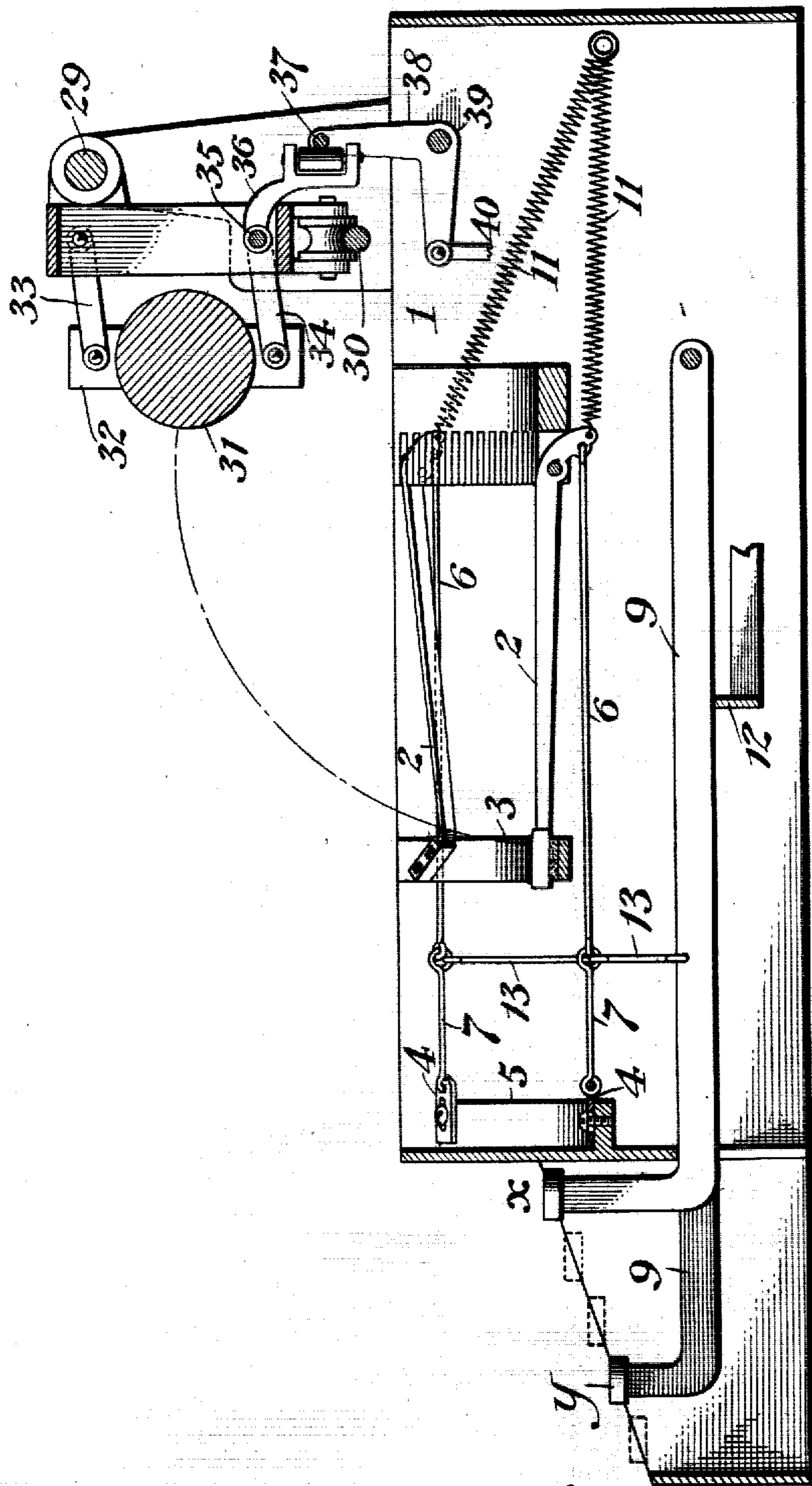


No. 822,858.

PATENTED JUNE 5, 1906.

E. B. HESS.
WRITING MACHINE.

APPLICATION FILED AUG. 1, 1905.



Witnesses
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WRITING-MACHINE.

No. 822,858.

Specification of Letters Patent.

Patented June 5, 1906.

Original application filed August 27, 1901, Serial No. 73,460. Divided and this application filed August 1, 1905, Serial No. 272,170.

To all whom it may concern:

Be it known that I, EDWARD B. HESS, a citizen of the United States, residing in the borough of Brooklyn, city of New York, State of New York, have invented certain new and useful Improvements in Writing-Machines, of which the following is a specification.

In my Patent No. 700,687, dated May 20, 1902, application for which was filed April 26, 1901, I have shown and claimed a structure containing flexible type-bar-actuating connections having the general construction and mode of operation of those herein disclosed. That patent shows and claims, however, details of construction not herein disclosed and to which the claims thereof are drawn, the right being reserved therein to make generic claims in my application, Serial No. 73,460, of which this case is a division.

The construction herein disclosed is specific and subordinate to generic claims made in my application filed August 1, 1905, Serial No. 272,171, which is also a division of my application, Serial No. 73,460. No detachable adjustable fixed pieces or anchor-points (hereinafter described) in an organization of the general character herein shown are claimed in my application Serial No. 73,460.

