

C. F. RICHARDSON.
 TYPE WRITING MACHINE.
 APPLICATION FILED FEB. 23, 1910.

1,126,277.

Patented Jan. 26, 1915.

6 SHEETS—SHEET 1.

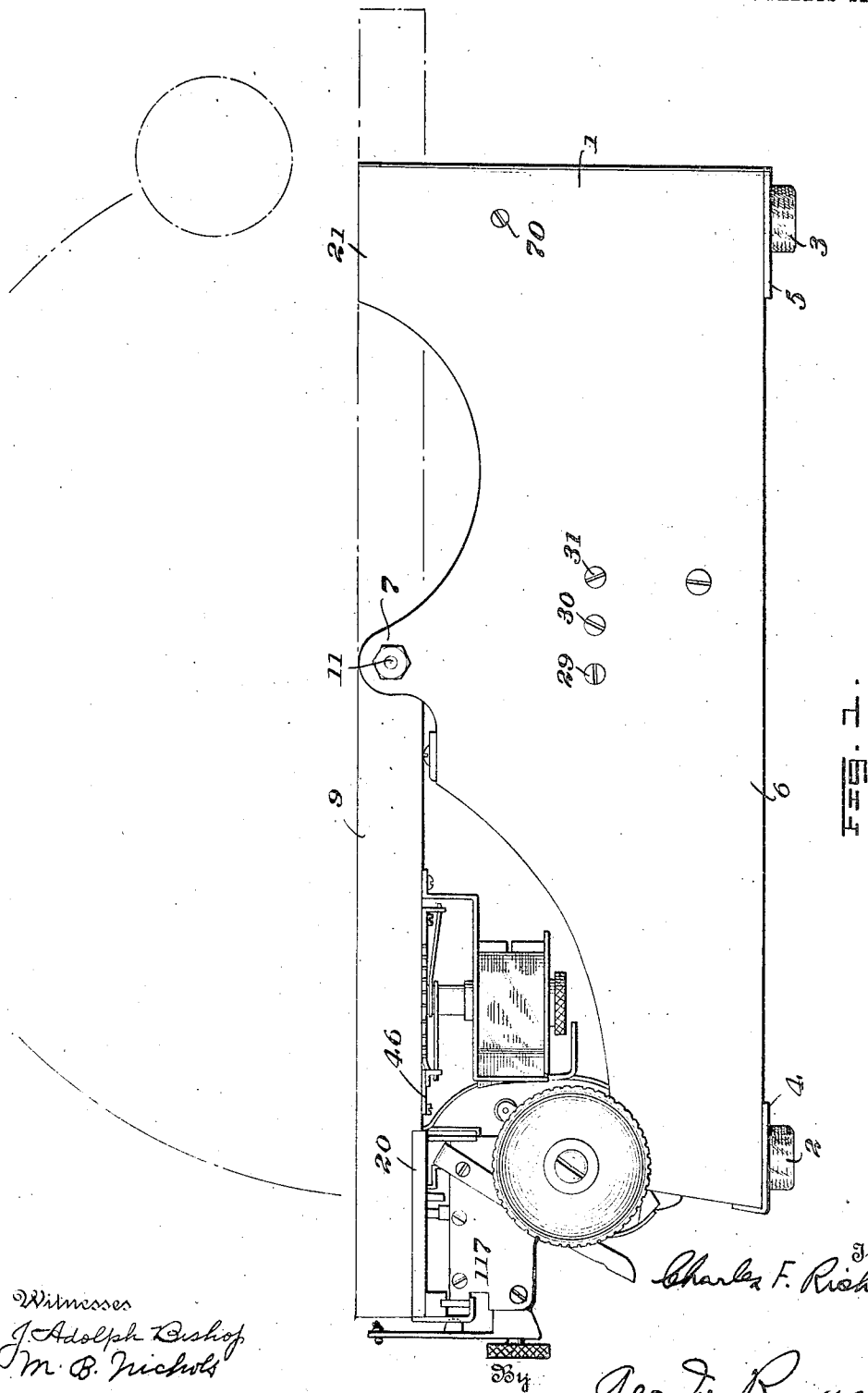


FIG. 1.

