

May 8, 1945.

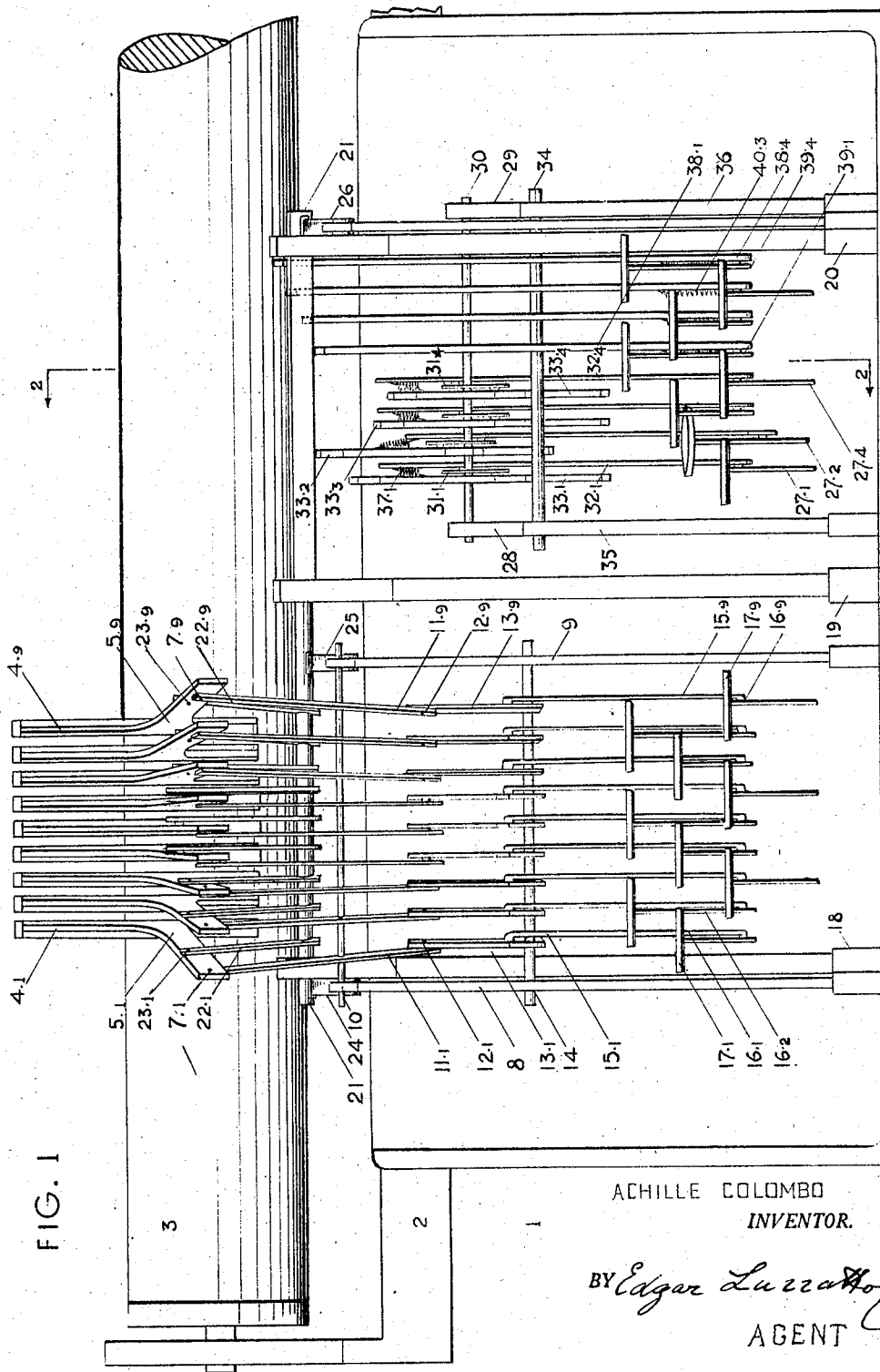
A. COLOMBO

2,375,526

TYPEWRITING MACHINE

Filed Sept. 16, 1942

6 Sheets-Sheet 1



May 8, 1945.

