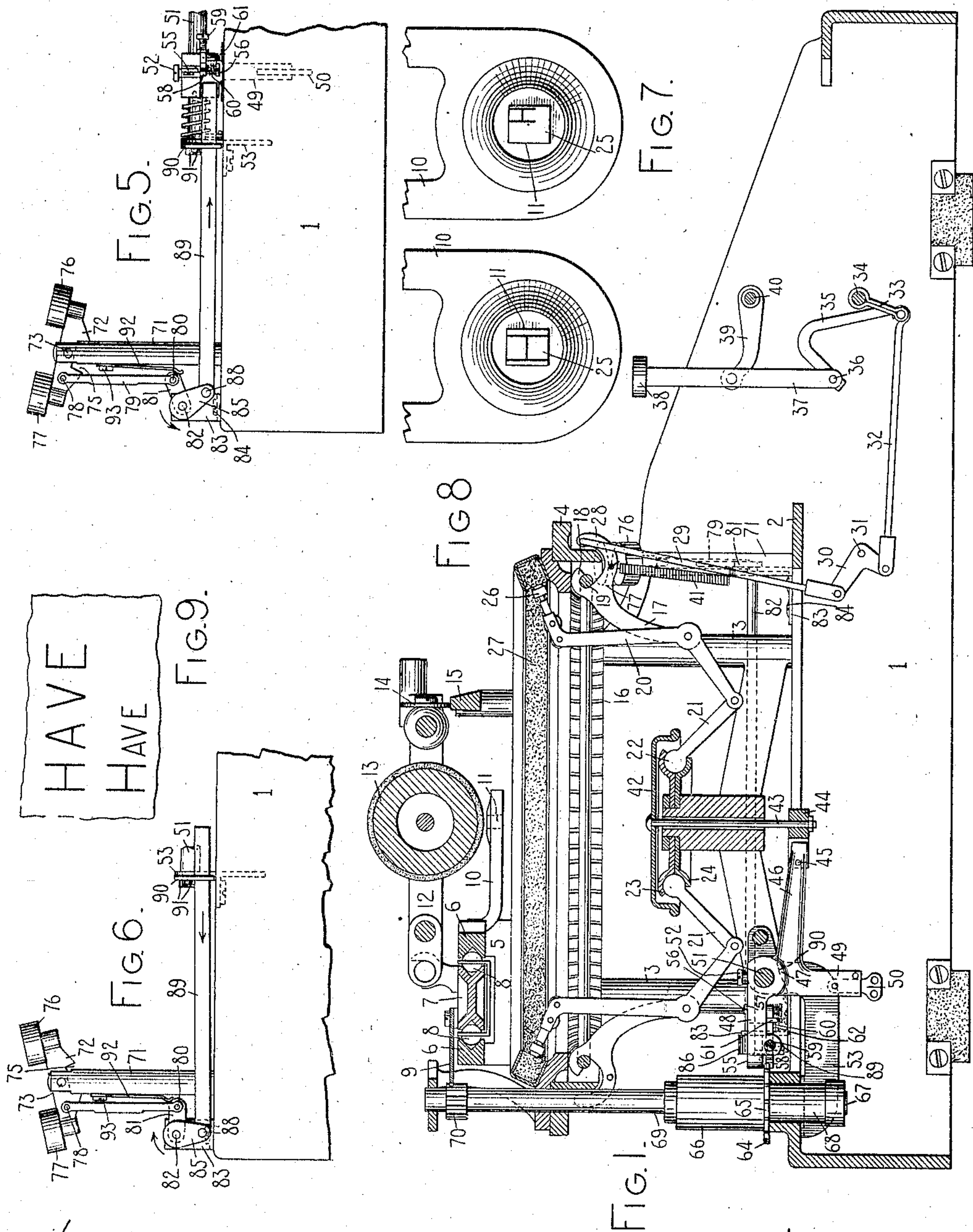


975,739.