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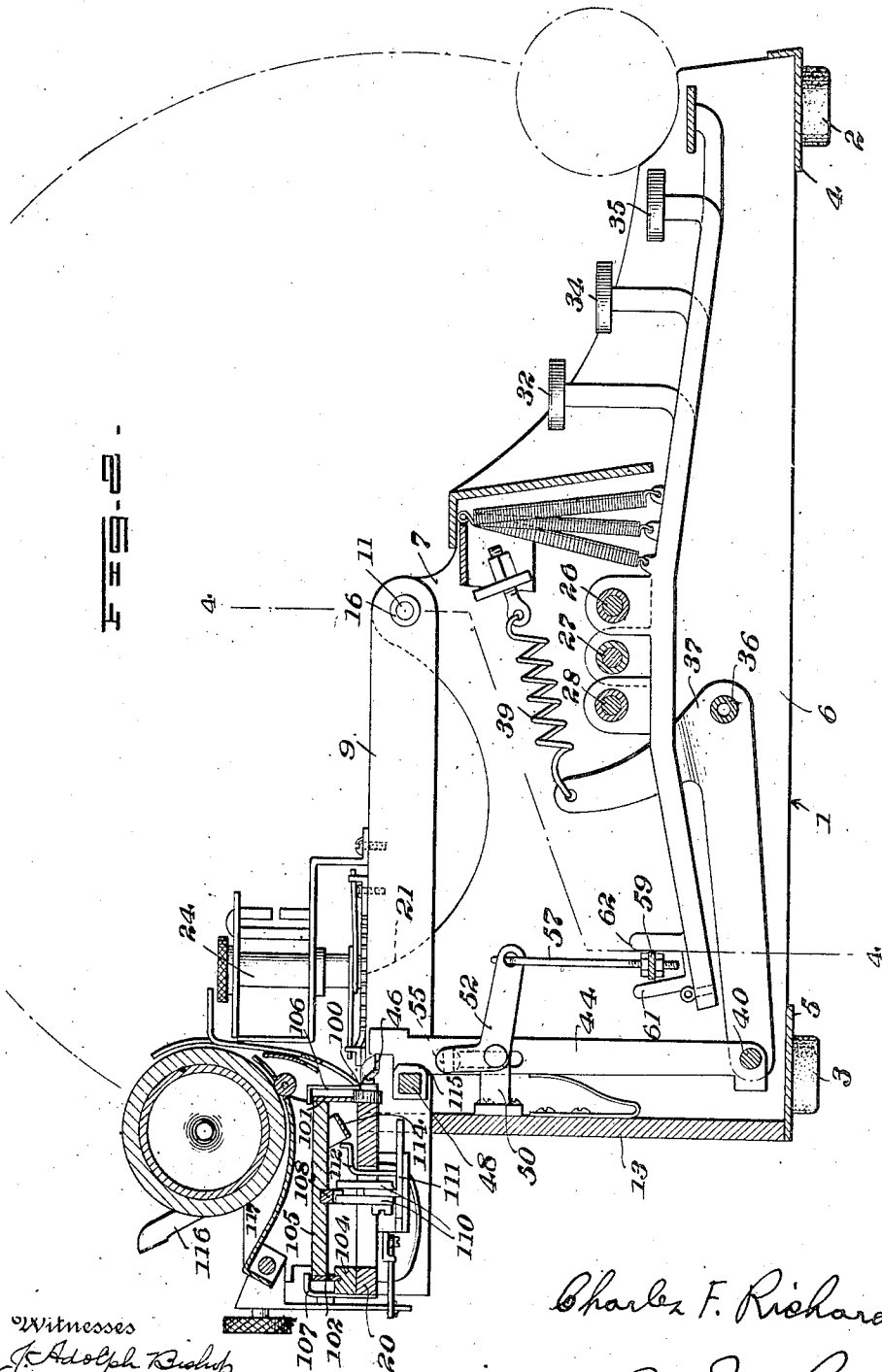
