

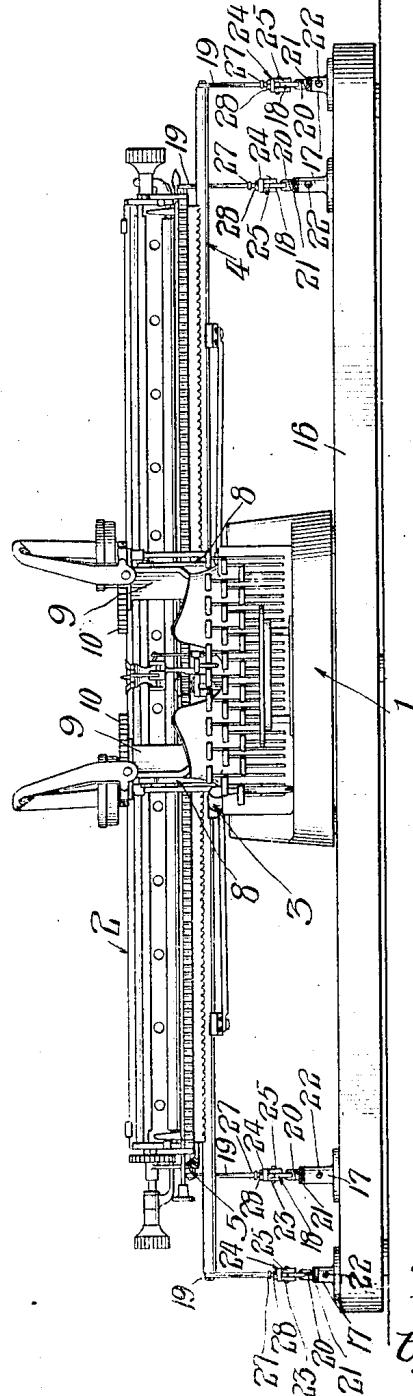
T. L. KNAPP.
 AUXILIARY SUPPORT FOR TYPE WRITER SHIFT FRAMES.
 APPLICATION FILED DEC. 27, 1907.

904,207.

Patented Nov. 17, 1908.

3 SHEETS—SHEET 1.

Fig. 1



Witnesses:

