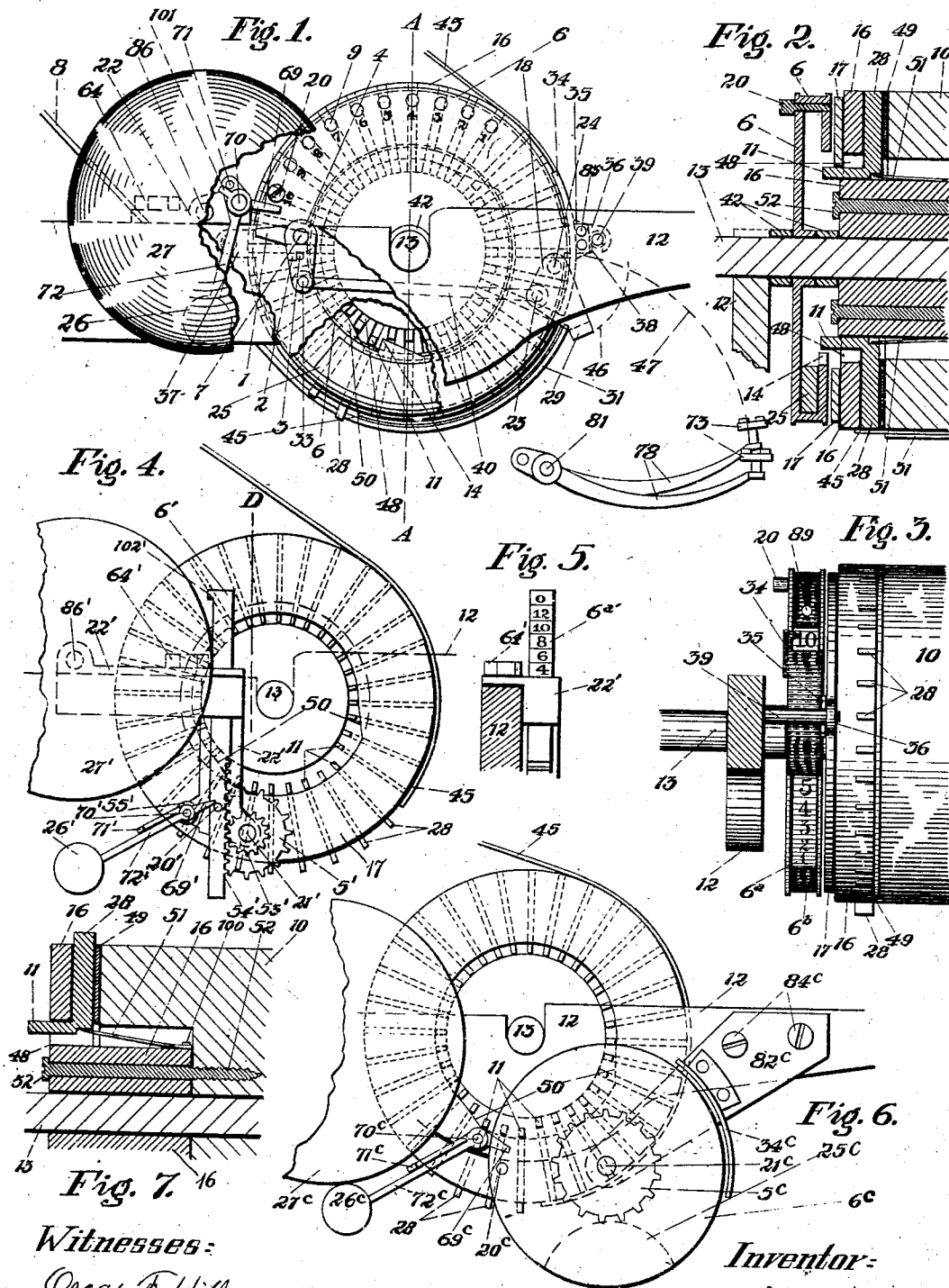


W. J. NEIDIG.
TYPE WRITING MACHINE.
APPLICATION FILED DEC. 13, 1909.

1,053,923.

Patented Feb. 18, 1913.

3 SHEETS—SHEET 1.



Witnesses:

Oscar F. Hill
Edith J. Anderson.

