Aug. 22, 1939. T. C. RHODES 2,170,696

LINE SPACING AND PARAGRAPHING MECHANISM

Filed March 31, 1938 3 Sheets-Sheet 1

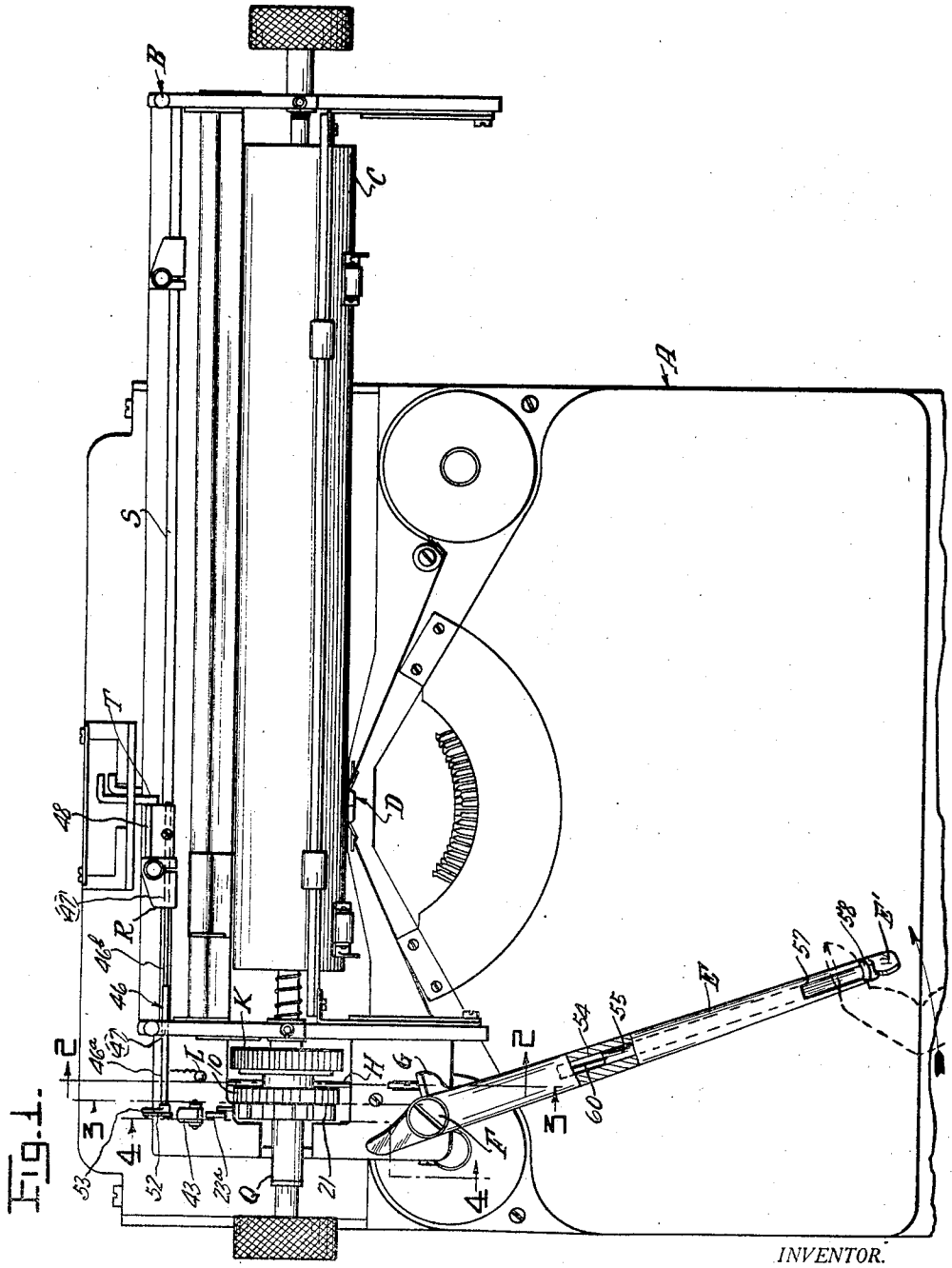


Fig. 1.

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Fig. 2.

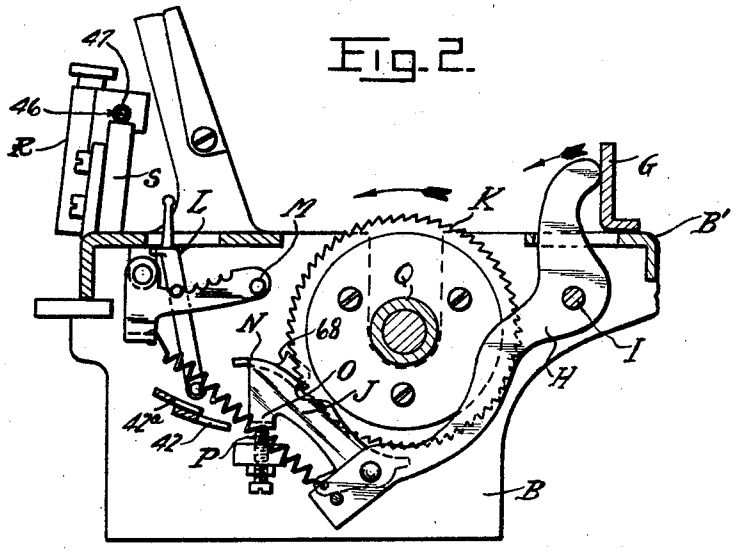


Fig. 8.