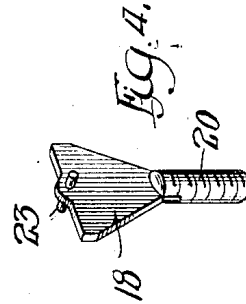
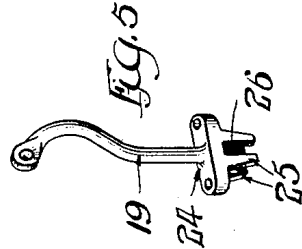
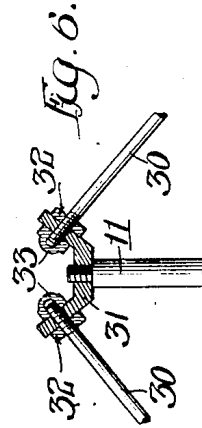
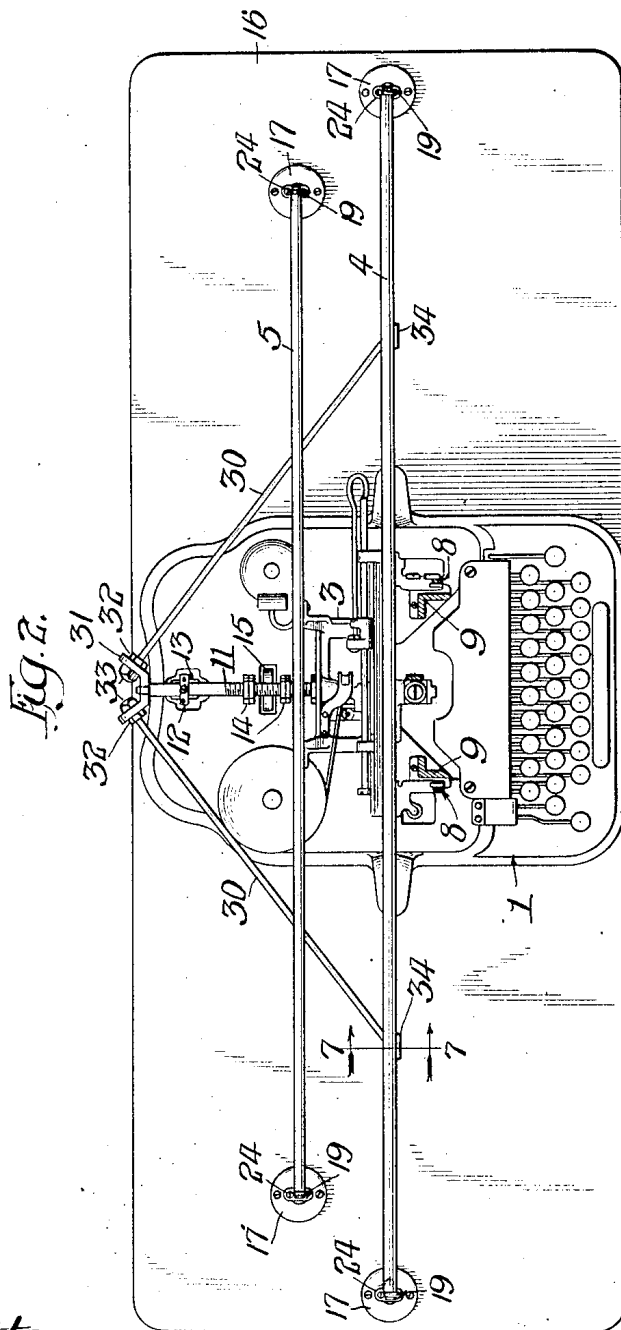
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 3 SHEETS—SHEET 2.



Witnesses:
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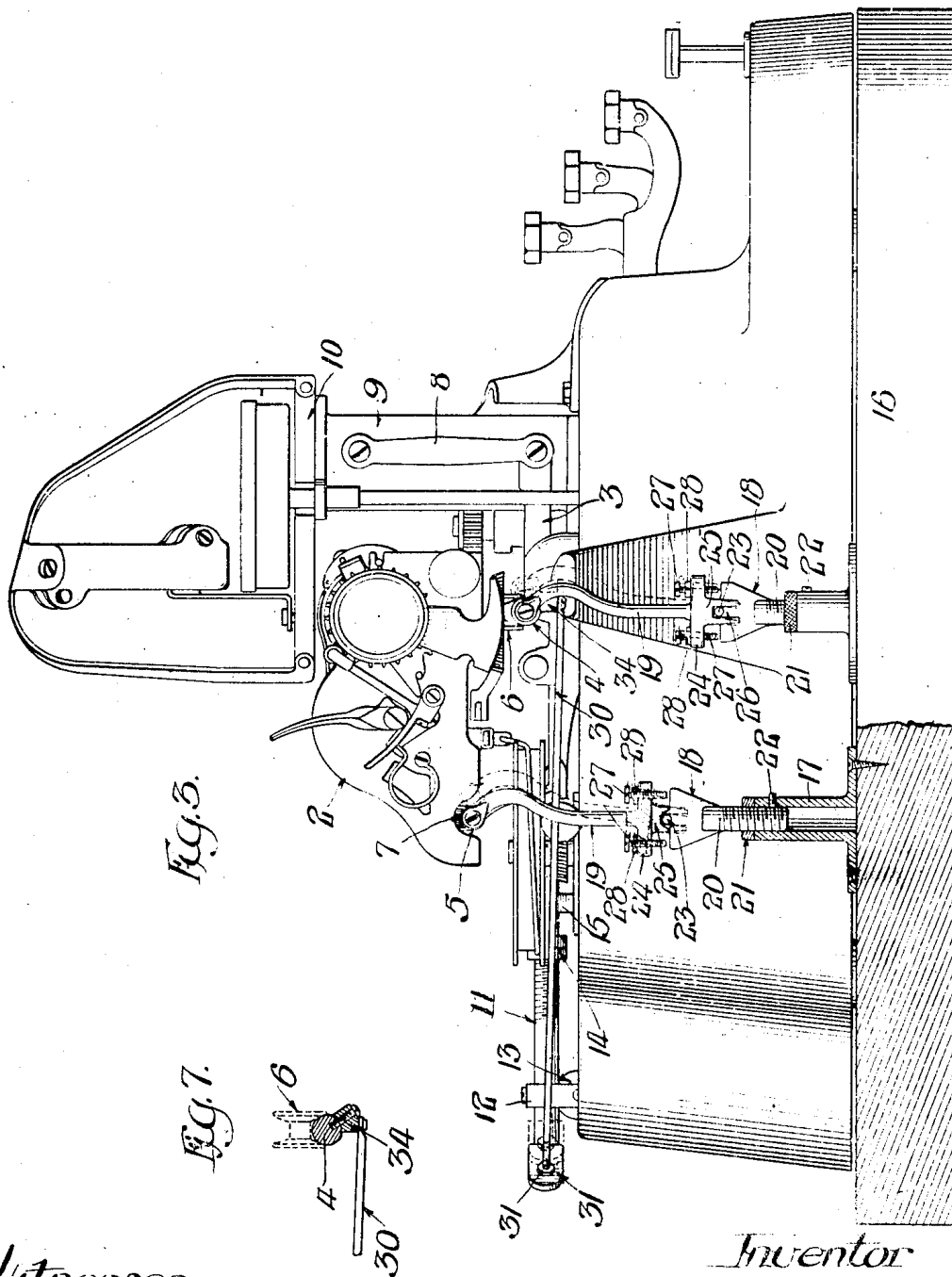
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3 SHEETS—SHEET 3.



