

No. 839,995.

PATENTED JAN. 1, 1907.

E. B. HESS.  
WRITING MACHINE.

APPLICATION FILED AUG. 28, 1901. RENEWED FEB. 20, 1905.

2 SHEETS—SHEET 1,

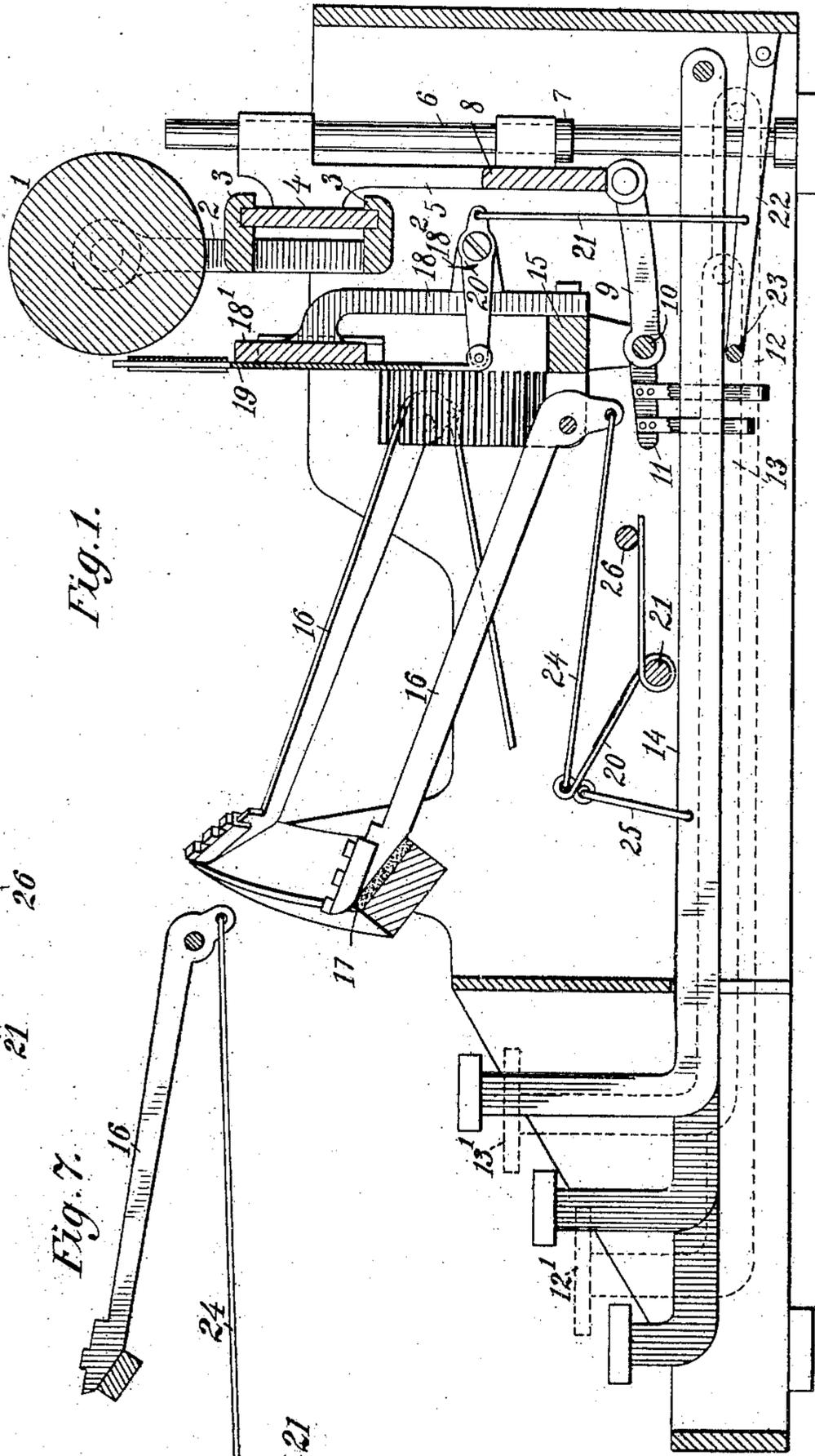


Fig. 1.

