

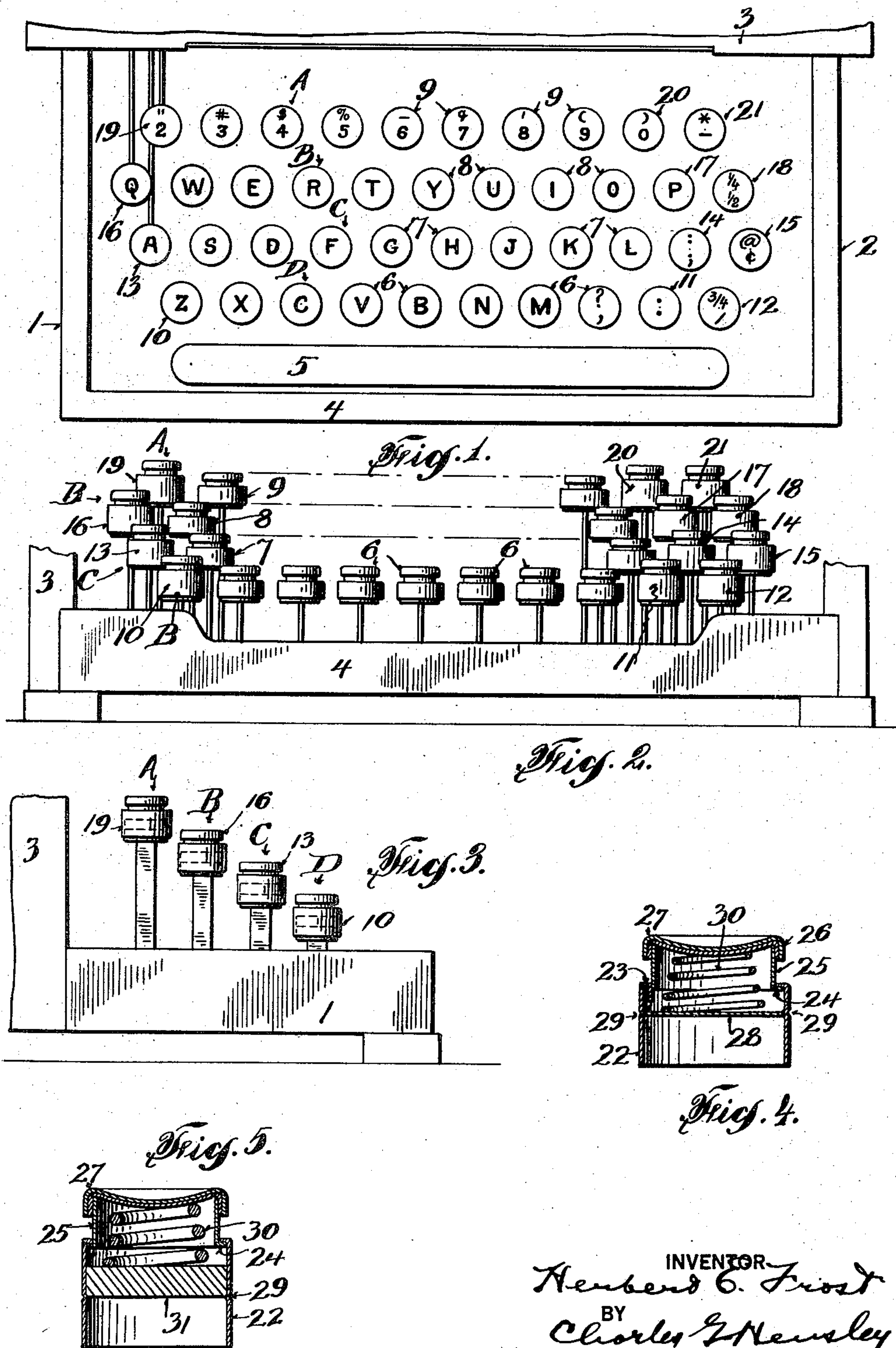
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TYPEWRITER KEYBOARD

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## TYPEWRITER KEYBOARD

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My invention relates to keyboards for typewriters and similar key operated machines, and it is particularly advantageous where the keyboard is operated by what is known as a touch writer, that is, a writer who uses all five fingers of both hands and writes by sense of touch rather than by looking at the keys. However, the device is also useful wherever the operator uses the various fingers of both hands or at least includes the use of the pinky fingers in operating the keys.

Where all fingers of both hands are used to operate the keys, those which are struck by the pinky fingers of both hands usually cause lighter impressions, so that the writing is not of uniform strength or impression throughout because the impressions made by the type levers the keys of which are struck by the pinky fingers, are in nearly every case lighter than those struck with the other fingers. This is due to two factors, one of which is that the pinky finger has less strength than the other fingers of the hands and because it is also much shorter than the other fingers, so that it is more difficult to press the key down with sufficient force with this finger, especially if the hand is held over the keyboard in position for convenient operation of the other fingers of the hand.