Witnesses:

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UNITED STATES PATENT OFFICE.

Theron L. Knapp, of Woodstock, Illinois, Assignor to Oliver Typewriter Company, of Chicago, Illinois, a Corporation of Illinois.

AUXILIARY SUPPORT FOR TYPE-WRITER SHIFT-FRAMES.

No. 904,207.

Specification of Letters Patent.

Patented Nov. 17, 1908.

Application filed December 27, 1907. Serial No. 408,256.

To all whom it may concern:

Be it known that I, Theron L. Knapp, a citizen of the United States, and a resident of Woodstock, in the county of McHenry and State of Illinois, have invented certain new and useful Improvements in Auxiliary Supports for Type-Writer Shift-Frames; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to a typewriting machine shift-frame upon which the paper-carriage is supported and has endwise movement and which itself has backward and forward shifting movement upon the machine-frame in order to bring the platen and the paper thereon in position to receive impressions from a plurality of types carried by each of the type-bars of the machine.

The invention is more particularly applicable to machines of the "Oliver" type, in which the shift-frame is provided with two horizontal, transversely arranged guide-bars on which the paper-carriage rests and travels, and in which said guide-bars project at their ends beyond the shift-frame proper and extend laterally outside of the frame of the machine and are made of sufficient length to properly support the carriage, whatever may be the length of the latter.

The object of the invention is to provide means adapted to afford proper support for said guide-bars, in machines in which the length of the guide-bars is such, as in the case of extra long carriages used for very wide paper, that the guide-bars cannot well be made sufficiently stiff or rigid in themselves to prevent the same from bending or flexing under the weight of the carriage.

The invention consists in the matters hereinafter described and pointed out in the appended claims.

My invention is shown in the accompanying drawings in connection with a typewriting machine of the "Oliver" type made in accordance with United States Letters Patent Number 599,863, granted to Thomas Oliver, March 1st, 1898, and United States Letters Patent Number 834,565, granted to Cross and Griffiths, October 30th, 1906.

