Aug. 12, 1924. 1,504,576

E. POPE

TYPEWRITER

Filed Dec. 14, 1922 2 Sheets-Sheet 1

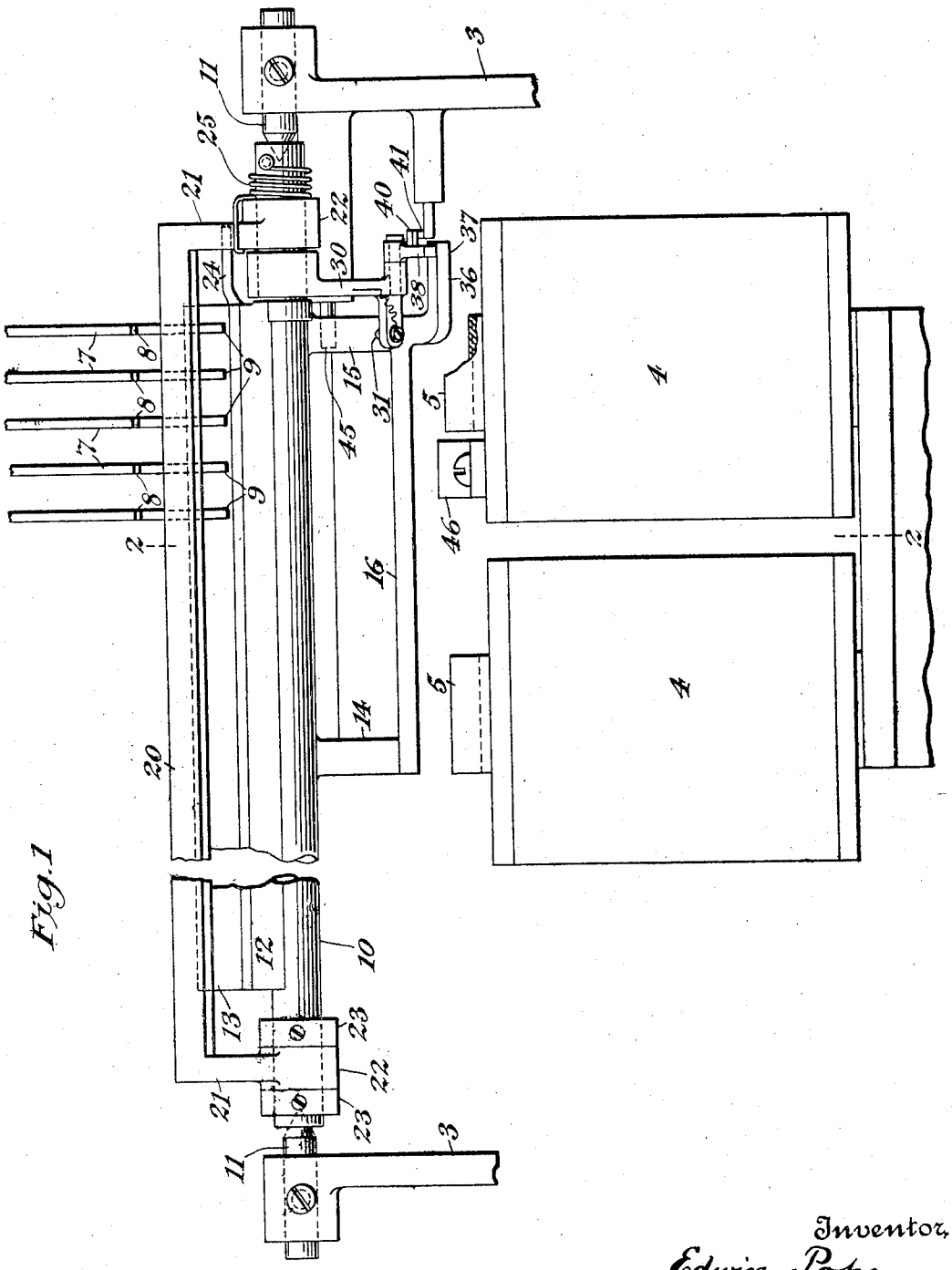


Fig. 1

Inventor,
Edwin Pope.
By his Attorney
Andrew Wilson.

