

April 11, 1939.

C. W. HEINEMAN ET AL

2,153,754

SIGNALING DEVICE

Filed Oct. 13, 1936

3 Sheets-Sheet 1

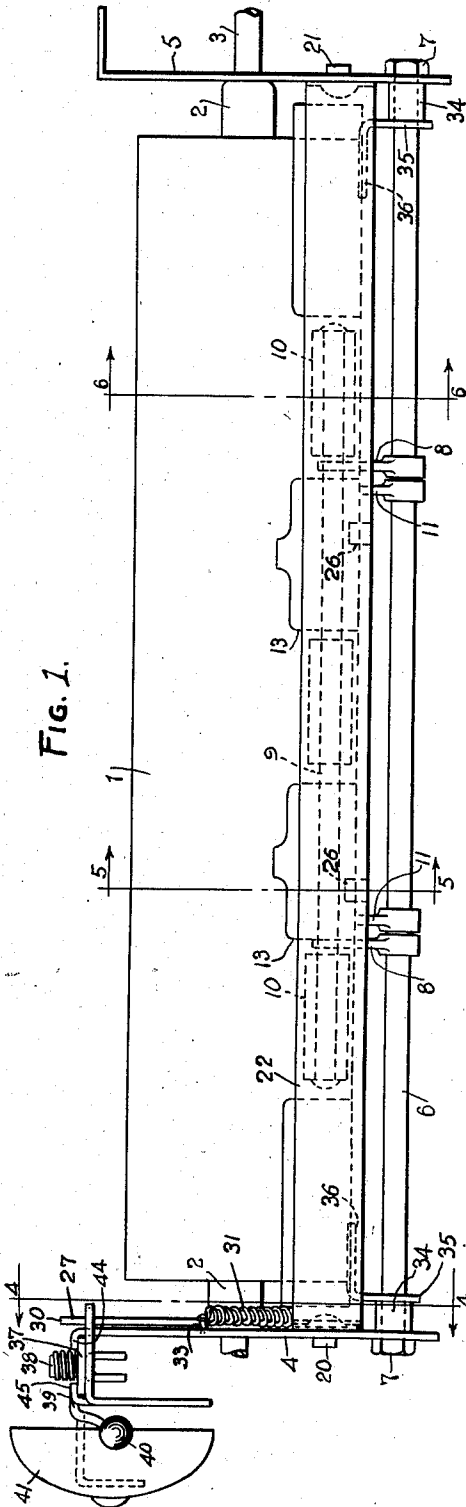


Fig. 1.

Fig. 8.

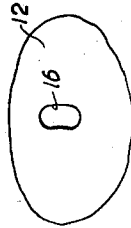


Fig. 7.

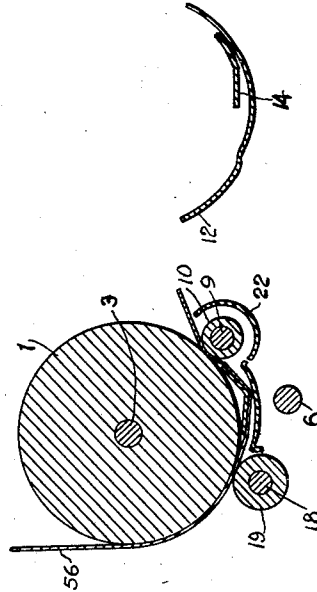


Fig. 6.

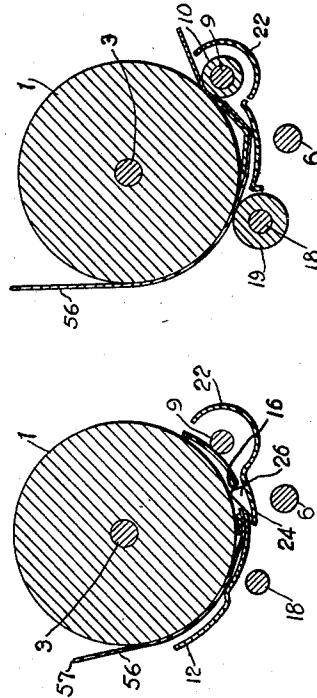


Fig. 5.

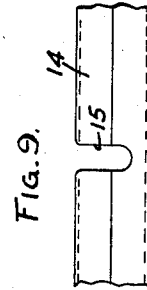
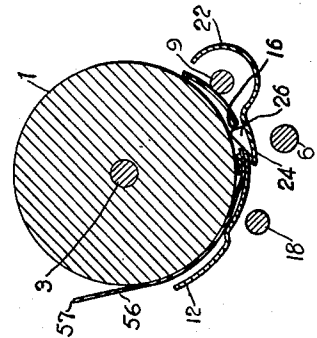


Fig. 9.

