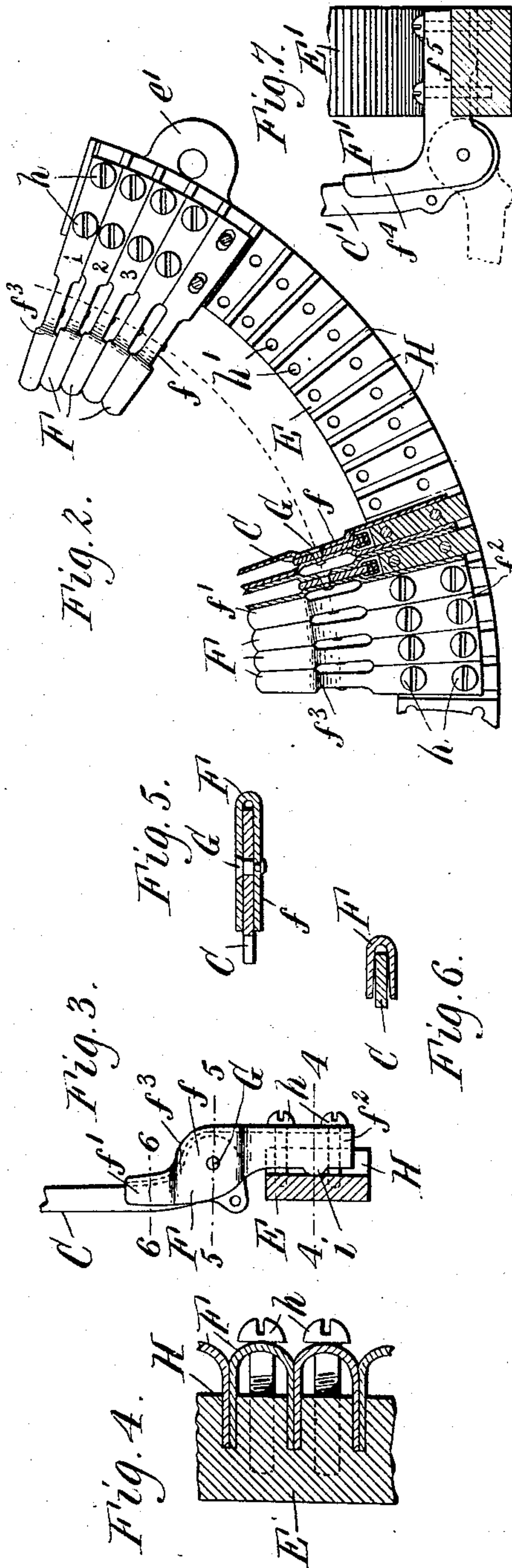
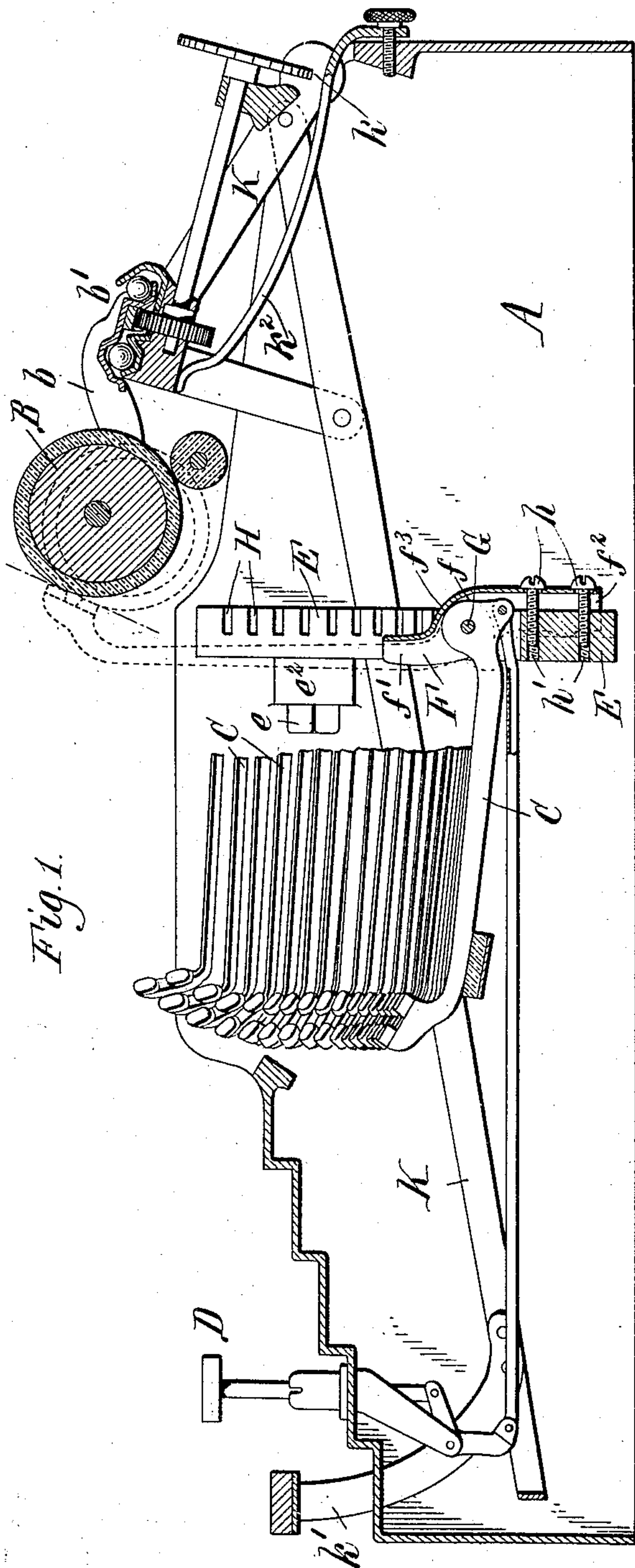