Aug. 12, 1924. 1,504,576

E. POPE

TYPEWRITER

Filed Dec. 14, 1922 2 Sheets-Sheet 2

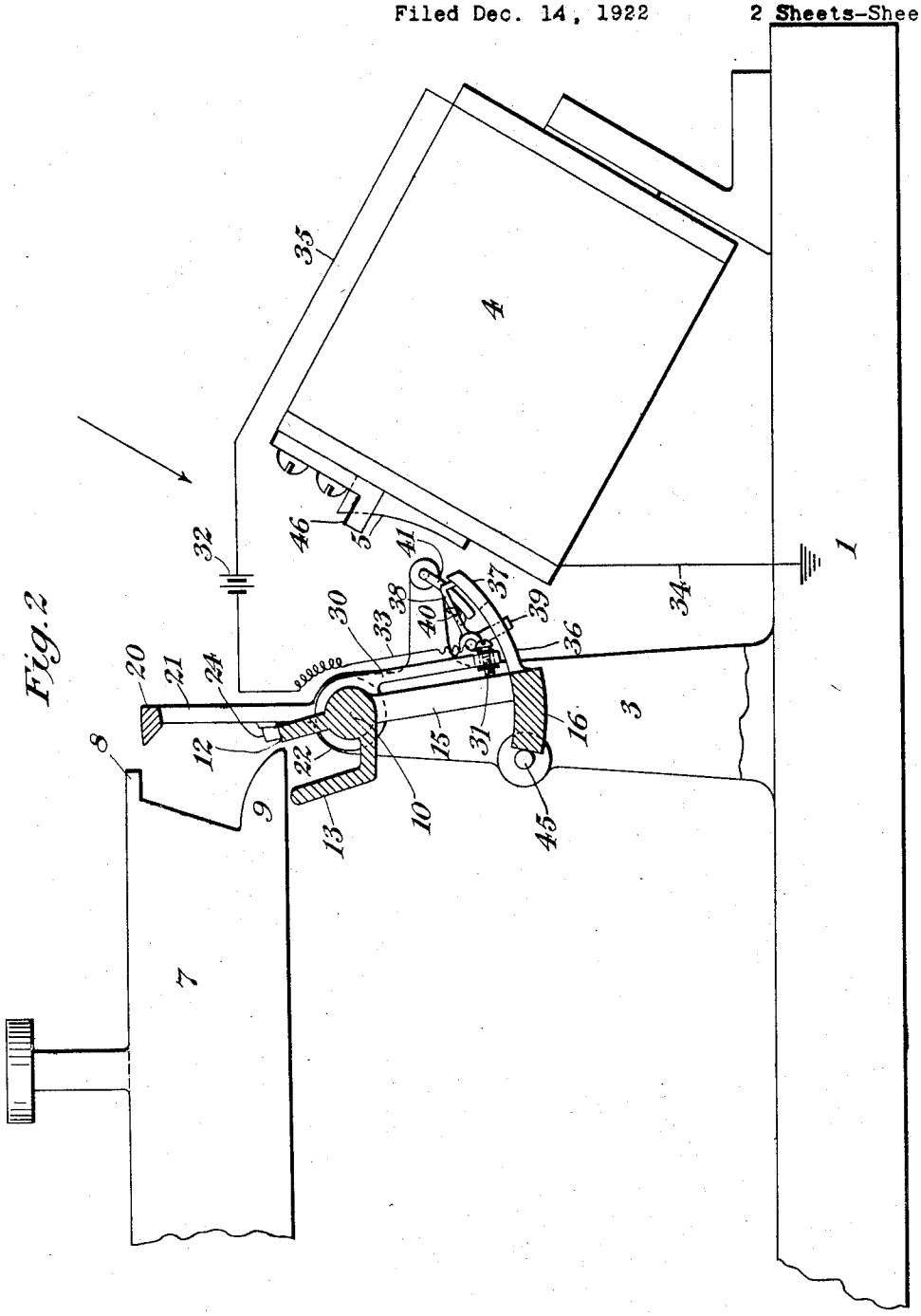


Fig. 2

Inventor,
Edwin Pope.

By his Attorney
Andrew Wilson.

Patented Aug. 12, 1924. 1,504,576

UNITED STATES PATENT OFFICE.

EDWIN POPE, OF QUEBEC, QUEBEC, CANADA.

TYPEWRITER.

Application filed December 14, 1922. Serial No. 606,778.

To all whom it may concern:

Be it known that I, EDWIN POPE, a subject of the King of Great Britain, residing at Quebec, in the Province of Quebec, Dominion of Canada, have invented certain new and useful Improvements in Typewriters, of which the following is a specification.

My invention relates to that class of typewriters in which electric power is employed in connection with the movements of the printing elements, and my improvements are directed particularly to means whereby, after the movement of a type bar has been normally initiated, it is continued and the printing operation is completed by electrical power, thus reducing the muscular action and power otherwise required from the operator, and facilitating the ease, rapidity and uniformity of operation of the machine.

