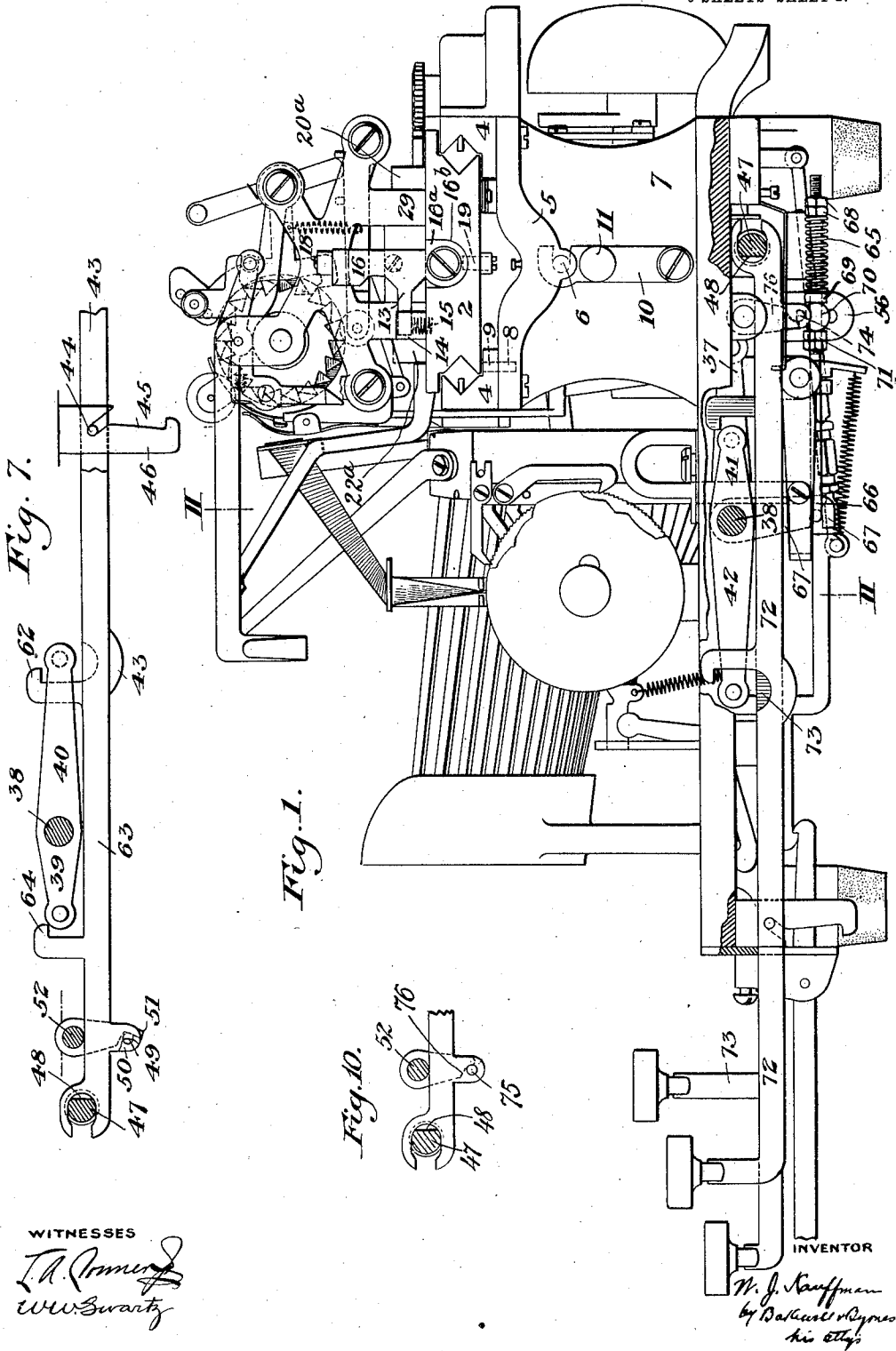


W. J. KAUFFMAN.
TYPE WRITER CARRIAGE MECHANISM.
APPLICATION FILED JUNE 11, 1906.

1,063,543.

