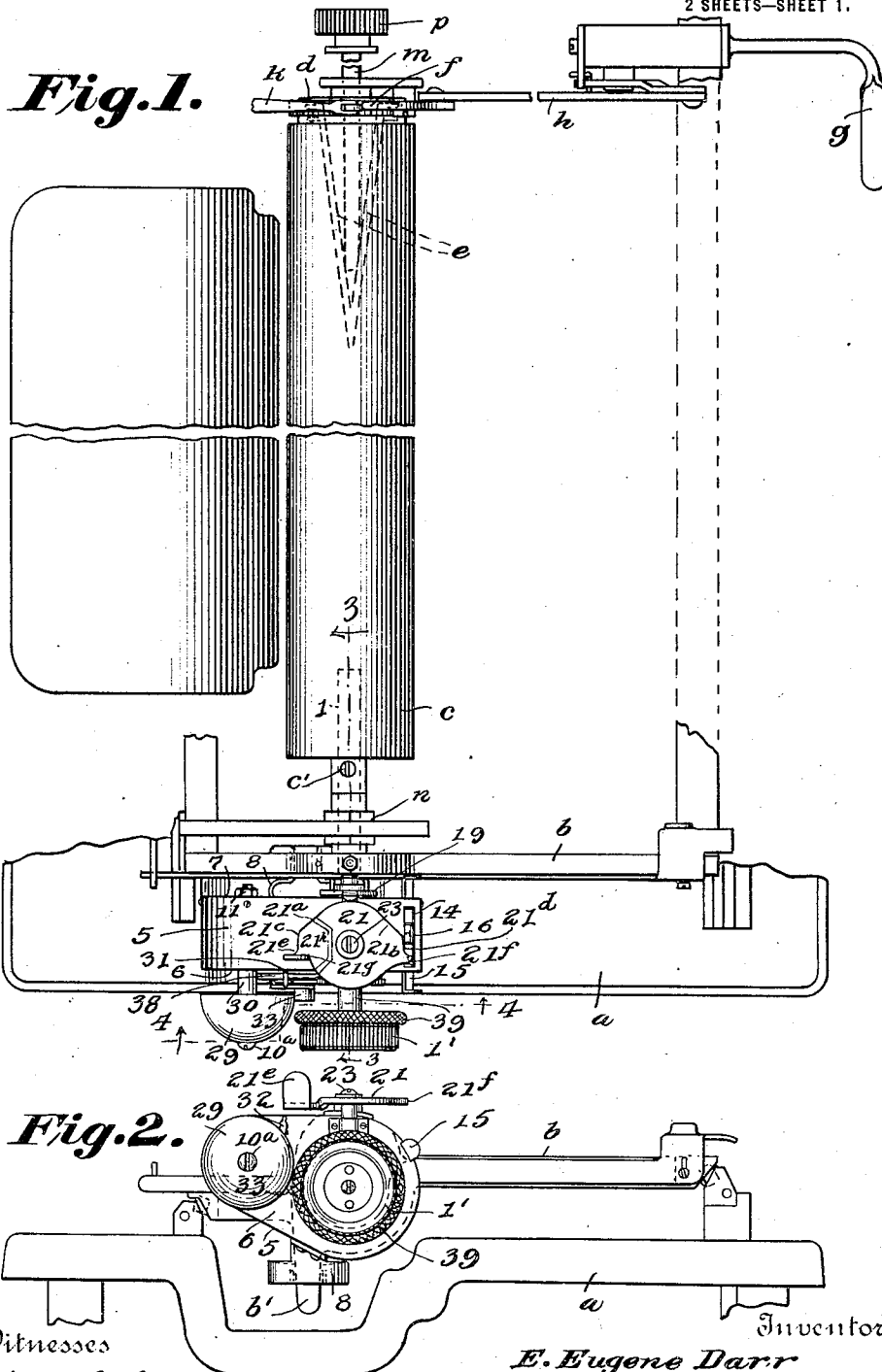


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 LINE INDICATOR AND SIGNAL FOR TYPE WRITING MACHINES.
 APPLICATION FILED AUG. 12, 1915.

1,304,458.

Patented May 20, 1919.

