

No. 849,835.

PATENTED APR. 9, 1907.

L. P. DISS.
TYPE WRITING MACHINE.
APPLICATION FILED SEPT. 18, 1903.

3 SHEETS—SHEET 1.

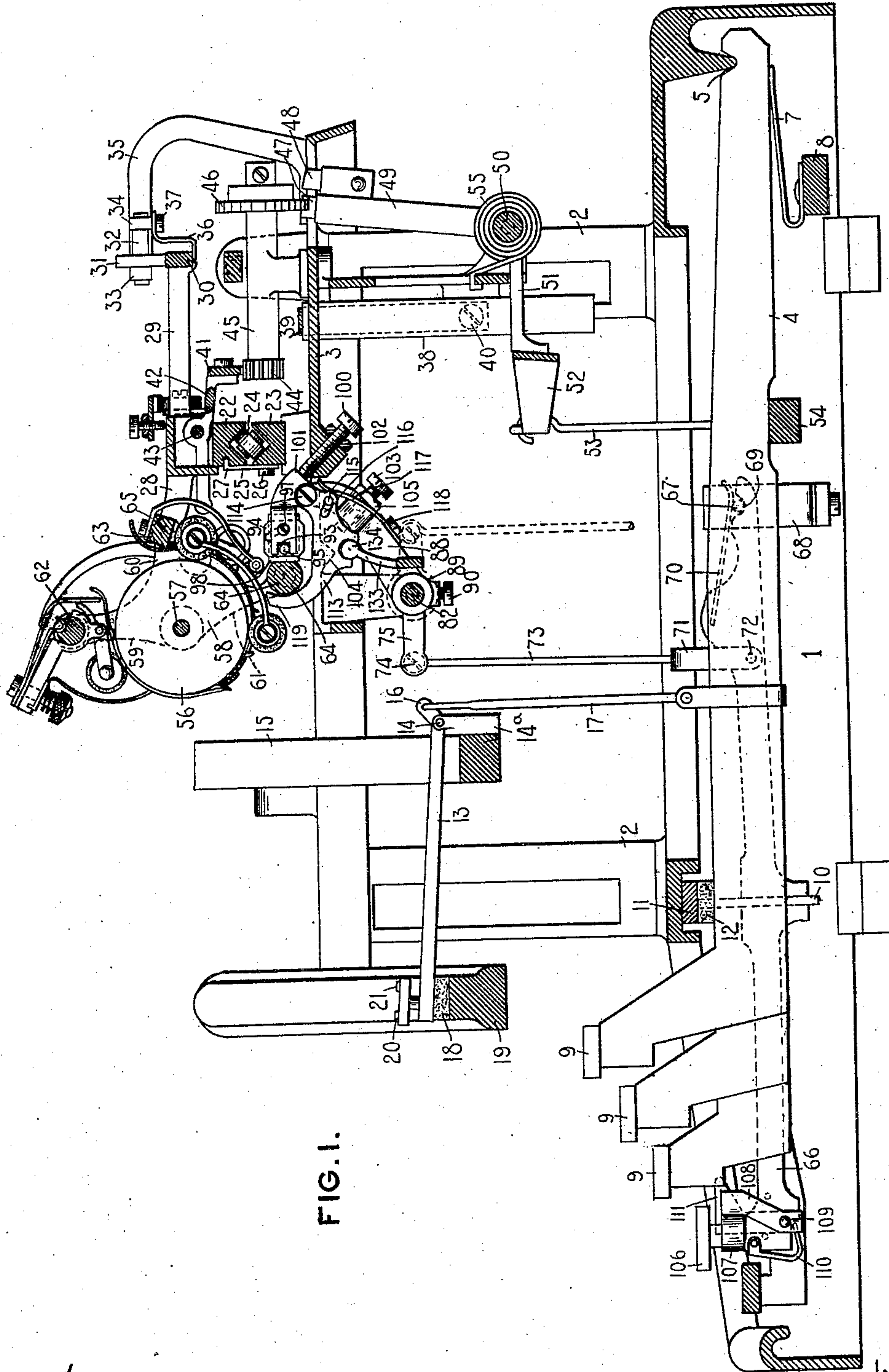


FIG. 1.

WITNESSES.

E. M. Heller.

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INVENTOR

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HIS ATTORNEY

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3 SHEETS—SHEET 2.