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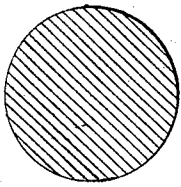
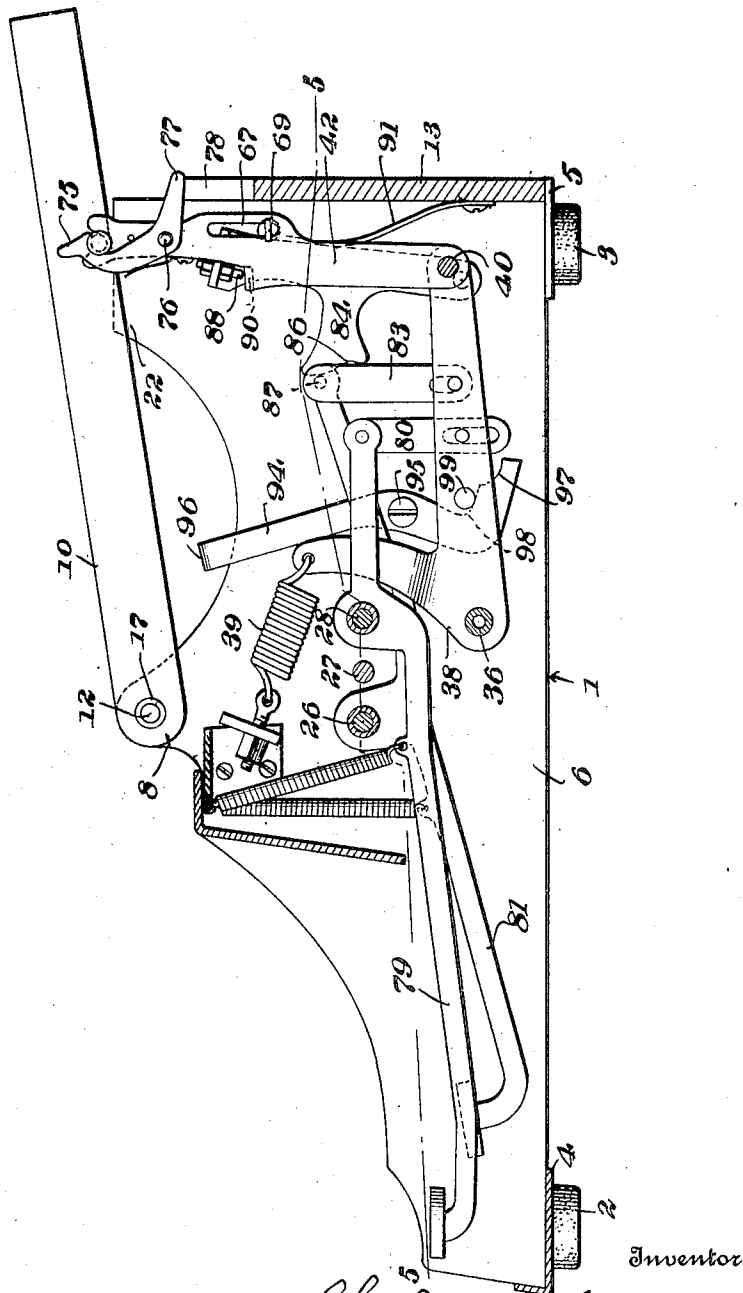