As shown in said drawings:—Figure 1 is a view in front elevation of an "Oliver"

typewriting machine together with a base-board on which the same rests, together with parts constituting my invention. Fig. 2 is a plan view of the parts shown in Fig. 1 with the paper-carriage removed to show the shift-frame and its guide-bars and with the type-bars and associated parts above the level of the shift-frame omitted, the supporting standards for the type-bars being shown in section. Fig. 3 is a view in end elevation on an enlarged scale of the parts shown in Fig. 1, with certain parts at the right-hand side of the figure shown in section. Fig. 4 is a detail perspective view of the upper adjustable section of one of the supporting standards for the ends of the guide-bars. Fig. 5 is a perspective view of one of the oscillating supporting arms for the said guide-bars. Fig. 6 is a detail view showing the rear end of the shift-frame guide-rod, and means for connecting therewith the oblique brace-rods. Fig. 7 is a detail section, taken on line 7—7 of Fig. 1.

As shown in said drawings, 1 indicates the base-plate of the typewriting machine, 2 the paper-carriage and 3 the shift-frame, which is supported upon the base-frame so as to have backward and forward shifting movement thereon and is provided with forward and rear, horizontal, transversely extending guide-bars 4 and 5 on which rest and travel the grooved supporting rollers 6 and 7 on the carriage. Said shift-frame 3, as shown in the drawings, is supported at its forward ends by means of upright links 8, 8 pivoted at their lower ends to forwardly projecting arms on the shift-frame and at their upper ends to standards 9, 9 which rise from the base-plate and support the horizontal bearing plates 10, 10 on which are mounted the type-bars and associated parts. Said shift-frame is supported at its rear end by means of a horizontal, rearwardly extending guide-stem 11 which is rigidly attached to the shift-frame and which passes through a guide-standard 12 on the rear part of the base-frame 1 and rests upon a guide-roller 13 mounted in said standard 12. Said guide-stem 11 is provided with stop-nuts 14, 14 adapted for contact with a second standard 15 which rises from the rear part of the base-plate 1 forward of the guide-standard 13; said stop-nuts serving to limit the backward and forward movement of the shift-frame.

In the machine illustrated, the paper-carriage 2 is made of considerable length in order to receive a very wide sheet of paper and the guide-bars 4 and 5, in order to properly support said carriage when moved to the limit of its endwise movement in either direction, are extended a considerable distance beyond or outside of the base-plate 1 at both sides of the machine. For supporting the ends of said guide-bars, so as to prevent the same from bending or flexing under the weight of the carriage and hold the said ends of the guide-bars in alinement with the central portions thereof which are directly attached to the shift-frame 3 during the backward and forward shifting movement of the said shift-frame and the guide-bars, auxiliary supports for said guide-bars are provided as follows: 16 indicates a flat, horizontally arranged base-board on which rests, centrally, the base-plate 1 of the machine. Said base-board 16 is made somewhat longer than the guide-bars 4 and 5. Mounted on said base-board are four auxiliary supports for sustaining the ends of said guide-bars. Said supports are all alike and are correspondingly lettered in the drawings, and a description of one of them will apply to all, the parts thereof being lettered alike in the drawings. Each of said supports embraces a standard 17 which is rigidly attached to and rises from the base-board 16 and is provided with a head 18 having vertically adjustable connection with said standard 17, and an oscillating supporting arm 19 which is pivotally connected with the end of its associated guide-bar at its upper end and at its lower end has pivotal connection with the adjustable head 18 of the standard 17, in such manner that said supporting arm is adapted to swing backward and forward in a horizontal plane.

The standard 17 consists of a tubular upright body portion having at its lower end a horizontal, outwardly extending flange, which is secured by screws to the top of the base-board. The upper adjustable head 18 of the standard is provided with a cylindrical stem 20 adapted to enter the upper part of the hollow standard 17 and screw-threaded to receive a nut 21, adapted to rest on the top of the standard 17 and form an adjustable stop to determine the vertical position of the head 18. A set-screw 22 is inserted through the side of said standard and bears at its inner end against the stem 19. Said set-screw 22 is inserted through the side of said standard and bears at its inner end against the stem 20. Said set-screw serves to hold the head 18 from movement when adjusted. The head 18 has the form of a flat plate arranged in a vertical plane extending from front to rear with respect to the machine, and is provided with a horizontal upper edge, and is also provided, centrally of said

plate, with a transverse pivot pin 23 which projects from the opposite sides of said head.

