Dec. 26, 1950 C. Y. LEE ET AL 2,535,539

BOTTOM MARGIN CONTROL DEVICE FOR TYPEWRITERS

Filed Aug. 29, 1949 3 Sheets-Sheet 1

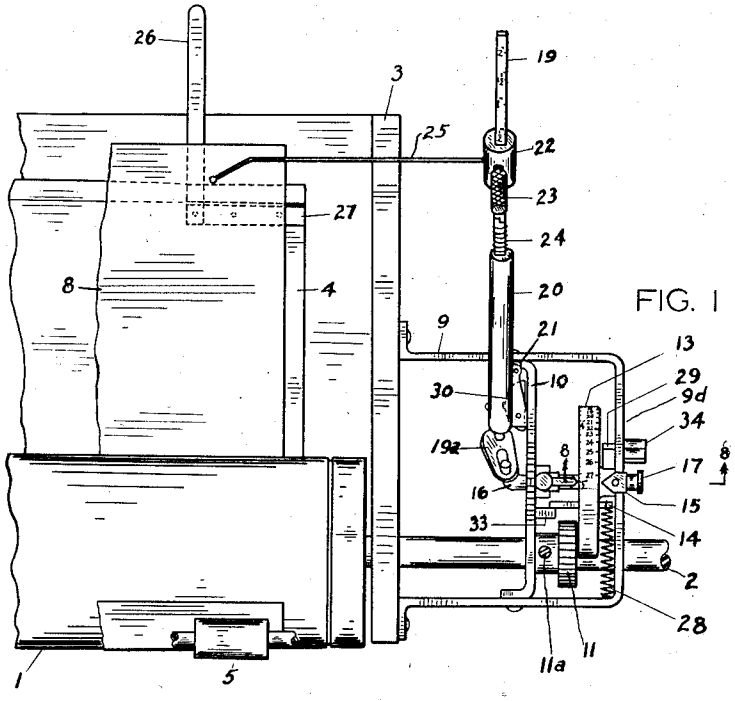


FIG. 1

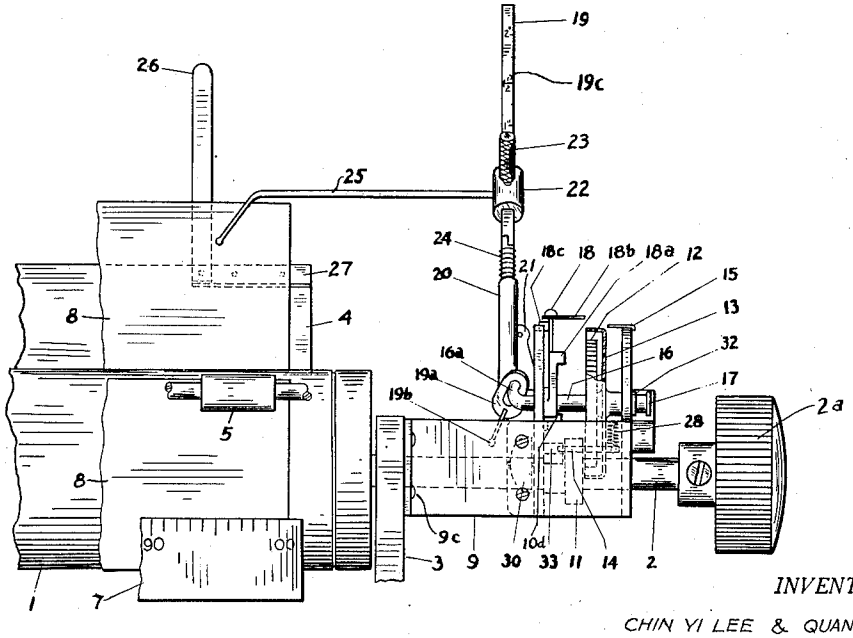


FIG. 2

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BOTTOM MARGIN CONTROL DEVICE FOR TYPEWRITERS

Filed Aug. 29, 1949 3 Sheets-Sheet 2

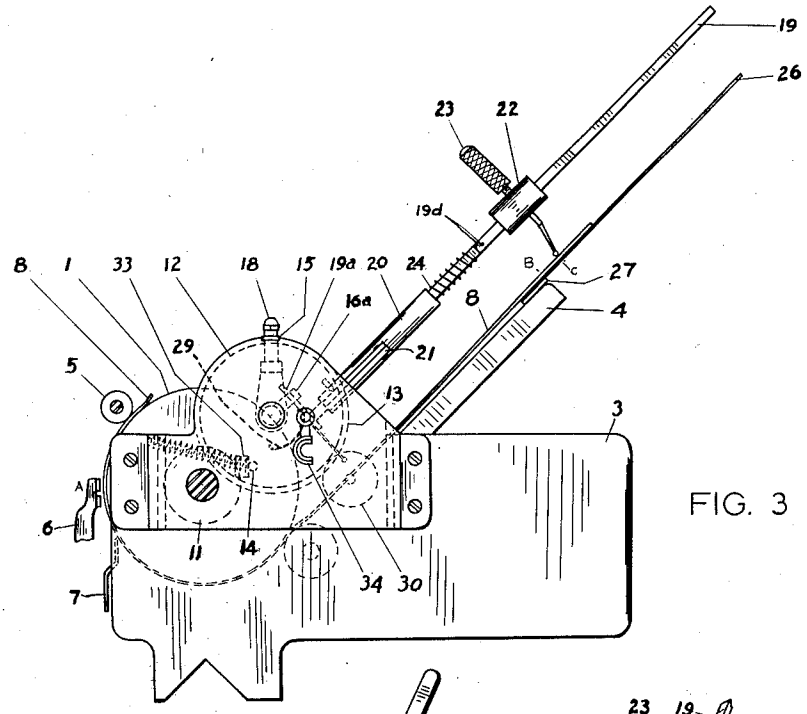


FIG. 3

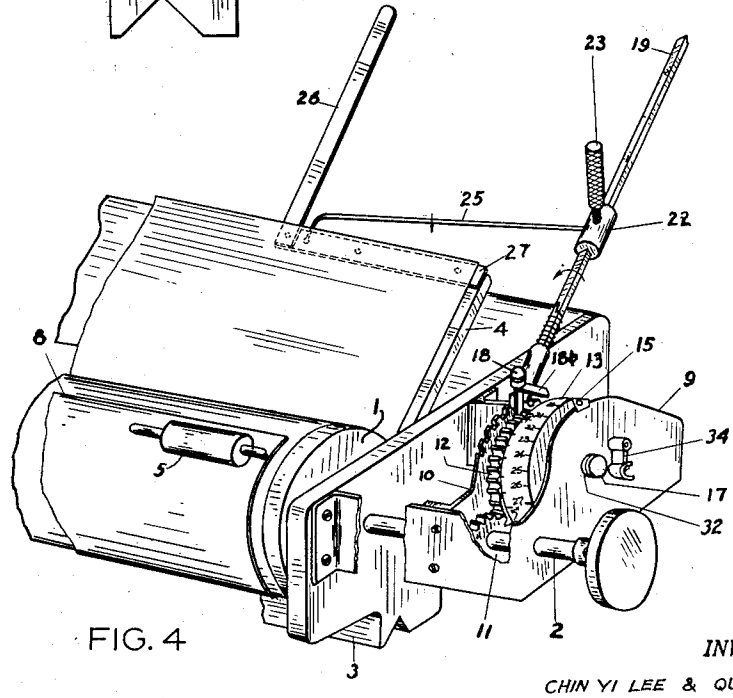


FIG. 4

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BOTTOM MARGIN CONTROL DEVICE FOR TYPEWRITERS

Filed Aug. 29, 1949 3 Sheets-Sheet 3

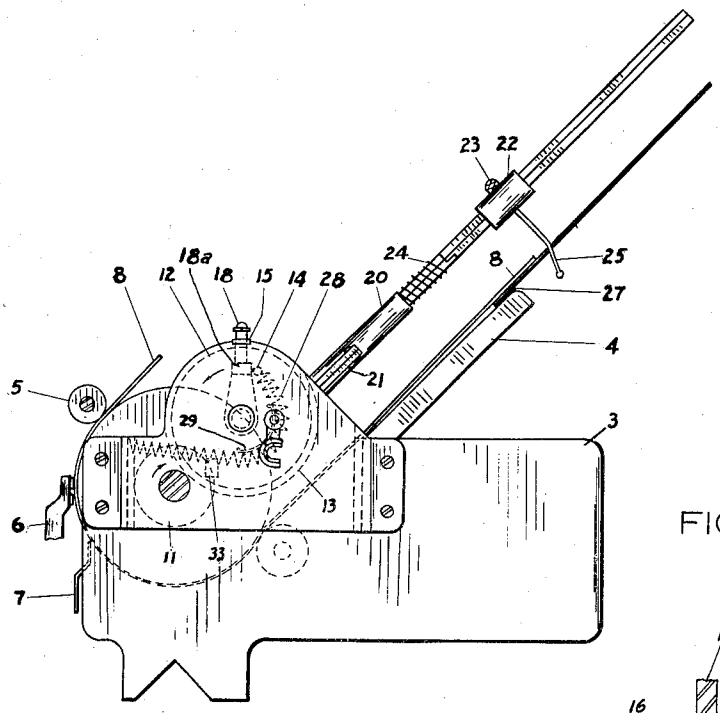


FIG. 5

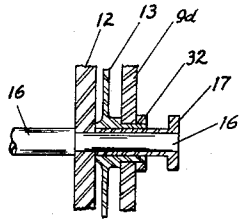


FIG. 8

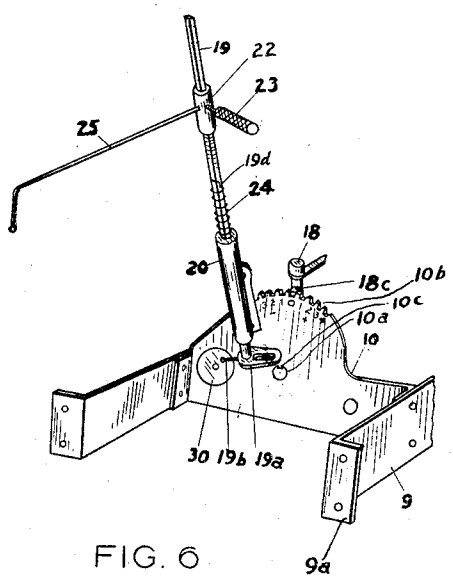


FIG. 6

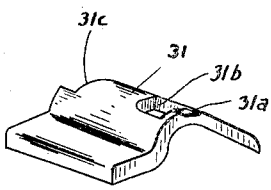


FIG. 7

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UNITED STATES PATENT OFFICE

2,535,539

BOTTOM MARGIN CONTROL DEVICE FOR TYPEWRITERS

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Application August 29, 1949, Serial No. 112,944

