No. 823,121. PATENTED JUNE 12, 1906.

E. B. HESS.

WRITING MACHINE.

APPLICATION FILED AUG. 27, 1901.

2 SHEETS—SHEET 1.

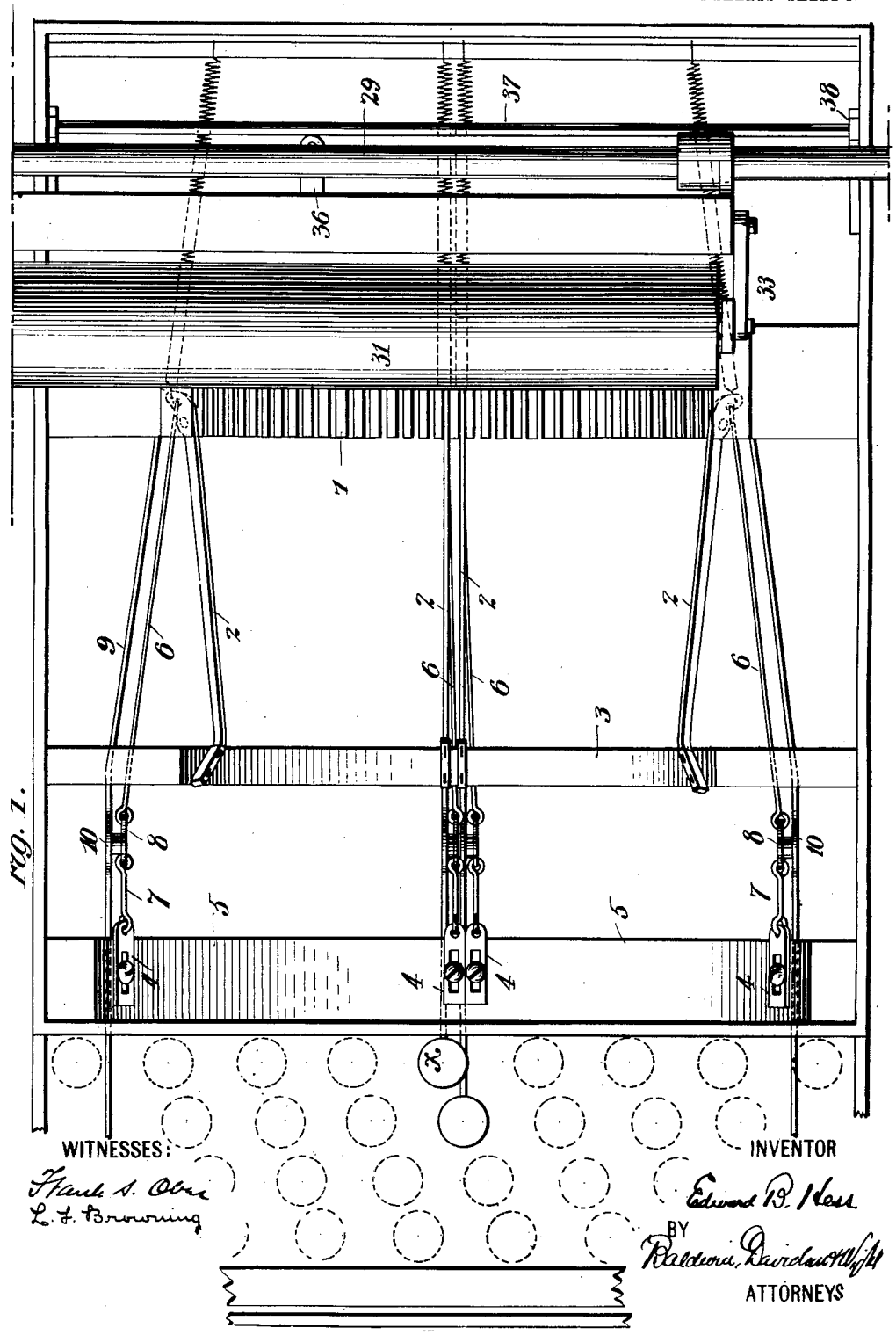

Fig. 1.

