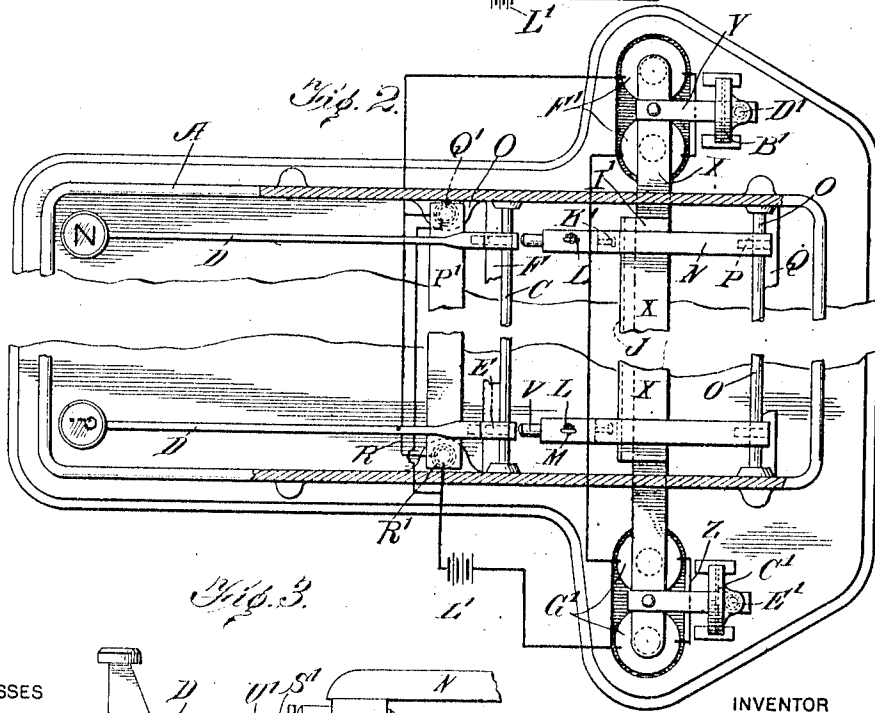
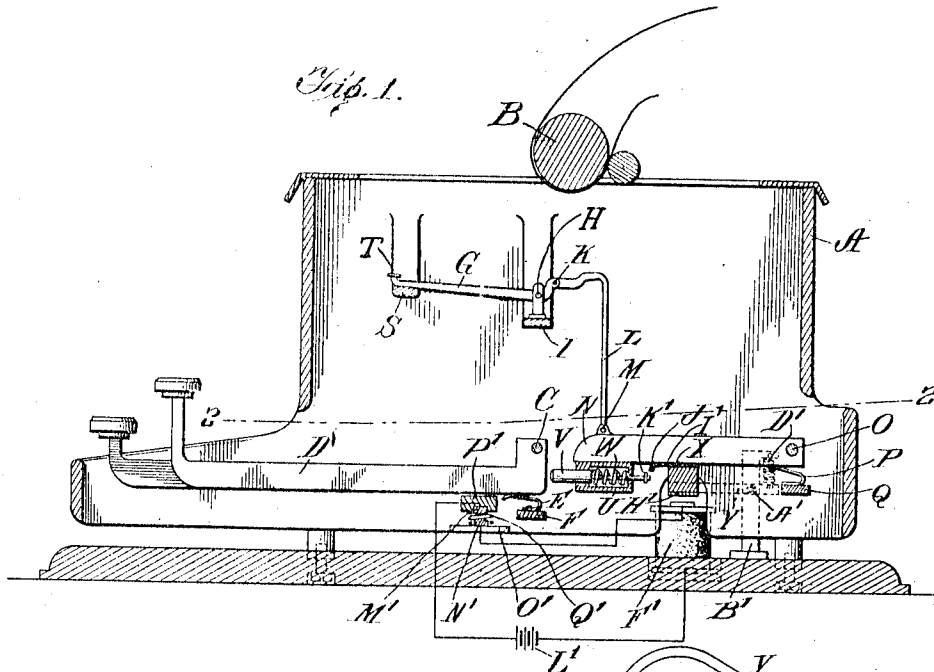


B. P. FINIGAN.
TYPE WRITING MACHINE.
APPLICATION FILED MAY 18, 1906.

1,035,177.

Patented Aug. 13, 1912.



WITNESSES

Paul J. Gathmann.
V. Charles Lammond.

INVENTOR

Benjamin P. Finigan
By H. K. Bliss
his Att'y.

UNITED STATES PATENT OFFICE.

BENJAMIN P. FINIGAN, OF WASHINGTON, DISTRICT OF COLUMBIA, ASSIGNOR OF ONE-FIFTH TO HENRY H. BLISS, OF WASHINGTON, DISTRICT OF COLUMBIA.

TYPE-WRITING MACHINE.

1,035,177.

Specification of Letters Patent.

Patented Aug. 13, 1912.

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To all whom it may concern:

Be it known that I, BENJAMIN P. FINIGAN, a citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification, reference being had therein to the accompanying drawing.