7 Claims. (Cl. 197—189)

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This invention relates to bottom margin control devices for typewriters.

It is an object of the present invention to provide a bottom margin control device for typewriters wherein the operator can set the bottom margin desired by the adjustment of the device and automatically upon the approach of this margin width a signal will be given to the operator.

It is another object of the present invention to provide in a bottom margin control device for typewriters wherein after the signal has been given to the operator that the bottom margin has been reached, an indication will be made as to the number of lines which can be typed before the actual preset margin which is finally desired is reached and wherein the feed of the paper will be automatically stopped at the last line.

It is another object of the present invention to provide a bottom margin control device which can be adapted to any kind of typewriter and can be applied to the typewriter as an attachment.

It is still a further object of the invention to provide in a bottom margin control device for typewriters a special device wherein the margin can be reset even if the preset margin is being approached or has been reached.

Other objects of the present invention are to provide a bottom margin control device for typewriters which is of simple construction, inexpensive to manufacture, easy to install upon the typewriter, has a minimum number of parts, adapted once the same has been set for any number of repeated sheets, does not interfere with the operation of the typewriter itself, and efficient in operation.

For other objects and for a better understanding of the invention, reference may be had to the following detailed description taken in connection with the accompaying drawing, in which

Fig. 1 is a fragmentary top plan view of a typewriter and of the attachment connected at one end thereof.

