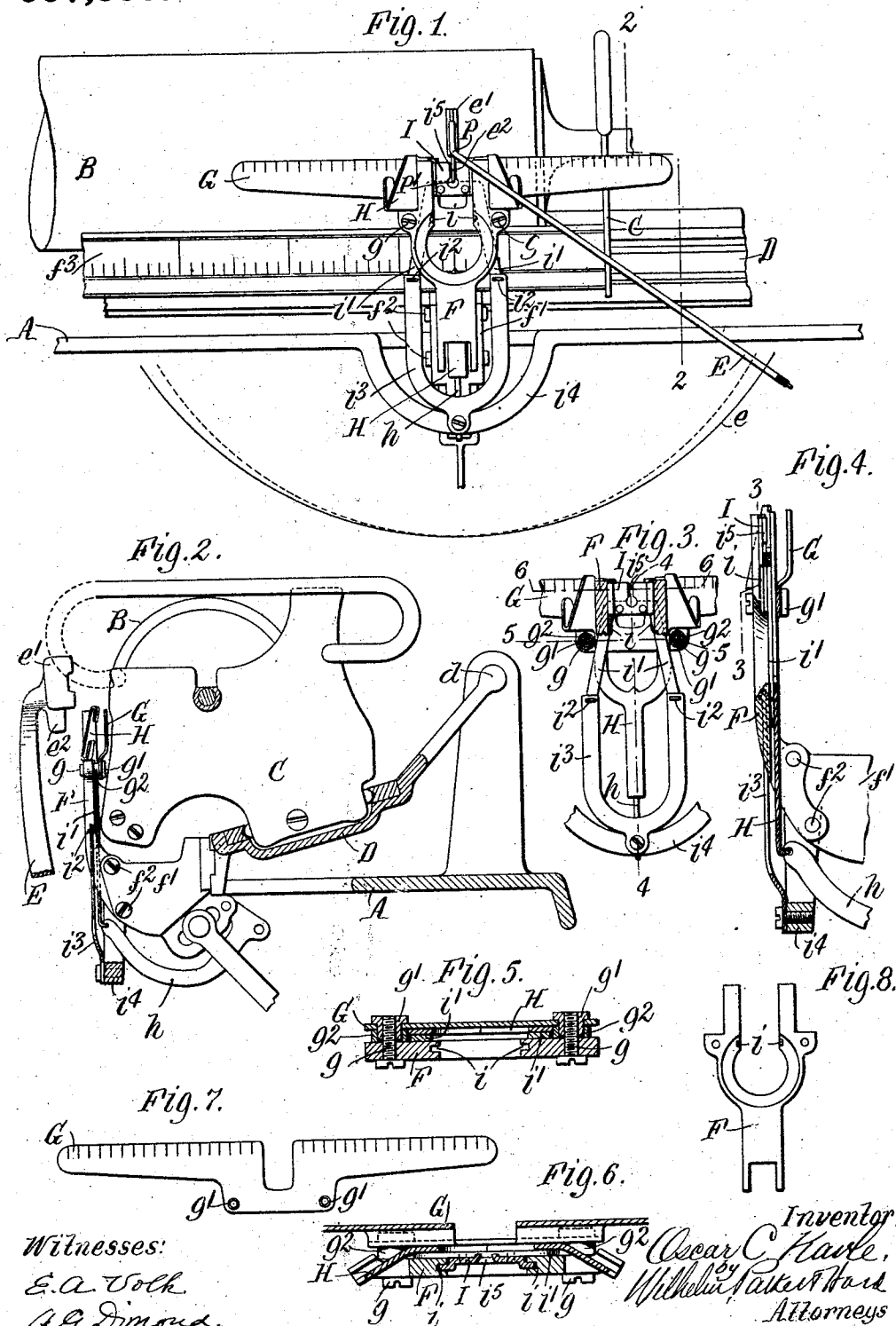


O. C. KAVLE.
 TYPE WRITING MACHINE.
 APPLICATION FILED NOV. 21, 1907.

997,559.

Patented July 11, 1911.



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TYPE-WRITING MACHINE.

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To all whom it may concern:

Be it known that I, OSCAR C. KAVLE, a citizen of the United States, residing at Syracuse, in the county of Onondaga 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 more particularly to center guides for the type-bars, and related parts, of typewriting machines of the sort in which the carriage is supported by a shift frame for shifting the platen into printing relation to either of different sets of type on the type-bars. Many features of the invention are, however, also applicable to machines in which the type-bar segment is shifted instead of the carriage, and to other types of machines.

The objects of the invention are to construct and arrange the parts so as to increase the efficiency and accuracy of the machine; to provide a center guide of simple, light and inexpensive construction; and to mount it on the main frame and provide means on the shift frame for preventing the deflection of the center guide; to so construct and arrange the center guide and type-bars that the type heads can be bent at an angle to the type-bars at a point above the guide, thereby enabling the type-bars to be pivoted in a segment of greater radius without increasing their length, and lessening the twisting strains on the type-bar bearings; and to improve the construction of the center guide and related parts of typewriting machines in the respects hereinafter described and set forth in the claims.