Patented June 3, 1913.

6 SHEETS—SHEET 1.



1,063,543.

6 SHEETS—SHEET 2.



L.A. Conner
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INVENTOR

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his attys.

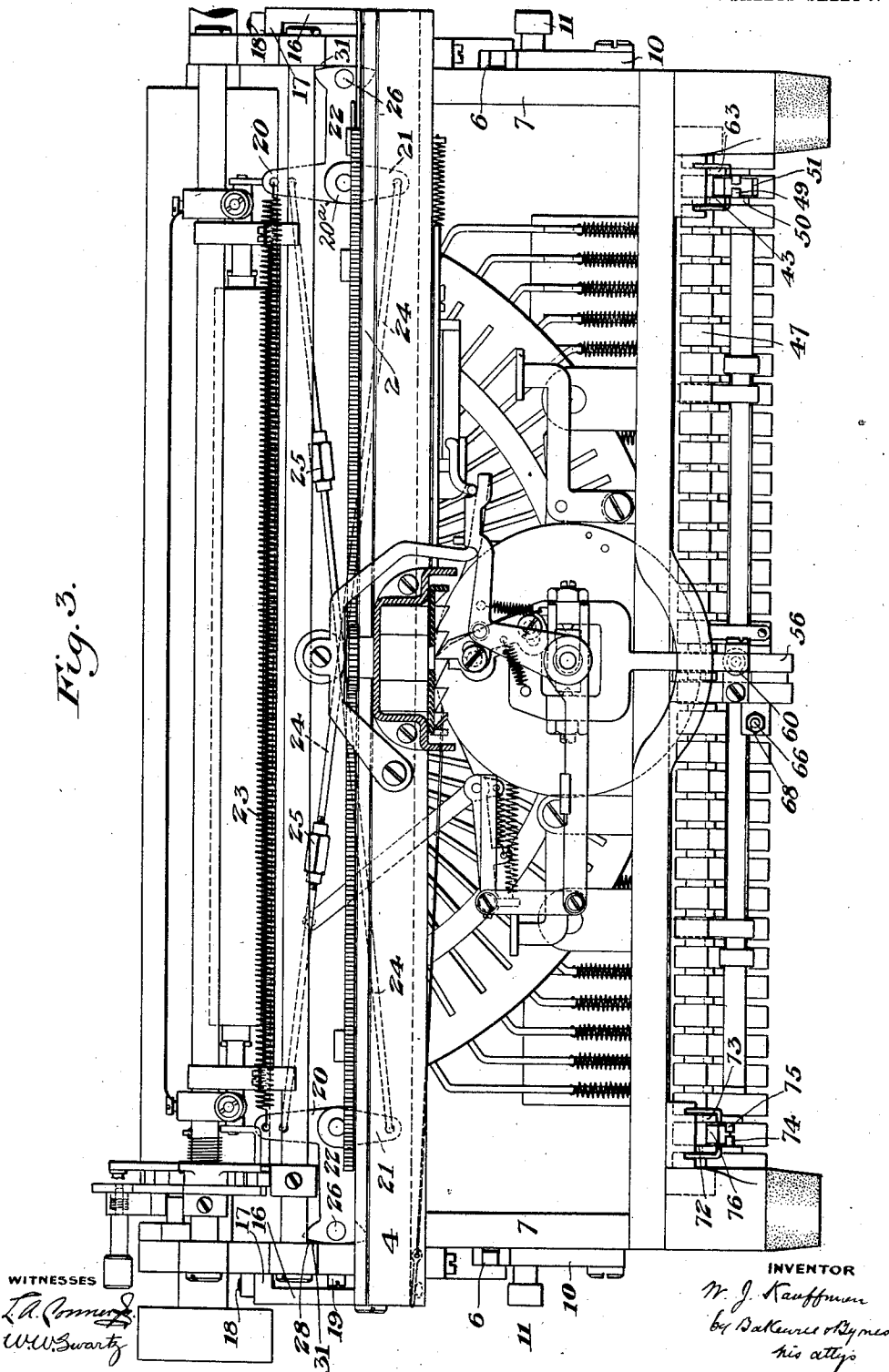
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6 SHEETS—SHEET 3.