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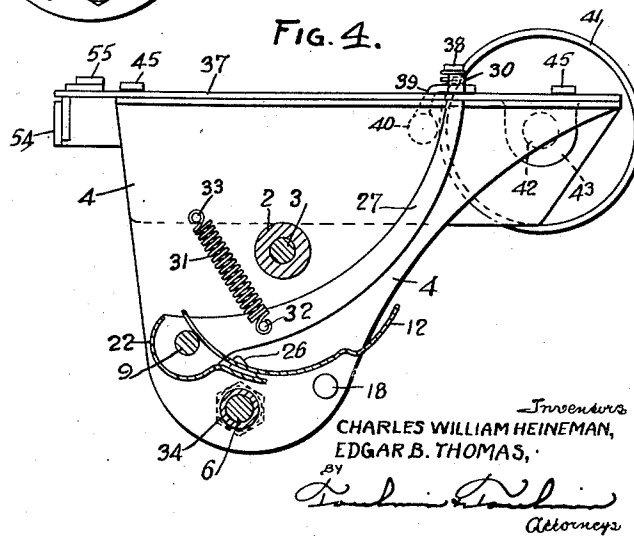
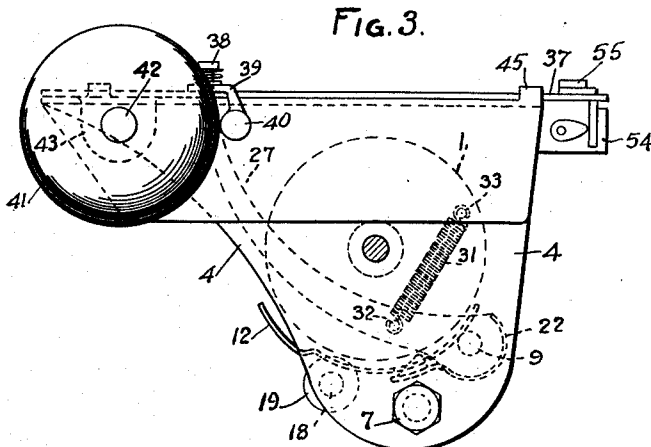
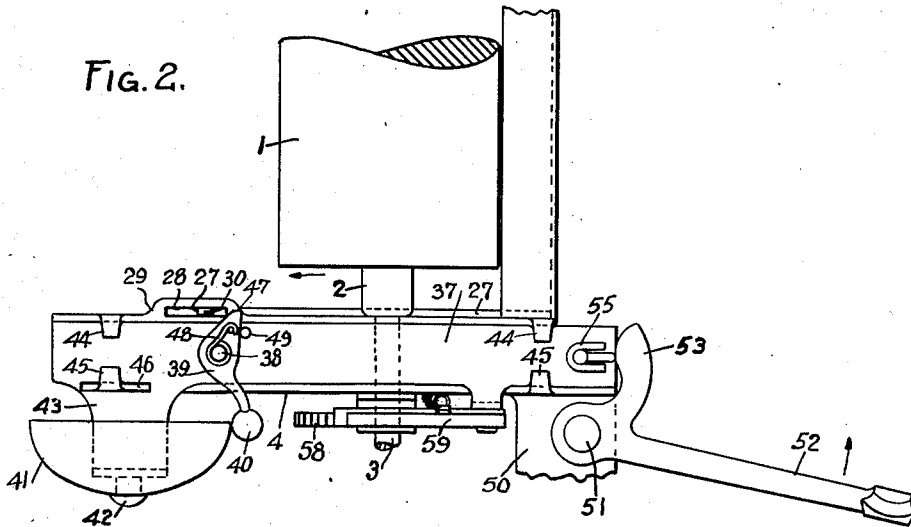
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3 Sheets-Sheet 2



