(No Model.) 2 Sheets—Sheet 1.

C. R. FERGUSON.

TYPE SETTING MACHINE.

No. 548,045. Patented Oct. 15, 1895.

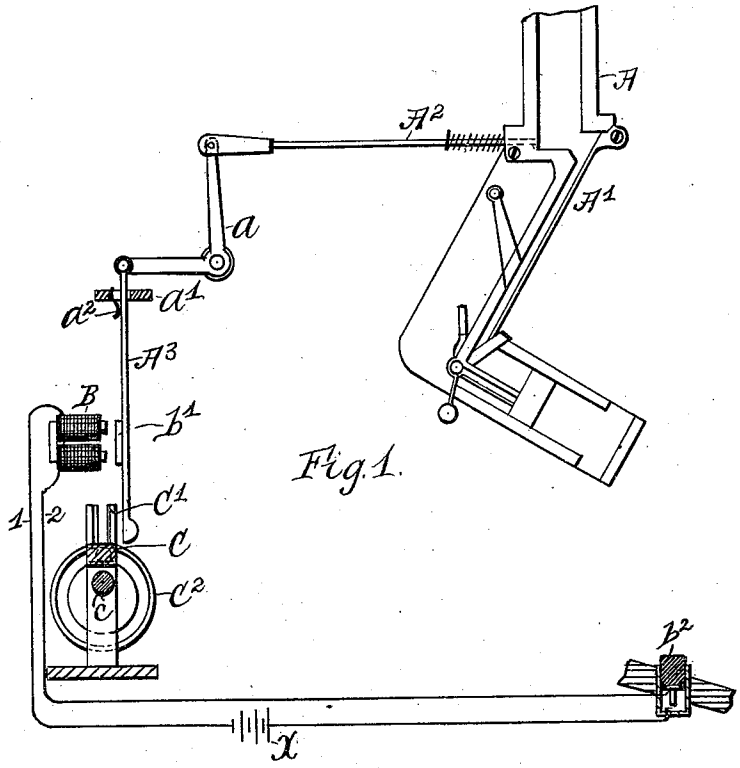

Fig. 1.

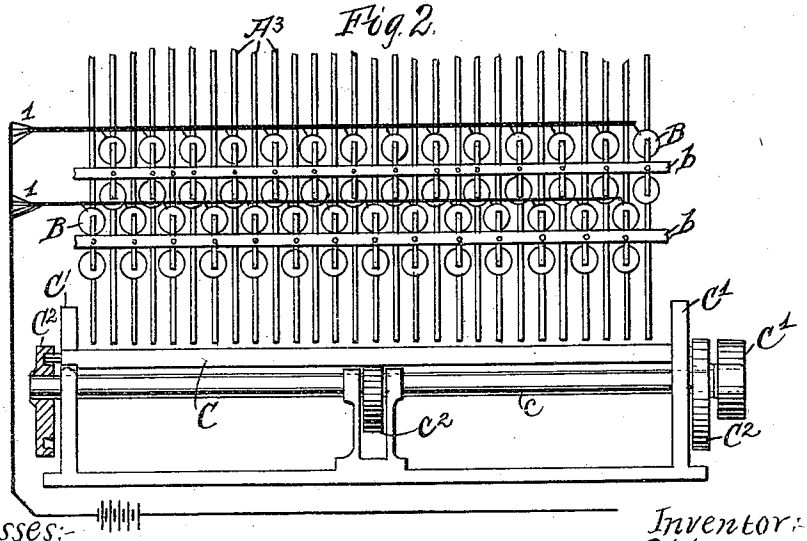

Fig. 2.

Witnesses:-
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Inventor:
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(No Model.) 2 Sheets—Sheet 2.

C. R. FERGUSON.

TYPE SETTING MACHINE.

