in section J it is only necessary to describe this section and in connection with it such devices as are necessary to operate these or the other sections.

Necessary to the operation of any and all of the electromagnetic devices is a source of electric current, and in the drawings I have illustrated this source as a battery M, from which emanates the feed-wire 1, having connected thereto in multiple arc the wires 1<sup>a</sup> 1<sup>b</sup> 1<sup>c</sup> 1<sup>d</sup> 1<sup>e</sup> 1<sup>f</sup> 1<sup>g</sup>, running, respectively, to the

keys "a," "b," "c," "Space," "Line," "Release 1," and "Release 2."

The operation is as follows: If the operator desires to print the letter "a" of section J, he will leave the switch as shown in Fig. 6 and depress the key marked "a." Through this operation he will close the circuit between the contacts + and - of key "a," thereby establishing an unbroken circuit between battery and some of the devices placed in section J, and the current will flow from the battery M through wires 1 and 1<sup>a</sup>, contact-point +, spring K<sup>2</sup>, contact-point -, wire 2, magnet j<sup>6</sup> of section J, which magnet is also marked "a," wire 3, electromagnet E, wire 4, contact l, switch L, wire 5, electromagnet J<sup>14</sup>, and wire 6 back to battery. Through the flow of the current through electromagnet j<sup>6</sup> of section J marked "a" the individual type-bar of this magnet will be actuated in such manner as to leave the imprint of its type on the matrix and through the flow of the current through electromagnet E the mechanism for moving carriage B in a transverse direction will be operated on in such manner so as to move said carriage B, and therefore the matrix T, one space, which space is equal to the space of letter "a" plus its spacing unit. The operations of the keys marked "b" "c" are the same in their result as the operation of the key marked "a." If the key marked "Space" is depressed, the current will flow from the battery M through wires 1 and 1<sup>a</sup>, contact +, spring K<sup>2</sup>, contact - of the key marked "Space," thence through wire 7, electromagnet E, and wire 4 back to the battery. The operation of electromagnet E was explained above. Its function is to move carriage B one space. If the key marked "Line" is depressed, the current will flow from the battery through wires 1 and 1<sup>a</sup>, contact +, spring K<sup>2</sup>, and contact - of the key marked "Line," through wire 8, electromagnet H, and back through wire 4 to the battery. In conjunction with the description of the operation of this key attention has to be called to the conducting-plate a<sup>20</sup>, which is secured to the guide-rod a<sup>19</sup>, (more clearly shown in Fig. 2,) and which guide-rod is in turn secured to the carriage B in such manner so that the transverse movement of the carriage will carry this contact-plate a<sup>20</sup> under the contacts a<sup>21</sup> and a<sup>22</sup>, thereby establishing the necessary circuit for operating the mechanism of bell a<sup>24</sup> a short time before the carriage has traveled its full distance, ringing the bell a<sup>24</sup> and notifying the operator of the distance the carriage B has already traveled and may yet be able to travel before completing the line. If the key marked "Release 1" is depressed, it will close the circuit around electromagnet F<sup>14</sup>, thereby releasing the two series of pawls f and f<sup>16</sup>, the functions of which were described above. If the key marked "Release 2" is depressed, it will close the circuit around electromagnet H<sup>17</sup>, operating the two series of pawls h and h<sup>16</sup>, the functions of which were



clearly described in conjunction with the description of the longitudinal movement given to carriage C.

After the above descriptions the *modus operandi* of both the type-writing and printing machine will be clearly understood. The manuscript, the contents of which should be stereotyped, is handed to the person operating the type-writing machine, the kind of types to be used for certain parts in the manuscript being noted upon the same. The operator after fixing the circuit for the desired type-font operates his machine in the usual manner. This machine is provided with the necessary ink-ribbon and paper, as usual, so that the contents of the manuscript will not only appear on the matrix-blank of the printing-machine, but also on the paper operated on by the type-writing machine. It is obvious that the contact-points of the switch controlling the electrical circuits of the different type-fonts should be designated by the name under which the particular kind of type is known. Any alterations of the printed matter may be made by erasing the matter objected to and substituting for it the desired letters.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a machine of the class described, a writing-machine, a printing-machine provided with a plurality of fonts of type of different faces, and electromagnetic devices for actuating the type-arms of said printing-machine, said electromagnetic devices being in

circuit with suitable connections controlled by the keyboard of the writing-machine.

2. In a machine of the class described, a writing-machine, a printing-machine provided with a plurality of fonts of type of different faces, electromagnetic devices for actuating the type-arms of said printing-machine, a separate circuit for the electromagnetic devices of each type-font, and means for controlling each of said circuits.

3. A printing-machine provided with a plurality of fonts of type of different faces, each font being operated by an independent system of electromagnetic devices controlled by a type-writer circuit, and a switch for throwing into operation any font desired, in combination with a type-writer located in said circuit for operating any one of said fonts.

4. A printing-machine provided with a plurality of fonts of type of different faces, each font being operated by an independent system of electromagnetic devices controlled by a type-writer circuit, a switch for throwing into operation any font desired, and electromagnetic devices for controlling the movements of the carriage of the machine, in combination with a type-writer located in said circuit for operating any one of said fonts.

In testimony whereof I sign my name, this 18th day of November, 1895, in the presence of two subscribing witnesses.

ISIDOR KITSEE.

Witnesses:

GEO. M. COSTELLO,  
WALLACE B. ELDRIDGE.