2 SHEETS—SHEET 1.



Witnesses

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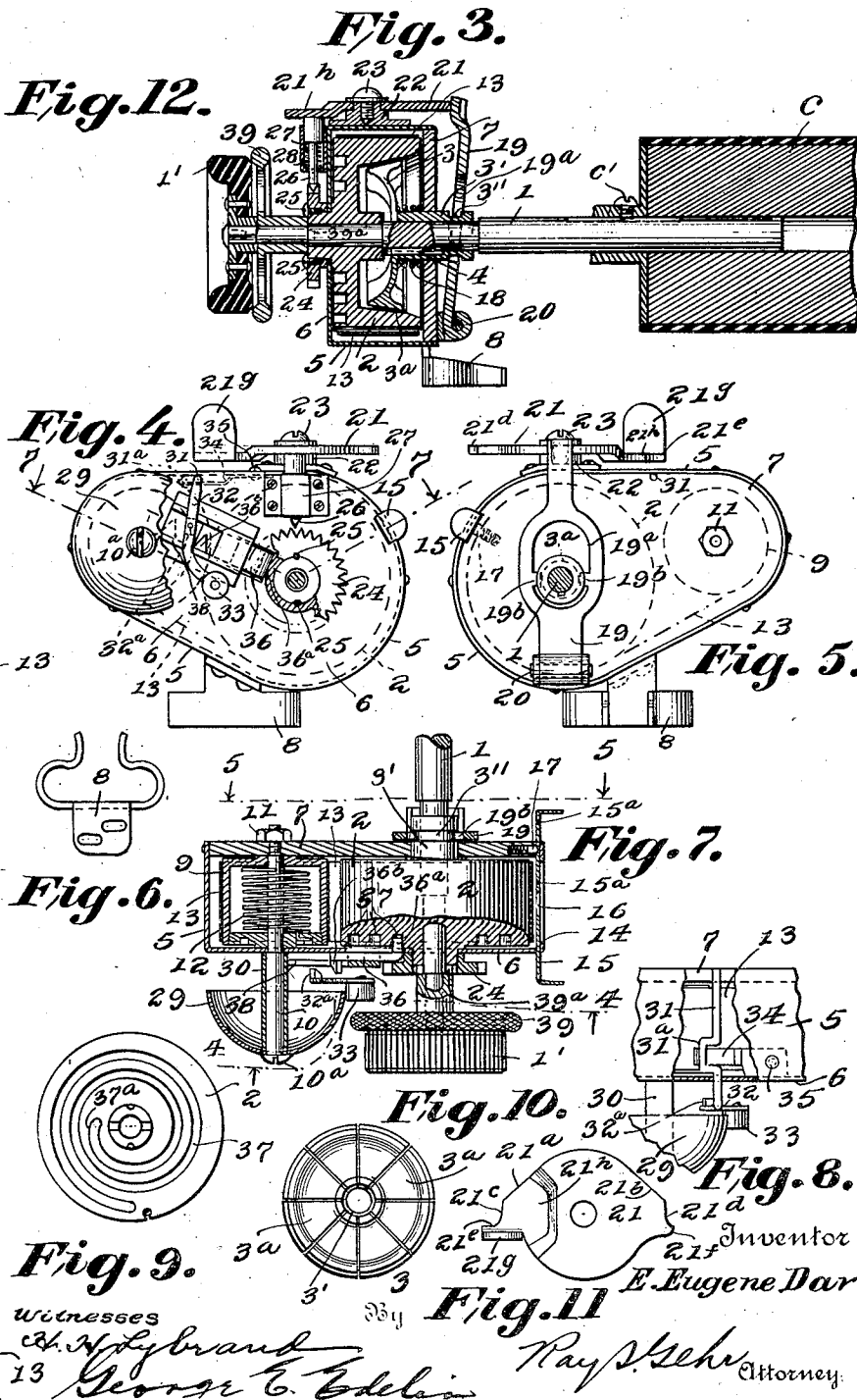
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Patented May 20, 1919.
 2 SHEETS—SHEET 2.

1,304,458.

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UNITED STATES PATENT OFFICE.

EDWIN EUGENE DARR, OF WASHINGTON, DISTRICT OF COLUMBIA.

LINE-INDICATOR AND SIGNAL FOR TYPE-WRITING MACHINES.

1,304,458.

Specification of Letters Patent.

Patented May 20, 1919.

Application filed August 12, 1915. Serial No. 45,239.

To all whom it may concern:

Be it known that I, EDWIN EUGENE DARR, a citizen of the United States, residing at Washington, District of Columbia, have invented a new and useful Line-Indicator and Signal for Type-Writing Machines, of which the following is a specification.

In the now standard type of front-strike typewriters it is impossible for the operator, as he approaches the bottom of the sheet of paper, to know how much writing space remains. This is not only an inconvenience in various respects, but frequently results in the writing space being overrun so that the appearance of the page is spoiled. The present invention relates to means for indicating to the operator, at all times, the number of unwritten line spaces yet remaining on the sheet, and for giving the operator an audible signal when the last line space of the sheet is reached.