Fig. 3.



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6 SHEETS—SHEET 4.



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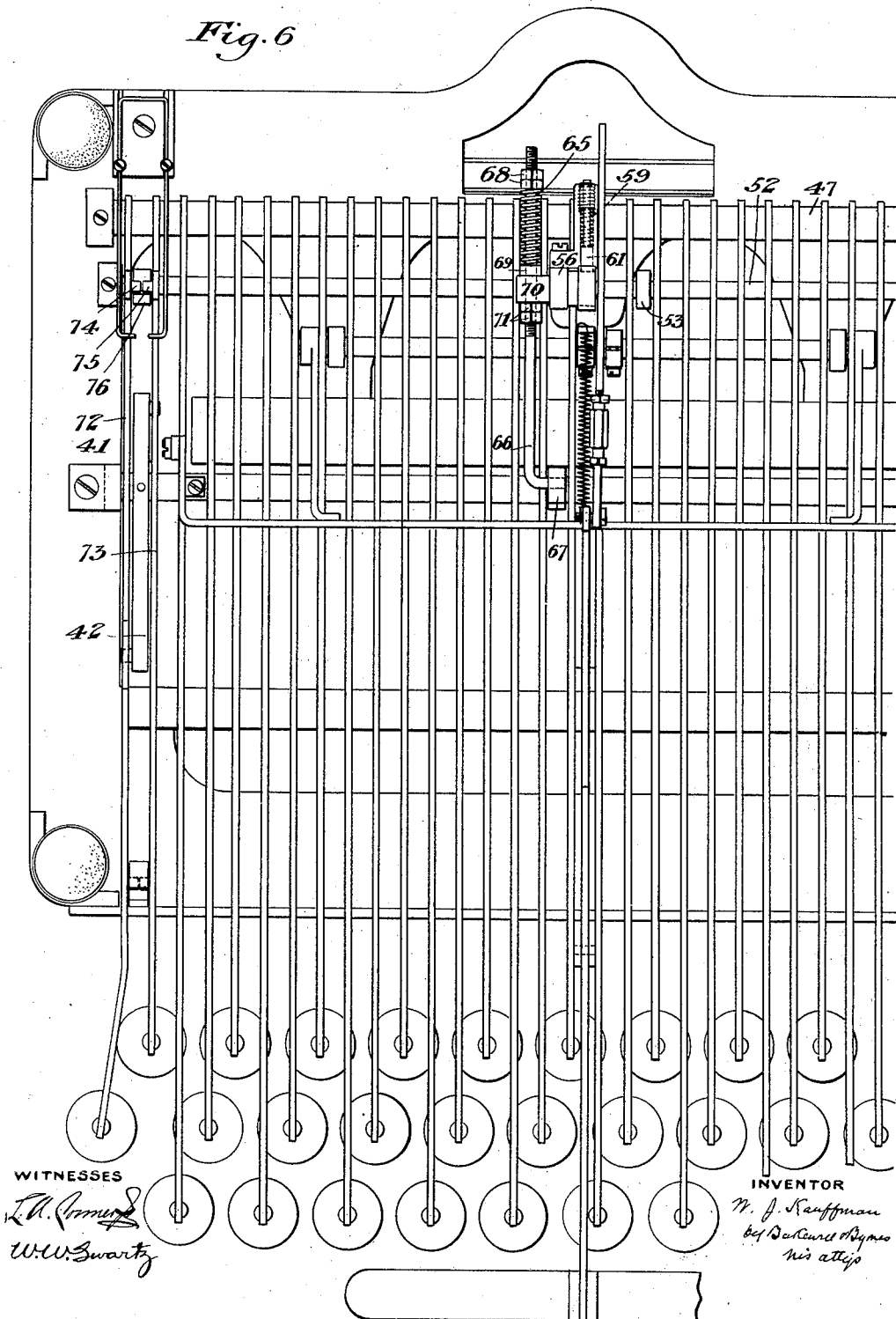
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6 SHEETS—SHEET 5.