No. 819,353.

PATENTED MAY 1, 1906.

E. G. LATTA.
TYPE WRITING MACHINE.
APPLICATION FILED OCT. 31, 1904.



Witnesses:
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UNITED STATES PATENT OFFICE.

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TYPE-WRITING MACHINE.

No. 819,353.

Specification of Letters Patent.

Patented May 1, 1906.

Application filed October 31, 1904. Serial No. 230,655.

To all whom it may concern:

Be it known that I, EMMIT G. LATTA, a citizen of the United States, residing at Friendship, in the county of Allegany and State of New York, have invented a new and useful Improvement in Type-Writing Machines, of which the following is a specification.

This invention relates to type-writing machines of the kind having pivoted type-bars, and is directed more particularly to improvements in the construction of the type-bars and their bearings and to the relative arrangement of the same and the platen.

Certain of the improvements are especially applicable to front-strike or visible-writing machines, in which the type-bars are provided with two sets of type, commonly known as "lower" and "upper" case type or characters, and the platen is normally in printing relation to one set of characters and is shifted into printing relation to the other set.

Other features of the invention are also applicable to other kinds of type-writing machines.

The objects of the invention are to produce a type-bar and bearing hanger or member of simple, durable, and inexpensive construction which enables a ready adjustment of the bearing, affords a guide for the type-bar in approaching the printing-point, and effectually excludes dust and foreign matter from the bearing, to apply the hangers to the machine in such a way as to secure a more compact build, and to so construct and arrange the parts that the printing being done can be seen by the operator to better advantage than in front-strike type-writing machines as ordinarily constructed.

In the accompanying drawings, Figure 1 is a fragmentary longitudinal sectional elevation of a front-strike type-writing machine embodying the invention. Fig. 2 is a rear elevation, partly in section, of a portion of the type-bar segment and hangers, part of which latter is omitted to show the segment. Fig. 3 is an elevation of one of the hangers and a portion of its type-bar, also showing the segment in transverse section. Fig. 4 is a sectional elevation, on an enlarged scale, in line 4 4, Fig. 3, showing several adjacent hangers. Figs. 5 and 6 are sections, on an enlarged scale, in lines 5 5 and 6 6, respectively, Fig. 3.