WITNESSES:

Frank A. Olds

L. L. Browning

INVENTOR

Edward B. Hess

BY

Baldwin, Davidson & Wright

ATTORNEYS

No. 823,121. PATENTED JUNE 12, 1906.

E. B. HESS.

WRITING MACHINE.

APPLICATION FILED AUG. 27, 1901.

2 SHEETS—SHEET 2.

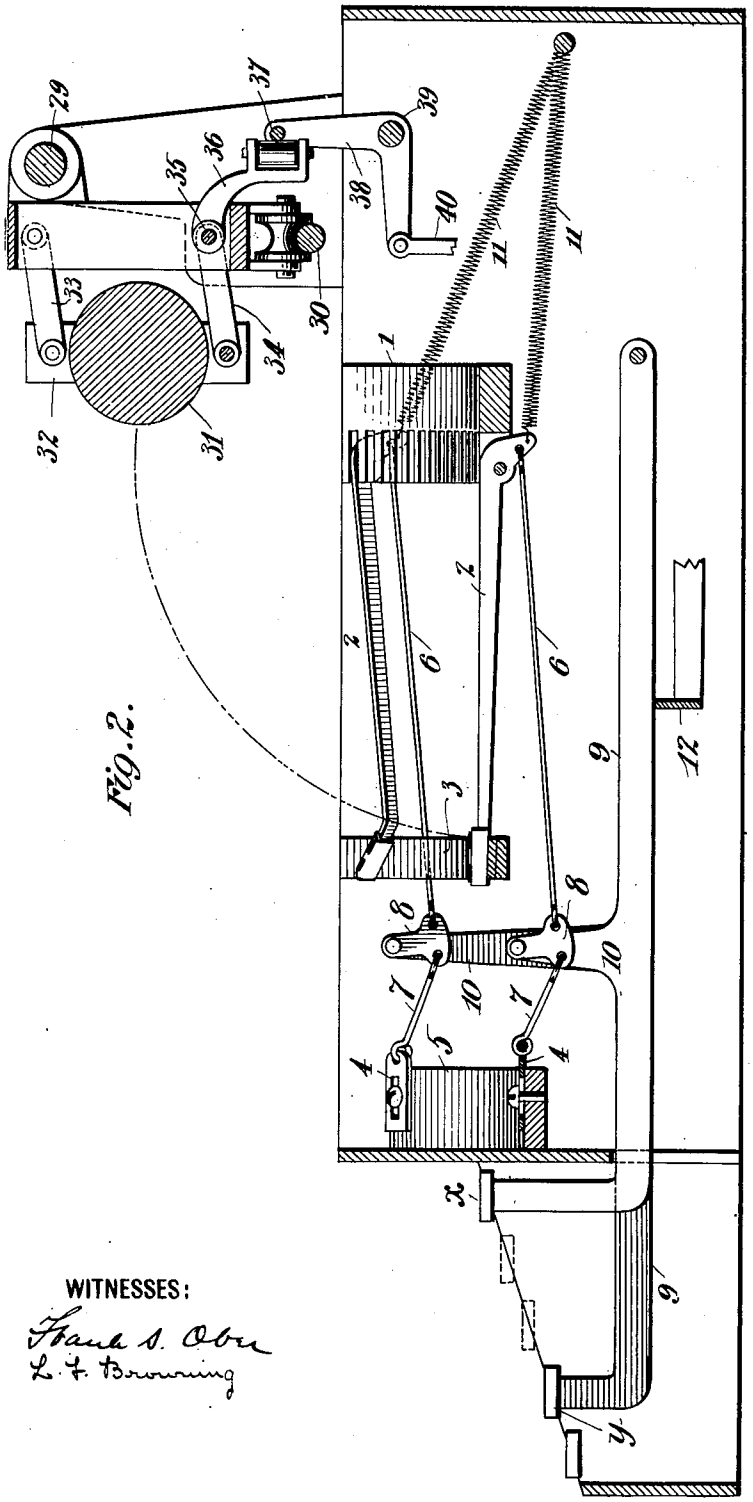

Fig. 2.