Inventor:

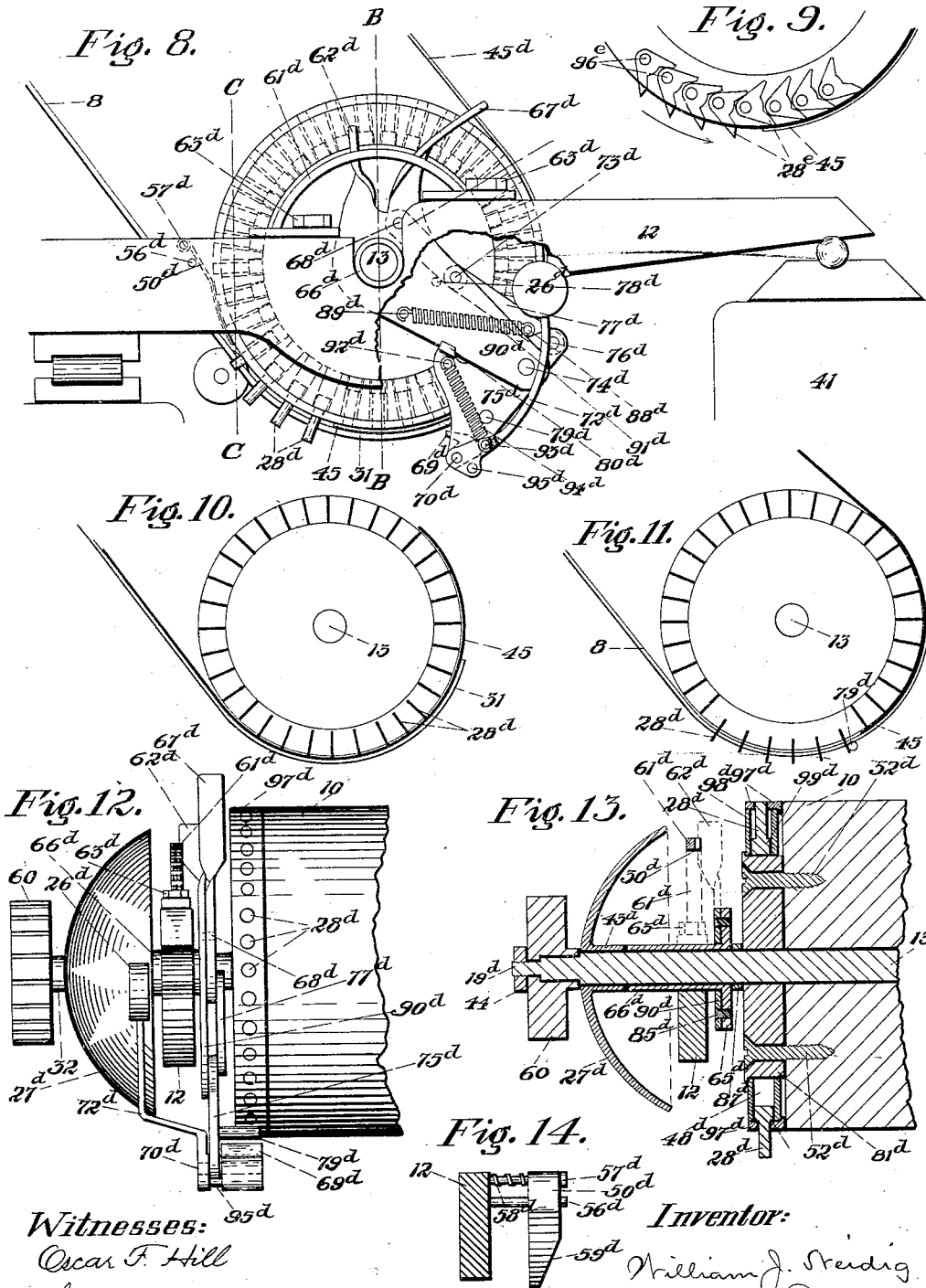
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3 SHEETS—SHEET 2.



Witnesses:
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3 SHEETS—SHEET 3.