The general object of my invention is the provision of improved mechanism adapted to perform the above-mentioned functions. Speaking more particularly, one of the objects of the invention is the provision of mechanism of the character in question which is adapted to be readily applied, as an attachment, to the standard typewriting machines.

Another object of the invention is the provision of such a mechanism which is adapted to be applied to standard typewriting machines by being substituted for some part or parts of such machines.

Another object of the invention is the provision of improved means for bearing and displaying the line-indicating characters.

Another object of the invention is the provision of line-indicating devices adapted to indicate the number of unwritten lines, either for single, or double, or triple, line-spacing.

Another object of the invention is the provision of devices adapted to automatically indicate to the operator either the number of single spaced unwritten lines alone, or the number of double spaced unwritten lines alone, or the number of triple spaced unwritten lines alone, so that the operator is not confused by a multiplicity of indications, and, at the will of the operator, to indicate, at any instant, the number of

single, double and triple line spaces remaining, whereby the operator can, at any point in the writing of the sheet, change from any one of the three line spacings to either of the others.

Another object of the invention is the provision of line indicating mechanism having improved means for operatively disconnecting it from the typewriting mechanism at the will of the operator when he does not desire to make use of the indicator, as, for example, when matter is being written that is known to cover only a small portion of the sheet.

Another object of the invention is the provision of line indicating means which is adapted to be temporarily operatively disconnected from the typewriting mechanism and locked in position while a partially written sheet is temporarily withdrawn from the machine or shifted, without interfering with the accuracy of the indicator.

Another object of the invention is the provision of improved means for actuating an audible signal device to indicate the approach of the last line space.

Another object of the invention is the provision of an indicating and signal mechanism such as has been referred to which is comparatively simple, compact, and of light weight.

The foregoing objects are attained in the mechanism hereinafter described in connection with the accompanying drawings, which illustrate a preferred form of the invention.

In the drawings,

Figure 1 is a fragmentary plan view of a portion of the paper carriage and main frame of a typewriter with my improved indicator and signal attached;

Fig. 2 is a left side elevation of the indicator and signal and some of the typewriter parts shown in Fig. 1;

Fig. 3 is a vertical section, on an enlarged scale, on the line 3—3 in Fig. 1, the indicator being shown disconnected from the platen roll of the typewriter and locked against movement;

Fig. 4 is a vertical section taken on the broken line 4—4 in Fig. 7, the signal bell being partially broken away to disclose details of the construction;

Fig. 5 is a vertical section taken on the line 5—5 of Fig. 7;

Fig. 6 is a detail view of one of the parts;

Fig. 7 is a section taken on the broken line 7—7 of Fig. 4;

Fig. 8 is a fragmentary plan view showing some of the signal parts;

Fig. 9 is a left side elevation of one of the winding drums of the indicating mechanism;

Fig. 10 is a side view of the clutch device by means of which the indicating mechanism is disengageably connected with the platen roll of the typewriter;

Fig. 11 is a detail plan view of one of the parts of the mechanism; and

Fig. 12 is a view of the unrolled tape which bears the line indicating numerals.

Referring in detail to the construction illustrated, *a* designates the top plate of the main frame of a No. 10 Remington typewriter, upon which plate is mounted the paper carriage having a frame *b* and a platen roll *c*. At the right end of the paper carriage are the line spacing devices comprising the ratchet wheel *d* which is disengageably connected to the platen roll by friction clutch *e*, the actuating pawl *f* which engages the ratchet wheel, the thumb lever *g* and the driving connections between the said lever and the actuating pawl which are designated in their entirety by the letter *h*. *k* is the detent arm which engages the ratchet wheel *d* to hold it in adjusted position. The knurled wheel *p* on shaft *m* serves to turn the platen roll and, by axial movement, to disengage and reengage the clutch *e*.

The frame of the paper carriage has the usual supporting bearings for the platen roll *c*, the bearing at the left end of the roll being shown at *n*. At the right end of the roll the bearing structure, together with other parts of the carriage frame, is omitted, but it will be understood that the shaft *m* of the roll is supported in the usual bearing.

