

No. 633,826.

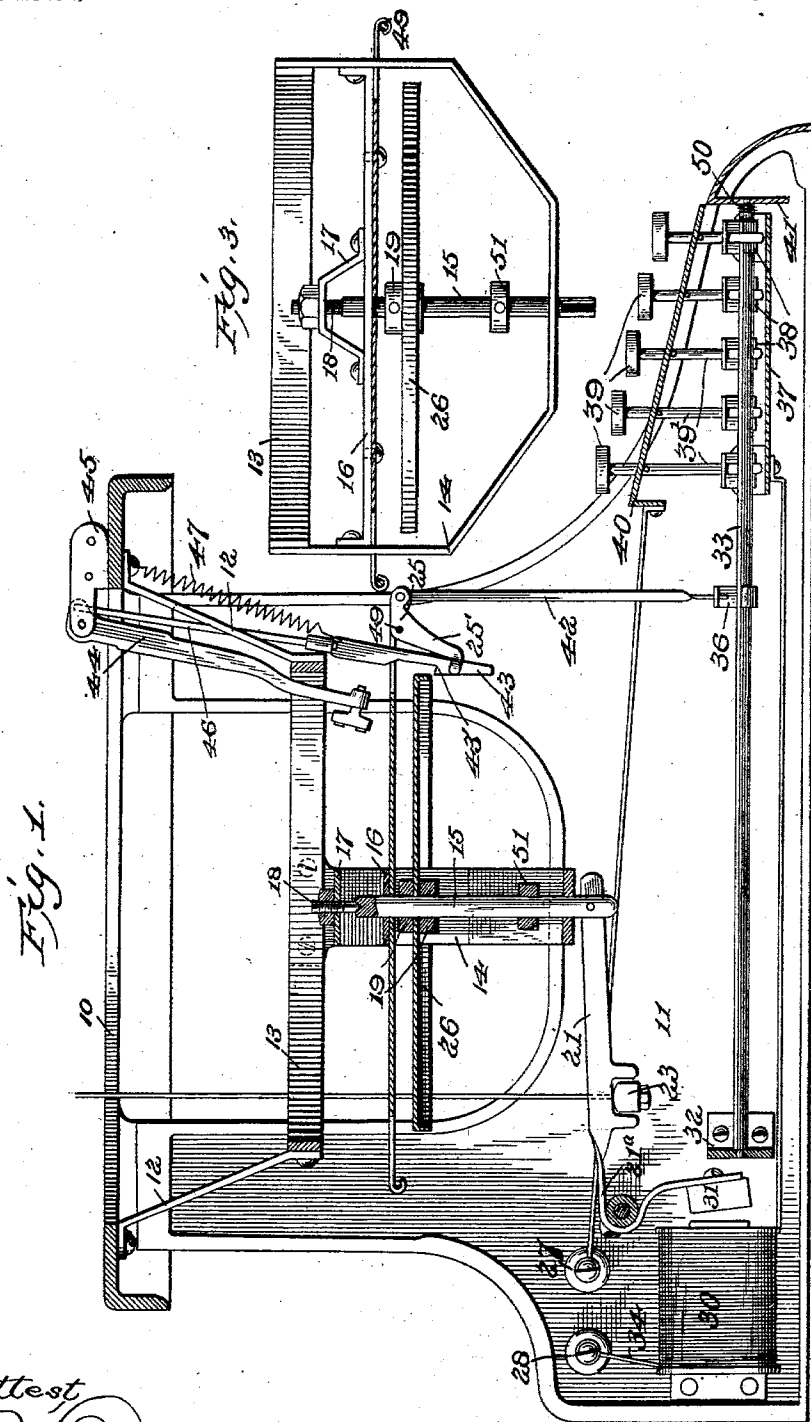
Patented Sept. 26, 1899.

W. R. FOX & G. J. BARRETT.
ELECTRICALLY OPERATED TYPE WRITER.

(Application filed Nov. 8, 1897.)

(No Model.)