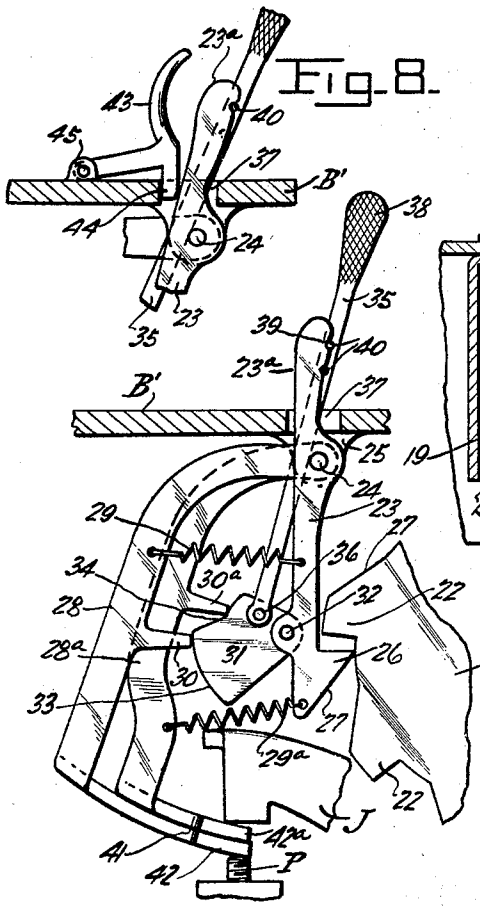


Fig. 3.

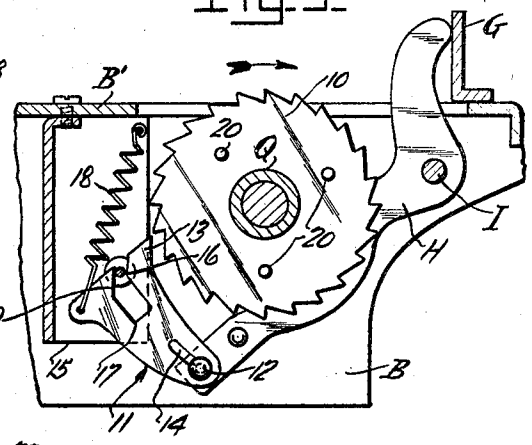


Fig. 6.

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Filed March 31, 1938 3 Sheets-Sheet 3

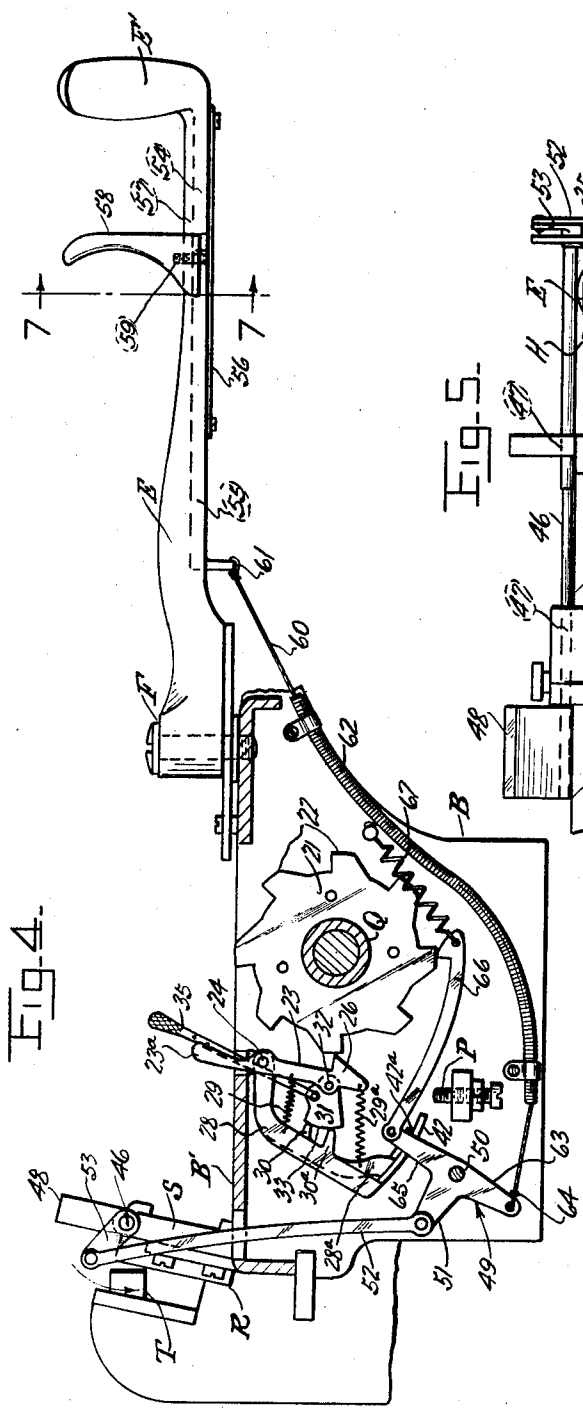


Fig. 4.