Fig. 2.

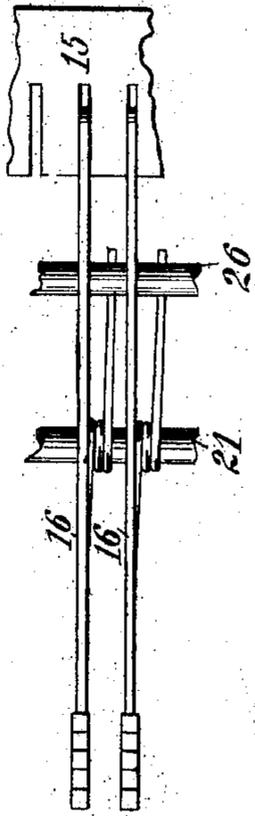
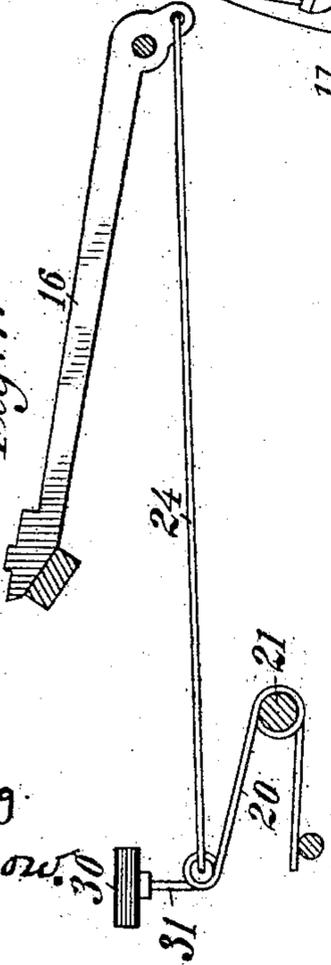


Fig. 7.



WITNESSES:

