

W. J. NEIDIG.
TYPE WRITING MACHINE.
APPLICATION FILED DEC. 16, 1909.

1,053,922.

Patented Feb. 18, 1913.

2 SHEETS-SHEET 1.

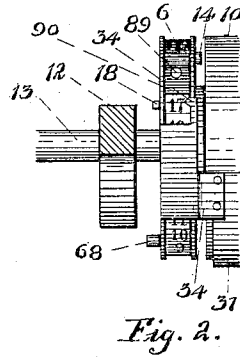
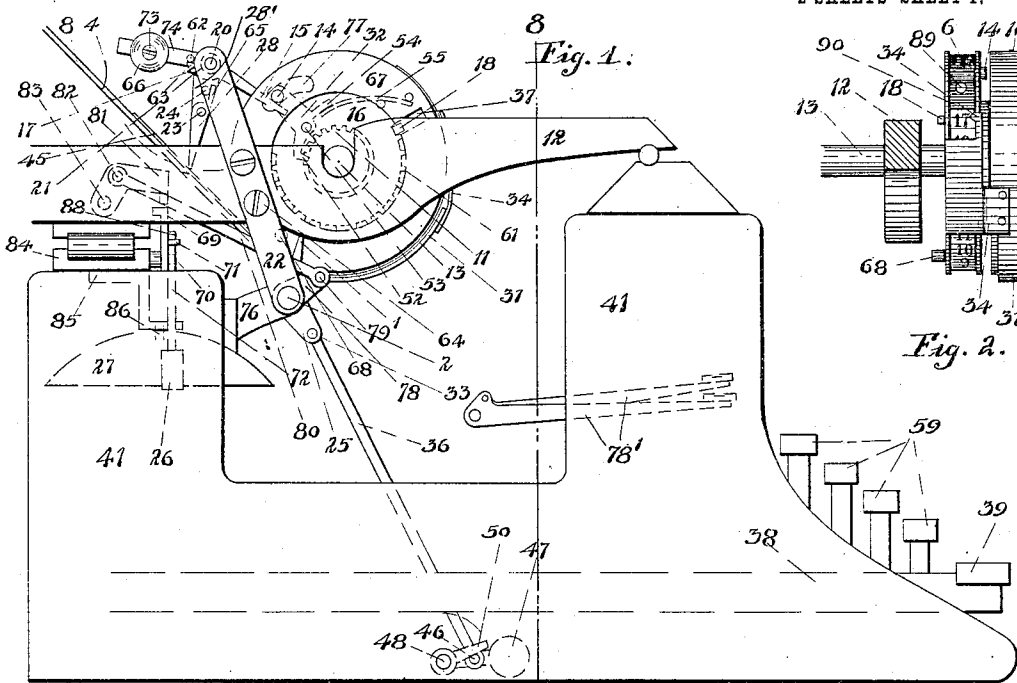


Fig. 3.

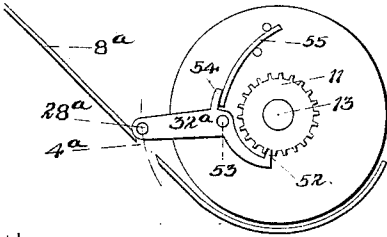


Fig. 4.

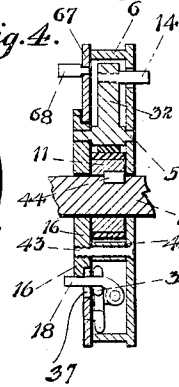


Fig. 5.

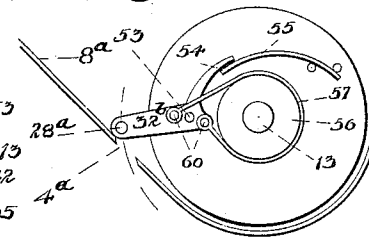


Fig. 6.

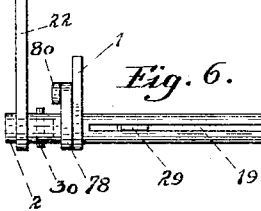
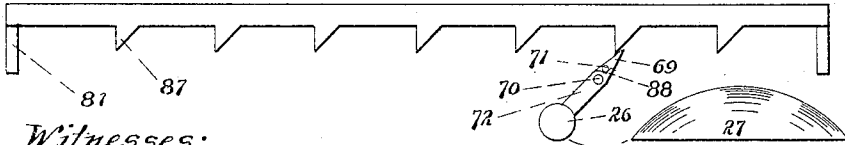


Fig. 7.



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2 SHEETS—SHEET 2.

