

C. H. VOGEL.
TYPE WRITING MACHINE.
APPLICATION FILED MAY 3, 1911.

Patented June 23, 1914.

1,100,795.

2 SHEETS—SHEET 1.

FIG. 1

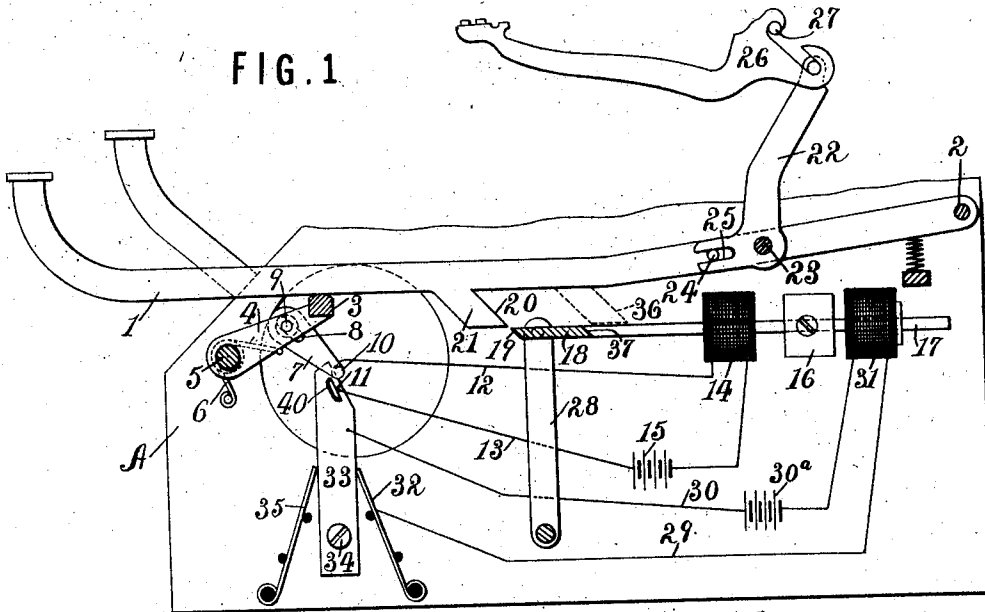


FIG. 3

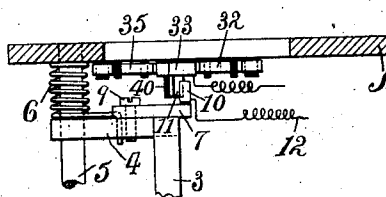
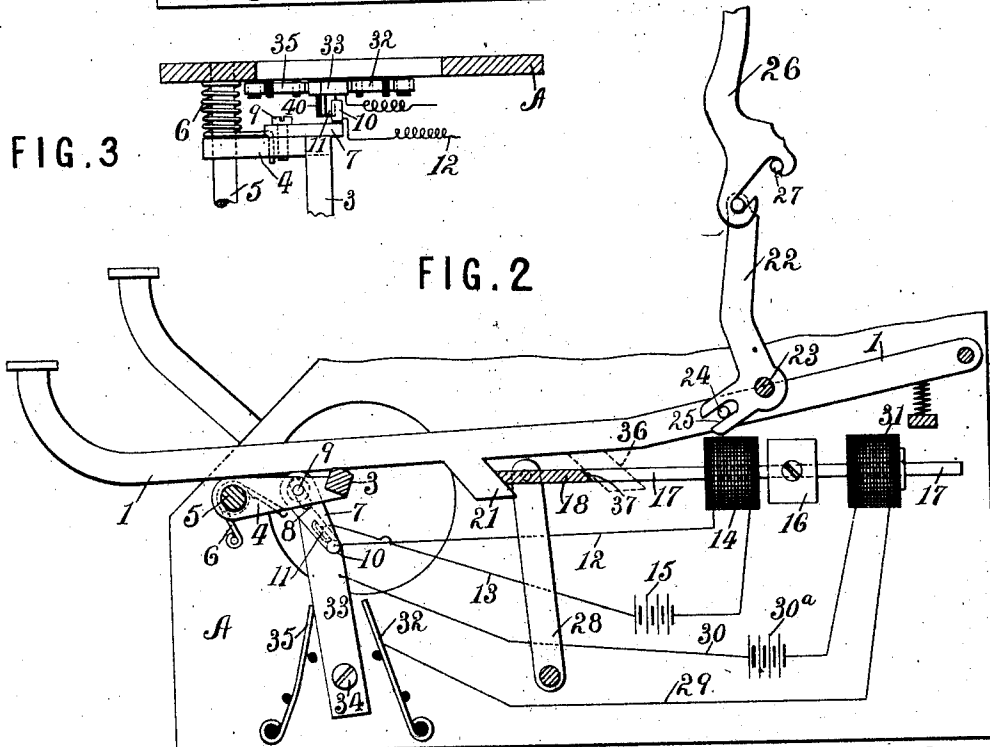