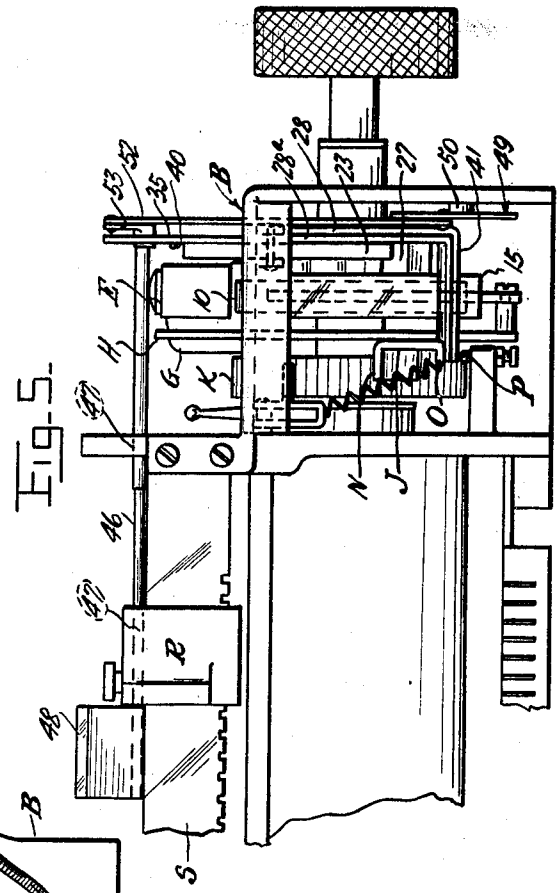


Fig. 5.

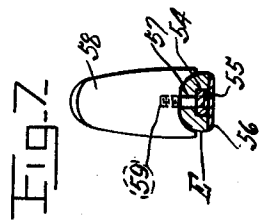


Fig. 7.

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UNITED STATES PATENT OFFICE

2,170,696

LINE SPACING AND PARAGRAPHING MECHANISM

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Application March 31, 1938, Serial No. 199,133

16 Claims. (Cl. 197—63)

This invention relates generally to typewriters and more particularly to improvements in the line spacing and paragraphing elements thereof.

In the operation of writing machines of this kind it is necessary, after each line is written, to return the paper carriage to starting position for the next line, and this action is carried out by actuation of a shifting lever which not only returns the carriage but also rotates the platen to space the new line below the line just written. If the new line is to start a paragraph, then the line must be indented and this is normally accomplished by operation of a tabulator bar or keys which release the carriage from starting position and allow it to move a predetermined number of spaces across the line. However, this action of resetting the carriage to starting position and indenting for a paragraph actually requires two separate manual operations and, inasmuch as the operator's hands are normally placed to most conveniently operate the usual spacing bar for spacing between words, it very often happens that the indentation is actually made simply by several strokes of this spacing bar and without use of the tabulator. As a result each line, whether it be the start of a paragraph or not, requires the same number of spacing operations, and over the course of a day's work with the machine the time thus needlessly used amounts to a considerable loss. The same effect is true wherever an indentation is made in the printed or written page and the invention is contemplated to overcome this lost motion on bookkeeping machines, printing or type setting machines, and all others which operate similar to the ordinary typewriter even though the invention is herein described as applied only to the typewriter.

In addition to the foregoing disadvantage in operation of these machines, their product as normally written has a disadvantage in that the lines of each paragraph are all evenly spaced down the page and it frequently is difficult to follow the lines with the eye while reading. Particularly is this true where two adjacent lines chance to start with the same words and the eye in moving back to the start of a new line becomes confused with the line just read. If, however, the paragraph were divided into separate groups of equal numbers of lines with slight additional spacing between groups, then the line groups would stand out to view as separate entities making it much easier to follow the lines. This grouping, as it will be hereinafter termed, also would greatly facilitate the counting of lines which is very often necessary.

With the foregoing facts in mind, it is the primary object of my invention to provide selective actuatable mechanism by which the single action of returning the paper carriage to starting position for a new line may, if that line is to start a paragraph, also serve to stop the carriage at such position that the paragraph indentation is automatically provided. Another, and important, object is to provide a mechanism cooperating with the foregoing and which will be effective to automatically space the lines as written, dividing them into groups of equal number, and which will be automatically set up for each paragraph to start the line grouping afresh and evenly divide the lines of the paragraph as it is written. Another object is to provide mechanism for grouping the lines as described but which is so arranged that the additional space between groups will not add to the total space occupied by the lines on the page, this being accomplished by the use of more minute spaces between the lines themselves. Another object is to provide means whereby the foregoing paragraphing and grouping operations may be selectively controlled and actuated at the will of the operator. A further object is to provide mechanism for the foregoing operations which is of a relatively simple nature and capable of being built into the machines as now constructed without substantial enlargement or alteration thereof.

