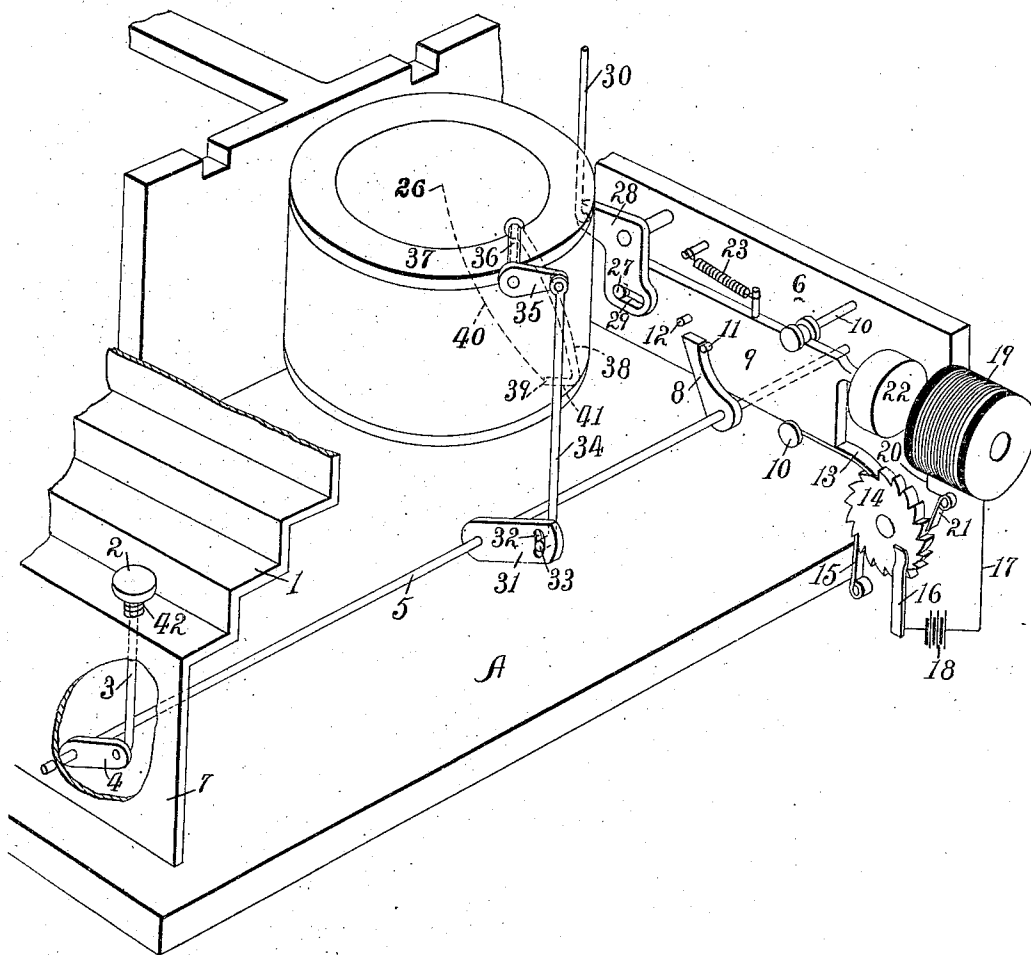


C. H. VOGEL.
TYPE WRITING MACHINE.
APPLICATION FILED AUG. 18, 1911.

1,080,028.

Patented Dec. 2, 1913.



WITNESSES:

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UNDERWOOD TYPEWRITER COMPANY, OF NEW YORK, N. Y., A CORPORATION OF
DELAWARE.

TYPE-WRITING MACHINE.

1,080,028.

Specification of Letters Patent.

Patented Dec. 2, 1913.

Original application filed August 22, 1910, Serial No. 578,457. Divided and this application filed August 18, 1911. Serial No. 644,724.

To all whom it may concern:

Be it known that I, CHARLES H. VOGEL, a British subject, 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 operating mechanism of typewriting machines, and the object of the invention is to provide improved, simple, and efficient means for operating the keys by a very light touch.

This application is a division of my application No. 578,457, filed August 22, 1910.

In carrying out my invention, a rock shaft rocked by one of the keys imparts a partial stroke to a universal bar by means of a dog on said shaft engaging on a pin on the bar. Said partial stroke causes the bar to turn a toothed wheel for the extent of one tooth. The wheel is in an electric circuit and a shoe is thereby caused to engage and disengage with one of the teeth, whereby the circuit is closed and opened, the closing of the circuit causing a magnet therein to draw the universal bar to complete its stroke. During the completed stroke of the universal bar it engages said dog by a pin to rock the shaft, which operates the corresponding type bar, by means of a link and arms, and simultaneously pulls a bell crank to actuate an escapement to feed the carriage. Lost motion is provided on said bell crank and one of said arms to render the escapement and type ineffective during the partial movement of the universal bar.

The drawing is a perspective, which diagrammatically illustrates my invention, certain parts being omitted, and others being broken away. In this view, I show only the parts necessary to actuate the single type bar; the other type bars and their actuating parts being omitted for the sake of clearness.