Fig. 6

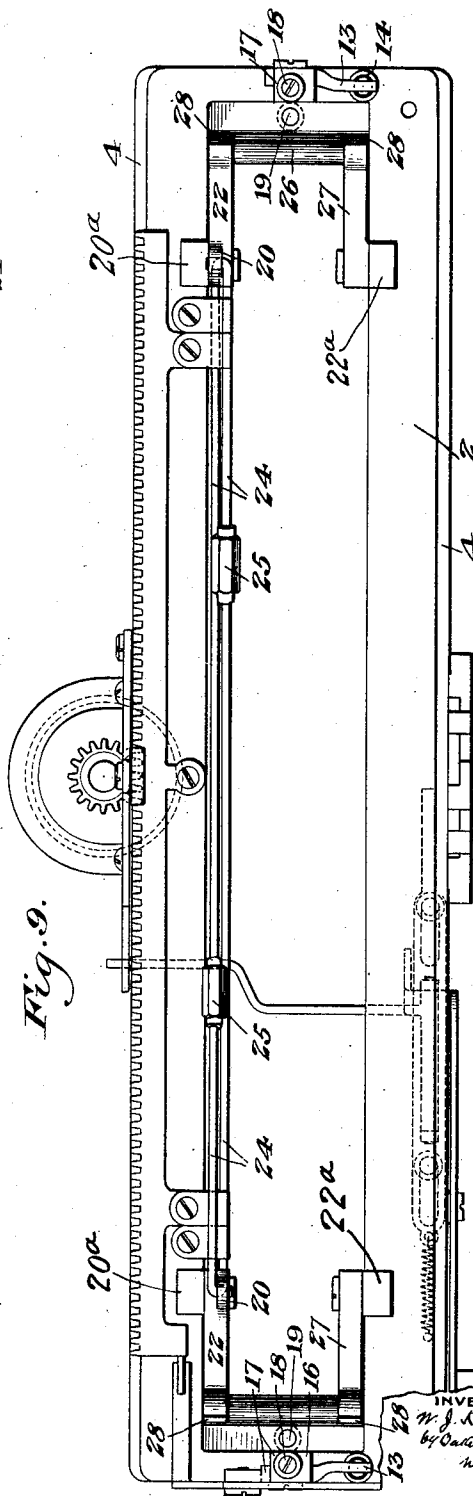
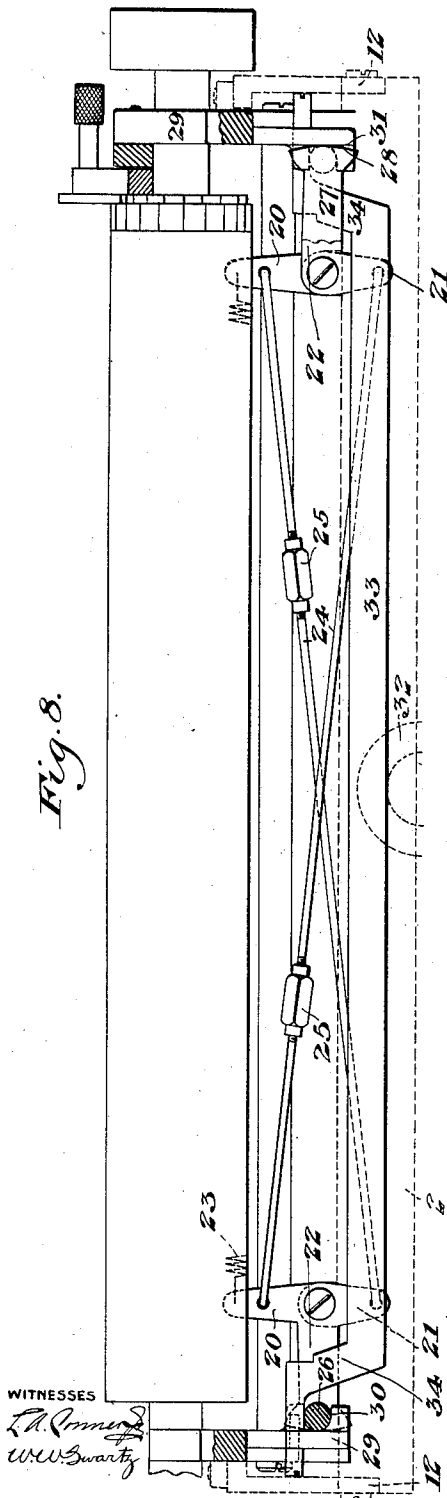


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6 SHEETS—SHEET 6.