A. COLOMBO  
TYPEWRITING MACHINE  
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2,375,526

6 Sheets-Sheet 2

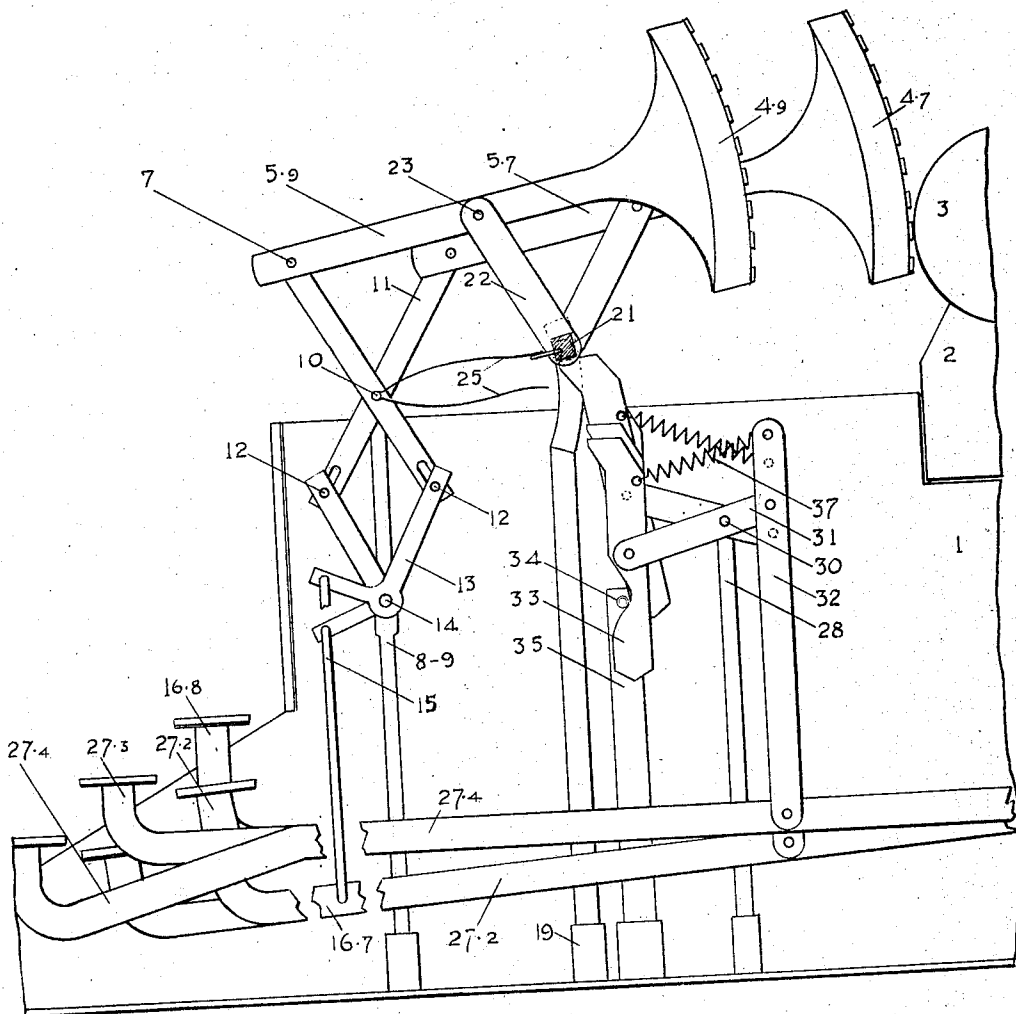


FIG. 2

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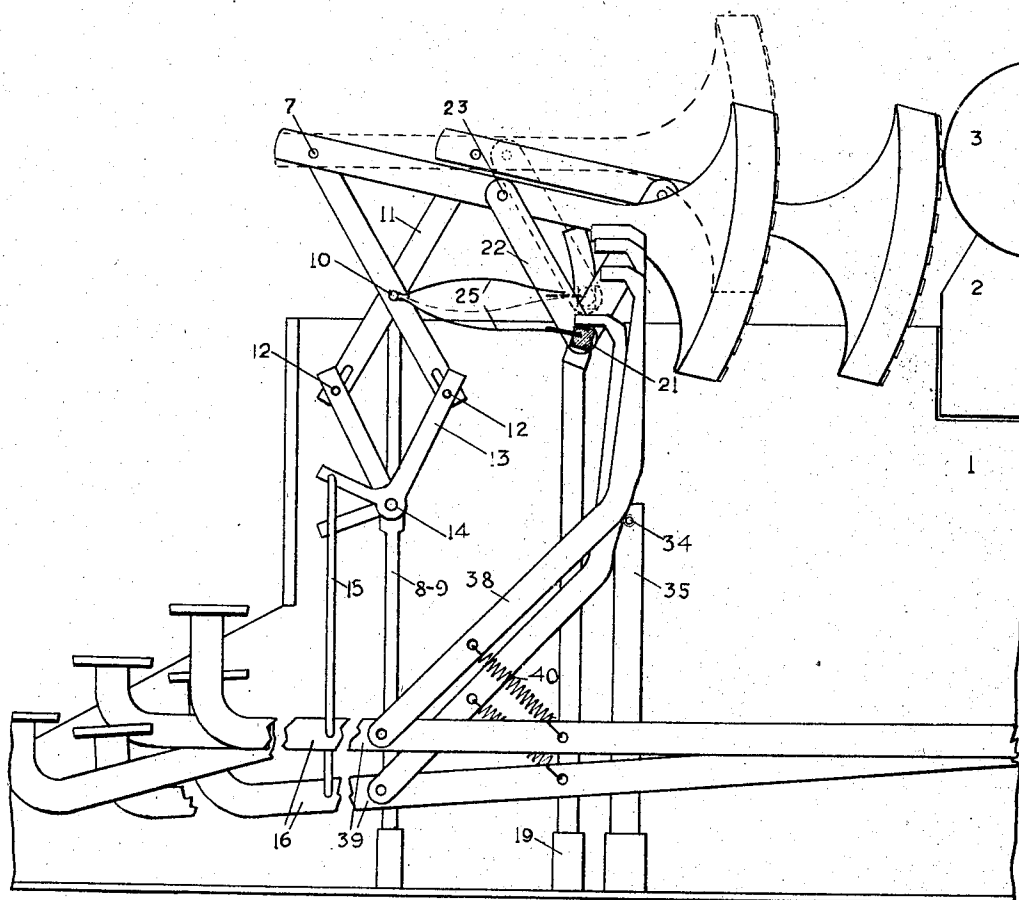
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TYPEWRITING MACHINE

