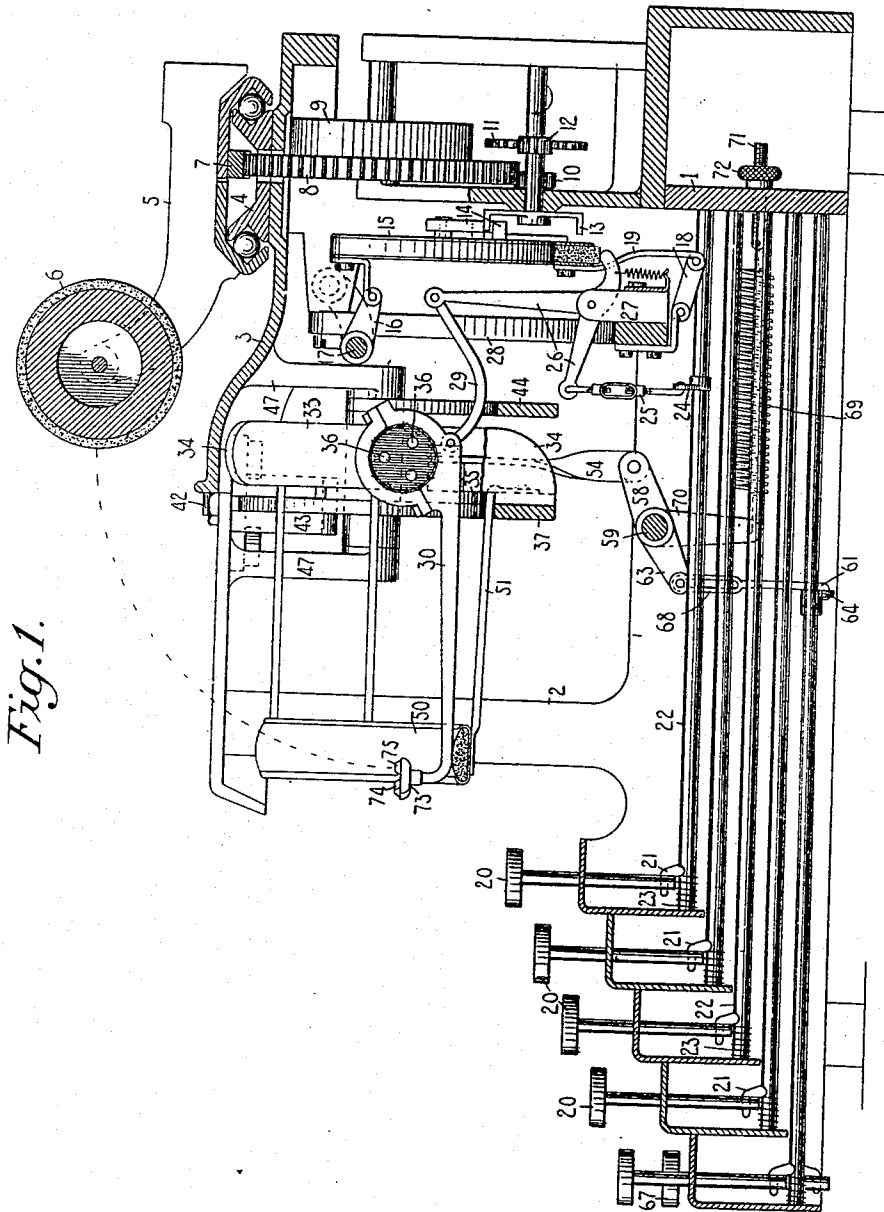


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No. 835,233.

PATENTED NOV. 6, 1906.

J. H. BARR.
TYPE WRITING MACHINE.
APPLICATION FILED JUNE 13, 1904.

3 SHEETS—SHEET 1.



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3 SHEETS—SHEET 2.