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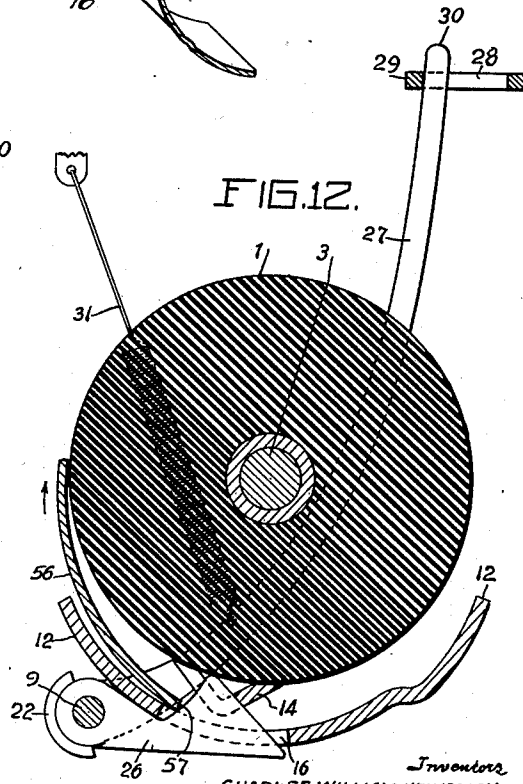
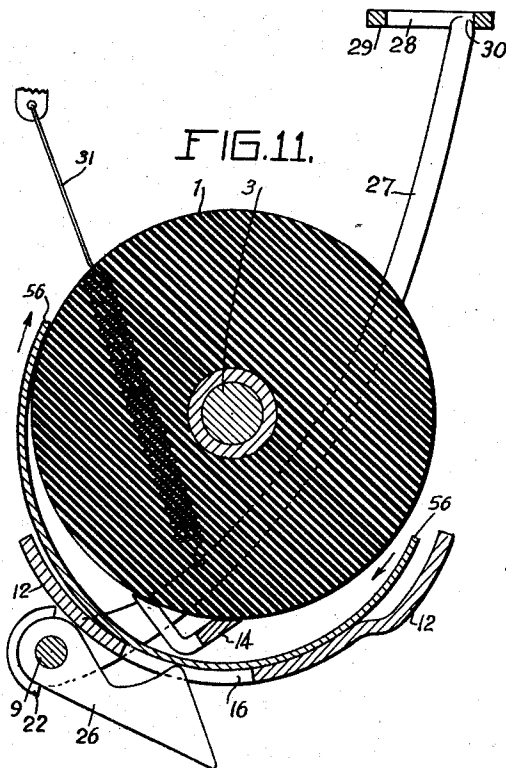
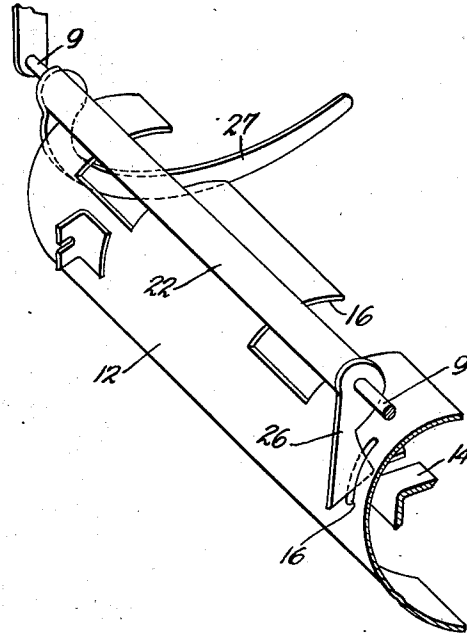
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FIG. 10.



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SIGNALING DEVICE

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Application October 13, 1936, Serial No. 105,409

3 Claims. (Cl. 197—189)

This invention relates to typewriters and in particular to signaling devices for indicating when the bottom of the page is being approached, so that the operator will be warned to leave an adequate space at the bottom of the page.

One object of this invention is to provide a signaling device responsive to the reaching of the bottom of the page, and have an alarm operated to indicate this condition to the operator.

Another object is to provide a signaling device which is actuated by means operative upon the passage of the end of the paper, this arrangement being operative to ring a bell or sound an alarm or give other means of indicating the condition of the paper so that the operator may remove the work from the machine and insert a new set of sheets.

Hitherto the difficulty has constantly arisen in typing work of this nature that the operator has continued to type line after line upon the sheet and is only warned of the approach of the bottom of the sheet when the paper slips to one side or becomes disarranged.

Another object is to provide a signaling device for typewriters, either in a form to be built into new typewriters, or attached to a typewriter already built, this device being arranged with cam operated mechanism adapted to operate a bell or other signaling device when the end of the paper passes and releases the cam.