The present invention relates to type-operating machines such as typewriters, typesetting machines, and the like.

In machines of the character described, type carrying different characters are manipulated for different purposes. In the typewriter, for instance, each type is so actuated that it is brought in contact with a piece of paper or other fabric upon which an imprint of the particular character is made. In typesetting machines the type are manipulated in a manner well understood, for other purposes. It is characteristic, however, of typewriting, typesetting and other similar machines, that there is a type-operating mechanism, corresponding to each of the several characters which is involved in the operation of the machine and that each of these mechanisms is set in operation by a controlling means, such as a key, which corresponds to its particular mechanism.

The present invention particularly relates to that class of type-operating machines in which a motor is employed to effect the operation of the type-operating mechanisms after the operator has by any suitable means selected the mechanism to be operated and placed the motor in operation. The advantages of machines of this type are well understood, but among them may be mentioned the ease and rapidity with which they may be operated, the uniformity of their action and the relieving of the operator of the manual labor necessary to the operation of the mechanism.

The object of this invention is to simplify and reduce the number of parts of machines of the character described whereby they are more easily and cheaply constructed, more easily operated and less liable to get out of order.

In the accompanying drawings, in which the invention is illustrated in connection with a typewriter, Figure 1 is a vertical section of a typewriter, sufficient of the parts being shown to illustrate the present inven-

tion, Fig. 2 is a horizontal section on the line 2—2 of Fig. 1, the central portion of the machine being broken away, and Fig. 3 shows a modified detail.

Referring to Figs. 1 and 2 of the accompanying drawings, the typewriter comprises a frame, A, which supports the various parts of the machine including the platen, B, and other well known parts, mounted in well known ways, but which are shown and will hereinafter be referred to only in so far as they are necessary to an understanding of the present invention. Supported by the frame is a rod, C, upon which are fulcrumed the key levers, D, which at their forward ends terminate in the usual bank of keys each bearing the character of the type to the mechanism of which the key is related, as is well understood. The key levers are normally held in an elevated position by means of springs, E, one corresponding to each lever, mounted upon a slat, F, supported by the frame and extending transversely of the machine. The various type bars are arranged to bring their respective type against the paper upon the platen in a well known manner and require no further description here. Each of the type-operating mechanisms comprises a type bar, G, carrying a type, T, and fulcrumed at H, upon a segment bar, I, extending transversely of the machine and which is supported by the frame, a link, L, pivoted to the type bar, G, at K, an arm, N, to which the link, L, is pivoted at M, and which is fulcrumed about the bar, O. The bar, O, is supported by the frame and extends transversely of the machine. The mechanism further comprises a spring, P, mounted upon a bar, Q, which spring tends to hold the arm, N, in elevated position and the type bar, G, in its forward position so that the type is removed from the platen and may rest upon a bar, S, as shown, if desired. To each arm, N, is secured a housing, U, within which slides a plunger, V, adapted at its forward end to abut against the rear end of a key lever, D, when the key is depressed, and at its rear end being adapted to be engaged by the motor to operate the mechanism, as will be hereinafter set forth. A spring, W, tends to force the plunger forward.

The motor in the present instance comprises a bar, X, which is universal to all of the arms, N, and which is secured to arms,

Y and Z, one at each end, which are fulcrumed at A', respectively, in supports, B' and C', mounted upon the base of the machine. Springs, D' and E', interposed between the supports and the rear ends of the arms, Y and Z, tend to hold the bar, X, in elevated position. The motor further comprises solenoids or electro-magnets—one or more as may be found desirable—arranged to operate the bar, X. I have shown two electro-magnets, F' and G', one at each end of the bar, and arranged to operate it by reason of magnetic pieces, as H', secured thereto; or, if preferred, the bar may be constructed wholly of magnetic material, as iron. Secured to the bar is a hood, I', extending to one side of the bar and preferably provided at its outer edge with a lip, J. This lip, when the plunger, V, is pressed rearwardly, is adapted to hook back of a flange, K', at the rear end of the plunger and thus prevent disengagement of the hood and plunger until after the former has returned to its elevated position. The motor is adapted to be actuated by a battery, L', or other suitable source of electricity, the circuit through the source and magnets being completed by the engagement of contacts, M' and N'. One of the contacts, N', is mounted upon a suitable stationary support, O', while the other, M', is movable with a key lever, D, and is normally held away from the contact N'. I prefer to mount the movable contact, M' upon a universal bar, P' arranged under the key levers so as to be moved thereby when they are depressed, but normally held elevated by springs, Q' and R', so as to separate the contacts, M' and N'. It will be obvious that since the universal bar, P', extends beneath all of the type levers, that upon the depression of any one of them the bar, P', will be depressed, and thereby bring the contacts, M' and N', together, close the circuit of the solenoid and thereby throw the motor into operation. I usually prefer to employ two pairs of contacts placing one pair near each end of the bar P'.