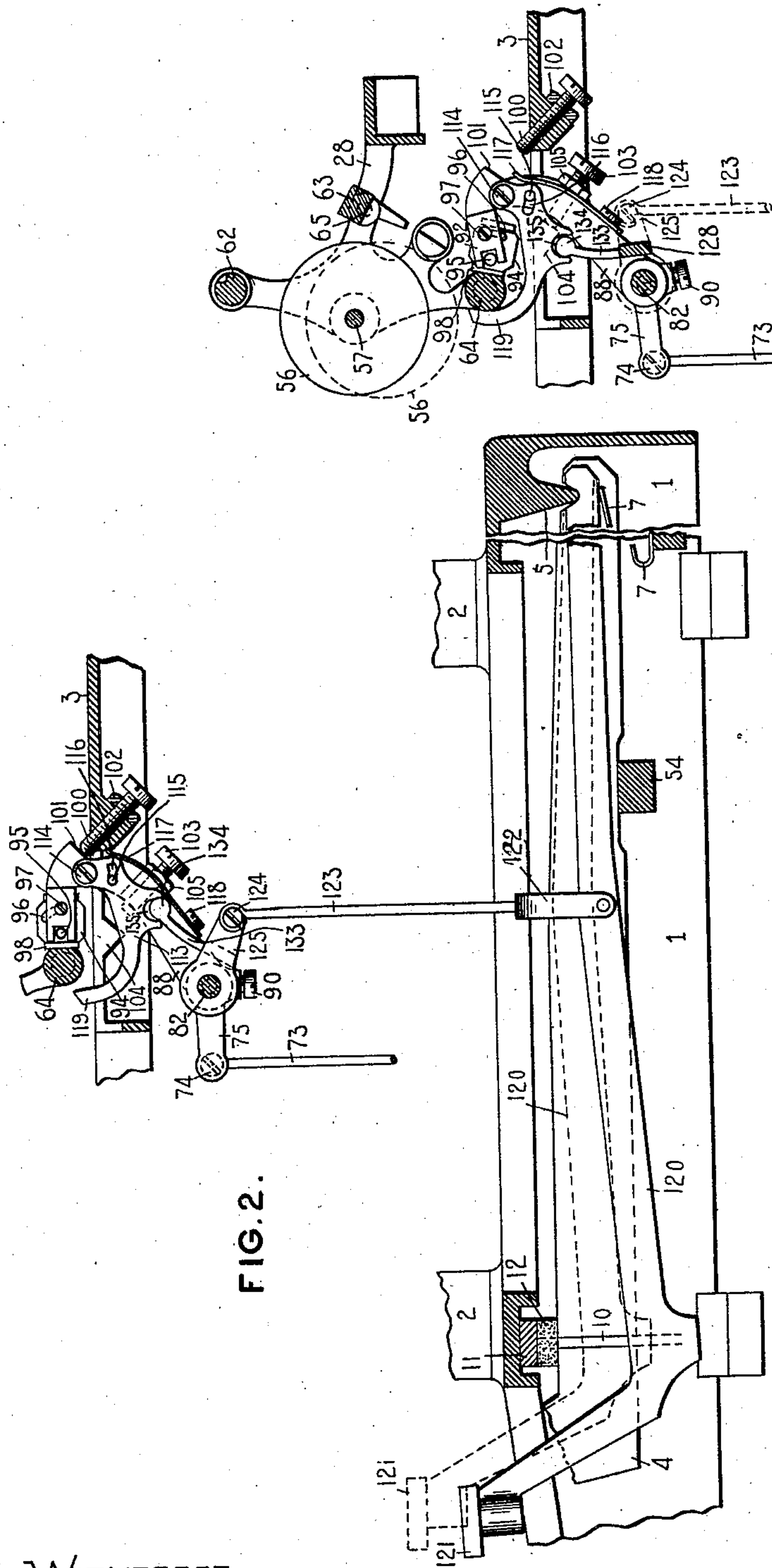


FIG. 2.

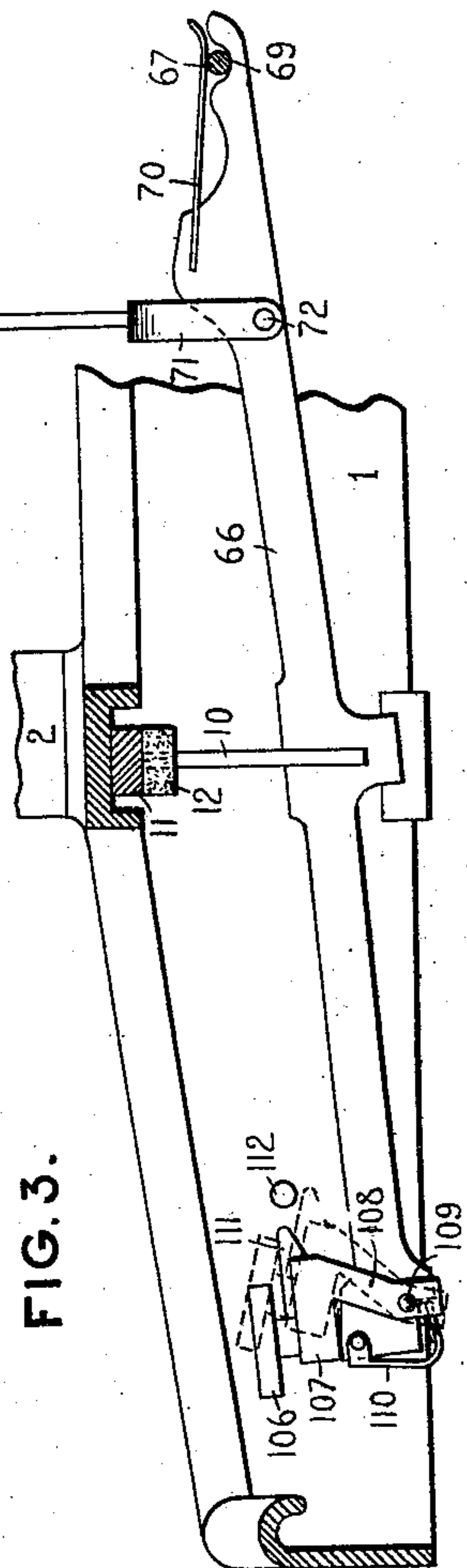


FIG. 3.

