Jan. 20, 1953 B. STERNFELD 2,626,036

TYPEWRITER LINE CONTROL ATTACHMENT

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Fig. 1.

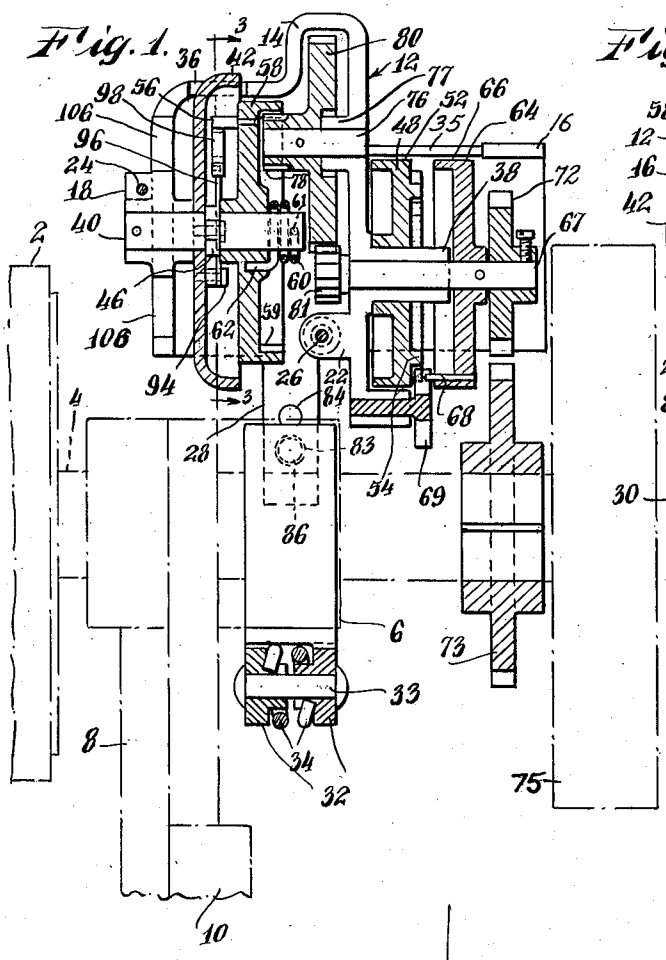


Fig. 3.

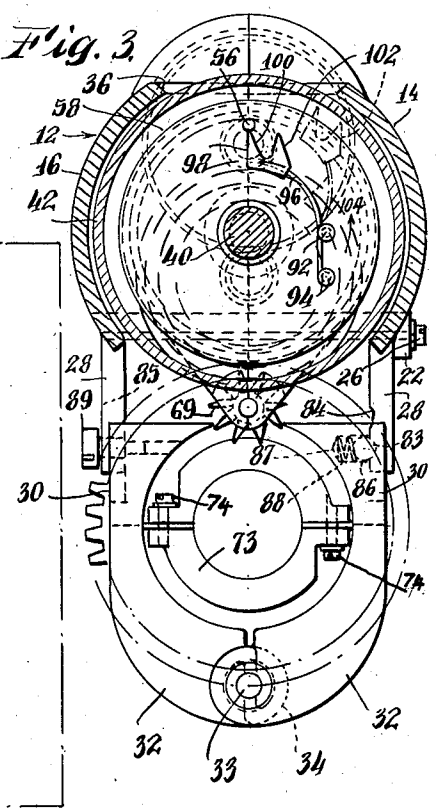
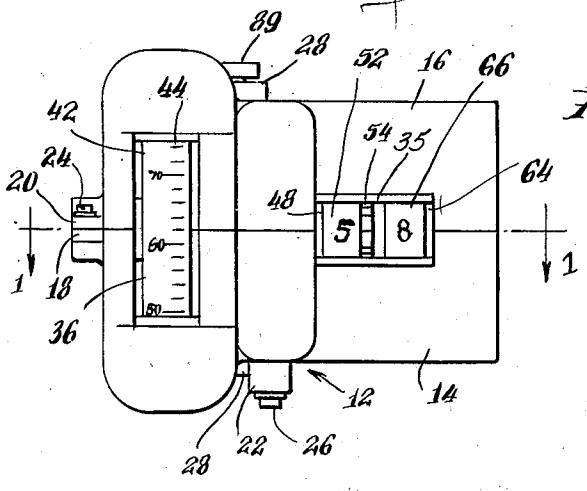


Fig. 2.



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TYPEWRITER LINE CONTROL ATTACHMENT

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2 Claims. (Cl. 197—189)

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The present invention relates to means adapted to be applied to typewriters, adding machines and the like, so as to inform the operator when a portion of the sheet normally obstructed from view is about to reach a predetermined position.

