

No. 661,849.

Patented Nov. 13, 1900.

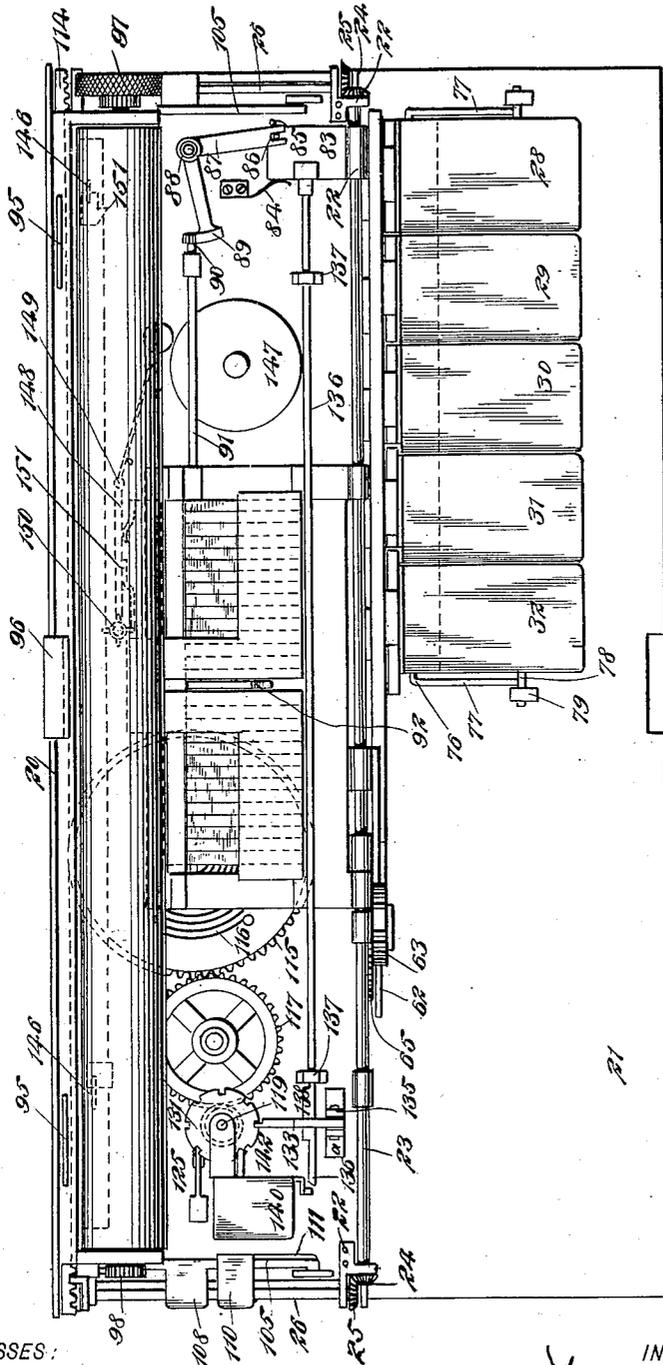
M. S. CARMONA.
TYPE WRITER.

(Application filed Feb. 2, 1900.)

(No Model.)

5 Sheets—Sheet 1.

FIG. 1.



WITNESSES:

H. Walker

John Lotka

INVENTOR

Samuel S. Carmona

BY

Wm. H. ...

ATTORNEYS

No. 661,849.