The foregoing and other objects of my invention will be made apparent in the course of the following detailed specification, reference being had to the accompanying drawings wherein:

Fig. 1 is a plan view of the rear portion of a conventional form of typewriter but showing my invention applied thereto, the shifting lever and other parts being shown as in paragraphing positions.

Fig. 2 is an enlarged cross section along the line 2—2 in Fig. 1, showing the platen advancing mechanism.

Fig. 3 is an enlarged cross section along the line 3—3 in Fig. 1, showing the grouping ratchet and pawl mechanism.

Fig. 4 is an enlarged cross section along the line 4—4 in Fig. 1, showing the grouping spacer, paragraph indentation apparatus, and the shifting lever.

Fig. 5 is a fragmental rear elevation of the left hand end of the carriage showing the foregoing parts installed therein.

Fig. 6 is an enlarged detail view showing the

line grouping apparatus in position for forming the additional spacing between line groups.

Fig. 7 is a cross section along the line 7—7 in Fig. 4.

Fig. 8 is a detail in cross section showing means for disengaging the line grouping mechanism when its use is not desired.

In order to facilitate the understanding of my invention, the line grouping mechanism will be first described.

Referring then with more particularity to the drawings, the reference character A designates a typewriter of substantially conventional form having the usual key board (not shown), type bars and ribbon assembly and having a guideway on which carriage B is slidably mounted. The carriage B moves transversely to move the platen C axially along the typing position D, and is automatically spaced and moved to the left by the normal operation of the machine in order to properly space the letters and words as they are written. After each line is written the carriage is returned to starting position for the next line by a pull to the right on the shifting lever E which is pivotally connected to the carriage at F. Normally the lever E stands in a forwardly and angularly extended position to the left and, as this pull to the right is given the lever, it swings on the pivot F causing the tooth G to engage the upper end of the platen advancing lever H and oscillate the same on its pivot I. The dog J carried by the lever H then engages the platen ratchet K and rotates the platen to carry the paper forwardly or upwardly and space the new line beneath the one just typed. The space between lines is varied by operation of the finger lever L to move the throw-out pin M to various positions in the path of the cam face N of the dog J so that the dog will rotate the ratchet K a greater or less distance each time the shifting lever E is operated. This line spacing mechanism operates in substantially conventional manner and requires only minor alteration to adjust it to the use of my invention as will presently appear.

As the dog J moves downwardly to adjust the platen, its extended hammer O engages a stop P to thus limit this motion. Accordingly, as the distance through which the dog may engage and move the ratchet K is regulated by the mechanism L—M then, by variation of this stop P, the distance through which the platen is moved may be independently varied; this for the reason that the travel of the dog may be increased or decreased by adjusting the stop. This action bears an important relation to the operation of my invention as will be described.

Ordinarily, the platen ratchet K has its teeth so proportioned to the platen diameter and the characteristics of the platen feed or advancing mechanism, that one tooth will represent one space between lines on the typed page. In other words, when the dog J moves the ratchet a distance equal to one tooth on the ratchet, the paper will be advanced one full space relative to the typing position D. This provides what is known as single line or single spacing while, by operation of the finger lever L, the dog may be caused to move a distance of either two or three teeth to give double or triple spacing, as will be understood.

In accordance with my invention, the ratchet K is preferably provided with exactly twice as many teeth as ordinarily, so that each tooth represents a half space between lines. This affords a greater nicety in spacing as well as facilitates the grouping operation as will appear, and the finger lever L may be arranged to permit finer control of the throw out pin M so that half line spacing, or multiples thereof, may be had. Two teeth now represent one full line.

The platen ratchet K is, of course, mounted on the platen shaft Q to turn therewith. Mounted outwardly of the ratchet K is an indexing ratchet 10 journaled freely on the shaft Q and movable thereon by the return motion of the lever H. For this purpose the lever H carries an indexing detent 11 pivotally mounted by the pin 12 and having the pointed extremity 13 for engaging the teeth of the indexing ratchet 10. This detent 11 is slidably connected with the pin 12 by an arcuate slot 14 and is slidably supported within a housing 15 suspended from the carriage top B'. A guide pin 16 carried by the housing pin 15 plays in a guide slot 17 in the indexing detent 11 and the detent is normally pulled upwardly and toward the ratchet 10 by a retractile coil spring 18 as shown. In operation, as the lever H is actuated by the tooth G of the shifting lever E, the lower end of the lever is swung downwardly, shifting the platen as hereinbefore described. This action likewise pulls the indexing detent 11 downwardly and, when the shifting lever E is released, the spring 18 pulls the detent upwardly again causing it to engage and rotate the indexing ratchet 10. This rotation is in an opposite direction to that of the platen as will be understood. Inasmuch as the travel of the lever H varies according to the position of the stops for the platen shifting dog J and the ratchet 10 must be shifted only one tooth length each by upward operation of the indexing detent 11, the slots 14 and 17 play an important part in the operation. It will be understood that, as the lever H moves downwardly to its lowermost position (shown in Fig. 3), the pin 12 will move to the lower extremity of the slot 14 and the detent will move downwardly until it just remains in engagement with the guide pin 16. In this position the inclined cam face 19 of the slot 17 will engage the guide pin 16 and move the detent entirely out of engagement with the ratchet. Now as the lever H returns to normal position (the shifting lever E being released) the spring 18 will pull the indexing detent 11 upwardly moving it into engagement with the indexing ratchet 10. The length of the slot 17 is such that this upward movement of the detent can only move the ratchet through a distance equal to the length of one tooth. The slot 14 provides for the play necessary in order that the aforesaid variation in movement of the lever H will not affect this operation of the indexing mechanism.