FIG. 2



WITNESSES:

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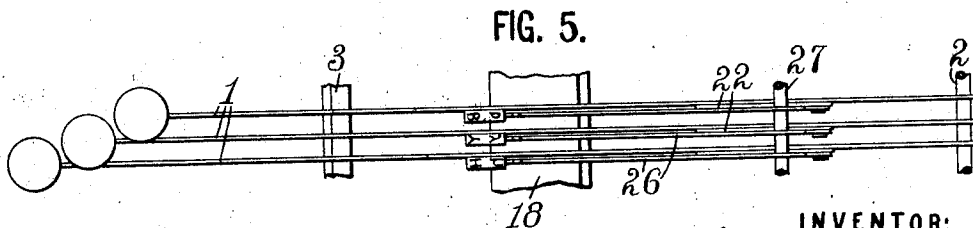
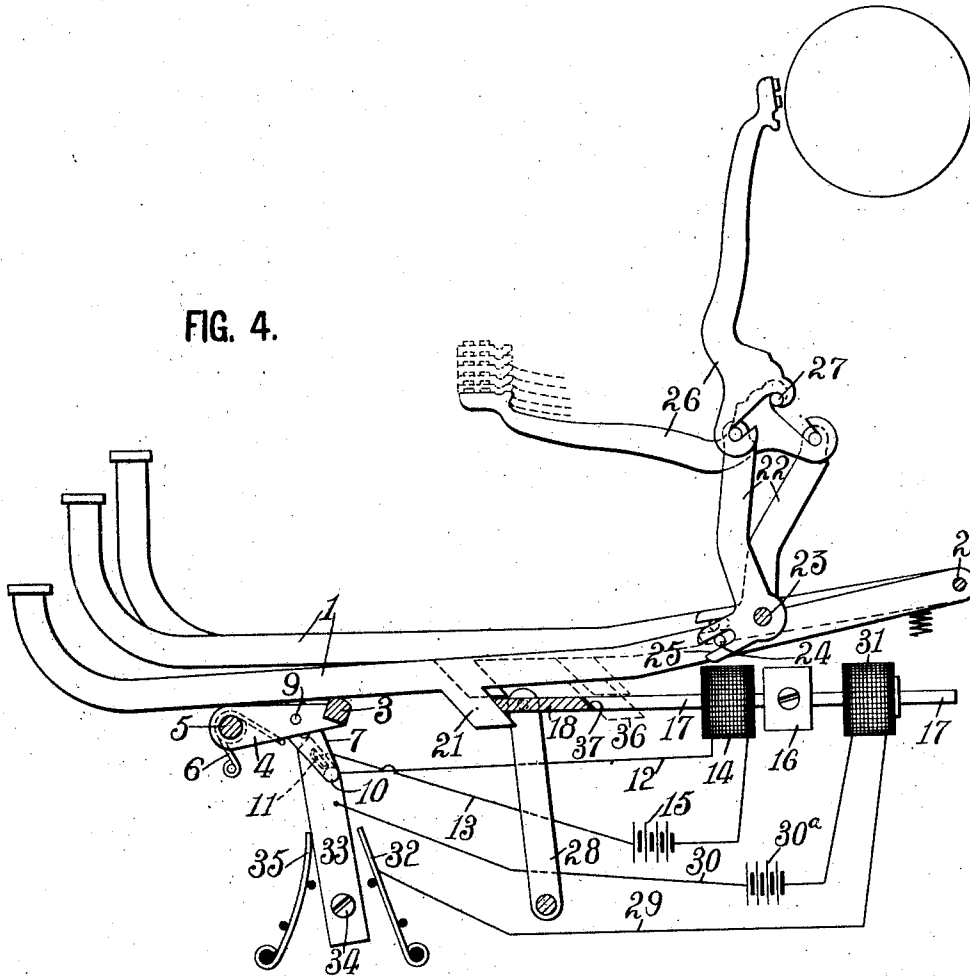
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

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TYPE-WRITING MACHINE.

1,100,795.

Specification of Letters Patent. Patented June 23, 1914.

Original application filed August 22, 1910, Serial No. 578,457. Divided and this application filed May 3, 1911. Serial No. 624,827.