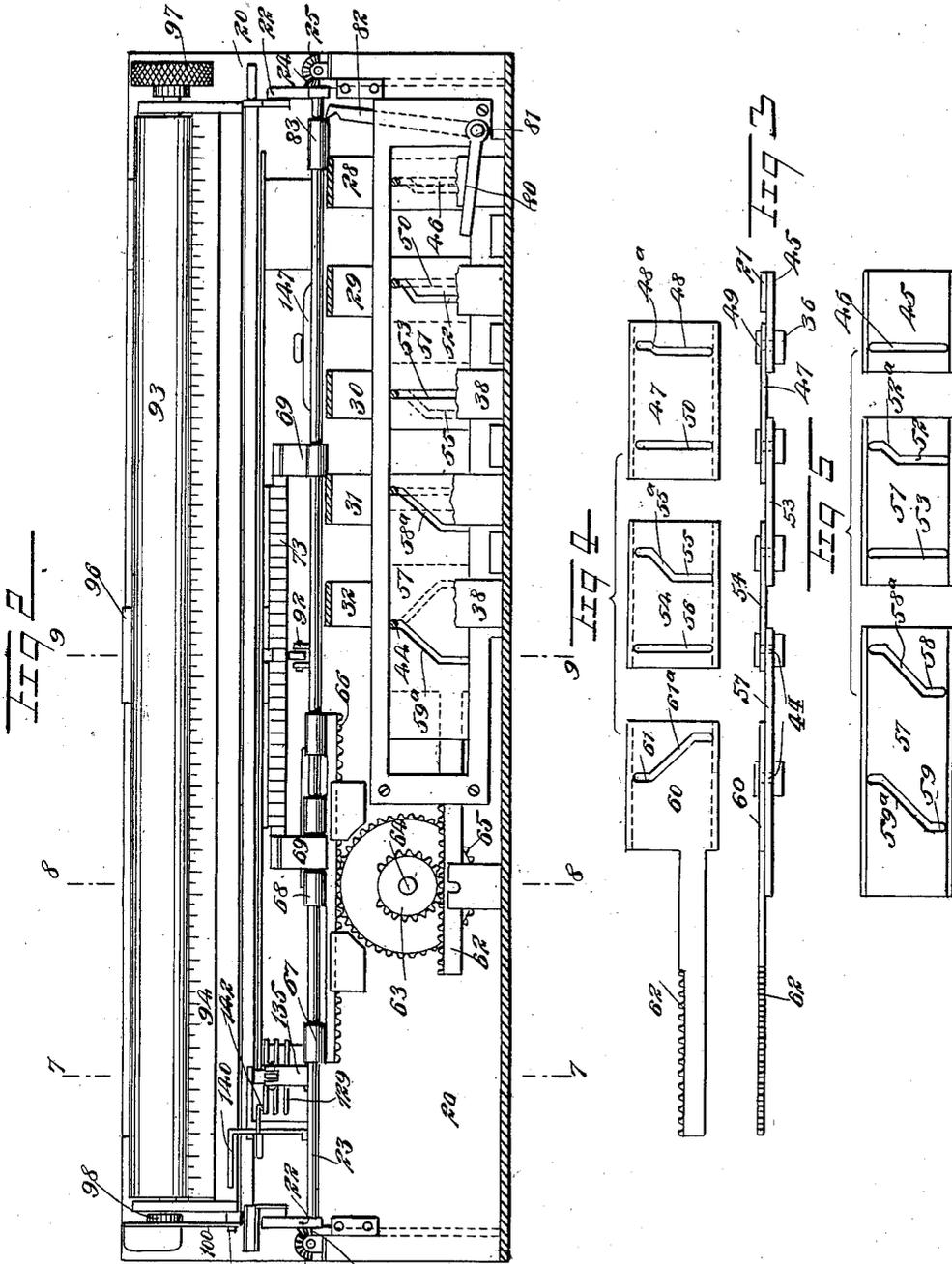
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(No Model.)

5 Sheets—Sheet 2.



WITNESSES:

H. Walker

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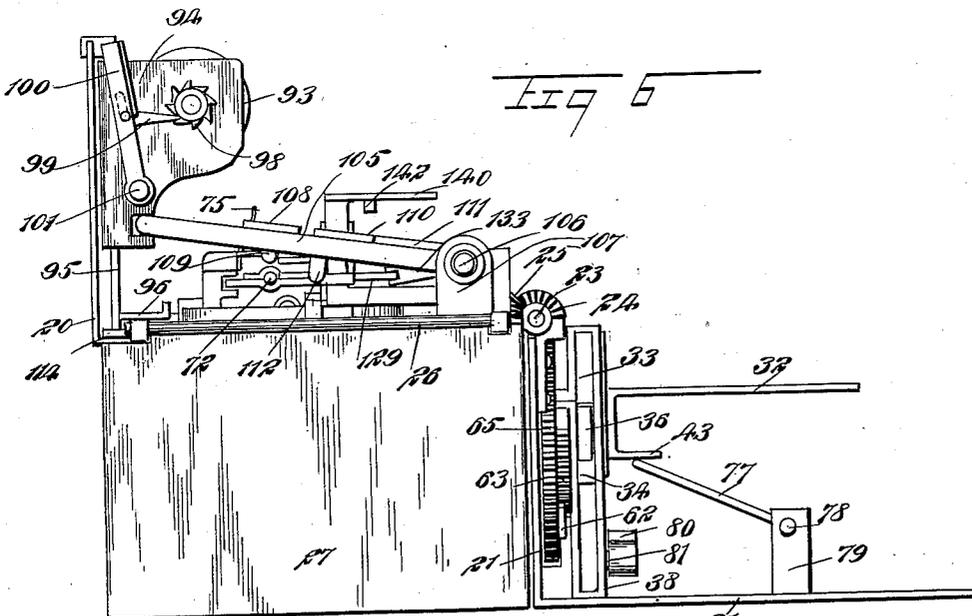
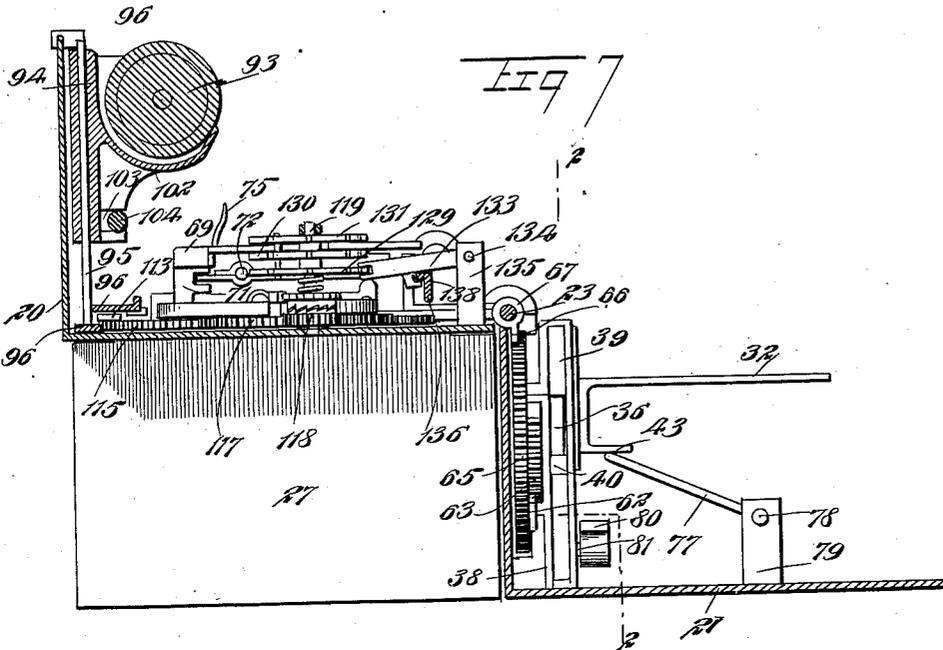
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(Application filed Feb. 2, 1900.)