WITNESSES:

E. M. Wells.
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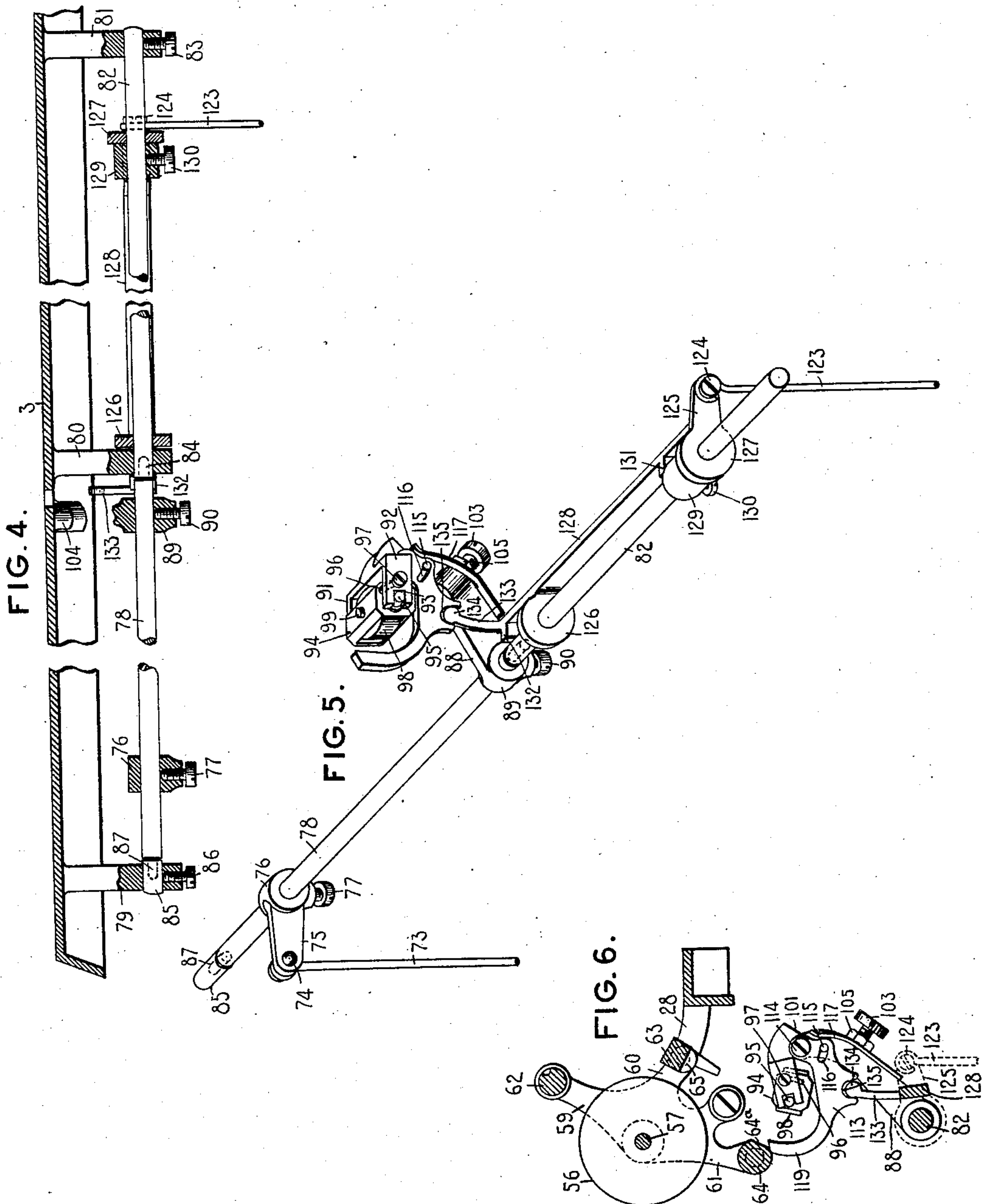
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3 SHEETS—SHEET 3.



WITNESSES:

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UNITED STATES PATENT OFFICE.

LOUIS P. DISS, OF ILION, NEW YORK, ASSIGNOR TO WYCKOFF, SEAMANS & BENEDICT, OF ILION, NEW YORK, A CORPORATION OF NEW YORK.

TYPE-WRITING MACHINE.

No. 849,835.

Specification of Letters Patent.

Patented April 9, 1907.

Application filed September 18, 1903. Serial No. 173,698.

To all whom it may concern:

Be it known that I, Louis P. Diss, a citizen of the United States, and a resident of Ilion, in the county of Herkimer and State of New York, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

My invention relates to type-writing machines, and has for its principal object to provide means for supporting and shifting the platens of such machines and for controlling the shift of the platen.

My invention consists in certain features of construction and combinations of parts, which will be fully described herein and particularly pointed out in the appended claims.

In the accompanying drawings, Figure 1 is a longitudinal section through a type-writing machine containing my improvements, the section being taken a little to the right of the center of the machine and certain parts being omitted for the sake of clearness of illustration. The mechanism is shown in normal position. Fig. 2 is a sectional side elevation showing a portion of the machine, many parts being omitted and others broken away. In this figure the top plate of the machine is shown on the same section as in Fig. 1, but the other parts are shown on a section near the right-hand side of the machine. Fig. 3 is a view similar to Fig. 1, but with numerous parts illustrated in Fig. 1 omitted and the case-shift key shown in depressed position. Fig. 4 is a fragmentary front view showing portions of the framework and of the mechanism in section and certain shafts and connections in elevation. Fig. 5 is a detail isometric view of portions of my mechanism, the framework being omitted. Fig. 6 is a fragmentary transverse sectional view showing the platen-frame held in non-printing position.

