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TYPEWRITER LINE STOP

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Fig. 1

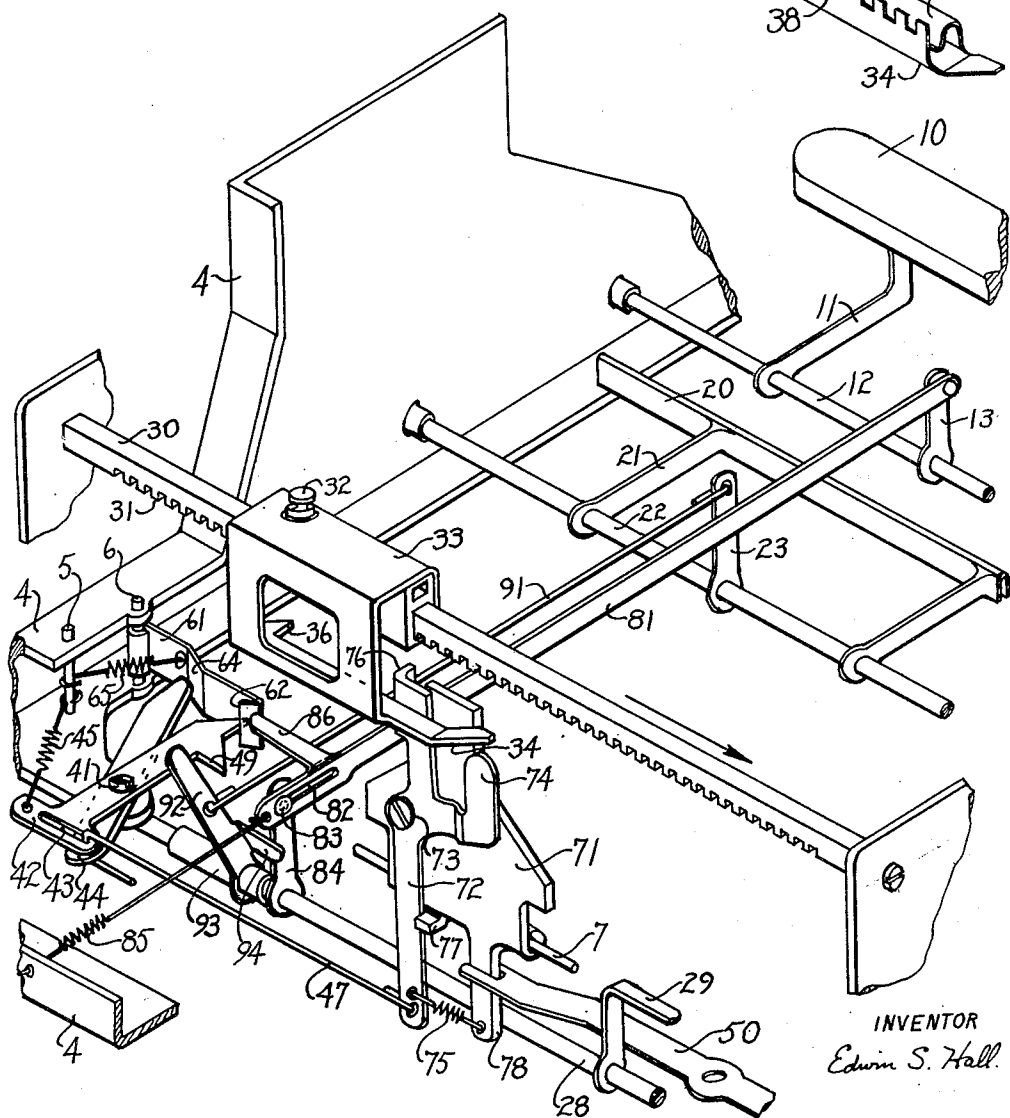
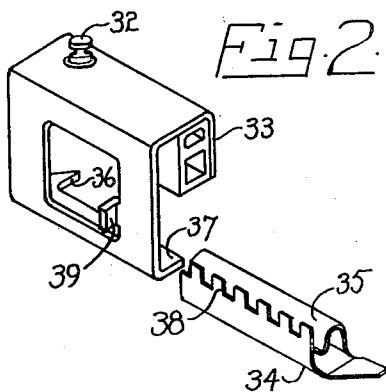


Fig. 2



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TYPEWRITER LINE STOP

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This invention relates to typewriter line stops. Line stop mechanisms in common use provide means whereby the operator may set the stop for the right-hand margin at a desired point, so that as the writing approaches the right-hand margin, an alarm bell rings, and a few spaces farther on, the writing mechanism automatically locks, so that further writing is prevented. If the locking of the writing mechanism takes place in the middle of a word, as it usually does, the operator must depress the "margin release" key, to unlock the writing mechanism, so as to complete the word or finish the syllable preparatory to using the hyphen.