5 Sheets—Sheet 3.

(No Model.)



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M. S. CARMONA.
TYPE WRITER.

(Application filed Feb. 2, 1900.)

5 Sheets—Sheet 5.

(No Model.)

Fig 10

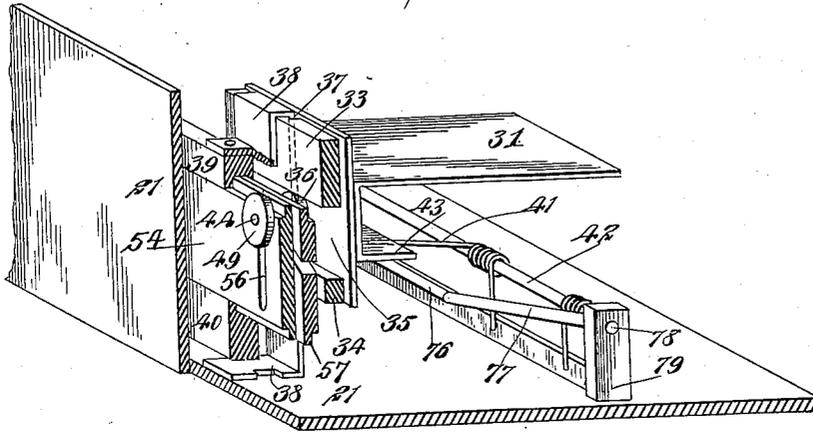


Fig 12

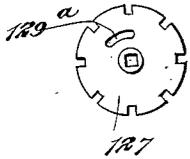


Fig 13

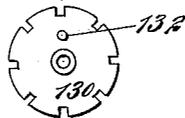


Fig 14

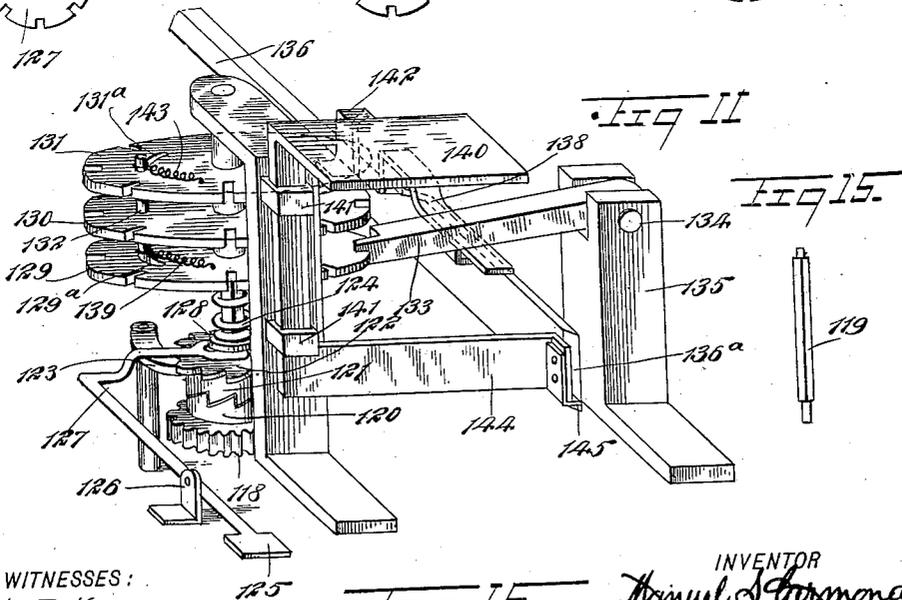
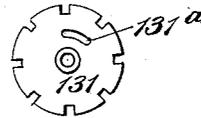
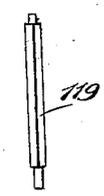
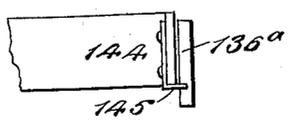