UNITED STATES PATENT OFFICE.

WILLIAM J. KAUFFMAN, OF CLEVELAND, OHIO.

TYPE-WRITER CARRIAGE MECHANISM.

1,063,543.

Specification of Letters Patent.

Patented June 3, 1913.

Application filed June 11, 1906. Serial No. 321,099.

To all whom it may concern:

Be it known that I, WILLIAM J. KAUFFMAN, of Cleveland, Cuyahoga county, Ohio, have invented a new and useful Type-Writer Carriage Mechanism, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side elevation partly in section of my improved typewriter viewed from the right side of the machine. Fig. 2 is a cross section on the irregular line II—II of Fig. 1 with parts omitted. Fig. 3 is a rear view. Fig. 4 is a longitudinal central section looking toward the right side of the machine. Fig. 5 is a partial end view, viewed from the left side of the machine. Fig. 6 is a bottom plan view of the key lever mechanism. Fig. 7 is a detail view of the key lever mechanism employed at the left side of the machine. Fig. 8 is a detail view of the platen partly in section showing the carriage bed in dotted lines. Fig. 9 is a plan view of the carriage bed with the platen removed and Fig. 10 is a detail view of a portion of the right-hand shifting mechanism.

My invention relates to the carriages of typewriters, and is designed to improve the carriage, the carriage base, the connection of the bed with the frame of the machine, and the means for shifting the platen of the carriage.

In the drawings, 2 represents the carriage base which I have shown as supported upon ball bearings 3 in the carriage bed 4. The carriage bed is provided at its ends with depending brackets 5, 5 having inner recesses with inwardly projecting pins 6. These brackets fit down over and inclose the vertically extending standards 7, 7 of the typewriter frame, which are provided at their upper ends with guide pins 8 entering guide holes 9 in the lower face of the carriage bed.

When the bed is set in place, being guided by the registering pins and holes, swinging hooked levers 10 are forced into engagement with the inwardly projecting pins of the brackets, thus clamping and holding the carriage bed securely in place, while at the same

time it is easily removed by swinging down these hooked levers having projecting thumb portions 11.

The carriage base preferably consists of a rectangular frame having its edges recessed for the roller bearings, as shown, this frame having means for holding the carriage proper thereon and for guiding it during the vertical movements of the platen. It is also preferably provided with carriage mechanism having a counterbalance to assist in returning the carriage or platen from a lower position to a higher position.

In the form shown, the carriage base is provided at each end with three-armed levers having lower arms 12 pivoted to the base while the forwardly projecting arms 13 rest within slotted guide-posts 14 containing spiral springs 15 which normally force the levers so that the upwardly extending arms 16 are in vertical position where they are stopped by the straight portion 16^a of the lever 12 engaging the straight portion or rear wall 16^b of the recess in the carriage base. These three-armed levers have at the top inwardly projecting lugs 17 provided with adjustable screws 18 which limit the upward travel of the carriage proper while its lower position is determined by the upwardly projecting set screws 19 extending through the ends of the carriage base. Screws 18 and 19 are preferably provided with lock nuts.

The counterbalancing and guiding cradle mechanism consists of two three-armed levers mounted on lugs 20^a near opposite ends of the base 2 and each having the arms 20, 21, 22. The arms 20 extend upwardly and are connected by the spiral spring 23. The arms 20 and 21 are interconnected by the two cross rods 24, these rods being adjustable by the turn-buckle devices 25. To the outwardly projecting arms 22 of the levers are secured transverse pins or shafts 26 which extend to single arm levers 27 extending parallel with the arms 22 and with their axes in alinement with those of the arms 22 and mounted on lugs 22^a on base 2. These pins or shaft 26 are also secured to arms 27. The arms 22 and the levers 27 are widened at their outer ends and provided with curved edges or faces 28 which

are struck on the arc of a circle from their axes as a center. This interconnected lever system forms a cradle device arranged so that the levers will swing simultaneously up and down to the same extent as the carriage is raised and lowered. The spiral spring connecting the arms of these levers constantly tends to draw them upwardly, thus giving a counterbalancing action which preferably does not overcome the weight of the carriage; but assist in lifting the carriage, thus reducing the power required for the platen shifting.