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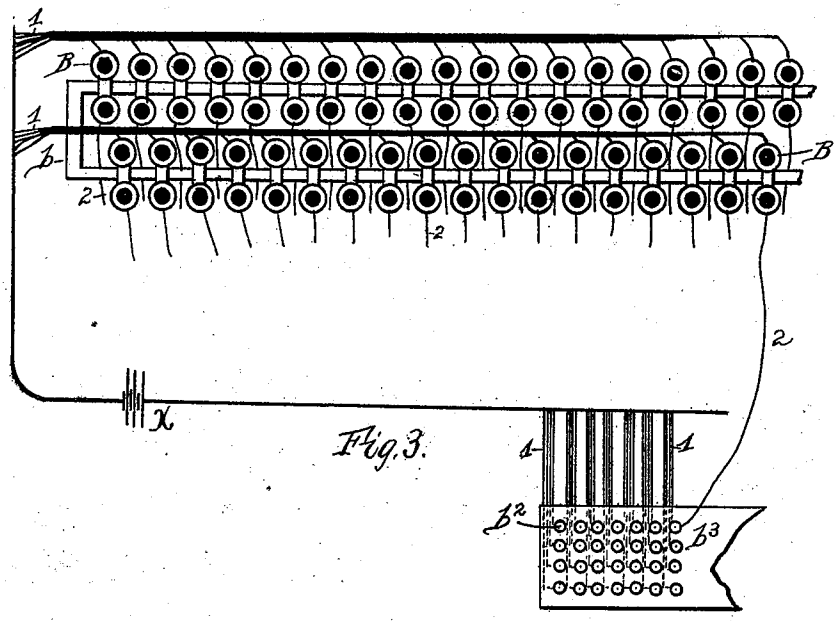
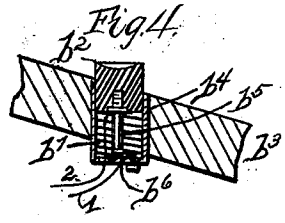


Fig. 3.

Fig. 4.



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UNITED STATES PATENT OFFICE.

CLARENCE R. FERGUSON, OF BROOKLYN, NEW YORK, ASSIGNOR TO THE MERGENTHALER LINOTYPE COMPANY, OF NEW JERSEY.

TYPE-SETTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 548,045, dated October 15, 1895.

Application filed July 27, 1894. Serial No. 518,721. (No model.)

To all whom it may concern:

Be it known that I, CLARENCE R. FERGUSON, a citizen of the United States, and a resident of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Type-Setting Machines, of which the following is a specification.

This invention relates to improvements in type-setting machines of the class in which plungers operate to discharge type, type-plates, matrix-plates, or the like, one at a time, from the type-cases into channels leading to an assembling part of the machine.

The object of the invention is to provide a simple electromechanical means for operating the plungers from a keyboard.

It is well known that electromagnets have heretofore been employed in connection with type-setting machines, but as the action of the parts depends wholly on the electromagnets too much electric current is required. With my invention, as the electromagnets have very little work to do or power to overcome, an ordinary battery may be sufficient. This, of course, is an advantage when there is no electric-power system from which to draw a current.

I will describe a type-setting machine embodying my invention and then point out the novel features in the appended claims.

In the accompanying drawings, Figure 1 is a side elevation of a sufficient portion of a type-setting machine to illustrate the invention in connection therewith. Fig. 2 is a rear elevation showing an arrangement of electromagnets, a portion of the wiring, and the mechanical actuating mechanism. Fig. 3 is a diagrammatic view of a part of the electromagnets, the wiring, and a part of the keyboard; and Fig. 4 is a section on an enlarged scale, showing a circuit-closer or operating-key.

Referring by letters and figures to the drawings, A designates a type-case communicating with a channel or raceway A′. These parts are of the character employed in the class of type-setting machines similar to what is shown in Letters Patent to Lorenz, No. 174,916, and improvements thereto, known as the "Empire Machine," and Letters Patent to Mergenthaler, Nos. 313,224 and 317,828, known as the "Linotype Machine."

A^2 designates a plunger or discharger movable horizontally to discharge type from the case A into the channel A′. At the outer end each plunger is pivotally connected to one arm of a bell-crank lever *a*, and from the other arm of each bell-crank lever a swinging lifting-rod A^3 depends. A slotted guide-plate *a′* may be employed to steady the rods A^3 and guide them in their swinging movement. Means—such, for instance, as springs a^2—may be employed for returning the rods to their normal vertical position after their release from the electromagnets, which operate to draw the lower ends of the rods into the line of movement of a lifting-bar.