L. F. Browning.  
Philip W. Carow.

INVENTOR

Edward B. Hess

BY

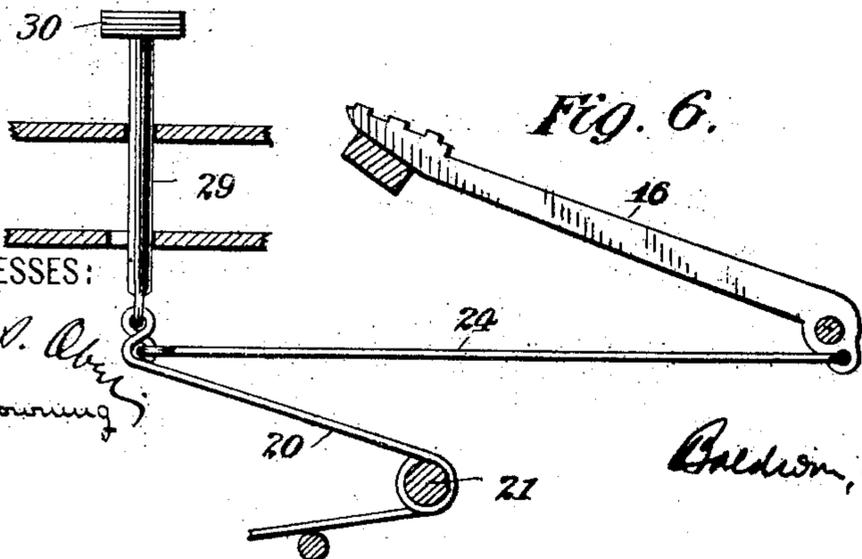
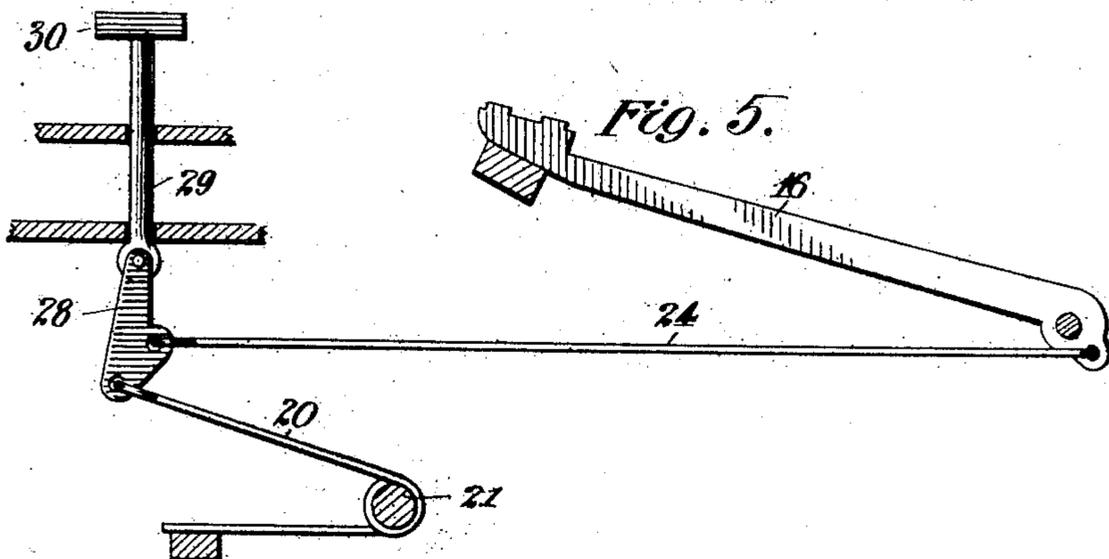
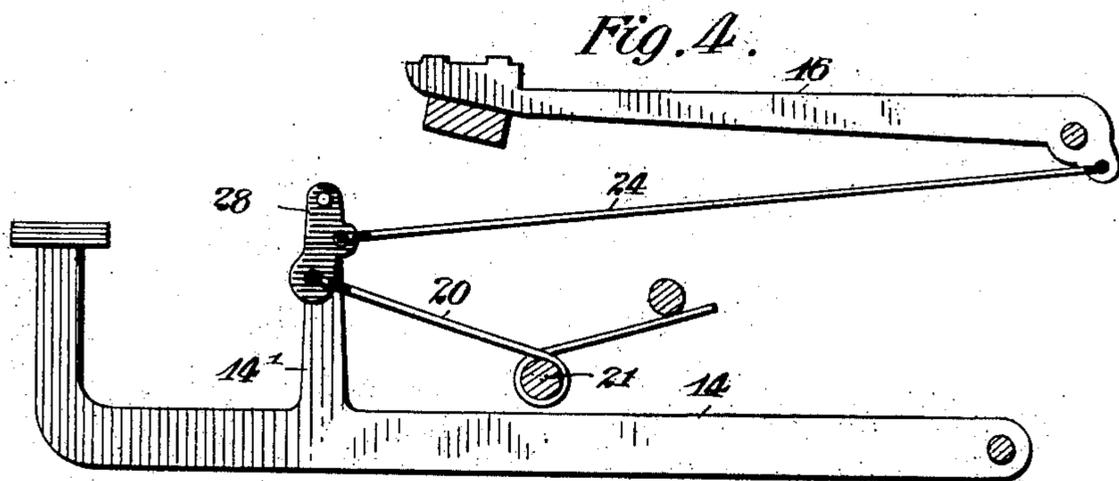
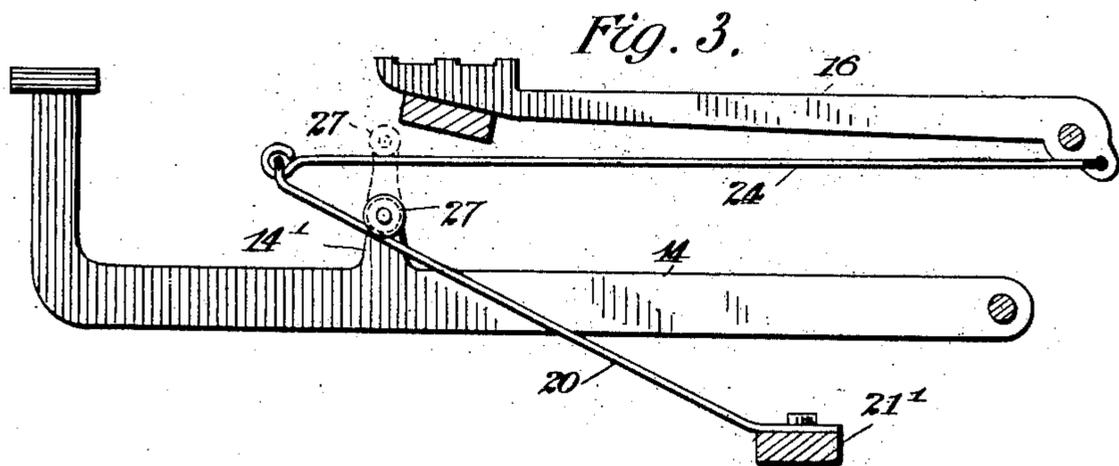
Edward C. Davidson