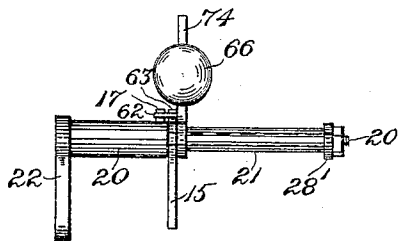
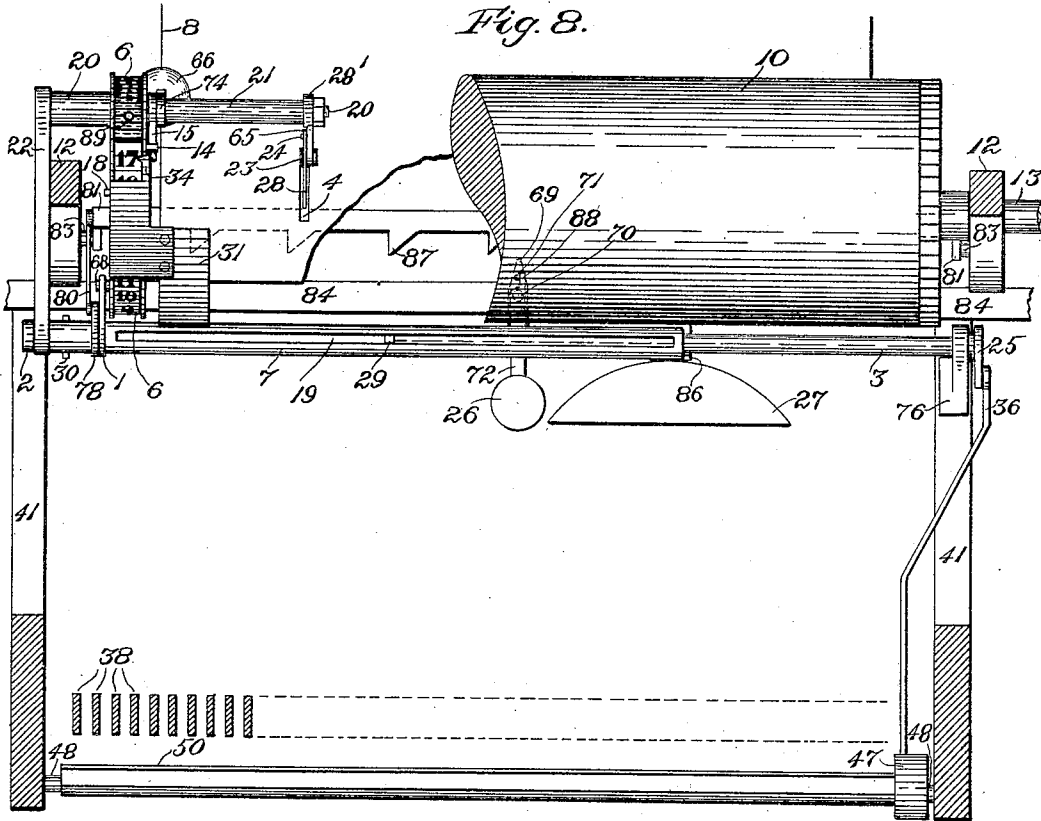


Fig. 9.

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UNITED STATES PATENT OFFICE.

WILLIAM J. NEIDIG, OF MADISON, WISCONSIN, ASSIGNOR, BY MESNE ASSIGNMENTS,
TO CHICAGO TITLE AND TRUST COMPANY, TRUSTEE, A CORPORATION OF ILLINOIS.

TYPE-WRITING MACHINE.

1,053,922.

Specification of Letters Patent.

Patented Feb. 18, 1913.

Application filed December 15, 1909. Serial No. 533,309.

To all whom it may concern:

Be it known that I, WILLIAM J. NEIDIG, a citizen of the United States, residing at Madison, in the county of Dane, State of Wisconsin, have invented a certain new and useful Improvement in Type-Writing Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

Certain principles and features of my invention as described herein are included within the generic invention which is described and claimed in my co-pending application filed April 20, 1908, Serial No. 428,212.

The objects of my invention are broadly to indicate to the operator by automatic means the position of his current line upon the sheet, either relatively to one of the edges thereof, or to certain other line positions.

The objects of that form of my invention more specifically illustrated in the drawings herein described are, first, to indicate to the operator the distance to the bottom edge of his sheet, or the bottom line of his page, from his current printing point, and this line by line and automatically, beginning as far up the sheet as may be found convenient; second, to give him a preliminary eye signal upon the approach of the end of the sheet; third, to supply him with a signal, preferably an ear signal, upon the completion of his predetermined last or next-to-the-last line or both of the said lines; fourth, to then lock the machine and render it inoperative; fifth, to enable him then to unlock the machine for further printing; and sixth, to supply certain means adapted to be applied to other paper-movement-indicating uses of the same general character.

As machines are at present constructed in practice, the operator has no means of knowing how near he is to the end of his sheet until too late to leave a suitable bottom margin. This is more especially true of front-strike and top-strike machines, because in them the bottom edge of the sheet passes entirely out of sight behind the platen while a large portion of the sheet still remains unused. I supply the operator with a system of adequate signals

whereby he may know when to stop his page; and in addition I measure for him the unused space left upon the paper-sheet, beginning long before the time to remove it, and continuing to the very end, so that without preliminary care on his part he can look ahead at any time and tell whether he has room on his sheet for a group of matter like a foot-note, or a table, or a chapter heading, that cannot conveniently be divided, and thus stop his page in advance of the predetermined page-length. This function has never before been performed, but is novel to my invention.

I attain my several objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is an end view of the preferable application of my principle as specifically shown herein; Fig. 2 is a front view of a portion of the same; Fig. 3 is a detail end view of a typical modification; Fig. 4 is a cross-section of a portion of Fig. 2, but with the adjustable parts brought into the best position for illustration; Fig. 5 is a detail end view of another typical modification; Fig. 6 is a front view of the rocking shaft-end 2 and the group of parts more immediately connected therewith under the platen; Fig. 7 is a front view of the rocking toothed rack 81 and some of its cooperating parts, under the paper table 8; Fig. 8 is a view, looking from the front, partly in section on the line 8—8, Fig. 1, the platen being partly broken away; and Fig. 9 is a top view of certain of the parts shown in Fig. 1.

Similar symbols of reference refer to similar parts throughout the several drawings.

My invention as more particularly described herein consists of a detachable rotary part connected more or less directly with the platen by means embracing a clutch; indicating means controlled or operated by the rotary part, comprising a series of indices, an eye signal, an ear signal, and means rendering the machine inoperative, whether one or all; and means controlling the action of the clutch, whereby the rotary part upon reaching a certain constant rotative position is released from engagement with the platen and detained until the sheet becomes suit-

ably advanced, and then, from its constant starting or initial position, is again engaged therewith. It includes also a paper-feeler having a novel give-way provision, together with novel means for retracting and positioning the same; a stop having also a novel give-way provision and novel positioning means and other novel features; a novel differential provision to regulate the pressure upon the sheet; a novel visual signaling means; a novel sheet-controlled means for rendering the printing mechanism of a typewriting machine inoperative at a predetermined line position, and for restoring the printing mechanism to operativeness at will without loss of line position, and for automatically restoring the printing mechanism to operativeness for later printing; certain novel features of clutch-construction; and sundry other novel features, as will be explained.