In the drawings, Fig. 1 is a plan view of a machine illustrating an embodiment of my invention, the view being taken looking in the direction of the arrow on Fig. 2, parts only of the frame being shown, and only a few of the usual bank of key bars, and the portions of the typewriter not modified by my invention being omitted; and Fig. 2 is a cross sectional elevation, taken as on the line 2—2 of Fig. 1, looking to the right.

Corresponding parts are designated by similar reference numerals in both the figures.

The operative parts of the typewriter are assembled upon a suitable base 1, provided with carrying standards 3, 3.

The base also supports a pair of electromagnets 4, 4, preferably disposed at an angle from the horizontal, the faces 5, 5, of the magnets being preferably curved as shown.

The forward ends of the key bars 7, 7 are each recessed so as to form upper and lower projections 8, 9, corresponding projections on the several key bars being all disposed in the same plane.

A rod or bar 10 is carried rotatably by and between the standards 3, 3 by adjustable pivot pins 11, 11, in the upper ends of the standards, set into sockets in the ends of the rod 10.

This rod 10 carries two flanges 12, 13, which extend the whole width of the bank of key bars 7, 7, while from the lower side of the rod 10, by arms 14, 15, is suspended an armature 16, which is adapted to be swung up into close proximity to the magnets 5, 5. The rod, flanges and armature may be comprehensively referred to as an armature element.

A bar 20 is carried by arms 21, 21 terminating in collars 22, 22, turning freely on the rod 10, but kept in proper position by collars 23, 23, or the like.

The flange 12 is provided with an extension 24, which extends over past the right hand arm 21; and this arm 21 is normally held against the extension 24 by suitable means such as a coiled spring 25 interposed between it and the rod 10.

Mounted revolvably on the rod 10 is an arm 30, provided with an insulated contact pin 31, normally bearing against the arm 15, and completing a current from battery 32, line 33, pin 31, arm 15, rod 10, frame and base 1 to line 34, the windings of magnets 5, 5, and line 35 to battery.

The armature 16 carries an extension 36 supporting a catch block 37, above which normally rests the end of a pawl 38, pivoted near the free end of the arm 30 and provided with a counterbalance weight 39, and a lateral lug 40 lying above an arm 41, carried by the right hand standard 3.

A suitable stop 45 is placed behind the armature 16 so as to arrest it in its normal, initial position. And another stop 46 limits the movement of the armature 16.

The operation of my machine is as follows:—

When the operator presses upon a key, as the key bar descends its projection 9 will press down the flange 13, swinging the armature 16 in toward the arm, bringing it under the influence of the magnets 5, 5. Simultaneously, the flange 12 swings in above the projection 9, releasing the arms 21, 21, and allowing the bar 20 to be swung forward above the projection 8 of the depressed key bar 7, but under the projections 8, 8, of the remaining key bars, so as to prevent their being depressed.

The depressions of the flange 13 swings the arms 14, 15, bringing their armature 16 into the field of the magnets 5, 5, which, thereupon, draw the armature quickly upward toward them. This causes the flange 12 to engage above the projection 9 and press down the key bar, completing the stroke of the type bar and the printing operation. This arrests the swing of the armature. But the arm 30, swinging freely on the rod 10, continues its movement, breaking the contact between its pin 31 and the arm 15 and

deenergizing the magnets 5, 5, the pawl 38 dropping behind the catch block 37, which prevents the reclosing of the circuit until the pawl 38 is again raised.

The armature 16, being released by the magnets 5, 5, drops back to its initial position, being arrested by the stop 45. This swings up the flanges 12, 13, allowing the key bar 7 to rise to its initial position, the movement of the flange 12 pushing the bar 20 out from under the projections 8, 8 of the key bars and leaving them all free for optional operation.

The arm 30 drops back with the arm 15, the lug 40 of the pawl 38 being raised by the arm 41 so that the pawl will pass above the catch block 37, and will allow the pin 31 to make contact with the arm 15 and again close the electric circuit.

By this arrangement only a very light touch is required of the operator to initiate the printing movement, the actual printing stroke being made by the force of the magnets, which will actuate all the type bars with equal energy, thus not only minimizing the work of the operator, but also insuring a very uniform and even style of printing. The strength or number of the magnets, also, may be varied to secure the results best adapted for the particular work in hand. Thus, if manifolding is being done, more powerful magnets should preferably be employed. And the machine may easily be arranged for this by lengthening the armature and mounting an additional magnet or magnets in the frame beside those shown, and arranging the wiring so that more or fewer of the magnets may be used as desired. The magnets may be operated by any suitable form of battery, or other source of electrical power. And the typewriter may also be operated by hand, if desired.

The armature preferably passes the magnets very closely and gets their full power; and the mechanism is adapted to slight changes, such as varying thicknesses of the paper on the platen, and the like.