HIS ATTORNEY

E. B. HESS.  
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2 SHEETS—SHEET 2.



WITNESSES:  
*Frank V. Ober*  
*L. F. Browning*

INVENTOR  
*Edward B. Hess*  
 BY  
*Carlson, Davidson & Wight*  
 HIS ATTORNEYS.

# UNITED STATES PATENT OFFICE.

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

## WRITING-MACHINE.

No. 839,995.

Specification of Letters Patent.

Patented Jan. 1, 1907.

Application filed August 28, 1901. Renewed February 20, 1905. Serial No. 246,493.

*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.

This invention is characterized by two features of primary importance, which while combined in a single organization, as herein shown, are not necessarily dependent upon each other.

Generally the object is to produce a type-bar-actuating mechanism or movement that shall be effective, require a light touch on the finger-piece, and which is simple and economical in construction. This end is best attained by the conjoint use of the two primary features of this invention, which will be described in detail.

In the accompanying drawings, Figure 1 is a vertical longitudinal section; Fig. 2, a detail plan view showing the two type-bars. Figs. 3, 4, 5, 6, and 7 are detail views showing modifications of the construction illustrated in Fig. 1.

The primary feature relates to the relative arrangement and action of the links or elements acted upon on the depression of the finger-piece to effect the printing movement of the type-bar. This construction comprises two links or bars of unequal length, the forward ends of which are flexible connected. The rear end of the longer one is operatively connected to the heel of the type-bar, and the rear end of the shorter is connected to a fixed point intermediate the type-bar pivot and said flexible connection. On the depression of a finger-piece the flexibly-united front ends of the two links are operated upon by any suitably-interposed devices to produce an endwise movement of the longer link to throw the type-bar to the printing-point with a pull.

Another feature of this invention requires that one of the two links through or by which the pivoted type-bar is thrown to the printing-point shall be a spring and that its reaction shall serve in whole or in part to return the type-bar to and retain it in its normal position.

In the organization herein disclosed the

link or part 24 extends rearwardly from its point of connection with the part 20 directly to the heel of the type-bar. The flexing connection between the forward ends of 20 and 24 is a universal joint to the extent of yielding freely in the angular displacement of either part, and the connection between the rear end of the member or link 24 and the type-bar is also a universal joint in the sense that it yields freely to any angular displacement due to the varying angular position of the heel of the type-bar during the excursion to the printing-point. This universal-joint construction is material in a structure of this kind, and the best results are, in my judgment, obtainable by employing universal joints at both points named. It is, however, more material that there should be a universal joint at the front ends of the two members 20 and 24.

