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TYPEWRITER AND METHOD OF OPERATING SAME

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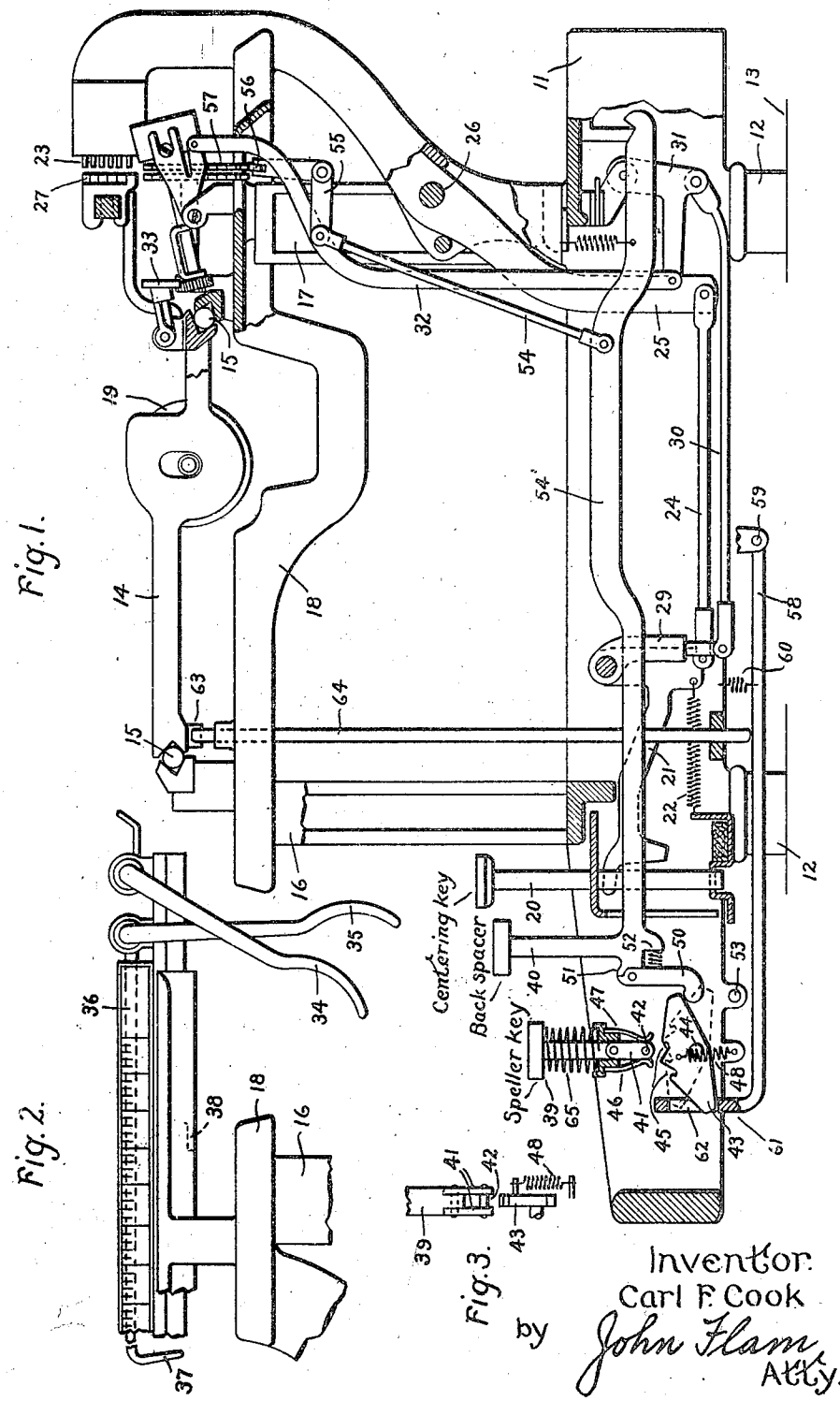


Fig. 1.