B indicates the electromagnets, arranged one pair for each rod A^3, as indicated in Fig. 2. These electromagnets may be supported in any desired manner. They are shown as supported by bars *b*, which may be attached to a part of the machine's frame. The rods A^3 have armatures *b′*, which coact with the electromagnets. The electromagnets have wires 1 2 leading to a circuit-closer, here shown as push-buttons b^2, arranged in a keyboard b^3. The electric current may be supplied from any desired source. I have here shown a battery X within the circuit.

In Fig. 4 I show, on an enlarged scale, a circuit-closer comprising a push-button b^2, of insulating material, movable vertically in a socket b^4, seated in the keyboard b^3. A metal contact-point b^5 extends downward from the button and is intended to engage with a contact-plate b^6, located in the lower end of the socket. The wire 2 leads from the contact-point b^5 and the wire 1 leads from the plate b^6. A spring b^7 may be employed to return the button to its upper or normal position.

I will now describe means for mechanically operating the plungers A^2.

C indicates a lifting-bar arranged horizontally and adapted to have a vertical movement in the guides C′. Each end of the bar C has a trunnion extending into groove-cams C^2, mounted on a shaft *c*, provided at one end with a drive-wheel *c′*, which may be driven

by means of a belt from any desired power. If desired, a cam-wheel c^2 may be attached to the shaft intermediate of its ends.

The operation of the device is as follows: The lifting-bar is in constant and rapid vertical motion, and when it is desired to operate a plunger A^2 to eject a type a button is pushed downward to close the circuit and energize the electromagnets belonging to the plunger. The electromagnet will draw the rod A^3 into the line of movement of the lifting-bar so, that the rod will be lifted, the crank-lever rocked, and the plunger forced forward to eject the type.

It is manifest that my invention is not limited in its application to type-setting machines operating upon movable types which are made up into forms for printing or stereotyping; but the electromechanical selecting mechanism, which is the subject of my invention, is equally applicable to the well-known class of machines by which selected matrix-plates are made up into a line or form to serve as a matrix for the casting of lines or forms for printing.

The character of the types, type-plates, matrix-plates, or the like, which are selected and acted upon by my electromechanical selecting mechanism does not in any manner affect or modify the operation of the electromechanical selecting mechanism itself. I have therefore used the term "type" in a general sense for the purpose of illustration without implying any restriction of the invention to "type-setting machines" strictly, so called. It is also manifest that the form of plungers actuated by my electromechanical selecting mechanism, or the particular manner in which the plungers or other ejecting or releasing devices are made to discharge the selected types, matrix-plates, or the like successively from their channels or receptacles, does not affect or modify the operation of the electromechanical selecting mechanism, and therefore my invention is not limited to the particular form of plungers or discharging devices here shown.

Having described my invention, what I claim is—

1. In a type setting machine, an electric circuit with a magnet therein, a type plunger, a bell crank lever pivotally connected with said plunger, a swinging rod depending from said bell crank lever, an armature on said rod and a horizontal bar having its ends inserted in rotatable groove cams, said rod being normally removed from contact with said bar, said parts being combined substantially as described.

2. In a type setting machine, an electric circuit with a magnet therein, a type plunger, a bell crank lever pivotally connected with said plunger, a swinging rod depending from said bell crank lever, an armature connected with said rod, a vertically-movable bar adapted to engage said rod, to lift the same, and means for removing said rod from said bar, said parts being combined substantially as described.

3. In a type-setting machine, the combination with a source of electricity and a type plunger of a bell-crank lever having pivotal connection with said plunger, a swinging rod depending from the bell-crank lever, an electro-magnet for swinging said rod in one direction, and a cam operated lifting bar for moving the swinging rod upward, substantially as specified.

Signed at New York, in the county of New York and State of New York, this 26th day of June, A. D. 1894.

C. R. FERGUSON.

Witnesses:
LOUIS B. CUMMINGS,
FRANK E. WALLACE.