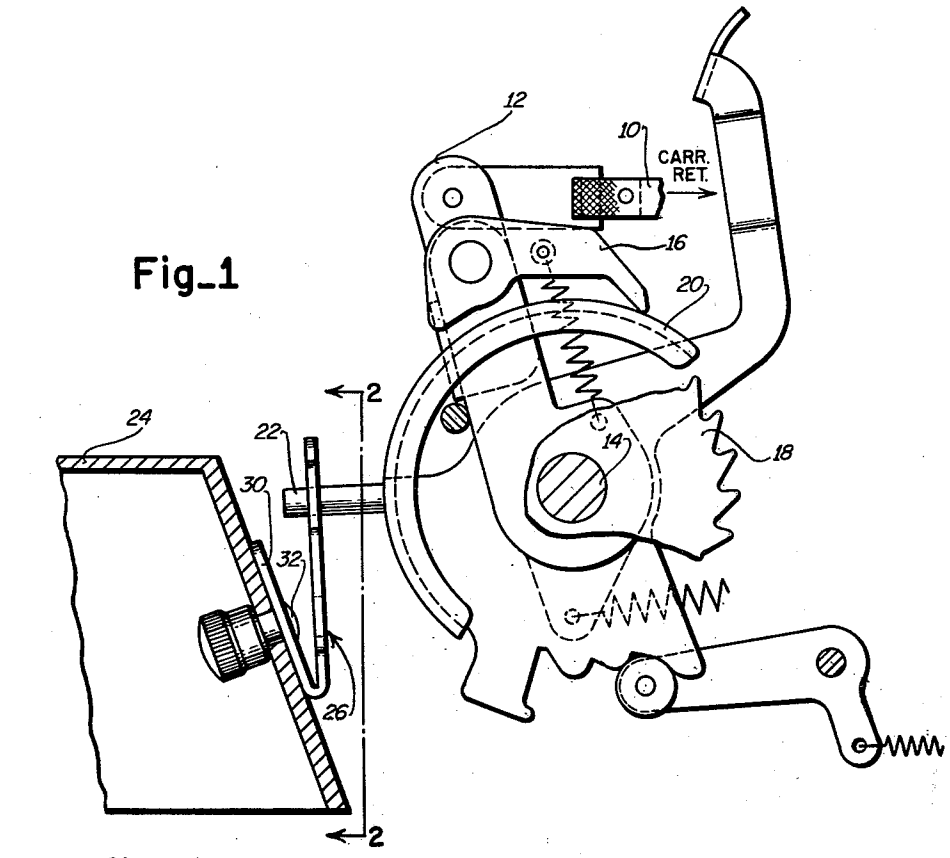
July 27, 1965 H. L. LAMBERT 3,197,012

AUTOMATIC CARRIAGE CONTROLLED LINE SPACE SETTING DEVICE FOR TYPEWRITERS

Filed June 28, 1963

Fig_1



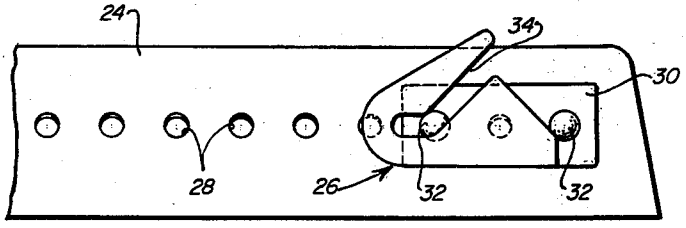


Fig_2

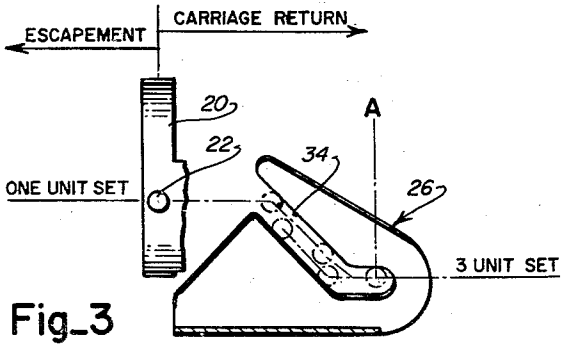


Fig_3

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AUTOMATIC CARRIAGE CONTROLLED LINE SPACE SETTING DEVICE FOR TYPEWRITERS

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3 Claims. (Cl. 197—114)

This invention relates to an automatic carriage controlled line space setting device for typewriters or like machines; more particularly it relates to a line space control which is conditionable upon return of and by the carriage to the beginning of a line to effect multiple spacing upon subsequent carriage return actuation thereby to permit rapid interform spacing.