Referring to the drawings, the usual main frame of a typewriting machine is indicated at 41, on which the transversely movable carriage-frame 12 is mounted, bearing journaled in the ends thereof the platen-arbor 13, on which is fixedly attached the usual platen 10, all in well-known manner. The line-space mechanism for advancing the platen to feed the sheet is not shown herein, but may be of any approved type, as in practice. The usual paper table 8 for the support of the entering sheet is shown, as are the paper guards or fingers 31 around the under side of the platen, all being attached in usual manner to carriage frame 12. The well-known type-keys 59, space-key 39, and key-levers 38 are shown, the latter being connected in practice with the usual type-bars, 78', mounted in usual manner. The platen as regarded herein is a means for feeding the sheet.

Fixedly attached to the platen arbor, and therefore moving simultaneously with the platen, is wheel 11, supplied with notches or interdental spaces around its periphery. Overhanging this wheel is an independently revoluble drum 6, hereinafter referred to also as the index-carrier, or indicator, the said drum having a removable side comprising the shouldered face-disk 16 and the annular plate 67. Face-disk 16 is attached to the main portion of the drum by screws 43 (Fig. 4), bushings 42 holding the two parts separated for wheel 11, which is revoluble between them. Such construction provides conveniently for assembling the parts. Annular plate 67 is adjustable angularly upon the main structure of the drum, and is used for adjusting the time of actuation of my bell-striking and locking mechanisms. The said annular plate carries attached thereon the outwardly projecting pin 68, the pivoted lock-bar 18, and the expanding spring 35, one end of which presses

against the lock-bar; and it is shown as having a bearing upon the shoulder of disk 16, a part of whose periphery is supplied with the locking recesses 61, into which the said bar 18 may be pressed by said spring. This bar 18 projects outwardly through a slot in said plate 67, shown at 37 in Fig. 1, so that it can be readily released from engagement with said recesses by the operator. Journaled at either end in the rear and face walls of said drum is the arbor 53 bearing the clutch-lever 32, said lever having thereon clutch-tooth 52 to engage with wheel 11. It is desirable that tooth 52 should seat and unseat without affecting the angular relationship between the drum and the said wheel, so as not to cause false motion of the drum. In this case I avoid such false motion by journaling arbor 53 at a point radially exterior of said wheel, and by placing tooth 52 in such position on said clutch-lever that it seats and unseats radially. The form given to the said clutch-tooth and to the co-operating teeth or interdental spaces on said wheel contributes to the result. The form of the teeth and the arrangement of parts is also designed to control the momentum of the drum and prevent the slipping of teeth following the usual sudden arrest of the platen after the completion of a spacing stroke of the line-space lever. Lever 32 is supplied with an arm 54, against which presses spring 55, attached on the rear wall of the drum, the pressure thereof tending to press tooth 52 into clutch with wheel 11. The said end of lever 32 bears a laterally extending projection 14 movable in a short arc in slot 77 in the rear wall of the drum, shown by dotted lines in Fig. 1. In this embodiment of the invention as a matter of convenience the projection 14 is extended inwardly toward the platen. I prefer to mount projection 14 as shown in Figs. 1, 2, 4 and 8, so that the lever bearing it will be contained within the contour of the drum, and so that there will be no projection of the revolving mechanism beyond the diameter of the platen to cause interference with the entering of a wider sheet on occasion, or interference with stationary index 34, or interference with typewriter parts, and also for structural reasons, but the parts can be constructed otherwise, as is illustrated in Figs. 3 and 5 and hereinafter explained. When projection 14 is pressed in the direction opposite that in which it rotates, lever 32, rocking on arbor 53, lifts tooth 52 out of clutch with wheel 11, whereupon the drum becomes disconnected from its driving means, and detachable.

Leaving the group of parts just described, the carriage frame 12 has attached to it by means of screws 64 the frame-extension 22, the upper part of which bears the inwardly projecting shouldered axle 20, Figs. 1, 8 and 9.

Journalled upon this axle is hub or sleeve 21, bearing near one end the fixedly attached weight-lever 74, upon which weight 66 is adjustably carried, the weight being fastened by set-screw 73 at any required distance from the axis thereof, according to the required leverage. Adjacent to this weight-lever, and maintained in lateral position by it on the one side and by the shoulder of axle 20 on the other, is the loosely mounted stop or controller-lever 15, movable in a plane coinciding with that of projection 14. This stop, journalled to turn on sleeve 21, performs the functions of both stop and lever, and normally projects into the path of the projection 14 previously described, being maintained in suitable angular position by the coöperation of lug 63 on the said stop-lever 15 with a one-way stop or pin 62 on the weight-lever, the weight of stop-lever 15 holding the said lug in contact with the said one-way stop. The said one-way stop 62 also coöperates with lug 17 on axle 20 to limit the movement in one direction of weight 66, and consequently of sleeve 21. That is to say, stop-lever 15 if moved in one direction will act to change the position of weight 66, through lug 63 and one-way stop 62. When force ceases to be exerted upon said stop-lever in said direction, weight 66 will return by gravity until stopped by contact of pin 62 with lug 17, its superior weight acting against the weight of stop-lever 15 to carry said stop-lever back with it, thereby positioning said stop-lever. If moved in the other direction, however, as by the backing-up of projection 14 against it, stop-lever 15 will not be operative upon the weight, lug 63 separating from one-way stop 62 and permitting idle movement of the stop-lever in that direction. Thus freebacking-up of projection 14 past stop-lever 15 is provided for. I regard the provision as desirable, although my invention does not necessarily require the use of a stop having any novel or special characteristics. At the other end of hub or sleeve 21 is the fixedly attached feeler-butt 28'. Upon this feeler-butt, and eccentric to the axis thereof, is pin 23 (Fig. 1), upon which is journalled feeler-tip 28, the parts being so mounted that when sleeve 21 is rocked, feeler-tip 28 will be moved into the paper-path, provision being made for such movement in this instance by providing the usual paper-table 8 of the typewriter with a slot or opening 4 in the path of the said feeler-tip, the paper-path being adjacent the surface of the paper-table. A lug 65 on the tip portion of the paper-feeler coöperates with a one-way stop 24 on the feeler-butt to limit the movement of the feeler-tip and feeler-butt relatively to each other, the said parts being movable one on the other in a direction separating said lug from said