This proceeding distracts the attention of the operator from the copy in a time-consuming and exasperating way. As a consequence, most accomplished typists prefer not to use the right-hand margin stop at all, depending on an occasional glance or their sense of line length to keep the right-hand margin under control.

The principal object of this invention is to provide an automatic right-hand margin control for a typewriter which will automatically terminate the lines of writing to produce a right-hand margin of acceptable appearance, without requiring the operator to assume any responsibility therefor.

Another object is to provide a line stop mechanism for a typewriter, which will lock the writing mechanism after a word has been ended when approaching the right-hand margin.

Another object is to provide means controlled by the space bar mechanism for determining the point of operation of the mechanism which locks the universal bar to lock the writing action.

Another object is to provide improved line stop mechanism while permitting all the usual features of customary line stops to be retained, including the alarm bell and final writing action lock, together with the margin release action now in common use.

Another object is to provide means for locking the writing mechanism automatically, activated either by the operation of the space bar, or by the engagement of the final margin stop brought about by the further travel of the carriage.

Another object is to provide means for conveniently adjusting the range of operation of the two aforesaid locking means, relative to the carriage and relative to each other.

Another object is to provide means associated with the usual "margin release" key, for releasing the writing mechanism after it has been

locked, to permit further writing on the same line.

Another object is to provide an improved line stop mechanism with little or no increase in the production cost of the typewriter.

These and other objects of the invention may be attained with any make of typewriter, by suitable modifications. The changes necessary will vary more or less in detail, according to the construction and arrangement of the parts in different machines. In some typewriters, for example, the line stop mechanism locks the writing action by locking the keys, while in others, the type bars are locked directly by the line stop mechanism to prevent further writing, requiring a somewhat different arrangement of the invention.

The mechanism illustrated in the drawing is that which is adapted to the Smith-Corona, and will be readily understood in connection therewith. In this particular machine, the final line stop mechanism acts thru the universal bar to lock the writing keys, thereby locking the action of the type bars.

In the drawing, Fig. 1 is an isometric view of a portion of the typewriter mechanism, looking from behind and above the machine.

Fig. 2 is an isometric view of an alternative construction of the margin stop of Fig. 1.

Briefly described, the invention consists in the provision of means such as a cam associated with the right-hand margin stop, which cam coacts with the writing lock mechanism to permit engagement thereof when approaching the end of the line, while at the same time, engagement of the writing lock mechanism is prevented by control means until the latter have been released either by the operation of the space bar at the end of a word, or by the final stop action in the usual manner.

In more detail, referring to the drawing, the space bar 10 is carried by arms 11 attached to shaft 12 pivoted in bearings in frame 4. Arm 13 of shaft 12 is connected to link 81 whose other end has a slot 82 engaging pin 83 on arm 84 which is attached to shaft 28 which may turn in bearings (not shown) in frame 4 and which may have an arm 29 by which the carriage escapement mechanism (not shown) is activated. Return spring 85 connects link 81 to frame 4.

Universal bar 20 is depressed by the operation of any one of the writing keys (not shown) of the typewriter, and is carried by arms 21 attached to shaft 22 pivoted in bearings in frame 4. Arm 23 of shaft 22 is connected by link 91

to arm 92 on sleeve 93 which is free to turn on shaft 28. Cross arm 94 of arm 92 engages arm 84, so that when arm 92 is pulled forward by link 91, shaft 28 may be oscillated thru the interaction of arms 94 and 84.

Rack 30 having teeth 31 is mounted on the carriage and carries the margin stops. The right-hand margin stop 33 is adjustable in the usual way by knob 32 and can be set at any point along rack 30 to provide the desired right-hand margin. Stop 33 is provided with a cam track 34 and a positive final stop 36.