While not limited thereto, the invention has been illustrated as embodied in a typewriter attachment wherein it is particularly useful in informing the typist that the lower edge of a sheet is approaching a horizontal line of typing. Thus, the invention provides means for warning the operator not to continue typing too close to the bottom of a sheet. When the invention is used in a typewriter to indicate that the lower end of a sheet is approaching, a signal will be given when the lower end of the sheet reaches a predetermined distance from the horizontal line being typed.

Another object of the present invention is the provision of a device of the character described which is provided with a line counter that informs the operator always which line of the page is being typed.

A further object of the present invention is the provision of a device of the character described which will give a preliminary signal indicating that the end of the page is approaching, and which will also later give a final signal indicating that the typing should be stopped.

Yet a still further object of the present invention is the provision of a device of the character described which can be installed easily and quickly on existing typewriters and the like without requiring any structural changes on the typewriter, and which by a simple manipulation can be disengaged from, or brought into operating engagement with moving parts of a typewriter, so that a typist can operate the typewriter in the usual manner with or without using the device, but does not have to remove it from the typewriter if he does not wish to use the device.

Still another object of the present invention is the provision of a device of the character described which is simple in construction, light in weight, small in size, which consists of only a few inexpensive parts that can be assembled easily and at low cost, but which is also sturdy, durable, and well adapted for the purpose for which it is intended.

With the foregoing and other objects in view which will appear as the description proceeds, the invention consists of certain novel details of construction and combination of parts hereinafter more fully described and pointed out in the claims, it being understood that changes may be made in the construction and arrangement of

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parts without departing from the spirit of the invention as claimed.

In the accompanying drawing a preferred form of the invention has been shown.

In said drawing:

Figure 1 is a vertical sectional view on the line 1—1 of Fig. 2 of a preferred embodiment of the invention;

Figure 2 is a top plan view of the same; and,

Figure 3 is a cross-sectional view on the line 3—3 of Fig. 1.

Similar numerals refer to similar parts throughout the several views.

This typewriter line control device can be attached to any typewriter or the like without removing therefrom the paper feed roll hand wheel. In Fig. 1 there are indicated in dash-and-dotted lines those parts of a typewriter which are adjacent or near my new line control attachment. These parts are: The paper feed roll or platen 2, the shaft 4 which carries the platen 2, one of the bearings 6 in which the shaft 4 rotates, a member 8 which supports the bearing 6, and a portion of the usual slidable carriage 10 on which the member 8 is vertically slidable.

The mechanism of the line control device is contained in and attached to a small housing 12, which in the present instance consists of a pair of shells 14 and 16. The shells 14 and 16 are provided with lug portions 18, 20 and 22, through which are extended screws 24 and 26 for securing the shells 14 and 16 to each other. The lower portions of the shells 14 and 16 are provided with any suitable means for engaging the bearing 6 or any other suitable non-rotatable part of the typewriter in such a manner as to prevent a rotation of the housing 12. In the instance shown each shell 14 and 16 is provided with a downwardly extending leg portion 28 adapted for engaging grooves 30 at the outer sides of a clamping member which consists of a pair of jaws 32 pivotally connected to one another by a pin 33 and pressed around the bearing 6 by a spring 34.

The center portion of the upper wall section of the housing 12 preferably is flattened and provided with a small opening 35 as well as with a large opening 36. A bearing 38, which preferably is divided along its longitudinal center line and has each of its portions made as a unit with each shell 14 and 16 respectively, is extended into the right-hand portion of the housing 12. A stationary shaft 40 is extended into the left-hand portion of the housing 12.

A bell 42 is rotatable on the shaft 40, which extends through the center portion of the bell 42, and the periphery of the bell 42 extends partially through the opening 36. The outer side of the rim portion of the bell 42 is provided with a circumferential graduation 44 and with numerals (Fig. 2). A collar portion 46 is formed on the shaft 40 in such a manner as to allow a rotation of the bell 42 on the shaft 40 but to prevent it from sliding off the shaft 40. A wheel 48 is rotatable on the cylindrical outer surface of the bearing portion 38 of the housing 12, and has on its periphery 52 a row of numerals (Fig. 2). The wheel 48 also is provided with a circular row of gear teeth 54. Another wheel 58 is rotatable on the stationary shaft 40 and has an internal circular row of teeth 59. Any suitable resilient means, for instance a spring 60, engages the wheel 58 and the shaft 40 in such a manner as to turn back the wheel 58 to its original position after it has been rotated and released. A pin 56 is secured to, and laterally extended from the wheel 58.