2 Sheets—Sheet 1.



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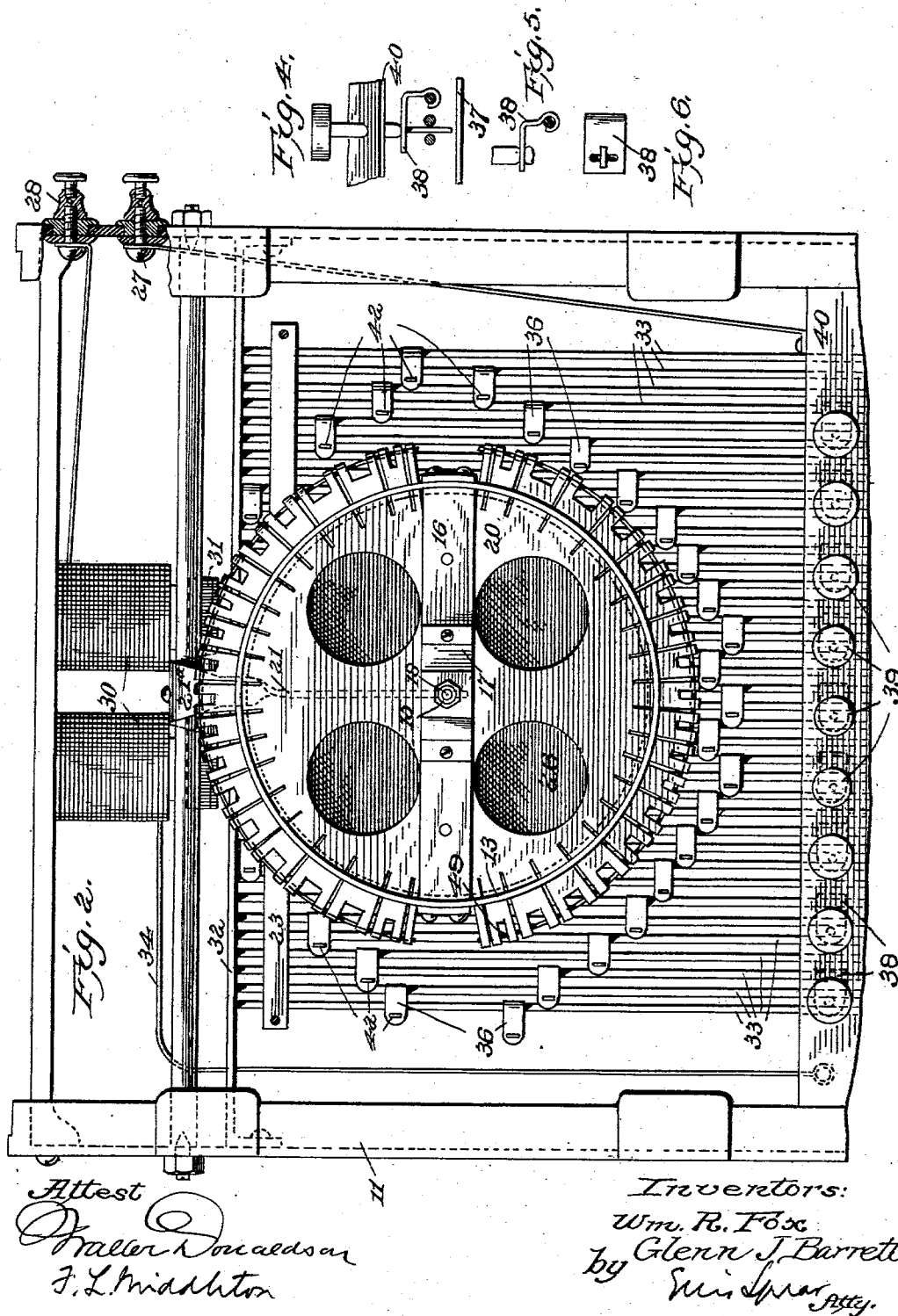
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UNITED STATES PATENT OFFICE.

WILLIAM R. FOX AND GLENN J. BARRETT, OF GRAND RAPIDS, MICHIGAN,
ASSIGNORS TO THE FOX MACHINE COMPANY, OF SAME PLACE.

ELECTRICALLY-OPERATED TYPE-WRITER.

SPECIFICATION forming part of Letters Patent No. 633,826, dated September 26, 1899.

Application filed November 8, 1897. Serial No. 657,837. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM R. FOX and GLENN J. BARRETT, citizens of the United States, residing at Grand Rapids, Kent county, Michigan, have invented certain new and useful Improvements in Electrically-Operated Type-Writers, of which the following is a specification.

