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O. C. KAVLE.
TYPE BAR BEARING SUPPORT FOR TYPE WRITING MACHINES.
APPLICATION FILED JULY 29, 1907.

1,055,756.

Patented Mar. 11, 1913.

2 SHEETS-SHEET 1.

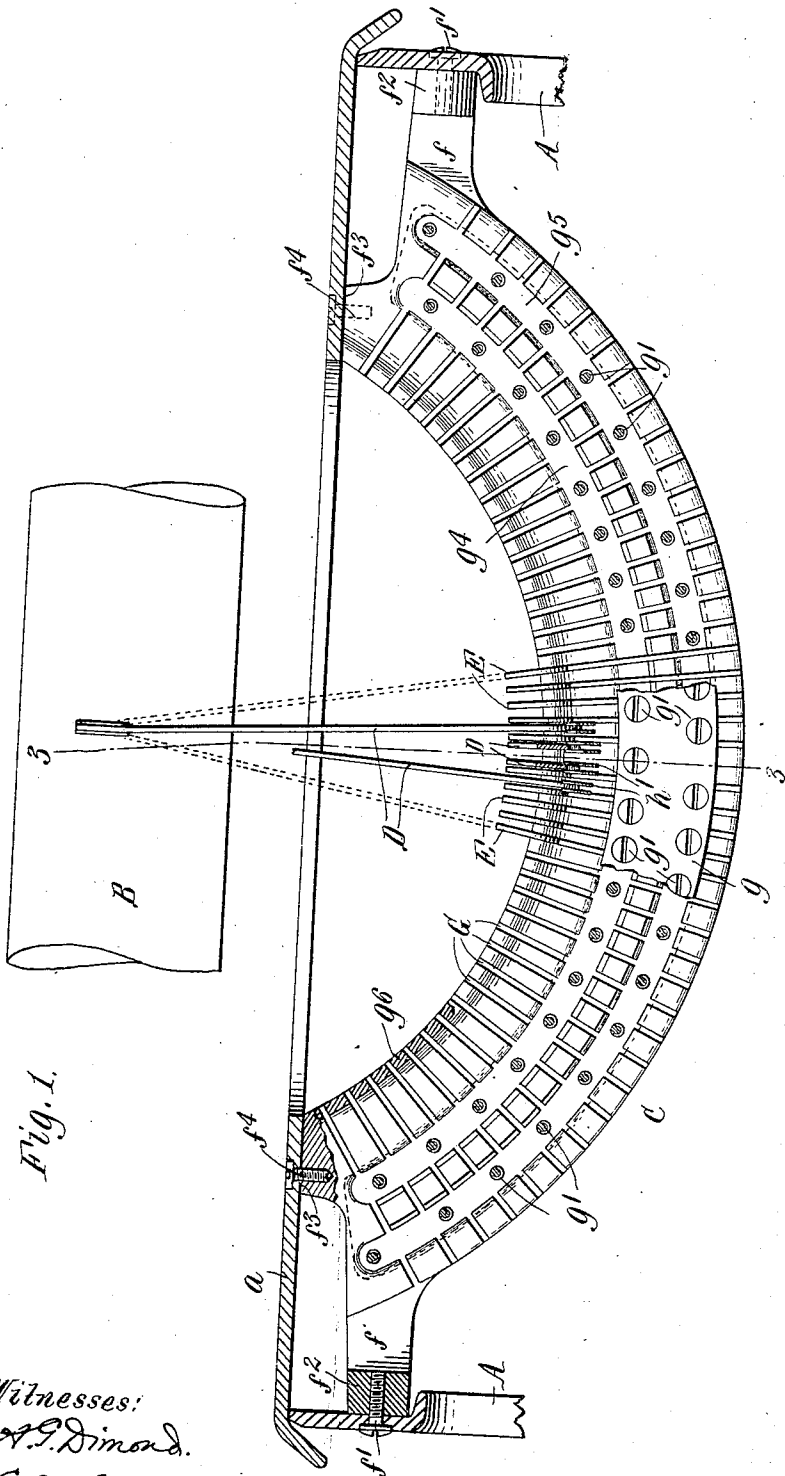


Fig. 1.