Fig 15



WITNESSES:
H. Walker
John Latta

Fig 16



INVENTOR
Manuel S. Carmona
BY *Manuel*
ATTORNEYS

UNITED STATES PATENT OFFICE.

MANUEL S. CARMONA, OF MEXICO, MEXICO.

TYPE-WRITER.

SPECIFICATION forming part of Letters Patent No. 661,849, dated November 13, 1900.

Application filed February 2, 1900. Serial No. 3,694. (No model.)

To all whom it may concern:

Be it known that I, MANUEL S. CARMONA, a citizen of the Mexican Republic, and a resident of Mexico, Mexico, have invented a new and Improved Type-Writer, of which the following is a full, clear, and exact description.

My invention relates to type-writers of that class in which a small number of keys—for instance, five—is employed, which by their use either singly or in combination govern the action of a type-locating mechanism and of a printing device.

One object of my present invention is to provide means for locating the type which will be positive in action and which will not be liable to deteriorate by wear; and a further object of the invention is to simplify the arrangement of the parts, so that the movement of the carriage will be relatively slight, and to provide an improved mechanism for effecting the impression.

The invention will be fully described hereinafter and the features of novelty pointed out in the appended claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a plan of my improved type-writer. Fig. 2 is a sectional elevation thereof, substantially on the line 2 2 of Fig. 7, parts of the keyboard being omitted. Fig. 3 is a plan of the type-locating bar. Figs. 4 and 5 are detail elevations of said bar. Fig. 6 is an end elevation of the type-writer. Figs. 7, 8, and 9 are sectional elevations of the machine, taken, respectively, on the lines 7 7, 8 8, and 9 9 of Fig. 2. Fig. 10 is a detail perspective view showing one of the keys and the mechanism operated thereby. Fig. 11 is a perspective view of the carriage feed mechanism or spacing device, and Figs. 12 to 16 are details of said spacing mechanism.

The type-writer box or casing consists of an L-shaped section 20, which forms the rear wall and the bottom wall of the type-writer box when closed, and another L-shaped section 21, which when the box is closed forms the front and top walls thereof. Journaled in bearings 22 on the section 20 is a shaft 23, extending lengthwise of the type-writer box, and on said shaft is suspended so as to turn

therewith the section 21. At the end of the shaft are arranged beveled pinions 24, which engage similar pinions 25, arranged upon transverse shafts 26, which are journaled in the section 20, said shafts having rigidly attached thereto end pieces 27. These end pieces are adapted to form feet for supporting the section 20, as shown in Figs. 6 to 9. It will be understood that when the section 21 is folded upward the shaft 23, with the pinions 24, will be turned, and this will cause the shafts 26 to turn also, so that the ends 27 will be folded upward to close the box formed by the sections 20 21. Similarly when the section 21 is folded down into the position shown in the drawings the ends 27 will automatically assume the position shown.

The section 21, which may be called the "top" section, since it is at the top when the type-writer is folded, carries the keyboard and the type-locating mechanism. The keyboard comprises five keys 28, 29, 30, 31, and 32, each of which has secured to it blocks 33 34, (see Fig. 10,) which form between them a channel 35, in which may move horizontally a roller 36. (See Figs. 8 and 9.) Each of the blocks 33 34 has a slideway 37, through which passes a stationary guide 38, which is secured to the bars 39 and 40 on the section 21. The keys and the blocks 33 34 have therefore a sliding up-and-down movement and are normally held in their upper position by means of springs, such as 41, coiled upon a rod 42 and engaging a projection 43 on the key. Each of the rollers 36 is secured to a pin 44, and each pin 44 passes through slots in two sections of the type-locating bar. These sections are shown separately in Figs. 4 and 5 and in their connection in Fig. 3. The first section 45 is secured to the section 21 of the box rigidly and has a slot 46, which is vertical in its entire length. This section 45 is lapped partly by the next section 47, which has a slot 48, adapted to register with the slot 46, said slot 48, however, having a lateral deviation or inclined portion 48^a, so that its upper end is not in line vertically with its lower end. As before described, one of these pins 44 will extend through these slots 46 48, said pin having at its rear end a head 49, which serves to hold it in its place in connection with the roller 36. By reference to Figs.