Fig. 7 is a view similar to Fig. 3, showing a modified form of segment and hanger.

Like characters of reference refer to like parts in the several figures.

A represents the stationary frame of the machine; B, the platen, which, as usual, is journaled on a carriage *b*, adapted to travel horizontally across the machine on a supporting and guiding bearing *b'*; C, the pivoted type-bars, and D one of the finger-keys which are connected to the type-bars to actuate the latter. These parts, with the exception of the type-bars, which will be described, may be of any usual or suitable construction.

In the front-strike machine illustrated in the drawings the type-bars are pivotally supported below and in front of the platen by a vertically-disposed segment or curved support E, which is secured at its ends to the ends of the frame, for instance, by bolts *e*, passing through lugs *e'* *e''* on the segment and sides of the frame, the bolt and lugs at one end only of the segment being shown. The type-bars are not pivoted directly to the segment, but to bearing hangers or members F, adjustably secured to the segment. Both the type-bars and hangers may be and preferably are stamped from sheet metal, and the hangers are formed by dies or otherwise into the shape shown. Referring particularly to Figs. 1 6, the hangers are of U section of varying width at different portions, as shown in Figs. 2, 4, 5, and 6. The central or intermediate part *f* of each hanger, in which part the type-bar is pivoted, is relatively narrow and has parallel sides, which bear flat against the opposite plain parallel faces of the pivot end of the type-bar to hold the latter from lateral deflection, while the side walls or faces of the inner and outer or attaching portions *f'* *f''* of the hanger taper, so that the sides of the hangers contact with each other on lines radial to the printing-point and mutually support each other laterally, thus making a very compact and rigid bearing structure for the type-bars. The side walls of the wide attaching portions of the hangers are spaced far enough apart to admit the ends of the connecting-rods by which the type-bars are actuated, while the side walls of the inner ends of the hangers are spaced and shaped to form

guides to cause the type-bars to always strike the platen exactly at the printing-point. For this purpose the inner faces of the side walls of the guide portions are inclined or converge (see Fig. 6) and the narrowest portion of the space between the inclined faces fits the rear edge of the type-bar when at the printing-point, as shown in Fig. 6. The guide ends of the hangers are offset relative to their attaching ends, and the side walls of their central bearing portions are connected above the pivot ends of the type-bars at f^3 , Figs. 1, 2, and 3, thus forming covers or dust-guards over the pivot-bearings. The pivot ends of the type-bars are offset to locate the pivots in the covered bearing portions of the hangers, and the guide ends of the hangers do not prevent the type-bars from striking the platen. This form of the hanger produces a most efficient guard to prevent the access of dust or foreign matter to both the bearing for the type-bar and the pivot-joint between the type-bar and its connecting-rod, and in this respect is more efficient than most other devices used for this purpose.

The type-bar is preferably pivoted to the hanger by a rivet G, Fig. 5, having a head, a cylindrical body, and a riveting end of smaller diameter than the body, whereby a shoulder is formed, which prevents the closing together of the side walls of the hanger, so as to pinch or bind the type-bar. The shoulder forms a guide, insuring a close joint of the sides of the hanger with the type-bar without binding the latter.

In the construction shown in Figs. 1 to 6 each hanger is secured to the segment with the front edges of its attaching portion engaging in radial slots H in the rear face of the segment by two screws h , which pass through holes in the back of the hanger and engage in screw-threaded holes h' in the segment. The screw-holes in the hanger are large enough to permit the hanger to be adjusted lengthwise slightly to secure the correct position of the type-head at the printing-point. Each slot H, with the exception of the two end slots, receives the adjacent side walls of two adjoining hangers, which are thus held in true radial position, while being capable of adjustment lengthwise, as stated. Each hanger is provided at its front side midway between its securing-screws with rounded projections i , Fig. 3, which bear on the bottoms of the slots H, forming fulcrums on which the hanger can be rocked slightly to move its inner guide end forwardly or backwardly, so that the type-bar will just enter the narrow inner end of its guide when it strikes the printing-point of the platen. By loosening one screw and turning up the other this adjustment is easily made. The movement required is so slight as to have no appreciable effect on the alignment. The hangers bear against each other both at their guide and attaching portions

and fit so snugly in the slots of the segment that while the stated adjustments can be made, yet they support each other laterally at all times and form, in effect, a solid structure. These adjustments obviate the necessity for taking up wear on the type-bar pivots.