Our invention relates to electrically-operated type-writers; and the object thereof is to provide a machine of the well-known basket type in which a device common to all the type-bars and electrically actuated is provided for operating the type-bars to make the impressions, mechanical means being employed to act in advance of said device to determine the type-bar to be operated thereby.

The invention relates also to certain details of construction, as will be hereinafter described, and particularly pointed out in the claims.

The machine is illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation, parts being in section, showing only a single type and type-bar and its operating connections. Fig. 2 is a plan view thereof. Fig. 3 is a detail front elevation of a portion of the machine. Figs. 4, 5, and 6 are detail views.

The frame 11 of the machine may be of any construction having a top plate with a central opening and the type-bars disposed around the same in basket form, although we prefer to follow the general line of the machine forming the subject of a prior application, Serial No. 609,332, filed October 19, 1896.

The top plate 10 of the machine herein shown is provided with a central opening, around the edge of which a series of hangers 45 are arranged, in which the type-bars 44 are pivoted. These type-bars 44 are of ordinary bell-crank form, having their longer members depending within the opening and carrying the type and their shorter members pivotally secured to depending links 46. In the present case but a single type-bar and its connection are shown, this being deemed sufficient for the purpose of illustration. A series of brackets 12 are secured to the under face of the top plate 10 and depend therefrom to support the buffer-ring 13, which incloses

the lower parts of the type-bar in their inactive position, and from this ring a frame 14 is supported. This frame 14 is made of a flat metal strip having a horizontally-extending bottom portion and vertical sides which are secured to the buffer-ring 13 at opposite points, as clearly shown in Fig. 3.

A cross-bar 16, bolted at each of its ends, which are upturned, to the vertical sides of the frame 14, has a central guiding-opening therein, which is in vertical alinement with a corresponding opening in the horizontal portion of the frame 14, and through these openings a vertically-reciprocating rod 15 is guided. A bracket 17, secured to the bar 16, extends above and across the end of said rod and carries a cone-screw 18, provided with a locking-nut for limiting the upward movement of said rod, as will be hereinafter described, a stop 51 being adjustably secured to the rod between the bar 16 and the horizontal portion of the frame to limit the downward movement of the rod. To reciprocate the rod, one arm 21 of a bell-crank lever 21^a is pivotally secured to the bifurcated end of the rod 15, the opposite arm of said lever carrying a soft-iron armature 31, which is adapted to be attracted by the magnet 30 when energized. One magnet or a plurality of magnets may be used, in the present case two being shown, which are arranged centrally of the machine at the rear thereof. Any kind of a keyboard may be employed, and the keys 39 have their stems 39' secured in horizontal members of L-shaped clips, which have their vertical members bent around to rigidly secure the same to rock-shafts 33, journaled at their rear ends in bracket 32, extending across the machine and at their forward ends in a vertical depending extension 41 of the front plate of the machine. To hold these rocking shafts in their normal position, springs 50, each having one of its ends secured in the extension 41, are coiled thereabout and secured thereto. It will be understood that there is a rocking shaft for each key, including the spacing-key. Extending entirely across the front of the machine, beneath the ends of the key-stems, is a plate 37, insulated from the frame, but secured to the sides thereof, and

above this plate is a corresponding plate 40, having openings therein to guide the key-stems. The current when the circuit about to be described is completed enters the magnets to energize the same through the wire 34, secured at one end to the binding-post 28 at one side of the machine near the rear thereof. This wire runs from the binding-post to the magnets and from thence to one end of the plate 37. A return-wire leads from the opposite end of the plate 40 to the binding-post 27, secured adjacent to the post 28 in the side of the machine. On the depression of a key the end of the stem thereof will contact with the plate 37 and close the circuit, when the magnets will be energized and the rod 15 drawn downwardly by the bell-crank 21^a. To the under side of the cross-bar 16 a circular disk 20 is secured, which has its edge provided with a series of tongues formed by recessing said edge, the ends of said tongues being coiled about a wire rod 49, which forms a pivot common to all of a series of bell-crank levers 25, which are held in said recesses.