Fig. 2 is a fragmentary elevational view of the typewriter and of the attachment.

Fig. 3 is a fragmentary end elevational view of the typewriter and of the attachment.

Fig. 4 is a perspective view of the typewriter and of the attachment with the paper edge having passed the feeler device to release the parts of the attachment and with the indication having been made.

Fig. 5 is an end elevational view similar to Fig. 3 after the paper has been fed through the typewriter a sufficient amount to release the feeler of the attachment and to give the indication that the bottom line has been reached.

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Fig. 6 is a fragmentary and perspective view of the attachment removed from the typewriter.

Fig. 7 is a perspective view of a cover for the attachment.

Fig. 8 is a sectional view taken generally on line 8—8 of Fig. 1.

Referring now to the figures, 1 represents the typewriter roll forming a part of the typewriter and supported at one end by its shaft extension 2 that extends through the side frame 3 of the typewriter. The shaft 2 has a turning knob 2a. In rear of the typewriter roll 1 is the usual chute 4. In front of the roll 1 is the usual press roll, type 6 and guide rule 7.

The paper, as indicated at 8, is supported on the paper chute 4 and can be turned over the roll 1 upon the turning of the knob 2a or by the usual spacing device of the typewriter, not shown.

The control device, which is an attachment for any kind of typewriter, includes a frame 9 adapted to be secured by its flanges 9a and screws 9c to the side frame 3 of the typewriter. This frame 9 has a closed outer end 9d and a transversely extending member 10. The frame 9 is of U-shape and the member 10 extends between the legs thereof.

On the typewriter roll shaft 2 there is fixed a pinion 11 by means of a set screw 11a. This pinion is adapted to receive a large gear 12 upon the same being moved inwardly from its normal position within an indicating disc 13. On the disc 13 is an abutment or stop pin 14, the function of which to be later described. The end portion 9d of the frame 9 has a pointer 15 fixed to its upper edge to indicate the readings of the typewritten lines which are found on disc 13.

The gear 12 is rotatably supported on the shaft 16 which slides through opening 10a in the transverse member 10. The shaft 16 has a fixed sleeve 17 on which the disc 13 is journalled. The shaft 16 has a radially extending arm 16a lying inwardly of the member 10 of the frame 9.

Angularly adjustable upon the shaft 16 is an adjusting lever 18 having a pointer 18b and a projection 18c adapted to register in any one of a series of notches 10b on the upper edge of the transverse frame member 10. The function of this adjusting lever will be later described.

A scale arm 19 extends upwardly and rearwardly from the frame and generally parallel to

the paper support 4 of the typewriter. This scale arm is of square section except for its lower end which is journalled in a supporting sleeve 20 carried by a bracket 21 fixed to the transverse member 10. On the lower end of the shaft 16 is a yoke 19a which receives the radially extending arm 16a of the shaft 16. Extending downwardly from the yoke 19a is a bell striker 19b.

On the scale arm 19 are distance indications 19c and a slide 22 having a handle 23. A spring 24 is connected between the arm 19 and the sleeve bearing 20 and normally urges the rotation of the scale arm 19 in a counter-clockwise direction. The slide 22 has a long finger arm 25 extending toward the paper 8. Fixed to the chute or paper support 4 of the typewriter and extending upwardly therefrom is a paper support extension 26 which extends upwardly from a horizontally extending member 27 which is fixed to the upper edge of the typewriter paper support 4.

Connected between the stop projection 14 on the disc 13 and the frame 9 is a tension spring 28 tending to retain the disc 13 and the gear 12 at the starting position and to return the same to the starting position when the paper sheet is removed from the typewriter. This spring 28 is stretched over a plate 29 extending from the end portion 9d of the frame. A signal bell 30 is mounted on the transverse plate or member. The projection 14 comes to rest to prevent further movement of the typewriter roll when engagement is had with the stop projection 18a on the adjusting lever 18. The stop projection 14 is held by the action of the spring 28 in its at rest position by the stop projection 33 extending from the transverse member 10, Fig. 2.

The combined shaft 16 and sleeve 17 and gear 12 can be held against inward displacement by a hook 34 pivoted on the end portion 9d of the frame 9 when the device is not in use.