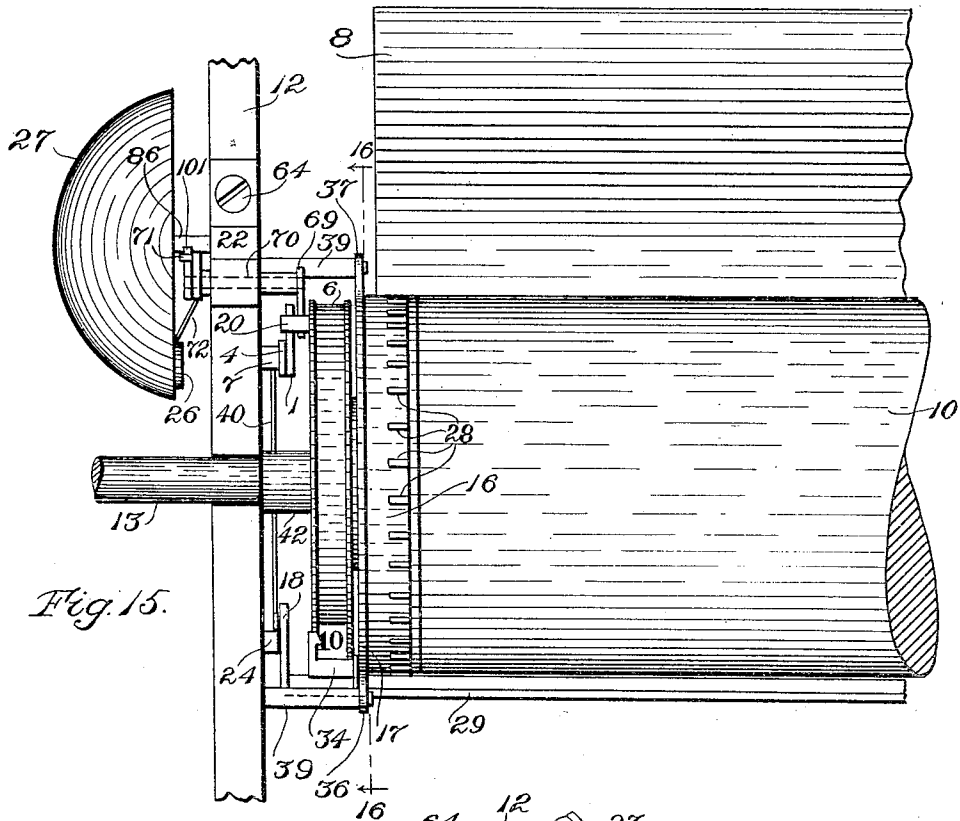


Fig. 15.

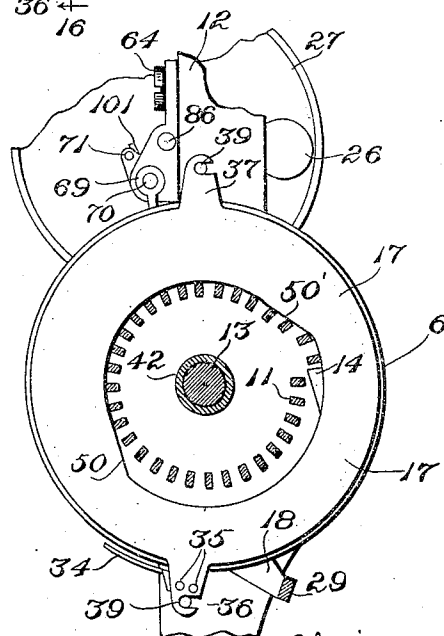


Fig. 16.

Witnesses:
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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.

1,053,923.

Specification of Letters Patent.

Patented Feb. 18, 1913.

Application filed December 13, 1909. Serial No. 532,928.

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 and State of Wisconsin, have invented a new and useful Improvement in Type-Writing Machines, of which the following is a specification.

Certain principles 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 other line positions.