In the accompanying drawings: Figure 1 is a front elevation of the center guide and related parts of a typewriting machine embodying the invention. Fig. 2 is a sectional elevation thereof, in line 2—2, Fig. 1. Fig. 3 is a fragmentary front elevation thereof, partly in section, in line 3—3, Fig. 4. Fig. 4 is a sectional elevation thereof, on an enlarged scale, in line 4—4, Fig. 3. Figs. 5 and 6 are horizontal sections thereof, on an enlarged scale, in lines 5—5 and 6—6, respectively, Fig. 3. Fig. 7 is a front elevation, detached, of the line gage. Fig. 8 is a front elevation of the support for the ribbon vibrator.

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

A represents the top plate of the main frame, B the platen, C the platen carriage, D the carriage shift frame, and E one of the type-bars of a front strike typewriting machine.

The shift frame D, upon which the carriage is supported and travels horizontally, is suitably pivoted at the upper rear portion of the main frame to swing up and down about an axis indicated at *d*, and is shifted by means (not shown) for placing the platen in printing relation to one or another of the two or more sets of type on the type-bars. The type-bars E are pivoted in any suitable manner below the shift frame to swing upwardly and rearwardly to strike the front side of the platen. The position of the type-bar pivots is represented by the solid segmental line *e*, Fig. 1. The type-bars have heads *e'* which, as usual, bear two or more type and extend in line with the type-bars or at more or less of an angle thereto, depending upon the position of the type-bars on the segment, so that the heads will all stand upright when making the impressions. Each type-bar is provided with a guide lug or extension *e''*, Figs. 1 and 2, which may be a part of either the bar or the type-head (the latter being ordinarily a separate piece secured to the bar), and depends vertically below the bend or angle between the type head and the bar when the head is nearing the printing point. Otherwise the parts referred to may be of any usual or suitable construction and arrangement.

F represents an upright support for the vibrating ribbon guide or vibrator. The support F preferably has rearwardly-extending legs secured in a slotted extension or bracket *f'* of the shift frame by screws *f''*, and a slotted or open upper portion for the passage of the type-bars and for exposing to view the usual letter space scale *f'''* on the carriage.

G represents a line or paper gage, H a vibrating ribbon guide or vibrator, and I a center guide for the type-bars; all of which are mounted on the upright support F, the first mentioned part being fixed to and spaced from the rear side of the support so as to form a space or guide-way between it and the support in which the other two parts are confined but permitted to slide vertically. The line gage is provided with por-

tions extending horizontally to opposite sides of the upright support close to the platen and having straight upper edges for facilitating the proper adjustment of the paper on the platen. The ends of the carriage at the height of the line gage do not project forwardly beyond the front side of the platen, see Fig. 2, which permits the ends of the carriage to pass in rear of the ends of the line gage without interference therewith when it is desired to print near the ends of the platen. A long line gage can therefore be used and located close to the platen. The gage is preferably secured to the support F, as shown in Fig. 5, by screws *g* passing through the support and provided with sleeved nuts *g'* surrounded by spacing washers *g''* which hold the gage away from the back of the support to provide the space for the vibrator and center guide. The upper end of the vibrator H, which, as usual, is forked and provided with side guide loops for the ribbon, slides vertically in the space between the support F and line gage G, being confined laterally by the screws *g*. The lower end of the vibrator is connected to the operating means, which in the construction shown consists of a lever *h* pivoted on the shift frame extension *f'* and vibrated by means not shown. The center guide I is located in the slot or opening of the support F and has side tongues which slide in vertical grooves *i*, Figs. 3, 5 and 6, in the side portions of the support F. The center guide is flexibly connected to the main frame, conveniently by legs *i'* which are riveted on the rear side of the center guide and extend downwardly therefrom between the vibrator H and the rear side of the support F and have feet *i''* at their lower ends engaging in holes in the upper ends of a forked or U-shaped standard *i'''* which is fixed by a screw or otherwise to a central bracket or part *i''''* depending from the top plate of the main frame. The guide has a central vertical slot *i''''* with beveled side edges to receive the guide extensions *e''* of the type-bars to guide them accurately to the printing point. The center guide being supported from the main frame maintains a fixed relation to the type-bars, while the support F, line gage G and ribbon vibrator H, being mounted on the shift frame D are shifted therewith and are thereby always kept in the same relation to the platen. The support F, however, having the described tongue and groove connection with the center guide, braces and holds the same against deflection, either laterally or fore and aft of the machine, during the operation of the type-bars, while the guide itself and the parts connecting it to the main frame can be made small and light. The flexible or loose connection of the center guide with the main frame, however, allows of the slight fore and aft deflection of the

guide necessary for it to slide on the support F when the latter is shifted with the shift frame, it being understood that the support moves in an arc.