The automatic operation of typewriters to reproduce form letters under control of records has been in extensive use for many years. Speed of reproduction of these form letters is appreciably slowed due to the necessity for the form writing typewriter to accomplish a great number of successive single line space operations between forms before the typing of the next form letter may begin. The loss of time is also experienced during production of the record which controls the form writing typewriter in that an operator must record codes in the record to effect a requisite number of single line space operations of the form writing typewriter to accomplish inter form spacing.

Line spacing is effected in the record producing and form writing machines in response to a carriage return action and occurs prior to movement of the carriage to the beginning of a new line; the number of line spaces effected being determined by the line space setting which may be set to 1, 2 or 3 spaces. The line space setting is normally set to effect single line spacing. At the end of a form letter produced simultaneously with a record in a code producing typewriter, the operator must depress the carriage return key a successive number of times equivalent to the number of line spaces required between forms and thereby perforate or record in a record a series of carriage return codes which are operative to initiate a series of single line spacing operations in the form writing machine.

In accordance with the invention there is provided on the record producing and form writing machines, means operative upon return of the carriage to a new line to move the line space setting to three thereby to effect three units of spacing in response to subsequently initiated carriage returns. If typing is resumed on the new line presented after the initial carriage return, the line space setting mechanism is automatically returned to a setting of one after a predetermined number of typing strokes, or is automatically returned to a setting of one in response to tabulating movement. If double spacing after a line of type is required an operator may initiate carriage return at the end of a line of type to return the carriage and effect a single line space, and initiate a tabulating movement to return the line space setting to one so that a carriage return initiated immediately thereafter will effect another single line space rather than three. In view of the above and as will be more specifically explained below, the invention reduces the number of times a typewriter, record producing or form writing, must be actuated to effect line spacing between forms.

Accordingly, an object of the invention is to provide a time saving attachment for typewriters to expedite line spacing between typewritten forms.

Another object of the invention is to provide apparatus operative in response to the movement of a typewriter carriage to a new line to automatically change the line space setting mechanism to effect multiple line spaces in response to carriage return actions initiated immediately thereafter.

Another object of the invention is in the provision of line space setting mechanism settable to a multiple line space position in response to carriage return movement and resettable to a single line space position in response to succeeding letter space-tabulating movements.

Still another object of the invention is in the provision of camming means secured to a typewriter frame and operable to engage and drive a cam follower associated with the line space setting mechanism on the carriage to effect a multiple line space setting upon movement of the carriage to a new printing line and to effect a single line space setting in response to predetermined letter space tabulating movements from the left hand margin set point.

Other objects and many of the attendant advantages of this invention will be readily appreciated as the same becomes better understood by reference to the following detailed description when considered in connection with the accompanying drawings in which like reference numerals designate like parts throughout the figures thereof and wherein:

FIGURE 1 is an elevational view showing the carriage return operated line space mechanism of a typewriter and elements embodying applicant's invention associated therewith;

FIGURE 2 is a partial elevational view of the top cover of the typewriter taken along lines 2—2 of FIGURE 1 showing a camming element mounted thereon which is operable on a follower associated with the line space mechanism; and

FIGURE 3 is a partial elevational view showing the action of the cam on the follower stud in response to carriage movement.

Referring now to the drawings wherein like reference characters designate like or corresponding parts throughout the several views thereof there is shown in FIGURE 1 well known elements of the Royal Electric Office Typewriter carriage construction which include a carriage return drawband **10** connected at one end to a lever **12** pivoted on the axis **14** of the platen at the left end of the carriage which is adapted to oscillate a pawl **16** pivotally mounted thereon. The pawl **16** is operable to engage the line space ratchet **18** on the platen so as to automatically effect, prior to carriage return movement, single, double or triple line spacing, each time a carriage return function is initiated, depending on the set position of a shield **20** pivotally mounted on the axis of the platen which determines the time of engagement of the pawl **16** during its operative stroke with the ratchet **20**. The other end of the drawband **10** is secured to a drawband drum (not shown) which is operatively coupled to the typewriter motor powered shaft upon initiation of a carriage return operation in a well known manner. The position of the shield illustrated in FIGURE 1 is the single space set position.

In accordance with the invention the shield **20** is provided with a cam follower stud **22** which extends radially therefrom and toward the front of the machine when the shield is positioned to effect single line spacing.