3, 4, 5, and 10 it will be noticed that if the key engaging said roller 36 is depressed the pin will travel downward in the slots 46 48. Now when the pin reaches the deviation 48^a the section 47 will be crowded toward the right, since the section 45 is stationary and since the slots 46 48 must aline exactly at that portion at which the pin 44 engages them. The section 47 will therefore move to the right, the amount of movement being equal to the amount the upper part of the slot 48 is out of line with the lower part of the said slot. The section 47 further has at its other end a vertical slot 50. The next section 51 has at its right-hand end a slot 52, with a deviation 52^a, and at its left-hand end a vertical slot 53. Similarly the section 54 has a slot 55, with a deviation 55^a and a straight vertical slot 56. The three sections 47, 51, and 54 are substantially alike, except that the amount of deviation or lateral distance of the upper part of the slot from the lower part varies with each. Thus if the lateral deviation at 48^a is taken as the unit the deviation at 52^a is twice as large and that at 55^a is four times as large. The next section 57 has two slots 58 and 59, having deviations 58^a 59^a amounting to eight times the amount of the deviation in the slot 48. The last section 60 has only one slot 61, with the deviation 61^a equal in amount but opposite in direction to the deviations 58^a 59^a. It will be understood, particularly with reference to Fig. 3, that the same pin 44 passes through the slots 46 48. This pin is controlled by the first key 28. The pin controlled by the second key 29 passes through the slots 50 52. The pin of the third key 30 passes through the slots 53 55. The pin of the fourth key 31 passes through the slots 56 58, and the pin of the last key 32 passes through the slots 59 and 61.

The sections of the type-locating bar are connected as shown in Fig. 3—that is, they are located alternately at the front and rear. These sections have guided horizontal movement between the bars 39 40, which are secured to the box-section 21. The operation produced by the depression of the key 28 has already been described. Should the key 29 be depressed, the corresponding pin 44 will travel downward in the slots 50 and 52, and owing to the deviation 52^a the section 51 will be moved toward the right a predetermined distance, the sections 45 47 remaining stationary. As the pins 44 connected with the keys 30 31 32, are at the top portions of the respective slots, it follows that the movement of the section 51 toward the right will cause the sections 54, 57, and 60 to share this movement. Should a plurality of the keys be depressed, the last section 60 will receive a movement which is equal to the sum of the movements each of said keys will produce if depressed alone. When the last key 32 is depressed, the pin 44 connected therewith travels in the slots 59 61, the deviations 59^a and 61^a of which extend in opposite direc-

tions, as described. Since all the other sections are stationary, owing to the fact that the pins 44 belonging to the other keys are at the upper ends of the respective slots, it follows that the pin 44 belonging to the key 32 will when it comes into engagement with the deviation 59^a (which is stationary) be forced over to the left, and if the section 30 were rigidly connected with said pin it is obvious that said section would be forced to the left an amount equal to the movement to the right produced by the depression of the key 31. As, however, the slot 61 has a deviation 61^a to the right, it follows that the section 60 has a movement to the left relatively to the pin 44 engaging said slot, and the result is that upon the depression of the key 32 the section 60 moves toward the left a distance equal to twice the amount of travel imparted to it by the depression of the key 31. Therefore if the key 28 is depressed the section 60 moves to the right, the extent of the movement being represented by the unit 1. If the key 29 is depressed, the movement of the section 60 is equal to 2. If the key 30 is depressed, the movement becomes equal to 4. Upon the depression of the key 31 a movement equal to 8 is produced, and if the last key 32 is depressed the movement is equal to minus 16—that is, it is in extent double the movement produced by the key 31, but opposite in direction. It will be understood that if two or more keys are depressed together the section 60 will move a distance corresponding to the arithmetical sum of the movements produced by the respective keys when operated singly. Thus if the keys 28 and 30 are depressed the movement will be equal to plus 5. If the keys 28, 29, and 32 are depressed, the movement will be equal to minus 13, and if the four keys 28, 29, 30, and 31 are operated together the movement will be plus 15—that is, about equal in extent, but opposite in direction, to the movement produced by the depression of the key 32 alone, (minus 16.) It will therefore be readily understood that by proper combinations the section 60 will be moved toward the left or toward the right from its central normal position, the range of movement being represented by any number of units between plus 15 and minus 16.

The section 60 of the type-locating bar is provided at its left-hand end with a rack 62, said rack engaging the pinion 63 upon a shaft 64, journaled in the section 21 of the box. On said shaft is also a toothed wheel 65 in engagement with a rack 66 upon a slide 67, which has guided movement on the shaft 23. Said slide has ears 68 engaging the carriage 69, which likewise slides longitudinally on the shaft 23. The carriage has a loose engagement with said shaft, so as to allow the shaft to turn therein, and is supported mainly by the section 20 of the box, while the rack 66 and its slide 67 are supported by the other section 21. By the means so far described the motion of the type-locating bar is trans-

mitted to the carriage and somewhat amplified. Of course it will be understood that if amplification of the movement is not desired the rack 62 may be engaged directly with the wheel 65 and the pinion 63 suppressed.