The carriage proper or platen carrier is provided at each end with depending standards 29 having on the inner faces curved transverse grooves 30 to receive the lever cross-rods 26 of the cradle, and with vertically extending flat faces 31 over which the arc faces 28 of the cradle levers roll during the vertical movement of the platen or carriage body. The rod-receiving grooves are provided with curved faces which fit the cross-rods, these curved faces merging into horizontal flat tangent faces over which the rods slide during their movement. As the carriage is raised and lowered the curved surfaces 28 rolling over the flat faces guide its vertical movement and prevent end shucking or lost movement, while the weight rests on the cross rods which roll and slide during the movement.

The lifting power is applied to the carriage by a flanged roller 32 receiving between its flanges the longitudinal rod 33 which rod is preferably provided with upwardly inclined end portions 34 which are secured to standards 29 above the transverse slots 30 to allow for easy detaching of the carriage or platen carrier from the carriage base and cradle. If this easy detachability is not desired, the ends of the lifting rod may be secured below the transverse slots or grooves referred to. The platen carrier is composed of standards 29 connected by rod 33 and four other shafts, and carrying the platen and accessories.

In placing the platen carrier or carriage upon the carriage base it is lowered upon the cross rods 26, the end arms 16 being swung forwardly by the fingers. As soon as the carriage drops into place the spring-pressed end levers on the base snap to vertical position and thus hold the platen carrier, and form stops for its upward movement. The flanged lifting roller 32 is mounted upon the cross brace 35 of a central frame having depending side legs 36. These legs are pivotally connected with lever arms 37 projecting rearwardly from the rock-shaft 38 pivoted at its ends in the frame of the machine. Near the ends of this rock-shaft are secured double-armed levers, one of which has a rear arm 39 and a forward arm 40, while the

other has a rear arm 41 and a forward arm 42. The forward arm 40 at the lefthand side of the machine is operated by a key-lever 43 having a pin 44 which moves over the face 45 of a downwardly projecting cam-plate 46. The inclined portion of this cam-slot acts to draw the entire lever forwardly as it descends, for a certain distance; and after this forward sliding movement the pin is moved over a portion of the face which is substantially on the arc of a circle struck from the pivotal axis of the lever, so that there is no endwise movement of the lever during the latter part of its downward movement. The rear end of the lever is provided with an elongated slot and opening leading into the slot. This lever slides and swings on the stationary key-lever shaft 47 which has a flattened face 48 on one side. The lever is inserted by placing it in a depending position and pushing the open slot up over the shaft until it enters the elongated slot. The lever may then be swung up into horizontal position and is locked against removal while it is allowed to slide and swing on this shaft. The lever rests within a circumferential groove of the stationary shaft, this groove being cut in on one side to form the flattened face. As the lever swings down and slides a lateral pin 49 on a lug 50 engages a depending release lever arm 51 projecting downwardly from the rock-shaft 52. This rock-shaft is provided with an upwardly projecting slotted arm 53 which engages a pin 54 on the recessed swinging dog 55. This dog is pivoted to a downwardly projecting lug 56 on the frame of the machine, and is provided at its upper end with three open slots or recesses arranged to engage a pin 57 extending between the inwardly and downwardly inclined legs 58 of the lifting frame. The frame is thus locked in any adjusted position whenever the recessed lever is drawn into engagement with the pin by means of the spring 59 in the barrel 60, which barrel contains a plunger 61 forced against the locking lever above its fulcrum. On depressing the key-lever 43 the lock is first disengaged by the connections just described and immediately thereafter an upwardly projecting hook lug 62 on the lever engages an inwardly projecting pin on the left-hand forwardly projecting arm of the rock shaft 38. The rock-shaft is thus turned and thereby lifts the central roller frame. During this lifting, the locking dog is held out of engagement by the pin which moves over the surface of the depending arm 51. As soon as the key is released the platen carrier descends of its own weight to the intermediate position and the locking dog at once springs to place and locks it in such position. To lower the platen carrier to its lowest position