C. D. WALLACE.
TYPE WRITING MACHINE.
APPLICATION FILED MAY 10, 1904.

Patented Nov. 15, 1910.

2 SHEETS-SHEET 1.



WITNESSES:

E. M. Wells
M. F. Haunrecher.

INVENTOR.

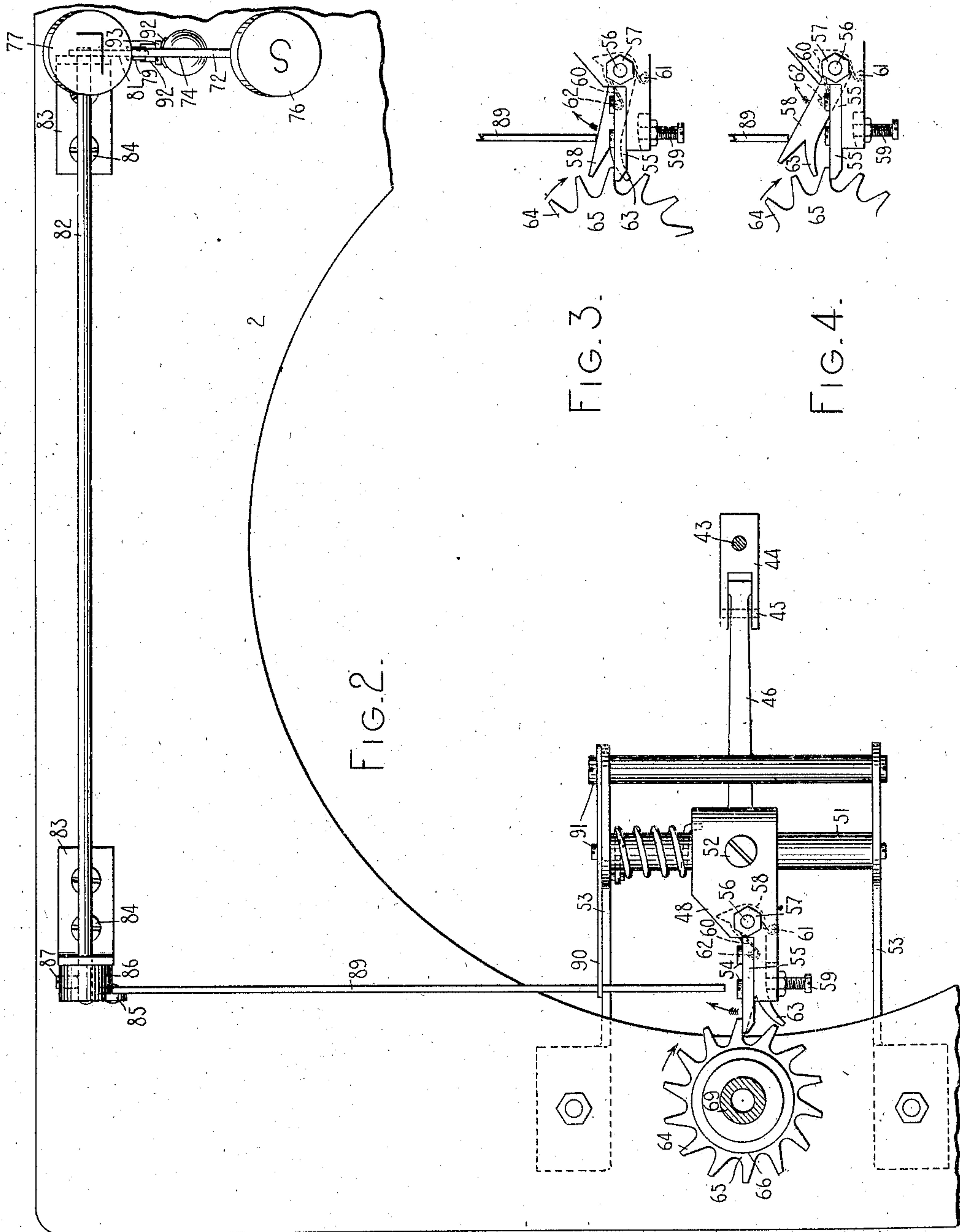
Casper D. Wallace
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WITNESSES.