The hanger F' (shown in Fig. 7) differs from that described principally in that its attaching end f^5 extends horizontally rearward or at an angle to the upright guide portion f^4 and is secured in slots in the upper face of the segment E. The type-bar C' in this construction is arranged for connection with an operating-rod, which is pushed upwardly to swing the type-bar to make the impression. The hanger F', like the hanger F before described, can be rocked and moved lengthwise in the slots of the segment to adjust the guide relative to the type-bar and the latter relative to the printing-point on the platen.

The hanger, while of narrow U shape in cross-section where it receives the type-bar, is wider and of semitubular form at its attaching portion and when in position on the segment forms a tube of great rigidity that is closed at the upper end and on all sides, except where it is open to receive the end of the type-bar and connecting-rod, making, in effect, a hollow hanger in which the bar is almost completely inclosed and perfectly protected from dust. The lower end of the hanger is left open to spread somewhat in tightening up the securing-screws, and as there is no danger of dust working into the bearing from below this is no objection. By closing the upper end of the hanger it is not only made practically dust-proof, but the end acts to stiffen the hanger and hold its side walls in exact position to fit the end of the type-bar, so that the latter may vibrate freely without lateral movement. This is important, because the securing-screws act to spread the walls of the hanger when tightened up and would, but for the integral connecting end portion of the hanger, disturb the seat for the type-bar. In case-hardening the hangers the integral ends prevent distortion of the metal to a large degree and insure the opening for the pivots remaining in exact alinement. The action of the securing-screws in spreading the walls of the hanger where it is secured to the segment is desirable, as it takes up any slight looseness of fit and insures a close contact between the hangers, whereby they are made absolutely rigid, giving the effect of a solid segment.

It is desirable in a front-strike type-writing machine to make the impression at a point on the platen above its horizontal center—that is, above the horizontal plane of its axis—so that the writing can be more readily seen by the operator. To accomplish this in a machine of the kind illustrated, in which the type-bars are pivoted below the platen, the type-heads are offset from the main por-

tion of the type-bars toward the platen, as shown in Fig. 1, to make room for the ribbon-vibrator and other parts, (not shown,) and the type-heads are so disposed that the type-faces are on a line inclined to the vertical when at the printing-point. (See the broken line position in Fig. 1.) The type-bars shown are provided with upper and lower case type, and the type most frequently used, which I term the "lower-case" type, are preferably located at the outer ends of the type-heads, so as to strike the platen above the horizontal plane of its axis in the normal position of the platen, while the other or upper-case type are below or nearer to the type-bar pivots, and the platen is shifted downwardly and forwardly to place it in printing relation to the upper-case type. Any desired platen or carriage shifting means may be employed that will move the platen in a direction substantially parallel with the type-face when at the printing-point. The platen-shifting means shown in the drawings consist of a shift-frame K, which supports the carriage and which is pivoted in any suitable manner to the main frame to swing about a pivotal axis k , Fig. 1, in rear of and below the axis of the platen, so that when the frame is depressed the platen will be lowered and moved forwardly. The shift-frame K is normally held up in the position shown by full lines in Fig. 1 by a spring k^2 , secured to the back of the machine-frame, and is provided with a forwardly-extending shifting key or lever k' , by depressing which the shift-frame and platen are lowered. The shift-frame can also be constructed, except as to the location of its pivotal axis, and operated like the shift-frame disclosed in my application for United States Letters Patent filed July 5, 1904, Serial No. 215,246. The lower position of the platen is indicated by broken lines in Fig. 1. Obviously the relative location of the upper and lower case type on the type-bars could be reversed and the platen arranged to shift upwardly and backwardly with a similar result; but as the line being written would in this case usually be in the lower position such arrangement is not so desirable.