the key-lever 63 is provided, this being arranged to turn and slide forward in the same manner as the lifting key lever. It, however, has a hooked lug 64 which acts upon a pin secured to the rear arm of the two-armed lever, and consequently draws down the supporting roller and frame and the platen carrier descends. In this case again the locking dog is held retracted during the lowering so that on release of the key, the platen may return to its intermediate position. This return movement is accomplished by means of a spring 65 surrounding the rear end portion of a hooked rod 66 whose front hooked end engages the recess of a depending lever 67 on the rock-shaft 38. The spring 65 extends between adjusting nuts 68 on the rod and a collar 69 on the post 70 through which the rod extends. The backward movement of the rod is limited by the nuts 71 in front of the post. When the mechanism is forced down by the key-lever this spring is compressed, and when the lever is released it forces the lifting frame and roller upwardly until the locking dog snaps into place to hold the platen carrier in its normal intermediate position.

At the right-hand of the machine are arranged key levers 72 and 73, which are connected and arranged in the same manner as the platen shifting levers at the left-hand end except that the pins 74, 75 move beyond the lower end of the depending lever 76, which is the right-hand release lever, thus allowing the lever 76 to snap into a position above the pins 74, 75 on the key levers 72 and 73. Consequently, when the platen support is raised or lowered to its upper or lower position it will at once be locked in such position until the other key at the right-hand of the machine is struck, when it will be released and return to its normal position.

The advantages of my invention result from the ease of detaching the carriage bed from the frame of the machine and separating the platen carrier from its base portion. This gives easy accessibility to all parts, while at the same time, the parts are securely held in their proper places when assembled. The cradle mechanism on the carriage base guides the platen carrier in its vertical movements and partially counter-balances the same to make the platen shifting easy in its action. The applying of the lifting force at the center of the carriage bed and directly beneath the printing point is of advantage as it insures the proper positioning of the platen at the printing point. Moreover, it reduces the number of parts necessary for the shifting of the platen and acts to guide the platen in its movements. The use of the key lever which turns and

slides endwise reduces the number of parts and simplifies the construction. The ease of detaching the carriage bed from the frame of the machine enables carriages of different lengths to be quickly and easily applied to the machine.

Variations may be made in the form and arrangement of the apparatus and its different parts without departing from my invention, since.

I claim:

1. In typewriters, a frame, a carriage bed detachably secured thereto, a carriage base arranged to move on the carriage bed, and a platen carrier detachably secured to said carriage base and movable with relation thereto; substantially as described.

2. In typewriters, a frame, a carriage bed interfitting therewith and having hand operated locking devices, a carriage base movable on the bed, and a vertically movable platen carrier removably mounted on the carriage base; substantially as described.

3. In typewriters, a carriage base, a vertically movable platen carrier mounted thereon and having a platen, and hand-operated swinging locking devices for holding the platen carrier in position on the base; substantially as described.

4. In a typewriter, a frame, a carriage bed removably mounted thereon, hand-operated locking devices for said bed, a carriage base movable on the bed, a vertically movable platen carrier removably mounted on the carriage base and having hand-operated locking devices for holding it in place, and connections for moving the platen carrier vertically relative to the carriage base; substantially as described.

5. In typewriters, a carriage base having swinging holding devices, a platen carrier having a platen removably held on the base by said holding devices, said devices having top and bottom stops for the platen carrier, and connections arranged to lift the platen carrier vertically relative to the base; substantially as described.

6. In typewriters, a carriage base having a detachable platen carrier thereon, a platen mounted on the platen carrier, and spring pressed swinging holding devices on the base arranged to hold top and bottom stops for the platen carrier; substantially as described.