The accompanying drawing is a vertical longitudinal section showing so much of a machine as is deemed desirable to illustrate the invention.

The drawing shows a front-stroke type-bar writing-machine. It is contemplated that each type-bar shall have two characters thereon and that either the type-bar segment or platen shall be shifted to print at will either upper or lower case letters. As shown, provision is made for shifting the platen.

The frame is of any appropriate construction. At a suitable point below the plane in which the platen is located is mounted the type-bar segment 1, in which the type-bars 2 are pivoted on a rod or wire, as usual. They lie toward the machine against a segmental rest 3. To the heel or projection of each type-bar is attached the rear end of a flexing connection, the front end of which is secured to a fixed point or piece 4, adjustably and detachably mounted by a slot-and-set-screw connection in a segment 5, located toward the front of the machine and in front of the transverse plane in which the heads of the type-

bars normally lie. Each connection (in the form in which it is shown) is composed of a rear link 6 and a front link 7, united at their adjacent ends by a hinge-joint formed by interlocking eyes at the ends of the links. Below the flexing connection is a series of key-levers 9, whose upturned ends are equipped with finger-pieces arranged in straight parallel rows. Each key-lever is connected by a link 13 with the hinge-joint between links 6 and 7. Springs 11 are applied to the type-bars, and springs may be applied to the key-levers. If a universal bar 12 be employed beneath the key-levers, it may, as usual, be urged upwardly against the key-levers by spring-pressure. Either or both arrangements may be employed. It is sufficient that the spring reaction, wherever and however applied shall properly assist in returning the type-bars to their position of rest, and so normally maintain them.

To secure a uniform depth of depression of the finger-pieces, the points of connection of the links 6 with the type-bars or the angle at which the links 7 are disposed may be varied. When a finger-piece and its key are depressed, link 13 is drawn down, flexing the connection downward and swinging that part of it in front of the point of flexure—i. e., link 7—around its point of connection with the fixed piece 4, thus drawing the rear link 6 toward the front of the machine and actuating the type-bar by a pull. This movement is characterized by a minimum of resistance at the start with correspondingly low velocity of the type-bar and an increase in resistance and type-bar velocity during the complete downward excursion of the finger-piece.

Two key-levers only are shown. 9^x is the center key of the upper row, connected with the central flexing connection running to the lowest point of the segment 5. 9^y is one of the end keys of the front row and is connected with a flexing connection running to the end of the segment.

The construction of the carriage and platen and mechanism for shifting the latter may be of any appropriate character. As shown, the carriage travels upon rails 29 and 30, mounted in brackets located at the sides of the frame. The platen 31 is mounted in a frame 32, carried in the ends of parallel pivoted arms 33 34, extending horizontally from the car-

riage. The lower arms 34 are fast to the ends of a rock-shaft 35, from the center of which projects an arm 36, whose end is acted upon by a cross-rod 37, held in the ends of bell-crank levers 38, located at the sides of the machine and fast to a rock-shaft 39. The bell-crank 38 at the left-hand side of the machine has connected to it a link 40 to be suitably actuated on the depression of a shift-key.

The relation of the type-bars and flexing connections is much the same, affording substantial uniformity of behavior. The structure is light, cheap, and simple and affords a marked refinement of "touch" of the finger-pieces. Obviously when the device or connection for operating the flexing type-bar-actuating connection is applied at the hinge-joint of the latter tensile strain only is exerted upon the parts thereof from the point of flexure to the opposite ends, respectively, and such parts may therefore be very light and inexpensive and preferably are made of wire. Preferably the joints between the members of the flexing connection and between it and the fixed point and type-bar are such as to allow slight twisting movements. This is particularly desirable at the type-bars near the ends of the segment.

The arrangement designated by me a "flexing connection" may have in some forms the full operation of a reverse or accelerating toggle and in all forms is of the nature of such a toggle. As illustrated, application of power thereto is in a line intersecting one drawn between the fixed point and the point of attachment to the type-bar.

I claim as my invention—

1. In a writing-machine, the combination of a platen, a pivoted type-bar, a key-lever, a type-bar-actuating connection capable of flexure intermediate its ends, a type-bar connected to the rear end thereof and a fixed point to which the front end is connected, and means applied to the point of flexure from below it to flex the connection and pull the type-bar to the printing-point with an increasing velocity.

2. In a writing-machine, the combination of a platen, a pivoted type-bar, a key-lever, a type-bar-actuating connection capable of flexure intermediate its ends, a type-bar connected to the rear end thereof and a fixed point to which the front end is connected, means applied to the point of flexure from below it to flex the connection and pull the type-bar to the printing-point with an increasing velocity, and means for changing the relation of the type-bar and platen.

3. In a writing-machine, the combination of a platen, a pivoted type-bar, a key-lever, a type-bar-actuating connection capable of flexure intermediate its ends, a type-bar connected to the rear end thereof and a fixed point to which the front end is connected, a

key-lever arranged below the flexing connection and operatively connected with the point of flexure thereof.