As usual in front-strike machines, the type-heads are set at an angle to the radial planes in which their bars swing, the inclination or angularity being opposite on opposite sides of the center of the machine and increasing the nearer the heads are to the sides of the segment. This increased angularity of the heads of the type-bars at the sides of the segment would cause the heads to interfere when at the rest or normal position if short type-bars all of the same length were set as closely as they are in the machine described. To secure the necessary space between the bars at the ends of the segment, it has heretofore been customary to either make the bars longer than is desirable, so as to permit

of a larger segment, which affords more space, or to employ fewer type-bars on a shorter segment, the ends of which do not extend upwardly far enough to cause the type-heads to interfere. In the machine shown this objection is overcome by making a few of the type-bar hangers, say three, at each end of the segment longer than the remaining hangers, as indicated by the hangers (numbered 1, 2, and 3) at the right of Fig. 2, each of which hangers is longer than its neighbor toward the center of the segment. This construction locates the pivots for the type-bars connected to such hangers correspondingly nearer to the printing-point and permits of the use of type-bars as much shorter than the others as their hangers are longer than the remaining hangers. As a result of this construction all of the type-bars strike at the same printing-point; but the shortening of the end bars causes each of their heads in the rest position to lie under or inside of the head of the adjacent bar toward the center of the segment, and the angularity of the heads is such that they nest without interference. Any desired number of the end type-bars can thus be made shorter than the regular length, according to the requirements. If a greater number are shortened, a segment of small radius can be used and the type-bars arranged at shorter intervals, or a greater number of bars can be mounted on a segment of the size shown.

Instead of employing longer hangers for the shorter end type-bars, as above explained, the ends of the segment could be curved on a shorter radius with a similar result; but the construction described is deemed preferable, as the circular segment can be more readily machined.

I claim as my invention—

1. The combination with a type-writing machine having a platen, and a series of type-bars arranged to strike the front of the platen, of a series of hangers to which the type-bars are pivoted arranged radially in front of and below the platen, said hangers being of U cross-section and having their rear sides and upper portions above the type-bar pivots closed, substantially as set forth.

2. The combination in a type-writing machine, having a series of type-bars, of an upright segment, and a series of type-bar hangers of U cross-section radially arranged on the rear side of the segment in contact thereon in radial lines and extending above the inner edge of the segment and formed above the segment with parallel side walls to receive the type-bars, substantially as set forth.

3. The combination in a type-writing machine having an upright segment, and a series of type-bars, of a series of type-bar hangers of U cross-section arranged with their open sides away from the printing-point and

against the segment and having openings in which the type-bars are pivoted, and which are closed above the type-bar pivots, substantially as set forth.

5 4. The combination in a type-writing machine having a series of type-bars, and an upright segment, of a series of hangers of U cross-section arranged on the segment, and having central portions with parallel side
10 walls between which the type-bars are pivoted, and end portions at opposite sides of the central pivot portions resting in contact on radial lines, substantially as set forth.

15 5. The combination in a type-writing machine having a series of type-bars and an upright segment, of a series of hangers of U cross-section arranged on the segment, and having central portions with parallel side
20 walls between which the bars are pivoted, and end portions both above and below the central pivot portions resting in contact on radial lines, substantially as set forth.

25 6. The combination with a type-bar, and its connecting-rod, of a hanger of substantially U section having an inner end with inclined side faces to guide the bar, a central part with parallel side faces to embrace the bar, and a portion of wider section to admit the end of the connecting-rod, substantially
30 as set forth.

35 7. The combination in a front-strike type-writing machine, of a series of hangers arranged in substantially upright relation, and type-bars pivoted thereto, the hangers having opposable side walls open at the front to receive the type-bars, and closed or united at the rear and over the type-bar pivots to exclude dust and stiffen the hangers, substantially as set forth.