7. In typewriters, a carriage base having a detachable platen carrier thereon, a platen mounted on the platen carrier, means for moving the platen carrier and platen vertically, and spring pressed levers on the carriage base arranged to limit the vertical movement of the platen carrier; substantially as described.

8. In typewriters, a carriage base having a removable platen carrier thereon, movable

- holding devices on the carriage base having stops arranged to limit the vertical movement of the platen carrier, and connections arranged to move the platen carrier vertically; substantially as described.
9. In typewriters, a carriage base having spring-pressed holding levers with stops, and a removable platen carrier held on the base by said levers and arranged to engage the lever stops in its vertical movement; substantially as described.
10. In a typewriter, a carriage base, a platen carrier thereon, and a cradle device on the base engaging the platen carrier and arranged to move during the vertical movement of the carrier; substantially as described.
11. In a typewriter, a carriage base, a platen carrier thereon, and a cradle device on the base engaging the platen carrier and arranged to move during the vertical movement of the carrier, said cradle being arranged to guide the platen carrier during its movement; substantially as described.
12. In a typewriter, a carriage base, a moving cradle thereon, a platen carrier on the carriage base engaging the cradle, and a counterbalancing spring connected to the cradle; substantially as described.
13. In typewriters, a carriage base, oppositely mounted interconnected levers thereon forming a cradle mechanism, and a vertically movable platen carrier engaging the cradle; substantially as described.
14. In a typewriter, a carriage base, a cradle mechanism thereon having curved bearing faces, and a platen carrier having surfaces over which the curved cradle faces roll during vertical movement of the platen carrier; substantially as described.
15. In a typewriter, a carriage base, a platen carrier removably mounted thereon, and a movable cradle device on the base engaging said platen carrier and arranged to move during its vertical movement; substantially as described.
16. In a typewriter, a carriage base having a cradle device thereon provided with cross pins, a platen carrier having elongated receiving slots or grooves for said pins, and means for preventing endwise movement of the platen carrier during its vertical movement; substantially as described.
17. In a typewriter, a carriage base having stops near its ends, a lifting device at the center of the stationary carriage bed, and a platen carrier arranged to engage the stops and be lifted relative to the carriage base by the lifting device; substantially as described.
18. In a typewriter, a platen carrier engaging a movable cradle device, said cradle device having oppositely located levers with a plurality of arms connected by cross rods arranged to cause simultaneous and equal movement of the opposite levers; substantially as described.
19. In a typewriter, a platen carrier engaging a movable cradle device, said cradle device having oppositely located levers with a plurality of arms connected by cross rods arranged to cause simultaneous and equal movement of the opposite levers, said cradle having a counterbalancing spring for the platen carrier; substantially as described.
20. In a typewriter, a cradle device for oppositely located swinging levers with arc-shaped faces, and transverse pins or shafts and a platen carrier having flat faces over which the arc-shaped cradle faces roll and provided with elongated slots or grooves within which the pins roll and slide during the vertical movement of the platen carrier; substantially as described.
21. In a typewriter, a swinging key-lever, a mechanism arranged to move the key-lever endwise and downward during a portion of its swinging movement; substantially as described.
22. In a typewriter, a swinging key lever and a cam device bearing on the key lever and arranged to shift it endwise and downward during a portion of its swing; substantially as described.
23. In a typewriter, a swinging key-lever, mechanism for shifting the key lever endwise and downward during the first portion of its downward movement, and a rock shaft arranged to be actuated by the key lever during its endwise shifting movement; substantially as described.
24. In a typewriter a swinging key lever having a bearing or fulcrum arranged to allow endwise bodily movement of the lever, and means for moving said key lever endwise during at least a part of its swinging movement; substantially as described.
25. In typewriters, a carriage base having a detachable platen carrier mounted thereon, a platen mounted on the platen carrier, means for moving the platen carrier and platen vertically, and a pair of free arm spring pressed levers pivotally mounted on the carriage base, and arranged to limit the vertical movement of the platen carrier; substantially as described.
- In testimony whereof, I have hereunto set my hand.

WILLIAM J. KAUFFMAN.

Witnesses:

GEO. B. BLEMING,
H. M. CORWIN.