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JUSTIFYING AND DIFFERENTIAL SPACING DEVICE FOR
TYPEWRITERS AND THE LIKE
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2,582,372

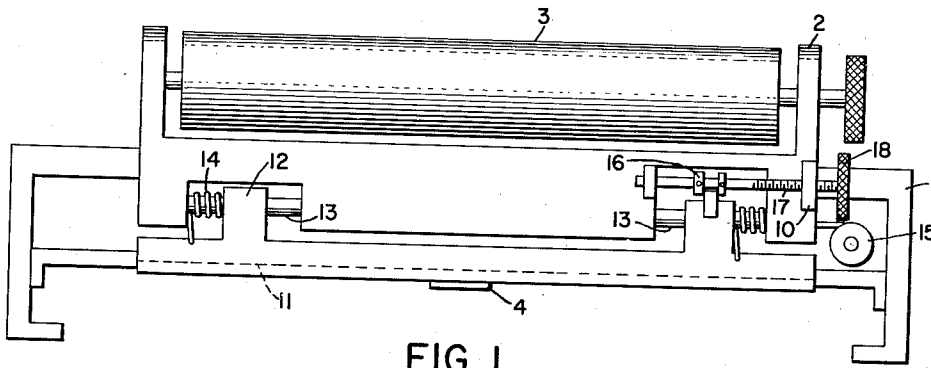


FIG. 1

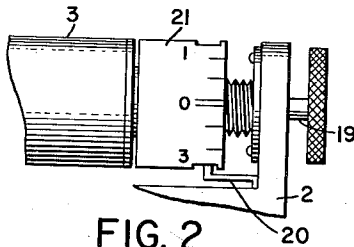


FIG. 2

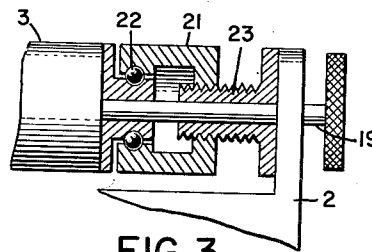


FIG. 3

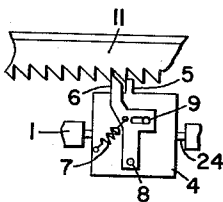


FIG. 4

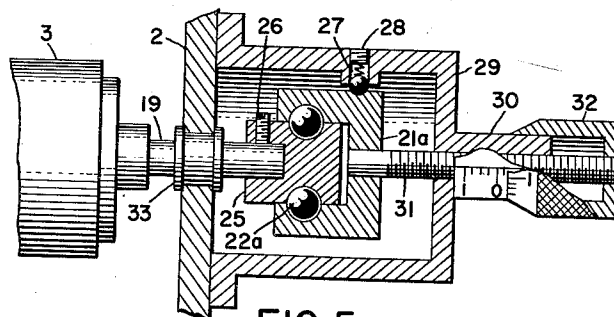


FIG. 5

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UNITED STATES PATENT OFFICE

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JUSTIFYING AND DIFFERENTIAL SPACING
DEVICE FOR TYPEWRITERS AND THE LIKE

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2 Claims. (Cl. 197—84)

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My invention relates to justifying and differential spacing devices for typewriters and the like. An object of my invention is to provide a typewriter with a spacing mechanism for normal spacing and an additional spacing device whereby the typist may narrow or widen the space between letters and/or words at will.

Another object is to provide a floating platen, adjustable longitudinally in either direction with respect to the normal spacing position so that the copy may be moved fractional spaces. A further object is to provide a fixed distance spacing mechanism and a secondary spacing mechanism applicable at will for variation of a specific space but which does not affect the normal spacing action of the fixed distance spacing mechanism either before or after its use. Another object is to provide an improved platen spacing adjustment easily applied to or built into a typewriter.

As is well known, a typewriter has a spacing rack with fixed spaced ratchet teeth, usually ten to the inch for pica type and twelve to the inch for elite. A pawl and detent is actuated by the keyboard space bar and by each key so that striking of the space bar or key will release a detent from one tooth of the spacing rack and engage a detent in the next succeeding tooth, permitting the platen to move over a fixed distance equal to that between the teeth. This distance of platen movement determines the spacing of the typed letters and characters. The same spacing is allowed for letters such as i or l as for capitals M and W.

On the other hand, differential or proportional spacing, found in printing, has long been desired in typing. This provides spacing of letters dependent upon their widths and gives a more pleasing appearance because of more uniform white space between letters and is more economical because it permits more characters to the line. Moreover, the ability to vary the spacing between successive letters and/or words makes possible the justification of the lines of printed or typed material so that each line may be of the same length and thus permits even margins at both the left and right hand sides of the copy, instead of the scraggly and uneven right side margin usually found in typed copy.

