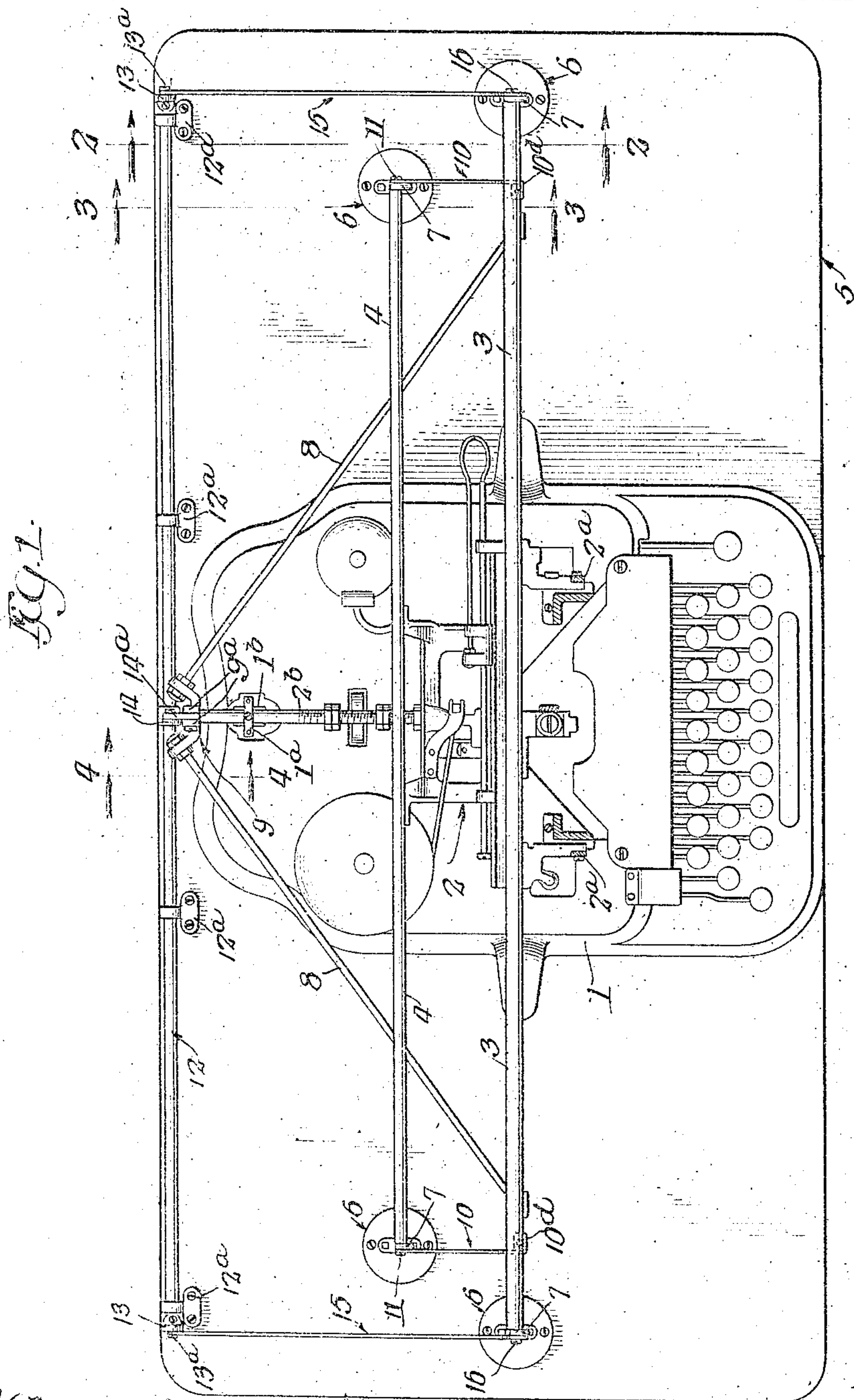


T. L. KNAPP.  
 BRACE MECHANISM FOR TYPE WRITER SHIFT FRAMES.  
 APPLICATION FILED JUNE 27, 1910.

983,557.