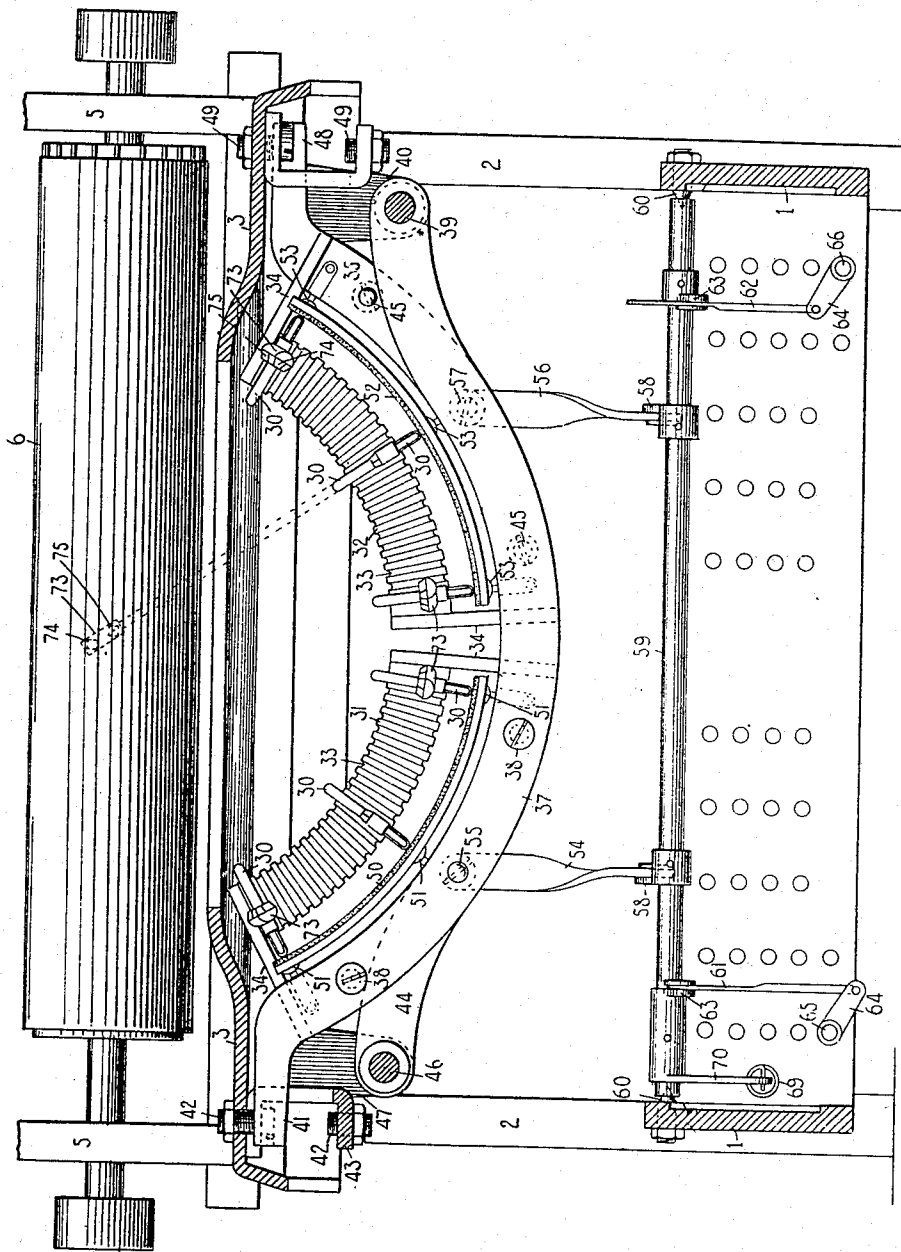


Fig. 2.

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3 SHEETS—SHEET 3.

Fig. 3.