FIG. 3.



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5 SHEETS—SHEET 4.

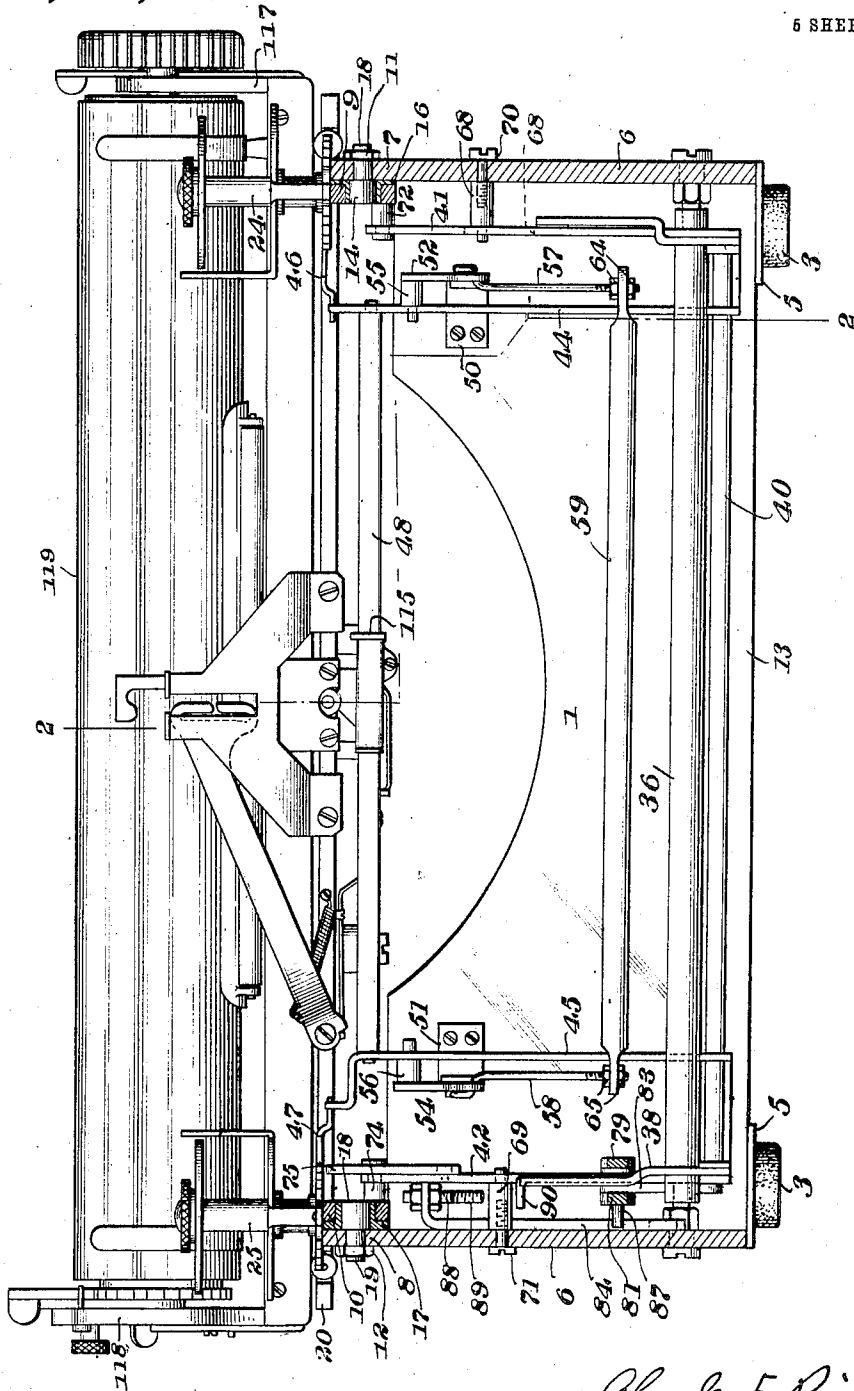


FIG. 4.