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6 Sheets-Sheet 3



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TYPEWRITING MACHINE

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6 Sheets-Sheet 4

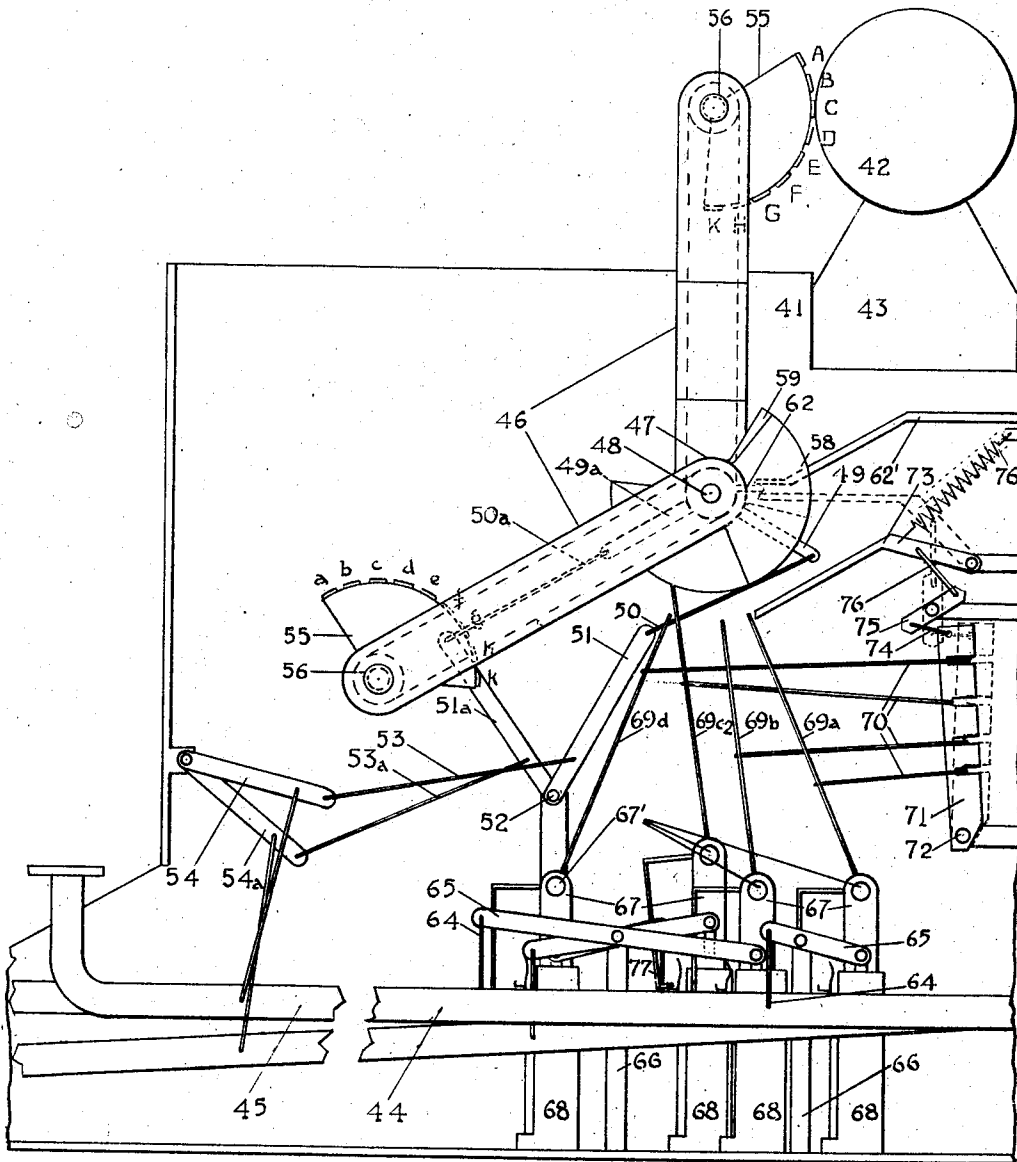


FIG. 4

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TYPEWRITING MACHINE

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6 Sheets-Sheet 5

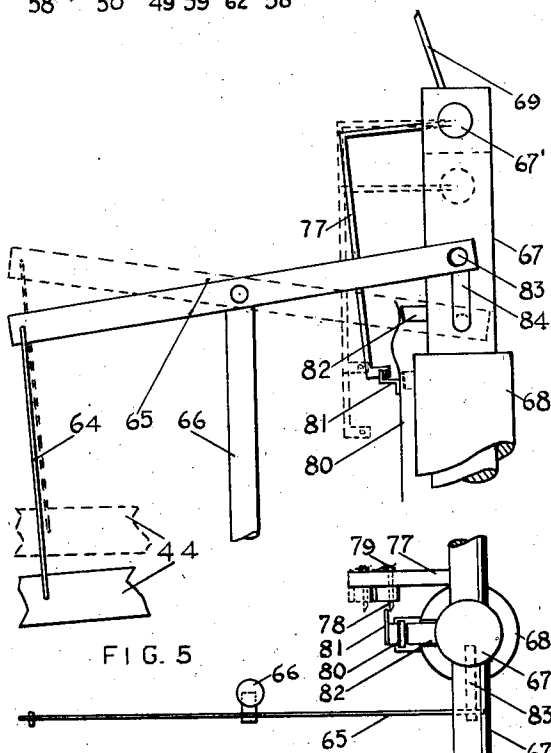
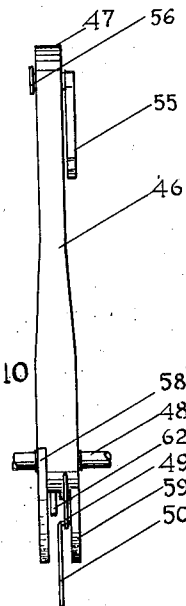
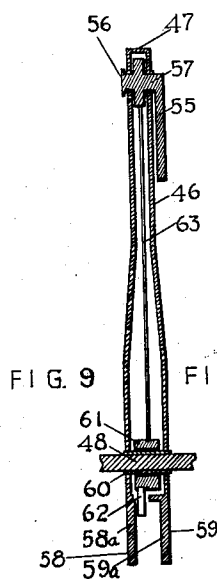
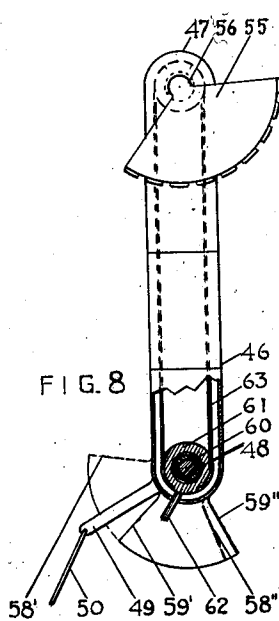