The same parts are designated by the same reference characters in the different figures of drawings.

The type-writing machine illustrated in the drawings is of the sort known as a "front-strike" machine and comprises a frame from the lower part 1 of which rise posts 2, supporting a top plate 3. The key-levers 4 are fulcrumed on a flange 5, depending from the base 1 of the frame, and cooperate with restoring-springs 7, attached to a cross-bar 8, all in a

manner well-known in the art. The key-levers are provided with the usual key-heads 9 and are guided by pins 10, depending from a transverse-bar 11, which is provided with a strip of sound-deadening material 12, against which the keys normally rest. The type-bars 13 are pivoted, as at 14, to hangers 14^a, attached to a type-bar segment 15, supported by the top plate 3. Said type-bars have crank-arms 16 connected to the key-levers 4 by links 17, pivoted to said crank-arms. When in their normal position, the type-bars rest on a strip 18 of felt or similar sound-deadening material, carried by a segmental basket 19, supported by the top plate 3 of the machine. Each type-bar is provided with two types 20 and 21 in the usual manner. To avoid confusing the drawings, I have shown but one of the type-bars, though it should be understood that a series of segmentally-arranged upwardly and rearwardly striking type-bars are employed and which impact with the front face of the platen.

The carriage has a bar 22 grooved on its under side, as shown in Fig. 1, and supported over a similar bar 23, fixed to the top plate of the machine by means of antifriction-rollers 24, as shown. The bar 22 is held against accidental displacement by a plate 25, fastened to the bar 23 by a screw 26 and bent, as shown at 27, to enter a groove in the bar 22. The platen-frame is supported by two forwardly-extending arms 28, one on each end of the carriage. The carriage also has arms 29 extending toward the rear of the machine and supporting a rail 30, the straight top of which is engaged by a roller 31, whose spindle 32 is journaled in ears 33 and 34, projecting from the side of a bracket 35, rising from the top plate of the machine. The rail 30 is secured against accidental displacement away from the roller 31 by a bent arm or plate 36, fastened to the bracket 35 by a screw 37 and extending under the bar 30. The carriage is drawn across the machine by a spring coiled within and actuating a drum 38, on the periphery of which is wound a strap 39, fastened at one end to the drum by a screw 40 and at the other end connected to the carriage. The motion of the carriage is controlled by the usual feed devices comprising a feed-rack 41, supported by a frame 42, pivoted, as at 43, to the carriage. Said rack normally engages a pinion 44, fast on a

shaft journaled in a housing 45, secured to the top plate 3 of the machine. An escapement-wheel 46 is operatively connected to the other end of said shaft by the usual pawl-
 5 and-ratchet mechanism, (not shown,) and is engaged by loose and fixed feed-dogs 47 and 48, respectively, and carried by an oscillating dog-rocker 49. The dog-rocker or rocker-arm 49 is fixed to a rock-shaft 50,
 10 pivoted to the framework of the machine and having an arm 51, that carries a transverse bar 52, connected by links 53 to the universal bar 54 in a manner well known in the art. A restoring-spring 55 is secured at
 15 one end to the rock-shaft 50 and at the other end to a fixed portion of the machine and operates in the usual manner to restore the dog-rocker and associated parts to their normal positions. The platen 56 is in the
 20 form of a cylinder the shaft 57 of which is journaled in the end pieces 58 of the platen-frame. Said platen-frame comprises the end pieces 58, each having three arms 59, 60, and 61. The arms 59 are connected by
 25 a bar 62, the arms 60 by a bar 63, and the arms 61 by a bar 64, said bars being rigidly secured to said arms, thus forming a rigid frame. Said frame is pivoted at each end to the arms 28 of the carriage, as indicated
 30 at 65. The platen-frame supports certain paper-guides and feed-rollers, some of which are shown in Fig. 1, but which need not be particularly described, as they form no part of the present invention.

35 The case-shift device comprises a case-shift key-lever 66, pivoted to a pin 67, fixed to a bracket 68, secured to the base 1 of the frame. The pin 67 engages a notch 69 in the end of said lever, and said lever is held
 40 in engagement with said pin by a spring 70, fastened to the lever. The key-lever is guided in its movements on the pin 67 as a center by pins 10 in the same manner as the character-keys. A loop 71 is pivoted to the
 45 shift-lever 66 at 72 and connects said lever with a link 73, the upper end of which is pivoted at 74 to a crank-arm 75, whose hub 76 is secured by a set-screw 77 to a rock-shaft 78.

Referring more especially to Fig. 4, it will
 50 be seen that three brackets 79, 80, and 81 depend from the top plate 3 of the machine and are arranged in a line across the machine. A fixed rod 82 passes through the brackets 80 and 81 and is held rigidly by a set-screw 83 in
 55 said bracket 81. At its left-hand end this rod is recessed, as shown by dotted lines at 84, and a short rod 85, passing through the bracket 79 and held rigidly therein by a set-screw 86, is similarly recessed, as shown at 87.
 60 The shaft 78 has its ends reduced, and such reduced ends are journaled in the recesses 84 and 87. An arm 88, Fig. 5, having a hub 89, is fastened to the shaft 78 near its right-hand end by a set-screw 90, threaded into said hub
 65 and engaging the shaft. The arm 88 carries

an antifriction-roller 98, which is cylindrical in form and engages the flat face 64^a of the bar or rail 64. When the case-shift key is operated, the roller 98 and the rail 64 rock
 70 about different centers. In order to cause them to engage properly, it is desirable that one or the other be capable of rocking in such a manner as to keep the roller lying flat against the rail. In the present instance I have
 75 shown the roller so mounted. As shown in Fig. 5, the free end of said arm 88 is bent toward the front of the machine and is formed with two forked arms 91 and 92, having notches 93 at their free ends. A block 94
 80 has projecting from its ends studs 95, which are journaled in said notches 93. The block 94 has in one end a segmental slot 96, into which projects the end of a screw 97, threaded into and extending through the forked
 85 arm 92. This slot and screw serve to limit the oscillation of the block 94 about its pivots 95. Said block 94 is hollowed out for the reception of the antifriction-roller 98, which is journaled therein at 99.