Patented Feb. 7, 1911.

2 SHEETS—SHEET 1.



Witnesses:  
*J. H. Alfred*  
*L. R. Wilkins*

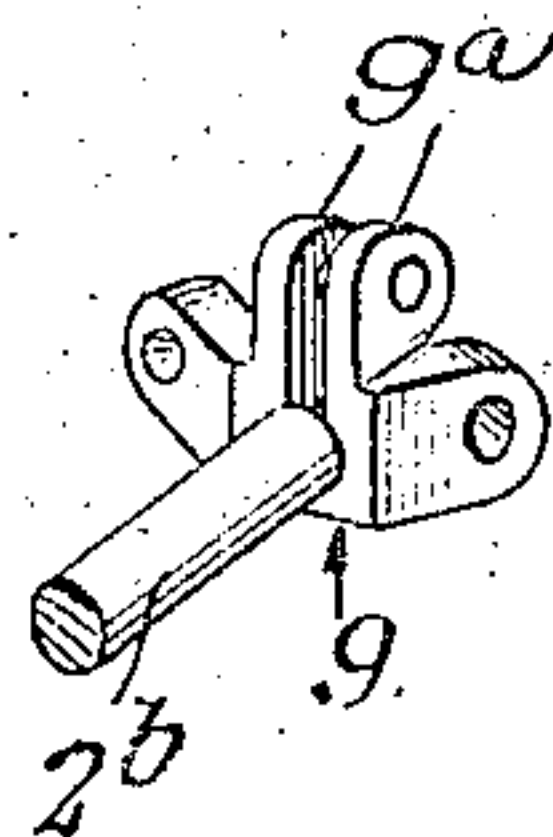
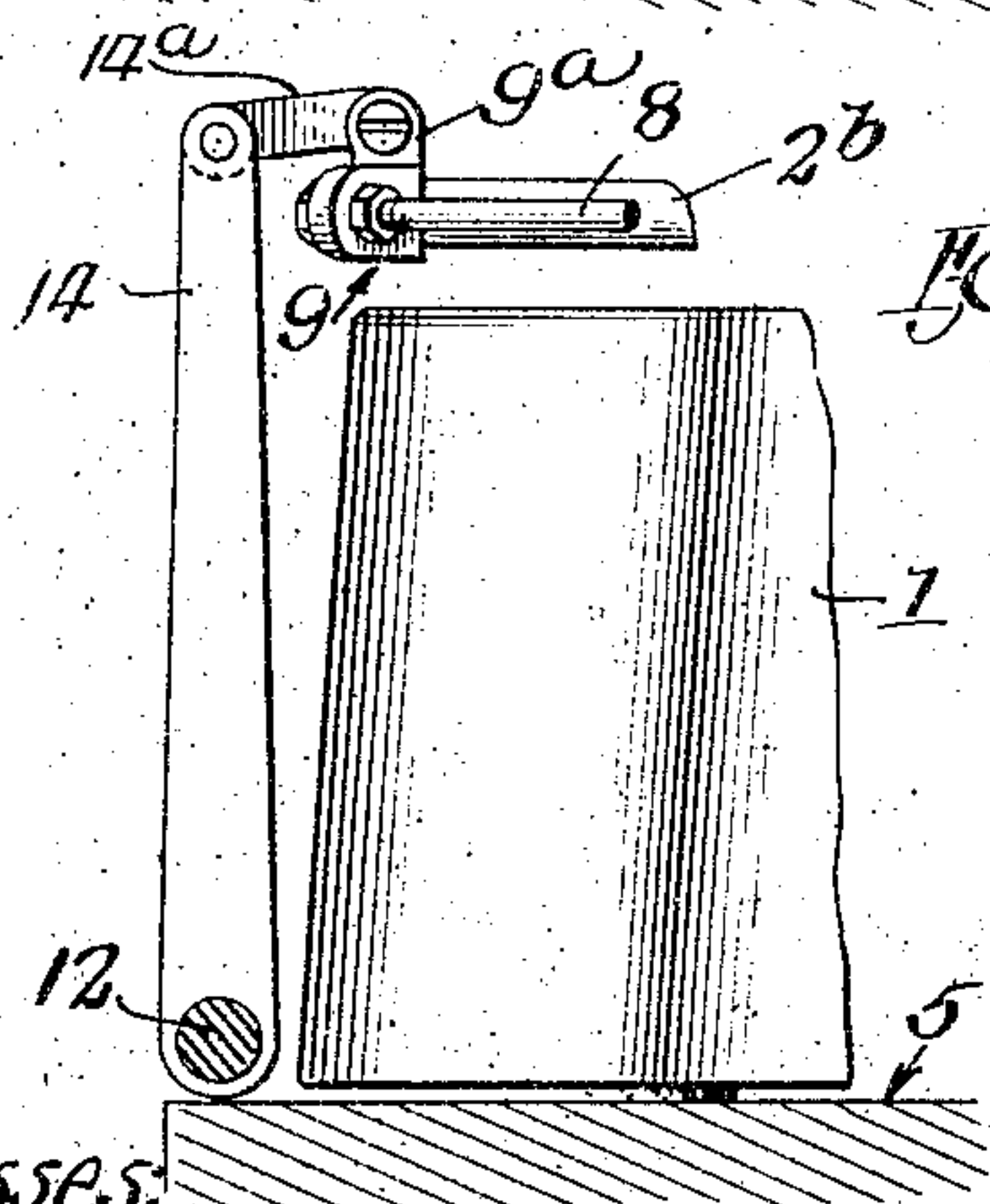
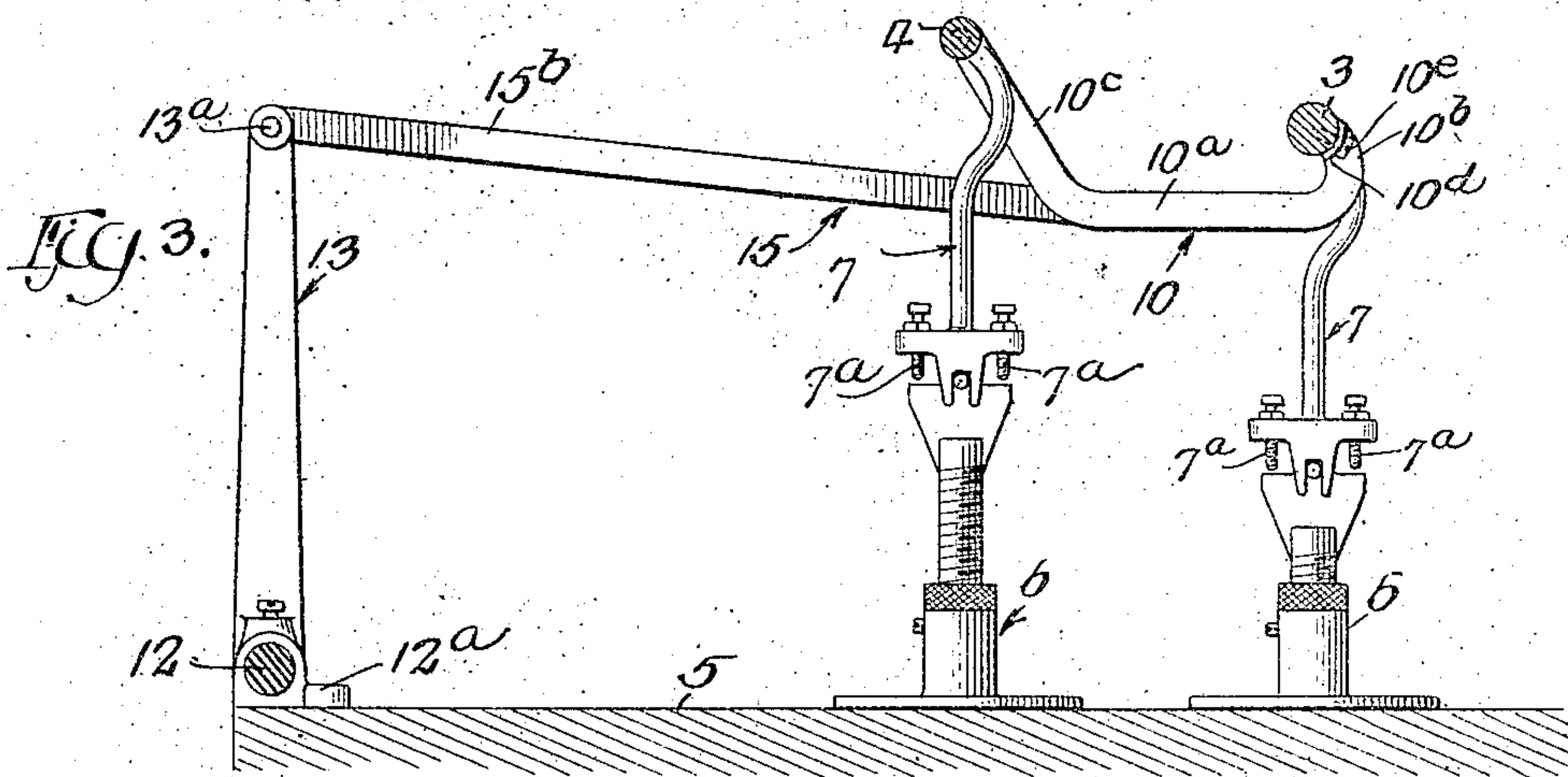