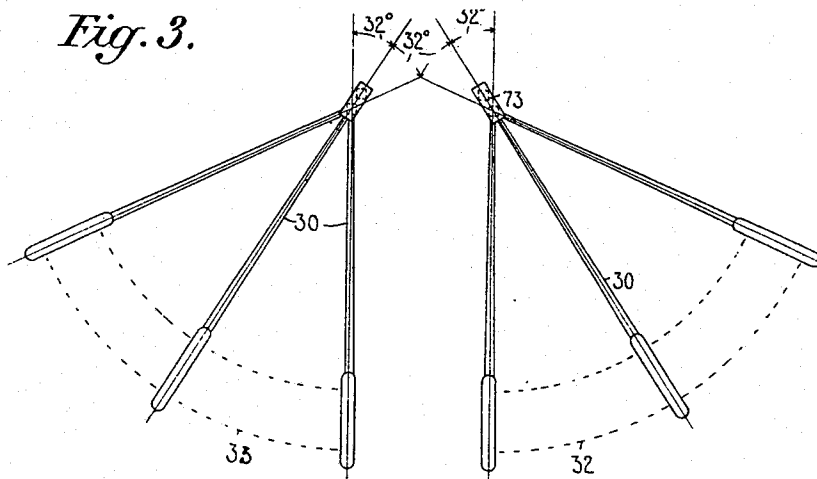
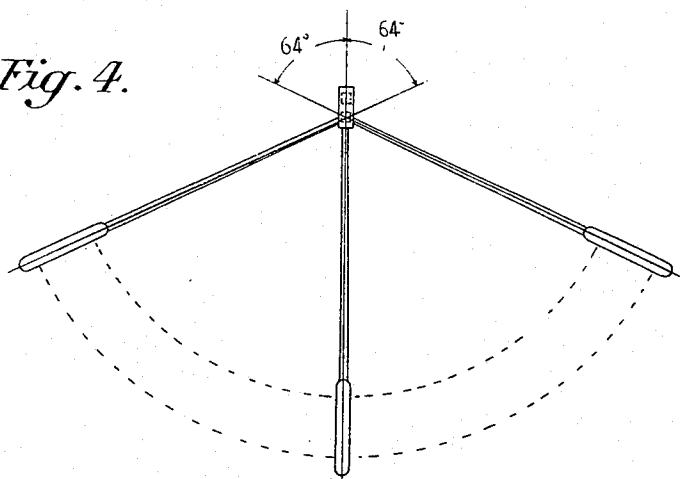


Fig. 4.



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CORPORATION OF NEW YORK.

TYPE-WRITING MACHINE.

No. 835,233.

Specification of Letters Patent.

Patented Nov. 6, 1906.

Application filed June 13, 1904. Serial No. 212,378.

To all whom it may concern:

Be it known that I, JOHN H. BARR, a citizen of the United States, and a resident of Syracuse, in the county of Onondaga and State of New York, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

My invention relates to type-writing machines, and more especially to the mounting and arrangement of the type-bars and to the mode of imparting case-shift motion to the type-bars. The type-bars are mounted on a plurality of separate segments, which are shifted toward and from the printing-point.

One embodiment of the invention is illustrated in the accompanying drawings, in which—

Figure 1 is a front-to-rear vertical section of the machine. Fig. 2 is a view in elevation taken on an irregular section and looking toward the back of the machine. Figs. 3 and 4 are diagrammatic views showing different arrangements of the type-bars of a front-strike type-writer.

I have illustrated my invention applied to a front-strike machine; but it is also applicable to other sorts of type-writers. The framework of the machine comprises the base portion 1, from which rise standards 2, which support a top plate 3, on which is mounted a rail 4. A carriage 5 is mounted to move along the rail 4, and said carriage supports the platen 6. A rack 7 is mounted on the under side of the carriage and meshes with a gear-wheel 8, which is rigidly connected to a spring-drum 9, which drives the carriage. The gear-wheel 8 is connected by gearing 10 11 12 with an escapement-wheel 13, which coöperates with feed-dogs 14, which are mounted on the rear side of the universal bar 15. This universal bar is in the form of a segment and is supported for parallel up-and-down motion by arms 16, fixed on a rock-shaft 17, and a link 18, which is pivoted at one end to a stationary part of the machine, and at the other to an arm 19, rigidly connected to and extending downward from the universal bar 15. The keys 20 have stems, which are connected to arms 21 on rock-shafts 22, which are journaled in the framework of the machine and are returned to normal position by springs 23. Each of the

rock-shafts 22 has an arm 24, which is connected by a link 25 to the forwardly-extending arm of a three-armed lever 26. There is a series of these levers 26, and each is pivoted in a hanger 27, mounted on a fixed segment 28. Each of these levers has a rearwardly-extending arm by which the universal bar is actuated and an upwardly-extending arm which is connected by a link 29 to a type-bar 30. The mechanism thus far described is not of my invention.

I mount the type-bars 30 on a plurality of movable segments, two such segments, 31 and 32, being shown in the present instance. The particular manner of mounting the type-bars on these segments is not material to my invention. As shown, said segments consist of curved bars, circular in cross-section and having grooves or ball-races 33 formed in their surfaces, and each type-bar is made of two pieces which surround the segment, as shown in Fig. 1. The ring or eye thus formed in the type-bar is internally grooved to form a ball-race, which coöperates with the ball-race 33. This particular manner of mounting a type-bar is not of my invention.