By reference to Fig. 1 it will be seen that
 90 the point 65, at which the platen-frame is pivoted to the carriage, is at the back of said frame and that when the parts are in the normal position (shown in Fig. 1) the platen-frame tends to fall, and its downward motion
 95 is limited by the engagement of the bar 64 with the roller 98. The arm 88, supporting said roller, has its backward motion limited by a set-screw 100, threaded into a portion of
 100 the top plate 3 of the machine and engaging a shoulder 101 of said lever 88. The normal position of the platen may be adjusted by means of said set-screw 100, which is then secured against accidental displacement by the
 105 lock-nut 102. It will be seen that the platen may be raised to upper-case position by depressing the key-lever 66, which, through its link 73 and arm 75, rocks the shaft 78 and moves the roller 98 slightly toward the front
 110 of the machine. In this motion the angular relation of the arm 88 and the flat face of the bar 64 is changed, owing to the fact that these parts oscillate about different centers, but the block 94 readily turns on its pivots
 115 95 and keeps the tread of the roller 98 in proper engagement with the flat side of the bar 64. The forward motion of the arm 88 is limited by a set-screw 103, threaded into said arm and adapted to engage a projection
 120 104 of the top plate 3 of the machine. The set-screw 103 is provided with a lock-nut 105.

I have provided means whereby the key-lever 66 may be locked in its depressed position, if desired. The key-head 106 of said
 125 lever is secured to a block 107, having two arms 108 straddling said key-lever and pivoted thereto at 109, the arms being united at their lower ends by a cross-piece. A
 130 spring 110, fastened to the key-lever, engages the cross-piece that unites the lower end of

the arms 108 and tends to hold the block 107 in its normal position relatively to the key-lever and which is shown in full lines in Figs. 1 and 3. When the key-lever is depressed, a slight rearward pressure exerted upon the key-head 106 is effective to turn the block 107 about the pivot 109, thus moving a nose 111, projecting from said block 107, beneath and into engagement with a pin 112, projecting from the frame of the machine. The locking position of these parts is shown in dotted lines in Fig. 3. The friction of the nose 111 pressing against the pin 112 is sufficient to overcome the tension of the spring 110, thus holding the parts in the locked condition and the platen in what may be termed a "shifted printing position." When it is desired to release the platen and restore it to lower-case position, the key-head 106 and parts connected thereto may be drawn back around the pivot 109 to the releasing position by the finger of the operator, and the parts are thus disengaged and the platen and shift-key will assume their normal positions when pressure is removed from the key.

A plate 113 is pivoted to one side of the arm 88, so as to be free to oscillate thereon, by means of a shouldered screw 114. The motion of said plate about said pivot is limited by a pin 115, projecting from the arm 88 into a slot 116 in said plate 113. Said plate is pressed toward the front of the machine by a spring 117, fastened to the arm 88 by means of a screw 118. The forward end of the plate 113 is formed into a finger 119, reaching when the parts are in normal position, as shown in Fig. 1, to the front side of the rod 64. The portion of said finger which is adjacent to said rod 64 is shaped in a curve approximately the arc of a circle about the pivot 114 as a center. It results from this construction that the finger 119, which is normally held in the position shown in Fig. 1, constitutes an effective latch or detent to prevent any motion of the bar 64 away from the roller 98 and to prevent a vibration of the platen when it moves back to the normal position, thus preventing the formation of "ghosts" by a type-bar coming into contact with the paper or the platen when the latter is vibrating. While the plate 113 cannot be moved by the bar 64, said plate may be oscillated about its pivot and the finger 119 thus withdrawn from in front of the bar 64 by the following means:

A special key-lever 120, Fig. 2, at the opposite side of the keyboard from the shift-key 66 has a finger-key 121 and is pivoted on the flange 5 and engaged by a spring 7 in the same manner as the character-keys of the machine; but the key-lever 120 is so formed that it does not engage the universal bar 54. A loop 122 is pivoted to the key-lever 120 and connects said key-lever to a link 123, pivoted at 124 to a crank-arm 125, forming

part of a rock-frame journaled on the rod 82, above described, as indicated in Fig. 5. Said rock-frame comprises hubs 126 and 127, connected by a yoke-bar 128. The rock-frame is held against longitudinal movement on the rod 82 by a collar 129, fastened to said rod by a set-screw 130 and engaged on one side by the hub 127 and on the other by a lug 131, projecting inward from the yoke-bar 128. At its inner end said yoke-bar has a lug 132 engaging one side of the bracket 80. A crank-arm 133 is connected to said yoke-bar at its inner end and has a rounded head 134, which enters a notch 135, formed in the lower part of the plate 113, as shown. The construction is such that if the key-lever 120 be depressed the rock-frame will be oscillated, moving the arm 133 toward the rear of the machine and depressing the plate 113, as shown in Fig. 2.