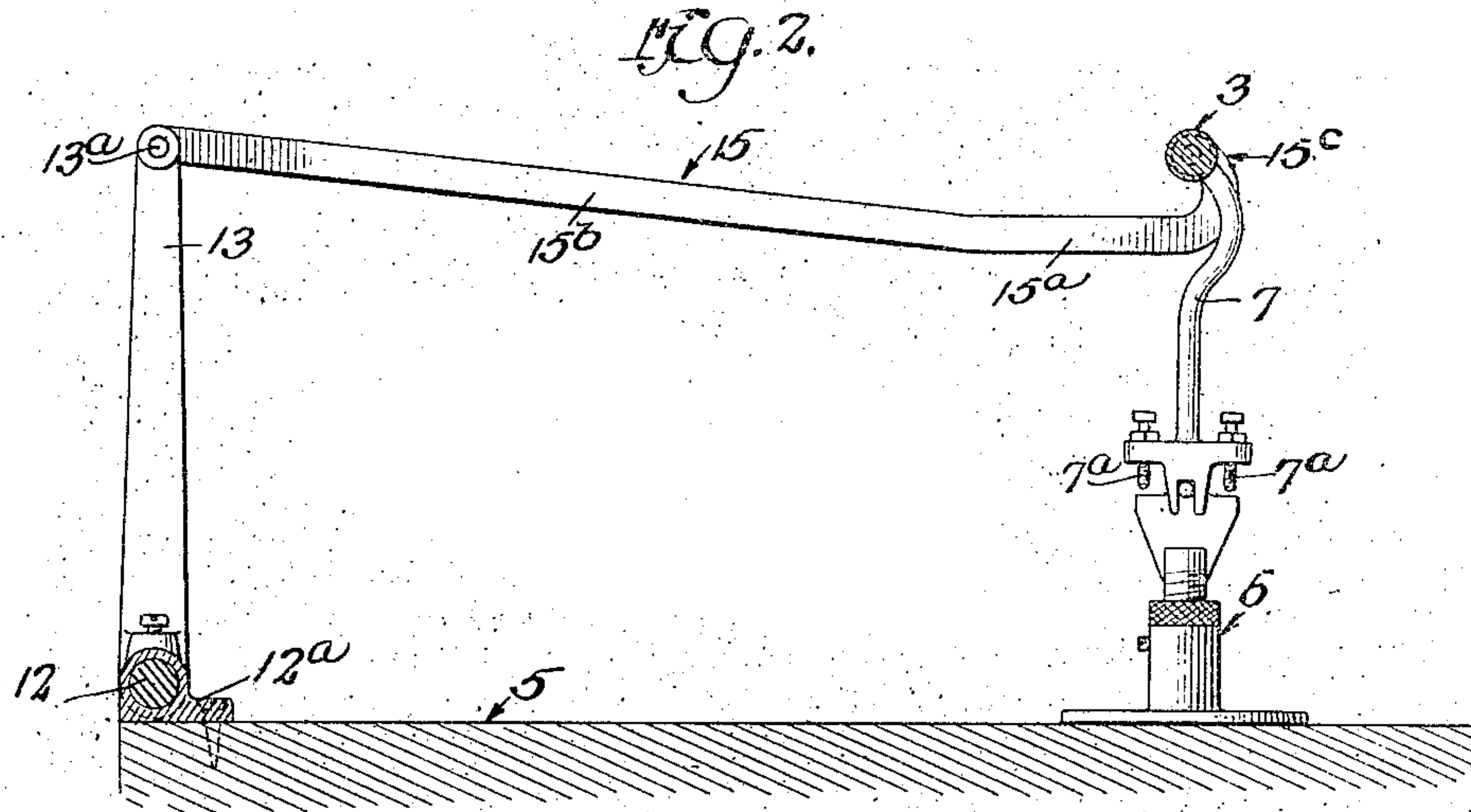
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2 SHEETS—SHEET 2.