WITNESSES:

Frank S. Ober

L. F. Browning

INVENTOR

Edward B. Hess

BY Baldwin, Davis & Wyle

ATTORNEYS.

UNITED STATES PATENT OFFICE.

EDWARD B. HESS, OF BROOKLYN, NEW YORK, ASSIGNOR, BY MESNE ASSIGNMENTS, TO ROYAL TYPEWRITER COMPANY, OF HOBOKEN, NEW JERSEY, A CORPORATION OF NEW JERSEY.

WRITING-MACHINE.

No. 823,121. Specification of Letters Patent. Patented June 12, 1906.

Application filed August 27, 1901. Serial No. 73,460.

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 this application, Serial No. 73,460. Such generic claims, however, are made in divisions of this application filed August 1, 1905, and serially numbered 272,170 and 272,171, to claims of which the construction disclosed in this case is subordinate.

In the accompanying drawings, Figure 1 is a plan view of so much of a machine as is deemed desirable to illustrate the invention; Fig. 2, a vertical longitudinal section therethrough.

The machine herein discolsed is 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 front of 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. This joint is formed by a third link 8, arranged transversely to the flexing connection and to the lower end of which links 6 7 are pivotally joined. Below the flexing connection is a series of key-levers 9, whose upturned ends are equipped with finger-pieces arranged in straight parallel rows. Somewhat in rear of their extreme front ends the key-levers converge toward the rear, so that at a point below the type-bar segment 1 they occupy a space substantially equal in width to the length of its chord. From each key-lever a projection 10 extends upward and is hinged to the upper end of the corresponding link 8. Springs 11 are shown 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 keys are depressed, link 8 will be thrust down, swinging the part of the flexing connection in front of it—*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 downward excursion of the finger-piece. The link 8 in its endwise movement follows the arc or curve described by the part or link 7, and so maintains substantially its angular relation thereto.

The links 6 7 are shown as inclined downwardly toward the point of flexure, the angle at which link 7 is set determining the desired depth of depression of the finger-piece re-

quired to move the type-bar through an arc of ninety degrees.

The links 7 are shown disposed at such angle as to afford moderate and suitable depth of depression of the finger-pieces, and the construction illustrated contemplates that they may be of uniform length.

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 carriage. 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 type-bar segment, type-bars pivoted therein and normally lying toward the front of the machine, flexing connections one for each type-bar arranged under the type-bars and each connected at its rear end to its type-bar and at its front end to a fixed piece and composed of two links, a third link connected to the adjacent ends of such two links and extending upwardly therefrom, key-levers disposed beneath the flexing connections and formed with upwardly-extending projections pivotally connected with the upper end of said third link of the corresponding connection.

2. In a writing-machine, the combination of a type-bar-actuating flexing connection having when flexed the action of a reverse or accelerating toggle and connected at its rear end to its type-bar and a detachable adjustable piece mounted on the frame and to which the front end of the flexing connection is hinged.

3. In a writing-machine, a series of adjustable detachable pieces mounted upon a fixed part of the frame, rearwardly-extending links hinged thereto and each having its rear end connected by a flexing joint to rearwardly-extending link whose rear end is connected to its type-bar and means for depressing the flexing joint between the two links to pull the type-bar to the printing-point with an increasing velocity.

4. In a writing-machine, the combination of a series of detachable pieces secured to a fixed part of the frame, type-bar-actuating connections connected with said pieces extending rearwardly to their respective type-bars and capable of flexure intermediate their ends and means for flexing such connctions to subject them to tensile strain on both sides of the point of flexure and pull the type-bars to the printing-point with increasing velocity.

In testimony whereof I have hereunto subscribed my name.

EDWARD B. HESS.

Witnesses:
EDWARD C. DAVIDSON,
L. L. BROWNING.