Each of the segments 31 and 32 is supported by brackets 34, which, as shown, are in the form of ears turned up from a segmental plate 35, Fig. 1, and are secured to the ends of the segments by screws threaded into holes 36 in the end of the segment. The plate 35 that supports the left-hand segment 31 is adjustably secured to the rear face of a curved lever 37 by screws 38. The lever 37 is fixed to a shaft 39, which is journaled in brackets 40, depending from the top plate 3 at the right-hand side of the machine. This rock-shaft is of sufficient length to insure steadiness to the lever. At the left-hand side of the machine the lever 37 has an extension 41, which is adapted to engage adjustable stops 42 to limit the motion of the lever in both directions. As here shown, these stops consist of set-screws, one of which is threaded through the top plate 3 and the other of which is threaded through a bracket 43, depending from said top plate. The plate 35 that supports the right-hand segment 32 is mounted on the front face of a lever 44 by screws 45. The lever 44 is fixed to a shaft 46, which is journaled in brackets 47, depending from the top plate 3 at the

left-hand side of the machine, and said lever at its right-hand end is formed with an extension 48, similar to the extension 41 of the lever 37 and adapted to engage stops 49 in the same manner as the other lever. A type-rest 50 is carried by arms 51, which are supported by the lever 37, so that the type-rest moves in unison with the segment 31 when the lever is oscillated. A similar type-rest 52 is similarly supported by arms 53, which are carried by the lever 44. The lever 37 is rocked up and down by a link 54, which is pivoted thereto at 55, and the lever 44 is similarly moved by a link 56, pivoted to said lever at 57. The links 54 and 56 are pivoted at their lower ends to arms 58, projecting from a rock-shaft 59, which is journaled in the framework of the machine. As shown in the present instance, the shaft 59 is journaled on cone bearings 60, adjustably mounted within the side plates of the main frame. The shaft 59 is rocked in one direction by the weight of the levers 37 and 44 and the parts connected thereto and in the other direction by links 61 and 62, connected to arms 63, projecting from said rock-shaft. The links 61 and 62 are pivoted at their lower ends to arms 64, projecting from rock-shafts 65 and 66, which are actuated by case-shift keys 67, which are connected to the rock-shafts 65 and 66 in the same way as the keys 20. Each of the links 61 and 62 is slotted at 68, as shown in Fig. 1, so that either of the case-shift keys may be depressed and rock the shaft 59 without affecting the other key.

In the drawings the left-hand case-shift key 67 is shown depressed, the right-hand key remaining in its normal position, as indicated by the position of the link 62 and its arm 64 in Fig. 2. The case-shift key 67 being shown depressed, all of the parts are shown in the drawings in their upper-case position. The weight of the levers 37 and 44 is partially counterbalanced by a spring 69, which is connected at one end to an arm 70, depending from the rock-shaft 59, and at the other to a rod 71, which extends through a portion of the framework and has a milled nut 72 threaded thereon, whereby the tension of the spring 69 may be regulated.

Each of the type-bars carries at its outer end a type-block 73, having thereon a lower-case type 74 and an upper-case type 75. The type-blocks and the pivots 39 and 46 are so disposed that when any type-bar is in printing position the two types thereon lie in an arc of a circle concentric with one of said pivots and passing through the printing-point.

In Fig. 2 there is indicated by dotted lines the position of the middle type-bar of the segment 32 when this type-bar is striking the platen, the upper-case type 75 being shown at the printing-point. I prefer to so design the mechanism that when this type-

bar is in this position it will be at right angles to a line drawn from the shaft 46 to the printing-point, so that this type-bar when in its printing position is substantially tangent to a circle concentric with the shaft 46 and passing through the printing-point. This being the construction, when the lever 44 is rocked this type-bar moves substantially in the direction of its length, and the type-block 73, mounted on it, is arranged in the direction of the length of the type-bar. The other type-blocks of this group will of course be set at angles, with their respective type-bars corresponding in each case to the angular distance of the particular bar from the center of the segment.