Witnesses:  
J. H. Hildebrand  
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Inventor  
Theron L. Knapp  
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# UNITED STATES PATENT OFFICE.

THERON L. KNAPP, OF WOODSTOCK, ILLINOIS, ASSIGNOR TO THE OLIVER TYPEWRITER COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

BRACE MECHANISM FOR TYPE-WRITER SHIFT-FRAMES.

983,557.

Specification of Letters Patent.

Patented Feb. 7, 1911.

Application filed June 27, 1910. Serial No. 569,133.

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 Brace Mechanism 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 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 into 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 maintain the guide-bars in proper, parallel alinement 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 retain them in proper relation throughout their length.

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

The 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 559,863, granted to Thomas Oliver March 1st, 1898, and United States Letters Patent Number 904,207, granted November 17th, 1908, to Theron L. Knapp.

In the drawings:—Figure 1 is a top plan view of an Oliver typewriting machine, together with a base-board upon which it rests, with my improvement attached, with the paper-carriage removed to show the shift-frame and guide-bars, and with the type-bars and associated parts above the level of the frame omitted, the supporting standards for the type-bars being shown in section as are also the swinging links or arms by means of which the shaft-frame is supported at its forward end. Fig. 2 is a partial vertical section through Fig. 1 on the line 2—2 thereof. Fig. 3 is a partial vertical section through Fig. 1 on the line 3—3 thereof. Fig. 4 is a partial vertical section through Fig. 1 on the line 4—4 thereof. Fig. 5 is a detail perspective view of one of the connecting parts to be referred to later. The views shown in Figs. 2 to 5 are all on an enlarged scale.

As shown in said drawings, 1 indicates the base-plate of the typewriting machine; 2, the shift-frame, which is supported on the base so as to have backward and forward shifting movement thereon, and is provided with forward and rear, horizontal, transversely extending guide-bars 3 and 4 on which rest and travel the supporting pulleys of the paper-carriage (not shown in the drawings). Said shift-frame 2 is supported at its forward end by means of swinging arms 2<sup>a</sup>, 2<sup>b</sup> (shown in cross-section in Fig. 1), and at its rear end by means of a horizontal guide-stem 2<sup>b</sup> rigidly attached to the shift-frame and passing through a guide standard 1<sup>a</sup> on the rear of the base frame 1 and resting upon a guide roller 1<sup>b</sup> mounted in said standard. The guide-bars 3, 4 are extended a considerable distance beyond or outside of the base-plate 1 at both sides of the machine in order to properly support a paper-carriage of considerable length adapted to receive a very wide sheet of paper. The ends of said guide-bars are supported from a horizontally arranged base-board 5, upon which the base 1 is centrally disposed, by means of fixed members 6 secured to the base-board and oscillating supporting arms 7 resting on said fixed members. Each oscillating arm 7 has pivotal connection with its associated guide-bar so as to swing transversely of the shift-frame, and bearing engagement with its fixed member 6 by means of horizontally separated set-screws 7<sup>a</sup>, 7<sup>b</sup>, so as to afford ris-