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UNITED STATES PATENT OFFICE.

CASPER D. WALLACE, OF BRIDGEPORT, CONNECTICUT, ASSIGNOR TO YOST WRITING MACHINE COMPANY, OF ILION, NEW YORK, A CORPORATION OF NEW YORK.

TYPE-WRITING MACHINE.

975,739.

Specification of Letters Patent.

Patented Nov. 15, 1910.

Application filed May 10, 1904. Serial No. 207,271.

To all whom it may concern:

Be it known that I, CASPER D. WALLACE, a citizen of the United States, and resident of Bridgeport, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a specification.

My invention relates to typewriting machines and more particularly to the carriage feed mechanism and to the type of such machines.

It is frequently desirable to write matter in larger characters than are ordinarily used in writing machines and at the same time to have the machine available for writing in smaller characters, so that part of the matter written may, if necessary, be in the larger characters and part in the smaller.

The main object of this invention is to provide a machine in which matter of this general nature may be written. As herein shown, the type characters employed are large capital letters and smaller capital letters, but I desire it to be understood that large and small characters of any other style or kind may equally well be used within the scope of my invention.

The invention consists in certain features of construction and combinations of parts, all as will be hereinafter set forth and particularly pointed out in the subjoined claims.

In the accompanying drawings, the invention is shown applied to a full keyboard typewriting machine having the general characteristics of that commercially known as the "Yost No. 10" typewriter, but I do not wish to be limited to the particular structure illustrated, as other kinds or styles of machines may be employed.

Figure 1 is a vertical front to rear sectional view, taken centrally of the machine, showing my invention applied thereto and with such parts omitted as are immaterial. Fig. 2 is a plan view of the escapement mechanism and its regulating device, in connection with such parts of the machine as are necessary to give a correct understanding of the relation of the invention thereto. Fig. 3 is a plan of the feed dogs and part of the escape wheel showing the loose dog out of engagement and thrown back into contact with the regulating stop, the latter being

shown in position to permit of the feed of a single tooth of the escape wheel. Fig. 4 is a view similar to Fig. 3, but with the loose dog contacting with the regulating stop when the latter is positioned to permit the escape of two teeth of the escape wheel. Fig. 5 is a rear elevation of the regulating stop mechanism mounted on the base of the machine and of a part of the escapement mechanism, the regulating stop being shown thrown into the position of Fig. 3. Fig. 6 is a rear elevation of the regulating mechanism and of the back part of the base of the machine on which it is mounted, the regulating stop being shown in the position of Fig. 4. Fig. 7 is a plan of the forward end of the type guide, one of the smaller characters being shown in the guide in the printing position. Fig. 8 is a plan of the forward end of the type guide, one of the larger character being shown in the guide in the printing position. Fig. 9 shows a sample of the print of this machine, the upper line being entirely in large capitals and the lower line having an initial large capital followed by small capitals corresponding to the large capitals in the top line.

Like parts are designated by like numerals throughout the several views, wherein 1 is the base of the machine, 2 the base plate maintaining the corner posts 3, which in turn sustain a type ring 4. Bearing brackets 5, mounted on the type ring, support ways 6, provided with oppositely faced grooves which, in connection with corresponding oppositely faced grooves of the carriage truck 7, comprise the bearings or channels for the anti-friction balls 8. A feed rack 9 of ordinary construction is screwed to the carriage truck 7. Supported centrally of the machine upon the forward carriage way 6 is a type guide 10, having at its forward end a guide opening 11 for the types. A platen frame 12, carrying the platen 13, is pivotally supported on the carriage truck and has a bearing wheel 14 which runs on a front rail 15, the latter in turn being sustained by the type ring 4. The type ring is provided with radial slots 16 for the reception of drivers 17, each driver having a hook-like projection 18 bearing upon a circular fulcrum rod 19 arranged in a groove in the type ring. The lower end of each driver is pivoted to a type carrier or bar 20.

which latter is pivotally connected at its lower end to the end of a guide link 21, said guide link having at its other end a disk-like portion 22, which is held in a bearing 5 formed of two circular plates 23 and 24 suitably fastened together and supported centrally of the type bar basket.