one-way stop, but having their relative movement in the other direction limited by said lug and stop. The feeler-butt and feeler-tip act as a single piece as far as their controlling action is concerned, and together constitute the sheet-controlled paper-feeler of my mechanism. In other words, I employ a paper-feeler capable of being variously described as knuckle-jointed, or knife-jointed, or as having a one-way hinge, or a one-way stop between the feeler-portion proper and the mechanism which it controls, to permit idle movement in one direction of one thereof with respect to the other, but to limit said movement in the other or working direction. The purpose of this giving provision is to permit free backing-up of the sheet from any position thereof. The exact position of the provision in the intermediate train of parts is more or less immaterial, as is its exact form, and a paper-feeler may in some cases be employed having none or few of the special characteristics of the paper-feeler just described, as is illustrated in Figs. 3 and 5 and explained hereinafter. The paper-feeler described has a normal position retracted from the paper-path, to permit of free sheet-insertion. Upon the passing of projection 14 from control of stop-lever 15, weight 66 rocks sleeve 21, thereby moving the attached paper-feeler out of the paper-path and away from the same, until stop-pin 62 comes in contact with positioning lug 17. In this position the parts will remain until projection 14 again presses upon stop 15, an action that ordinarily will not occur until a new sheet is inserted and advanced. Other novel action of the paper-feeler will be explained later.

The action of the mechanism thus far described is as follows: The paper-sheet 45 is entered into the machine and advanced as usual by the platen, the paper-feeler occupying its retracted position and permitting unobstructed sheet-insertion. Drum 6 (and its attached parts) is rotated with the platen during this forward movement of the sheet through the action of clutch-tooth 52 and wheel 11, as explained. Eventually projection 14 will be brought around into contact with stop-lever 15, maintained in the path thereof by weight 66. Further advance of the platen and drum will cause projection 14 to act operatively upon stop-lever 15, thereby through lug 63 and one-way stop 62 elevating weight 66, rocking sleeve 21, and moving the paper-feeler toward the paper-path. If the paper-sheet were not present, the sheet-contacting portion of the paper-feeler would now move into slot 4, stop-lever 15 would continue to move ahead of projection 14 until entirely removed from the path thereof, and drum 6 would continue to move with the platen. But in the pres-

ence of the sheet over slot 4 the paper-feeler cannot enter said slot, and stop-lever 15 consequently can no longer move ahead of projection 14, but becomes a controlling stop in the path thereof, as illustrated in Fig. 1.

Further rotation of drum 6 under the action of the platen will now cause lever 32 to be rocked upon axis 53 and tooth 52 to be lifted radially out of the interdental space.

on toothed wheel 11 in which it has been seated, thereby unclutching drum 6 from connection with the platen and permitting detention of the drum by projection 14. In this position of parts the mechanism will remain during the control of the paper-feeler by the sheet. Meanwhile the sheet will be advanced by the platen until the bottom edge of the sheet arrives at the paper-feeler. The moment the end of the sheet clears the paper-feeler, the said paper-feeler will be left free to move into slot 4, stop 15 connected therewith will instantly cease to have a stopping action upon projection 14 but will move ahead thereof out of the way, and spring 55 will instantly through lever 32 move tooth 52 into clutch with wheel 11. Drum 6 by reason of such action must instantly begin moving with the platen, and it must now continue to revolve securely with the platen until the clutch-mechanism is again released.

Other forms of clutch may be used, and other methods of controlling the same, as is illustrated in Fig. 5 and explained hereinafter, without departing from the general mode of operation disclosed herein.

I have described a means whereby the rotary drum 6 is brought to a stop always at the same rotative point, given the presence of the work-sheet. Since the drum comes to a stop always at the same rotative point, it follows that it resumes its movement always from the same initial or starting point. Also, it instantly begins its working movements when the sheet's bottom edge has arrived at a fixed distance from the printing point, and thereafter moves in unison with the platen, and therefore coördinately with the sheet. That point upon the drum or carrier which lies opposite the pointer or stationary index 34, conveniently attached to the paper-guard 31, during detention of the drum by stop 15 may be marked with a small circle or index 89, to indicate that position of the drum.

When the drum is given movement with the platen after release by the sheet a new point thereon will be brought opposite the stationary index. This point can be marked to indicate the distance then remaining between the current printing point and the sheet-end, for the same point on the drum will always come into indicating position when the sheet-end arrives at the given distance from the printing point. Let us say that this distance is seventeen single line-spaces. I mark my drum or index-carrier

17, to indicate that distance. I now advance my sheet say a single line-space: whereupon I mark the new point on my carrier then in indicating position 16, to indicate say that distance. And so on, down to 1. Such are the numerals shown in the drawings. Any distances desired within the range of the mechanism can be indicated in the same way, beginning with any sheet-position and ending with any and omitting any. Instead of using single-line indication, I can use double-line or triple-line; or I can use still other units of measurement. Instead of indicating distances to the bottom edge of the sheet, I can indicate the distances to (say) the bottom line position just as well, as will be readily understood. I prefer to employ indices involving no mental calculation nor memorizing, but I do not limit myself in every case to the use of any particular kind. number or order of indices.

Any mechanism having a mode of operation such as has been described,—that is to say, having an operative member that is first brought into a constant starting or initial position, and then at a constant point in the sheet's progress given a movement constant with that of the sheet,—can be made not only to operate indices, but to control and operate almost any form of signaling apparatus as well. In my drawings I show means for attracting the operator's attention first through his eye, then through his ear, and after that, a means for rendering the machine inoperative, all operated or controlled by the composite rotary member 6—11—87.