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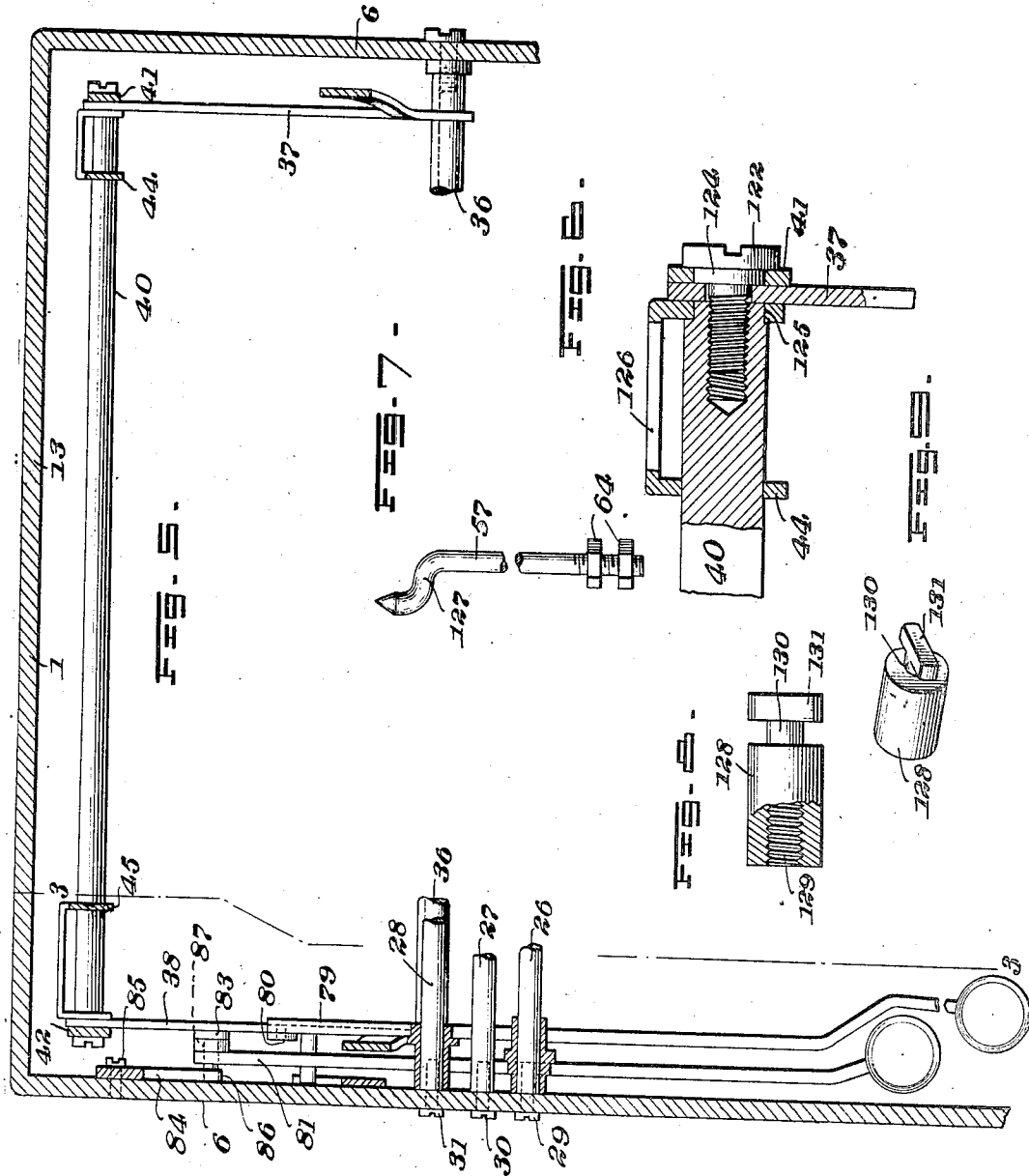
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6 SHEETS—SHEET 5.



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UNITED STATES PATENT OFFICE.

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TYPE-WRITING MACHINE.

1,126,277.

Specification of Letters Patent.

Patented Jan. 26, 1915.

Application filed February 23, 1910. Serial No. 545,502.

To all whom it may concern:

Be it known that I, CHARLES F. RICHARDSON, a citizen of the United States, and a resident of Woonsocket, county of Providence, State of Rhode Island, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

This invention relates broadly to the art of typewriting and specifically to a typewriting machine which is constructed and arranged to be folded within small compass.

One object of the invention is to provide a typewriting machine which is constructed with a carriage shiftable for upper and lower case letters, figures, etc., and so arranged that the carriage can be folded out of normal position into an abnormal position.

Another object of the invention is to arrange the carriage, feed mechanism, and ribbon mechanism in such manner that they are carried by means attached to the machine frame in such a way that the previously stated mechanisms may be folded over to abnormal position in order that the machine may occupy less vertical space.

A still further object of the invention is to arrange the carriage mechanism, feed mechanism, and ribbon mechanism in such manner that all of said mechanisms are shifted when the carriage is shifted from upper to lower case position.

A further object of the invention is to provide a latch mechanism which securely fastens the carriage mechanism to the devices for shifting the carriage to upper and lower case, when the carriage is in normal position; the latch mechanism is so arranged that the carriage mechanism may be unlocked from the shifting devices when it becomes desirable to fold the carriage into abnormal position.

Further objects of the invention will in part be obvious and in part pointed out in the specific description of structure hereinafter followed.

This invention will be more specifically described hereinafter by reference to the accompanying drawings which form a part of this invention and the scope of the invention will be indicated by the appended claims, in which like figures represent like parts throughout the specification.

Figure 1 is an elevation showing the car-

riage, ribbon and feed mechanism folded to abnormal position. Fig. 2 is a sectional elevation with the type bar mechanism omitted, showing the carriage, feed and ribbon mechanisms in normal position. Fig. 3 is a sectional elevation showing the shift mechanism of the carriage shifted to its highest shifted position. Fig. 4 is a sectional elevation through the side frame, with key levers and type bars omitted, showing the relationship of the shift links, etc., with reference to the carriage bed. Fig. 5 is a sectional plan, with key levers omitted, showing the arrangement of the shift key mechanism. Fig. 6 is a detail of construction showing means of attaching the ribbon actuating links to the shift frame. Fig. 7 is a detail of universal bars suspension link. Fig. 8 is a detail plan view of one of the pivot studs. Fig. 9 is a perspective view of the pivot stud.