FIG. 5

FIG. 6

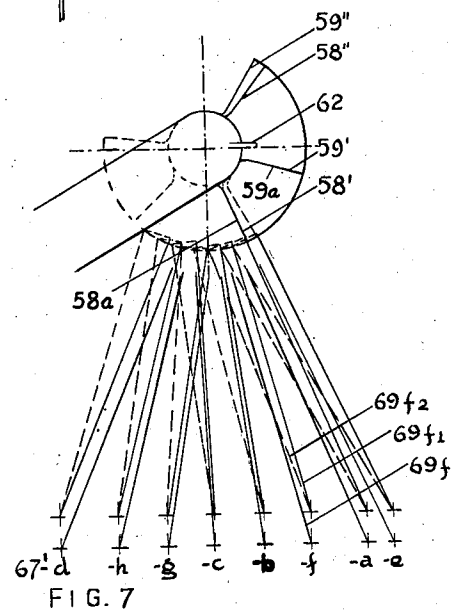


FIG. 7

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2,375,526

TYPEWRITING MACHINE

Filed Sept. 16, 1942

6 Sheets-Sheet 6

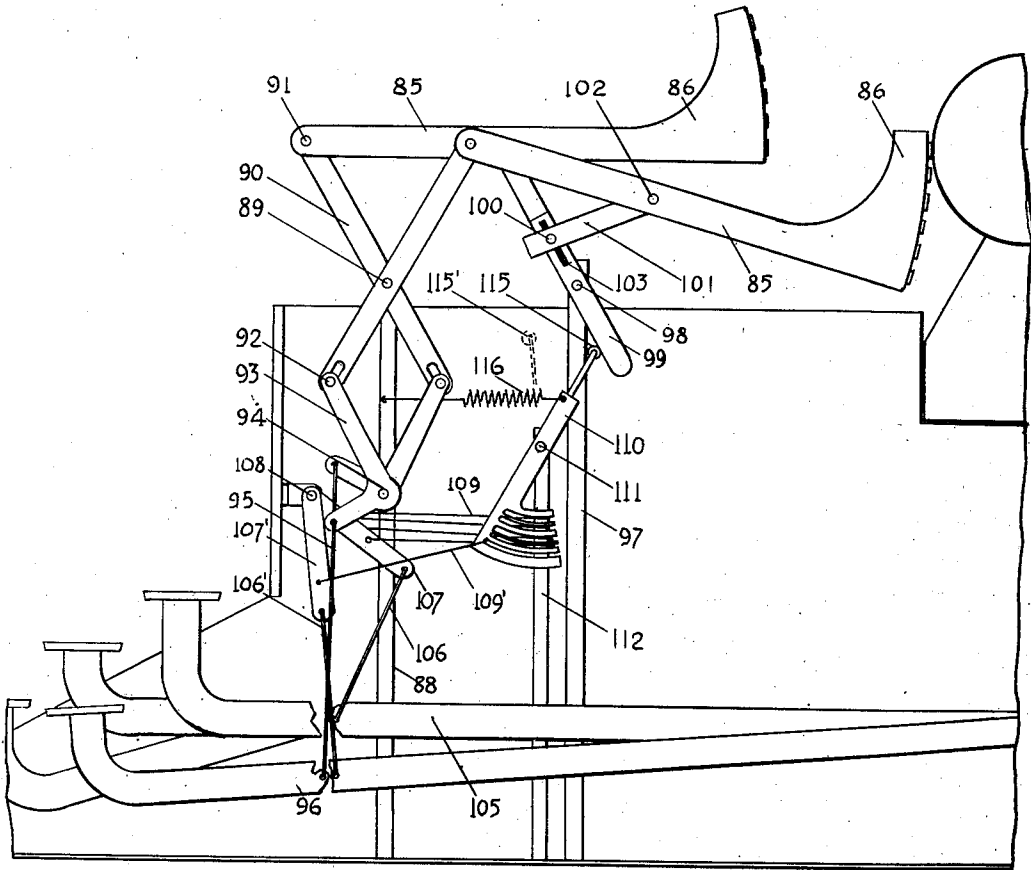


FIG. 11

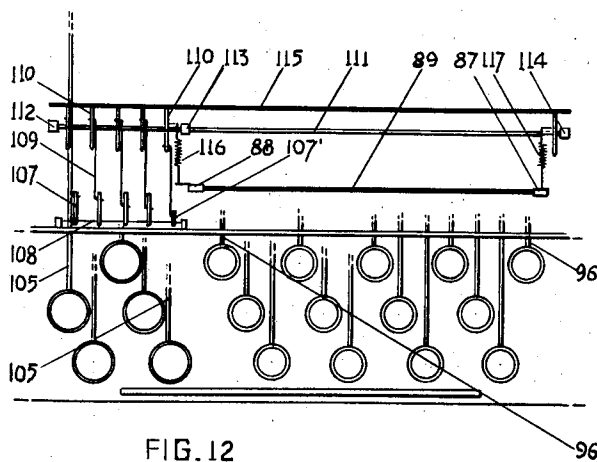


FIG. 12

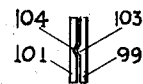


FIG. 13

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## UNITED STATES PATENT OFFICE

2,375,526

## TYPEWRITING MACHINE

Achille Colombo, New York, N. Y.

Application September 16, 1942, Serial No. 458,496

5 Claims. (Cl. 197—11)

This invention relates to typewriters and has for its general object to provide means whereby the number of keys is greatly reduced in comparison with conventional typewriters, and the typing of any desired character is obtained by jointly operating two keys arranged in separate keyboards.

More specific objects of the invention will become apparent by reference to the principles of operation of the machine hereafter set forth. In a machine of this class, the types are grouped on a limited number of type-carrying members, each having a plurality of types, and each member must be movable in such a manner as to permit the selection of anyone of the types carried thereon, to cause any desired type to leave its impression on the paper when said type-carrying member reaches its writing position.

Means controlled by the keys of one of the two keyboards effect the selective movement of said type-carrying members (which movement may be completed at any time not later than the moment in which the members reach their writing position); means controlled by the keys of the other keyboard are simultaneously, or in quick succession, actuated to cause the members to assume their writing position.

It is thought that this system of typing offers considerable advantages for the reasons set forth in my copending application Ser. No. 415,517, now Patent No. 2,311,737, wherein a similar arrangement of keyboards has been described with reference, however, to an entirely different type of power-driven machine.

The advantages attained by means of this system, when applied to hand-driven typewriters, are still more evident. When a single key is employed for the typing of each character, as in conventional typewriters, the typing of the necessary signs, which number about eighty, requires forty keys, plus a supplementary shift from small to capital letters, and vice versa. On the contrary, my system of typing wherein the typing of any character is brought about by the joint operation of two keys, requires only a reduced number of keys, for instance 18: 9 in a keyboard and 9 in the other. This allows of 81 possible combinations, and any shift from small to capital letters becomes unnecessary.

The motion of the typist's hands is reduced to a minimum as his fingers can remain almost stationary on the most frequently used keys, five in each keyboard, which control the typing of 25 characters, that is an entire alphabet.

The reduction in the number of keys leads to

a corresponding simplification in the mechanism connected with the keys; this means simplification of construction and reduction of the cost of manufacture.

Furthermore, my system of typing permits to distribute between two fingers the work that is normally done by a single finger. In the typewriters that are now generally used, a single finger operates several parts of the machine: the writing means, the carriage, and the inking ribbon. In a machine according to my invention one of these parts can be operated by one finger and the others by another finger, with the result that the work of each finger is rendered considerably lighter, and the space traveled by each key is shortened; the speed of operation is therefore increased and the fatigue of the operator is lessened.

The means whereby the objects of my invention are attained will be readily understood by reference to the description and drawings that illustrate preferred embodiments of the invention.

In the drawings:

Fig. 1 is a vertical front view of the machine showing the type-carrying members, the selector and the actuating device, and the controlling sets of keys;

Fig. 2 is a vertical side view of the same structure in the plane 2—2 of Fig. 1 in the direction of the arrows, showing part of the selector means;

Fig. 3 is another vertical side view of the same structure showing the rest of the selector means;

Fig. 4 is a vertical side view of a different embodiment of the invention, showing the actuating device and part of the selector mechanism;

Fig. 5 is a vertical side view, on a greater scale, of a detail of the selector mechanism according to the embodiment of Fig. 4;

Fig. 6 is a plan view, also on a greater scale, of the same device;

Fig. 7 is a diagram illustrating the possible positions of part of the selector mechanism;

Fig. 8 is a vertical side view of a writing member according to the embodiment of Fig. 4, with part of the structure broken off to show the mechanism contained therein;

Fig. 9 is a vertical section of the writing member of Fig. 8;

Fig. 10 is a vertical front view of the same writing member;

Fig. 11 is a vertical side view of the machine according to still another embodiment of the in-

vention showing the actuating and the selector mechanism;

Fig. 12 is a plan view, on a reduced scale, of the selector mechanism showing also the particular arrangement adapted in this embodiment for the two sets of keys, and

Fig. 13 is a detail, on a greater scale, of the selector device.

In Figs. 1 to 3 there is illustrated an embodiment of my invention. Referring now in detail to these figures, 1 indicates the frame of the machine, only partly shown, 2 the carriage, and 3 the paper-carrying roller; letter and line feeding means as well as the inking device, not shown in the figures, may be conventional.