The indexing ratchet 10 has three (or more) unevenly spaced pins 20 extended outwardly and a cam wheel 21 is journaled on the platen shaft Q and supported by these pins in order to rotate with the ratchet. This cam wheel 21 has a series of evenly spaced and radially projecting cam shoulders or lobes 22 around its periphery and a pawl lever 23 is pivotally suspended from the carriage top B' to engage these shoulders as shown in Figures 4 and 6. This pawl lever 23 is pivotally mounted by a pin 24 supported by a boss 25 on the top B' and the lower end of the lever has an extended hook 26 to ride the periphery of the cam wheel 21. As the cam wheel rotates (together with the indexing ratchet 10) this hooked end of the lever 23 will ride up on the shoulders 22 and drop down into the spaces

therebetween causing a corresponding oscillation of the lower portion of the lever toward and away from the platen shaft Q. The lever 23 and the cam shoulders 22 have complementary inclined faces 27 to facilitate the movement of the lever by the cam wheel in obvious manner.

Two stop levers 28 and 28a are pivotally connected at their upper ends to the pin 24 and are bent outwardly away from the pawl lever 23, downwardly in spaced relation thereto and then inwardly in the reverse direction to a substantial U-shaped as shown. These levers are arranged side by side and are normally urged or pulled toward the pawl lever by retractile coil springs 29 and 29a stretched between the respective stop levers and the pawl lever. This motion is limited by means of fingers 30 and 30a extended from the stop levers 28 and 28a toward the pawl lever 23 and which fingers ride the periphery of a spacing cam 31 pivotally mounted at 32 on the pawl lever. This cam 31 has a projected longer face or lobe 33 terminating at the upper corner in a cutaway recess or shoulder 34. The cam is adjustable by means of a thin finger bar 35 which is pivotally connected at 36 to the cam and extends upwardly through an opening 37 in the carriage top B' to terminate in the finger piece 38. The pawl lever 23 also has an end 23a extended upwardly through the opening 37 and this lever end has a notch 39 in which any one of the short studs 40 on the bar 35 may enter. In operation, then, the bar 35 may be pushed downwardly or pulled upwardly and may be held in either of two positions by engaging the studs 40 with the notch 39. The bar 35 bears against the pin 24 and the bar must be sprung slightly in order to release the studs from the notch. In its elevated position the finger bar 35 thus holds the cam 31 with its lobe 33 in engagement with both of the fingers 30 and 30a and the levers 28 and 28a are thus both urged away from the pawl lever 23 as shown in Fig. 4. Then, as the cam 31 is moved downwardly, the finger 30a will ride inwardly into the recess 34 and the stop lever 28a will swing inwardly toward the pawl lever 23 as indicated in Fig. 6. The assembly is thus such that the pawl lever 23 and stop levers 28 and 28a may oscillate as a unit under control of the cam wheel 21 and also the stop levers may be independently adjusted in their positions relative to the pawl lever.

The lower ends of the stop levers 28 and 28a are turned laterally as at 41 so that they extend over to the rear of the stop P and their extremities are arranged one above the other to form stop fingers 42 and 42a which may swing over the stop P when the pawl lever hook 26 moves off of one of the cam wheel shoulders 22. This is the position shown in Figure 6.

The platen ratchet K and index ratchet 10 may be engaged by conventional roller dogs (not shown) to prevent over-running or retrogressive movement of these parts.