The bell 30 which is supported on the transverse member 10 of the frame 9 is adapted to receive a striker 19b on the scale arm 19. A cover 31 of any desired shape may be fitted over the top of the frame 9.

In operation, the paper 8 is inserted in the machine. Its bottom edge will rest upon the support arm 26 when the support arm 26 is extended in the manner as shown. At times when the control device is not in use, the support arm can be pivoted to a down position parallel to the member 27 upon which it is pivoted, the member 27 being fastened by rivets to the paper suppor 4 of the typewriter. The slide 22 is adjusted along the scale arm to the proper scale marking and to the desired bottom margin wanted for the paper sheet 8. The scale markings on the scale arm are preferably at one-half inch distances. The scale arm 19 can be pivoted so that the finger 25 will be rested on the top face of the paper at a location adjacent to the extended support arm 26. The handle 23 is in the form of an adjusting screw so as to hold the slide 22 in its adjusted position. The finger 25 will be held in place upon the face of the paper by the torsion spring 14. The bearing sleeve 20 is pivotally connected to the bracket 21 and can be folded downwardly to a horizontal position to save space when not in use. Also, the scale arm 19 is formed in two parts pivoted together at 19d and the outer part can be folded forwardly over the inner part when not in use.

As the typing continues, the bottom edge of the paper sheet 8 reaches a point so that the finger 25 drops downwardly. This causes the scale arm 19 to turn by gravity and by the torsional force of the spring 24. The shaft 16 is pulled inwardly by the yoke 19a and to the left as viewed in the figures. The shaft will be stopped in its inward movement when the end collar formation engages the collar 32 on the end portion 9d of the frame 9. The pinion 11 will then be engaged by the gear 12. Through the projection 14 the disc 13 bearing the line indications will be turned as the typewriter roll 1 is advanced with the paper. The shaft 16 is axially adjustable through the frame 9, but is kept from turning by a key formation 10c on the transverse frame member 10. The indicator disc 13 is locked against longitudinal movement with the shaft and gear by the collar 32. The adjusting lever 18 is locked against movement on the shaft by the transverse member 10 and bracket 10d, but can be angularly adjusted on the shaft 16. The pointer 15 will show the starting point of the indicating disc 13 at the moment that the finger 25 drops from the paper. From this moment, the pointer 15 will indicate the number of lines which can be typed before the present margin is reached. At the starting position, the figure on the disc 13 opposite pointer 15 will indicate the number of lines or inches which can be typed on the length of paper between type 6 and the edge of member 27 of the paper support or of the chute 4 of the typewriter, such distance being indicated generally on the paper sheet between large letters A and B, Fig. 3. As the yoke 19a turns, the bell striker 19b will strike the signal bell 30 to give an indication to the operator that the finger 25 has dropped from the paper and to take note of the line indications on the indicator disc 13. The indicator disc 13 will turn and the number of lines left to be typed will be indicated as the typewriter roll and the paper sheet are advanced. The distance A to B on the paper sheet is constant for any particular make of machine and the number of lines which can be typed is fixed. The indicator disc may also bear inch indications and these indications may be of different color. The indicator disc can be used to measure off blank spaces for inserting diagrams or other data between typed lines. The end of finger 25 is very close to extension 26. This device will function properly on any kind of thin paper.

As the typing continues, the gears and the indicator disc 13 turn until the stop pin 14 engages projection 18a on the adjusting lever 18. At this time, the last line to be typed has reached the preset bottom margin. The typewriter roll can no longer be turned to feed the paper sheet. The stop pin 14 is fastened to indicator disc 13 and goes through a hole on gear 12. The engagement of the stop pin 14 with the adjusting lever is shown clearly in Fig. 5 and the spring 28 will have been stretched about the plate 29. At this time, if the operator desires to type a few more lines, she may reset the adjusting lever 18 in a plus notch 19b, Fig. 6, on the transverse member 10. The projection 18c is adjustable on the lever 18 for engagement with the different notches 19b. Thereafter, the adjusting lever 18 can be returned to the zero position.