A lever 25 is provided for each key, with the exception of the spacing-key, and said levers are arranged in the same radial position as the type-bars 45, one for each bar. The shorter members of said levers are each pivotally connected at their ends to a link 42, having its end held in an angular clip 36, corresponding to the clips 38, so that on the rocking of the shaft 33 the shorter member of the lever 25 will be pulled downwardly and throw its longer member 25' inwardly and upwardly similarly to the movement of the bar 44.

The end of each of the members 25 is forked to provide a seat for a flat plate 43, having a recess in the front edge thereof to provide a shoulder 43'. A link pivotally connected to the shorter member of each type-bar depends therefrom and has its end fixed and rigidly held within the socket in the end of each of the plates 43.

To the rod 15 a flat circular disk 26 is secured by means of collars 19, secured to said rod, which clamp said disk between their adjacent faces. The outer edge of this disk is turned down to form a flange to increase the rigidity of the same and to provide an edge to engage the shoulder 43' of each plate 43. In the inactive position of the parts the plates 43 surround the disk 20 at a slight distance therefrom with the shoulders 43' below the edge of said flange. On the depression of a key, provided it be not the spacing-key, the rocking shaft will turn and draw down on the corresponding links 42 through the connections before described. This will tilt the lever 25 and push the shoulder portion of the plate 43 beneath and in the path of the flange of the disk 26. The circuit being closed by the stem contacting with the plate 37, on the continued depression of the key the rod, as before described, will be drawn downwardly,

causing the flange on the disk 26 to engage the shoulder on the plate 43, which will draw down on the link 46 and lift the type-bar to make the impression. After the release of the key the plate 43 is quickly returned by a coiled spring 47, which extends from each of the plates to the under side of the top plate 10, the type-bar of its own weight also tending to drop back when released. The under side of the member 21 of the lever 21' is provided with depending ears spaced a slight distance apart, through which the bar 23 passes, which is connected by a link with a spacing mechanism, (not shown,) so that on every movement of the armature and lever carrying the same the carriage will be fed forward one step, and by means of the spring which returns the feed-rack the lever 21' will be assisted in its return on the deenergizing of the magnets. When the spacing-key is operated, the magnet will be energized and the rod 15 depressed; but as all of the plates 43 are out of the path of the disk no operation of the type or type-bars will take place. By operating all the type-bars from a common device the evenness of the impression is insured.

We claim—

1. In combination, the type, type-bars, and links, the keys, the plurality of rock-shafts horizontally arranged, one for each key, the pivoted bell-crank levers, a connection between each rock-shaft and one of said bell-crank levers to operate the same to position one of the links on the depression of a key, and an electrically-operated device to actuate the positioned links, substantially as described.

2. In combination, the type, the type-bars, the links, the keys, the plurality of rock-shafts, the plurality of bell-crank levers, connections between the keys and the rock-shafts, connections between the shafts and the bell-crank levers to operate the same to position the links, and a device electrically operated adapted to actuate the positioned links, substantially as described.

3. In combination, the type, the type-bars, the links, the keys having depending stems, the plurality of rock-shafts, one for each key, a clip rigidly secured to each shaft and having a key-stem attached thereto, a plurality of bell-crank levers engaging the links depending from the type-bars to position the same, clips secured to the rock-shafts and connected to the bell-crank levers, and a device electrically operated to actuate the positioned links to complete the operation of printing, substantially as described.

4. In combination in an electrically-actuated type-writer, the type and type-bars, the keys and shafts operated thereby, the magnet, the bar having a connection adapted to operate a carriage-escapement and the bell-crank lever having an armature secured to one arm thereof and its opposite arm extending across the upper face of said bar and

adapted to depress said bar when the lever is tilted, substantially as described.

5 In combination in a type-writer, the keys, the key-bars, the links, the means for mechanically positioning one of said links on the depression of its respective key, a buffer-
10 ring supported from the top plate, a frame supported from the ring having vertical sides secured to the ring, and a horizontal bottom, a cross-bar secured to the sides of the frame having a guiding-opening therein, said horizontal portion having a corresponding opening, a rod vertically reciprocating in said

opening, a disk clamped to said rod adapted to engage the positioned link, means electric- 15 ally actuated for operating said rod and stops to limit the movement of said rod, substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

WILLIAM R. FOX.
GLENN J. BARRETT.

Witnesses:

ELIZABETH JONES,
FRANCES C. GORHAM.