My invention contemplates the usual fixed spacing between successive positions of the platen but when, for purposes of preparing copy for reproduction, making forms, sales letters or for other reasons, it is desired to save space, add attractiveness or simulate printed copy, the position of the platen with reference to the spacing

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rack may be varied by the operator so as to compress or expand the normal spacing between letters and/or between words. Instead of a fixed relation between the part of the typewriter which carries the paper (the platen) and that which fixes its position relative to the type (the spacing rack), my invention contemplates that one may be moved relatively to the other any fraction of a space at the will of the operator either before or after normal spacing action.

For example, after striking a letter the platen will normally move over a full space and take a position for the next letter but, with the application of my invention, the operator before striking the next letter may, by a secondary spacing device which does not interfere with normal spacing action, adjust the position of the platen to, say, $\frac{3}{4}$ of a full space or to $1\frac{1}{2}$ times a full space or to any other fraction of a space desired. This is done by actually moving the platen relative to the spacing rack, thus shifting the paper to the desired position before striking the next letter. It may be done on all letters to provide either close spacing or wide spacing or it may be done differentially to give full spaces to wide letters, slightly narrower spacing to narrower letters and fractional spacing to line letters and punctuation marks. Thus, any typewriter to which my invention is applied may be used to turn out differentially spaced and justified typed copy comparable to fine printing and suitable for reproduction for any purpose for which printing is used.

With the foregoing and other objects in view, as will be apparent to those skilled in the art as the description proceeds, my invention resides in the combination and arrangement of parts and in the details of construction described in this specification and particularly pointed out in the appended claims, it being understood that changes may be made in the particular embodiment of the invention within the scope of what is claimed without departing from the spirit of the invention. I intend no limitation other than those of the claims when fairly interpreted in the light of the full disclosure and the present state of the art.

Referring now to the accompanying drawing illustrative of my invention, Fig. 1 is a conventional rear elevation of a typewriter illustrative of an application of one embodiment of my invention; Fig. 2 is a fragmentary view of one end of a platen illustrative of an application of another form of a supplementary spacing device; Fig. 3 is a view similar to Fig. 2, partly in section; Fig. 4 is a detail of a part of the assembly of Fig. 1; Fig. 5 is a part section illustrative of the

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application of another form of spacing device. Like reference characters refer to corresponding parts in all views.

Referring to Fig. 1, the usual typewriter construction includes a platen 3 rotatably mounted on a carriage 2 which is slidably mounted on a frame 1. In this rear view the carriage 2 is moved to the left manually and moves to the right, space by space, through the action of a spacing mechanism including a spring 15 in cooperation with a spacing rack 11 and a pawl and detent arrangement located at 4, a common form of which is shown in greater detail in Fig. 4.

As is well known in the art, the action of this type of pawl and detent depends upon a rocking plate 4 pivoted as at 24 to the frame 1. As an element of the keyboard is struck, plate 4 is rocked to raise detent 5 to a position between the teeth.

When detent 5 enters, it relieves detent 6 which slips out and by the action of spring 7 snaps over to the next space, stop 9 being positioned to align the detent 6. As the keyboard element is released, plate 4 rocks back, the upper part of the plate dropping down, detent 6 taking hold and detent 5 dropping out from the spacing rack, whereupon spring 15 (Fig. 1) pulls the carriage 2 and the space bar 11 to the right (Fig. 4), the movement being limited by stop 9 which holds detent 6 from further motion. At this time the two detents 5 and 6 are aligned and the cycle begins again. Thus spacing rack 11 is effectively positioned and held.

In the embodiment of my invention shown in Fig. 1, two springs 14 press the spacing rack 11 and the detents into engagement and act to normally center the support arms 12 with respect to recesses in the carriage 2 while rods 13 of the carriage assembly slidably engage and support arms 12 of the spacing rack. A member 17, threaded at one end, is mounted through suitable ears 10 affixed to the carriage 2. Member 17 may be turned by an indexed knob 18. Affixed to the member 17 may be a pair of collars 16 which engage a projecting portion of one of the spacing rack support arms 12. Thus, when the knob 18 is turned, member 17 screws into or out of ear 10 and, as spacing rack 11 is held by the detent on plate 4, the resultant action is to move the carriage 2 and platen 3 relative to the spacing rack 11.