The type face 25 of the type block 26 on the end of each type bar normally rests 10 against an inking pad 27 supported on the type ring. As best appears in Figs. 7 and 8, the type faces are of two kinds, while the type blocks are of uniform dimensions in order to fit the guide-opening 11 in the cen- 15 ter guide 10. Fig. 7 shows a type which occupies but half the width of the face, this half being the right hand half and the lines of the character occupying the right half upper corner of the face when the type is in 20 printing position and is viewed from above and from the front of the machine, as is the case in Fig. 7. The type shown in Fig. 8 is one of the larger size and the size of the character is limited only by the boundaries 25 of the face of the type block.

The driver 17 of each type carrier or bar is provided with an extension 28, which is connected to the upper end of a connecting rod 29, the lower end whereof is pivotally 30 connected to the upper arm of a bell crank 30, the said bell crank in turn being pivoted at 31 to a stationary part of the machine. The lower arm of the bell crank has pivoted to it the rear end of a draw link 32, the for- 35 ward end of which is pivoted to an actuating blade 33 having a stationary pivot 34. Integral with the blade 33 is a grooved arm 35 pivotally connected to which at 36 is a key stem 37 terminating in a key cap 38 and 40 connected to the upper guide arm 39, which latter has a stationary pivot 40. A contractile spring 41, having its ends connected to the driver and connecting rod, assists in restoring the type actuating mechanism to 45 normal position after the type has been actuated to print in the well-known manner of this style of machine.

The drawings illustrate completely the type actuating mechanism of only a single 50 type, but it will, of course, be understood that the machine is provided with the usual complement of keys, types and type connections which, since they are not necessary to a complete understanding of my invention, 55 have been omitted for the sake of clearness. The particular type actuating mechanism illustrated is one which actuates a type of the general style shown in Fig. 8, and it is to be understood that the upper portion of 60 the keyboard usually occupied by the capital letters is designed to be occupied in this instance by a set of keys which actuate types of the larger size, as shown in the said Fig. 8. The lower section or half of the key- 65 board, that usually occupied by the small-

letter or "lower case" keys, is here designed to be occupied by keys actuating capital types of the smaller size, as shown in Fig. 7.

Above the circular bearing plates 23 and 24, a circular universal bar 42 is so arranged 70 that the guide link 21 is adapted to contact therewith during the movement of the type bar toward the printing point. This contact of the guide link with the universal bar raises the latter at one side and with it a 75 headed rod 43 which passes loosely through a central opening therein. The lower end of the rod 43 is adjustably connected with a block 44, which is pivoted at 45 to an arm 46, which is the forward arm of the dog 80 rocker. The latter comprises in addition to the forwardly extending arm 46, a hub 47 from which the arm 46 extends, the rear arm 48 and the downward arm 49, both likewise extending from the hub 47. The 85 downwardly extending arm 49 carries a link 50 with which the draw link of the spacing bar (not shown) connects. A rock shaft 51 passes through a central perforation in the hub 47 and is rigidly connected to the latter 90 by a screw 52. The rock shaft is seated in side bearing brackets 53, which are secured to the base plate 2. Extending rearwardly from the rear arm 48, to which it is connected by screws 54, is a rigid dog 55 of ordi- 95 nary construction. Pivoted to a shouldered screw 56, which is screwed into the rearward plate 48 from beneath and secured in place by a nut 57, is a loose or limber dog 58. The normal position of the loose or pivoted dog 100 58, that is, its position when in engagement with the escape wheel, is such that its working face is in the same vertical plane as the working face of the rigid dog 55. This rela- 105 tion between the two dogs is secured and maintained by an adjusting screw 59, which is screwed into the side of the rearward arm 48 and against the end of which the left hand face of the loose dog 58, considered 110 from the front of the machine, normally butts. A wire spring 60, coiled around the lower portion of the pivotal shouldered screw 56, has one end secured to a pin 61 in the under side of the rearward plate 48 115 and the other end secured to a pin 62 in the under side of the loose dog 58. The spring 60 tends to throw the loose dog 58 to the right, considered from the front of the machine, when the said dog is released from 120 the escape wheel and this movement of the dog continues until checked by means to be presently described. The loose dog 58 is provided with a spur or finger 63, the purpose of which will subsequently appear, and the said dog normally engages with the 125 teeth 64 of a horizontally disposed escape wheel 65. The escape wheel, as is seen in Fig. 1, is integral with a carrier 66, the depending stem 67 whereof extends through a sleeve 68 fixed within an opening in the base 130