The frame may be of any appropriate construction. The platen 1 is mounted in a carriage 2, having an appropriate number of grooved lugs 3, that embrace and travel upon or along the upper and lower edges of a flat plate or track 4, mounted in elongated vertical brackets 5, having rearwardly-extending lugs or bosses that fit over and are adapted to slide vertically upon upright posts 6, suitably mounted in the frame, the lower position of the platen being determined by collars 7 on these posts. The brackets 5 and the cross bar or plate 8, connecting them at the bottom, constitute a frame which may be elevated by means of one or more arms 9, extending rearwardly from a rock-shaft 10, mounted in the side plates of the frame, and from the end of which at the left side of the machine projects forwardly an arm 11. Two straps or links connected with this arm at different distances from its center of motion—i. e., the axis of the rock-shaft—are respectively connected with shift-levers 12 and 13, having finger-pieces 12' 13' applied to their upturned ends at the front of the machine.

The type-bar-operating key-levers 14, Fig. 1, are pivoted at or toward the rear of the machine and are provided at the front with finger-pieces, as usual. 15 is a segment of ordinary construction in which the type-bars 16 are pivoted. The bars normally lie toward the front of the machine, resting against

a back-stop 17, and are adapted to strike against the front face of the platen. The segment may be supported in any appropriate way. To the rear of the segment is attached an upright arm or frame 18, having at the top a vertically-disposed head or plate 18', formed with a guide or way in which a ribbon-carrier 19 may be vertically vibrated. The lower end of the ribbon-carrier is pivoted to the front end of a lever 20<sup>x</sup>, pivoted in a projection 18<sup>z</sup> from the rear of the arm 18 and having its rear end connected by a link 21 with the center arm 22 of the universal bar 23. Obviously the ribbon will be carried in front of the printing-point at the time of impact of the type upon the platen and will drop to expose the printing-point as the type-bar recedes and its actuating-key lever resumes its normal position.

The type-bar-actuating devices will for the movement be described with particular reference to Figs. 1 and 2. To the heel of each type-bar is connected a link 24, which extends forward under the type-bar and the forward end of which is connected by a loose flexing or hinge connection with the front end of the arm 20, which extends rearwardly to a fixed cross-bar 21, mounted in the side plates of the machine. Obviously if the front ends of the two members 20 24 be forced down the part 24 will be moved endwise toward the front of the machine and the type-bar will be thrown to the printing-point. This operation may be conveniently accomplished by a link 25, connecting said hinge or flexing joint with the key-lever. If the part 20 merely rocked about the axis of the fixed cross-bar 21, a suitable coil or other spring would be applied in the ordinary way to some part of the mechanism, so that its reaction would hold the parts in normal position with the type-bar against its back-stop. In the construction here depicted, however, the member 20 is a spring coiled around the cross-bar 21, its rear end being carried under another cross-bar 26. The construction is very clearly shown in Figs. 1 and 2. When the key-lever is depressed, the upward tension of the spring is overcome and its reaction restores the parts to normal position. If desired, the action may be supplemented by light springs applied to appropriate parts of the mechanism. The loose flexing or hinge joint between the two members 20 24 may be formed by bending the end of the former into a figure 8 shape, thus forming two eyes with which eyes at the ends of the links 24 25, respectively, engage.

It will be seen that both primary features of this invention hereinbefore mentioned are present in the construction shown in Fig. 1. The parts may be light and inexpensive, the movement is one which efficiently actuates the type-bar, and the finger-piece is characterized by a soft or readily-yielding light

touch. Moreover, at the end of the stroke or downward excursion of the key-lever it is cushioned by the spring 20, no solid abutment being provided or required to limit its movement.

In Fig. 3 the spring member 20 is shown as rigidly bolted to the top of a flat cross-bar 21'. Here, however, the key-lever 14 is formed with an upward projection 14', carrying a roller 27, which rides upon the spring member 20 in rear of its hinge connection with the forward end of the link 24, as shown in dotted lines of this figure. As shown in dotted lines, the projection 14' may be longer and the roller 27 may ride upon the upper or longer link 24.