The shaft which is used in the standard typewriter construction to support the left end of the platen roll is replaced by a shaft 1 which constitutes a part of my improved line indicator and signal. This shaft is designed to perform the ordinary functions of the shaft which it replaces and, in addition, constitutes an important part of the indicator and signal mechanism. As is clearly indicated in Fig. 1, the shaft 1 fits within the bearing *n*, and is rigidly secured to the platen roll *c* by the screw *c'*. 2 is a winding drum mounted on the shaft 1 so as to turn freely thereon. The right side of the drum 2 is coned out to receive a conical clutch 3. The clutch has a hub part 3' which is slidably mounted on the shaft 1, but is held against rotation in relation to the shaft by a key 4, so that when the clutch operatively engages the drum 2 the latter is caused to turn with the shaft 1. The body of the clutch 3

is divided into a plurality of sector-shaped parts 3^a, 3^a. The clutch is made of resilient material and the peripheral conical faces of the sector parts are shaped so that normally they come into engagement with the conical wall of the drum 2 at the right side of the clutch before the other parts of their surfaces come into such engagement, the full engagement being secured by forcing the clutch 3 to the left until the sector parts are sprung sufficiently to effect such engagement. Any suitable type of clutch may be employed, but I prefer one such as illustrated as it is adapted to hold very securely without danger of slippage.

The drum 2 and clutch 3, as well as other parts which will presently be described, are inclosed in a casing which is designated in its entirety by 5. This casing, in the construction shown, comprises a main cup-like part 6, which is preferably pressed from sheet metal and a closure plate 7. The body of the casing 6 is supported on the hub of the drum 2 while the closure plate 7 is supported on the hub 3' of the clutch 3, and the casing as an entirety is held against rotation around the axis of the shaft 1 by a forked bracket 8 which is rigid with the casing and projects laterally therefrom with its arms slidably embracing a vertical extension *b'* of the carriage frame *b*, the arrangement being such that the casing 5 is free to rise and fall with the platen roll when the latter is actuated by the shift key of the machine, but is held against rotation around the axis of the platen roll.

In the rear part of the casing 5 is arranged a hollow drum 9 which is rotatably mounted upon a shaft 10. This shaft is supported in the casing 5 in the manner shown in Fig. 7, being threaded at one end to receive a nut 11 which secures the shaft fixedly in position. Within the drum 9 is a coiled spring 12 which is secured at one end to the fixed shaft 10 and at its other end to the winding drum, the arrangement being such that the spring 12 tends to yieldingly hold the winding drum in a certain angular position on the shaft and to return it to such position when the drum has been turned.

13 is an indicating tape which is mounted upon the drum 9, preferably having its inner end secured to the drum. The outer end of the tape 13 is extended forward from the under side of the drum 9 and secured to the winding drum 2, the arrangement being such that when the shaft 1 turns with the platen roll in a direction to feed the paper forward, the tape 13 is drawn from the drum 9 and wound upon the drum 2, the spring 12 permitting such action, but tending, as above stated, to return the parts to their initial positions.

The tape 13 may be of any suitable material, but I have found that linen tape of

good quality is satisfactory. As shown in the drawings, the tape bears three longitudinally extending series or rows of numerals which are designed to indicate the lines on the sheet which is being typewritten. On referring to Fig. 12 it will be observed that the left hand series of numerals begins with the numeral 72 and ends with 1, while the middle series begins with the numeral 36 and ends with 1, and the right hand series begins with 24 and ends with 1. These three series correspond to single, double and triple line spacing, respectively, on a legal size sheet, as will appear from the spacing of the indicating numerals of each series in relation to each other and in relation to the numerals of the adjacent series.

For the purpose of effectively displaying the indicating numerals to the machine operator the front wall of the casing 5 is formed with a rectangular, transversely elongated aperture 14 and in connection with said aperture is a slide 15 having an aperture or window 16 of less width than the aperture 14. The slide 15 extends through the side walls of the casing 5 and can be moved into anyone of three positions, bringing its window 16 opposite either of the three series of indicating numerals on the tape 13. To secure the slide 15 against accidental displacement it is formed with a series of notches 15^a, 15^b, and a spring pressed plunger 17 mounted in the closure plate 7 is arranged to engage these notches so as to yieldingly hold the slide 15 (see Fig. 7).

The clutch 3 is actuated and controlled by the following devices. 18 is a coiled spring interposed between the body of the clutch and the closure plate 7 of the casing structure and serving to press the clutch into operative engagement with the winding drum 2. The right end of the hub 3' of the clutch extends outside the casing and is engaged by an actuating lever 19 which has a pivotal support 20 at its lower end. The lever 19 in the construction shown is formed with an opening 19^a large enough to receive the hub 3' and with inturned lugs 19^b, 19^c which engage a circular groove 3'' in the hub of the clutch. It will be seen that when the lever 19 is thrown to the right the clutch 3 is moved in the same direction on the shaft 1 against the tension of the spring 18 so as to disengage the clutch from the drum 2.