The carriage 69 at its rear end slides in a guideway 70, provided in a bar 71, rising from the box-section 20. At the rear end of the carriage is located a longitudinal rod 72, on which are pivotally mounted type-levers 73, each preferably carrying three types 74 at different distances from the rod 72. Each of the type-levers 73 is therefore adapted to swing independently into the printing position. (Indicated in dotted lines in Fig. 9.) To secure a somewhat elastic impact, a spring 75 is attached to the bar 71 at the impression-point to engage the type-lever 73 when thrown up against the paper.

The impression is effected as follows: When a key is depressed, it first operates the type-locating bar, and thereby shifts the carriage 69, so that the desired type is in the printing position. The projection or flange 43 of the key engages a bar 76, extending under the projections 43 of all the keys, said bar being secured to the ends of arms 77, pivoted at 78 upon brackets 79, secured to the box-section 21. At the right-hand end of the machine is arranged under one of said arms 77 one arm 80 of an elbow-lever fulcrumed at 81 and engaging with its other arm 82 a slide 83, mounted to move lengthwise on the shaft 23 and pressed toward the right by a spring 84 against a stop 85. This slide carries a pin 86, engaged by the forked end of an elbow-lever 87, fulcrumed at 88 and carrying at the end of its other arm a toothed sector 89. This sector is in mesh with a pinion 90 upon a shaft 91, which is journaled in bearings secured to the section 20 of the box and extends lengthwise under the type-carriage. At the center of the machine said shaft 91 carries the impression-lever 92. It will be seen that when a key is depressed it turns the arms 77, moves the slide 83, and through the sector 89 imparts a rotating motion to the shaft 91, throwing the impression-lever 92 up, and thus bringing that type-lever which is immediately above said impression-lever into the printing position, as shown in Fig. 9.

By reference to Fig. 1 it will be seen that the impression-lever when the carriage is in its normal position is just at the center of the carriage, and therefore the movements of the carriage are comparatively small, since the movements instead of being always in the same direction as in former machines of this type invented by me may be either toward the left or toward the right. It will be obvious that the decrease in the extent of the movement of the carriage facilitates the operation of the machine and increases the speed of its work.

As above described, I prefer to provide each of the type-levers 73 with a plurality of types 74—three, as shown. To effect an im-

pression of one or the other of these types, I provide an arrangement whereby the roll over which the paper passes is shifted so that one or the other of the types will strike the paper. When, as shown in Fig. 9, the paper-support is in its highest position, the type at the end of the lever 73 will print. By lowering the paper-support the other types can obviously be brought to bear upon the paper. To accomplish this, I construct the paper-support as follows: The paper is carried around a roll 93, which is journaled in a frame 94, having vertical movement on guides 95 of the paper-carriage 96, with sufficient friction to prevent accidental displacement of the frame 94. At one end the shaft of the roller has a milled head 97 to feed the paper by hand in the ordinary manner, and at the other end may be located a ratchet-wheel 98, engaged by a pawl 99, actuated by a lever 100, pivoted at 101, this mechanism serving to give a definite movement to the roll 93. The frame 94 is provided with a guide 102, the paper passing between the roll 93 and said guide in the usual manner. At its bottom the frame 94 has a longitudinal groove 103, which engages a longitudinal rod 104, attached to the ends of arms 105, fulcrumed at 106 upon brackets 107 of the box-section 20. One of the said arms 105 is provided with a handle 108 for depressing the same, the downward movement of said arm being limited by the engagement of a stop 109 with the box-section 20. By pressing on the handle 108 the paper-support is brought down to its lowest position. To bring the paper-support into the intermediate position I, provide a handle 110, secured to the end of a lever 111, also fulcrumed at 106, but independent of the arm 105. This handle 110 has a downward projection 112, adapted to engage the box-section 20 and so arranged that the movement of the handle 110 is stopped when the arm 105, over which the said handle extends, has moved downward about one-half the distance it would be moved by the depression of the handle 108. In this manner the paper-support may be brought into its lowest or into its intermediate position or back to its normal uppermost position.