Referring more specifically to Fig. 1, the machine frame 1 is provided with supporting feet 2 and 3 which are attached to plates 4 and 5 fastened to the under portion of the machine frame. The side members 6 of the frame, are provided with projections 7 and 8 on their upper portions. Side bars 9 and 10 are pivotally mounted to the projections 7 and 8, respectively, of the machine frame, by means of pivot members 11 and 12. These pivot members are provided with enlarged portions 14 and 15, which are seated in bushings 16 and 17, that are carried by the side members 9 and 10. The pivot members are adapted to pass through the projections 7 and 8 of the machine frame and are provided with nuts 18 and 19 on their outer ends. This construction permits of a simple pivot bearing, all of the parts of which may be hardened and ground to a true surface. The side bars 9 and 10 carry the carriage bed 20, which is attached to their upper surface by means of screws or any convenient fastening means. The side members of the machine frame are provided with upper continuations 21 and 22, near the back portion of the machine. The side bars 9 and 10 are mounted in such manner that the projections 21 and 22 form lateral guides which hold the side bars 9 and 10 in proper relationship when the carriage mechanism is in normal position. The ribbon spools 24 and 25 are carried by the pivoted side bars 9 and 10 in such a position as not to strike the machine

frame when the carriage is folded to abnormal position.

The key lever pivot bars 26, 27, and 28 are mounted in the side frame by means of screws 29, 30 and 31. These pivot bars 26, 27 and 28 form fulcrum members for the key levers 32, 34 and 35 respectively. A shaft 36 is also pivotally mounted between the side frames 6—6, and carries near its outer end bell crank levers 37 and 38, to one arm of which are attached counter-balancing springs 39. The other end of the bell crank levers carry a rod 40, upon which is mounted the shift links 41 and 42 respectively. The rod 40 also carries vertical links 44 and 45, the upper ends of which are adapted to operate small bell cranks 46 and 47, which operate the ribbon spools. A bar 48 is carried by the upper ends of the vertical links 44 and 45, and provides means for operating the ribbon shift and carriage feeding mechanism which will be described more specifically hereinafter. Brackets 50 and 51 are mounted upon the rear portion 13 of the machine frame directly back of the vertical links 44 and 45. These brackets carry small bell crank levers 52 and 54, which are provided on their upper arms with studs 55 and 56 respectively. These studs are constructed with a projecting T head (shown in detail in Figs. 8 and 9) and are adapted to pass through slots in the vertical links 44 and 45. The other arms of the bell crank levers 52 and 54 are perforated and are adapted to carry wire links 57 and 58, which carry on their lower ends a universal bar 59. The universal bar 59 is held in position over the key levers 32, 34 and 35 by means of forked ends 61 on the space lever arms 62. The nuts 64 and 65, carried upon the links 57 and 58, permit the adjustment of the universal bar 59 with relation to its position over the key levers.

The studs 68 and 69, which are mounted upon the machine frame by means of screws 70 and 71 respectively, are provided with T heads, similar to the studs 55 and 56, which heads are adapted to pass through the slots 66 and 67 in the shift links, and the studs are adapted to form sliding pivots upon which the links 41 and 42 may be actuated. The upper ends of the links 41 and 42 are bifurcated and are adapted to engage studs 72 and 74, which are carried by the side bars 9 and 10. The link 42 is provided at its upper portion with a latch member 75, which is pivotally mounted upon the link by means of a rivet 76. This latch member 75 is adapted to latch over the stud 74, thereby securely locking the bar 10, and all of the mechanisms carried upon said bar, to the shift link 42. The latch 75 is also provided with a tail portion 77, which is adapted to pass through a slot 78 in the rear wall 13 of the machine frame, to form a finger piece

by means of which the latch can be disengaged from the stud 74 in order to release the mechanism when it becomes desirable to fold the carriage to abnormal position.