It is therefore a rather strained operation to operate the pinky finger on the ordinary keyboard of a typewriter.

I have designed a keyboard wherein the keys which are operated by the pinky finger of each hand will be different in operation to the remaining keys of the keyboard in order to allow the pinky fingers to exert the same downward pressure upon the keys operated by them as the normal pressure of the remaining fingers of the hand operate on their respective keys.

There are several factors, any one or all of which may be employed to obtain the result described herein. One feature of the invention is the provision of keys in the several rows of the keyboard so arranged that the tops of the keys which are operated by the pinky fingers normally lie in a horizontal plane which is slightly higher than the tops of the remaining keys of a given line. Generally the pinky finger of the left hand is used to operate the extreme left hand key in each horizontal row of keys of a typewriter. In such cases these keys on the extreme left hand of each horizontal row of keys will therefore be disposed to lie normally above the planes of the other keys of the respective rows. Generally it is the custom to use the pinky finger of the right hand to operate two of the endmost keys of each hori-

zontal row and in such cases the two endmost keys at the right of each horizontal row of keys will be disposed with their tops normally higher than the keys forming the remainder of the row. The keys of each row, other than those to be operated by the pinky fingers, are preferably arranged with their tops in line with each other or in other words only the keys to be operated by the pinky fingers are raised above what may be called the normal plane of the keys of each row.

When the operator holds the hands over the keyboard, the keys to be operated by all of the fingers of both hands, other than the pinky fingers, will be arranged in rows the same as in the ordinary keyboard but in each row there will be one or more keys the tops of which project above the remaining keys; and these higher keys of each row will be the ones that are to be operated by the pinky fingers.

The difference in height between the keys which are to be operated by the pinky fingers over the height of the remaining keys of each row need be very slight and I have found that a difference of approximately one-eighth of an inch is sufficient to accomplish the results desired.

The operator will hold the hands in the regular position for operation of the keys and will move the fingers up and down the same as in operating any typewriter keyboard, except that when a pinky finger is depressed to operate a key it is not necessary to tilt the hand in order to drive this finger down far enough to operate the type bar, because with the hand held in position for the normal operation, the pinky finger, coming into contact with the normally higher key, will operate on this key comfortably and conveniently while the hand is in the position for the normal operation of fingers other than the pinky fingers.

In order to facilitate the operation of the keys which are actuated by the pinky fingers I prefer to add to these particular keys a weight in order to create in favor of the pinky fingers a difference over the remaining keys of each row in order that the keys operated by the pinky fingers may be depressed by a lighter finger pressure than the other keys of the row, in order to compensate for the difference in the normal strength of the pinky fingers in relation to the other fingers of the hands.

Where detachable, speed keys are employed in connection with the ordinary keys of the typewriter, which speed keys are provided with compression springs, the springs of the speed keys which are to be operated by the pinky fingers may be made slightly stiffer than the springs of



the regular keys in order that the tops of the speed keys operated by the pinky fingers will not move downwardly quite as far as the speed keys operated by the remaining fingers of the hand.

5 Thus, the tops of the speed keys operated by the pinky fingers will have a normally shorter stroke than the tops of the other speed keys, and therefore the pinky fingers will not be required to move as far as the other fingers of the hand.

10 If desired, all three of these features may be combined and used co-operatively or each feature may be used independently of the others.

It is desirable that the difference in height referred to above be accomplished in conjunction with what are known as spring or speed keys detachably applied to the regular keys of the typewriter, in order that the subject of this invention may be applied to typewriters now in use and in order that the application of the features of the invention may be optional. Furthermore, it may be desirable in first adopting the invention to apply the higher keys over practice periods and then ultimately adopt them for permanent use. For these reasons it is desirable to employ the invention with detachable or speed keys although in the broad aspect of the invention the regular keys of the typewriter may be arranged in the manner herein described.

25 In the drawing forming part of this application, 30

Figure 1 is a plan view of a keyboard of a typewriter with my invention applied thereto,

Figure 2 is a front elevation of the keyboard,

Figure 3 is an end elevation thereof,

35 Figure 4 is a vertical sectional view through one of the detachable speed keys, and

Figure 5 is a similar view of another such key.

In the drawing I have shown the frame extension of an ordinary typewriter which extension surrounds or encloses the several sides of the keyboard. This extension is shown as composed of arms 1, 2 projecting forwardly of the typewriter frame 3 and connected at the outer ends by the front member 4 so that these several members surround the keyboard on three sides. This is the common arrangement of the standard typewriters but it will be understood that the construction in regard to the frame may be modified if desired.