The carriage 96 moves on guides 113, extending lengthwise of the box-section 20. At its lower end the carriage is provided with a feed-rack 114, engaging a toothed wheel 115, pivoted on the box-section 20. This toothed wheel is connected with a coil-spring 116, which has a tendency to turn said wheel in one direction, so as to feed the paper-carriage, said spring being wound in the ordinary manner. The toothed wheel 115 further engages a gear-wheel 117 in mesh with a pinion 118, loose upon the shaft 119. The pinion 118 has rigidly secured to it a clutch-section 120, engaged by a mating clutch-section 121, mounted on a square portion of the shaft 119, and therefore compelled to turn with it. With the clutch-section 121 is rigidly connected a

ratchet-wheel 122, engaged by a pawl 123, so as to hold the shaft against rotation in one direction. The ratchet-wheel 122 and clutch-section 121 are capable of sliding longitudinally on the shaft 119, but are normally pressed downward by a spring 124. To bring the clutch-section 121 out of engagement with the clutch-section 120 and the ratchet-wheel 122 out of engagement with the pawl 123, I provide a shifting device consisting of a lever 125, pivoted at 126 and having a forked arm 127, engaging a collar 128 on the ratchet-wheel 122, this being a well-known clutch-shifting mechanism. On the shaft 119 are mounted three notched wheels 129, 130, and 131. Of these the central wheel 130 is held to turn with the shaft, while the others are loose thereon, and a pin 132 is rigidly secured to the central wheel 130 and extends up and down into segmental slots 129^a and 131^a of the other notched wheels, so that the said wheels are capable only of a limited rotary motion relatively to the fixed wheel 130. The length of the slots 129^a and 131^a is equal to the distance between two of the notches in said wheels. A notch of the lowermost wheel 129 is normally engaged by a releasing-pawl 133, fulcrumed at 134 upon a bracket 135 and held in its lower position either simply by gravity or by a spring. It will be understood that the spring 116, through the wheels 115, 117, and 118, turns the shaft 119, and with it the notched wheel 130 and the pin 132, until said pin is stopped by engaging the end of the slot 129^a of the wheel 129, which is held stationary by the releasing-pawl 133. When a key is depressed, the slide 83 is moved toward the left, as described. To the slide is attached a sliding rod 136, passing through guides 137 and having at its free end a cam projection 138, which extends under the releasing-pawl 133. As the said rod 136 is operated by the depression of a key, the cam 138, sliding under the pawl 133, raises the same. The pawl is made of such width that it will engage the notch of the central wheel 130 before it leaves the notch of the lower wheel 129, with which it is engaged. Therefore as the pawl swings upward into engagement with the wheel 130 the shaft 119 remains locked, and consequently the wheel 115 cannot move to feed the paper-carriage. As soon as the lower wheel 129 is released a spring 139 turns it so as to bring the pin 132 in engagement with the opposite end of the slot 129^a, and then when the operator releases the key the slide 83 and bar 136 move to the right under the influence of the spring 84, and the pawl 133 being no longer held up by the cam drops into a notch of the wheel 129, which notch, however, is not the same as the one engaged before. As soon as the pawl 133 thus releases the wheel 130 the shaft 119, with the wheels 118, 117, and 115, will be turned by the spring 116, thus feeding the carriage 96 until this movement is brought to a stop by the engagement of the pin 132 with

the end of the slot 129^a. This operation takes place every time a letter is printed, and therefore produces the requisite space between two succeeding characters. When it is desired to produce a double space, as at the end of a word, the operator depresses a finger-piece 140, mounted to slide vertically in guides 141 and provided with a projection 142, adapted to engage the uppermost wheel 131. All the wheels 129, 130, and 131 are capable of sliding up and down on the shaft 119, the spring 124 normally holding them in the upper position. When, however, the finger-piece 140 is depressed, the notched wheel 131 will be lowered to the position in which the wheel 130 is normally held. Therefore the impression of the last character of a word will throw the releasing-pawl 133 into engagement with the wheel 130, as above described, and if at the same time the finger-piece 140 is depressed the pawl 133 will pass from engagement with the central wheel 130 into engagement with the upper wheel 131, which is under the influence of a spring 143, having a tendency to turn it relatively to the central wheel 130 in the same direction as the spring 139 turns the wheel 129. As soon as the pawl 133 in this movement releases the wheel 130, it having previously engaged the wheel 131, the spring 116 feeds the carriage, turning the shaft 119 against the action of the spring 143 until the pin 132 engages the opposite end of the slot 131^a. Then as the key and the finger-piece 140 are released the pawl 133 again engages successively the wheels 130 and 129, giving the carriage an additional feed movement, in the same manner as hereinbefore described.

It will be obvious that it is important that the carriage-feed should not begin before the type has returned to its normal position—that is, the return movement of the rod 136 and slide 83 should precede the return movement of the finger-piece 140. For this purpose I provide at the end of the arm 144, connected with said finger-piece, a spring 145, located in the path of the end of the bar 136. When the finger-piece 140 is depressed and the bar 136 slides forward, the end of said bar will be above the spring 145, forming a stop, which prevents the upward return of said finger-piece until the bar 136 has returned to its normal position. In order that the spring 145 may not interfere with the movement of the bar 136 when the finger-piece 140 is not depressed, the said bar is provided with a beveled end 136^a, and the spring 145 is so made that it may yield sidewise while being substantially rigid against downward movement.