Referring particularly to Figs. 3, 4 and 5, the "Cap" shift lever 79 is mounted upon the key lever pivot bar 28 and is connected by means of a slotted link 80 with the bell crank lever 38. The "Fig" shift lever is mounted upon the key lever pivot bar 26 and is also connected at its outer end by means of a slotted link 83 with the bell crank lever 38. A movable abutment member 84 is pivotally mounted upon the machine frame by means of a screw 85. This member is provided with a cam portion 86 which is adapted to cooperate with a pin 87 carried by the outer end of the "Fig" shift lever 81. The upper portion of the movable abutment 84 is provided with stop screws 88 and 89. The shift link 42 is provided with an abutting shelf 90, with which the stop screws 88 and 89 are adapted to cooperate in order to accurately position the carriage when it is shifted for different case letters. The longer stop screw 89 positions the carriage for lower case printing while the shorter screw 88 positions the carriage in the "Fig" or upper shifted position. A spring 91 holds the depression in the cam 86 of the abutting member 84 in normal position against the pin 87, in which position the abutting screw 89 is adapted to cooperate with the shelf 90 on the link 42. When the "Fig" shift key is operated, the pin 87 cooperating with the cam 84, moves the abutting member backwardly against the pressure of the spring 91 to such position that the shorter stop screw 88 is in the path of the abutting shelf 90, and thus this screw determines the length of the shift for the "Fig" shift key. In order to provide for the shift lock an L-shaped lever 94 is pivotally mounted upon the side frame by means of the screw 95. This locking lever 94 is provided at its upper end with a finger key 96 and at its lower end with notched portions 97 and 98, which are adapted to cooperate with a stud pin 99, which is mounted on the bell crank lever 38, in order to lock the carriage in any shifted position. It will be seen that the notched portions on the locking lever 94 prevent the shift mechanism from moving in a downward direction, while the abutting screws 88 and 89 likewise prevent the mechanism from moving in an upward direction, therefore, when the locking lever is thrown into engagement with the stud 99, the carriage is effectually locked in either of these shifted positions.

Referring more particularly to Fig. 2, the carriage bed 20 carries upon its front middle portion a small roller 100, upon which the front carriage rail 101 is adapted to run. A rear carriage rail 102 is mounted

to slide in a groove cut in the base rail 104, which is fixedly mounted on the carriage bed 20. The carriage frame 105 is mounted between the rails 101 and 102. The holding members 106 and 107 are arranged to cooperate with the rails 101 and 102 in order to prevent the carriage from being lifted or thrown from its position upon the carriage bed. This carriage frame 105 carries a feed rack 108 which is adapted to cooperate with the feed dogs 110, which are mounted upon the escapement lever 111. The escapement lever 111 is provided with an extension 112, which is arranged in the path of the release bar 114. The escapement lever 111 is also provided with a forward extension which is adapted to contact with the member 115 carried on the bar 48, in order to actuate the feed dogs in and out in the feed rack 108. The release bar 114 terminates in a pivotally mounted release lever 116, which enables the operator to swing the release bar in order to disengage the feeding dogs from the carriage rack. The carriage frame 105 also carries end frames 117 and 118, in which is mounted a platen 119.

Referring particularly to Fig. 6, which is a detail section showing the method of attaching one of the ribbon actuating links to the shift frame, the rod 40 is attached at one end to the bell crank lever 37 by means of a headed screw 122. Beneath the head of the screw 122, a shoulder 124 is provided in such manner as to form a pivot for the shift link 41. The rod 40 is shouldered at 125 in order to provide a pivot bearing for the ribbon actuating link 44. This ribbon actuator is provided with an off-set portion 126, which forms a brace to prevent lateral motion of the ribbon operating link. The ribbon operating link 45 is attached to the rod 40 in a manner similar to that of the attachment of the link 44.

Referring specifically to Fig. 7, the wire link 57, which supports one end of the universal bar 59, from the bell crank 52, is shown in detail. The upper end of this link is provided with a double curved portion 127 in such manner that when the link is threaded through the opening in the bell crank 52, it cannot be removed by a vertical pull. The lower end of the link is provided with nuts 64 and 64 which permit of the adjustment of the universal bar with reference to the key lever.

Referring specifically to Figs. 8 and 9, which illustrate in detail one of the pivoted abutment studs which is used in applicant's construction where a slotted sliding pivot is required, for example in the shift links 41 and 42 and the ribbon actuating links 44 and 45. These studs are formed of a cylindrical body portion 128, which is threaded as at 129 in order to receive holding screws. The outer end of the stud is provided with a

smaller cylindrical portion 130, which is capped at a T-shaped head 131. The width of the T-shaped head is substantially the same as the diameter of the cylindrical portion 130. This stud forms a very secure and yet simple attaching means for such parts as have hereinbefore been described.