The objects of that form of my invention which is more specifically illustrated in the accompanying drawings, are first, to indicate to the operator the distance to the bottom edge of his sheet from his current printing position, and this line by line and automatically, irrespective of the length of the sheet, and beginning a considerable distance from the end of the sheet; second, to give the operator an improved preliminary eye signal upon his nearing the end of the sheet, and this automatically; third, to supply him with an improved signal, preferably an ear signal, upon the completion of a predetermined line upon the sheet, automatically; fourth, to render the machine inoperative by improved means upon the completion of a predetermined line upon the sheet, also automatically; fifth, to release the machine for further printing upon the removal of the completed sheet, automatically; sixth, to enable the operator to release the machine for further printing before the removal of the sheet being printed, at will; and seventh, to supply certain means adapted to be applied to other paper-movement-indicating uses of the same general character. The automatic progressive measuring of the unused space left upon the paper-sheet, so that the operator, without preliminary care on his part, can look ahead and tell whether he has room on his sheet for a group of matter like a footnote, or a table, or a chapter heading, that cannot well be divided, and thus stop his page in advance of the predetermined page-length if need be, has never before been performed, but is novel to my invention.

In the accompanying drawings, Figure 1 is an end view, with portions broken away of the preferable application of my principle as specifically shown herein; Fig. 2 is a front view in vertical cross-section of portions of the same, on the line A A of Fig. 1; Fig. 3 is a front view, with the carriage in vertical section, of the parts shown in Fig. 2; Fig. 4 represents more or less diagrammatically in end view a modification; Fig. 5 is a front view in vertical section of a portion of Fig. 4, on the line D; Fig. 6 is an end view of another modification, shown more or less diagrammatically; Fig. 7 is a front view in vertical cross-section of structure partly shown in Fig. 2, with certain parts in a different operative position; Fig. 8 is an end view, with portions broken away, of a simplified modification, certain elements shown in the preceding figures being omitted and others receiving a different form; Fig. 9 is an illustration of a modification in form of the sheet-controlled extensible teeth I employ; Figs. 10 and 11 are diagrammatical representations illustrative of the general principle of sheet-control shown herein; Fig. 12 is a front view of the modification shown in Fig. 8; Fig. 13 is a vertical cross-section of the same, on the line B B; Fig. 14 is a front view of a detail of Fig. 8, partly in section on the line C C; Fig. 15 is a plan view, on an enlarged scale, of the parts which are shown in Fig. 1, omitting the type-bar; Fig. 16 is a view in section on line 16, 16, Fig. 15, looking in the direction indicated by the arrows.

The preferable form of my invention is that shown in Figs. 1, 2, 3, and 7, in which the platen carriage frame 12, carried upon the main frame 41 of the typewriting machine in the usual manner (see Fig. 8), has journaled in its ends the platen arbor 13 as shown, bearing the platen 10, which may be imagined as connected with the usual line spacing mechanism, not shown herein. 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 the usual way to the carriage frame 12. I show my invention as stationed at the left-hand end of the platen, but obviously it could be applied to the right-hand end as well. Taking now this structure as a basis, I first prepare the left end

of the platen for the addition of my mechanism by forming a circular recess therein deep enough to receive the laterally-projecting hub or shoulder of the feeler-carrier 16 (Fig. 7). The head or disk of this feeler-carrier 16 is constructed with a series of slideways or channels 48 radially arranged around the inner face thereof as shown, and each having an elbow or outwardly extending channel, the channels preferably corresponding in number to the number of teeth upon the line-space ratchet-wheel, the purpose of the elbow-channel being to receive one of the loosely sliding pieces 28 with its elbow-arm 11. The pieces 28 constitute feelers or detectors as hereinafter explained. The purpose of the inwardly-projecting hub of the feeler-carrier 16 is to serve as structure upon which to fasten light springs 51, by means of pins 100. The free end of a spring 51 is carried into a channel 48, and made to engage with the piece 28 in such channel in such a manner that the spring will tend to move the piece 28 lightly radially outward as shown in Fig. 7. I make the head of the feeler-carrier 16 of the same diameter as the platen, or smaller, and the length of the piece 28 such that when moved inward against the resistance of the spring the outer end of the said piece will lie flush with the peripheral surface of the platen, or slightly below it. Between the head of the feeler-carrier 16 and the end of the platen I place the washer 49, to supply a fourth side to the channel 48 and retain the piece 28 therein, the washer being suitably notched adjacent its central opening, for the play of spring 51. The several parts are held in position against the end of the platen by means of screws 52, Figs. 2 and 7, passing through the hub of feeler-carrier 16, and said parts turn as a unit with the platen on the arbor 13.