Fig. 2.

Fig. 3.

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TYPEWRITER AND METHOD OF OPERATING SAME.

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To all whom it may concern:

Be it known that I, CARL F. COOK, a citizen of the United States, residing at Schenectady, in the county of Schenectady, State of New York, have invented new and useful Improvements in Typewriters and Methods of Operating Same, of which the following is a specification.

My invention relates to improvements in typewriters, especially those having movable carriages, and to new methods of operation rendering it possible to secure new and useful results.

It is quite often necessary for a typist to type lines which do not extend entirely across the sheet, as for example when titles, headings, or captions are to be written. In order that these lines of type may present a neat appearance, especially where two or three of them are placed right under each other, they should each be spaced centrally of the sheet. It is the main object of my invention to make it possible for the typist to set the carriage of the typewriter with facility to such a place that when the line of type shall have been written, this line will be centrally located on the sheet.

To make clear how my method may be followed to perform this function, assume that there are in all S spaces in the line of type to be written. The number S includes, of course, all of the spaces in the line, whether occupied by letters or left blank, as between words. It is evident that when the line of type is centered, there are as many spaces to the left of the center line as there are to the right. Thus there should be $\frac{S}{2}$ spaces on each side of the center line. In case S is odd, then it is possible to have $\frac{S+1}{2}$ spaces to the left, and $\frac{S-1}{2}$ spaces to the right, without materially disturbing the balance. This compromise is necessary since typewriters as ordinarily constructed cannot be operated to move the carriage by one-half paces. My method thus consists in first centering the carriage of the typewriter, and then moving the carriage opposite to its movement when the line of type is written, substantially one-half the distance it will have moved through, upon completion of the typing operation. This movement may readily be performed by means of the back spacer key, which may be so operated as to back space the carriage at the average rate of one space per pair of spaces in the line of type.

The depression of the back spacer key is performed simultaneously with the mental observation of each pair of spaces in the line of type. This in fact may be readily performed by depressing the back spacer for one space and allowing it to return to its original position for the next space, and continuing this operation until the entire line is thus spelled out.

While the alternate operation of the back spacer key may be readily accomplished at the will of the operator, I prefer to provide auxiliary means, such as a "speller" key, which, upon depression for every space in the line of type, causes the carriage to move back the proper amount. This may be accomplished by so arranging the speller key that alternate operations thereof cause actuation of the back spacer. To perform my method, then, it is merely necessary to center the carriage and then spell out the line on the speller key. Preferably I also provide means for centering the carriage with the minimum amount of inconvenience.

As stated heretofore, it becomes more important to center lines of type when two or three of them are placed on the sheet one after another. Especially is this the case when the difference in the length of lines so arranged amounts to no more than a few spaces. Under such circumstances, a misalignment of even one space is sufficient to destroy the pleasing effect of the centered lines. Such a misalignment of course cannot ordinarily occur with my method, except when the "speller" key is used and when some of the lines centered have an odd number of spaces. Under such circumstances it

is necessary to insure that the back spacing is performed so as to move the carriage back by the amount $\frac{S-1}{2}$ or $\frac{S+2}{2}$; in other words, that the back spacer key be operated by the next smaller or larger whole number than the exact half of the spaces in the line; and that it always be either $\frac{S+1}{2}$ or $\frac{S-1}{2}$ spaces for every line, and not $\frac{S+1}{2}$ spaces for one line, and $\frac{S-1}{2}$ spaces for the line succeeding. It is evident that if this precaution be not taken, then successive lines of type may be shifted relatively to each other, so that the lower line does not come directly under the upper line. I prevent this possible misalignment by providing means which cause the first actuation of the "speller" key (after the carriage is centered) to operate the back spacer. If the number of spaces in the line of type is odd, the carriage is moved $\frac{S+1}{2}$ spaces, while if it be an even number, then the carriage is moved $\frac{S}{2}$ spaces.