Upon a base plate A is attached a keyboard 1, in which key 2 is mounted, having a stem 3 which extends downwardly and is attached to an arm 4 which enables the key to rock a rock shaft 5 which extends from front to rear of the machine; the rear end of said rock shaft being mounted in a back plate 6, and the forward end in the front plate 7.

The rock shaft 5 carries a dog 8, disposed close to the face of a universal bar 9, which is mounted to slide transversely to said rock shaft from side to side of the machine on guide pins 10. The dog 8 normally inclines toward the left, so that it rocks toward the right by the depression of a key. When the key 2 is depressed, the dog 8 swings slightly toward the right, and gives the universal bar 9 a partial movement by engaging a pin 11 on the bar. This partial movement is sufficient to enable an extension 13 at the lower edge of the universal bar to rotate a ratchet wheel 14 for the extent of a single tooth. The ratchet wheel 14 is insulated, and is held against a backward rotation by an insulated detent pawl 15. The ratchet wheel is of conducting material, and has a brush 16 constantly in contact with it, said brush being in a circuit 17 with a battery 18. In this circuit there is provided an electro-magnet 19, which is connected by conductor 20 of the circuit with a contact shoe 21, which is insulated and fixed with its end projecting into the path of the teeth of the ratchet wheel. From this arrangement, when the wheel is rotated one of the teeth of the ratchet wheel strikes and passes the contact shoe 21, which closes the circuit through the electro-magnet or solenoid 19, and then immediately breaks it, causing the magnet 19 to attract an armature 22, attached to or forming a part of the adjacent end of the universal bar. In this way the magnet draws the universal bar over, giving it its completed stroke, and upon the immediate breaking of the circuit, the universal bar is returned by spring 23. Whenever the dog 8 is actuated it is swung into the path of a second pin 12 on the universal bar so that when the universal bar is given its completed stroke by the magnet 19, the pin 12 strikes the dog 8 and rocks the shaft 5 in the same direction as the key did.

Rock shaft 5 is provided with an arm 31, which has a slot 32 receiving a pin 33 projecting from a link 34 which extends upwardly and connects with a rocker arm 35 fixed on a wrist 36, said wrist being rotatably supported upon a hanger ring or plate 37 and carrying a type bar 38 which is normally in the position indicated in dotted

lines. The free end of this type bar 38 is provided with a type 39, and when the link 34 is pulled down, this type 39 describes a curved line 40 which brings it to the striking point 26.

The universal bar 9 is connected by a pin 27 with a bell crank 28 through a slot 29, so that the completed stroke of the universal bar 9 pulls the bell crank 28 and link 30 connected thereto to actuate an escapement device and feed the carriage, not shown in the drawing. It will be seen that the slot 32 in arm 31 and slot 29 and bell crank 28 provide the necessary lost motion so that the partial stroke of universal bar 9 does not affect the type, or the carriage, but the completed stroke of said universal bar operates the type and feeds the carriage. The key 2 is provided with a return spring 42, which aids spring 23 to return the parts.

Having thus described my invention, I claim:

1. In a typewriting machine, the combination with a type bar and a key, of a rock shaft extending from front to rear of the machine and rocked by the key, a universal bar reciprocating from side to side of the machine and transversely of said shaft, a dog on said shaft actuating said universal bar to give it a partial stroke, an electric circuit closed by said partial stroke, a magnet in said circuit for drawing said universal bar to complete its stroke, and connection between said rock shaft and type bar to operate it; said connection having lost motion to render the bar ineffective during the partial stroke of the universal bar, and the completed stroke of said bar actuating said dog to operate the type bar by means of said connection.

2. In a typewriting machine, the combination with a type bar and a key, of a rock shaft rocked by the key, a universal bar for receiving a partial stroke from said shaft, an electric circuit closed and opened by said partial stroke, a magnet in said circuit for drawing said universal bar to complete its stroke, said completed stroke rocking said shaft, an arm on said shaft swung thereby, a lever for the type bar, and a link connecting said arm with the lever to operate the type bar; said arm having lost motion to render the type ineffective during the partial stroke of said universal bar.

3. In a typewriting machine, the combination with a type bar and a key, of a device operated by the key, a universal bar, means between said device and said universal bar whereby the latter is given a partial stroke, connection between said device and the type bar for operating the type, said connection having lost motion to render the type ineffective during the partial stroke of said universal bar, an electric circuit closed and opened by said universal bar, and a magnet

in said circuit for causing said universal bar to complete its stroke to operate the type bar through said connection.

4. In a typewriting machine, the combination of a type bar, an operating key, a shaft rocked by the key, a universal bar, a dog on said shaft for imparting a partial stroke to the universal bar, an electric circuit closed by said partial stroke, a magnet in said circuit for causing said universal bar to complete its stroke, means on the universal bar to drive the dog during the final portion of the universal bar stroke, and a connection between said shaft and the type bar for operating the type; said connection having lost motion to permit the type to be idle during said partial stroke of the universal bar.