Having reference to my visual or eye signal I have shown herein the periphery of the part 6 divided into two sections, the one, the working section, consisting of the portion bearing the indicating marks or indices, and the other being left blank. The working section is colored in striking contrast to the other section—say a white background with black lettering thereon for the one, and a solid black for the other. The index-guide or pointer-piece 34 is shown extended out over the periphery as shown, so that during the time the periphery is detained with the point 89 opposite the pointer, none of the white or lettered portion of the periphery will be visible to the operator, but when the periphery enters upon its working movements with the platen, the white or lettered portion will be brought into view and the black portion will disappear. The striking change from black to white will be noticed by the operator, who will then understand that it is time, or near time, for him to remove his sheet. Such a signaling or indicating means could be used alone, without the addition of any lettered indices whatever, and without the addition of any other signaling means. The

precise manner of covering or concealing the working section of the periphery to the required extent is not material in all cases. Nor are the precise color arrangements material in all cases.

My audible or ear signal is given by the following means: I attach to the track 84, which supports the carriage 12 in its transverse movements across the machine in the usual manner, and is in turn supported at either end in the usual manner by the frame 41, the angle-piece 85, and to this angle-piece I attach by means of the pin 86 the bell 27. The bell may be supposed to hang about centrally between the frames 41. Also attached to track-beam 84 is the pin or axle 70, having journaled thereon the upwardly-extending trip-lever 69 and the downwardly-extending hammer-lever 72. The lever 69 carries a stop-pin 71 to engage with the lug 88 on the said hammer-lever. Attached to the end of the hammer-lever is the bell-hammer or clapper 26, adapted to fall by gravity against the said bell 27. I now attach to the carriage frame 12 by means of the axle or pin 83 the serrated rocking-piece 81, a front view of which is shown in Fig. 7. This piece 81 must be imagined as rocking upon a similar supporting pin 83 attached to the similar carriage-frame-end 12 at the farther end of the platen, as will be understood; and it carries upon it the pin 82 projecting from the nearer end thereof, and the projections 87 as shown. The carriage frame 12 bears also the extension 22, upon which is journaled the rocking end 2 of the slotted and keyed telescoping shaft 7—3, shown more clearly in Fig. 6. The sleeve portion 7 of this shaft bears fixedly attached thereto the crank lever 78, which is connected with the before-mentioned rocking piece 81 by means of the pins 79 and 82 and the connecting rod 80, and said sleeve portion also bears the upwardly-extending lever 1, which projects into the orbital path of the pin 68 stationed on the adjustable annular disk 67. The further or inner end of the said telescoping shaft is journaled in the frame extension 76, the said extension being attached to the further end-frame of the machine, the same resembling in form the end-frame 41 shown, as will be understood. The key-pin 30, Fig. 6, is merely used to hold the head 2 in position upon the sleeve 7. When it is time for the signal to be given, the pin 68, projecting from the disk 67 as described, engages with the lever 1, which is thereupon pressed forwardly, and with it the rock-shaft 2—7—3 and the lever 78 thereon. This action rocks downwardly the serrated rocking-piece 81, so that the projections 87 thereon come into operative relation with the upper portion of the trip-lever 69. When now the carriage is returned in the

usual manner across the machine for the beginning of a new line, the projections 87 will alternately lift the bell-clapper 26 from the bell and release it, thus giving the operator an adequate signal.

The means whereby I render the machine inoperative are described thus: I prefer to employ means that will lock the printing mechanism of the machine in all cases at a predetermined point in the progress of the sheet, whether the printing at the time consists of a single column of numerals having short lines, or matter in longer lines, and whether it be positioned midway between the side edges of the sheet or far to one side or the other of such position,—that is, to say, locking means that will operate irrespective of the position of the carriage. The telescoping shaft 3, bears the projecting key 29, adapted to play in the slot 19 in the sleeve 7. The shaft 3 bears fixedly attached thereto the crank-lever 25, upon which is stationed the pin 33. I journal between the main end-frames 41 of the machine the lock-gates 50, having an axle or arbor 48. Fixedly attached upon this arbor, or upon the lock-gate itself, is the weighted lever 47, bearing the pin 46. The connecting rod 36 connects this portion of my mechanism with that previously described, through the pins 46 and 33. When it is time for the machine to be rendered inoperative, the pin 68, acting upon the lever 1, acts rockingly upon the sleeve 7 and through it the shaft 3 and crank-lever 25, thereby bringing the locking gate 50 into an upright position under the levers connected with the keys 59 and 39. These levers are the usual levers found in typewriting machines, and they may be imagined as lying behind the space-key lever 38, and in the same position relatively to the locking edge of the gate 50. The machine is now locked against further printing, whatever the position of the carriage and irrespective of its movement.

In the illustrated construction the arrangement and setting of the parts are such that the first action of pin 68 upon lever 1 operates to draw the rocking-piece 81 down far enough to enable its teeth 87 to engage with trip-lever 69 of bell-clapper 26 in the return movement of the carriage, but does not turn the lock-gate 50 far enough to lock the type-levers. The next turning movement of the platen and pin 68 causes the rocking-piece 81 to be drawn down somewhat farther and moves the lock-gate into its locking position.

I will now describe more particularly the use of my mechanism. Suppose I wish to leave a margin at the bottom of my sheet equal to four double line-spaces: I bring my composite rotary member around, by twirling the platen say, until the projecting piece

18 is conveniently stationed; then, lifting the said piece out of the recess in the edge of disk 16 occupied by it, I hold it and the disk 67 stationary while I turn the part 6 with its indices around until the numeral 8 lies opposite the said locking bar 18. I now release the bar 18, which falls into another recess, locking the disk 67 again with the part 6 through the disk 16. My mechanism will now always give a preliminary eye-signal when the bottom of the sheet is approaching within its range; and when the paper-sheet is finally advanced into the last line position, it will ring a bell during the return of the carriage for the beginning of the line, thus advising the operator that the current line is the last line to be printed upon that sheet. If the operator disregards this signal and feeds forward the sheet after printing such line, then returning the carriage to the beginning of the line, the bell will be rung again during such return, and the machine having been rendered inoperative he can do no more printing. The parts may be set so as to cause the bell to be rung only upon the completion of the last line. If for any reason the operator wishes to print additional lines upon the sheet, he has but to turn the platen forward a line to release the lever 1 from engagement with the pin 68, and then backward into position, and his machine will be once more rendered operative.