In setting up the conditions for operation of the grouping mechanism it may be assumed that it is desired to type with one-half line spaces between the lines and with an added one-half line space between groups. The finger bar 35 is accordingly elevated so that only the lower stop finger 42 rests upon the stop P when the pawl lever hook 26 rests between the cam wheel shoulders 22. The finger lever L is then set so that the dog J will engage three teeth of the platen ratchet K and thus in normal operation only one-half line spaces will be formed between the lines as they are typed. Now, as the platen C is rotated during the typing operations and under influence of the operation of the shifting lever E, the indexing ratchet 10 is rotated in the opposite direction by action of the detent 11. In the example here taken the ratchet 10 has three times as many teeth as the number of shoulders 22 on the cam wheel 21 and, as a result, after three lines have been typed the cam wheel will have been moved to such distance that one of the shoulders thereon will engage the hook 26 and urge the pawl lever 23 outwardly from the cam wheel. This operation withdraws the stop finger 42 from the stop P and, for the space between this third line of typing and the next, the dog J may move downwardly a further distance equal to the length of one of the teeth on the platen ratchet K and so move the platen an extra half line space. During the next operation of the lever E the hook 26 will drop off of the shoulder 22 and the stop finger 42 will move back over the stop P to restore the original half line spacing between lines. This condition obtains until three lines have again been written, whereupon the next shoulder 22 is in position to engage the hook 26 and again withdraws the stop finger 42 to provide an added half-line space between the sixth and seventh lines of typing. The extra one-half line space will thus be provided between each group of three lines so long as the typing is continued and the completed page will be very easy to read (or to number the lines) as hereinbefore pointed out. It may here be stated that by varying the relative proportion of the number of shoulders on the cam wheel 21 and the number of teeth on the indexing ratchet 10, the number of lines in each group may be varied as may be desired. For example, the use of eight shoulders on the cam wheel and twenty-four teeth on the indexing ratchet forms three line groups as described, six cam shoulders and twenty-four ratchet teeth would give four line groups and five cam shoulders and twenty-five ratchet teeth would give five line groups, and so on. By the use of cam wheels of proper formation the lines may also be grouped in sequential series of three lines and two lines for convenience in counting and numbering in multiples of five as will be apparent. The indexing ratchet and cam wheel may be readily removed and replaced to thus vary the line grouping.

In addition to the combination of half-line spacing between lines and full line (two half-lines) spacing between groups herein pointed out, numerous other combinations are possible. For example, the finger lever L may be adjusted to enable the dog J to move the platen a full line space, one and one-half line spaces, two line spaces and so on, between each line and to which in each case will be added the extra half line between groups by the withdrawal of the stop finger 42 as pointed out. Also the finger bar 35 may be adjusted to allow the stop lever 28a to swing forwardly so that the upper stop finger 42a moves over the lower stop finger 42 (Figure 6) thus doubling the added space between groups. In this case then the typing may be single spaced between lines with double spaces between groups, or the spacing between lines may be increased in multiples of one-half line spaces by actuation of the finger lever L as described.

When line grouping is not desired the pawl lever 23 may be urged wholly out of engagement with the cam wheel 21 by a forward pull on its upper exposed end 23a. A latch 43 may then have

its nose 44 dropped in behind the lever as shown in Fig. 8 to retain the lever in this disengaged position. This latch 43 pivots at 45 on the carriage top B' and it may be swung clear when the grouping mechanism is in operation.

It may be thought that this addition of extra spacing between line groups will result in a waste of space upon the page, requiring a greater page length for the same number of lines as against the length required for normal typing. However, this is not true for the reason that the spacing between lines may be reduced each by one-half space. For example, a twelve line paragraph written with ordinary single spacing requires actually twenty-three spaces. The same paragraph written with half-line spacing between lines and added half line spaces between groups (which forms a very pleasing effect to the eye) requires twelve lines, plus eleven half line spaces plus three half line group spaces, or a total of eighteen full lines, actually less paper space than ordinary typing requires.

For operation in conjunction with the grouping mechanism described, I provide an automatic paragraphing mechanism which, in addition to its function of regulating carriage travel for paragraphing or tabulating, also effects the operation of the grouping of lines as will appear.

The carriage B, when moved to the right in returning to starting position for a new line, is ordinarily limited in this motion by a stop block R which is adjustably mounted on the bar S and engages a forwardly projecting stop arm T. This stopping of the carriage provides for the starting of each line at an even distance from the left hand edge of the paper to provide a margin thereat. The block R may be adjusted to various positions along the bar S to vary the width of thisc margin and this adjustment, as hereinafter pointed out, will have no effect on the operation of my invention.

In accordance with my invention a rocker shaft 46 is journaled through the carriage frame and the stop block R at 47 and extends along the upper edge of the bar S. This rocker shaft carries a stop lug 48 at its inner end and which is radially extended in such manner that, while standing normally in an upwardly extended position in the clear, it may be swung downwardly to a rearwardly projecting position at which it will contact the stop arm T and stop the movement of the carriage B short of the stop block R by a distance equal to the length of the lug as shown in Figure 1. This action is carried out by an oscillating motion applied to the rocked shaft 46 and this motion is applied through operation of a bell crank lever 49 located within the left end of the carriage rearwardly of the stop lever assembly. The bell crank lever 49 is fulcrumed at 50 and has one arm 51 pivotally connected by a link 52 to a radially extended lever 53 affixed to the left hand end of the rocker shaft 46 where it extends outwardly above the carriage.

The shifting lever E is then provided with a longitudinally extended groove 54 in its under side in which is slidably mounted a draw bar 55 retained in place by a removable cover plate 56. Near its outer or frontal end the groove 54 opens cut through the upper face of the lever E in the form of an elongated slot 57 which extends inwardly or rearwardly some distance from the finger hook E' of the lever. A finger piece or pull block 58 is slidably mounted atop this slotted end of the lever E and is secured to the end of the draw bar 55 by a screw 59 passing slidably through the slot 57. A small flexible pull wire or cable 60 is connected at 61 to the other end of the draw bar 55 and runs rearwardly through a conduit 62 to the lower arm 63 of the bell crank lever 49 to which it is connected as shown at 64.