The spring 60 in the instance shown is a coiled spring. One end of the spring 60, namely the end 61, extends into a hole in the shaft 40, while the other end 62 of the spring 60 extends into a hole in the wheel 58. A third wheel 64, whose periphery 66 is also provided with numerals (Fig. 2), is firmly secured to a shaft 67 which is rotatable in the bearing 38. The wheel 64 is provided with a laterally extending pin 68, which engages a pinion 69 that meshes with the gear teeth 54 on the wheel 48, so that the latter makes one tenth of the revolutions of the wheel 64. A pinion 72, which has ten teeth, is secured firmly to the shaft 67, and normally meshes with a gear wheel 73 on the shaft 4, so that the latter will transmit its rotation on the shaft 67. The number of teeth on the wheel 73 depends upon the number of single-spacing movements necessary for one full revolution of the shaft 4. The gear wheel 73 preferably is radially divided into two halves which are connected to one another by means of screws 74 (Fig. 3), so that the wheel 73 can be attached to the shaft 4 without removing therefrom the hand wheel 75 of the typewriter.

A small shaft 76 is rotatable in a bearing-shaped portion 77 of the housing 12. A gear wheel 78, which engages the teeth 59 of the wheel 58, is secured to one end of the shaft 76, and another gear wheel 80, which preferably is formed as a unit with the wheel 78, engages a pinion-shaped portion 81 at the end of the shaft 67.

By means of screws 92 and 94 (Fig. 3) or the like there is secured to the inner side of the bell 42 a resilient arm 96, which carries at one end a hammer member 98. The latter preferably is bifurcated and has two inclined sides 100 and 102.

The leg portions 28 can be slid up and down in the grooves 30, and one of the leg portions 28 is provided with notches 83 and 84, while the other leg portion 28 is provided with a vertical slot 85. A ball 86 laterally slidable in a bore 87 in one of the jaws 32 is pressed by a spring 88 toward the notches 83 and 84. A screw 89, screwed into the other jaw 32, extends through the slot 85.

The above described parts function in the manner described hereinafter as follows:

The paper feed roll or platen 2 is revolved in the usual manner by the so-called "spacing movements" carried out by actuating a lever or the like not shown. If the device is in the position shown in Figs. 1 and 2, in which position the ball 86 engages the notch 83, the wheel 73 is in spaced relation to the pinion 72, so that the typewriter can be operated without using my new and improved line control attachment. If the latter is depressed, so that the ball 86 engages the notch 84, the pinion 72 meshes with the gear wheel 73. In this position there rotates with the platen 2 the shaft 4 as well as the wheels 64, 72, 73 and 81. The wheel 48 will be rotated by the parts 54, 68 and 69 at a ratio of transmission of ten to one, which means that the wheel 48 carries out only one revolution when the wheel 64 carries out ten revolutions. Since both wheels 48 and 64 have each ten numbers on their respective peripheries, the wheel 48 will move only a distance of one number while the wheel 64 makes one full revolution.

On the letter-size typewriter paper, which is eleven inches long, there is space for sixty-six single-spaced lines. For turning the entire eleven inch sheet through the typewriter, from the first line of the sheet to the last line, there will be necessary sixty-six spacing movements. In the case of legal-size paper, which is fourteen inches long, eighty-four spacing movements are necessary for turning the entire sheet through the typewriter. During every ten spacing movements, the wheel 64 carries out one revolution, and the wheel 48 one tenth of a revolution. In the case of double-space typing, said numbers of spacing movements are one half of the above mentioned numbers. In order to prevent confusion, the following part of the description is made for single space typing only.

On the periphery 44 of the bell 42 there are at least as many graduation marks as spacing movements necessary for turning the longest sheet used through the typewriter, plus a sufficient number of graduation marks to allow for the spacing movements needed before the first line of the sheet reaches its position on the platen where it can be typed upon, and to allow for the spacing movements needed to turn the sheet out completely after the last line of the sheet has passed that position on the platen. One hundred graduation marks should serve this purpose well in the case of a typewriter; this would mean that one hundred teeth 59 would be required on the wheel 58. If one hundred gear teeth is not a standard size, then the size nearest to one hundred can be used, as for example ninety-six gear teeth 59. This would mean that the bell 42 would have ninety-six graduation marks. Every turn of the wheel 64 will turn one tooth on the wheel 58. On the periphery 66 of the wheel 64 and on the periphery 52 of the wheel 48 there are numerals from zero to nine inclusive equally distributed over each of the entire peripheries 52 and 66. These numerals are for single-spaced typing. In the case of double-spaced typing, the typist has to divide these numerals by two.