4. In a writing-machine, the combination of a platen, a pivoted type-bar, a key-lever, a type-bar-actuating connection capable of flexure intermediate its ends, a type-bar connected to the rear end thereof and a fixed point to which the front end is connected, a horizontally-disposed key-lever located under the flexing connection and a link connecting the key-lever with the point of flexure thereof.

5. In a writing-machine the combination of a platen, a pivoted type-bar, a key-lever, a flexing connection composed of links united at their adjacent ends by a hinge-joint and having its rear end connected with the type-bar and its front end with a fixed piece, and a connection between the key-lever and the hinge-joint uniting the two parts of the flexing connection.

6. In a writing-machine, the combination of a platen, a pivoted type-bar, a key-lever, a flexing connection composed of links united at their adjacent ends by a hinge-joint and having its rear end connected with the type-bar and its front end with a fixed piece, a connection between the key-lever and the hinge-joint uniting the two parts of the flexing connection, and means for changing the relation of the type-bar and platen.

7. In a writing-machine, the combination of a pivoted type-bar, a flexing type-bar-actuating connection connected at its rear end to the type-bar and at its front end to a fixed piece, and composed of links whose adjacent ends are united by a hinge connection, a third link applied at such hinge connection and arranged transversely to the other two links, a pivoted key-lever and a hinge connection between the key-lever and said third link whereby on the depression of the key-lever the type-bar-actuating connection is flexed and the type-bar thrown to the printing-point with an increasing velocity.

8. In a writing-machine, a flexing actuating connection comprising two links united at their adjacent ends by a hinge-joint, the rear end of the connection being operatively connected to the type-bar to be actuated, and the front end thereof connected to a fixed point, and means applied to the hinge-joint for flexing the connection at such joint, thereby subjecting both links to tensile strain and throwing the type-bar to the printing-point with an increasing velocity.

9. In a writing-machine, the combination of a platen; a type-bar support; a type-bar pivoted therein, and normally lying toward the front of the machine; a flexing connection comprising two links united at their adjacent ends by a hinge-joint, the rear end of the connection being operatively connected to the type-bar and the front end to a fixed

point; a finger-piece, and a device actuated by the finger-piece and applied to said hinge-joint to flex the joint, subject both links to tensile strain, and throw the type-bar to the printing-point with an increasing velocity.

10. In a writing-machine, the combination of a platen; a type-bar support; a type-bar pivoted therein, and normally lying toward the front of the machine; a flexing connection comprising two links united at their adjacent ends by a hinge-joint, the rear end of the connection being operatively connected to the type-bar and the front end to a fixed point; a key-lever and an operative connection between it and said hinge-joint, whereby on depression of the key-lever the hinge-joint is drawn down, both links subjected to tensile strain, and the type-bar pulled to the printing-point.

11. In a writing-machine, the combination of a platen, a type-bar segment, type-bars pivoted therein and normally lying toward the front of the machine, flexing connections, one for each type-bar, disposed under the type-bars, connected at their rear ends to the type-bars and at their front ends to fixed points and capable of flexing intermediate their ends, key-levers disposed under the flexing connections and links connecting the key-levers and points of flexure of the respective flexing connections, whereby on depression of a key-lever the corresponding flexing connection is flexed and subjected to tensile strain on both sides the point of flexure and the type-bar pulled to the printing-point.

12. In a writing-machine, a flexing actuating connection consisting of two links united at their adjacent ends by a hinge-joint, the rear end of one link to be operatively connected to the part to be actuated and the front end of the other link connected to the fixed part of the frame and means for flexing the connection at the hinge-joint and subjecting both links to tensile strain only.

13. In a writing-machine, a flexing actuating connection consisting of two links united

at their adjacent ends by a hinge-joint, the rear end of one link to be operatively connected to the part to be actuated and the front end of the other link connected to the fixed part of the frame and a key-lever for flexing the connection at the hinge-joint and subjecting both links to tensile strain only.

14. In a writing-machine, a flexing actuating connection having its front end operatively connected to a fixed part on the frame and its rear end connected to the part to be actuated, and means for flexing such connection to change its angular disposition between its ends and exert tensile strain only thereon from the point of flexure to its opposite ends respectively.

15. In a writing-machine, a flexing actuating connection having its front end operatively connected to a fixed part on the frame and its rear end connected to the part to be actuated, and a key-lever for flexing such connection to change its angular disposition between its ends and exert tensile strain only thereon from the point of flexure to its opposite ends respectively.

16. In a writing-machine, the combination with a series of pivoted type-bars of a corresponding series of accelerating toggle type-bar-actuating devices, and means applied at the points of flexure of said devices to operate them and pull the type-bars to the printing-point with increasing velocity.

17. In a writing-machine, the combination with a series of pivoted type-bars of a corresponding series of accelerating toggle type-bar-actuating devices, pivoted key-levers and connection between the key-levers and the points of flexure of said devices, whereby on depression of a key-lever the corresponding type-bar is pulled to the printing-point with increasing velocity.

In testimony whereof I have hereunto subscribed my name.

EDWARD B. HESS.

Witnesses:

EDWARD C. DAVIDSON,
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