In the drawings:

Figure 1 is a front elevation of a typewriter platen and certain of its associated mechanisms showing the signaling device of this invention.

Figure 2 is a top plan view of the left end of the assembly shown in Figure 1.

Figure 3 is a left hand elevation of Figure 1 with the spacing lever broken away to disclose the mechanism behind it.

Figure 4 is a vertical section along the line 4—4 in Figure 1, showing certain details of the signaling device.

Figure 5 is a cross section along the line 5—5 in Figure 1.

Figure 6 is a cross section along the line 6—6 in Figure 1.

Figure 7 is a diagrammatic cross sectional view showing the paper guide and its associated elements.

Figure 8 is a fragmentary view showing a portion of the paper guide with the aperture therein for the operating cam.

Figure 9 is a bottom plan view of a portion of the slotted angle member secured to the paper guide.

Figure 10 is a perspective view of the finger-piece and its connected devices, looking upwardly from beneath the platen.

Figure 11 is a vertical transverse sectional view taken on the line 11—11 of Figure 10 looking in the direction of the arrow showing the typewriter paper in feeding relation to the platen roller and the finger-piece with its arm and its actuating spring in inoperative position.

Figure 12 is a like vertical transverse sectional view, at the time when the parts have moved from their position shown in Fig. 11 to their later position as shown in Figure 12, of the platen roller taken on the same line 11—11 of Fig. 10, looking in the direction of the arrow showing the typewriter paper in fed relation to the platen roller and the finger-piece with its arm and its actuating spring in operative position to cause the alarm to ring to notify the operator that the paper has been fed the limit to allow a margin of the paper below the last typewritten line.

Referring to the drawings in detail:

Figure 1 shows a portion of a typewriter having a platen 1 with end portions 2 supported upon a shaft 3, mounted in end plates 4 and 5 secured to the opposite ends of the rod 6 as by the nuts 7. The rod 6 also serves to support the arms 8, the ends of which serve as bearing portions for the shaft 9, which carries the gripping rolls 10 (Figure 1).

The rod 6 also carries arms 11 the upper ends of which carry the paper guide 12. The latter is a curved metal plate running from end to end of the platen and having slots 13 therein for the passage of the gripping rolls 10. Secured to the paper guide 12 is an angle strip 14, the latter being soldered to the ends of the paper guide 12, leaving a slight space therebetween for the passage of the paper. The angle strip 14 is provided with slot 15 (Figure 9) which is aligned with aperture 16 in the paper guide 12. The rod 6, which supports the rod 9, also supports the rod 18, the latter carrying additional gripping rolls 19.

Pivotaly mounted upon stud screws 20 and 21 at the opposite end plates 4 and 5 is an elongated member 22 of arcuate cross section having an extended portion 24, (Figure 5), carrying a cam member or finger 26. The cam member 26 projects upwardly through the aperture 16 and slot 15 when there is no paper in the machine. When paper has been inserted in the machine however, it forces the cam member 26 downwardly so that it is in a position outside of the apertures 16.

The left hand end of the elongated member 22 is provided with an arm 27 (Figures 3 and 4), 55

which extends upwardly and passes through a slot 28 in the top portion 29 of the left hand end plate (Figure 2). The upper end 30 of the arm 27 is placed below the slot 28 when paper has been inserted in the machine. When, however, the end of the paper passes the cam member 26 and permits it to move upwardly into the hole 16 and slot 15, the upper end 30 of the arm 27 moves upwardly into the slot 28 and projects beyond the top thereof. A coil spring 31 secured at 32 to the arm 27 and at 33 to the end plate 4 urges the arm 27 and the cam member 26 in an upward direction. Mounted on the opposite ends of the rod 6 and spaced therefrom between collars 34 are L shaped arms 35, the upper ends 36 of which extend horizontally beneath the ends of the paper guide 12, and support its opposite ends. Mounted upon the top portion 29 of the end plate 4 (Figure 2) is a sliding member 37 carrying pin 38 adapted to pivotally support a lever 39. The outer end of this lever 39 carries a clapper 40 for ringing a bell 41 the latter being mounted as at 42 upon the arm 43 extending downwardly from and forming a part of the sliding member 37. The sliding member 37 is guided in its reciprocatory motion by the tongues 44 and 45 extending over it and integral with the upper portion 29 of the end plate 4. One of the tongues 45 extending upwardly through a slot 46 formed at the junction of the arm 43 with the sliding member 37 permits the sliding motion thereof while serving as a guide.