As a result of the foregoing arrangement, a pull forward on the finger piece 58 will slide the draw bar 55 forward and pull the cable 60 so that the bell crank lever 49 is rocked on its fulcrum 50. This action rocks the shaft 46 and drops the stop lug 48 over behind the block R where it will engage the stop arm T.

Inasmuch as the carriage is returned to normal marginal position simply by placing a finger over the hook E' and moving the lever and carriage to the right, in order to stop the carriage short of the margin, it is only necessary for the operator to hook his or her finger over the finger piece 58 and pull forwardly and to the right to draw the finger piece forwardly (Fig. 1) and move the carriage in the usual manner. This operation is no more trouble and consumes even less time than the ordinary carriage return but, nevertheless, stops the carriage short of the margin and indents the paragraph a space equal to the length of the stop lug 48.

The stop lug 48 may be removably mounted so that it may be replaced with others of a shorter or longer length to thus vary the paragraph indentation.

The rocker shaft 46 may be made in two telescopically connected sections 46^a and 46^b so that the stop block R may be adjusted to various positions along the bar S without disturbing the operation of the paragraphing mechanism.

In connection with the grouping mechanism it will be apparent that there should be some means for setting up the operation so that, in starting a page or paragraph, the first group will have the proper number of lines. In other words, the mechanism should be in starting position, at which one shoulder 22 is in engagement with the pawl lever hook 26 as shown in Figure 4. For this purpose the bell crank lever 49 has another arm 65 which is pivotally connected to a setting dog 66 extended forwardly beneath the cam wheel 21 and held in engagement therewith by the retractile coil spring 67. It is this spring 67 which also returns the entire paragraphing mechanism to initial position after each operation.

The dog 66 is so arranged that it will be pulled rearwardly when the finger piece 58 is pulled forwardly and the dog will in this action engage and rotate the cam wheel 21 to a sufficient distance so that one of the shoulders 22 will engage the pawl lever 23 as required. This action will take place no matter what position the cam wheel may be in and the action is, of course, determined by the length of stroke of the dog 66.

It follows, therefore, that each time an indentation is made for a new paragraph, the grouping mechanism will be set up to start the grouping anew for that paragraph. Also, the grouping mechanism may be set up at any time to starting position, and without starting a new paragraph simply by a pull forward on the finger piece 58.

The platen advancing dog J has an extended stop flange 68 which is adapted to engage the throw out pin M as the dog moves upwardly. This feature is of advantage in that, in doing single space typing for example, the shifting lever E will not return as far to the left as it now does and considerable lost motion will be prevented. As the lever returns to normal position the dog J, of course, moves upwardly until the

flange 68 strikes the pin M and the position of the pin (regulating the spacing between lines) will thus determine the returned or normal position of the shifting lever. This difference in actual shifting lever motion will have no effect on the operation of the indexing mechanism due again to the provision of the slot 14 in the detent 11.

The invention is here shown as applied only to one conventional form of typewriter but it is apparent that it may be readily rearranged as necessary to fit the various parts to other machines as may be desired. While I have herein set forth a certain preferred embodiment of my invention, therefore, it is understood that I may vary the same in minor structural details provided that such variations lie within the spirit and scope of the appended claims.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent is:

1. A writing machine for printing in lines upon a page, the same comprising a paper carrying platen and means for periodically advancing the platen to thereby evenly space the lines upon the page, the said platen advancing means embodying a ratchet and dog operating thereon, mechanism including an adjustable stop member normally engaging the dog to limit the advancement of the platen thereby, and indexing mechanism associated with the said stop member and effective to withdraw the stop member from engagement with the said dog at regular intervals.

2. A writing machine for printing in lines upon a page, the same comprising a paper carrying platen and means for periodically advancing the platen to thereby evenly space the lines upon the page, the said platen advancing means embodying a ratchet and dog operating thereon, mechanism including an adjustable stop member normally engaging the dog to limit the advancement of the platen thereby, indexing mechanism operable by advancement of the platen, and associated with the said stop member and effective to withdraw the stop member from engagement with the said dog at regular intervals.

3. A writing machine for printing in lines upon a page, the same comprising a paper carrying platen and means for periodically advancing the platen to thereby evenly space the lines upon the page, the said platen advancing means embodying a ratchet and dog operating thereon, mechanism including an adjustable stop member normally engaging the dog to limit the advancement of the platen thereby, indexing mechanism associated with the said stop member and effective to withdraw the stop member from engagement with the said dog at regular intervals, and manually adjustable means effective to reset the indexing mechanism to stop member retracting position.

4. A writing machine for printing in lines upon a page, the same comprising a paper carrying platen and means for periodically advancing the platen to thereby evenly space the lines upon the page, the said platen advancing means embodying a ratchet and dog operating thereon, mechanism including an adjustable stop member normally engaging the dog to limit the advancement of the platen thereby, indexing mechanism associated with the said stop member and effective to withdraw the stop member from engagement with the said dog at regular intervals, and manually adjustable means for indenting any line for starting a paragraph on the printed page and for simultaneously adjusting the indexing mechanism to stop member withdrawing condition.