I do not limit myself to the employment in all cases of the exact means shown for rendering the printing mechanism of a type-writing machine inoperative, nor to the use of any particular or special connecting means between the locking mechanism and the actuating means therefor.

I show diagrammatically two modifications of my more specific invention as described herein, in Figs. 3 and 5, the first illustrating a more direct connecting means between the clutch-lever 32^a and the slot-entering part 28^a, the said part 28^a being carried by the clutch-lever, and the second showing a friction-clutch of well-known strap type similarly connected.

In order for a mechanism of this character to be completely operative, provision must be made for every possible backing-up movement of the sheet, and for the handling of wrinkled sheets and sheets having broken surfaces. I have made such provision by providing the paper-feeler with a hinge-joint 23, lug 65 and stop 24 as described, and by providing means whereby the parts 15 and 1 permit of a backing-up movement of the pins engaging upon them, from any point. If the mechanism be backed-up from the position of parts shown in Fig. 1 the paper-feeler instantly recedes from contact with the sheet, the backward movement of projection 14 permitting

weight 66 to move downwardly, thereby rocking sleeve 21 and moving the paper-feeler away from the paper-path. Should a chance roughness or irregularity in the backward-moving paper-surface meet the paper-feeler before the effective retraction thereof, the paper-feeler tip will merely bend back upon pin 23 until clearance is effected. If the mechanism be backed-up from a somewhat later position of the sheet than that shown in Fig. 1, immediately after the paper-feeler, released by the sheet-end, has entered slot 4, say, the backing-up bottom edge of the sheet will likewise cause the lower portion of the paper-feeler to bend idly backward upon pin 23. Slot 4 is made sufficiently long to provide for any possible movement of the paper-feeler on its axis, but, ordinarily the combined retracting action and flexing action give clearance to the parts before the feeler has been carried backward into the slot very far. If the mechanism be backed-up from a still later position, after projection 14 has cleared stop 15, the said projection on encountering the stop merely lifts the same idly out of its path, as before explained. This novel backing-up action while desirable is not necessarily an essential part of my invention, nor do I regard myself as limited to the exact special means described for its accomplishment in all cases.

The uses of the weight-lever 74 and the weight 66 adjustable thereon are these: first, through the action of the pin 62 upon the lug 63, to return the stop or lever 15 into an operative position; second, through the hub 21 to swing the paper feeler out of its slot and away from the paper table 8 toward the platen, in order that the entering sheet may not be obstructed; and third, to adjustably subtract for sheet-easing purposes from the forces pressing the paper-feeler against the sheet; that is to say, to enable the pressure of the paper-feeler upon the paper sheet to be rendered as light as may be desired, whatever the force applied against the lever 15 by the pin 14. For instance, suppose that the spring 55 be of such a stiffness that the pressure of the pin 14 upon the lever 15 in the clutch-releasing action equals as much as half a pound, whether because of leverage circumstances or what. Such a pressure transmitted to the paper-feeler might be sufficient to tear or mar any ordinary sheet. But by adding the weight 66, and adjusting it upon the lever 74 until it bears backwardly against the pin 14 with a force equal to half a pound less half an ounce, the net pressure against the sheet will be reduced to a half-ounce. Briefly stated, the principle involved is that the paper-feeler is pressed against the sheet by the difference between two forces, the lesser of which, namely that due to the action of the

weight 66, subtracts for sheet-easing purposes from the pressure of the greater, namely that due to the action of projection 14 against lever 15. Thus the weight 66 acts with pressure-differentiating effect in connection with the paper-feeler. I prefer to use a backward-pulling weight as a differential agent to regulate the pressure upon the sheet, but this portion of my mechanism is not necessarily limited to any particular form, position, or mode of application in the performance of its novel function, nor do I regard my invention as necessarily dependent upon the use of such differential pressure-regulating means. The weight need not be adjustable, but may be a fixed weight.

The devices shown in the drawings and described herein are part of a series of closely related inventions or improvements which are presented in a number of co-pending applications for Letters Patent filed by me. The said devices have a number of general objects in common with those forming the subject matter of different applications in the said series, and to a certain extent embody and utilize various principles and features which are common to devices shown and described in one or another of the said applications. Some of the said common principles and features are claimed broadly in my application filed April 20, 1908, aforesaid, and in my applications filed June 15, 1908, Serial No. 438,577; April 25, 1910, Serial No. 557,330; Mar. 30, 1912, Serial No. 687,463; and, April 9, 1912, Serial No. 689,560. The branch of the general invention that is covered hereby is distinguished by the characteristic features specified in the following claims.

Having thus clearly explained the nature and objects of my invention, and the manner of applying it, I claim as new and desire to secure by Letters Patent—

1. In a typewriting machine, in combination, a platen, a wheel which rotates simultaneously with the platen, a revoluble part having combined therewith a series of indices, and a sheet-controlled clutch-device combined with the said revoluble part and cooperating with said wheel to cause said part to begin to revolve simultaneously with the platen when the bottom edge of the sheet arrives at a predetermined distance from the printing position, whereby the said indices are caused to indicate the progress of the sheet.

2. In a typewriting machine, in combination, a platen, an index-carrier, and a sheet-controlled clutch-device operating to actuate said index-carrier to begin to move coordinately with the platen when an edge of the sheet arrives at a predetermined point, to thereby indicate the progress of the sheet.

3. In a typewriting machine, in combina-

tion, a platen, a rotary member, indices called into operation through said member, and connecting means between the platen and the said rotary member, including a sheet-controlled clutch, calling the said member into action at a given point in the progress of the end of the sheet, whereby the indices are made effective to indicate the progress of the sheet.

4. In a typewriting machine, in combination, a platen, a rotary member, visual signaling means called into operation through said member, and connecting means between the platen and the said rotary member, including a sheet-controlled lever-clutch, operating said signaling means to indicate visually the arrival of the end of the sheet at a given point in its progress.