The operation of the machine may now be described. The parts being in position as shown in Figs. 1 and 2, if a key be depressed the lever, D, corresponding to it will also be depressed and the rear end of the lever will abut against the forward end of the plunger, V, driving it backwardly until the flange, K, comes beneath the hood, I'. The depression of the lever, D, also operates to depress the universal bar, P', and to close the contacts, M' and N'. The circuit of the magnets being thus closed through the source, L', the magnets become energized and attract their armatures, thereby depressing the bar, X, and its flange or hood, I'. In thus moving, the flange J engages with the rear end of the plunger, V, which has

been driven backward by the operation of the key lever, D, that has just been struck, and operates it (the plunger) and the particular arm, N, with which the plunger is connected. This causes the operation of the type bar that corresponds with the key that has been depressed. It is to be observed in this connection that only the mechanism corresponding to the depressed key will be operated as it is the plunger of this mechanism only which will be thrown in a position to be engaged by the hood, I'; the other plungers remaining in their forward positions. Upon the release of the depressed key the contacts, M' and N', will separate, thus breaking the circuit through the magnets when the springs, D' and E', will return the bar, X, to its elevated position and the plunger, V, will be released and forced to its forward position by the spring, W. The apparatus is thus in readiness for a depression of the same or any other key and the operation of the corresponding mechanism.

It will be obvious from the foregoing that a plunger and the means for throwing the motor into operation are each operated from a key lever independently of each other. The construction is thus rendered extremely simple and complication of parts being avoided the ease of operation is enhanced. It will also be obvious that by operating the motor from the key-lever through a train of mechanical and electrical connections, all independent of the plunger, I am enabled to prevent the operation of any key-lever and the consequent downward actuation of the motor before the key-lever of the last operated type mechanism is permitted to return to its normal position. I accomplish this with the aid of the lip J and the flange K'. Thus while lip J carried by the motor is in engagement with one plunger V, by reason of the circuit being closed because one of the key-levers is in its lowermost position, it is impossible to press down another key-lever since the corresponding plunger would be prevented from moving by contact of the lower edge of its flange K' with the outside surface of the lip J. It is thus insured that the contacts N' and M' will not be placed in engagement a second time before the plunger of the last used key has been released and both the "piling up" of the type bars, and the actuation of the motor when not in engagement with some one of the plungers will be prevented.

In Fig. 3 of the drawings is shown a construction whereby the engagement between the key lever and the plunger is modified. In this figure a lever, S', is interposed between the plunger and the key lever, the said interposed lever being fulcrumed at T', and being adapted at one end to abut against the plunger while its other end is forked

to receive a pin, U', upon the key lever. It will be apparent that upon depression of the key the portion of the key lever which is in engagement with the forked end of the lever S', will be raised, thereby raising the forked end of the lever, S', while the opposite end of the lever, S', will be thrown against the end of the plunger so that the latter will be moved rearwardly.

While the invention has been illustrated in what is considered one of its best embodiments, it is to be understood that it may be embodied in other structures and applied to other uses without departing from the spirit of the invention. The invention should not, therefore be limited to the structure or application shown.

What I claim and desire to secure by Letters Patent is:—

1. In a type-operating machine, the combination with a plurality of type-operating mechanisms, of a plunger for each of said mechanisms, a key lever corresponding to each of said plungers and mechanically independent of its type-operating mechanism, a motor adapted to engage with any of said plungers, each of said levers being adapted to move its corresponding plunger into position to be engaged by said motor, a stationary electrical contact, a universal bar adapted to be moved by direct contact with the key levers and provided with an electrical contact adapted to engage said stationary electrical contact, and electrical means for throwing said motor into operation operatively connected with said universal bar.

2. In a type-operating machine, the combination with a plurality of type-operating mechanisms, of a motor, a key lever corresponding to each of said mechanisms but mechanically independent therefrom, means operated by each of said key levers for connecting its corresponding mechanism with said motor, a stationary electrical contact, a universal bar adapted to be moved by direct

contact with the key lever and provided with an electrical contact adapted to engage said stationary electrical contact, and electrical means for throwing said motor into operation operatively connected with said universal bar.

3. In a type-operating machine, the combination with a plurality of type-operating mechanisms, of a plunger corresponding to each of said mechanisms, an electro-magnet, a bar actuated by said electro-magnet and adapted to engage any one of said plungers, a key lever corresponding to each of said plungers and adapted to move it into position to be engaged by said bar and mechanically independent from its corresponding type-operating mechanism, a stationary electrical contact, a universal bar adapted to be moved by direct contact with the key levers and provided with an electrical contact adapted to engage said stationary electrical contact, a source of electrical supply, and conductors connecting said contacts, electro-magnet and source.

4. In a type-operating machine, the combination with a plurality of type-operating mechanisms, of an electric motor for operating such mechanisms, a unitary means for closing and opening the circuit of the electric motor, a key corresponding to each type-operating mechanism but mechanically independent therefrom and each arranged to operate the unitary circuit closing and opening means, and a plurality of means operated by the said keys respectively and independently of the circuit closing and opening means for moving the set of mechanism individual to that key into position for engagement with the motor, substantially as set forth.

In testimony whereof I affix my signature, in presence of two witnesses,

BENJAMIN P. FINIGAN.

Witnesses:

R. C. FAUGHT,
J. S. BARKER.