40 8. The combination in a type-writing machine having a series of type-bars normally extending forwardly from an upright segment, of a series of hollow type-bar hangers arranged on the segment and having their
45 sides and upper ends closed except for openings at one side to receive the ends of the type-bars, substantially as set forth.

50 9. The combination in a type-writing machine having an upright segment, and a series of type-bars, of a series of semitubular hangers radially arranged on the segment in such a way that the segment closes the open sides of the hangers, the upper ends of the hangers being closed except for openings at
55 one side to receive the type-bars, substantially as set forth.

60 10. The combination in a type-writing machine having a series of type-bars provided with offset pivot ends, of a series of upright hangers in which said bars are pivoted, the upper ends and rear sides of the hangers being united so as to inclose the offset ends of the type-bars, substantially as set forth.

65 11. The combination in a type-writing

machine having a series of type-bars provided with offset pivot ends and connecting-rods pivoted thereto, of a series of hangers of U cross-section in which the offset ends of the type-bars are pivoted, the ends of the hangers in which the bars are pivoted being closed to form covers over the offset ends of the type-bars and the pivots joining the type-bars and connecting-rods, substantially as set forth. 70

75 12. The combination in a type-writing machine having a series of type-bars provided with offset ends normally extending in front of an upright segment, of a series of hangers having side walls pivotally connected to the offset ends of the type-bars, the side walls of the hangers being united by semicircular connecting portions over the offset ends of the type-bars to exclude dust from the pivots and stiffen the hangers, substantially as set forth. 80

85 13. The combination in a type-writing machine having a series of type-bars provided with offset pivot ends, of a series of type-bar hangers of U cross-section having offset ends to receive the offset ends of the type-bars, the side walls of the offset ends of the hangers being united by semicircular connecting portions to cover the offset ends of the bars and stiffen the hangers, substantially as set forth. 90

95 14. The combination in a type-writing machine, of a segment having radial slots, and a series of hangers having opposable side walls arranged with one side wall of two adjoining hangers seated in the same slot in the segment, substantially as set forth. 100

105 15. The combination in a type-writing machine, of a hanger-support having slots radial to the printing-point, a series of type-bar hangers having opposable side walls engaged in said slots whereby the hangers are held in radial relation, and securing means for said hangers which permit the latter to be adjusted angularly in said slots, substantially as set forth. 110

115 16. The combination in a type-writing machine, of a hanger-support having slots radial to the printing-point, a series of type-bar hangers held in radial relation by said slots, and securing means for said hangers which permit the latter to be adjusted angularly and lengthwise in said slots, substantially as set forth.

120 17. The combination in a type-writing machine, of a hanger-support, a series of type-bars and connecting-hangers, each hanger being secured to the support by two screws and having a rocking bearing on the support, whereby the free ends of the hangers may be adjusted in the planes in which the type-bars swing by changing the position of the screws, substantially as set forth. 125

130 18. The combination in a type-writing machine, of a hanger-support, a series of type-

bars, a series of hangers pivoted to the bars and having integral extensions forming guides for the type-bars, and means for adjusting the guide portions of the hangers angularly in the planes in which the type-bars swing to fit the bars when at the printing-point, substantially as set forth.

19. The combination in a type-writing machine, of a segment, a series of pivoted type-bars, hangers for the same, and means for adjusting the inner ends of the hangers toward and from the printing-point in the planes in which the type-bars swing and also in a direction parallel with the plane of the segment, substantially as set forth.

20. The combination in a type-writing machine, of a platen, a plain segment curved on the same radius throughout and arranged

in front and below the platen, a series of type-bars having angularly-arranged type-heads, and a series of hangers radially arranged on the segment and pivotally connected to the type-bars, the pivots connecting the type-bars to the hangers in the central part of the segment being arranged at the same distance from the segment, and the pivots connecting the type-bars near the ends of the segment being arranged at graduated distances from the segment, substantially as set forth.

Witness my hand this 26th day of October, 1904.

EMMIT G. LATTA.

Witnesses:

CHAS. J. RICE,
H. L. BLOSSOM.