40 I have shown four horizontal rows of keys, A, B, C, and D conforming with the standard keyboard as to arrangement of the keys in the several rows, and I have also shown a space bar 5 disposed at the front of the forward or lowermost row of keys. The keys of the several rows are arranged in stepped relation in accordance with standard practice; that is to say, the keys 6 of the foremost row D are arranged in a relatively low horizontal plane, whereas the keys 7 of the row C are on a slightly higher plane than the row D. Likewise, the keys 8 in row B are slightly higher than those of row C; and the keys 9 of row A are slightly higher than the keys in row B.

45 Assuming that the disposition of the several keys in the several rows conforms with the standard arrangement in the standard keyboard, the following will be the preferred application of my invention.

Of the lower row of keys D, those representing the letters X, C, V, B, N, M, ?, and shown as seven in number, will all have their top or striking surfaces arranged in a common plane. The key 10 at the extreme left hand end of the row, however, which is one of the keys to be operated by the pinky finger of the left hand, will have its top

or striking surface arranged at a slightly higher plane than the keys 6. The difference in level of the special or pinky key over that of the keys 6 may be varied, but I have found that most desirable results may be obtained with the average operator when this difference in position of the special key over the remaining keys of the row is about one-eighth of an inch as shown in the drawing. 5

Usually the pinky finger of the right hand is used to operate the two right hand keys of each row and therefore I have shown the keys 11, 12 at the right hand end of the lower row D normally disposed in a horizontal plane which is slightly higher than the tops of the regular keys 6. In the row of keys C the several keys 7 have their tops arranged in a common plane, which plane is at a higher elevation than the tops of the keys 6 of row D. In row C the extreme left hand key 13 is the special or pinky key and the top of this is raised above the plane of the tops of the several keys 7. Likewise, the two keys 14, 15 on the right of the row C are also raised above the plane of this row. 10 15 20

In like manner, the regular keys 8 of row B are arranged in a common plane higher than the plane of the keys in row C. The special, left hand key 16 is arranged above the plane of the regular keys of row B and the special keys 17, 18 at the right of the row are likewise arranged above the plane of the normal keys. In row A the keys 9 are the regular keys and the keys 19 and 20, 21 are the special keys arranged at a higher elevation. 25 30

The detachable speed keys are shown in the drawing as applied to the ordinary typewriter keys and as to the details of construction of keys of this type, reference may be had to U. S. Patent Nos. 1,293,105 and 1,324,964. In the drawing I have shown the speed keys as consisting of a cylindrical shell 22 having a turned or rolled top edge 23 with which the outwardly rolled edge 24 of a cup or shell 25 engages to limit the upward movement of the cup. The cup has a cylindrical portion to house the compression spring and the depressed top wall 26 of the cup is covered with suitable material such as celluloid 27 provided with the particular letter or type indicia. Within the shell 22 there is a bottom wall 28 which is secured in place by a small indentation or bead 29 formed around the shell to hold the wall in place. Between this bottom wall and the under side of the top wall of the cup there is a compression spring 30 which abuts against the stationary bottom wall and pushes upwardly on the cup to normally hold the rolled edge 24 of the latter compressed against the inwardly rolled edge 23 of the shell. 35 40 45 50 55

The speed keys are snapped over the ordinary typewriter keys so that the bottom plate 28 rests on the top of the typewriter key; and the lower portion of the shell surrounds the same and holds the speed key in place. The spring 30 as is well known, serves to cushion the shock as the operator operates the several type levers as the fingers come into contact with the top of the cup; and the blow is partially cushioned through the spring 30 acting between the movable cup and the key of the type lever. The several normal keys in the several rows A to D, i. e., the keys 6, 7, 8, 9 are preferably made as shown in Figure 4. The special keys or those indicated by the numerals 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21 in the several rows are preferably made as shown in Figure 5. 60 65 70 75



In this view the bottom plate 31 disposed within the shell of the speed key is made much thicker and therefore much heavier than the bottom plate 28 shown in Figure 4, so that the special keys which are operated by the pinky fingers are weighted in order that the additional weight of the heavy plate 31 will permit the special keys to be operated with less force in their downward stroke than is required to operate the normal keys.

In addition, the spring 32 in the special keys is preferably made of heavier or stiffer material so that the downward movement of the cup of each of these keys will be less in relation to the bottom plate 31 for any given pressure than the movement of the cup in the form shown in Figure 4.