Also in accordance with the invention, the frame mounted top cover **24** of the machine is adapted to adjustably mount a camming element, generally designated by reference numeral **26**, at laterally spaced positions corresponding to selected left hand margin settings. To this end mounting holes **28** are provided on the rear face of the top cover as viewed in FIGURE 2. The camming element **26** is V-shaped as viewed endwise in FIGURE 1 with one side **30** of the V secured to selected mounting holes **28** as by screws **32**. The other side as viewed from the front

of the machine in FIGURE 3 is formed with an open slot **34** extending leftwardly and then upwardly and to the left at a predetermined angle to the horizontal. The camming slot **34** is positioned in the path of the follower stud **22** on the line space shield whereby upon return movement of the carriage the follower stud will be cammed downwardly by the upper edge of the slot and the shield will rotate counterclockwise as viewed in FIGURE 1 to the three space position which permits the pawl to engage the ratchet earlier in its stroke.

The position A of the follower stud in FIGURE 3, i.e. with the follower stud **22** all the way in the slot depicts the carriage at the left hand margin set position hereinafter referred to as the left limit of carriage movement. If a carriage return operation is initiated at this position of the carriage the platen will rotate 3 line space increments. Hence the return of the carriage to a new line automatically conditions the machine to effect 3 line space increments in response to carriage return actions initiated at the beginning of a new line.

Where the new line and lines subsequent thereto are to receive typing it is necessary to effect a single line spacing between typed lines. Hence if typing is to resume, the setting must be returned to a single line space setting. With reference to FIGURE 3 it is apparent that if the carriage moves in letter space (escapement) or tab direction, the stud **22** in moving out of the slot **34** will be cammed upwardly by the lower edge of the slot during movement of the carriage through three letter spaces. Hence after three letter spaces the shield will resume its single space position whereby a carriage return at the end of the typed line will effect a single line space only, and again condition the shield to permit three units of spacing.

Where double spacing between lines is required an operator will be required to initiate a tab operation immediately after a carriage return and then initiate another carriage return.

As is evident the camming plate may be positioned in an inoperative position beyond the left margin set position or removed wherever operation as above described is not desired.

It should be understood that the foregoing disclosure relates to only a preferred embodiment of the invention and that it is intended to cover all changes and modifications of the example of the invention herein chosen for the purposes of the disclosure which do not constitute departures from the spirit and scope of the invention.

The invention claimed is:

1. Typewriter apparatus having a frame,
a carriage mounted for movement relative to said frame between left and right limits,
a platen rotatably mounted on said carriage,
a ratchet secured to said platen,
pawl means operable through a predetermined stroke upon initiation of a carriage return movement adapted to engage and rotate said ratchet,
adjustable means normally enabling engagement of said pawl means with said ratchet over a portion only of its operative stroke whereby a single incremental movement is effected,
and frame mounted means positioned in the path of said carriage operative on said adjustable means upon movement of the carriage to its left limit whereby said pawl means is enabled to engage said ratchet over a greater portion of its operative stroke whereby multiple incremental movement is effected in response to carriage return operations initiated while said carriage is at its left limit position.

2. Typewriter apparatus having a frame,
a carriage mounted for movement relative to said frame between right and left limits,
a platen rotatably mounted on said carriage,
a ratchet secured to said platen,
pawl means operable through a predetermined stroke upon initiation of carriage return movement adapted to engage and rotate said ratchet,
settable means for normally inhibiting engagement of said pawl over a major portion of its operative stroke thereby to permit a single incremental movement of said ratchet by said pawl,
a cam follower and camming means mounted on said settable means and said frame respectively, said camming means being positioned to operate said follower upon movement of said carriage to said left limit and upon movement of said carriage from said left limit, whereby said settable means is conditioned to permit engagement of said pawl with said ratchet over the major portion of its stroke thereby to effect multiple incremental movement of said ratchet upon subsequent carriage return actuation while said carriage is at its left limit and whereby said settable means is reset to its normal position upon subsequent movement of said carriage toward its right limit.

3. Typewriter apparatus having a frame,
a carriage mounted for movement relative to said frame and rotatably supporting a platen,
a ratchet connected to said platen,
a pawl carried on said carriage and operable upon initiation of carriage return movement to engage said ratchet,
a positionable shield for normally controlling the time of engagement of said pawl with said ratchet thereby to effect a single incremental rotation of said ratchet,
a cam follower stud associated with said shield,
and camming means supported by said frame and positioned to engage said cam follower stud during the terminal portion of carriage return movement whereby said shield is positioned to permit earlier engagement of said pawl with said ratchet, thereby to effect multiple incremental rotation of said platen in response to immediately following carriage return actuations.

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