The operation of my invention is as follows: A depression of the character-keys 9 when the carriage is in normal position throws the type-bars upward and backward, causing the type 21, which it may be assumed is a lower-case type, to strike the paper upon the platen-roller. When the case-shift key 106 is depressed, the shaft 78 is rocked toward the front of the machine by the link 73, thus moving the arm 88 and roller 98 toward the front of the machine and lifting the platen to the position shown in Fig. 3, the block 94 turning on its pivots 95 to keep the roller 98 pressed flat against the side 64^a of the bar 64. If the case-shift key is depressed with some force, any overthrow of the platen, which might cause the printing to be made in the wrong place on the paper, and any vibration of the platen, which would form ghosts in the printing, are prevented by the finger 119. When the platen is in its upper-case position, it is in position to be struck by the upper-case type 20. Whether the platen is in its upper or lower case position the operation of the character-keys rocks the escapement-frame and permits the carriage to be fed step by step across the machine, the rollers 24 and 31 supporting the carriage-truck and the roller 98 engaging the platen-frame. If for any reason it is desired to raise the platen to a non-printing position or to a position higher than its upper-case position—as, for example, for the purpose of making erasures—the key-lever 120 is depressed, thus withdrawing the finger 119 from in front of the bar 64. The platen-frame may then be elevated by hand. If then the key-lever 120 be released, the finger 119 will resume its normal position, which will then be behind the bar 64, and said finger will sustain the platen-frame in its elevated position, as shown in Fig. 6. The platen-frame may be released from the finger 119 by operating either of the key-levers 120 or 66. If the lever 120 be operated, the plate 113

will turn about its pivot 114 and the finger 119 be thus withdrawn from engagement with the bar 64. If the key-lever 66 be depressed, the arm 88 will be moved forward, carrying the plate 113 with it, and thus carrying the finger 119 to a position where the weight of the platen-frame will depress it and allow the frame to descend until the bar 64 engages the roller 98. It will thus be seen that the key-controlled finger 119 performs two functions, being a means for preventing overthrow and vibration of the platen-frame when the case-shift device is operated and also a detent to hold the carriage in its non-printing position when it is desired to do so for the purpose of making erasures or for other reasons.

It will be observed that the platen is supported and controlled by means which are extremely simple and rigid; the platen-frame is pivoted directly to the truck of the carriage and normally tends to fall to a position below either of its printing positions; that it is supported against falling by the roller 98, which is placed near the center of the machine and approximately in the vertical plane through the printing-point and extending from back to front of the machine; the finger 119 is located in the same plane, so that the platen is always rigidly supported at the printing-point and the means for preventing vibration of the platen, whether due to violent operation of the case-shift key or by the movement of the platen from one case position to another or to the blow of the type itself, engages the platen-frame at the point where it is most important that said platen be exactly positioned and rigidly held. It will also be observed that I have provided an overhanging platen-frame which is carried by the carriage-truck forward of all of the means for supporting and guiding said truck and that said platen-frame is shifted up and down. This is an important feature in this class of machines, where the visibility of the writing is a prime consideration. It will also be observed that the case-shift device is located to the rear of the axis of the platen, so that it is out of the way of the type-bars and of the means for connecting said type-bars with the keys.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination with a platen and a platen-frame movable to move said platen bodily away from printing position, of a key-controlled device separate from said platen-frame and cooperating with said platen-frame to hold said platen away from printing position.

2. The combination of a platen movable to a non-printing position, and means normally operative to prevent such motion but operable to allow such motion and to retain said platen in such non-printing position.

3. The combination of a platen mounted to have a case-shift motion; and means normally operative to limit such motion but releasable at will to permit a further motion of the platen to a non-printing position.

4. The combination of a platen having a case-shift motion and also a motion to a non-printing position, and a key carried by the frame of the machine and connections controlling such motion of said platen to non-printing position.

5. The combination of a platen having a case-shift motion and also movable to a non-printing position; means for holding said platen in such non-printing position; and a key for imparting said case-shift motion to said platen and also operable to release said holding means.

6. The combination with a platen, of a case-shift device therefor, comprising a case-shift key and an overthrow-preventer; and a special key for controlling said overthrow-preventer to permit said carriage to move to a non-printing position.

7. The combination with a platen having a normal position, a shifted printing position and a non-printing position, of key-controlled means for holding said platen in either its shifted printing position or its non-printing position.

8. The combination with a platen-frame, of a case-shift device having a limited motion; and key-controlled means for preventing said platen-frame from becoming disengaged from said case-shift device.

9. The combination with a platen mounted to have a case-shift motion and a motion to a non-printing position; of means for imparting said case-shift motion to said platen, and means connected to said case-shift means for holding said platen in said non-printing position.

10. The combination of a platen mounted in a pivoted frame that is adapted to rock on its pivot to impart to said platen a case-shift motion and also a motion to a non-printing position, and a key carried by the frame of the machine and connections controlling such motion of said platen to non-printing position.

11. The combination with a platen-frame, of a case-shift device, a key for operating said case-shift device, a detent connected to said case-shift device and cooperating with said platen-frame, and a special key controlling said detent.

12. The combination with a platen-frame, of a case-shift device comprising a key-operated rock-frame; a detent pivoted to said rock-frame, and key-operated means for controlling said detent.