After the preset margin has been reached, the paper can be removed either by pushing the paper release lever or by turning the roll 1 after a slight push on the handle 23 of the slide 22 to rotate the scale arm 19 to move the shaft 16 outwardly and to disengage the gears 11 and 12. The spring 28 will return the indicator disc and gear 12 to their initial positions. The stop projection 14 will

come to rest against the stationary stop block 33 on the transverse member 10. When another sheet of paper is placed in the machine, the finger 25 will be lifted and rested upon its top surface.

As shown clearly in Fig. 3, the distance between A, the position of type 6, and B, the outer edge of member 27, measured on the paper is fixed for any particular machine. Also the diameter of the typewriter roll is fixed. Therefore, the length of paper fed by each complete turn of the typewriter roll is constant for any particular machine. The pinion 11 and the gear 12 have a fixed number of teeth. The angular movement of the gear 12 and the indicating disc 13 is limited through the stop pin projection 14 upon engagement with the stop blocks 18a and 33. The arrangement is such that the gear 12 and indicator disc 13 will rotate from its starting position to its end position when the pinion 11 and the roll 1 turns to feed a length of paper equal to the distance from A to B thereon. If the finger 25 is set at B, Fig. 3, or at the outer edge of the member 27, the finger will drop from the paper when the bottom edge of the paper reaches the position B. Gear 12 and pinion 11 will then be engaged. From this point on, the typewriter roll 1 can only feed a length of paper equal to the distance between A and B. The stop pin 14 will then engage the stop projection 33. As the length of the paper which is measured is equal to the distance between A and B, there will be no margin left thereon.

When the finger 25 is adjusted to a position C, Fig. 3, and away from the edge of the member 27, it will be moved a distance on the paper sheet, as indicated by the letters B and C. When the bottom edge of the paper 8 reaches C, the finger drops. The length of the paper left in the machine is equal to the distance between A and C. The gear 12 engages with the pinion 11 and as the roll can be stopped before the projection 14 reaches the projection 33, there will be margin left at the bottom of the sheet equal to the distance between B and C. When a new margin is desired, the slide 22 is adjusted to the new position. The handle screw 23 is loosened and then when the slide 22 is in the proper position, it is tightened to retain the same on the slide.

The adjusting lever 18 can be set to one side or the other of a zero location. It is useful after the finger 25 has dropped from the paper. Any time before the preset margin has been reached on the paper, this margin can be widened or shortened. After the preset margin has been reached, the margin can still be shortened if so desired. If it is desired to leave a few lines for a foot note within the preset margin, the lever 18 can be set so many lines or notches to the negative side of the zero location. Fig. 6. The typewriter roll will then be stopped so many lines ahead to serve as a warning. At this time, the lever 18 can be set back to the zero reading. The foot note then can be typed until the preset margin is reached.

If it is desired to disconnect the operating parts of the attachment from the machine, the hook 34 is lifted and the shaft and gear 12 will be moved outwardly. The gear 12 will be out of engagement with the pinion 11 and the attachment will not function. The collar formation on the end of the sleeve 17 will engage the collar 32 in the manner as shown in Fig. 4. The same effect can be had by tilting the supporting arm 26 a little to the right to support the finger 25 in its raised position.

In order to reverse the roll to make corrections

when typing, there is no extra manipulation to be effected. This is done as with the ordinary machine. After the bell 30 rings, the finger 25 is put back on the paper, but before the bell rings, the paper slides under the finger without difficulty. The cover 31, Fig. 7, can be placed over the frame and this cover has an opening 31a which receives the pointer 15. The indications on the disc 13 will be visible through the opening 31b. The slot 31c receives the adjusting lever 18 and permits its movement over the transverse member 10.

The pinion 11 has more teeth than the paper feed ratchet wheel of the typewriter. This will avoid any irregularity of the last line. The length of the paper from A to B is about five inches on the ordinary typewriter. This is more than half the typing space of a sheet of paper which is eleven inches long. Within this space all of the features of measurement can be effected.