The opposite end of the lever 39 from the clapper 40 is provided with a contact portion 47 adapted to be engaged by the upper end 30 of the arm 27 when this upper end is caused to project upwardly through the slot 28. A coil spring 48 encircles the pin 38 and urges the end 47 of the lever 39 in one direction. A stop pin 49 mounted upon the sliding member 37 serves to limit the motion of the lever 39.

The end plate 4 near its top front portion is provided with an extended portion 50 (Figure 2) serving to support a pivot pin 51 upon which is mounted a spacing lever 52. The latter is of bell-crank form and is provided with a portion 53 adapted to engage member 54 so that the latter is operated when the lever 52 is moved. Member 54 is secured as at 55 to the sliding member 37.

The platen shaft 3 carries a ratchet wheel 58 (Figure 2) which is operated by pawl mechanism 59 operatively connected to the spacing lever 52 in the conventional manner. This mechanism is omitted in Figure 1 so as to show the signaling device more clearly.

In the operation of this invention, the paper is inserted in the typewriter in the usual manner but is caused to pass beneath the angle strip 14 and above the paper guide 12. The position of the paper assembly 56 is shown in Figure 5 after the end 57 thereof has passed the aperture 16 and slot 15, thereby permitting the cam member 26 to move upwardly into said aperture and slot. When the paper is in its normal position before the bottom of the sheet is reached it occupies the position shown in Figure 6. In this position the cam portion 26 is forced downwardly causing the arm 27 to move downwardly and its upper end to fall beneath the slot 28.

When the typist has operated the shift lever to space the paper a sufficient number of times to cause the bottom 57 thereof to pass the aperture 16, the cam member 26 moves upwardly in response to the urge of the spring 31 thereby causing the arm 27 to move upwardly and its top

portion 30 to project beyond the slot 28. When this occurs the arm end 30 engages the portion 47 of the lever 39 when the operator actuates the lever 52 and the slide 37 and causes the bell clapper 40 to strike the bell 41. This notifies the typist that the bottom of the page has been reached, and that another assembly of sheets should be placed in the machine. It should be observed that the cam member 26 is placed upon the side of the platen so that contact motion thereof is made when the bottom edge of the paper moves upwardly. By reason of this position, the device always gives a certain predetermined margin at the bottom of the page, regardless of the particular spacing being used.

Referring now to Figures 10, 11, and 12, and more particularly at this point, Figures 11 and 12, the platen-roller 1 and the typewriter paper 56 are shown with the paper moving downward in Figure 11 until it reaches the position shown in Figure 12. When the paper is thus traveling, it passes over the finger-piece 26 and beneath the angle strip 14, but in engagement or contact with the finger-piece as best shown in Figure 11. The paper guide plate 12 permits this contact between the finger-piece 26 and the paper through the aperture 16 in this plate. And during such period the paper is also bodily beneath the angle strip 14.

During the time the parts are in the relative positions here set forth, as shown in Figure 11, the arm 27 is out of operative position with respect to its cooperation with the clapper lever 39. The arm is mounted on the finger-piece shaft 9.

It will be observed from Figure 10 that the finger-piece 26 and the arm 27 are interconnected by an arcuate plate 22 so that the finger-piece 26 and the arm 27 will operate in unison, the finger-piece serving to swing the arm 27 when it is depressed by the paper and the spring 31 serving to swing the arm upward when the finger-piece moves from the position shown in Figure 11 to that shown in Figure 12, and makes contact in the latter position with the platen roller, the paper having also then moved to the position shown in Figure 12.

Referring specifically to Figure 12 it will be seen that the paper has moved in the direction of the arrow until its portion 57 has passed from the position shown in Figure 12, when the paper is barely overlapping the more elevated edge of the angle strip 14. In this position the lower end of the paper has assumed a position practically in contact with the adjacent portions of the platen-roller; and under these conditions the finger-piece, under the influence of the spring 31 and its connection with the arm 27, has been moved upward to contact with the roller, the finger-piece in moving from its lower position, shown in Figure 11, to its elevated position shown in Figure 12, passing across the aperture 16.

And this action of the spring 31 also swings the arm 27 from its inoperative position with respect to the clapper lever, to its operative position for being reached by the clapper lever 39.