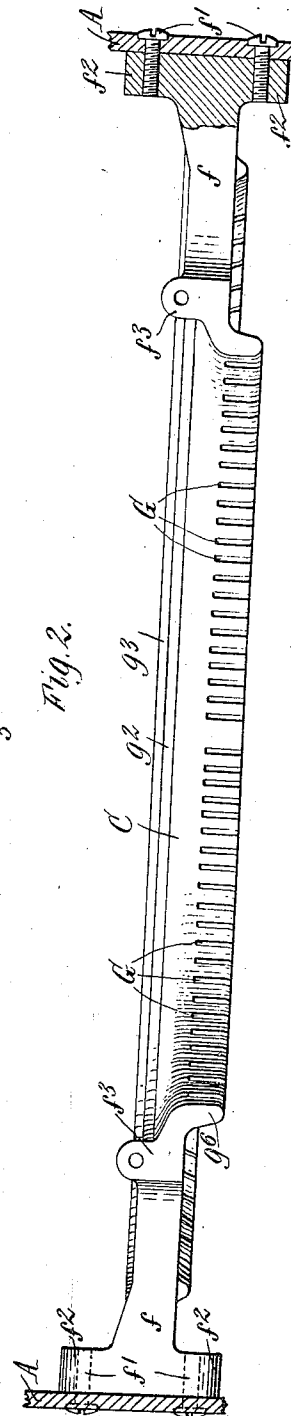


Fig. 2.

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Fig. 3.

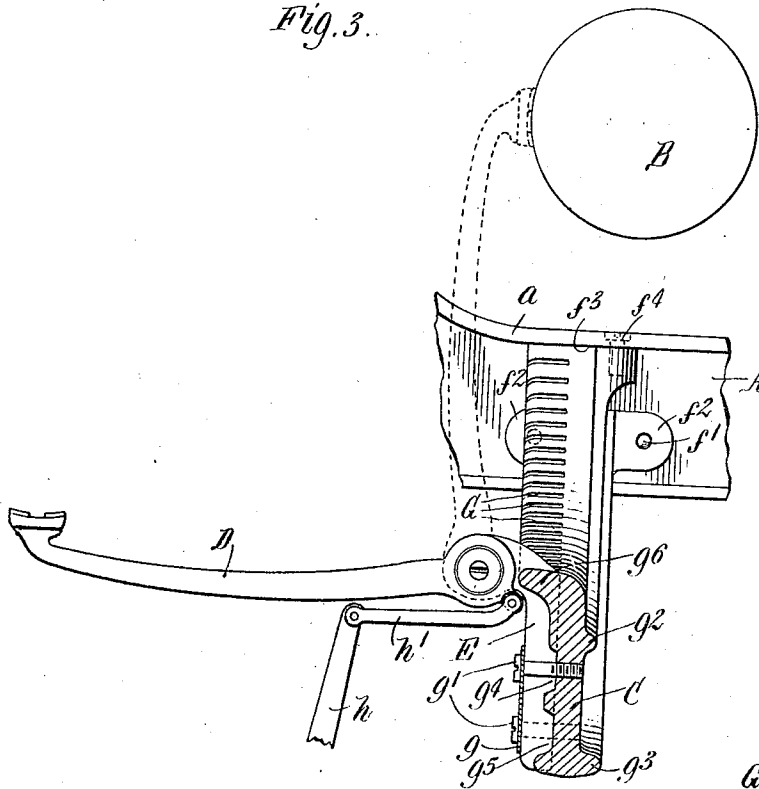


Fig. 4.

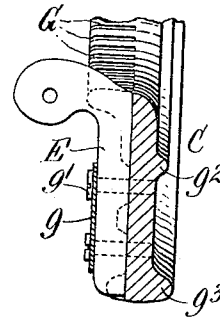


Fig. 5.

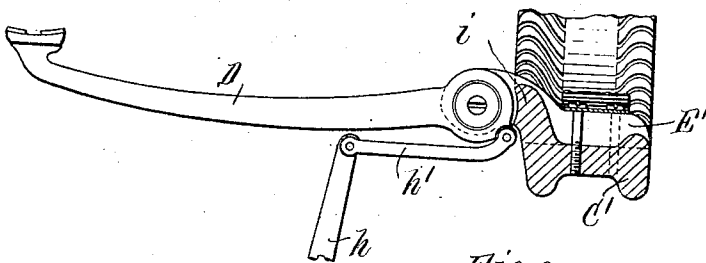
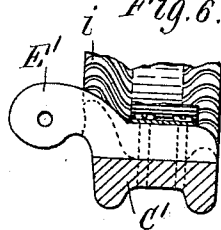


Fig. 6.