As a convenient means for actuating the clutch lever 19 I provide a cam plate 21 which is rotatably mounted upon a block 22 secured on the top of the casing 5, the cam plate being held against displacement by a screw 23 which is threaded into the block 22. The cam plate 21 is provided with cam surfaces 21^a and 21^b which are adapted to engage the upper end of the lever 19. In Fig. 1 the cam plate is shown in its inopera-

tive position, the clutch 3 being then held in engagement with the drum 2 by the spring 18. By turning the cam plate 21 ninety degrees in a clockwise direction the cam surface 21^a is brought into engagement with the upper end of the lever 19 so as to force it to the right and cause disengagement of the clutch 3; and, similarly, by turning the cam plate ninety degrees in the opposite direction the cam surface 21^b is brought into engagement with the lever 19 so as to effect the disengagement of the clutch. In order to hold the clutch securely in disengaged position the cam plate is formed with circular surfaces 21^c and 21^d adjacent the cams 21^a and 21^b, respectively, and to prevent overthrow of the cam plate it is formed with stop shoulders 21^e and 21^f which are adapted to engage the lever 19 and limit the throw of the cam plate. To provide a convenient means for actuating the cam plate I form it with an upstanding flange 21^g, which can conveniently be grasped between the thumb and finger by the machine operator. This flange 21^g, being located at one side of the cam plate, serves also as a practical indicator, as will be explained hereafter.

For certain purposes it is desirable to be able to lock the indicating tape in any desired position, and to this end I provide the following devices. On the left end of the hub of the drum 2, and outside the casing 5, I mount a toothed wheel 24, said wheel being rigidly secured to the hub of the drum 2 by screws 25. 26 is a locking plunger mounted in a frame or casing 27 which is arranged above the toothed wheel 24 and secured to the adjacent wall of the casing 5. The plunger is normally held in an upper, inoperative position by a coil spring 28 and is arranged so that its upper end is engaged by a depressed section 21^h of plate 21, the said depressed section constituting a cam which is adapted, when the plate 21 is turned into the position shown in Fig. 3, to press the locking plunger 26 downward into locking engagement with the wheel 24, thus securing the drum 2 against rotation. When the parts are in the positions shown in Fig. 1 the drum 2 is free to turn in relation to the casing 5 and is secured to the shaft 1 by the clutch 3 as previously described. To lock the drum against rotation the cam plate 21 is turned ninety degrees in a counter-clockwise direction from the position shown in Fig. 1, and this movement of the cam plate simultaneously effects the disengagement of the clutch 3 from the drum 2 in the manner previously described. Hence, by the simple quarter turn of the cam plate 21, the indicating tape is disconnected from the platen roll and positively locked against movement; and when the cam plate 21 is returned to the position shown in Fig. 1 the clutch 3 is again thrown into operative en-

gagement with the drum 2 by the spring 18 and the plunger 26 is disengaged from the toothed wheel 24 by the spring 28.

To relieve the machine operator of the necessity of watching the indicator, in order to note when the last line space of the sheet is reached, I provide an audible signal mechanism which preferably operates when the platen roll is moved forward to the last line space. 29 is a bell which is mounted on an extension of the shaft 10, the bell being clamped between the screw head 10^a and one end of a sleeve 30, the other end of which abuts against the casing 5. In the upper part of the casing 5, at a point adjacent the bell 29 is mounted a transversely arranged spindle 31, this spindle having one end extending through a bearing aperture in the wall 6 of the casing and extended downward to form a swinging arm 32 which carries at its free end a hammer 33 adapted to strike the bell 29. The spindle 31 is formed with a crank 31^a which is engaged by a flat spring 34 secured, as by a rivet 35, to the casing 5. The spindle crank 31^a normally extends approximately horizontally rearward and the spring 34 underlies the crank, so that any movement of the hammer 33 away from the bell is resisted by said spring (see Figs. 4 and 8).

For the actuation of the bell striker I provide a slide 36, which is mounted in a guide 38 secured to the wall 6 of the casing 5. The slide 36 and its guide 38 are arranged so that the former can have a limited longitudinal movement along lines radial to the axis of the drum 2. At its inner end the slide 36 has a lug 36^a which extends laterally through a slot in the wall 6 of the casing 5 and engages a spiral cam groove 37 formed in the adjacent face of the drum 2. When the drum 2 is turned the groove 37, by reason of its engagement with the lug 36^a, causes the slide 36 to move radially, and the rotational movement of the drum is limited by the engagement of the lug 36^a with the ends of the groove 37. When the lug is in engagement with the outer end of the groove 37, numeral 72 on the indicating tape is opposite the window 16 and the paper (assuming that legal size is being used) is in position for the writing of the first line. As the paper is advanced from line to line the drum 2 is turned and the spiral groove effects the inward radial movement of the slide 36, the lug 36^a of the slide approaching the inner end of the groove 37 as the last line space of the page is approached.