Assuming the spacing rack 11 has ten teeth to the inch and that member 17 has twenty threads to the inch, a single turn of knob 18 will move the platen one half space, a half turn of the knob will move the platen one quarter space and one and a half turns of knob 18 will move the platen three quarters of a space. It is apparent that the platen may thus be moved in either forward or backward direction any desired fraction of a space by turning knob 18 and the amount of turn may be made visual by any suitable form of indexing or marking and it may be controlled.

It is further apparent that, for the purposes described, only a fractional supplementary space movement is necessary because a full space movement may be obtained in the usual way. Moreover, at any time the knob 18 may be turned back to zero position and a full space in either direction obtained by the spacing bar or the back spacing key and new fractional adjustment made as desired.

It may be desired to provide fractional spacing means adjacent to the end of the platen either in place of or in addition to the spacing rack attach-

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ment of Fig. 1. For that purpose, I refer to the embodiments of my invention shown in Figs. 2, 3 and 5.

In the device illustrated in Figs. 2 and 3, the platen 3 may be keyed to shaft 19 and slidable thereon or the action may be to move both platen 3 and shaft 19 as one piece, the necessary movement in either direction, as before mentioned, being normally of the order of one tenth of an inch. In this embodiment, a threaded member 23 is affixed to the carriage 2 and engaged by an indexed knob or nut 21 which is rotatably connected to the platen, preferably by a ball connection 22, so that rotation of the platen will not affect the adjustment. If desired, a supplemental indexing and holding spring 20 may be located to snap into grooves in the index knob 21 as it is rotated. Such grooves may be elongated as shown (Fig. 2) to provide for longitudinal movement of the knob. As before, turning of the knob 21 will result in moving the platen 3 longitudinally backward or forward—that is, to the typist's right or left—with respect to the fixed detent at 4 and, of course, relative to the carriage 2 and spacing rack 11.

Turning now to Fig. 5, a platen 3 is fixed on a shaft 19 riding in bearings 33 mounted on the carriage 2. Longitudinal side play is provided for controlled movement of platen 3 and shaft 19 at least equal to a full space. To the projecting end of shaft 19 is affixed a cylindrical block 25, as by a set screw 26.

A ball connection 22a is made between block 25 and a rotatable cylindrical member 21a in a manner and for a purpose similar to the construction shown in Fig. 3. As a deterrent to undesired motion, as mentioned above, and to provide a "click" or index, I prefer to provide a spring pressed ball ratchet 27, held by a screw 28 in a frame or housing 29, lightly engaging a longitudinal groove in member 21a to which member is rigidly attached a long threaded rod 31 screwed through an extension 30 of the housing 29. Housing 29 is fastened to the carriage 2 and removable.

To the end of the threaded rod 31 is fixedly attached and preferably pinned, a control knob 32 which rotates with rod 31 and at the same time slides over the housing extension 30. Control knob 32 is preferably bevelled externally at the inner edge and indexed. A base line with gauge markings is placed along the barrel 30 so that not only the amount of rotation of knob 32 is indicated but also the distance traveled back and forth by the platen. Preferably this marking is in fractions of a space.

When knob 32 is turned, the screw rod 31 is likewise turned and by means of its threaded engagement with the housing extension 30, it will travel longitudinally taking with it the member 21a. By means of the ball connection 22a with the block 25 and the latter's attachment to the shaft 19, the travel of screw 31 will be the same as the movement of the shaft 19 and the platen 3. Thus the platen 3 may be shifted left or right by turning knob 32 and with the choice of number of threads to the inch of screw 31 with relation to the fixed space travel of the platen, as above explained, a turn of knob 32 may be any fraction of a space desired.

In all the embodiments the effective action of the supplementary spacing device shown and described is to shift the position of the platen and the copy carried thereby such fraction of a space as may be desired by the operator without affecting the normal spacing. This will permit the

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operator to adjust the distance between adjacent letters and/or words whereby lines may be justified.

When lines are of uniform length, margins at both sides of the copy will be even, improving appearance and simulating printed copy. Moreover, successive letters may be compressed together or spaced apart or may be given spacing dependent upon their width. There is thus provided added flexibility and usefulness with little cost.

What I claim is:

1. A fractional spacing device for a typewriter comprising a carriage, a housing supported by said carriage, a longitudinally-slidable platen assembly mounted on said carriage, a member connected to the platen assembly, a member having a threaded connection to the said housing, means to connect said members and an indexing device to indicate the travel of said platen assembly.

2. Justifying means for a typewriter compris-

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ing a housing attachable to the typewriter carriage, a fractional spacing device adjustably carried by said housing and provided with a recessed member for the reception of a platen shaft, means to fasten said member to said shaft, and adjusting means for said spacing device externally of said housing.

RALPH P. CLARKSON.

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