ing and falling movement of the end of the guide bar to correspond with the rising and falling movement of the forward end of the shift-frame. 8, 8 are brace-rods secured by means of a yoke 9 to the rear of the guide bar 2<sup>b</sup>. Said brace-rods diverge toward the front of the machine and are rigidly connected to the front guide bar 3 near its ends. The parts thus far described are substantially as shown in the patent above referred to, No. 904,207, and require no further description.

The front guide-bar 3 is longer than the rear guide-bar 4 and projects beyond said rear guide-bar at both ends. It is connected to the ends of said rear guide-bar by means of parallel, longitudinally extending braces 10, 10 (see Figs. 1 and 3). Said braces comprise horizontal members 10<sup>a</sup> and upwardly and rearwardly extending upright members 10<sup>b</sup>, 10<sup>c</sup> which are secured, respectively, to the front guide-bar 3 and the rear guide-bar 4. The upright member 10<sup>b</sup> has a laterally projecting flange 10<sup>d</sup> curved to fit the surface of the guide-bar 3 and is rigidly secured thereto by means of a screw 10<sup>e</sup>. The rear upright member 10<sup>c</sup> is connected to the end of the guide-bar 4 by means of the screw or bolt 11 which pivotally connects the oscillating member 7 of the guide-bar end-support to said guide-bar.

12 is a rock-shaft arranged parallel to the guide-bars 3, 4, and rotatably mounted on the base-board 1 near its rear margin by means of bearing lugs 12<sup>a</sup> rigidly secured to said board. 13, 14, 13 are upwardly projecting rock-arms which are made rigid with said rock-shaft and project upward to points substantially on a level with the shift-frame. The rock-arm 14 is arranged to swing in the vertical plane through the guide-rod 2<sup>b</sup> and the rock-arms 13, 13 are arranged to swing in the vertical planes of movement of the ends of the guide-rod 3 during the shift of the shift-frame. The rock-arms 13, 13 are connected by means of links 15, 15 to the ends of the guide-rods 3. Each of said links 15 comprises a short horizontal member 15<sup>a</sup> which is located on a level with the horizontal members 10<sup>a</sup> of the braces 10; a rearwardly inclined extension 15<sup>b</sup> which is pivotally connected to its associated rock arm 13; and a rearwardly and upwardly inclined upright member 15<sup>c</sup> at its forward end which is pivotally connected to the guide-bar 3. The upright member 15<sup>c</sup> is pivoted to the end of said guide-bar 3 by the same screw 16 by means of which the oscillating member of the end support of said guide-bar is pivoted thereto. The rear end of the link 15 is pivotally connected to the upright rock-arm 15 by means of a bolt 13<sup>a</sup>.

The middle upright rock-arm 14 is connected at its upper end to the yoke 9 to which are secured the brace bars 8. Said

yoke is provided with laterally separated upright ears 9<sup>a</sup>, 9<sup>a</sup> (see Fig. 5) between which is pivoted the forward end of a short link 14<sup>a</sup>, the rear end of which is pivotally connected to the upper end of said rock arm.

By means of the construction described, the guide-bars are connected together near their ends by the braces 10 which hold them in spaced relation at these points and, in addition, the front guide-bar is connected by the links 15, 15 to the swinging frame comprising the rock-shaft 12 and the upright rock-arms 13, 13, 14, which also has connection with the shift-frame at its middle through the link 14<sup>a</sup> connecting the yoke 9 with the rock-arm 14. We thus have the guide-bars not only held in parallel relation by means of connections between them, but also have them held in proper aligned arrangement by means of their connection to the swinging frame at or near their ends and at the middle.