5. In a typewriting machine, in combination, a platen, a rotary member, a bell-striking means controlled by the said member, and connecting means between the platen and the said rotary member, including a sheet-controlled lever-clutch, operating said bell-striking means to indicate audibly the arrival of the end of the sheet at a given point in its progress.

6. In a typewriting machine, in combination, a platen, a wheel which rotates simultaneously with the platen, a clutch-device cooperating with said wheel, an independently-revoluble index-bearing part which overhangs the said wheel and clutch-device and with which said device is revoluble, a spring for actuating said clutch-device to engage with said wheel, to cause said revoluble part to revolve simultaneously with the platen, and a sheet-controlled stopping element cooperating with said clutch-device to hold the clutch open and said revoluble part in a predetermined position of rest.

7. In a typewriting machine, in combination, a platen, a wheel which revolves simultaneously with the platen, a revoluble part detachable independently of the platen, a clutch-device revoluble with said part adapted to engage with said wheel and having a laterally-extending detent revolving with said revoluble part in a path not exceeding the platen in diameter, a spring tending to actuate said clutch-device to cause said part to revolve simultaneously with said wheel, and a sheet-controlled stop movable in a plane coinciding with that of the said detent and cooperating with said detent to open the clutch.

8. In a typewriting machine, in combination, a platen, a toothed wheel which revolves simultaneously with the platen, a revoluble part detachable independently of the platen, a lever mounted on the said revoluble part radially beyond the periphery of the said wheel, and having a tooth, a spring actuating said lever to press said tooth toward said toothed wheel, and a

sheet-controlled stopping element cooperating with said lever to unseat said tooth from said toothed wheel.

9. In a typewriting machine, in combination, a platen, an indicator having differently-appearing indicating sections, one of which has indicating prominence in the starting position of the said indicator, and another having indicating prominence after the indicator has been moved from said position, and sheet-controlled means for coordinating the position of the said indicator with the position of the sheet-end, including means for giving the indicator the said starting position and means for giving it simultaneous movement with the platen therefrom.

10. In a typewriting machine, in combination, a platen for advancing the sheet, an indicator having one indicating portion thereof supplied with indices and another indicating portion not so supplied, a paper-feeler, means rendered effective by the said paper-feeler in the presence of the sheet for giving the said indicator a constant starting position, and means rendered effective by the passing of the sheet-end for giving the said indicator movement coordinated with that of the sheet from the said starting position.

11. In a typewriting machine, in combination, a platen, an indicator, a paper-feeler, means rendered effective by the said paper-feeler in the presence of the sheet for giving the said indicator a constant starting position, means rendered effective by the passing of the sheet-end for giving the said indicator simultaneous movement with the platen from the said starting position, and a shield adapted to conceal a portion of the indicator from the operator.

12. In a typewriting machine, in combination, printing instrumentalities, a platen, paper-feeler means, an operative member actuated from the platen under the control of said paper-feeler means, and means operable from the platen through said member to prevent said printing instrumentalities from printing.

13. In a typewriting machine, in combination, a platen, paper-feeler means, an operative member actuated from the platen under the control of said paper-feeler means, key-levers, and means operable by said member in every position of the carriage to lock said levers against use.

14. In a typewriting machine, in combination, a platen, a paper-feeler, an operative member actuated from the platen under the control of said paper-feeler, printing instrumentalities, and means controlled by said operative member for preventing the use of the printing instrumentalities in printing, said means constructed to automatically release said printing instrumen-

talities for use on continued forward movement of the platen.

15. In a typewriting machine, in combination, a platen, a rotary member, connecting means between the platen and the said rotary member including a sheet-controlled lever-clutch, the key-levers, and a key-lever lock operatively controlled by said rotary member, rendered operative to lock the key-levers by turning movement of said member, and releasing the key-levers on further turning movement of said member.

16. In a typewriting machine, in combination, a transversely movable carriage, a platen, a paper-feeler, an operative member on said carriage actuated from said platen under control of said paper-feeler, the stationary frame, printing instrumentalities on said frame, and means controlled by said operative member in every working position of the carriage for preventing the use of said printing instrumentalities, including parts relatively shiftable in carriage-movement direction without loss of engaging position.

17. In a typewriting machine, in combination, a carriage, a platen, sheet-controlled devices on said carriage, type-key levers, a lock for said levers, and a universal connection between said sheet-controlled devices and said lock, including parts movable one relatively to the other in carriage-movement direction and operable one by the other from said devices to actuate said lock in every working position of the carriage.

18. In a typewriting machine, in combination, a carriage, a platen, an operative member on said carriage actuated from the platen, a sheet-controlled stop for detaining said member, the main frame, printing instrumentalities thereon, means also thereon for rendering the printing instrumentalities inoperative, and a universal connection between said operative member and said means, including parts movable one relatively to the other in carriage-movement direction and operable one by the other to actuate said means from said member in every working position of the carriage.

19. In a typewriting machine, in combination, a carriage, a platen, an operative member on said carriage, a sheet-controlled clutch for connecting said member to move with the platen, the main frame, printing instrumentalities thereon, a lock on said main frame for preventing the use of the printing instrumentalities, and a universal connection through which said operative member operatively controls said lock in every working position of the carriage and irrespective of the movement of the carriage.

20. In a typewriting machine, in combination, a platen, printing mechanism, platen-actuated sheet-controlled means operative irrespective of the position of the carriage to

prevent the use of the printing mechanism in printing, and means for adjusting the relative time of the operation of the said means.

21. In a typewriting machine, in combination, a carriage, the key-levers, a key-lever lock-gate, a platen, a sheet-controlled rotary member operated from said platen, and a sleeve and a shaft telescoping together, one of which is connected with the carriage and the other with the machine-frame and one thereof operated by said rotary member and the other operatively connected with said lock-gate to operate the latter.

22. In a typewriting machine, in combination, printing instrumentalities, locking means therefor, the carriage-frame, the platen and its arbor, a rotary member, sheet-controlled means for rotating said member, a splined or feathered shaft and slotted sleeve telescoping together, one thereof connected with the carriage and the other with the machine-frame, and means for operating one thereof from said rotary member and operating the locking means from the other thereof.