As will be perceived, I have attached to the end of the platen a circular series of feelers or detectors which latter, respectively, are depressible at a touch, they revolving in a plane adjacent to the edge of the printing surface on the platen, so that the paper sheet will overlap upon them; and connected tooth by tooth with the feelers or detectors of this series I have what is in effect a toothed wheel projecting laterally from the outer face of the feeler-carrier 16, formed of the ends of the elbow projections 11. These projecting ends or teeth 11 are encircled by the annular guide-piece 17, which is supplied with an inside cam-surface 50 (Figs. 1 and 16) adapted to act controllingly upon the said ends 11, and through them control the radial position of the feelers or detectors 28. This guide-piece is furnished with supporting structure consisting of the slotted ears 36, 37, Figs. 1 and 16, the slots 38 in the ears being adapt-

ed to settle down over the supporting pins 39 projecting inwardly from the carriage frame 12. The loosely revolving drum 6 is mounted upon the platen arbor and held in a suitable lateral position by means of bushings 42 upon said arbor at opposite sides of the central portion of the said drum. The inner side-face of the drum is cored out, as shown in Fig. 2, so that the teeth 11 may project within the contour of the drum. This drum is supplied with means acting rotatively upon it in such a manner that when released from engagement it will be returned to a constant position of rest, which may be designated its initial or starting position, the specific means preferred being the weight 25, Fig. 1, added to the drum near its periphery, though the precise means employed is not material. The drum is also supplied with an interior projection 14, so shaped and stationed that when the teeth 11 are in their retracted position it does not lie in their path, but when they are moved out toward the periphery of the drum by the force of gravity, or the action of the springs 51, or both, it does lie in their path and is engaged by them as the platen is rotated. I prefer to give the said projection the angular shape as shown, in order that it may sustain only a one-way engagement with the teeth 11, but its precise shape is not material. I prefer to use a single projection or tooth for this duty, but do not necessarily limit myself thereto. The periphery of the drum 6 I supply with indices and other markings, as described later. I also provide the pointer or index-indicator 34, Figs. 1, 3 and 15, preferably attaching it by means of the rivets 83 to the ear 36 of the annular part 17 before mentioned, in such position that the operator may conveniently use it.

The action of the structure thus far described is as follows:—Sheet 45 is entered into the machine in usual manner, the upper incline 50 of the tooth-controlling cam-piece 17 acting, as the platen is rotated by hand, to retract the feelers or detectors 28, and the rear portion of such cam-piece holding them retracted quite out of the way of the entering end of the sheet. The cam-incline 50 permits the feelers or detectors to move outward again. As the platen is rotated, the tooth 11 of the extended feeler or detector which is next behind tooth 14 of drum 6 will engage with said tooth and carry the drum around until said tooth 11 arrives at the said upper cam incline 50. The said incline will then in the continued rotation of the platen and drum press the said feeler or detector, and the other extended feelers or detectors next succeeding it and preceding the leading edge of the sheet, inward clear of tooth 14. Meanwhile the sheet itself has held in retracted posi-

tion such of the feelers 28 as have been permitted to rest thereon by cam-piece 11. Drum 6 is thus rendered free to be rotated by weight 25 thereon into its constant initial position as illustrated in Fig. 1, with the arbitrary symbol shown at 89 before pointer 34. In this position the drum remains until the bottom end of the sheet passes upon the platen and some of the feelers 28 are no longer retracted by the sheet. Eventually that tooth 11 which is connected with the first feeler lying beyond the end of the sheet engages upon projection 14, drum 6 is moved forward, and the symbol marked 89 is replaced by indices. Since projection 14 sustains a fixed relation to the drum bearing it, and is engaged by a tooth having a fixed relation to the end of the sheet, any peripheral point upon drum 6 will likewise have a fixed relation to the end of the sheet and may be supplied with an index indicating such relation. That is to say, if the end of the sheet is ten single line spaces from the printing point after the first advance of the drum, the peripheral portion of the drum then before the pointer may be marked 10, as in Fig. 3, and the new portion of the drum moved into indicating position with the succeeding line-space advance of the sheet may be marked 9, and so on down to 1. Such is the series of indices 6^a of the drawings (Fig. 3). I prefer to use numerals in descending order, indicating the full distance to the end of the sheet in single-line units, but the kind, order, form, number and position of the indices are not material, nor is the unit of measurement employed, nor need the full distance to the sheet-end necessarily be indicated.