It is usual to make the bend or angle between the type-bars and type heads below the center guide, but this causes the type heads, particularly on the bars near the ends of the segment, to be offset so much as to cause serious side or twisting strains on the type-bar pivots and more or less imperfect impressions to be made by such type-bars. But in the construction herein claimed the type-bars are pivoted on a curved line *e*, Fig. 1, which is concentric with a point P above the center guide and preferably coincident with the normal printing point on the platen, and the bend or angle between the type-bars and their heads is made at this point P so that the bars extend in straight lines therefrom to their pivots, while the guide projections *e''* of the type-bars extend below the point P to enter the slot of the center guide, as clearly shown in Fig. 1. This construction insures more perfect work, prolongs the life of the type-bar pivots, lessens the need for a banking ring, thereby avoiding the expense and noise of the same, and furthermore permits the type-bar pivots to be arranged on a segment of longer radius, which gives more room for the bearing hangers without increasing the total length of the type-bars. This last advantage will be understood from an examination of Fig. 1, in which the broken curved line indicates the location of the type-bar pivots that would be required if the bars were bent at a point P' below the center guide, as they usually are.

I claim as my invention:

1. In a typewriting machine, the combination of a series of segmentally arranged type-bars provided at the outer ends with type heads extending at an angle to the bars, and with guide projections which extend inwardly beyond the vertexes of the angles formed by the heads with the type-bars, and a center guide arranged to receive only said guide projections of the type-bars, substantially as set forth.

2. In a typewriting machine, the combination of a platen, a series of segmentally arranged type-bars each provided at its outer end with a head bearing a plurality of type, the heads of different bars having different angular relations to the bars, and a guide projection extending inwardly from each head in the plane of the head beyond the juncture of the head with the type-bar, and a center guide arranged to receive only said guide projections of the type-bars, substantially as set forth.

3. In a typewriting machine, the combination of a platen, a center guide, a series of type-bars pivoted in a segment below said

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guide to swing in radial planes which intersect at a point above said center guide, heads secured to the type-bars at different angles, and a rigid part projecting from the outer end of each bar inwardly in the direction of the center of the segment beyond the juncture of the head with the bar and adapted alone to enter said center guide, substantially as set forth.

4. In a typewriting machine, the combination of a series of type-bars pivoted in an arc and having outer portions bent at an angle to the body portions of the type-bars, type heads secured to the outer portions of the bars and extending outwardly from the bends in the bars, and guide projections extending inwardly from the bends in the bars in the planes of the heads, and a center guide arranged to receive said guide projections of the type-bars at a point inwardly from said bends in the type-bars, substantially as set forth.

5. In a typewriting machine, the combination of a series of type-bars, a platen and carriage for the same, a movable shift frame for the platen, a center guide for the type-bars having a fixed relation thereto, and a part on said shift frame which constitutes a lateral support for said center guide, substantially as set forth.

6. In a typewriting machine, the combination of a series of type-bars each having a plurality of printing characters, a platen and carriage for the same, a shift frame for the carriage, a center guide for the type-bars having a fixed relation therewith, and a lateral support for the center guide supported by the shift frame and moving therewith, substantially as set forth.

7. In a typewriting machine, the combination of a main frame, a series of type-bars, a platen and carriage for the same, a movable shift frame for the platen, a center guide for the type-bars mounted on the main frame and having a fixed relation to the type-bars, and a part movable with said shift frame and by which said center guide is supported laterally, substantially as set forth.

8. In a typewriting machine, the combination of a series of type-bars each having a plurality of type, a platen and carriage for the same, a shift frame for the carriage, a main frame supporting the shift frame, a ribbon vibrator, a guide on the shift frame

for the vibrator, a center guide for the type-bars laterally supported by the vibrator guide, and connections between the center guide and main frame acting to retain the center guide in proper relation with the type-bars, substantially as set forth.

9. In a typewriting machine, the combination of a main frame, a series of type-bars each having a plurality of type, a center guide having a flexible connection with the main frame, a platen and carriage for the same, a shift frame for the carriage, and a lateral support for the center guide arranged on the shift frame and having a sliding connection with the center guide, substantially as set forth.

10. In a typewriting machine, the combination of a main frame, a series of type-bars each having a plurality of type, a platen and carriage for the same, a shift frame for the carriage pivoted on the main frame, a ribbon vibrator, a guide for the vibrator supported by the shift frame, and a center guide for the type-bars having a sliding connection with the vibrator guide and a flexible connection with the main frame for holding the center guide from shifting with the shift frame, substantially as set forth.

11. In a typewriting machine, the combination of a series of type-bars each having a plurality of type, a platen, a movable shift frame for the platen, a ribbon vibrator, a guide for the vibrator supported by the shift frame, a fixed center guide for the type-bars supported laterally by said vibrator guide, and a line gage supported by said vibrator guide, substantially as set forth.

12. In a typewriting machine, the combination of a series of type-bars each having a plurality of type, a platen and carriage for the same, a shift frame for the carriage, a ribbon vibrator, a guide for the vibrator supported by the shift frame, a fixed center guide for the type-bars laterally supported by the vibrator guide in front of the vibrator, and a line gage supported by the vibrator guide in rear of the vibrator, substantially as set forth.

Witness my hand, this 14th day of November, 1907.

OSCAR C. KAVLE.

Witnesses:

OTTO A. SCHILLY,
CHESTER W. REID.