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UNITED STATES PATENT OFFICE.

OSCAR C. KAVLE, OF SYRACUSE, NEW YORK, ASSIGNOR TO HARVEY A. MOYER, OF
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TYPE-BAR-BEARING SUPPORT FOR TYPE-WRITING MACHINES.

1,055,756.

Specification of Letters-Patent.

Patented Mar. 11, 1913.

Application filed July 29, 1907. Serial No. 386,053.

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-Bar-Bearing Supports for Type-Writing Machines, of which the following is a specification.

This invention relates to segments and hangers for supporting the type-bars in visible writing type-writing machines in which the type-bars are pivoted on separate hangers mounted on a segment or curved support below the platen.

The objects of the invention are to construct and connect the segment to the frame of the machine in a way to increase the strength and rigidity of both the frame and the segment, and so that the segment can remain in place on the frame when the top plate is removed, or can remain in place on the top plate and be removed from the frame therewith as most convenient for making repairs and adjustments in type-bar bearings or other parts of the machine; also to provide a segment of inexpensive construction which will enable thin hangers to be arranged in close relation thereon and will stiffen the hangers or hold their bearing ends from lateral deflection; and also to form the hangers so that they will afford adequate lateral support for the type-bars but will not interfere with parts by which the type-bars are actuated.

In the accompanying drawings, consisting of two sheets: Figure 1 is a transverse sectional elevation of a portion of a typewriting machine provided with a type-bar segment and hangers embodying the invention, a portion only of the hangers and type-bars being shown in place on the segment. Fig. 2 is a plan view of the segment and portions of the frame, the top plate of the frame being removed. Fig. 3 is a sectional elevation of the parts shown in Fig. 1, in line 3—3 in said figure. Fig. 4 is a transverse sectional elevation of the segment and one hanger, the section being taken through one of the hanger slots of the segment. Fig. 5 is a sectional elevation of a segment of modified construction with a type-bar and hanger in place thereon. Fig. 6 is a sectional elevation of the segment shown in Fig. 5, and one hanger, the section being

taken through one of the hanger slots of the segment.

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

A represents portions of the sides of the main frame of a typewriting machine, *a* the top plate thereof which is screwed or otherwise secured on the frame, B the platen, C the segment or curved support for the type-bars, D the type-bars, and E the hangers which are secured on the segment and to which the type-bars are pivoted.

The segment is arranged in upright position below the horizontal plane of the platen, as usual in front-strike machines, and the hangers are secured thereon so that the type-bars pivoted thereto will swing in radial planes passing through the printing point at the front side of the platen. The hangers can be arranged on the segment to stand upright substantially radially with regard to the printing point, as shown in Figs. 1-4, or they can be arranged horizontally on one of the curved sides of the segment, for instance, on the top thereof, and project to one side of the segment, as shown in Figs. 5 and 6.

The segment, shown in Figs. 1-4, is provided at its opposite ends with laterally projecting securing brackets or portions *f* which bear against the sides of the main frame and are secured thereto by screws *f'*. Each securing bracket preferably has front and rear lugs *f²* in which the screws engage, two screws *f'* being employed at each end of the segment. The segment is also provided at its end portions with flat faced parts *f³* which bear against the underside of the top plate and are secured thereto by screws *f⁴*, see Fig. 1. Thus the segment is firmly secured both at its extremities to the sides and between its extremities to the top plate of the main frame and serves to rigidly connect these parts together and stiffen the frame, and, on the other hand, the segment itself is held very rigidly in place and prevented from twisting or shifting with regard to the frame.

By the described construction of the segment the securing screws can be placed a considerable distance apart and thus insure the proper position of the segment in case of a slight error in the location of the screws in either part. Another advantage of the described construction is that the segment

can be detached from the sides of the main frame and removed with the top plate, or detached from the top plate and left in position on the main frame when the top plate is removed therefrom, as may best suit the purpose in making repairs or adjustments that require the removal of the top plate. The segment of the modified form, shown in Figs. 5 and 6, can be secured to the sides and top plate of the main frame in this same manner.