1. The carrier 66 operatively connects the escape wheel with the vertical shaft 69, near the upper end of which is fixed a pinion 70 which meshes with the carriage feed rack 9, thus connecting the carriage with the escapement mechanism, all as in said "Lost" machine.

The width of one set of characters employed in this machine is, as has been previously set forth, twice as great as that of the other set employed, and it will therefore be apparent that it will be necessary to feed the carriage twice as far when one of the former characters is printed than it will be when one of the latter characters is printed in order to secure uniform spacing. Hence it is necessary to feed the escape wheel or circular rack 65 two teeth when one of the larger characters is printed and one tooth when one of the smaller characters is printed. The mechanism to accomplish this result will now be described.

Referring more especially to Figs. 2, 5 and 6, 71 designates a vertical bearing post fixed to the base plate 2 at the right hand side of the machine and to the rear of the regular key board. A rocker 72 is pivoted at 73 in a vertical slot or cut-away 74 formed in the top of the bearing post 71. A notch 75 is formed centrally of the rocker 72 so as to straddle the post 71 when the rocker is in position and the sides of the said notch act as stops to limit the movement of the rocker about its pivot 73 in either direction. To the left end of the rocker 72 a key button 76 is attached, the top of which is furnished with a letter "s" in a size corresponding to the character on the type face shown in Fig. 8. Pivoted at 78 to the rocker and midway between the pivot 73 and the key button 77 is a depending link 79, the lower end of which is pivoted at 80 to the left hand end of a substantially horizontal arm 81 rigidly connected with the forward end of a rock shaft 82. The rock shaft has its bearings in right-angled brackets 83, suitably attached as by screws 84 to the base plate 2. The rear end of the rock shaft 82 carries a substantially vertical arm 85 provided with a collar 86 and a set screw 87, whereby it is attached to the rock shaft 82 at right angles to the forward arm 81. Pivoted to the lower end of the arm 85 at 88 is the right hand end of a sliding stop bar 89, which terminates near the center of the machine, and, near its left-hand end, passes through a suitable opening in a guide plate 90, which is rigidly attached by screws 91 to the right-hand bearing-bracket 53. The said stop bar is adapted to slide back and forth in the guide plate 90 above the right-hand bearing-bracket 53 and in the horizontal plane occupied by the loose dog 58.

It will be apparent from the drawings and description that the rock shaft 82 and

the arms 81 and 85 rigidly mounted thereon at right angles to each other, constitute in effect a bell crank, which is actuated, through the link 79 and rocker 72, by either of the key buttons 76 or 77, to the positions shown respectively in Figs. 5 and 6. These devices are maintained in either of said positions by a spring-stop 92 which is attached by a screw 93 to the bearing post 71, and co-acts with the end of arm 82. It will further be apparent that this actuation of the bell crank through the key buttons, rocker 72 and depending link 79 will cause a longitudinal movement of the sliding stop bar 89, which, as previously explained, is in the same horizontal plane as the loose dog 58 and which serves as a stop to limit the movement of said dog about its pivot in the direction of the feathered arrows in Figs. 2, 3 and 4.