The supporting arm 19 has at its lower end an integral cross-head 24 extending from front to rear relatively to the machine and having at its opposite sides depending parallel lugs or flanges 25, 25 separated from each other by a vertical notch or recess of sufficient width to receive the upper margin of the head 18. Each of said flanges 25 is provided with a downwardly opening slot 26 adapted to receive and engage one end of the pin 23 when the cross-head 24 is placed in engagement with said head 18; the parts being so arranged that the supporting arm is free to swing or rock forwardly and backwardly on the standard 17, and is held from shifting thereon horizontally in any direction by the engagement of the slotted flanges with the head 18 and the pin thereon.

Two upright set-screws 27, 27 are inserted through screw-threaded apertures in the ends of the cross-head 24, said set-screws having their lower ends in position vertically above and in bearing contact with the top surface of the head 18 at opposite sides of the bearing pin 23, or at the front and rear of said pin. Said set-screws 27, 27 are provided with jam-nuts 28, 28 by which they may be held or locked from turning when properly adjusted.

The set-screws 27, 27, arranged as described, perform two different functions. By their vertical adjustment in the cross-head they afford bodily vertical adjustment of the supporting arm, as required to bring the ends of the guide-bars sustained thereby accurately in line with the central parts thereof. Regardless of the adjustability of said set-screws, their lower ends afford two separated points of contact between the lower end of the oscillating arm and the standard which supports it, so that, when the upper end of said arm is swung or oscillated, either forwardly or backwardly from its central position, the said arm will swing or rock about one of said points of contact, and will be thereby bodily lifted when swinging in either direction from its central position.

As a result of the construction described, therefore, when the upper end of the supporting arm is swinging forwardly, the arm will rest and turn on the lower end of the forward set-screw, the rearmost set-screw will rise from contact with the head 18, and the arm itself will be correspondingly lifted. Likewise, when the upper end of the arm is swung rearwardly from its central position, said arm will swing on the lower end of the rearmost set-screw, and will be slightly lifted as its said upper end moves rearwardly from its central position. It will, of course, be understood that the greater the distance apart of the two set-screws, or the greater the distance apart between the centrally arranged

pin 23 and the set-screws, the greater will be the bodily lifting movement imparted to the supporting arm when the latter is swung or tilted forwardly or backwardly a certain distance from its upright position. The degree of lifting movement so imparted to the supporting arm will correspond with the lifting movement which, as set forth in said prior patent No. 837,611, is imparted to the forward end of the shift-frame and guide-bars through the swinging movement of the supporting links 8, 8 in the backward and forward shifting movement of the shift-frame from its central position. From this it will be understood that the lower or contact ends of said set-screws will be located at such distance apart that when the shift-frame is moved or swung forwardly or rearwardly and the upper end of the said supporting arm and the end of the guide-bar, with which it is connected, is moved to an equal extent, the said upper end of the supporting arm will be given rising movement corresponding with that imparted to the shift-frame by the said oscillatory suspension links 8, 8, and the end of the guide-bar which is sustained by the supporting arm will be lifted the same extent as is the shift-frame. It follows that the supporting arm, mounted as described, when used in connection with the shift-frame supported by pivoted suspension links, will not only afford backward and forward shifting movement of the ends of the guide-bar with the shift-frame to which it is attached, but will also afford slight rising and falling movement in the ends of the said guide-bar, corresponding with the rising and falling movement imparted to the shift-frame by said suspension links.

Inasmuch as the rising and falling movement imparted to the end of the guide-bar, as above set forth, is due to the contact of the supporting arm with the standard at points separated from each other as described, such rising and falling movement will result regardless of whether the supporting arm be made vertically adjustable relatively to its support. It follows that so far as the means for giving such rising and falling movement are concerned, the set-screws described constitute no essential part of the structure and may be omitted.