In Fig. 4 the forward ends of the members 20 24, instead of being directly hinged together, are each hinged to a plate or flat link 28, pivoted in the upper end of the arm 14', rising from the key-lever.

In Fig. 5 the construction is the same as that shown in Fig. 4, except that the key-lever is dispensed with and the flat link 28 is pivoted at its upper end to the lower end of a stem 29, movable vertically in proper guides and having a finger-piece 30 applied to its upper end. In this construction the use of the link 28 permits of a true vertical movement of the stem. A link, such as 28, having substantially the same mode of operation, is claimed in the patent of Hess and Stoughton, No. 679,674, dated July 30, 1901.

In Fig. 6 the member 20 is bent at its end into figure 8 shape to form two eyes, with the lower one of which the link 24 is connected, the upper one being engaged by an eye in the end of a finger-piece stem movable up and down in suitable guides. Here there will be a slight angular displacement of the stem, which is provided for by elongating the lower guide-aperture in which it slides.

In Fig. 7 the member 20 is coiled at its end to form an eye and is then extended vertically, as at 31, a finger-piece being applied to its upper end.

All of these constructions are characterized by the same general arrangement of parts 20 24. They form an angularly-disposed flexing connection in which the point of flexure is in front of the fixed point or axis about which the movement takes place. So far as the mere movement is concerned the member 20 might be rigid and merely rock about the axis or cross-bar 21. To attain, however, all the other results sought by this invention, the member 20 is made resilient. Such a construction imparts the desired characteristics of touch heretofore mentioned and affords an energetic action of the type-bar.

I do not broadly claim herein an organization in which one or more of the parts or members through or by which power imparted to a finger-piece is transmitted to a

type-bar is made resilient and so arranged as to either alone or when assisted by other springs return the type-bar to its normal position and also act, if desired, to cushion the finger-piece at the bottom of its stroke, as such subject-matter will be claimed by me in another application, Serial No. 78,077, filed October 9, 1901. The present application is limited to an organization comprising the principle of arrangement of the links 20 24, which has been described.

I claim as my invention—

1. In a writing-machine, the combination of a platen, a pivoted type-bar, a flexing connection composed of two members united at their front ends by a universal joint and extending rearwardly, one directly to a type-bar and the other to a fixed point arranged below and in front of the type-bar pivot and means applied to the connection in front of the fixed point for depressing the universal joint and thereby throwing the type-bar to the printing-point.

2. In a writing-machine, the combination of a platen, a segmental type-bar support arranged below the plane of the platen, a type-bar pivoted at or near the end of the segment, a flexing connection composed of two members united at their front ends by a universal joint, and extending rearwardly, the upper one in a direct line from the universal joint to the heel of the type-bar and the other in a direct line rearwardly and downwardly to a fixed point or axis and means applied to the connection in front of the fixed point to depress the universal joint and throw the type-bar to the printing-point.

3. In a writing-machine, the combination of a platen, a segmental type-bar support arranged below the plane of the platen, a type-bar pivoted at or near the end of the segment, a flexing connection composed of two members united at their front ends by a universal joint, and extending rearwardly, the upper one in a direct line from the universal joint to the heel of the type-bar and the other in a direct line rearwardly and downwardly to a fixed point or axis, a pivoted key-lever arranged below the flexing connection and a link interposed between the key-lever and connection for the purpose set forth.

4. In a writing-machine, the combination of a platen, a segmental type-bar support arranged below the plane of the platen, a type-bar pivoted at or near the end of the segment, a flexing connection composed of two members united at their front ends by a universal joint, and extending rearwardly, the upper one in a direct line from the universal joint to the heel of the type-bar and the other in a direct line rearwardly and downwardly to a fixed point or axis, a pivoted key-lever arranged below the flexing connection and a link interposed directly between the key-

lever and the universal joint for the purpose set forth.