For a better understanding of the mechanism whereby I obtain the results stated heretofore, reference is to be had to the accompanying drawing in which Figure 1 is a sectional view of a typewriter of the movable carriage type embodying my invention and in which unessential details of construction have been omitted; Fig. 2 is a front view of a detail of construction; and Fig. 3 is a side view of the lower portion of the "speller" key and associated parts.

Referring now more in detail to the drawing, in which like reference characters refer to like parts throughout, the typewriter has a base 11 supported on feet 12 resting on an appropriate plane surface 13. The base 12 carries all the operating parts of the typewriter, many of which, such as the hammers or type bars and type keys, have been omitted from the drawing. The carriage 14 moves on guides 15, placed on standards 16 and 17, which also serve to support the braces 18. The roller or platen 19 is appropriately mounted in the carriage 14.

The first operation to be performed when my method is practiced is the centering of the carriage 14. For this purpose there may be used a key mechanism entirely similar to a so-called tabulator key; or if there be a sufficient number of such keys, one of them may be adjusted to cause the carriage to come to a central position. In the present instance, I show a special centering key 20 adapted to perform its function in any one of well known ways. For example, the depression of the centering key 20 may cause lever 21 to be rotated against the action of spring 22. This rotation causes the uppermost stop 23 located near the back of the typewriter, to be extended toward the front, by the action of link 24 and lever 25, which lever is pivoted to the frame at 26. The stop 23 is in this instance shown as coacting with the uppermost projection 27 carried at the back of the carriage in the manner usual in Remington typewriters. The stops 23 and 27 may be extra ones added to the ordinary supply used for tabulating; or they may be one pair of those already on the machine but adjusted so as to center the carriage.

If the carriage 14 has not passed the central position on its travel to the left as the machine is operated, the depression of the centering key 20 may also be made use of in a well known manner to release the carriage from its rack and thus to allow the spring usually provided, to move the carriage 14 until the stop 27 engages the stop 23. To effect this result, the lever 29, link 30, lever 31 and link 32 are utilized for rocking rack 33 on the carriage 14 out of engagement with its pinion. Mechanisms for performing the centering or tabulating operations by means of the depression of a key are so well known that the foregoing cursory description of one means for performing this operation is considered a sufficient description of this feature of my invention. Should the carriage be located to the left of the center line of the machine, the release of the rack 33 from its pinion will not have the effect of bringing the carriage back to the right, since the spring moving the carriage always acts to the left. It is then necessary to bring the carriage back manually, by means of the lever 34 (Fig. 2) usually provided for the purpose while key 20 is depressed until the stops engage, and then to release the key 20.

Other means may also be provided for centering the carriage when it is to the left of the central position. For example, a lever 35, similar to lever 34 may be provided for manual operation. This lever, upon being pulled toward the right, is arranged to rotate a rod 36 having a projection 37 at its end, so as to cause this projection to engage a stationary stop 38 located on the frame of the machine, when the carriage is centered.

After the carriage has been definitely centered, the next operation comprises moving the carriage back a distance substantially equal to one-half the distance the carriage will have moved through on completion of the line of type. For performing this operation quickly, I provide a speller key 39, so arranged that for every other depression thereof, it operates the back spacer key 40. A relatively weak spring 65 is made

use of to return the speller key to its undepressed position. The speller key 39 pivotally carries a pair of links 41, which support at their lower extremities the cross pin 42. This pin is so arranged that upon its downward movement it engages a tiltable member 43, pivoted on the pin 44. This tiltable member has a pair of notches 45 cut into it with which the pin 42 may readily coact for tilting the member 43 in one direction or the other. Springs 46 and 47 are provided to keep the links 41 central upon release of key 39. An off set spring 48 is provided to prevent the tiltable member 43 from remaining in any intermediate position. In other words, this tiltable member has but two definite stable positions—either completely tilted to the right, or completely tilted to the left. In the full line position, or when it is tilted to the left, upon the next depression of the speller key 39, the pin 42 engages the right hand notch 45, and after the member 43 reaches its mid position, the spring 48 helps it to reach the dotted line position; with a definite snap action. The next time the key 39 is depressed, it tilts the member 43 back again into the full line position. It is thus evident that the movement of key 39 serves to tilt member 43 now to the right, and now to the left.