One advantage of dividing the type-bars into groups will be understood by comparing Figs. 3 and 4. The arrangement adopted in the present case is represented diagrammatically in Fig. 3, and it will be seen that the type-blocks of the end type-bars of each group are set at an angle of about thirty-two degrees with the type-bar. Fig. 4 represents diagrammatically the ordinary arrangement in which all of the type-bars are mounted on a single segment. If the same number of type-bars were used in this instance as in the case represented in Fig. 3 and spaced the same distance apart, the type-blocks of the end type-bars would be set at an angle of sixty-four degrees from their respective type-bars. The difference however, is greater than thus indicated, because the type-blocks being, according to the usual arrangement, deflected at greater angles it is necessary to space the end type-bars farther apart. The present arrangement enables me to space the type-bars much closer together on the segment than is possible by the ordinary arrangement.

It will be perceived that I have divided the type-bars into groups and that these groups are shifted in different directions toward and from the printing-point. It will also be perceived that each segment is not only moved in a direction toward and from the printing-point, but that it is moved in the arc of a circle, so that when the segment stands in one position the type-bar when swinging on its pivot to print is moved in a plane which is not parallel to the plane in which it swings when the segment stands in its other position.

It will be readily understood that more than two segments may be employed, if desired, and that the arrangement here applied to a front-strike machine is equally applicable to type-writing machines of other sorts.

By comparing Figs. 3 and 4 it will be seen that the type are arranged differently on the type-blocks in the two figures. According to the usual arrangement (represented in Fig. 4) the two types are arranged on the type-block one above the other, the up-and-down

axis of each letter being lengthwise of the type-block. According to my arrangement (represented in Fig. 3) the two letters of each type-block stand cornerwise, the up-and-down axis of each letter lying diagonally across the face of the type-block. The axis of each letter is oblique to the axis of the type-block. This difference in the arrangement of the types is of course necessitated by the fact that according to the present invention the segment is not shifted in a direction at right angles to the line of writing, as is usual, but in a direction oblique to the line of writing.

It will be understood that all of the type-blocks designed to be mounted on the segment 32 will have the letters arranged thereon at the same angle, but that this angle will be different from the angle at which the letters are arranged on those type-blocks which are mounted on the segment 31.

The words "pivoted to swing about a fixed axis" or like expressions used in the claims with reference to the type-bar segments are intended to define a construction in which each point of the segment swings about the pivotal axis, as in the present case.

Various changes may be made in the construction and arrangement of parts without departing from my invention.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a type-writing machine, a type-bar segment pivoted to swing about a fixed axis at right angles to the plane of the segment.

2. In a type-writing machine, a series of type-bars mounted on a plurality of segments, each pivoted to swing in its own plane about a fixed axis.

3. In a type-writing machine, a plurality of type-bar segments each mounted to swing about a fixed axis, the axes about which the several segments swing being parallel.

4. In a type-writing machine, the combination of a plurality of groups of type-bars, and case-shift means for swinging the different groups about different parallel axes.

5. In a type-writing machine, the combination with a cylindrical platen, of a type-bar; a support on which said type-bar is pivotally mounted; said support being pivoted to swing about a fixed axis substantially perpendicular to the plane which is tangent to the platen at the printing-point.

6. In a type-writing machine, the combination of a type-bar; a pivoted support on which said type-bar is pivotally mounted; means for swinging said type-bar on its pivot to print; and case-shift means for swinging said support about its pivot, the plane in which the type-bar swings about its pivot being substantially perpendicular to that in which the support swings.

7. In a type-writing machine, the combination of a type-bar mounted to swing about

a pivotal axis to print; and a case-shift device adapted to change the direction of said pivotal axis.

8. In a type-writing machine, the combination of a type-bar mounted to move in a plane to print; and a case-shift device adapted to change the motion of the type-bar, from one plane to another plane at an angle to the first.

9. In a type-writing machine, a plurality of type-bar segments, and independent carriers therefor pivoted on axes at opposite sides of the machine.

10. In a type-writing machine, a plurality of type-bar segments, separate parallel carriers therefor pivoted each at one end and having its ring-segment near its other end.

11. In a type-writing machine, a plurality of type-bar segments disposed in the same plane, combined with separate carriers for said segments each pivoted on an axis at right angles to said plane, and the segment on each carrier being, in whole or in part, between the segment on another carrier and the axis of motion of that other carrier.