Cam 34 may be made adjustable relative to final stop 36, as shown in Fig. 2, in which cam 34 is a separate piece from the main body of margin stop 33. This separate cam 34 may be slipped under lip 37, the lug 39 engaging one of the teeth 38, and the cam being held in the desired position by the spring portion 35 which is to bear on the upper surface of lip 37.

The usual bell trip may be provided on the margin stop 33, but has been omitted from the drawing for the sake of clearness. Actually, when my improved line stop is used, both the bell trip and the bell may be dispensed with, since an alarm bell is no longer either necessary or desirable.

Carriage stop member 71 is pivoted on hinge pin 7 which is fixed to frame 4; this portion of frame 4 was omitted from the drawing for the sake of clearness. Stop member 71 carries line stop lever 72 pivoted on screw 73, and having arm 74 for engagement with cam 34, and surface 76 for engagement with final stop 36. Lever 72 is normally held against stop 77 on member 71 by spring 75 attached to leg 78 on member 71. Leg 78 may also be connected with the margin release lever 50.

The lower end of lever 72 is connected by link 47 to levers 42 and 44, both of which are pivoted on screw 41 on frame 4. Spring 45 connects lever 42 thru pin 5 to frame 4. The end of link 47 engages a small bored hole in lever 44, so that lever 44 moves with link 47 at all times, but link 47 engages a slot 43 in lever 42, so that its action on lever 42 is permissive rather than mandatory.

Lever 42 is the key lock lever, and is formed with hook 49 to engage arm 92 to lock the key action to prevent writing, but is normally held out of locking position by catch 62 of lever 61. Lever 61 is pivoted on pin 6 in frame 4, and is held in operative position by spring 65 attached thru pin 5 to frame 4.

Lever 44 may coact with cam surface 64 of lever 61, to release catch 62. Catch 62 may also be released by the forward motion of link 81 thru its arm 86 which bears against lever 61.

During the writing operation, the carriage, with parts 30-39 inclusive, moves in the direction indicated by the arrow. When cam 34 engages arm 74, lever 72 is turned a little clockwise (as viewed in the drawing), and is maintained in that position as the flat portion of cam 34 rides along on arm 74. Link 47 is moved to the left (as seen in the drawing). Lever 44 moves with it, but not enough to engage cam surface 64 on lever 61. Lever 42 may not move at all, being held by catch 62, the end of link 47 sliding in slot 43.

If now a word be completed, and the space bar 10 operated, link 81 is pulled forward, and thru arm 86, pulls lever 61 forward also, so that catch 62 releases lever 42, and spring 45 acts at once to engage hook 49 with arm 92, thereby locking the action of arm 92 and preventing further operation of the writing action thru the interconnection of

link 91, arm 23, shaft 22, arms 21, universal bar 20, and the keys and typebars not shown.

If a long word is being written, so that the space bar 10 is not used while arm 74 is riding on cam 34, final stop 36 will engage surface 76 on the end of lever 72 and push it all the way over against the upper end of member 71. This action stops the carriage and at the same time pushes link 47 further over, turning lever 44 on its pivot 43 far enough to engage cam surface 64 on lever 61, releasing catch 62; then lever 42 is instantly pulled about its pivot by spring 45 so that hook 49 can engage arm 92, to lock the writing action. This prevents piling up letters in one spot, as usually provided for. To finish the word or syllable, the operator may then depress the "margin release" key.

The "margin release" key, thru means such as forked lever 50, may rock the carriage stop member 71 on its pin 7 so as to disengage either arm 74 from cam 34, or lock surface 76 from final stop 36. In this way the writing action may be unlocked at once, whether it has been locked by the final stop action or by the action of space bar 10 at the end of a word. Thus in any case, further letters or another word or two may be conveniently added to the line if desired, after the line has been automatically stopped.

To enable the operator to choose the desired range for the permissive action of cam 34 prior to the positive action of final stop 36, the adjustment illustrated in Fig. 2 may be provided. Cam 34 may be depressed against the spring action of spring 35 to permit longitudinal movement of cam 34 relative to stop 36, to engage lug 39 with another one of the teeth 38, so as to alter the number of letter spaces during which cam 34 may coact with arm 74 before final stop 36 engages lock surface 76.