5. In a writing-machine, the combination of a pivoted type-bar, a flexing connection composed of two members flexibly united at their front ends and extending rearwardly, one to the type-bar and the other to a fixed point, and means acting with a pull applied to the flexibly-connected ends of the two members for flexing them.

6. In a writing-machine, the combination of a platen, a pivoted type-bar, a flexing connection composed of two members flexibly united at their front ends and extending rearwardly, one to the type-bar and the other to a fixed point, means acting with a pull applied to the flexibly-connected ends of the two members for flexing them, and means for changing the relation of the type-bar pivot and platen.

7. In a writing-machine, the combination of a platen, a pivoted type-bar, a flexing connection composed of two members flexibly united at their front ends and extending rearwardly, one to the type-bar and the other to a fixed point, means acting with a pull applied to the flexibly-connected ends of the two members for flexing them, and means for shifting the platen.

8. In a writing-machine, the combination of a platen, a pivoted type-bar, a type-bar-actuating connection comprising two members respectively connected at their rear ends to the type-bar and to a fixed point and at their front ends to a link, a finger-piece, and a part actuated thereby to which said link is pivoted to actuate the type-bar by a pull.

9. In a writing-machine, the combination of a platen, pivoted type-bars normally extending toward the front of the machine and adapted to strike against the front face of the platen, flexing connections composed of two members flexibly united at their front ends and extending rearwardly, one to the type-bar and the other to a fixed point, and means applied to the flexibly-connected ends of the two members for flexing them.

10. In a writing-machine, the combination of a pivoted type-bar, a finger-piece, a spring mounted upon a fixed support and extending toward the front of the machine, and connections extending respectively from the type-bar and from a part actuated by the finger-piece to the free end of the spring, the operation being substantially as described.

11. In a writing-machine, the combination of a pivoted type-bar, a flexing connection composed of two members flexibly united at their front ends and extending rearwardly, one to the type-bar and the other to a fixed point, the latter being a spring adapted to yield laterally, and means for flexing the connection applied thereto in front of the fixed point.

12. In a writing-machine, the combination of a pivoted type-bar, a flexing connection composed of two members flexibly united at their front ends and extending rearwardly, one to the type-bar and the other to a fixed point, the latter being a spring adapted to yield laterally, and means applied to the flexibly-connected ends of the two members for flexing them.

13. In a writing-machine, the combination of a platen, a pivoted type-bar, a flexing connection composed of two members flexibly united at their front ends and extending rearwardly, one to the type-bar and the other to a fixed point, the latter being a spring adapted to yield laterally, means for flexing the connection applied thereto in front of the fixed point, and means for changing the relation of the type-bar pivot and platen.

14. In a writing-machine, the combination of a platen, a pivoted type-bar, a type-bar-actuating connection comprising two members respectively connected at their rear ends to the type-bar and to a fixed point and at their front ends to a link, the latter of said two members being a spring adapted to yield laterally, a finger-piece, and a part actuated thereby to which said link is pivoted.

15. In a writing-machine, the combination of a platen, pivoted type-bars normally extending toward the front of the machine

and adapted to strike against the front face of the platen, flexing connections composed of two members flexibly united at their front ends and extending rearwardly, one to the type-bar and the other to a fixed point, the latter being a spring adapted to yield laterally, and means for flexing the connection applied thereto in front of the fixed point.

16. In a writing-machine, the combination of a platen, a pivoted type-bar, a flexing connection composed of two members flexibly united at their front ends and extending rearwardly, one to the type-bar and the other to a fixed point, and means applied to the connection in front of the fixed point and acting to flex it in a direction away from the platen to pull the type-bar to the printing-point.

17. In a writing-machine, the combination of a pivoted type-bar, a flexing connection composed of two links of unequal length flexibly united at their front ends and extending rearwardly, the longer one to the type-bar and the shorter one to a fixed point, and means applied to the flexibly-connected ends of the two members for flexing them.

In testimony whereof I have hereunto subscribed my name.

EDWARD B. HESS.

Witnesses:

L. F. BROWNING,  
KATHARINE MACMAHON.