13. The combination with a platen-frame, of a detent adapted to engage a portion of said frame on one side thereof, to prevent motion of said frame in one direction or to

engage said frame portion on the other side thereof to prevent motion of said frame in the other direction: and means for operating said detent.

14. The combination with a platen of a case-shift mechanism comprising a pivoted key-lever; a finger-key connected to said lever by a piece pivoted to said lever; and a fixed part; the construction being such that said pivoted piece may be turned on its pivotal connection with the key-lever and pushed under said fixed part if desired, in order to lock the key-lever in depressed position.

15. A platen-frame comprising a bar; a case-shift device comprising means engaging said bar on one side to impart a case-shift motion thereto; and an overthrow-preventer cooperating with said bar on the opposite side; and means for moving said overthrow-preventer to inoperative position.

16. A platen; types adapted to strike said platen on its front vertical face; a frame supporting said platen and pivoted to the rear of said platen; and having a bar below the pivotal axis of said frame; a case-shift device comprising a movable part and an antifriction-roller mounted in said movable part and engaging said bar and supporting said frame; and an overthrow-preventer pivoted to said movable part.

17. In a front-strike type-writing machine, a platen; types adapted to strike the front face of said platen; a carriage-truck; a platen-frame pivoted directly to said truck and having its pivotal axis to the rear of the printing-point; said platen-frame comprising a rail extending lengthwise of the platen below said pivotal axis; in combination with a case-shift device engaging said rail, and controlling the oscillation of said frame on its pivots.

18. In a front-strike type-writing machine, a platen; types adapted to strike the front face of said platen; a carriage-truck; a platen-frame pivoted directly to said truck and having its pivotal axis to the rear of the printing-point; said platen-frame comprising a rail extending lengthwise of the platen below said pivotal axis; in combination with a case-shift device comprising an antifriction member engaging said rail, and means for moving said antifriction member to rock said platen-frame.

19. In a front-strike type-writing machine, a platen; types adapted to strike the front face of said platen; a pivoted platen-frame having its pivotal axis to the rear of the printing-point; said platen-frame comprising a rail extending lengthwise thereof below said pivotal axis; in combination with a platen-shifting device comprising an antifriction-roller journaled in a movable part and engaging said rail; an overthrow-preventer co-

operating with said rail and connected to said movable part; and a case-shift key for controlling said movable part.

20. In a type-writing machine having a movable carriage, a platen-frame pivoted to the truck of the carriage, and a case-shift device engaging and supporting said platen-frame near the center of the machine and controlling the shifting movements thereof and affording a free travel of the carriage.

21. In a type-writing machine having a movable carriage, a platen; types adapted to strike against the front face of said platen; a platen-frame pivoted to the truck of the carriage; and a case-shift device engaging and supporting said platen-frame approximately in the transverse vertical plane of the printing-point.

22. In a type-writing machine, the combination with a pivotally-mounted platen-frame having a flat-faced rail; with a case-shift device comprising an oscillating part carrying a cylindrical antifriction-roller, engaging said flat-faced rail; one of said engaging members being pivotally supported, so that the roller may always engage the flat face of the rail.

23. The combination of a platen-frame having a flat-faced longitudinal bar, of a shift device for said platen-frame comprising a roller mounted on a pivoted frame and engaging said flat-faced bar.

24. In a type-writing machine, the combination of a platen-carrier, a guide-rail, a pivoted finger adapted to engage one side of the rail when in its normal position and to engage another side to support it when in an elevated position.

25. In a type-writing machine, the combination of a platen-carrier, a guide-rail secured to the carrier; a pivoted finger adapted to engage the lower side of the rail to support it when in an elevated position and be released to let the carrier drop into its normal position, and means for effecting a disengagement between the pivoted finger and rail.

26. In a type-writing machine, the combination of a truck, a carrier for the platen pivoted to the truck at each end, a guide-rail secured to the carrier, a rocking arm, a roller carried by the rocking arm and supporting the guide-rail, a hooked finger pivoted to the rocking arm and engaging the rail on the side opposite the roller, and key-actuated means for operating the rocking arm.

27. In a type-writing machine, the combination of a platen-carrier, a guide-rail thereon, a rocking arm, means for actuating same, a roller carried by the rocking arm, a hooked finger pivoted to the rocking arm and having a slot, a spring exerting a pressure on the finger, and a stud on the rock-

ing arm playing in the slot of the finger to limit its movement.

28. In a type-writing machine, the combination of a platen-carrier, a rocking arm adapted to shift the platen-carrier, means for operating said arm, a hooked finger connected to the rocking arm and adapted to hold the carrier in an elevated position and operate independently of the rocking arm, and means for operating the finger.

29. In a type-writing machine, the combination of a platen-carrier, a guide-rail, a rocking arm, an antifriction-roller carried by the rocking arm and supporting and shifting the guide-rail, key-actuated means for operating the rocking arm, a hooked finger pivoted to the rocking arm and adapted to secure the rail against lateral movement on the side opposite the roller, and a key-actuated lever adapted to throw the finger on its pivot and release the guide-rail.

30. In a type-writing machine, the combination of a truck, a platen, a frame pivoted to the truck and supporting the platen, a guide-rail forming a part of the frame and having a flattened side, a roller operating on the flattened side of the rail and adapted to change the angle of its axis as the platen-frame is shifted, a rocking arm to carry the roller, a shaft carrying the rocking arm and means for actuating said shaft.