To all whom it may concern:

Be it known that I, CHARLES H. VOGEL, a subject of the King of England, residing in Vancouver, in the county of Vancouver, Province of British Columbia, Dominion of Canada, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

This invention relates to the type action of writing machines and is a division of application No. 578,457, filed August 22, 1910.

The object of the invention is to produce a simple and efficient type-action in which the keys may be operated with a very light touch.

In carrying out the invention, I preferably provide an arrangement whereby a very slight depression of a key operates mechanism to complete the depression of the key. I may accomplish this with electrical means, by closing a circuit in the initial movement of the depressed key. Electromagnets in the circuit may then complete the depression of the key and effect or assist in effecting the completion of the printing stroke of the type, relieving the operator of labor and also securing uniform strokes of the type bars.

Other features and advantages will hereinafter appear.

In the accompanying drawings, Figure 1 is a diagrammatic view, showing part of a typewriting machine in vertical section, and illustrating the arrangement of solenoids which control the type action. This view shows the mechanism in the normal position. Fig. 2 is a view similar to Fig. 1, but showing the device in operation, and illustrating how the solenoids operate to actuate the type bar. Fig. 3 is a horizontal section, taken near one of the side plates of the typewriter frame, and further illustrating details of construction for closing the contacts which control the circuits through the solenoids. Fig. 4 is a side view largely diagrammatic, showing two key levers, one of which is partly depressed. Fig. 5 is a plan view showing several key levers diagrammatically.

Key levers 1 are mounted upon a fulcrum bar 2 toward the rear of the frame, and their lower edges are just above a universal bar

3, disposed transversely to the frame and mounted on swinging arms 4, pivotally held on a horizontal fixed shaft 5, so that when the keys are depressed, the universal bar swings down; and a spring 6 is provided between the side wall A and arm 4 for returning the universal bar after being depressed. As the universal bar moves down, it carries with it an adjustable contact arm 7, which is adjustably attached to one of the arms 4 by means of a slot 8 and an adjusting screw 9. The lower end of this arm has a laterally projecting contact pin 10, in the path of which lies an insulated contact plate 11 (on a swinging support 33). Conductor 13 is connected to plate 11, and conductor 12 is connected to pin 10, thereby to close a circuit through a depressing solenoid 14; and a battery 15 in this circuit energizes the coil and causes it to draw forwardly an armature 16, said armature being attached to a stem 17, which extends rearwardly from a transverse universal bar 18.

A very slight depression of the key lever closes the circuit, and as the bar 18 moves forwardly, its forward beveled edge 19 strikes the inclined rear edge 20 of a depressing lug or cam 21, which projects down from each key lever. This depresses the key lever more completely, and swings a sub lever 22 on its fulcrum 23 through the action of a pin 24, working in a slot 25, and the sub lever actuates a type bar 26, which is hung upon a segment 27 in the usual manner. The forward end of the bar 18 is supported on rocker arms 28.

The conductor 30 is attached to rocker arm 33, so that when the rocker arm is against the spring 32, as in its normal position, a circuit is closed through coil 31 and the energized coil 31 keeps the armature 16 pulled over near it.

As shown in Fig. 2, when the rocker 33 is swung forwardly or to the left on its pivot screw 34 by the action of the pin 10 on the inclined contact plate 11 (which is fixed on swinging arm 33), the circuit through the wires 29 and 30 is broken at the spring 32, and the rocker arm flexes a return spring 35, similar to the spring 32; and when the pin 10 has passed below the lower edge of the contact plate 11, the spring 35 swings the

arm 33 back to its normal vertical position. When the pin 10 passes under the contact plate 11, the circuit through the solenoid coil 14 is broken, but the momentum of the armature 16 continues to carry it forward and pulls the key down, so as to completely depress it and actuate the type bars 26. As soon as the spring 35 has returned the rocker 33 to its normal vertical position, the circuit through the conductors 29 and 30 and the battery 30^a is again closed, and the solenoid coil 31 draws back the bar 18.

The spring 6 in returning the universal bar 3, will return all of the keys 1, but if desired, a return-lug 36 may be provided on the under side of each key, as shown in dotted lines in Figs. 1 and 2. This return-lug or cam is inclined like the lug 21, so that as the bar 18 is pulled back, its beveled rear edge 37 strikes the inclined forward edge of the lug 36, and pushes the key back to its normal position.

It should be understood that in the normal position of the keys, the lower ends of the lugs are above the bar 18, so that as this bar advances under the action of the coil 14, it can strike the lug only of the key which has been touched; and it should be understood that by adjusting the arm 7, the mechanism can be arranged so that a very slight depression of the key will close the circuit through the solenoid 14, whereupon no further depressing force need be exerted by the operator, for the coil 14 then completes the type movement.