I arrange matters in such a way that the right hand tiltings of members 43 cause actuation of the back spacer key 40. For this purpose I pivot a hook shaped member 50 to the front end of the back spacer lever, spring pressed against the stop 51, as clearly indicated. The member 43 when it is tilted to the right, presses down on the hook 50 and causes actuation of the back spacer mechanism. The hook 50 is arranged to be pressed inward against the action of spring 52 due to its engagement with the pin 53 appropriately placed in the path of movement of the hook for this purpose. When this occurs the tiltable member 43 becomes disengaged from the hook 50, and the back spacer key is released. The parts are so proportioned that sufficient movement is given to the back spacer to insure the backward movement of the carriage. The particular species of back spacing mechanism is wholly immaterial in the present invention, and merely for the sake of illustration, I show the link 54 pivoted to the back spacer lever 54′ which is adapted to coact with the bell crank lever 55 carrying pawls 56 which engage ratchet wheels 57 when the lever 55 is rocked. The wheels 57 are rotated in such a direction by this means that it serves to back space the entire carriage.

In order that the "feel" when depressing the speller key 39 be the same whether the tiltable member is rocked to the right or to the left, I may make the flexible member or spring 46 somewhat stiffer than the spring 47. In this way, a greater resistance is offered to the rotation of links 41 to the left as the pin 42 rocks the tiltable member to the left, than the rotation of the links to the right, when pin 42 rocks the member to the right. It is thus seen that the work done in depressing the back spacer is balanced by the work done in flexing the spring 46. A portion of the balancing pressure, however, may be due to compressing spring 52 as member 43 rocks to the left, and as it thus presses against the hook 50.

As stated heretofore, it is important when more than one line is to be centered, and when any of them have an odd number of spaces, to insure that the first movement of the key 39 after the carriage is centered, be an active one, i. e., that the back spacer key be depressed. For this purpose, I provide a mechanism which automatically tilts the member 43 to the left if it is not already there, as the carriage reaches its central position. For example, I may use a hook 58 pivoted at 59 and normally held up by a weak spring 60. The bent up portion 61 of the hook 58 has a slot 62 therein within which the tiltable member 43 may move. This slot is long enough so as not to interfere with the free movement of member 43 while the hook 58 is held up in its normal position. However, when the hook 58 is depressed against the action of the spring 60, the upper edge of slot 62 engages with the member 43 and throws it over center to the position shown. It is to be noted that the member 43 need not be depressed further than to cause it to be slightly over center, for then after that the spring 48 snaps it into the position shown. Thus merely a limited movement of member 58 is needed.

I provide means for depressing the hook 58 when the carriage is at center position, comprising the cam 63 formed on the under side of the carriage 14, and the cooperating push rod 64 appropriately guided in its movement, and so arranged that it pushes hook 58 downward when the cam 63 engages its upper end. This is made to take place just at the center position. It is evident that normal operation of the typewriter is not interfered with. At the same time, when the member 58 is depressed, there is enough space left in the slot so as to permit the tiltable member 43 to operate, since as stated heretofore, there is just sufficient movement of the hook 58 when it is depressed, to throw the tiltable member 43 over center.

It is evident from the foregoing description that I have explained a new method of operation of typewriters, and described one embodiment of the mechanism whereby the method may be practiced. I desire it to be

understood, however, that I aim to embrace in the appended claims, all modifications falling fairly within the scope of my invention.