When the preset bottom margin has been reached, the operator can type a few more lines by resetting the adjusting lever 18 as previously explained. There is another way of effecting this same result. After typing the last line, the indicator disc 13 shows that there are zero lines left. By noticing the width of the margin which was originally set as indicated on the scale 19, the operator can refer to the indicator disc to find out how many more lines can be typed within the margin which has been left before the paper will drop off the roll. The operator can push the screw 23 to the right to disengage the pinion and gear and to return the gear and the indicator to the starting position. After release of the screw from the hand, the finger 25, the pinion and gear will be re-engaged. The operator can now proceed to type until the paper drops from the roller if desired.

While various changes may be made in the detail construction, it shall be understood that such changes shall be within the spirit and scope of the present invention as defined by the appended claims.

What is claimed is:

1. A bottom margin control device for typewriters comprising a frame adapted to be connected to the side of a typewriter, a small pinion gear adapted to be connected to the typewriter roll extension, gear means shiftable upon the frame and in one position thereof engageable with the small gear on the typewriter roll extension, a disc indicator interlocked with the shiftable gear means to operate with the same to give an indication of the number of lines which can be made after a prior signal, and a finger engageable means connected to the frame and to the shiftable gear means to operate the same, said finger engageable means adapted to extend into engagement with the paper sheet within the typewriter and adapted to fall from the same upon the bottom edge of the sheet being reached whereby to cause the engagement of the gears with one another and the movement of the indicating disc, said finger engageable means comprising a scale arm having scale indications thereon to indicate the length of the margin desired at the bottom of the sheet, a slide adjustable upon said scale arm and adapted to be fixed in its adjusted position, and a finger extending laterally from the slide on the scale arm for engagement with the paper sheet and adapted to drop downwardly therefrom upon the paper sheet being advanced through the typewriter.

2. A bottom margin control devce for typewriters comprising a frame adapted to be connected to the side of a typewriter, a small pinion gear adapted to be connected to the typewriter roll extension, gear means shiftable upon the frame and in one position thereof engageable with the small gear on the typewriter roll extension, a disc indicator interlocked with the shiftable gear means to operate with the same to give an indication of the number of lines which can be made after a prior signal, and a finger engageable means connected to the frame and to the shiftable gear means to operate the same, said finger engageable means adapted to extend into engagement with the paper sheet within the typewriter and adapted to fall from the same upon the bottom edge of the sheet being reached whereby to cause the engagement of the gears with one another and the movement of the indicating disc, said finger engageable means comprising a scale arm, a journal bearing rotatably receiving said scale arm, said scale arm being connected with the shiftable gear means, a slide adjustable upon the scale arm to regulate the device for the different margin settings, a finger connected to the slide and extending laterally thereof for engagement with the paper sheet in the typewriter, and means for pivotally connecting the bracket to the frame so that the scale arm and finger can be lowered to a horizontal and out-of-use position.

3. A bottom margin control device for typewriters comprising a frame adapted to be connected to the side of a typewriter, a small pinion gear adapted to be connected to the typewriter roll extension, gear means shiftable upon the frame and in one position thereof engageable with the small gear on the typewriter roll extension, a side indicator interlocked with the shiftable gear means to operate with the same to give an indication of the number of lines which can be made after a prior signal, and a finger engageable means connected to the frame and to the shiftable gear means to operate the same, said finger engageable means adapted to extend into engagement with the paper sheet within the typewriter and adapted to fall from the same upon the bottom edge of the sheet being reached whereby to cause the engagement of the gears with one another and the movement of the indicating disc, said finger engageable means comprising a scale arm, a journal bearing rotatably receiving said scale arm, said scale arm being connected with the shiftable gear means, a slide adjustable upon the scale arm to regulate the device for the different margin settings, a finger connected to the slide and extending laterally thereof for engagement with the paper sheet in the typewriter, and means for pivotally connecting the bracket to the frame so that the scale arm and finger can be lowered to a horizontal and out-of-use position, said scale arm being formed of two parts pivotally connected together, the outer part being foldable forwardly over the inner part when the device is not in use.