It will be seen that by reason of this engagement the slide 36 is given a radial movement by the rotation of the drum 2, and the spiral groove is so arranged that the slide is moved radially inward when the drum and platen roll are turned in the direction to feed the sheet of paper forward in the machine,

and radially outward when the drum is turned in the opposite direction.

The slide 36 has, at the end opposite the lug 36^a, a dog 36^b which extends laterally through a slot in the guide 38. This dog 36^b is designed to engage a tooth 32^a on the bell hammer arm 32. The tooth 32^a has its forward side beveled, as is clearly shown in Fig. 7, so that when the dog 36^b, in its rearward movement, engages the tooth 32^a, the latter and the arm 32 are forced laterally until the dog 36^b passes the tooth 32^a, whereupon the arm 32 springs back to its normal position, bringing the tooth 32^a into position in front of the dog. This last described operation is facilitated by the engagement of the hammer 33 with the bell, the latter thus serving as a sort of abutment. When, later, the slide 36 is moved in the opposite direction by rotation of the drum 2, the dog 36^b, by reason of its engagement with the tooth 32^a on the hammer arm 32, causes the latter to swing forward against the tension of the spring 34. In this movement of the parts the paths of the dog 36^b and the tooth 32^a diverge (see Fig. 4), and the construction and relative arrangement of the parts is such that the tooth is released from the dog just as the lug 36^a approaches the inner end of the spiral groove 37. Preferably, the groove 37 is formed with a rather sharp bend 37^a at or near its inner end so that the slide 36 will be given a considerable movement by the camming action of the groove during the last part of the angular movement of the drum 2, it being understood that it is this final angular movement of the drum which brings the paper forward to the last line space of the page.

The bell hammer, when released as just described, is projected against the bell 29 by the action of the spring 34, thus giving an audible signal to indicate that the last line space has been reached.

On the left hand end of the shaft 1 I mount a knurled wheel 1' by means of which the shaft 1 and the platen roll can be turned; and between the knurled wheel 1' and the hub of the drum 2 I mount a hand wheel 39, which is free to turn on the shaft 1, but is connected by means of clutch teeth 39^a with the adjacent end of the hub of the drum 2. Thus mounted, the wheel 39 serves as means for turning the drum 2 independently of the platen roll whenever it may be desirable to do so.

The operation of the indicator and signal will now be readily understood. The procedure of the operator may be as follows: First, the slide 15 is set to show one or the other of the series of indicating numerals, according as single, double or triple line spacing is to be employed. Then, assuming that the cam plate 21 is in the normal position indicated in Fig. 1, the indicating tape

is moved by means of the knurled wheel 1' or the similar knurled wheel *p* at the opposite end of the platen roll, so as to bring into a position opposite the window of the slide 15 the numeral corresponding to the number of lines to be written upon the sheet. This numeral will depend upon the length of the sheet, the line spacing and the margins that are to be left at the top and bottom of the sheet. As soon as the proper numeral has been brought into register with the window of the slide 15, the cam plate 21 is moved in the counter-clockwise direction so as to lock the drum 2 against movement and simultaneously release it from the shaft 1. The platen roll having thus been freed for rotation independently of the drum 2 and the indicating tape, the operator inserts the sheet of paper, bringing it into position so as to give the desired top margin. The cam plate 21 is now returned to its former position, as indicated in Fig. 1, thus unlocking the drum 2 from its casing and connecting it through clutch 3 with the shaft of the platen roll.

The operator now proceeds with his work in the usual manner. With each actuation of the platen roll to effect the line spacing the drum 2 is turned and the indicating tape advanced one step, so that an indication of the number of line spaces remaining on the sheet is always given. As the roll 2 is intermittently turned the bell hammer 33 is gradually retracted by means of the slide 36 in the manner previously described, and when the paper is fed forward to bring the last line space into printing position the bell hammer is released from the slide 36 so as to ring the bell 29. The attention of the operator is thus arrested and there is no danger of the bottom margin being encroached upon.

When the last line has been written the operator turns the cam plate 21 from the position shown in Fig. 1 in a clockwise direction so as to disengage the clutch 3, thus releasing the drum 2 from the shaft 1 of the platen and permitting the tape to be wound off the drum 2 upon the drum 9, which is turned by the tension of the spring 12. When the tape is thus retracted by the action of the spring 12 the return movement of the parts is limited by the engagement of the lug 36* of the slide 36 with the outer end of the spiral groove 37 in the drum 2. The sheet having been numbered, if desired, it is removed in the usual manner.