There are provided nine type-carrying members that comprise sectors 4<sub>1</sub> . . . 4<sub>9</sub>, each carrying a plurality of types uniformly spaced thereon (as shown in Figs. 2 and 3), and sector bars 5<sub>1</sub> . . . 5<sub>9</sub> that may be made integral with the sectors. There are nine types on each sector in the embodiment illustrated, to provide the desired total of 81 types.

Uprights 8 and 9, secured to the frame of the machine, support horizontal bar 10 whereon there are pivotally mounted, at a point intermediate their ends, a number of levers 11<sub>1</sub> . . . 11<sub>9</sub>, one for each of bars 5<sub>1</sub> . . . 5<sub>9</sub>; the upper end of said levers is pivoted at 7<sub>1</sub> . . . 7<sub>9</sub> to the free end of bars 5<sub>1</sub> . . . 5<sub>9</sub>, and the lower end thereof is slotted to receive pivots 12<sub>1</sub> . . . 12<sub>9</sub> of L shaped levers 13<sub>1</sub> . . . 13<sub>9</sub> mounted on a bar 14 supported by aforementioned uprights 8 and 9.

Links 15<sub>1</sub> . . . 15<sub>9</sub> connect said L shaped levers to arms 16<sub>1</sub> . . . 16<sub>9</sub> that are pivoted to the frame of the machine and carry keys 17<sub>1</sub> . . . 17<sub>9</sub>; each of these keys is in this manner operatively connected to one of bars 5<sub>1</sub> . . . 5<sub>9</sub> and has marked thereon the same characters or signs that are carried by the corresponding type-carrying member.

These keys may be designated as the actuating keyboard as they serve to cause any desired type to leave actually its impression on the paper. It will be readily understood that by depressing one of the keys, as shown in Figs. 1 and 2, the various parts described above will cause the corresponding sector to move forward toward the paper-carrying roller thereby causing one of the types carried by the sector to come into contact with the paper and to leave actually its impression thereon, the mechanism being, of course, so arranged as to cause all the sectors to strike the paper-carrying roller at the same point, since, in this respect, the invention involves no departure from conventional structures.

As the sectors have nine types each, arranged thereon at suitable angular intervals, it is clear that in order to allow all of the nine types to come into contact with the paper-carrying roller the type-carrying members must be capable of assuming nine different angular positions. The following device is employed to determine selectively anyone of said positions.

Uprights 18, 19 and 20 are provided with a sector-shaped upper portion having its center at 10; a horizontal bar 21 is slidably mounted within said sector-shaped upper portion, and has a circular cross-section in the portion comprised between uprights 18 and 19 and a square cross-section in the portion comprised between uprights 19 and 20. Links 22<sub>1</sub> . . . 22<sub>9</sub> are freely mounted on said circular portion of bar 21 and connect this latter with sector bars 5<sub>1</sub> . . . 5<sub>9</sub> at 23<sub>1</sub> . . . 23<sub>9</sub>; the length of said links is such that

the sector bars will be held in a horizontal position when bar 21 is in the central position within the sector-shaped upper portion of uprights 18, 19 and 20, position in which it is normally held by the action of double springs 24, 25 and 26 that engage the opposite faces of blades secured to bar 21 and protruding therefrom, as shown in Fig. 3.

In this normal position of the sector bars, the central type on any one of sectors 4<sub>1</sub> . . . 4<sub>9</sub> will come into contact with the paper-carrying roller whenever the corresponding actuating key is depressed. It is clear that by moving bar 21 upwardly or downwardly from its aforementioned central position, the sector bars 5<sub>1</sub> . . . 5<sub>9</sub> will be caused to assume various angular positions whereby any type will be allowed to come into contact with the paper-carrying roller when the type-carrying members are moved toward this latter.

An embodiment of the means that may be used for selectively moving bar 21 by any amount desired will now be described. As all sector bars 5<sub>1</sub> . . . 5<sub>9</sub> are normally held in a horizontal position wherein all nine central types on the sectors are normally ready for typing when the corresponding actuating keys are depressed, there have to be provided only eight other positions of bar 21, and a selector keyboard of eight keys is needed; each of said keys will have marked thereon one of the types of each sector, that is all those types that are located in the same position on the various type-carrying members. A ninth key may be provided having marked thereon the nine central types, it being understood, however, that such a key will not be operatively connected with the selector mechanism.

Four positions can be obtained by moving bar 21 upwardly, and the other four by moving it downwardly. The four higher positions whereby the four lower types will be set in the proper position for typing, are obtained by means of the device illustrated in Figs. 1 and 2.

Four arms 27<sub>1</sub> . . . 27<sub>4</sub>, each carrying a key, are pivoted to the frame of the machine; uprights 28 and 29 support bar 30 whereon there are freely mounted levers 31<sub>1</sub> . . . 31<sub>4</sub>. Vertical levers 32<sub>1</sub> . . . 32<sub>4</sub> are pivoted at their lower end to arms 27<sub>1</sub> . . . 27<sub>4</sub>. Members 33<sub>1</sub> . . . 33<sub>4</sub> are provided with a recessed portion which is given a cam-like profile and is normally urged by springs 37<sub>1</sub> . . . 37<sub>4</sub> against a roller freely mounted on horizontal bar 34 that is supported by uprights 35 and 36. When a key is depressed, one of members 33<sub>1</sub> . . . 33<sub>4</sub> is lifted and engages the bottom face of bar 21 being guided thereto by the profile of the recessed portion provided in the member itself; bar 21 is in turn lifted by the proper amount which is determined by the length of the member engaging said bar. The four members are given different lengths to allow bar 21 to assume the four different positions required.

On releasing the key, all parts will be returned to their initial position, the return motion of members 33<sub>1</sub> . . . 33<sub>4</sub> being aided by springs 37<sub>1</sub> . . . 37<sub>4</sub>, and bar 21 being caused to assume again its initial position by springs 24, 25 and 26.

A similar mechanism is employed for obtaining the four lower positions of bar 21, as shown in Fig. 3. Four members 38<sub>1</sub> . . . 38<sub>4</sub> having different lengths are pivoted to arms 39<sub>1</sub> . . . 39<sub>4</sub>; these latter carry keys and are in turn pivoted to the frame of the machine. Said members are provided with a hook-shaped upper portion and a recessed portion having a cam-like profile in their face nearest to the roller of bar 34. Springs

401 . . . 404 normally urge said recessed portion against said roller. Whenever the key of one of arms 39<sub>1</sub> . . . 39<sub>4</sub> is depressed, the corresponding member 38 is lowered and guided by its recessed portion to engage the upper face of bar 21 with its hook-shaped upper portion; bar 21 is therefore lowered by the amount desired which is determined by the length of the engaging member.