5. In a typewriting machine, the combination with a type bar and a key connected thereto by a lost motion device, of a universal bar for receiving a partial stroke from the key, an electric circuit, a toothed member in said circuit moved by said partial stroke to the extent of one tooth, a shoe in said circuit for striking a tooth on said member when turned to make and break the circuit, and a magnet in said circuit for drawing said universal bar to complete its stroke to operate the type bar.

6. In a typewriting machine, the combination with a type bar and a key, of a universal bar, a connection between the key and said universal bar to impart thereto a partial stroke, a lost motion connection between said key and said type bar, an electric circuit, a toothed member in said circuit moved by said partial stroke to the extent of one tooth, a shoe in said circuit for striking a tooth on said member when turned to make and break the circuit, and a magnet in said circuit for drawing said universal bar to complete its stroke, to operate the type bar.

7. In a typewriting machine, the combination with a type bar and a key connected thereto by a lost motion device, of a rock shaft, a stem and crank from the key to rock said shaft, a universal bar for receiving a partial stroke from said shaft, an electric circuit closed and opened by said partial stroke, and a magnet in said circuit for drawing said universal bar to complete its stroke, to rock said shaft and operate the type bar.

8. In a typewriting machine, the combination with a type bar and a key, of a rock shaft rocked by the key, a lost motion device between said type bar and key, a universal bar, a dog on said shaft, a pin on said bar struck by said dog to impart a partial stroke to the bar, an electric circuit closed and opened by said partial stroke, a magnet in said circuit for drawing said universal bar to complete its stroke, and a pin on said bar striking said dog during said completed stroke to rock said shaft for operating the type bar.

9. In a typewriting machine, the combination with a type bar and a key, of a universal bar, a lost motion connection between said type bar and key, means connected to the key for giving the universal bar a partial stroke while the type bar remains motionless, an electric circuit closed by said partial stroke, a magnet in said circuit for causing said universal bar to complete its stroke and operate the type bar, and means for automatically opening the circuit.

10. In a typewriting machine, the combination with a type bar and a key connected thereto by a lost motion device, of a device operated by the key, a universal bar for receiving a partial stroke from said device, an electric circuit closed by said partial stroke, and a magnet in said circuit for drawing said universal bar to complete its stroke to operate the type bar; means being provided for opening the circuit at the completion of the stroke of the universal bar.

11. In a typewriting machine, the combination of a type bar, an operating key, a lost motion device between said type bar and key, a universal bar, a connection between said universal bar and said key whereby the universal bar is given a partial stroke, said universal bar being connected to the type bar to operate the same, an electric circuit, means for closing said electric circuit by said partial operation of the universal bar, and a magnet in said circuit for causing said universal bar to complete its stroke.

12. In a typewriting machine, the combination of a type bar, an operating key, a lost motion device between said type bar and key, a universal bar for receiving a partial stroke from the key, said universal bar being connected to the type bar to operate the same, and means actuated by said partial stroke to complete the stroke of said universal bar.

13. In a typewriting machine, the combination with a type bar and a key connected thereto by a lost motion device, of a universal bar for receiving a partial stroke from the key, and means actuated by said partial stroke to complete the stroke of said universal bar; the type bar being operable by the universal bar during such completion of the stroke of the latter.

14. The combination of a key, a universal bar, means to enable the key to start the universal bar, a ratchet wheel operable by the universal bar, a source of power brought into action by the movement of the ratchet

wheel, means for enabling said source of power to complete the movement of the universal bar and ratchet wheel, means cooperating with the ratchet wheel to shut off the source of power, means to return the universal bar to normal position, a type bar operable by said universal bar, and a lost motion connection between said type bar and said universal bar.

15. In a typewriting machine, the combination with a type bar and a key, of a universal bar adapted to be given a partial stroke by said key, and electric means actuated by said partial stroke to complete the stroke of said universal bar; said universal bar being connected to the type bar to operate the same during such completion of the universal bar movement, and a lost motion device between said universal bar and type bar.

16. In a typewriting machine, the combination with an operating key and a type bar, of a universal bar given a partial stroke by the key, means connected to a source of power for completing the stroke of the universal bar; said universal bar being connected to the type bar to operate the same during such completion of the universal bar movement, and a lost motion device between said universal bar and type bar.

17. The combination of a key, a universal bar, a ratchet wheel operable by said universal bar, an electric circuit closable by the initial portion of the movement of said ratchet wheel, a magnet for said circuit for completing the movement of said universal bar, a type bar operable by said magnet through said universal bar, said circuit being constructed to be opened by the final portion of the movement of the ratchet wheel, means for returning the universal bar to normal position, and a lost motion device between said type bar and universal bar.

18. In a typewriting machine, the combination with a type bar and a key, of a universal bar, means connected to the key for giving the universal bar a partial stroke while the type bar remains motionless, an electric circuit closed by said partial stroke, a magnet in said circuit for causing said universal bar to complete its stroke and operate the type bar, and means for automatically opening the circuit.

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Witnesses:

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