Actual use of this invention has shown that where a very regular margin is desired for the sake of appearance, as in writing letters, a fairly close adjustment of cam 34 to stop 36 is advisable, a distance of three to five letter spaces giving very satisfactory results. With this adjustment, the operator may have to use the "margin release" key two or three times to a page, to finish a word or syllable, when the final stop action automatically terminates a line before the end of a word.

When cam 34 engages arm 74 a distance of eleven or twelve spaces before final stop 36 engages surface 76, the final stop engagement will almost never function, because only rarely will a word of more than twelve letters be started immediately before cam 34 takes hold. Such an adjustment of cam 34 relative to stop 36 is therefore desirable for maximum convenience and where a somewhat irregular margin is permissible or preferable to the use of hyphens, as in copying manuscript. This specification has been typed with the twelve space adjustment.

From the foregoing description it is clear that a line stop mechanism has been provided for a typewriter, which will lock the writing action after a word has been ended, when approaching the end of a line, and that this objective has been attained without losing any of the operating features of present line stop mechanisms. The alarm bell may still be used, if desired, and the final key lock may still operate to prevent piling up letters when the carriage is halted, and the margin release mechanism may be used in the usual way. The writing mechanism may be locked either by the operation of the space

bar when approaching the right-hand margin, or by the continued travel of the carriage alone. Maximum convenience may be had by adjusting for a relatively long range of permissive action, during which the space bar operation will lock the writing action, prior to the engagement of the final stop by continued travel of the carriage. Optimum appearance may be had by adjusting for a relatively short range of permissive action, prior to the engagement of the final stop. The operator may use whatever setting is most suitable for the class of work in hand at the moment, but in any case, need take no responsibility for the right-hand margin. Yet after the writing action has been automatically locked, the operator may use the "margin release" and add more writing to the line if so desired.

It is also evident that this improved line stop has been attained with little or no increase in production expense. The modifications necessary can be made mostly by changes in design of parts already in use, the additional parts required being in most cases fewer in number and less expensive than the bell and bell ringing mechanism which may be dispensed with. Once the changes in tooling have been made, the manufacturing cost per unit of typewriters with the improved line stop as described herein, will be little or no greater, and with some makes will be a little less, than the cost without this improvement.

Altho a specific embodiment of the invention has been particularly shown and described, it will be understood that modifications and changes in the construction and in the arrangement of the various parts, either for the Smith-Corona, or to adapt the invention to any other make of typewriter, may be made without departing from the spirit or scope of the invention, as expressed in the following claims.

I claim:

1. In a typewriter having keys and a space bar mechanism, a carriage, means activated by the movement of the carriage for locking the keys when approaching the end of a line of writing, means for holding the said key locking means out of locking position, means operable by said space bar mechanism to release said holding means, and means operable by the movement of the carriage to release said holding means.

2. In a typewriter having keys and a space bar mechanism, a carriage, means activated by the movement of the carriage for locking the keys when approaching the end of a line of writing, means for holding the said key locking means out of locking position, means operable by said space bar mechanism to release said holding means, means operable by the movement of the carriage to release said holding means, and margin release mechanism whereby said locking means may be disengaged.

3. In a typewriter having type means for writing and a space bar mechanism; means activated by said space bar mechanism for automatically locking the action of said type means after a word has been ended when approaching the end of a line of writing, and means for locking the action of said type means at a predetermined point at the end of a line of writing.

4. In a typewriter having type means for writing and a space bar mechanism; means activated by said space bar mechanism for automatically locking the action of said type means after a word has been ended when approaching the end

of a line of writing, means for locking the action of said type means at a predetermined point at the end of a line of writing, and means for adjusting both the aforesaid locking means.

5. In a typewriter having type means for writing and a space bar mechanism; means activated by said space bar mechanism for automatically locking the action of said type means after a word has been ended when approaching the end of a line of writing, means for locking the action of said type means at a predetermined point at the end of a line of writing, and means for unlocking the action of said type means to permit further writing after the line has been automatically stopped by either of the aforesaid locking means.