The release of the key together with the action of springs 24, 25 and 26 will return all the parts to their initial position. It will, of course, be understood that for proper operation of the mechanism described bar 21 is constantly held in a horizontal position during its upward or downward movement from its normal central position within the sector-shaped upper portion of the aforementioned uprights 18, 19, 20; this may be obtained by means of any suitable device of a known type such as, for instance, applied to drawing tables for similar purposes.

Figs. 11 to 13 illustrate a modification of the embodiment hereinbefore described comprising a different selector mechanism; the figures also show by way of example a different arrangement of the two sets of keys wherein a different number of actuating and selector keys is used.

In this case the selector keyboard is placed at the typist's left, as shown in Fig. 12, and it comprises a smaller number of keys, to wit: five. The actuating keyboard, placed at the typist's right, consists of thirteen keys that are operatively connected to as many type-carrying members; each of said members comprises a sector bar 85 and a type-carrying sector 86 provided with six types, the total number of types being therefore 78, that is approximately the same total number as in the previous embodiment.

It is thought that a selector keyboard of only five keys may be advantageously adopted inasmuch as in this case one of the typist's hands can control the selection of anyone of the types without having to move at all about the keyboard; on the other hand the slightly increased number of keys of the actuating keyboard, still greatly reduced in comparison with conventional typewriters, will not noticeably increase the labor to be performed by the other hand.

The type-carrying sectors 86 are caused to move toward the paper-carrying roller by means of a similar mechanism to that described with reference to the previous embodiment. Said mechanism comprises uprights 87 and 88 which support horizontal bar 89, a lever 90 for each type-carrying sector freely mounted on said bar 89, and pivotally connected at 91 to one end of a sector bar 85 and slotted at its lower end to receive pivots 92 of an L shaped lever 93; this latter is mounted on a bar 94 which is also supported by the aforementioned uprights 87 and 88.

A link 95 connects each L shaped lever 93 to one of arms 96 which carry the keys that form the actuating keyboard; the depression of any of these keys will therefore cause the corresponding type-carrying member to move toward the paper-carrying roller. As each type-carrying sector is provided with six types, each actuating key will have marked thereon six characters instead of nine as in the first embodiment.

The selector device is as follows:

Two or more, suitably placed uprights 97 support a horizontal bar 98 whereon there are freely mounted, at a point intermediate their ends, thirteen members 99, one for each type-carrying member; each of said members 99 has, pivotally mounted at 100, a member 101 which in turn is

connected at 102 to one of sector bars 85. Members 99 and 101 normally engage each other by means of a ridge-groove device 103—104 (as shown in detail in Fig. 13) so that they normally function as a single rigid unit, the total length of which is so calculated as to maintain sector bars 85 in a horizontal position. It is apparent that as long as said members 99 and 101 function as a single rigid unit, the sector bars will be caused to move in a horizontal plane toward the paper-carrying roller whenever the actuating keys are depressed, and therefore the lowermost type on any of the type-carrying sectors 86 will be caused to come in contact with the paper.

In order to cause selectively sector bars 85 to follow different paths upon depression of the actuating keys, so as to cause selectively anyone of the remaining five types to leave its impression on the paper, there is provided the following mechanism.

Each of the five arms 105 that carry the five keys of the selector keyboard, is connected by a link 106 to one end of a lever 107 which has its other end freely mounted on a bar 108 fastened to the frame of the machine. Each lever 107 has, at a point intermediate its ends, a link 109 which connects 107 to the lower end of a member 110 freely mounted on a bar 111, and this latter is supported by uprights 112, 113 and 114. All links 109 are mounted intermediate the ends of the levers 107 but at different points, and the lower end of members 110 is comb-shaped; the purpose thereof will hereafter become apparent.

The upper end of members 110 is secured to a horizontal bar 115 which extends underneath all thirteen type-carrying members, said members 110 being normally located in such an initial position that bar 115 will be held in the position shown in dotted lines at 115' (Fig. 11) wherein it will not engage any member 99 when this latter is caused to rotate about 98 during the forward motion of sector bar 85 due to the depression of an actuating key.

When, however, a selector key is depressed, 106, 107 and 109 will be caused to assume the position 106', 107' and 109', consequently 110 will rotate about 111 thereby causing bar 115 to move from its initial position 115' to a different position (as the one shown in full lines in Fig. 11) wherein it will engage member 99 during the rotation of this latter about 98 determined by the forward motion of a sector bar 85, said forward motion being in turn brought about by the depression of an actuating key. Consequently, member 101 will be compelled to disengage itself from 99 and to rotate about 100 as the ridge-groove device will not offer sufficient resistance to prevent this rotation whenever member 99 is held in a fixed position and prevented from freely rotating about 98.

Therefore sector bar 85 is caused to deviate from the horizontal plane during the remaining portion of its movement toward the paper-carrying roller so that the lowermost type on the type-carrying sector will no longer come into contact with the paper-carrying roller.

The amount of deviation from the horizontal plane, that is the angle of the plane wherein the sector bar is caused to travel with respect to the horizontal plane, determines which one of the five remaining types will actually contact the paper. Obviously, this angle is in turn determined by the point of contact of member 99 with bar 115.

In order to determine selectively five different

points of contact (that will be angularly staggered by a convenient amount having regard to the dimension of the various parts and the angular interval between any two adjacent types) links 109 are mounted on levers 107 at different points intermediate the ends of these latter levers so that the depression of the various selector keys will cause the various members 110 to rotate about 111 by suitably different amounts. As all members 110 are secured to bar 115, and all are therefore caused to rotate when any one of the selector keys is depressed, the lower part of said members 110 is provided with a comb; links 109 are mounted therein and are allowed to slide in their slot so that all of links 109 that are connected with one of the keys which are not depressed will not be affected by the motion of bar 115. Coil springs 116 and 117 return members 110 and bar 115 to their initial position when the selector keys are released after the typing of any desired character. The release of the actuating keys and arms will return sector bars 85 to their initial position thereby also causing 101 to rotate in a backward direction to come again into engagement with 109.

Figs. 4 to 10 illustrate another embodiment of the invention.

Numerals 41, 42 and 43 denote, respectively, the frame of the machine, the paper-carrying roller and the carriage. The two sets of keys that consist of eight selector keys carried by arms 44, and nine actuating keys carried by arms 45, are located in the same position as in the embodiment of Fig. 1, the selector keys being at the typist's right. In Fig. 4 one of the selector keys and one of the actuating keys are shown to have been depressed thereby causing one of the types to come into contact with the paper-carrying roller.

I shall call "writing members" the nine members 46 that are caused to swing from their initial position toward the paper-carrying roller by actuating keys 45, and shall now describe their construction. Each of said members (Figs. 8, 9, 10) comprises a hollow body 47 rotatably mounted on spindle 48 which is supported by the frame of the machine; said hollow body 47 is provided with a lever 49 operatively connected to an actuating key by a linkage mechanism 50, 51 (51 being pivotally mounted on bar 52 supported by the frame), 53, 54. A type-carrying member or sector 55 is mounted on 47 and carries nine types arranged thereon at equal angular intervals as shown in Fig. 4; pivot 56 of said sector 55 carries small pulley 57 within hollow body 47.