5. A machine for printing legible characters in lines, the same comprising apparatus operating normally to regularly space adjacent lines and to maintain the starting ends of the lines in alignment, grouping mechanism cooperatively arranged and effective to increase the spacing between lines at pre-selected intervals, and manually operated mechanism effective to indent the starting end of any selected line to a pre-determined distance, the latter mechanism cooperating with the grouping mechanism and controlling the sequence of operation thereof with respect to the indented lines.

6. A machine for printing legible characters in lines, the same comprising apparatus operating normally to regularly space adjacent lines and to maintain the starting ends of the lines in alignment, grouping mechanism cooperatively arranged and effective to increase the spacing between lines at pre-selected intervals, and manually operated mechanism effective to indent the starting end of any selected line to a pre-determined distance, the latter mechanism cooperating with the line grouping mechanism to automatically provide an increase in space before each indented line.

7. A machine for forming legible characters in lines upon a receiving surface, the same including means for adjusting the receiving surface in directions at right angles to each other and to thereby regulate the spacing between lines of characters and the length of the said lines, mechanism operating under control of the line spacing adjustment of the receiving surface and effective to vary the spacing between lines at regular intervals, and manually operated means controlling the operation of the said mechanism and acting to vary the length of any selected line of characters.

8. A machine for forming legible characters in straight lines, the same comprising apparatus operating to normally control the spacing between adjacent lines of characters and to periodically increase the spacing between equal groups of lines, paragraphing mechanism for indenting any selected line, and means cooperating with the paragraphing mechanism for automatically setting up the grouping sequences with respect to each indented line.

9. A machine for forming legible characters in straight lines, the same comprising apparatus operating to normally control the spacing between adjacent lines of characters and to periodically increase the spacing between equal groups of lines, paragraphing mechanism for indenting any selected line, and means for automatically setting up the grouping sequences with respect to each indented line under control of operation of the said paragraphing mechanism.

10. A machine for forming legible characters comprising, apparatus normally controlling the spacing between lines and for forming spaces of preselected extent between lines, grouping mechanism cooperating with said normal spacing apparatus for periodically increasing the line spacing between groups of lines, manually operable and spring returned means for setting up the grouping mechanism at the start of a group of lines at any desired time, and remote control means, for actuating the said setting up means, located forwardly of said apparatus.

11. A writing machine for forming written

lines upon a page, the same including mechanism for regularly spacing the lines from each other, grouping mechanism for periodically increasing the spacing, paragraphing mechanism for varying the starting position of any selected line upon the page, and means cooperating with the grouping and paragraphing mechanisms for controlling the operation of the former to thereby regulate the insertion of additional line spaces with respect to the starting position of the lines.

12. In combination with a writing machine including a movable platen and a platen advancing member for rotating the platen in one direction, an adjustable throw-out pin located in the path of the platen advancing member for varying the action thereof and controlling the extent of each platen advancing operation, the said member having a cam face for engaging the pin, a shifting lever for moving the said platen advancing member, and a stop flange carried by the platen advancing member at right angles to the said cam face thereof for engaging the pin and restricting the movement of the said member and of the shifting lever.

13. A writing machine for printing in lines upon a page, the same comprising a paper carrying platen and means for periodically advancing the platen to thereby evenly space the lines upon the page, the said platen advancing means embodying a ratchet and dog operating thereon, mechanism including adjustable stop members normally engaging the dog to limit the advancement of the platen thereby, and indexing mechanism associated with the said stop members and effective to withdraw the stop members from engagement with the said dog at regular intervals, the said mechanism also including manually operable means for adjusting the said stop members to thereby vary the extent to which the movement of the dog is limited thereby.

14. In a machine for writing in lines including a platen and means for periodically advancing the platen to thereby evenly space the lines of writing, the said platen advancing means including a ratchet and a dog operating thereon through a plane of movement normally limited by a fixed stop, mechanism including variable-thickness stop means adapted for insertion over the said stop to thereby further limit the movement of the dog and the extent to which the platen is advanced thereby, indexing mechanism for periodically retracting the stop means from the path of the dog, and means for adjusting the effective thickness of the stop means and thereby controlling the extent to which the movement of the dog is limited by said stop means.

15. A writing machine for printing in lines upon a page, the same comprising a paper carrying platen and means for periodically advancing the platen to thereby evenly space the lines upon the page, the said platen advancing means embodying a ratchet and dog operating thereon, mechanism including an adjustable stop member normally engaging the dog to limit the advancement of the platen thereby, indexing mechanism operable by advancement of the platen, and associated with the said stop member and effective to withdraw the stop member from engagement with the said dog at regular intervals, and manually operable latch means connected to the said mechanism for withdrawing and holding the stop member out of engagement with the dog.

16. In combination with a writing machine including a movable work carriage, a shifting lever carried by said carriage and projecting therefrom for manual operation to shift the carriage in one direction to a predetermined position, the outer end of the lever having a finger hook, means associated with the carriage and shifting lever for limiting the said shifting of the carriage, and to stop the carriage short of said predetermined position, and the said means including a finger piece movably mounted on the shifting lever for movement toward and away from the said finger hook.

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