12. In a type-writing machine, a plurality of type-bar segments disposed in the same plane, combined with independent carriers pivoted to swing or move said segments in said plane toward and from the printing-point.

13. In a type-writing machine, two type-bar segments combined with separate carriers therefor, said carriers being pivoted to swing or move said segments relatively to the printing-point, each segment being between the other segment and the center of motion of that other segment.

14. In a type-writing machine, two type-bar segments disposed in the same plane, combined with separate carriers therefor, said carriers being pivoted to move said segments in said plane for case-shift, each segment being between the other segment and the axis of motion of that other segment.

15. In a type-writing machine, two type-bar segments disposed in the same plane, in combination with independent carriers therefor pivoted to move said segments in said plane, and a key-operated lever having independent connections with said carriers.

16. In a type-writing machine, the combination with a platen and a type-bar segment, one of said parts being movable relatively to the other for case-shift, of a rock-shaft connected to and operating the said movable part; two arms on said shaft; and keys connected by slotted links to said arms and moving said shaft.

17. In a front-strike type-writing machine, the combination of two type-bar segments disposed in the same plane; separate carriers for said segments pivoted on horizontal axes at opposite sides of the machine, and adjustable stops at each side of the machine for the

carrier pivoted at the other side of the machine.

18. In a front-strike type-writing machine, the combination of two type-bar segments 5 disposed in the same plane; separate carriers therefor pivoted on horizontal axes at opposite sides of the machine, and a type-bar rest for each carrier connected to and moving therewith.

19. In a type-writing machine, the combination of separate type-bar supports movable in different directions, and separate type-rests connected to the several supports.

20. In a type-writing machine, the combination of a plurality of type-bar supports 15 having different non-parallel motions, and a plurality of type-bar rests each movable in unison with the corresponding support.

21. In a type-writing machine, a plurality 20 of groups of type-bars, each type-bar carrying a plurality of types, the up-and-down axis of each type lying at an oblique angle to a line joining that type and another type on the same type-bar, this angle being the same 25 for all of the types and type-blocks of each group, but being different in the different groups.

22. In a type-writing machine, a plurality 30 of groups of type-bars, each type-bar carrying a type-block having a plurality of types, the angle between the axis of each type and the axis of its type-block being the same for all of the types and type-blocks of each group, but being different in the different 35 groups.

23. In a front-strike type-writing machine, the combination of a platen; a plurality of type-bar segments lying below the platen and each shiftable toward and from the 40 printing-point; a series of type-bars mounted on said segments; and a case-shift mechanism comprising a rock-shaft 59 and a plurality of links 54, one such link connecting said rock-shaft with each of said segments.

24. In a front-strike type-writing machine, 45 the combination of a platen; a plurality of type-bar segments standing end to end below said platen; a series of front-strike type-

bars mounted on said segments; and a case-shift device comprising a rock-shaft 59; and 50 links 54 connecting said rock-shaft with the several segments.

25. In a front-strike type-writing machine, the combination of a platen; a plurality of type-bar segments standing end to end below 55 said platen; a plurality of arms lying in planes parallel to the plane of said segments and each pivoted to swing about a fixed axis perpendicular to said plane, each of said arms carrying one of said segments; a series of 60 type-bars mounted on said segments; and a case-shift device for swinging said segments about said fixed axis toward and from the printing-point.

26. In a type-writing machine, the combination of a platen; a segment pivoted to 65 swing in its own plane in such fashion that the central type-bar on said segment moves substantially toward and from the printing-point; a series of type-bars mounted on said 70 segment; and a case-shift device for swinging said segment.

27. In a type-writing machine, the combination of a platen; a series of type-bars; a 75 plurality of segments on which said type-bars are mounted, each of said segments being pivotally mounted to swing in its own plane in such manner that the central type-bar thereon swings substantially toward and 80 from the printing-point; and a case-shift mechanism for swinging said segments.

28. In a type-writing machine, the combination of a platen; a series of type-bars; a 85 plurality of type-bar segments arranged end to end in the same plane; and case-shift mechanism adapted to move said segments in said plane in directions converging toward the printing-point.

Signed at Syracuse, in the county of Onondaga and State of New York, this 9th day 90 of June, A. D. 1904.

JOHN H. BARR.

Witnesses:

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E. E. CORY.