In the preferred construction of the segment, shown in Figs. 1-4, it is provided with slots G in the front side in which the hangers are secured by any suitable means, for instance, by the clamping plate g and screws g' shown in the drawings. The segment is cast in a single integral piece and afterward machined, and for the purpose of making it light and at the same time strong, it is preferably formed with concentric inner and outer ribs g^2 g^3 on its rear side and with concentric segmental depressions g^4 g^5 in its front side. The segment also has at its upper or inner edge a forwardly projecting rib or flange g^6 through which the hanger slots extend. The bearing ends of the hangers extend forwardly from their shanks which are secured in the slots of the segment, portions of the slotted rib or flange g^6 between the hangers extending forwardly into close proximity to the bearing ends of the type-bars, thereby securely bracing the bearing ends of the hangers and preventing any lateral deflection or movement thereof. This enables thinner hangers to be used than could otherwise be employed, and thus the hangers can be arranged in very close relation at the center portion of the segment so that a large number of type-bars can be mounted on a segment of relatively short radius. The hanger slots extend into the segment flush with bottoms of the depressions g^4 g^5 so that the hangers bear flat against the segment throughout the width thereof, and the bottoms of the depressions can be left flat, which is an advantage in drilling and tapping the holes for the hanger securing screws.

The type-bars are preferably pivoted in any suitable manner on one side of the hangers, and, as before stated, swing in radial planes passing through the printing point of the platen, and in order to enable both the type-bars and the hangers to be made from flat parallel-sided sheet metal without bending or tapering the bearing ends of either the type-bars or the hangers, the hangers and their slots in the segment are not truly radial to the printing point, but are parallel with and to one side of the radial planes in which the type-bars swing, so that the planes in which the hangers are located do not pass through the printing

point but to one side thereof. Preferably the hangers at opposite sides of the center of the segment are arranged in planes passing through points on the platen at opposite sides of the printing point, as indicated by the broken lines extending from the two outside hangers in Fig. 1, and the type-bars are mounted on the inner sides of the hangers, or sides next to the center of the segment. The same result would be secured by arranging the type-bars on the outer sides of the hangers. Either of these arrangements gives a symmetrical appearance to the segment and bearings and insures equal action of the bars at opposite sides of the segment, but all of the type-bars could be arranged, if desired, on the same side of the hangers, in which case the planes of all of the hangers would pass through the segment at the same side of the printing point. In each of these arrangements all of the hangers and all of the type-bars are alike except as to the outer ends of the type-bars which must have different inclinations as usual in type-bars having two sets of characters.

The type-bars are actuated by levers h connected by links h' to the type-bars. A portion of one lever and one link are shown in Fig. 3. In order that the required number of type-bars may be assembled on a segment of minimum size, and in order to avoid the use of the long bars which would be necessary if the segment were made longer to provide wider intervals between the bars, the hangers at the central part of the segment must be arranged very close together. To provide the necessary space for the ends of the links attached to the type-bars therefore, the bearing ends of the hangers are offset or extend forwardly from the segment so that the links can swing under these bearing ends. The upper edges of these offset or extending ends of the hangers are preferably of the same radius as the bearing ends of the type-bars to give a symmetrical appearance and afford the desired lateral strength or support for the type-bars, but the lower edges of the bearing ends of the hangers are cut away or made of smaller radius than their upper edges, as shown in Figs. 4 and 6 and by broken lines in Figs. 3 and 5, to allow the links to be pivoted to the type-bars close to their pivots and swing without interfering with the hangers.

In the construction shown in Figs. 5 and 6, in which the hangers E' are arranged in slots on the upper or inner curved side of the segment C' , the segment is provided at its front edge with an upwardly or inwardly extending slotted flange i , the portions of which between the hangers extend upwardly and forwardly into close proximity to the bearing ends of the type-bars and brace the bearing ends of the hangers so as to pre-

vent lateral deflection thereof in the same manner as the flange g^o of the segment in the preferred construction. This segment, like the other, consists of a relatively thin casting with strengthening ribs at opposite sides at or near its front and rear edges.

I claim as my invention:

1. In a typewriting machine, the combination of a series of type-bars arranged to swing upwardly and rearwardly in planes radial to a common point, a series of supporting hangers to which the type bars are pivoted, the hanger for each type bar being arranged at one side of the type-bar in a plane parallel with the radial plane in which said type bar swings, and a segment having slots located in planes coincident with said hangers in which said hangers are secured, substantially as set forth.