If, for example, the typist is about to type a letter-size sheet single-spaced, for which 66 single-space spacing movements are necessary for turning the entire sheet from its first line to its last line through the typewriter, and the sheet should have a bottom margin of the space for six lines, the typist turns the bell to the graduation 60 (66 less 6), as shown in the example of Fig. 2. Then the typist lifts up my line control attachment to the position of Figs. 1 and 3, so that the pinion 72 will be disengaged temporarily from the wheel 73, which causes

the shaft 67 and the wheels 48 and 64 to be turned by the spring 60 to a position in which zero appears in the opening 34 of the housing 12. The spring 60 is designed and arranged in such a manner that it—when released—will not move the various parts farther than to this zero position, or any suitable well-known stop (not shown) is provided on the device for limiting the return rotation of the gearing under the influence of the spring 60. Thereupon, the typist inserts the paper by turning the platen 2 until the sheet reaches the position in front of the platen, just before the first line of the sheet is in a position where it can be typed upon. Then the typist presses the attachment down, so that the pinion 72 engages the wheel 73; turns the platen 2 until, for instance, the numeral 7 appears on the wheel 64 in the opening 34. In this case there will be a margin of the space for six lines at the top of the paper. While typing, the wheel 64 makes one tenth of a revolution during each spacing movement, and the wheel 48 turns one number every time the wheel 64 moves from number "9" to "0," so that at each line the number of the line appears in the opening 34. During the spacing movements, the pin 56 on wheel 58 approaches slowly the bell hammer 98, moving in the direction indicated by the arrow 104 in Fig. 3. About at line 50, the pin 56 slides along the inclined side 102 of the hammer 98 and depresses the latter. When the pin 56 has passed the outer end of the side 102, the hammer 98 will be forced by the resilient arm 96 against the bell 42, giving a first signal which warns the typist that only a few more lines should be typed on the sheet. During the following spacing movements, the pin 56 slides along the side 100 of the hammer 98. In Fig. 3 the parts are shown in a position in which the pin 56 is just at the end of the side 100. During the next following spacing movement, the pin 56 will fully release the hammer 98, so that the latter will hit the bell 42, sounding a final signal which indicates that no more should be typed on the same sheet. The position of the parts 96 and 98 after the hammer 98 has been released from the pin 56 is shown in dash-and-dotted lines in Fig. 3.

The side wall of the housing 12 preferably is provided with large perforations 106, and the lower portion of the housing 12 is open, so that the sounding of the bell 42 can be heard clearly.

Since certain changes may be made in the above article and different embodiments of the invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawing shall be interpreted as illustrative and not in a limiting sense.

It is also to be understood that the following claims are intended to cover all of the generic and specific features of the invention herein described, and all statements of the scope of the invention which as a matter of language might be said to fall therebetween.

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

1. A typewriter line control attachment comprising a housing having side walls and a top wall which is provided with perforations and having an open bottom portion from which a pair of vertical legs are downwardly extended, a clamping member adapted for being clamped

to a non-rotatable part of the carriage of a typewriter and having a pair of vertical grooves in which said legs are slidable, a stationary shaft extending through one of said side walls into the housing, a cup-shaped bell within said housing being rotatable on said stationary shaft and having graduation marks at its rim portion which extends partially through one of the perforations in the top wall of said housing, a gear wheel being rotatable on said stationary shaft within said housing, resilient means interposed between said stationary shaft and said gear wheel being adapted for turning said gear wheel back to its original position after it has been turned around said shaft and released, a revolution counter being attached to said housing, a rotatable shaft within said housing being in driving engagement with said counter, a set of gears connecting said rotatable shaft to said gear wheel, a first pinion being secured to said rotatable shaft beyond said counter, a second pinion adapted for engaging said first pinion being secured to the roller shaft of the typewriter, a resilient arm being secured to the inner side of said cup-shaped bell and having a tendency to rest with its free end portion against the inner side of the rim portion of said bell, a hammer secured to the free end portion of said resilient arm having a pair of pointed portions which are directed toward the inner side of the rim portion of said bell, and a pin laterally extended from said gear wheel being adapted for engaging the pointed portions of said hammer.

2. A device of the character described comprising a clamp member adapted for being clamped to a non-rotatable part of the carriage of a typewriter, a housing having a perforated top and being slidably mounted on said clamp member, a stationary shaft being mounted within said housing, a cup-shaped bell provided with circumferential graduation marks being rotatable on said shaft and having a section of its rim portion extended through a perforation in the top of said housing, a gear wheel being on said shaft within said housing, a coiled spring having one of its ends secured to said gear wheel while its other end is secured to said shaft, revolution counting means being attached to said housing, gears connecting said counting means to said gear wheel, a first pinion driving said counting means being connected thereto, a second pinion adapted for engaging said first pinion being secured to the roller shaft of the typewriter, a hammer attached by resilient means to the inner side of said bell and normally resting against the inner rim side of the bell, and a pin extending from said gear wheel into said cup-shaped bell and being adapted for moving said hammer temporarily away from the rim portion of the bell when said gear wheel is rotated relative to said bell.

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