It is apparent that whenever the actuating key is depressed, the linkage mechanism will be caused to assume position 54a, 53a, 51a, 50a, lever 49 will assume position 49a and the writing member 46 will be caused to swing toward the paper-carrying roller moving into the writing position shown in Fig. 4 wherein one of the types carried by sector 55 has come into contact with the paper.

Parallel sectors 58, 59, integral with opposite faces of hollow member 47 and located in planes perpendicular to the axis of the paper-carrying roller, cooperate to the selection of any desired type in a manner to be described later.

Each member 46 has a sleeve 60 freely mounted on spindle 48 and rotating with said member; 60 also carries small pulley 61 contained within 47 and operatively connected to pulley 57 by wire 62 so that a rotation of pulley 61 causes pulley 57 to rotate by an equal amount. Sleeve 60 and

pulley 61 are made of different materials for the purpose of securing such a friction between the surfaces of contact that 61 will normally rotate together with 60 about 48 but will be caused to slide relative to 60 whenever its extension 62 is locked in any given position.

As pulley 61 is operatively connected to pulley 57 and sector 55, any motion of 61 relative to 60 will cause type-carrying member or sector 55 to change its angular position relative to hollow body 47, and the amount of said motion determines the amount of displacement of 55 relative to 47, thereby also determining which one of the types is moved to the proper position for coming into contact with the paper-carrying roller.

The mechanism for selectively obtaining the desired amount of motion of 61 relative to 60 will now be described.

All writing members are normally held in the initial position shown in Fig. 4, and their type-carrying sectors 55 are normally located relative to 47 in such a position that the first type from the left would come into contact with the paper-carrying roller whenever the actuating keys are depressed, provided there be no change in the position of 55 relative to 47 during the movement of 46 about 48. Supposing for instance that a sector 55 carries the letters, *a, b, c, d, e, f, g, h, k*, arranged as shown in Fig. 4 the letter "a" would leave its impression on the paper. In order to determine selectively the amount of motion of 61 relative to 60 and therefore the change in the position of 55 relative to 47 by any desired amount, the following device is used.

Each of selector arms 44 is connected by link 64 to one end of a lever 65 pivotally supported, at a point intermediate its ends, by one of up-rights 66; the other end of said lever 65 engages a cylindrical member 67 having a bar 67' rotatably mounted therein, and this latter carries a plate 69 which extends underneath all writing members 46. As 67 is vertically slidable within its socket 68, the depression of the selector key will lift 67 together with 67' and 69 by a fixed amount.

Four of the members 67, bars 67' and plates 69 (these latter identified as 69a, 69c2, 69b, 69a for a reason that will later become apparent) may be seen in Fig. 4; however, it is understood that there are required eight of each of such parts, operatively connected to as many selector arms and keys.

Plates 69 are intended to cooperate with sectors 58, 59; therefore they are given such a height that, when lifted, they will be engaged by the front face 58a or 59a of one of said sectors and caused to rotate together with bar 67', during the rotation of the writing members 46 about 48 due to the depression of the actuating keys, by a fixed amount, as and for the purpose that will become hereafter apparent. Four of these plates are to be engaged by sectors 58 and four by sectors 59; for this purpose the sectors have different sizes and different angular positions, as illustrated in Figs. 7 and 8 wherein 58 is shown comprised between 58' and 58'', and 59 between 59' and 59''. It is to be noted that plates 69 are given a maximum height, required for coming into engagement with the aforementioned sectors, only in correspondence with those of the sectors, either 58 or 59, with which they must cooperate. The remaining inoperative portion of the plates has a reduced height, particularly in correspondence with those of the sectors 58

or 59 with which the plates do not cooperate. Each writing member is capable of cooperating with all the eight plates 69 by engaging them either with its sector 58 or its sector 59; the points of engagement have been distributed between two sectors for each member 46 in order to permit anyone of plates 69 to rotate without interfering with the next plate while this latter is in its normal position (see Fig. 7).

All plates 69 are connected by links 70 to a slotted member 71 pivoted at 72 to the frame of the machine; 71 is in turn operatively connected with a swingable bent member 73 through link 74, lever 75 and link 76. The mechanism is normally held by spring 76' in the position shown in dotted lines in Fig. 4 wherein swingable bent member 73 bears against extension 62; pulleys 61 are therefore prevented from rotating with sleeves 60 about 48 and are caused to move relative to 60 thereby bringing about a change in the position of sectors 55 relative to hollow bodies 47 whenever writing members 46 are caused to rotate about 48. When members 46 return to their initial position, their extensions 62 will rotate together with them, and must be stopped as soon as 46 reach their initial position; stop 62' is provided for this purpose.

Should the mechanism described be held in its normal position during the complete motion of any given member 46, the last type on the type-carrying sector 55 pertaining to said member 46 would be caused to leave its impression on the paper, for instance the letter "k" on the sector 55 that can be seen in its normal position in Fig. 4. Therefore it is apparent that only eight selector keys and cooperating means are needed, though a ninth inoperative key may be advantageously added for uniformity of typing.

When, however, one of sectors 58, 59 engages with the front face 58a or 59a, during the motion of its writing member 46, one of plates 69 that has been lifted owing to the depression of a selector key, said plate will yield to the thrust exerted by the sector and rotate by a given amount, as it is carried by bar 67' which is rotatably mounted in 67; link 70 will move slotted member 71 to the position shown in full lines in Fig. 4, 74, 75 and 76 will concurrently cause swingable bent member 73 to assume the position also shown in full lines, extension 62 will be disengaged, pulley 61 will become free to rotate together with sleeve 60, and no further change will take place in the position of 55 relative to 47.

It is therefore clear that the space which sectors 58, 59 must travel before engaging their cooperating plates 69, determines the amount of displacement of 55 relative to 47, and therefore also determines which one of the types is moved into the proper position for coming into contact with the paper-carrying roller. It is also clear that by suitably arranging the position of plates 69 so as to cause each of sectors 58, 59 of each writing member 46 to engage the plates at four different points, angularly staggered by an amount equal to the angular distance between two successive types, all sectors 55 can be selectively caused to assume eight different positions with respect to 47, wherein eight different types will come into contact with the paper-carrying roller; the ninth type will be moved automatically into the proper position for typing whenever the mechanism plates 69-sectors 58, 59 remains inoperative.