When the clutch 3 is released as last described and the drum 2 turned by the re-winding of the tape upon the drum 9, the slide 36, by reason of its engagement with the spiral groove 37 of the drum 42, is forced rearward into engagement with and past the arm of the bell hammer in the manner which has previously been described.

Instead of setting the indicator before the insertion of the sheet of paper, as above described, the paper may first be inserted and then, the cam plate 21 having been turned from the position shown in Fig. 1 in a clockwise direction to disengage the clutch 3, the operator can, by grasping the hand wheel 39, turn the drum 2 (the platen meanwhile remaining stationary) until the proper numeral appears at the window of the slide 15, whereupon the cam plate 21 is thrown back to its initial position so as to clutch the drum 2 to the shaft 1 of the platen. The operator then proceeds with the writing as before.

The use of my improved indicating and signaling device is facilitated by reference to margin tables which may be arranged to indicate the number of line spaces upon sheets of different lengths for various top and bottom margins. By glancing at such a table the operator can quickly determine the number of line spaces meeting the requirements of the particular case. However, an operator soon memorizes the number of line spaces on pages of the standard sizes, so that reference need be made to such tables but rarely. In introducing the paper little trouble is had in securing the desired top margin if the operator bears in mind that on the standard machines there are six single spaces to the inch.

I have stated above that any suitable form of clutch may be employed to connect the drum 2 and the shaft 1; and the controlling conditions in this connection may now be pointed out more fully. By reason of the fact that the ratchet wheel *d* is connected to the platen roll *c* by means of a friction clutch which permits movement of the platen roll in relation to the ratchet wheel when such movement is desired by the operator, it is essential that the parts of the clutch connecting the drum 2 and the shaft 1 shall be adapted to engage when they are in any angular relation to each other whatever, as otherwise the indicating numerals on the tape would be thrown out of register with the window in the slide 15. At the same time it is essential that there be no slippage of the clutch parts as that would throw the indicating numerals out of register with the slide window. To meet these conditions I preferably employ a clutch such as shown the parts of which are adapted to engage in any angular relation and hold with ample security to prevent slippage due to the inertia of the parts when the paper is spaced forward, the clutch being thrown out of engagement by the manual devices when it is desired to retract the indicating tape or, for any purpose, to cause relative rotation of the indicating drum 2 and the platen roll.

What I claim is:

1. In a typewriting machine, the combi-

- nation with a paper carriage having a platen roll and bearing supports therefor, of a self-contained line-indicating mechanism comprising a shaft adapted to be connected to the platen roll and to operatively engage one of the said bearing supports, thereby operatively connecting the indicating mechanism to the platen roll and affording a working support both for said mechanism and said roll.
2. In a typewriting machine, the combination with a paper carriage having a platen roll, of line indicating mechanism comprising a rotatable drum, a flexible tape bearing line-indicating characters secured to and adapted to be wound upon the drum, means for connecting the platen roll to advance the said line-indicating characters to a reading point, and means for retracting the tape.
3. In a typewriting machine, the combination with a paper carriage having a platen roll, of line indicating mechanism comprising a rotatable drum, a flexible tape bearing line-indicating characters secured to and adapted to be wound upon the drum, means for connecting the platen roll and the drum adapted to turn the drum with the platen roll to advance the said line-indicating characters to a reading point, and means comprising a spring actuated roller for retracting the tape.
4. In a typewriting machine, the combination with a paper carriage having a platen roll, of line-indicating mechanism comprising a rotatable drum mounted coaxially with the platen roll, a flexible tape bearing line-indicating characters secured to and adapted to be wound on the drum, means for connecting the platen roll and the drum adapted to turn the drum with the platen roll to advance the line-indicating characters to a reading point, and means comprising a spring actuated roller for retracting the tape.
5. In a typewriting machine, the combination with a paper having a platen roll, of line-indicating mechanism comprising a casing, a rotatable drum mounted in the casing coaxially with the platen roll, a flexible tape bearing line-indicating characters secured to and adapted to be wound upon the drum, the said casing having an opening to which the indicating characters are advanced by the rotation of the drum, means for connecting the platen roll and the drum to turn the latter, and a spring actuated roller to which one end of the tape is connected and which is adapted to retract the tape after it has been wound upon the said drum.
6. In a typewriting machine, the combination with a paper carriage having a platen roll, a line-indicating mechanism comprising an elongated member bearing line-indicating characters secured to and adapted to be wound upon the drum, the said casing having an opening to which the indicating characters are advanced by the rotation of a drum, means for connecting the platen roll and the drum to turn the latter, and a spring actuated roller to which one end of the tape is connected and which is adapted to retract the tape after it has been wound upon the said drum.
7. In a typewriting machine, the combination with a paper carriage having a platen roll, a line-indicating mechanism comprising an elongated member bearing line-indicating characters, driving connections between the platen roll and said elongated member adapted to move the latter and advance its line-indicating characters to a reading point as the platen roll is turned to feed the paper forward, and means for retracting the elongated member to its initial position.
8. In a typewriting machine, the combination with a paper carriage having a platen roll, of line-indicating mechanism comprising a member carrying a plurality of series of line-indicating characters, said series corresponding respectively to different line spaces, and means adjustable in relation to said series of characters and adapted by virtue of said adjustability to cooperate with any one of said series of characters to indicate the corresponding line spaces as the paper is fed forward on the platen roll.
9. In a typewriting machine, the combination with a paper carriage having a platen roll, of line-indicating mechanism comprising a casing, a movable member therein bearing a plurality of parallel series of line-indicating characters corresponding respectively to different line spaces, and driving connections between said member and the platen roll, the said casing having a movable section formed with a window which can be brought into alinement with one or another of the said series of characters by the movement of said section.
10. In a typewriting machine, the combination with a paper carriage having a platen roll, of line-indicating mechanism comprising a movable member bearing a plurality of parallel series of line-indicating characters corresponding respectively to different line spaces, driving connections between the platen roll and said member, and a casing around said member having a window adapted to be moved from alinement with one to another of the said series of characters.
11. In a typewriting machine, the combination with a paper carriage having a platen roll, of line-indicating mechanism comprising a movable member bearing line-indicating characters, frictional driving connections between the platen roll and the said movable member, and means for disengaging and en-