23. In a typewriting machine, in combination, a platen, a paper-feeler, an operative member actuated from the platen under the control of said paper-feeler, and an audible signaling means controlled through said member.

24. In a typewriting machine, in combination, a platen, a paper-feeler, means for moving the said paper-feeler into position retracted from the paper-path and for normally holding it in such position, and indicating means controlled by the said paper-feeler.

25. In a typewriting machine, in combination, a platen, a paper-feeler, a weight for returning the said paper-feeler into position retracted from the paper-path and normally holding it in such position, and indicating means controlled by the said feeler.

26. In a typewriting machine, in combination, a platen, indicating means, a paper-feeler operatively controlling said indicating means, means yieldingly returning the said paper-feeler toward normal position out of the paper-path after movement thereinto, and means limiting the return movement of the said paper-feeler.

27. In a typewriting machine, in combination, a platen, a paper-feeler, a movable stop, indicating means controlled by the said paper-feeler through the stop, and a weight giving the said stop its normal operative position.

28. In a typewriting machine, in combination, a platen, a paper-feeler, a weight connected with the said feeler, and a position-stop to position the paper-feeler under the action of the weight.

29. In a typewriting machine, in combination,

a platen, indicating means, a paper-feeler controlling the said indicating means and itself controlled by the sheet, and a weight acting to subtract from the forces pressing the paper-feeler against the sheet.

30. In a typewriting machine, in combination, a platen, indicating means, a paper-feeler controlling the said indicating means and itself controlled by the sheet, and means for adjustably subtracting for sheet-easing purposes from the forces pressing the paper-feeler against the sheet.

31. In a typewriting machine, in combination, a platen, an operative member, indicating means called into operation through said member, sheet-controlled means for giving the member simultaneous movement with the platen, including a paper-feeler pressed against the sheet by the difference between two forces the lesser of which subtracts from the pressure of the greater for sheet-easing purposes.

32. In a typewriting machine, in combination, a platen, an operative member indicating means called into operation through said member, means for giving the operative member simultaneous movement with the platen but permitting detention thereof independently of the platen, a paper-feeler connected to control the said movement, and a weight adapted to subtract for sheet-easing purposes from the forces pressing the paper-feeler against the sheet.

33. In a typewriting machine, in combination, a platen, an operative member, indicating means called into operation through said member, a paper-feeler, means rendered effective by the said paper-feeler under control of the sheet for giving the said member a constant starting position, means rendered effective by the passing of the sheet-end for giving the said member simultaneous movement with the platen from the said starting position, and means acting with differential effect to regulate the pressure of the paper-feeler upon the sheet.

34. In a typewriting machine, in combination, a platen, a paper-feeler, a movable stop, a one-way stop between the said movable stop and the said paper-feeler, and indicating means controlled by the paper-feeler through the movable stop.

35. In a typewriting machine, in combination, a platen, a paper-feeler, a weight connected with the said feeler, a movable stop, a one-way stop between the said weight and the said movable stop, and indicating means controlled by the feeler through the said movable stop.

36. In a typewriting machine, in combination, a platen, a paper-feeler, and indicating means controlled by the said paper-feeler, with a one-way stop between the said feeler and the said indicating means, to permit backing-up.

37. In a typewriting machine, in combination, a platen, a detachable member operatively connected with the platen and having a projection thereon, a movable stop in the path of the projection, a paper-feeler, connecting means between the movable stop and the paper-feeler including a one-way stop, and indicating means called into operation through the detachable member.
38. In a sheet-position-indicating mechanism for typewriting machines, in combination, a platen, indicating means, a paper-feeler movable around an axis substantially parallel with that of the platen and operatively controlling said indicating means, a stop to limit the movement of the paper-feeler upon said axis in one direction, and a provision in the structure adjacent to the paper-path permitting the paper-feeler to swing in an arc ahead of the backing-up bottom edge of the sheet and out of the paper-path.
39. In a typewriting machine, in combination, a platen, indicating means, and a paper-feeler operatively controlling the said indicating means, said paper-feeler knuckle-jointed to permit free backing-up of the sheet.
40. In a typewriting machine, in combination, a platen, a member normally moving with the platen but detachable independently thereof, indicating means called into operation through said member, a stop for controlling the movement of the said member, and a knuckle-joint paper-feeler connected to control the action of the said stop.
41. In a typewriting machine, in combination, a platen, an operative member, indicating means called into operation through said member, a knuckle-joint paper-feeler permitting free backing-up of the sheet, means rendered effective by the said paper-feeler under control of the sheet for giving the said member a constant starting position, and means rendered effective by the passing of the sheet-end for giving the said member simultaneous movement with the platen from the said starting position.

42. In a typewriting machine, in combination, a platen, a member movable with the platen but detachable independently thereof, indicating means called into operation through said member, and a sheet-controlled detent for detaining the said member, the said elements cooperating for indicating purposes when the platen is actuated forwardly and constructed to permit unobstructed backing-up from any position of the sheet and to any required extent.

43. In a typewriting machine, in combination, a platen, a member normally moving with the platen but detachable independently thereof, indicating means called into operation through said member, a sheet-controlled detent for detaining the said member, and means permitting the backing-up of the said member past its detent-detained position.

44. In a typewriting machine, in combination, a platen, a member normally moving with the platen but detachable independently thereof, indicating means called into operation through said member, a paper-feeler, and a projection and cooperating stop intermediate the said paper-feeler and detachable member, the said intermediate parts having a give-way provision permitting of a backing-up movement of the projection past the stop.

45. In a typewriting machine, in combination, a platen, a detachable member connected with the platen and having a projection thereon, indicating means called into operation through said member, a stop having a position in the path of the projection and deflectable both forwardly and backwardly according as the projection presses upon it in a forward or a backward movement, and a paper-feeler connected with the said stop.

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

WILLIAM J. NEIDIG.

Witnesses:

CHAS. F. RANDALL,
ALICE H. MORRISON.