The operation of the device may be briefly explained as follows:—Supposing first that it be desired to print a series of the larger characters, the key button 77 bearing the large "L" on its top is depressed. Considering the movements of the parts as viewed in Fig. 6, this depression of key button 77 lowers the depending link 79, depresses the forward arm 81, turns the rock shaft 82 in the direction of the arrow in Fig. 6 (which it will be remembered is a view from the rear of the machine), moves the rear arm 85 to the left about its pivot and draws the sliding stop bar in the direction of the arrow thereon in said figure. The end of the stop bar 89 will then be in the position shown in Fig. 4. If now the key 38 (which it will be remembered is one of the upper section of keys which actuates the larger characters) be depressed, it will, as is well understood, actuate the type to print. During the movement of the type bar toward the printing point the link 21 is raised into contact with the universal bar 42, lifting it at one side and through it the center rod 43, which in turn will raise the forward arm 46 of the dog rocker and depress the rearward arm 48 about its rock shaft 51. The depression of the rearward arm carries the rigid dog 55 down into engagement with the tooth 64 of the escape wheel 65 and frees the loose dog 58 from said tooth, permitting the loose dog, under the impulse of the spring 60, to move in the direction of the feathered arrow in Fig. 4 until said dog contacts with the end of the sliding stop bar 89. After the imprint of the type, the return movement of the type bar takes place and in its travel back toward the ink pad 27 lowers the guide link 21, permitting the universal bar 42 to return to normal position. This movement of the universal bar permits the downward longitudinal movement of the rod 43, which in turn permits the return of the forward arm

46 to normal position and raises the rearward arm 48, lifting the rigid dog out of the plane of the escape wheel and bringing the loose dog 58 into the plane thereof. Under the tension of the usual carriage spring (not shown) the carriage is now drawn to the left and the escape wheel, through carriage rack 9, pinion 70, shaft 69 and carrier 65, is turned in the direction of the arrow in Fig. 4. It will be noted on inspecting said figure that though the loose dog 58 when in contact with the end of the stop 89 is outside the field or path of travel of the teeth 64, the finger 63 remains in the path of said teeth between the stopping tooth and the next tooth and as the escape wheel 65 turns in the direction of the arrow on the return movement of the dog rocker, the said next tooth, contacting with the finger 63, moves the dog 58 to the left against the tension of its spring and brings the working face of the dog into the field of the second tooth from the stopping tooth, making this second tooth in turn the stopping tooth and allowing the carriage to space two teeth of the escape wheel, thus providing for the successive printing of all large capitals, as seen in the upper line of Fig. 9.

If now it be desired to change from the larger to the smaller size of letters, the key 76 is depressed until the side of the notch 75 contacts with the bearing post 71 and the consequent movement of the parts, as viewed in Fig. 5, will be as follows:—The depending link 79 will be raised in the direction of its length, causing the rock shaft 82 to turn in the direction of the arrow and moving the sliding stop rod 89 in the direction of the arrow thereon in said figure. This causes the end of the stop bar 89 to assume the position shown in Fig. 3 and when, as previously explained, one of the lower banks of keys (not shown) is depressed and the loose dog 58 is moved by its spring 60 in the direction of the arrow in the said Fig. 3, the said dog will contact with the end of the sliding stop bar 89 before the working face of the dog has passed out of the path of the teeth 64 of the escape wheel. Consequently on the return movement of the rocker the next tooth to the stopping tooth, moving in the direction of the arrow, will contact with the working face of the loose dog, moving the said dog to the left against the tension of its spring 60 until it contacts with the end of the adjusting screw 59, thus permitting the carriage to feed only one tooth of the escape wheel. Thus it will be seen that either size of type may be used as desired and that by first depressing the proper finger key, that is, either key 76 or 77, the carriage will be caused to space the proper distance for the style of type required at the time.