When the universal bar 3 returns, the pin 10 rides up idly past the plate 11 on the front, which is insulated at 40, so that circuit through 12 and 13 is not closed at this time. The arm 33 yields by swinging over against spring 32 to permit the pin 10 to rise, and is then restored by spring 32. It will be observed that from some points of view the bar 18 and the electro-magnet 31 may be regarded as a retracting device for the type bars.

Variations may be resorted to within the scope of the invention.

Having thus described my invention, I claim:

1. In a typewriting machine, in combination, a key lever, an electric circuit adapted to be closed by the depression thereof, electro-magnetic means in said circuit to complete the depression of said key lever, and electro-magnetic means for returning said key lever after depression.

2. In a typewriting machine, in combination, a key lever, and electric circuit, a contact member adapted to move when said key is depressed, a movable contact plate co-operating therewith to close said circuit, a coil in said circuit, and means controlled thereby to complete the depression of said key lever after said circuit is closed, said

movable contact plate being adapted to break the circuit before said key lever is completely depressed, a second coil, and means to close a circuit through said second coil to return said key lever.

3. In a typewriting machine, in combination, a key lever, a contact member adapted to be depressed thereby, a contact plate in the path of said contact member and adapted to be displaced by said contact member, so as to pass out of the path thereof, an electric circuit passing through said contact member and said contact plate, and electrically controlled means for depressing said key lever after said circuit is closed and for returning said key.

4. In a typewriting machine, in combination, a key lever, a contact pin adapted to be moved when said key is depressed, a contact plate in the path of said pin and adapted to be displaced thereby, an electric circuit closed through said pin and contact plate, a coil in said circuit, a bar controlled by said coil and adapted to be advanced thereby, said bar engaging said lever to depress the same, and an electric circuit automatically closed for returning said bar.

5. In a typewriting machine, in combination, a key lever, a contact pin adapted to be displaced when said key lever is depressed, a swinging contact plate in the path of said pin, an electric circuit passing through said pin and said contact plate, a coil in said circuit, a bar controlled by said coil and adapted to depress said key after said circuit is closed, when said pin strikes said contact plate, a second electric circuit closed when said contact plate is in its normal position, and a coil in said second electric circuit for returning said bar.

6. In a typewriting machine, in combination, a key lever, a circuit adapted to be closed by the depression of said key lever, a coil in said circuit, a bar controlled by said coil, said key lever having a projection adapted to be engaged by said bar to depress said key, and having a second projection adapted to be engaged by said bar to return said key lever.

7. In a typewriting machine, the combination, a key lever, a circuit adapted to be closed by the depression of said key lever, a coil in said circuit, a bar controlled by said coil, said key lever having a projection in the path of said bar to be engaged thereby, and having a second projection adapted to be engaged by said bar to return said key lever, and means for returning said bar.

8. In a typewriting machine, in combination, a plurality of key levers, a universal bar adapted to be depressed by said keys, an adjustable arm carried thereby, a contact pin on said arm, a contact plate in the path of said pin, an electric circuit adapted to be closed by the contact of said pin and said

plate, a type bar, and electrically controlled means for actuating said type bar in each direction.

9. In a typewriting machine, in combination, a key lever, a contact pin adapted to be displaced thereby, a contact plate in the path of said pin, resilient means for normally holding said contact plate in the path of said pin, an electrically controlled device in said circuit for completing the depression of said key lever after said circuit is closed, a second electric circuit adapted to be opened when said contact plate is displaced by said pin, said electric device including a bar adapted to engage the key lever to depress the same, and a coil in said second circuit for returning said bar.

10. In a typewriting machine, the combination with a key lever, of a universal bar operated by said lever, a contact point on said universal bar, a swinging arm carrying a terminal arranged to complete a circuit through said contact point to depress said lever, a spring arranged to hold said swing-

ing arm so that it is returned to normal position at the completion of the stroke of said key lever, and a second contact point arranged to close a circuit to positively return said key lever.

11. In a typewriting machine, the combination of a series of independent type-carriers, a series of operating keys therefor, a retracting bar, means for connecting said bar with any carrier at the printing point, an electromagnet for moving said retracting bar, and means for operating said magnet.

12. In a typewriting machine, in combination of a series of independent type-bars, a series of operating keys, means for advancing a type-bar to printing position, a normally disconnected retracting bar for said type-bar, and means for connecting said type-bar and retracting bar.

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Witnesses:

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