4. A bottom margin control device for typewriters comprising a frame adapted to be connected to the side of a typewriter, a small pinion gear adapted to be connected to the typewriter roll extension, gear means shiftable upon the frame and in one position thereof engageable with the small gear on the typewriter roll extension, a disc indicator interlocked with the shiftable gear means to operate with the same

to give an indication of the number of lines which can be made after a prior signal, and a finger engageable means connected to the frame and to the shiftable gear means to operate the same, said finger engageable means adapted to extend into engagement with the paper sheet within the typewriter and adapted to fall from the same upon the bottom edge of the sheet being reached whereby to cause the engagement of the gears with one another and the movement of the indicating disc, an attachment comprising an attaching member adapted to be fixed to the paper support of the typewriter and an upwardly and rearwardly extendable paper support arm pivotally connected to said member and adapted to support the paper sheet when extended, said finger means engageable with the paper adjacent said paper supporting arm and to one side thereof so that the finger can move downwardly upon the paper being advanced from beneath the finger means, said paper supporting arm being adjustable to a horizontal position upon the attaching member when the device is out of use.

5. A bottom margin control device for typewriters comprising a frame adapted to be connected to the side of a typewriter, a small pinion gear adapted to be connected to the typewriter roll extension, gear means shiftable upon the frame and in one position thereof engageable with the small gear on the typewriter roll extension, a disc indicator interlocked with the shiftable gear means to operate with the same to give an indication of the number of lines which can be made after a prior signal, and a finger engageable means connected to the frame and to the shiftable gear means to operate the same, said finger engageable means adapted to extend into engagement with the paper sheet within the typewriter and adapted to fall from the same upon the bottom edge of the sheet being reached whereby to cause the engagement of the gears with one another and the movement of the indicating disc, said shiftable gear means comprising a shaft axially adjustable in said frame, a gear fixed to said shaft for engagement with the gear on the typewriter roll extension, a sleeve fixed to the shaft, said indicator disc journalled on said sleeve, and an interlocking projection extending between the disc and the gear and stop means on the frame adapted to be engaged by said interlocking projection to stop the further advance of the typewriter roll when the last line has been reached.

6. A bottom margin control device for typewriters comprising a frame adapted to be connected to the side of a typewriter, a small pinion gear adapted to be connected to the typewriter roll extension, gear means shiftable upon the frame and in one position thereof engageable with the small gear on the typewriter roll extension, a disc indicator interlocked with the shiftable gear means to operate with the same to give an indication of the number of lines which can be made after a prior signal, and a finger engageable means connected to the frame and to the shiftable gear means to operate the same, said finger engageable means adapted to extend into engagement with the paper sheet within the typewriter and adapted to fall from the same upon the bottom edge of the sheet being reached whereby to cause the engagement of the gears with one another and the movement of the indicating disc, said shiftable gear having a stop projection extending from the same, an adjusting lever pivoted upon the shiftable means and

adjustable between different positions with respect to said frame, said adjusting lever having a stop projection thereupon and adapted to be engaged by the stop projection on said gear whereby to prohibit the further advance of the typewriter roll when the margin distance has been reached upon the paper, said adjusting lever being releasable to permit additional lines or to shorten the margin after the setting has been made by the finger-engaging means.

7. A bottom margin control device for typewriters comprising a frame adapted to be connected to the side of a typewriter, a small pinion gear adapted to be connected to the typewriter roll extension, gear means shiftable upon the frame and in one position thereof engageable with the small gear on the typewriter roll extension, a disc indicator interlocked with the shiftable gear means to operate with the same to give an indication of the number of lines which can be made after a prior signal, and a finger engageable means connected to the frame and to the shiftable gear means to operate the same, said finger engageable means adapted to extend into engagement with the paper sheet within the typewriter and adapted to fall from the same upon the bottom edge of the sheet being reached whereby to cause the engagement of the gears

with one another and the movement of the indicating disc, said shiftable gear means including a shaft adjustable through the frame in an axial direction, a gear journalled upon the shaft, a sleeve fixed to the shaft, said sleeve having an enlarged formation on the end thereof externally of the frame, said disc journalled on the sleeve, a collar for holding said sleeve against inward displacement with respect to the frame but permitting axial movement of the shaft through the frame, and releasable means connected to the frame and adapted to engage with the enlarged formation on the sleeve to hold the gear on the shaft out of engagement with the gear on the typewriter roll extension and to permit the use of the typewriter without the bottom margin control device.

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