gaging said frictional driving connections at will.

12. In a typewriting machine, the combination with a paper carriage having a platen roll, of line-indicating mechanism comprising a rotatable drum supporting line-indicating characters on its periphery, driving connections between the drum and the platen roll adapted to be operatively engaged and disengaged in all relative angular positions of the drum and the platen roll, and means for engaging and disengaging said connections at will.

13. In a typewriting machine, the combination of a paper carriage having a platen roll, a line-spacing ratchet wheel, and a friction clutch disengageably connecting said wheel and platen roll, of line-indicating mechanism comprising a rotatable drum supporting line-indicating characters on its periphery, driving connections between the drum and the platen roll adapted to be operatively engaged and disengaged in all relative angular positions of the drum and the platen roll, and means for engaging and disengaging said connections at will.

14. In a typewriting machine, the combination with a paper carriage having a platen roll, of line-indicating mechanism comprising a movable member bearing line-indicating characters, driving connections between said movable member and the platen roll, means for disengaging said driving connections at will, and means for locking the movable member against movement while the said driving connections are disengaged.

15. In a typewriting machine, the combination with a paper carriage having a platen roll, of line-indicating mechanism comprising a movable member bearing line-indicating characters, disengageable driving connections between the movable member and the platen roll, means for locking the movable member against movement when the

said connections are disengaged, and a manual actuating device adapted when moved to one position to disengage the said connections and when moved to another position to disengage the said connections and apply the said lock.

16. In a typewriting machine, the combination with the paper carriage having a platen roll, of means for indicating the approach of the last line space of the paper comprising a bell, a bell tapper, means for retracting the tapper, and a rotatable spiral cam for actuating the retracting means.

17. A self-contained line-indicating mechanism for typewriting machines which have a paper carriage with a platen roll and bearing supports therefor, said mechanism comprising in combination a movable member bearing line indicating characters and a shaft adapted to be connected to the platen roll of the typewriting machine and to operatively engage one of the said bearing supports, thereby operatively connecting the indicating mechanism to the platen roll and affording a working support both for said mechanism and for said roll.

18. In a typewriting machine, the combination with the paper carriage having a platen roll, of mechanism for indicating the approach of the last line comprising a bell, a bell tapper and mechanism comprising a rotary member which, in the normal operation of the mechanism, has a constant operative connection with the platen roll to move therewith at the same angular speed and actuates the bell tapper to strike the bell at the end of a rotational movement of the platen and rotary member greater than 360°.

In testimony whereof I affix my signature, in presence of two witnesses.

EDWIN EUGENE DARR.

Witnesses:

GEORGE E. EDELIN,
J. E. GILES.