By providing the braces 10, 10 and 15, 15 with upright members for connecting them to the guide-bars, said links are located below the paper-carriage a sufficient distance so that they will not interfere with its operation.

I claim as my invention:—

1. The combination with a typewriting machine frame, a base-board beneath said frame, a shift-frame having shifting movement on the machine frame, said shift-frame being provided with laterally extending guide-bars which project beyond the machine frame, and means for supporting the ends of said guide-bars, of braces connecting said guide-bars near their ends, a rocking frame supported on said base-board, and links connecting one of said guide-bars to said rocking frame.

2. The combination with a typewriting machine frame, a base-board beneath said frame, a shift-frame having shifting movement on the machine frame, said shift-frame being provided with laterally extending guide-bars which project beyond the machine frame, and means for supporting the ends of said guide-bars, of braces connecting said guide-bars near their ends, a rocking frame embracing a rock shaft rotatably mounted on said base-board and extending parallel to said guide-bars, and upright rock-arms made rigid with said rock-shafts, and links connecting one of said guide-bars to said rock-arms.

3. The combination with a typewriting machine frame, a base-board beneath said frame, a shift-frame having shifting movement on the machine frame, said shift-frame being provided with laterally extending guide-bars which project beyond the machine frame, and means for supporting the ends of said guide-bars, of braces connecting said guide-bars near their ends and adapted



to hold them in proper spaced relation, a rocking frame embracing a rock shaft extending parallel to said guide-bars and located near the rear margin of said base-board, and upright rock-arms made rigid with the said rock-shaft and adapted to swing in planes parallel to the longitudinal central axis of the machine frame, one of said rock-arms being located in the plane of the central longitudinal axis of the machine, and a rock-arm located opposite each end of one of said guide-bars, links connecting the ends of said guide-bar with their associated rock-arms, and a link connecting the intermediate rock-arm with the shift-frame.

4. The combination with a typewriting machine frame, a base-board beneath said frame, a shift-frame having shifting movement on the machine frame, said shift-frame being provided with laterally extending guide-bars which project beyond the machine frame, means for supporting the ends of said guide-bars, and a rearwardly extending guide stem made rigid with said shift-frame, of braces connecting said guide-bars near their ends, a rocking frame comprising a shaft parallel with said guide-bars and rotatably mounted on said base-board, and upright rock-arms made rigid with said shaft, one of said rock-arms being located opposite the end of said guide-stem, a lug secured to the end of said guide-stem, a link pivotally connected at one end to said lug and at the other end to said rock-arm, two of said rock-arms being located opposite the ends of one of said guide-bars, and links pivotally connected at one end to the end of said guide-bar and at the opposite end to the associated rock-arm.

5. The combination with a typewriting

machine frame, a base-board beneath said frame, a shift-frame having shifting movement on the machine frame, said shift-frame being provided with a laterally extending guide-bar which projects beyond the machine frame, and means for supporting the ends of said guide-bar, a rocking frame supported on said base-board, and links connecting said guide-bar to said rocking frame.

6. The combination with a typewriting machine frame, a base-board beneath said frame, a shift-frame having shifting movement on the machine frame, said shift-frame being provided with a laterally extending guide-bar which projects beyond the machine frame, and means for supporting the ends of said guide-bar, of a rocking frame embracing a rock-shaft extending parallel to said guide-bar and located near the rear margin of said base-board, and upright rock-arms made rigid with the said rock-shaft and adapted to swing in planes parallel to the longitudinal central axis of the machine frame, one of said rock arms being located in the plane of the central longitudinal axis of the machine, and a rock-arm located opposite each end of said guide-bar, links connecting the ends of said guide-bar with their associated rock-arms, and a link connecting the intermediate rock-arm with the shift-frame.

In testimony that I claim the foregoing as my invention I affix my signature in the presence of two witnesses, this 17th day of June A. D. 1910.

THERON L. KNAPP.

Witnesses:

A. J. MULLEN,  
LILLIAN SCHROEDER.