6. In a typewriter having type means for writing and a space bar mechanism; means activated by said space bar mechanism for automatically locking the action of said type means after a word has been ended when approaching the end of a line of writing, means for locking the action of said type means at a predetermined point at the end of a line of writing, means for adjusting both the aforesaid locking means, and means for unlocking the action of said type means to permit further writing after the line has been automatically stopped by either of the aforesaid locking means.

7. In a typewriter having type means for writing, a space bar mechanism, and a carriage; means activated by said space bar mechanism for locking the action of said type means at the end of a word when approaching the end of a line of writing, and means activated by the travel of the carriage for locking the action of said type means at a predetermined point at the end of a line of writing.

8. In a typewriter having type means for writing, a space bar mechanism, and a carriage; means activated by said space bar mechanism for locking the action of said type means at the end of a word when approaching the end of a line of writing, means activated by the travel of the carriage for locking the action of said type means at a predetermined point at the end of a line of writing, and means for adjusting the two aforesaid locking means relative to the carriage and to each other.

9. In a typewriter having type means for writing, a space bar mechanism, and a carriage; means activated by said space bar mechanism for locking the action of said type means at the end of a word when approaching the end of a line of writing, means activated by the travel of the carriage for locking the action of said type means at a predetermined point at the end of a line of writing, and means for unlocking the action of said type means to permit further writing after the line has been automatically stopped by either of the aforesaid locking means.

10. In a typewriter having type means for writing, a space bar mechanism, and a carriage; means for locking the action of said type means when approaching the end of a line of writing, said locking means comprising both permissive means and positive means, and means for adjusting the relative position of said permissive and positive means to vary the range of operation of said permissive means.

11. In a typewriter, in combination, space key activated means for automatically terminating a line of writing after a word has been ended when approaching the right-hand margin, and

means for automatically terminating a line of writing at a predetermined point at the right-hand margin.

12. In a typewriter, in combination, space key activated means for automatically terminating a line of writing after a word has been ended when approaching the right-hand margin, means for automatically terminating a line of writing at a predetermined point at the right-hand margin, and means for adjusting each of the aforesaid means individually and relative to each other.

13. In a typewriter, in combination, space key activated means for automatically terminating a line of writing after a word has been ended when approaching the right-hand margin, means for automatically terminating a line of writing at a predetermined point at the right-hand margin, and manually operable means for permitting further writing after the line has been automatically terminated by either of the aforesaid means.

14. In a typewriter having a space bar and a carriage, means for automatically terminating a line of writing, said means being activated by the first operation of said space bar within a predetermined and adjustable distance from the desired right-hand margin, said means being also activated by the travel of said carriage at a predetermined and adjustable point thereof, and means for permitting further writing after the line has been automatically terminated.

15. In a typewriter having a carriage, a space bar, and type means for writing; a spring actuated lock for the writing action of said type means, mechanism normally holding said spring actuated lock out of locking engagement, means operable by the travel of said carriage for disabling said holding mechanism when the carriage is within a predetermined and adjustable distance from the desired right-hand margin,

a catch for preventing engagement of said lock even when said holding mechanism is disabled, means operable by said space bar for releasing said catch, and means operable by further travel of said carriage for releasing said catch.

16. In a typewriter having a carriage, a space bar, type means for writing, and a margin release key; a spring actuated lock for the writing action of said type means, mechanism normally holding said spring actuated lock out of locking engagement, means operable by the travel of said carriage for disabling said holding mechanism when the carriage is within a predetermined and adjustable distance from the desired right-hand margin, a catch for preventing engagement of said lock even when said holding mechanism is disabled, means operable by said space bar for releasing said catch to permit engagement of said spring actuated lock, adjustable means associated with said carriage and operable by further travel of said carriage for releasing said catch to permit engagement of said spring actuated lock, and means operable by said margin release key for disengaging said lock to permit further writing on the same line.

17. In a typewriter having a carriage, a space key, key operated type means, and mechanism comprising a universal bar operable by said type means for controlling the travel of said carriage; means operable by the travel of said carriage for locking the action of said universal bar mechanism to prevent the operation of said type means, means for holding said locking means out of locking engagement with said universal bar mechanism, and means operable by said space key for releasing said holding means to permit the engagement of said locking means with said universal bar mechanism to lock the writing action of said type means.

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