In order to prevent any bending of the guide-rods in a horizontal plane in the backward and forward movement of the shift-frame and to thereby insure that the ends of said guide-rods shall exactly partake of such movement of said shift-frame I provide oblique brace-rods 30, 30, extending from the rear end of the guide-stem 11 of the shift-frame forwardly to one of said guide-rods at points outside of the carriage-frame. Said oblique brace-rods, as shown in the drawings, extend from the rear end of the guide-stem forward and outwardly in a di-

vergent direction to the forward guide-bar 4, to which guide-bar the forward ends of said brace-rods 30, 30 are attached at points about midway between sides of the shift-frame proper and the outer ends of said guide-bar. The rear guide-bar 5 being located considerably above the level of the forward guide-bar 4, said brace-rods 30, 30 extend beneath the said rear guide-bar and are substantially horizontal. The employment of the brace-rods 30, 30 in connection with the forward guide-bar 4 only, serves to prevent horizontal flexure or movement of both guide-bars, because the engagement of the grooved supporting rollers of the carriage with the front and rear guide-bars serves to maintain the same in parallel relation, or to insure the movement of the ends of the rear guide-bar with those of the forward guide-bar.

According to the details of construction illustrated, said guide-bars 30, 30 are connected at their rear and forward ends with the guide-stem 11 of the shift-frame and with the forward guide-bar 4, as follows: As clearly seen in Fig. 6, a transversely arranged yoke piece 31 is attached centrally to the rear end of the said guide-stem 11 by means of a screw-threaded stud 32 on the rear end of said rod, which stud is screw-threaded to engage a screw-threaded aperture in the yoke-piece. The ends of said yoke-piece are bent or deflected rearwardly and outwardly and stand at right angles to the rear ends of the said brace-rods 30, 30. The rearwardly bent ends of the yoke-piece are apertured to receive the rear ends of the brace-rods, which latter are provided with nuts 33, 33 between which the said ends of the yoke-piece are clamped and by which the brace-rods are rigidly secured to said yoke-piece. The forward ends of said brace-rods 30, 30 are connected with the forward guide-bar 4 by means of blocks 34, 34 which are secured to the under surfaces of and project downwardly from said guide-bars. To the lower faces of said blocks 30, 34 the forward ends of the brace-rods are attached by screws, as illustrated in Fig. 7. The said connecting blocks 34, 34 being attached to the lower surface of the guide-bar are in position to avoid interference with the movement of the supporting rollers of the carriage along the guide-bar, while the ends of the brace-rods are located at a sufficient distance below the guide-bar to prevent contact therewith of the said supporting rollers, as the latter travel along the guide-bar.

I claim as my invention:--

1. The combination with a typewriting machine frame, a paper-carriage, a shift-frame having shifting movement on the machine frame, said shift-frame being provided with a guide-bar, and supporting links for the shift-frame, pivotally connected with the

machine frame above the level of the shift-frame, of auxiliary supports for the ends of said guide-bar, comprising oscillating supporting arms, and fixed members on which
 5 said arms are mounted, said supporting arms and fixed members having contacting parts which are horizontally separated from each other to afford rising and falling movement in the ends of the guide-bar when said
 10 arms are swung forwardly and backwardly from the central position thereof.

2. The combination with a typewriting machine frame, a paper-carriage, a shift-frame having shifting movement on the machine frame, said shift-frame being provided
 15 with a guide-bar, and supporting links for the shift-frame, pivotally connected with the machine frame above the level of the shift-frame, of auxiliary supports for the ends of
 20 said guide-bar, comprising oscillating supporting arms and fixed members on which said arms are supported, said arms being loosely connected with the fixed members by
 25 means preventing horizontal shifting of the arm on said fixed members, and the said arms and fixed members having contacting parts horizontally separated from each other
 30 to afford rising and falling movement in the ends of the guide-bar when said arms are swung forwardly or rearwardly from the central position thereof.