What I claim as new and desire to secure by Letters Patent of the United States, is:

1. The method of setting the carriage of a typewriter so that a line of type, when typed from the setting, will be centered, which consists in bringing the carriage to a position corresponding to the center of the space within which the line is to be typed, and back spacing the carriage at the rate of one space per pair of spaces in the line of type, each of the back spacing steps being performed substantially simultaneously with the observation of each pair of spaces by the operator.

2. The method of setting the carriage of a typewriter having a back spacer so that a line of type when typed from the setting will be centered, which consists in bringing the carriage to a position corresponding to the center of the space within which the line is to be typed, and depressing the back spacing key for every alternate space in the line of type, each depression being performed simultaneously with the observation of every alternate space by the operator.

3. In a typewriter having a movable carriage, means for moving the carriage in a direction opposite to that which it is moved when characters are typed in succession, and a depressible key adapted to operate said means at an average rate of one-half space for each depression of the key.

4. In a typewriter having a carriage, means for setting the carriage so that a line of type when typed from the setting will be centered, comprising an operating key, said key when operated, being arranged to back space said carriage at the average rate of one-half space for each operation of the key.

5. In a typewriter having a carriage, means for setting the carriage so that a line of type when typed from the setting will be centered, comprising means for bringing the carriage to a central position, and manual means operated for each space in the line for back spacing the carriage from that position at the rate of one space for each pair of spaces in the line to be typed.

6. In a typewriter having a back spacer, a depressible key, and means whereby alternate depressions of said key operate the back spacer.

7. In a typewriter having a carriage and a back spacer, means for centering said carriage, a depressible key, and means whereby alternate depressions of said key operate the back spacer.

8. In a typewriter having a back spacer key, a tiltable member for operating the back spacer key and a depressible key for tilting said member.

9. In a typewriter having a back spacer key, a tiltable member arranged to operate said key when tilted in one direction, and a depressible key for tilting said member alternately in opposite directions.

10. In a typewriter having a back spacer key, a pivoted hook carried by said key, and a tiltable member arranged to engage said hook and operate the back spacer key.

11. In a typewriter having a back spacer key, a pivoted hook carried by the key, a tiltable member arranged to engage said hook and depress the back spacer key, and means for rotating said hook when the back spacing is effected, to disengage it from the tiltable member.

12. In a typewriter having a back spacer key, a pivoted hook carried by the key, a tiltable member arranged to engage said hook and depress the back spacer key upon tilting in one direction, a depressible key for alternately tilting said member in opposite directions, and means for rotating the hook when the back spacing is effected, to disengage it from the tiltable member.

13. In a typewriter having a carriage and a back spacer, a depressible key, means whereby alternate depressions of said key operate the back spacer, means for centering said carriage, and means operated by the movement of the carriage to center position for controlling the effect of the next depression of the key to operate the back spacer.

14. In a typewriter having a back spacer key, a tiltable member arranged to operate said key when tilted in one direction, a depressible key for tilting said member alternately in opposite directions, and means for independently tilting said member.

15. In a typewriter having a carriage and back spacer key, a tiltable member arranged to operate said key when tilted in one direction, a depressible key for tilting said member alternately in opposite directions, means for centering said carriage, and means operated by the movement of the carriage to center position for controlling the effect of the next depression of the key to operate the back spacer.

16. In a typewriter having a back spacer, a depressible key, means whereby alternate depressions of said key operate the back spacer, and means for causing substantially the same pressure to be exerted for each depression of the key.

17. In a typewriter having a back spacer key, a tiltable member arranged to operate said key when tilted in one direction, a depressible key, a pivoted link carried at the lower extremity of said key and arranged to operate the tiltable member alternately in opposite directions and a pair of flexible

members tending to maintain said link in its central position.

18. In a typewriter having a back spacer key, a depressible key, and means whereby alternate depressions of said key operate the back spacer key comprising a pivoted link carried by said depressible key and a pair of flexible members tending to maintain said link in its central position, said flexible members being of unequal stiffness.

In witness whereof, I have hereunto set my hand this 21st day of December, 1920.

CARL F. COOK.