2. In a typewriting machine, the combination of a series of type-bars arranged to swing in planes radial to a common point and each having a flat side, a series of hangers each having a flat-side to which the type bars are pivoted, and a supporting segment on which said hangers are secured, each hanger being arranged at one side of the type bar with its flat side parallel with the radial plane in which the type bar pivoted thereto swings, substantially as set forth.

3. In a typewriting machine, the combination of a series of type-bars arranged to swing in planes radial to a common point and having bearing ends with flat parallel sides, a series of flat hangers having parallel sides to one side of which the type-bars are pivotally connected, and a supporting segment on which the hangers are secured in planes parallel with the radial planes in which the type-bars swing, substantially as set forth.

4. In a typewriting machine, the combination of a series of type-bars arranged to swing upwardly and rearwardly in planes radial to a common point, a series of hangers arranged in planes parallel with but to one side of the planes in which the type-bars swing and pivotally connected to the bars on one side only, and a supporting segment having slots in which the hangers are secured, the type-bars at one side of the segment being arranged on the opposite side of the hangers from those at the other side of the segment, substantially as set forth.

5. In a typewriting machine, the combination of a series of type-bars arranged to swing in planes radial to a common point, a series of straight hangers arranged in planes parallel with but to one side of the planes in which the type-bars swing and pivotally connected to the type-bars, a supporting segment having slots in which the hangers are secured, the slots for the hangers in one-half of the segment being ar-

ranged at one side of the planes in which the type-bars swing, and the slots in the other half of the segment being arranged on the opposite side of the planes in which the type-bars swing, substantially as set forth.

6. In a typewriting machine, the combination of a series of type-bars, a segment, and hangers having body parts secured to said segment and bearing ends to which the type-bars are pivoted and which project outwardly from the segment, said segment having a slotted edge flange projecting outwardly therefrom beyond the body parts of the hangers and engaging the projecting bearing ends of the hangers close to the type-bar pivots to hold said projecting bearing ends from lateral deflection, substantially as set forth.

7. In a typewriting machine, the combination of a segment, a series of type-bar hangers having body parts secured to the segment and bearing ends projecting outwardly from one side of said segment, a series of type-bars pivoted to the projecting bearing ends of said hangers, and operating links for said type-bars pivoted thereto, said segment having a slotted edge flange which projects outwardly therefrom beyond the body parts of the hangers and engages the projecting bearing ends of the hangers close to the pivot ends of the type-bars and above the pivot joints connecting the type-bars with said operating links, substantially as set forth.

8. In a typewriting machine, the combination of a series of type-bars arranged to swing upwardly and rearwardly, an upright segment, and hangers having body parts secured to said segment and bearing ends to which the type-bars are pivoted projecting forwardly from the segment, said segment having a slotted flange which projects forwardly from its inner edge beyond the body parts of the hangers and engages the projecting bearing ends of the hangers close to the type-bar pivots to hold the projecting bearing ends of the hangers from lateral deflection, substantially as set forth.

9. In a typewriting machine, the combination of a type-bar having an enlarged bearing end, an operating part pivotally connected to the bearing end of the bar at a point normally below and in rear of its center, and a hanger having an enlarged bearing end pivotally connected to the bar on one side only, the lower edge of the bearing end of the hanger being cut away to clear the pivot end of the operating part, substantially as set forth.

10. In a typewriting machine, the combination of a series of type-bars arranged to swing upwardly and rearwardly, an upright segment supporting the type-bars, a main frame connected to the ends of the segment, and a top plate also connected to the seg-

ment, whereby the segment acts to connect the main frame to the top plate, substantially as set forth.

11. In a typewriting machine, a series of
5 type-bars arranged to swing upwardly and rearwardly, an upright segment supporting the type-bars, a main frame connected to both ends of the segment, and a top plate
connected to the segment independently of
10 the main frame, whereby the segment may be detached from the main frame and removed with the top plate, or the top plate may be detached from the segment leaving
the segment in position on the main frame,
15 substantially as set forth.

12. In a typewriting machine, a series of type-bars arranged to swing upwardly and rearwardly, an upright segment supporting the type-bars and having a securing part with front and rear projections at each end, 20 and two screws connecting each securing part to the adjacent side of the frame of the machine, substantially as set forth.

Witness my hand, this 24th day of July, 1907.

OSCAR C. KAVLE.

Witnesses:

GEORGE F. RANSOM,
FRANK E. REID.