Referring particularly to the hereinbefore specifically described mechanisms, it will be noted that the key mechanism and shift mechanism are mounted within the machine frame in such manner that the ribbon mechanism, carriage mechanism and feeding mechanism may be shifted or folded without disturbing the previous mentioned devices. It will also be noted that the bars 8 and 9 are pivoted directly to the machine frame and perform a double function of carrying the ribbon mechanism, carriage mechanism and feeding mechanism when shifted to upper and lower case, and also permitting the said feeding mechanism, carriage mechanism and ribbon mechanism to be folded over to a position beyond the key board in such manner that the machine can be packed within a small vertical compass. When the device is in its folded relationship the platen 119 is adapted to rest on the portions of the side frame 120 and 121, which are formed to fit the configuration of the platen. By pivoting the side bars 9 and 10 to the machine frame, applicant is enabled to secure an extremely rigid structure for shifting from upper to lower case and also is enabled to secure a structure which is light and simple in construction and also rigid when the carriage mechanisms are folded to abnormal position for packing the machine in small compass.

As many changes could be made in the herein described structure and many widely different embodiments of this invention might be made without departing from the scope thereof, the matter contained in the above described structure and shown in the accompanying drawings is to be taken as illustrative and not in a limiting sense.

I desire it also to be understood that the language used in the claims is intended to cover all generic and specific features of this invention herein described and all statements of the scope of the invention, which as a matter of language might fall therebetween.

Having described my invention what I claim is:—

1. In a typewriting machine the combination of a main frame, supporting bars pivotally attached to the upper portion of said main frame, carriage mechanism mounted upon said supporting bars, the arrangement and construction of parts being such that the carriage mechanism may be moved to abnormal position beyond the key board, in which position the vertical height of said

supporting bars is substantially equal to the highest portion of said machine frame.

2. In a typewriting machine the combination of a main frame, key levers operatively mounted in said main frame, supporting bars pivotally mounted upon said main frame, platen carriage mechanism mounted upon the outer end of said supporting bars, said main frame being formed with a supporting portion in front of the main key board, the arrangement and construction of parts being such that the carriage mechanisms are adapted to be moved through substantially one hundred and eighty degrees and to rest upon said supporting portion of the main frame in front of the main key board.

3. In a typewriting machine the combination of a main frame provided with supporting portions, key levers operatively mounted in said frame, supporting bars pivotally mounted on the inner surfaces of the sides of said main frame and adapted when in normal position to rest upon the upper portions of the back of said main frame, carriage mechanism carried by said supporting bars, the arrangement and construction of parts being such that said carriage mechanism may be moved through substantially one hundred and eighty degrees and rest upon said supporting portions of the main frame in a position substantially for the front of the main key board of the machine.

4. In a typewriting machine a main frame, supporting bars pivotally mounted on the inner surface of the sides of said main frame, and guiding projections upon the upper rear portion of said main frame, substantially as described.

5. In a typewriting machine the combination of a main frame, supporting bars

pivoted to the upper part of said main frame and capable of being moved through one-hundred and eighty degrees, the axis of said supporting bars being in a vertical plane substantially midway between the front and back of the machine, a carriage supported upon the free ends of said supporting bars, a platen operatively mounted upon said carriage, and means formed upon the front end of the said frame to support the said platen when the supporting bars are moved through one-hundred and eighty degrees to folded position.

6. In a typewriting machine in combination, a machine frame, feet beneath said machine frame and adapted to support said machine, a pair of supporting bars pivoted to the sides of said machine frame, a platen operatively mounted upon the free ends of said supporting bars, and a support formed upon the front end of said machine frame, the construction and arrangement of parts being such that when said platen rests upon the support at the front of the machine frame the supporting bars are substantially parallel to a line joining the bottom of the feet under the machine frame.

7. In a folding typewriting machine in combination, a machine frame, supporting bars pivoted to said machine frame, a platen carriage operatively mounted upon said supporting bars, the construction and arrangement of parts being such that said platen carriage may be folded from normal to abnormal position to reduce the vertical height of said machine, and a locking latch operative to secure said carriage in normal position.

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