In the example of Fig. 4, the four plates 69

are arranged to cooperate with sector 58 of the writing member shown in the writing position, which has a sector 55 carrying the letters A, B, C, D, E, F, G, H, K; the points of engagement of 58 with the four plates 69 are such as to allow of the selection of the letters A, B, C, D. The plate which allows of the selection of the letter C is shown as having been lifted and engaged by sector 58, and the letter C is being typed on the paper.

Fig. 7 diagrammatically illustrates by way of example the arrangement of the plates 69 and cooperating sectors 58, 59 with reference to a writing member 46 having a sector 55 that carries types *a, b, c, d, e, f, g, h, k*. The plates are shown in their normal position, in the position they would assume if lifted, and in the position to which they would be moved by the sectors 58, 59. During the motion of the writing member 46, sector 58 may move from its initial position 58'—58'' to the position shown in dotted lines and engage anyone of plates 69a, 69b, 69c, 69d that has been lifted, to cause the engaged plate to act on member 73 through the linkage mechanism 70, 71, 72, 74, 75, 76, as hereinbefore described, to move said member 73 thereby releasing pulley 61 and selecting any one of the letters *a, b, c, d*; sector 59 may move from its initial position 59'—59'' to the position shown in dotted lines and engage anyone of the remaining four plates that has been lifted, thereby selecting in a similar manner anyone of the letters *e, f, g, h*, the letter *k* being automatically selected whenever the mechanism plates-sectors remains inoperative.

Figs. 5 and 6 also show means for a correct selection of the types even in case an inexperienced typist should abandon a selector key before the operation of the selector mechanism has been completed.

For this purpose there is provided a device which locks plates 69 in the position they have assumed after having been lifted and engaged by the cooperating sectors 58, 59, and permits them to return to their initial position only during the return motion of the writing members. Bars 67' have secured thereto a rigid member 77 bent at a right angle; the lower portion of said member is hook-shaped and is provided with a horizontal stud 78 resiliently held therein by spring 79. Vertical spring 80, mounted on the base of 68, has a curved upper portion provided with a hook 81. When 67 is lifted, the back face of the curved upper portion of spring 80 is urged against a stud 82 carried by 67, and 67, 67' and 69 are thereby securely locked in their upper position. As soon as plate 69 is engaged by one of sectors 58, 59 and caused to rotate, the hook-shaped portion of 77 is moved toward hook 81; the wedge-shaped tip of stud 78 slides along the side of 81 and is caused to abut against the back face thereof. Should the typist abandon the selector key, lever 65 will be allowed to return to its initial position as stud 83 may slide within slot 84 in member 67, but this latter will remain lifted and the operation of the selector mechanism will not be affected.

During the return motion of the writing member, plate 69 will be disengaged and returned by spring 76' through 73, 76, 75, 74, 71 and 70 to the position it had prior to its being engaged by the sector; therefore 67' will be caused to rotate, 77 will pull 81 backwardly, 80 will no longer be urged against 82, and 67 will be allowed to slide within 68 and to return to its initial lower posi-

tion. Since 78 rotates about an upper center and 81 rotates about a lower center, they will easily disengage from each other thereby allowing 77 to drop together with 67.

It will be understood that the foregoing description has been given merely by way of example, and that many changes may be given in the devices illustrated without departing from the spirit of the invention or exceeding the scope of the claims.

What I claim is:

1. A typewriting machine comprising, in combination, a paper-carrying roller, a plurality of swingable members mounted on a stationary spindle and movable toward the paper-carrying roller, a pulley frictionally mounted within each of said swingable members for rotation about the stationary spindle and having an extension, stop means for normally engaging said extension to hold said pulley in an initial fixed position, sectors carried by each of said swingable members, a type-carrying member rotatably mounted in each of said swingable members and carrying a plurality of types, means operatively interconnecting said type-carrying member with said pulley whereby said type-carrying member is caused to rotate with respect to said swingable member during the motion of this latter toward the paper-carrying roller whenever said pulley is held in said initial position, a first set of keys, means actuated by said set of keys for selectively causing anyone of said swingable members to move toward the paper-carrying roller, a second set of keys, and means actuated by said second set of keys and cooperating with said sectors for selectively disengaging said stop means from said extension, to release said pulley at any desired point during the motion of its swingable member toward the paper-carrying roller, to allow the pulley to be frictionally driven by the swingable member.

2. A typewriting machine comprising, in combination, a paper-carrying roller, a plurality of type-carrying members, each of said members carrying a plurality of types and being movable toward the paper-carrying roller, movable means for guiding each of said type-carrying members during the motion thereof toward the paper-carrying roller, said means being capable of causing the type-carrying member to effect another and distinct movement whereby anyone of the types carried by said member is selectively allowed to leave its impression on the paper, a first set of keys, means actuated by said set of keys for selectively causing anyone of the type-carrying members to move toward the paper-carrying roller, a second set of keys, and means actuated by said second set of keys and capable of engaging selectively said guiding means at anyone of a number of fixed points during the motion of the type-carrying member toward the

paper-carrying roller to cause said type-carrying member to effect the selective movement by any amount desired.

3. A typewriting machine as in claim 1, wherein the means for selectively disengaging the stop means from the extension, to release the pulley at any desired point during the motion of the type-carrying member toward the paper-carrying roller, comprise an element capable of engaging one of the sectors carried by the swingable member at a fixed point, and of being angularly displaced thereby by a fixed amount, and means interconnecting said element and said stop means operable to displace said stop means to disengage the same from the extension in the angular displacement of said element.

4. In a typewriting machine, a paper-carrying roller, a stationary spindle, a plurality of members rotatably mounted on said spindle for swinging movement toward the paper-carrying roller, a type-carrying member rotatably mounted on each of said swingable members and having a plurality of types, an element frictionally mounted in each swingable member for rotation about said stationary spindle, means operatively interconnecting said element and said type-carrying member, stop means for normally preventing rotation of said element on said spindle during movement of the swingable member to cause angular displacement of the type-carrying member relative to the swingable member, a set of keys, means actuated by said set of keys for selectively moving anyone of the swingable members toward the paper-carrying roller, a second set of keys, and means controlled by said second set of keys for rendering said stop means inoperative at any desired point during the movement of the swingable member thereby releasing said element to allow the same to be frictionally driven by the swingable member and selectively determining the amount of angular displacement of the type-carrying member relative to the swingable member.

5. A typewriting machine comprising a paper-carrying roller, a plurality of type-carrying members, each of said members having a plurality of types and being movable toward the paper-carrying roller, means for supporting the type-carrying members for normal motion in a horizontal plane, a set of keys, means actuated by said set of keys for selectively causing anyone of the type-carrying members to move toward the paper-carrying roller, another set of keys, and means actuated by said set of keys for selectively causing the type-carrying member that is moved toward the paper-carrying roller to deviate from the horizontal plane at anyone of a number of predetermined points during its movement, thereby determining which one of the types will come into contact with the paper-carrying roller.

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