In operating the keyboard, the operator will place the hands over the keyboard in the same position as for operating any ordinary typewriter keyboard. All the fingers except the pinky fingers will be used to depress the normal keys in the same manner as with the ordinary or standard keyboard. The keys at the extreme left hand end of each row and those at the right hand end of each row may be reached and may be conveniently operated by the pinky fingers without changing the position of the hands over that necessary for the operation of the normal keys. As a result the operator may exert greater downward pressure with the pinky fingers when operating the special keys than could be conveniently employed to operate the corresponding keys in a standard keyboard. Because of this, the impressions made by the type of the special keys will be approximately uniform with the impressions made by the type of the keys operated by the various fingers of the hands other than the pinky fingers, or in other words, the impressions made by all of the fingers of the hands will be approximately uniform. This will give a more uniform and satisfactory appearance to the typewritten matter.

Owing to the additional weight applied by the thickened plate 31 to the special keys, the pinky fingers will not be required to exert as much pressure on these keys to obtain an impression equal to that obtained with the normal keys. Furthermore, the cups of the special keys will not move downwardly relatively to the bottom wall 31 as far as the cups of the normal keys move downwardly because of the relatively stiffer springs 32 in the special keys, and therefore the pinky fingers are not required to make as long a stroke as the fingers which operate the normal keys.

As stated above, the feature of the relatively stiffer springs may be used independently of the differential weight and both of these may be used independently of the elevated feature but I deem it advantageous to combine the three features to obtain the most satisfactory results.

Having described my invention, what I claim is:

1. Detachable keys for typewriter keyboard, each including a shell, a movable cup telescoping in relation to said shell, a spring in said cup and shell for holding the cup in an elevated position and adapted to permit it to be depressed in relation to the shell, a bottom plate in said shell to support said spring, some of the keys having the lower side of said bottom wall disposed in a relatively lower plane than the bottom wall of other keys whereby when said keys are applied to the keys of a typewriter some of the detachable

keys will have their top surfaces lying normally in a higher plane than others.

2. A typewriter keyboard having a plurality of rows of keys arranged in different planes and means associated with the end keys of the several longitudinal rows for weighting said end keys more than the major number of keys of each row, said weighted keys being adapted to be operated by the pinky fingers.

3. A plurality of detachable keys adapted to be applied to the keys of a typewriter, each detachable key comprising a shell having a cup telescoping in relation to the shell, a spring for holding said cup in an elevated position and adapted to permit the same to be depressed in relation to the shell, certain of said detachable keys having relatively thin bottom walls arranged in the shells to rest on the typewriter keys and on which bottom walls said springs are adapted to rest, and other of said keys having relatively thick bottom walls for said springs whereby when said keys are attached to the typewriter keys with said thick bottom walls resting on the typewriter keys certain of the spring keys will be weighted by said thicker bottom walls so that said heavier keys may be operated by a lighter touch than the relatively lighter keys.

4. A plurality of detachable keys adapted to be applied upon the keys of a typewriter keyboard, said detachable keys each comprising a shell adapted to be fitted over the key of a typewriter, a cup adapted to telescope in relation to the shell, a spring for holding up said cup and adapted to be compressed by the downward movement of the cup in relation to the shell, a bottom plate in said shell upon which said spring rests, certain of said keys having relatively light springs and others of said keys having relatively stiffer springs, whereby the stroke of said cups for a given downward pressure will cause a greater movement in the keys having lighter springs than those having the relatively stiffer springs.

5. A typewriter keyboard having a plurality of rows of keys arranged in different horizontal planes and detachable keys for the several rows of the several horizontal rows, the major number of detachable keys in each horizontal row having their tops arranged in a common plane, and one or more of said detachable keys at the end of the rows disposed with their tops normally elevated above the planes of said first keys, said elevated keys adapted to be operated by the pinky fingers, said detachable, elevated keys being provided with weighting means for making said elevated keys heavier than the remaining keys of the row.

6. A typewriter keyboard having a plurality of rows of keys arranged in different horizontal planes, detachable spring keys for said typewriter keys, the major number of detachable keys in each horizontal row having their tops arranged in a common plane and one or more detachable keys at the ends of the row disposed with their tops normally elevated above the planes of said first keys, said elevated keys adapted to be operated by the pinky finger, said detachable keys each having a shell for attachment to the typewriter key, a cup telescoping in relation to the shell, and a compression spring for pressing said cup upwardly, the relatively higher keys of the several rows having relatively stiff springs and the remaining keys of the rows having relatively lighter springs.

7. A typewriter keyboard having a plurality of rows of keys arranged in different horizontal



planes, detachable keys for said several typewriter keys, each of said detachable keys comprising a shell, a cup telescoping in relation to the shell, a compression spring for pressing upwardly on the cup, a bottom plate in said shell on which the spring rests, certain of said detachable keys having relatively thick bottom plates supporting the springs, and the same detachable keys having relatively stiff springs and

others of said detachable keys having relatively thin plates supporting the springs and having relatively lighter springs than said first mentioned keys, certain of said detachable keys when applied to the typewriter keys adopted to rest with their tops normally higher than the remaining keys of the row. 5

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