It will further be noted that at the beginning of a sentence when the key 76, or in other words, the small-letter or smaller "cap" key, is depressed, a larger letter or larger capital may be employed as the first letter, and, if followed by a small letter or letters the spacing will be correct. This follows from the fact that the double space required by the larger letter is provided for by the spacing made by the space key as a preliminary to beginning the sentence, if it be the second sentence or any following one of a series of sentences. The same is true if it be the beginning of a paragraph, since there is no writing to the left of the initial capital. In other words, the left half of the larger capital will occupy a letter-space that would be utilized if a small capital were printed and the right half of the larger capital will print in the letter-space which a small capital would impress if actuated, the initial larger capital thus occupying a double letter-space and the small letter a single letter-space, as in the lower line of Fig. 9.

This invention is particularly applicable to the printing of labels, index, address or like cards or other similar matter, but, of course, I do not desire to be limited to such use. The work which may be done by employing my invention is of an unusually clear and legible character, and wherever matter of such a sort is desired to be printed this invention may be employed to advantage.

It will be seen that by my invention special means are provided for regulating or varying the throw of the feed dog, and consequently the feed of the carriage, at will and independently of the character keys or type actuating mechanism; that such means may be regulated from the front of the machine and in the vicinity of the keyboard, thereby facilitating the operation which may be accomplished by depressing a finger key; that said means are attached to the framework of the machine and do not interfere with any of the usual mechanism of the machine; that such means may be regulated before the printing stroke is begun, thus providing in advance for letter spacing suitable to the kind or size of types to be printed; that the characters of one set of types may be of substantially the full dimensions of their type blocks, the corresponding characters of the other set differing in dimensions from the first set and occupying only one corner of the faces of their type blocks; and that the type blocks are, and must of necessity be, of uniform dimensions in order to cooperate properly with the center guide.

Various changes may be made in the construction as herein described without departing from the gist of my invention as set forth in the sub-joined claims.

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

5 1. In a typewriting machine having letter spacing mechanism appropriate to two degrees of spacing and to sets of types of different widths, the combination of a type guide provided with a guide opening, key controlled type carriers having a complete set of capital letter types uniform in size, adapted to one only of said degrees of letter spacing, other key controlled type carriers having a complete set of smaller capital letter types uniform in size, the types of the second set being different in width from the
15 corresponding types of the first set and occupying only a part of the length of face of their type blocks, each of said smaller capital letter types being arranged in one corner of its associate type block, and adapted to the other of said two degrees of spacing, the type blocks of all the types being of uniform size so that said type blocks may properly engage with the guide opening in said type guide.

25 2. In a typewriting machine having two sets of types differing in character, the combination of a carriage; carriage feeding mechanism comprising a toothed wheel and cooperating dogs, one of said dogs being
30 pivotally mounted on its support; and means for regulating the extent of movement of the

dog on its pivot, said regulating means comprising a slide bar co-active with said dog, a rock shaft, crank arms fixed to said rock shaft at its ends, one of said crank arms
35 being pivotally connected with said slide, a link pivotally connected with the other crank arm, and a pivoted key-controlled rocker pivotally connected with said link.

3. In a typewriting machine having two
40 sets of types differing in character, the combination of a carriage; carriage feeding mechanism comprising a toothed wheel and cooperating dogs, one of said dogs being pivotally mounted on its support; and
45 means for regulating the extent of movement of said feed dog on its pivot, said regulating means comprising a slide bar co-active with said dogs, a pivoted key controlled rocker connected with said slide, stops for
50 limiting the movement of said rocker in both directions, and a spring detent for maintaining said regulating means in one or another of a plurality of adjusted positions.

Signed at Bridgeport, in the county of
55 Fairfield, and State of Connecticut, this 7th day of May A. D. 1904.

CASPER D. WALLACE.

Witnesses:

BRUCE MILLS,
HUGH M. ROBINSON.