It will be understood that details of construction may be varied, as by the use of mechanical equivalents, and the like, without departing from the spirit of my invention as described and claimed, the drawings being intended to show an illustrative form of a mechanism embodying my improvements and not an exclusive type.

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

1. The combination, in a typewriter, with means for producing a controlling magnetic field, of key bars each provided with a fixed engaging element, an armature element provided with fixed means initially engageable directly by each key bar and moveable thereby to bring the armature into the magnetic field, and also provided with fixed means for directly engaging the fixed engaging element of each key bar and completing the stroke movement of each key bar through the influence of the magnetic field in the armature.

2. The combination, in a typewriter, with means for producing a controlling magnetic field, of key bars each provided with a fixed engaging element and a locking element, an armature element provided with fixed means initially engageable directly by each key bar and moveable thereby to bring the armature into the magnetic field, and also provided with fixed means for directly engaging and completing the stroke movement of each key bar through the influence of the magnetic field in the armature, and separate, moveable, key locking means, controlled by the armature element.

3. The combination, in a typewriter, of key bars each provided with a fixed engaging element and a locking element, an armature element provided with means initially engageable directly by each key bar and moveable thereby into the magnetic field and provided with fixed means for directly engaging and completing the stroke movement of each key bar, a source of electrical energy, an electric circuit containing an electromagnet, and means, controlled by the movement of the armature element, for opening and closing such circuit.

4. The combination, in a typewriter embodying key bars, a normally closed electric circuit provided with a switch, a source of electrical power, electromagnets, and supplementary key bar actuating means located in the electric circuit, of means associated with and initially actuated by the supplementary actuating means for opening the switch after the completion of the downward stroke of a key bar.

5. The combination, in a typewriter embodying key bars, a normally closed electric circuit provided with a switch, a source of electrical power, electromagnets, and supplementary key bar actuating means located in the electric circuit, of means associated with and initially actuated by the supplementary actuating means for opening the switch after the completion of the downward stroke of a key bar and for automatically closing it again.

6. The combination, in a typewriter embodying moveable type bars and a platen, of key bars and keys, an electric circuit, a source of electrical power, electromagnets and supplementary type bar actuating means, located in said electric circuit, and means, associated with the supplementary type bar actuating means, for opening said electric circuit at the end of each printing operation and for closing it before the beginning of the next printing operation.

7. The combination, in a typewriter, embodying manually operable key bars, supplementary key bar actuating means, a normally closed electric circuit, energizable means located therein, and a source of electric energy located in the circuit, the initial movement of the manually operable means acting to bring the supplementary means from beyond to within the field of the energizable means.

8. The combination, in a typewriter, embodying manually operable key bars, supplementary key bar actuating means, a normally closed electric circuit, energizable means located therein, and a source of electric energy located in the circuit, the initial movement of the manually operable means acting to bring the supplementary means progressively from beyond to within the field of the energizable means.

9. The combination, in a typewriter embodying manually operable key bars, of a normally closed electric circuit, an electromagnet located therein, supplementary, unitary key bar actuating means embodying an armature adapted to be brought within the field of said magnet and being provided with fixed passive means engageable by each key bar on its downward movement, and with fixed active means to engage and continue the movement of the key bar.

10. The combination, in a typewriter embodying manually operable key bars, of a normally closed electric circuit, an electromagnet located therein, a supplementary, single, common key bar actuating means embodying an armature adapted to be brought within the field of the electromagnet, passive means in fixed relation to the armature and engageable by each key bar and active means, also in fixed relation to the armature, to engage and continue the movement of said key bar, and key bar locking means governed by said active means.

11. The combination, in a typewriter embodying manually operable key bars, of a normally closed electric circuit, a source of electric energy located therein, an energizable element in said circuit, rotatable means normally beyond the influence of the energizable means, disposed between it and the key bars, and moveable by each key bar, in its initial downward movement, into the range of influence of the energizable element, and actuable thereby to complete the movement of the key bar.

12. The combination, in a typewriter embodying key bars, of a normally closed electric circuit, containing a source of electric energy and energizable means, of rotatable means moveable by each key bar from beyond into the field of influence of the energizable means.

13. The combination, in a typewriter, with an electric circuit and means for producing a controlling magnetic field therein, of key bars operatively connected directly with a swinging armature element which is provided with a switch adapted to be opened by its own momentum after the arrest of the movement of the armature in one direction.

14. The combination, in a typewriter, with an electric circuit and means for producing a controlling magnetic field therein, of key bars operatively connected directly with a swinging armature element which is provided with a switch adapted to be closed by the movement of the armature in one direction and to be opened by the momentum of the switch upon the arrest of the armature's movement.

EDWIN POPE.