3. The combination with a typewriting machine frame, a paper-carriage and a carriage shift-frame mounted and having shifting
 35 movement on the machine frame and provided with a guide-bar, of an auxiliary support for the said guide-bar located outside of the machine frame and comprising a fixed standard and an oscillating supporting
 40 arm mounted on said standard and having both rising and falling movement thereon, said arm being engaged at its upper end with the guide-bar.

4. The combination with a typewriting machine frame, a paper-carriage and a shift-frame mounted and having shifting movement on the machine frame, said shift-frame
 45 being provided with a guide-bar for the carriage, of an auxiliary support for said guide-bar comprising a fixed standard provided at its top with a vertically adjustable member,
 50 and an oscillating supporting arm, loosely connected at its lower end with said vertically adjustable member and engaged at its
 55 upper end with the guide-bar.

5. An auxiliary support for the end of a shift-frame guide-bar, comprising a tubular standard, a head provided with a stem which extends within and has vertically ad-
 60 justable connection with the standard, and an oscillating supporting arm loosely mounted on said head.

6. An auxiliary support for a shift-frame guide-bar, comprising a tubular standard, a
 65 head provided with a stem which enters said

standard, an adjustable stop on the stem, adapted to rest on the top of the standard, clamping means for holding the stem from movement in the standard, and an oscillating supporting arm loosely connected at its
 70 lower end with the said head.

7. An auxiliary support for a shift-frame guide-bar, comprising an oscillating supporting arm and a flat, vertically arranged
 75 plate on which said arm is mounted, said plate being provided with a horizontal pin extending transversely thereof, and the lower end of the supporting arm being provided with a cross-head having depending
 80 flanges which extend at opposite sides of the plate, and are provided with vertical slots for engagement with said pin.

8. An auxiliary support for a shift-frame guide-bar, comprising an oscillating supporting arm and a flat, vertically arranged
 85 plate on which said arm is mounted, said plate being provided with a pin, extending transversely thereof, and the lower end of the supporting arm being provided with a cross-head having depending flanges which
 90 extend at opposite sides of the plate and are provided with vertically extending slots for engagement with said pin, and set-screws inserted through the ends of said cross-head and adapted for contact with the upper edge
 95 of said plate.

9. An auxiliary support for a shift-frame guide-bar, comprising an oscillating supporting arm, a supporting member on which
 100 said arm is mounted, said arm being loosely connected with the supporting member by means holding the lower end of the arm from shifting horizontally on the plate, and two vertically arranged, horizontally separated set-screws inserted in one of said parts
 105 and adapted for contact with the other part to give rising and falling movement to the upper end of said supporting arm when swung forwardly or rearwardly from its
 110 central position.

10. The combination with a typewriting machine frame, a paper-carriage and a carriage shift-frame mounted and having shifting movement on the machine frame, said
 115 shift-frame being provided with a carriage guide-bar, of auxiliary supports for the ends of the guide-bar, located outside of the carriage-frame, and oblique brace-rods attached to the rear end of the shift-frame and to the
 120 said guide-bar.

11. The combination with a typewriting machine frame, a paper-carriage and a shift-frame mounted and having shifting movement on the machine frame, said shift-frame
 125 being provided with a carriage guide-bar and with a rearwardly extending guide-stem, of oblique brace-rods attached at their rear ends to the rear end of said guide-rod and at their forward ends to the guide-bar.

12. The combination with a typewriting 130

machine frame, a paper-carriage and a shift-frame mounted and having shifting movement on the machine frame, said shift-frame being provided with a rearwardly extending
5 guide-stem and with a transversely arranged carriage guide-bar, of auxiliary supports for the ends of said guide-bar, located outside of the machine frame and provided with oscillating supporting arms engaged at their upper
10 ends with the guide-bar, and oblique brace-rods extending from the rear end of

the shift-frame guide-stem forwardly and outwardly to the guide-bar.

In testimony, that I claim the foregoing as my invention I affix my signature in the presence of two witnesses, this 23rd day of December A. D. 1907.

THERON L. KNAPP.

Witnesses:

E. R. Hoy,

L. L. SCHIROEDER.