As heretofore stated in this specification, when the parts have operated and assumed the ultimate positions as shown in Figures 5 and 6, and more clearly shown in the enlarged views, Figures 11 and 12, the upper end of the arm 27 will be positioned, by the action of the spring 31, at a place in the slot 28, for contact with the clapper lever 39 when the operator actuates the lever 52 and the slide 37. Of course, the operator of the typewriter operates the lever 52 at the end of every line. If at any of these times, the paper

has nearly run out and reached the position shown in Figure 12, then the arm 27 will assume a position in the slot 28, which will cause the clapper lever 39 to engage it on the forward movement of the slide 37, and thereby ring the bell, which is the signal to the operator that the paper is about run out and a new sheet must be inserted.

The insertion of the new sheet followed by the successive movement of the platen-roller will soon bring the forward edge of the paper in contact with the angle strip 14 and direct the paper downward between the angle strip 14 and paper guide 12, the paper forcing the finger-piece downward from the position shown in Figure 12 to that shown in Figure 11.

Finally, it will be noted that we provide a paper guide 12 below the platen-roller, such guide being adapted to support the paper if it lags below the adjacent part of the periphery of the roller. This arrangement so maintains or positions the finger-piece that the paper bears on the finger-piece 26. And again, we provide a further strip or sheet which makes contact with the paper near its lower edge or end, at which time the finger-piece 26 rises from its position when in contact with the paper to the position of contact with the periphery of the roller. The action of the spring 31 so operates the finger-piece, that when the paper is feeding through the machine it makes contact with the finger-piece until the lower end of the sheet has reached the point of contact with the metal plate, at which time the paper has neared the periphery of the roller and freed itself from contact with the finger-piece.

It will be understood that we desire to comprehend within our invention such modifications as come within the scope of the claims and the invention.

Having thus fully described our invention, what we claim as new and desire to secure by Letters Patent is:

1. In combination with a typewriter having a platen and line spacing mechanism thereon, an angle strip having an aperture therein carried below said platen and adjacent thereto for spacing a paper sheet therefrom, an elongated movable member arranged with its axis parallel with the axis of said platen, a spring pressed finger carried by said elongated movable member and having a cam portion thereon extending below and adapted to be resiliently urged into said aperture, an arm carried on said elongated movable member movable therewith, signal means associated with said line spacing mechanism and movable therewith, said finger, said elongated movable member and said arm adapted to be moved in one direction upon cooperation of said cam portion with the entering edge of a paper sheet and in the reverse direction when the bottom edge of the paper sheet has passed said cam portion, said arm adapted to be moved into position for engagement with said signal means when the bottom edge of the paper sheet has passed said

cam portion whereby said signal means will function upon operation of said line spacing mechanism.

2. In combination with a typewriter having a platen and line spacing mechanism thereon, said line spacing mechanism having a platen operating movement and a resetting movement, an angle strip having an aperture therein carried below said platen and adjacent thereto for spacing a paper sheet therefrom, an elongated movable member arranged with its axis parallel with the axis of said platen, a spring pressed finger carried by said elongated movable member and having a cam portion thereon extending below and adapted to be resiliently urged into said aperture, an arm carried on said elongated movable member movable therewith, signal means associated with said line spacing mechanism and movable therewith, said finger, said elongated movable member and said arm adapted to be moved in one direction upon the cooperative engagement of said cam portion and the entering edge of a paper sheet and in the reverse direction when the bottom edge of the paper sheet has passed said cam portion, said arm adapted to be moved into a position for engagement with said signal means when the bottom edge of the paper sheet has passed said cam portion whereby said signal means will function upon each resetting movement of said line spacing mechanism.

3. In combination with a typewriter having a platen and a line spacing mechanism thereon, an apertured paper spacing strip carried below said platen and adapted to space the paper away from said platen, an aperture paper guide carried below said paper spacing strip in spaced relation thereto whereby paper inserted in said typewriter will pass between said paper guide and said paper spacing strip, an elongated movable member carried adjacent said paper guide and having the longitudinal axis thereof arranged parallel to the axis of said platen, said movable member adapted for limited rotation about its axis, a spring pressed finger carried by said movable member for movement therewith extending below said paper guide and having a cam portion thereon adapted to be resiliently urged into said apertures in the absence of paper between said paper guide and said paper spacing strip and adapted to be retracted from said apertures by the cooperative engagement of the entering edge of the paper and said cam, signal means carried on said line spacing mechanism for movement therewith, said signal means having a trip lever thereon, an arm carried by said movable member movable therewith, said arm adapted to be moved into a position for engagement with said trip lever when the bottom edge of the paper has passed said cam portion whereby the signal will function upon operation of said line spacing mechanism.

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