The movement of the carriage is limited by stops 146, and I also provide any suitable mechanism for giving a signal when the carriage is approaching the end of the line, such as a bell 147, adapted to be struck by a hammer 148, pivoted at 149 and actuated by a toothed wheel 150, located in the path of a projection 151 on the carriage.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

5 1. In a type-writer, a bottom supporting the carriage, a box-section hinged to the bottom and arranged to carry the keys, said box-section carrying pinions at the hinge, and hinged ends having pinions engaging those of the hinge, to swing the ends together with said
10 section.

2. In a type-writer, a type-locating bar consisting of a series of consecutively-arranged sections connected at their adjacent ends and movable one relatively to the other, the several sections having different relative movements, keys for effecting a movement of the several sections, movable type, the position of which is controlled by the movement of the type-locating bar, and an impression mechanism operated by the movement of the keys.
15 20

3. In a type-writer, a type-locating bar consisting of a series of sections movable one relatively to the other, the relative movements of the sections being as 1, 2, 4, 8 and 16, respectively, keys for effecting a movement of the several sections, movable type the position of which is controlled by the movement of the type-locating bar, and an impression mechanism operated by the movement of the
25 30 keys.

4. In a type-writer, a type-locating bar consisting of a series of sections movable one relatively to the other, the relative movements of the sections being as 1, 2, 4, 8 and 16, respectively, and the last-named section operating in the opposite direction to the other sections, keys for effecting a movement of the several sections, movable type the position of which is controlled by the movement of the type-locating bar, and an impression mechanism operated by the movement of the keys.
35 40

5. In a type-writer, a type-locating bar consisting of a series of consecutively-arranged sections movable one relatively to the other, the relative movements of the sections being different and increasing progressively, and the section which has the greatest movement working in the opposite direction to the others, keys for effecting a movement of the several sections, movable type the position of which is controlled by the movement of the type-locating bar, and an impression mechanism operated by the movement of the keys.
45 50

6. In a type-writer, a type-locating bar consisting of a series of sections movable one relatively to the other, and overlapping at their adjacent ends, said adjacent ends being each provided with a slot or guideway which in one section has a lateral deviation, pins movable in the guideways of said overlapping ends, keys arranged to actuate said pins, movable type the position of which is controlled by the movement of the type-locating bar, and an impression mechanism operated by the movement of the keys.
55 60 65

7. In a type-writer, a type-locating bar con-

sisting of a series of sections movable one relatively to the other and overlapping at their adjacent ends, said adjacent ends being each provided with a slot or guideway which in one section has a lateral deviation, pins movable in the guideways of said overlapping ends and carrying rollers, keys provided with transverse guideways for the rollers, movable type, the position of which is controlled by the movement of the type-locating bar, and an impression mechanism operated by the movement of the keys.
70 75

8. A type-writer comprising a bottom supporting the carriage, hinged ends adapted to form feet for said bottom, and a side and top hinged to the bottom and arranged to carry the keys.
80

9. In a type-writer, a box adapted to form a type-writer support, said box comprising a connected side and bottom, the opposite side being hinged to the bottom and the top being connected directly with said hinged side, and ends hinged to the bottom and adapted to fold outwardly to form legs for supporting the
85 90 bottom.

10. In a type-writer, a type-locating bar consisting of a series of sections movable one relatively to the other, keys for effecting a movement of the several sections, movable type located on a carriage having a rack, a rack on the type-locating bar, connected toothed wheels of a different number of teeth engaging the said two racks, and an impression mechanism operated by the movement
95 100 of the keys.

11. In a type-writer, a type-locating bar consisting of a series of consecutively-arranged sections connected with each other at their adjacent ends and movable one relatively to the other, keys for effecting a movement of the several sections, movable type, the position of which is controlled by the movement of the type-locating bar, and impression mechanism operated by the movement of the keys.
105 110

12. In a type-writer, a carriage having a rack, a pinion engaging said rack, a notched wheel held to rotate with said pinion, two other notched wheels, each arranged on one side of the first-named notched wheel and capable of a limited turning movement relatively thereto, a releasing-pawl arranged to engage said notched wheels and to lock one of them before it releases the one with which it is temporarily engaged, means for throwing the pawl from one wheel to the next, said means being operated by the type-keys, and means operated by a space-key for giving an additional throw to the pawl.
115 120 125

13. In a type-writer, a carriage having a rack, a pinion engaging said rack, a notched wheel held to rotate with said pinion, two other notched wheels each arranged on one side of the first-named notched wheel and capable of a limited turning movement relatively thereto, a releasing-pawl arranged to
130

engage said notched wheels and to lock one of them before it releases the one with which it is temporarily engaged, means for throwing the pawl from one wheel to the next, said
5 means being operated by the type-keys, and means operated by a space-key for giving an additional throw to the pawl, the means operated by the type-keys having a projection for temporarily locking the means operated
10 by the space-key, to prevent a return move-

ment of the releasing-pawl until the type-keys return to their normal position.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

MANUEL S. CARMONA.

Witnesses:

JOHN LOTKA,

EVERARD BOLTON MARSHALL.