31. In a front-strike type-writing machine, a platen; types arranged to strike the front face of said platen; a carriage-truck; a platen-frame pivoted directly to said truck and having its pivotal axis to the rear of the printing-point, said platen-frame comprising a rail extending lengthwise of the platen below said pivotal axis; in combination with a case-shift device including a rock-shaft parallel to said rail and having an arm cooperating with said rail and controlling the oscillation of said frame on its pivots.

32. In a front-strike type-writing machine, a platen; types arranged to strike the front face of said platen; a carriage-truck; a platen-frame pivoted directly to said truck and having its pivotal axis to the rear of the printing-point, said platen-frame comprising a rail extending lengthwise of the platen below said pivotal axis; in combination with a case-shift device including a rock-shaft parallel to said rail and having an arm, an antifriction member mounted on said arm and engaging said rail, and means for oscillating said rock-shaft to rock said platen-frame.

33. The combination with rearwardly-striking types, of a platen against the front face of which said types are arranged to strike; a platen-frame; a carriage-truck upon which said platen-frame is pivotally mounted; a traverse-rail arranged back of said platen and supporting said truck; means back of said traverse-rail for preventing said

truck from tilting about said rail; and a case-shift device for rocking said platen-frame about its pivot, and moving said platen up and down.

34. The combination with a carriage-truck and means for supporting and guiding the same, of an overhanging platen-frame carried by said carriage-truck forwardly of all of the means for supporting and guiding said truck, a platen in said platen-frame, types adapted to strike the front face of said platen, and means for imparting an up-and-down case-shift motion to said platen.

35. The combination with a carriage-truck and with means for supporting and guiding the same, of a platen-frame pivotally mounted on said carriage-truck forwardly of said supporting and guiding means and having a longitudinal bar below its pivotal support; a platen in said platen-frame; types arranged to strike the front face of said platen; a rock-shaft below said longitudinal bar, an arm on said rock-shaft engaging said longitudinal bar; and means for rocking said rock-shaft to impart a case-shift motion to said platen.

36. The combination with a carriage-truck and means for supporting and guiding the same, of a platen-frame pivotally mounted on said carriage-truck forwardly of said guiding and supporting means and having a longitudinal bar below its pivotal support; a rock-shaft having an arm engaging the rear face of said bar, a case-shift key for oscillating said rock-shaft, and adjustable means for limiting the motion of said arm.

37. A platen-frame mounted to have a case-shift motion and having a longitudinal rail, a crank-arm controlling the motion of said rail in both directions, means for oscillating said crank-arm, and adjustable means for limiting the motion of said crank-arm in both directions.

38. In a type-writing machine, the combination of a platen; types arranged to strike the front face of said platen; a pivoted platen-frame having its pivotal axis to the rear of the printing-point and having a longitudinal bar below said pivotal axis; a rock-shaft mounted in the frame of the machine and having an arm cooperating with said bar on both sides thereof; means for oscillating said rock-shaft; and adjustable means for limiting the motion of said arm in both directions.

39. In a front-strike type-writing machine, a platen; types arranged to strike the front face of said platen; a pivoted platen-frame having its pivotal axis to the rear of the printing-point, said platen-frame comprising a rail extending lengthwise thereof below said pivotal axis; in combination with a case-shift device comprising a member engaging said rail and supporting the same while permitting a free traverse of said frame; an adjustable part between which and said rail

said member is interposed; and means for operating said member to impart a shifting motion to said platen-frame and platen.

40. The combination of a platen; types arranged to strike the front face of said platen; a platen-frame comprising end pieces pivotally supported at the rear of the platen and longitudinal bars connecting said end pieces above and below the platen; and a case-shift device cooperating with one of said bars.

41. The combination of a platen; types arranged to strike the front face of said platen; a pivoted platen-frame having its pivotal axis to the rear of the printing-point and having a longitudinal bar below said pivotal axis; a rock-shaft below said longitudinal bar; an arm on said rock-shaft cooperating with the rear face of said bar; and a shift-key for rocking said rock-shaft.

42. In a type-writing machine, the combination of a carriage, a platen-frame pivoted directly to said carriage and having a longitudinal bar below its pivotal support, and a member which engages said bar and limits the motion of said frame about its pivotal support.

43. In a type-writing machine, the combination of a carriage, a platen-frame pivoted directly to said carriage and having a longitudinal bar back of the printing-point, and a member engaging said bar and limiting the motion of said platen-frame about its pivotal support.

44. In a type-writing machine, the combination of a carriage, a platen-frame pivotally

mounted on said carriage and having a longitudinal bar below its pivotal support, and an adjustable member engaging the rear side of said bar and limiting the motion of said platen-frame about its pivotal support.

45. In a type-writing machine, the combination of a carriage and platen-frame pivotally mounted on said carriage and having a longitudinal bar below its pivotal support; a relative fixed antifriction member engaging the rear side of said bar and limiting the motion of said platen-frame about its pivotal support; and means for adjusting said member.

46. The combination of a platen having a case-shift motion and also a motion to a non-printing position, means normally restraining said platen against motion to such non-printing position, and a key and connections controlling said restraining means.

47. The combination of a platen mounted in a pivoted frame that is adapted to rock on its pivot to impart to said platen a case-shift motion and also a motion to a non-printing position, means normally preventing such rocking to non-printing position, and a key and connections controlling said means.

Signed at Ilion, in the county of Herkimer and State of New York, this 14th day of September, A. D. 1903.

LOUIS P. DISS.

Witnesses:

R. A. SHEPARD,
A. B. RUSSELL.