The means whereby I supply the operator with a visual signal to notify him of the approach of the end of the sheet are described as follows: I divide the periphery of the drum 6 into two portions, the one, marked 6^b, in Fig. 3, lying uppermost during the major progress of the sheet, and the other, marked 6^a, coming into the sight of the operator only when the end of the sheet approaches within a constant distance of the printing point. By coloring these two peripheral sections in striking contrast one to the other, as, say, the 6^b section black, and the 6^a section white, and by extending the pointer 34 in the form of a shield over the white section so as to conceal it during the time previous to the connecting of the drum 6 with the platen, *i. e.*, so long as the drum 6 remains in normal position, or in other words in its constant position of rest, I am able to attract the operator's eye before he reaches the predetermined last line upon his page and thus warn him of the position of his sheet, the striking change from black to white being sufficient to do

this. Other colorings or other markings could be employed for the purpose, and they need not be peripheral. I supply the operator with additional indicating means as follows: First, I furnish him with a signal to warn him when he has reached his predetermined last-line position, so that he need not lose time in trying to write further upon the sheet, and after that I render the machine inoperative, so that if he neglects to observe the last-line signal he will still be prevented from over-running his page upon his bottom margin, except by intention. The last-line signal I prefer to be an audible signal given by a bell, and the means whereby it is given are described thus: Upon the end 12 of the carriage frame is added frame extension 22 by means of bolt 64. Frame extension 22 carries outwardly projecting pin 86 bearing bell 27; and it carries also, journaled therein, the short axle 70 having fixedly attached thereto upon the inner end the trip-lever 69, and upon the outer end two pieces, the inner one being the loosely fitted hammer-stem 72 having an extension with the pin 71 outwardly projecting therefrom, and the other being the fixedly attached lug-piece 101 adapted to engage against the said pin 71. In Fig. 1 the end 12 of the carriage frame is partly broken away, as is also bell 27, to show these parts more clearly. Trip-lever 69 projects into the path of a pin 20, Figs. 1 and 2, stationed near the periphery of drum 6, and is operated thereby at a predetermined moment. Convenient adjusting means are these: Drum 6 is supplied with a series of threaded holes 9, stationed at line-space intervals apart, into any of which the pin 20 may be screwed. The purpose of lug-piece 101 and pin 71 engaged thereby is to permit of a backing-up movement of the pin 20. Hammer-stem 72 bears hammer 26, preferably operative within the bell as shown. When it is time for the bell signal to be given, pin 20 presses against lever 69, depressing it, thus rocking shaft 70 together with lug-piece 101, and through the engagement of said lug-piece with pin 71 raising hammer 26 within the bell. Pin 20 then passes on, lever 69 is released, and bell-hammer 26 falls against the bell, causing it to sound.

The means whereby I render the machine inoperative are described thus: Upon the end 12 of the carriage frame I place the inwardly projecting pin 24, shown at the right-hand side in Fig. 1, having journaled thereon the end 18 of the rocking bail-piece 29. This bail-piece extends the entire length of the platen and lies parallel to the axis thereof; and its further end is journaled similarly upon a pin in the farther end of the carriage frame 12, these parts being similar in form to the parts shown. The end 18 bears the inwardly projecting pin 23, upon

which one end of the connecting rod 40 is journaled. The end 12 of the carriage frame bears also the inwardly-projecting pin 7, near the left in Fig. 1, upon which is hung first the loosely journaled arm 4, and second the loosely journaled trip-lever 1. Upon trip-lever 1 is a lug 2 bearing upon a pin 3 upon the said arm 4 in such a manner that when the trip-lever is depressed the arm is rocked, but when the trip-lever is raised the arm is not acted upon, the purpose of this construction being to permit of a backing-up movement of the pin 20. Arm 4 bears also the inwardly-projecting pin 33, upon which is journaled the other end of the connecting rod 40 before mentioned. Trip-lever 1 is so stationed that it projects into the path of pin 20, preferably in a different vertical plane from that of the lever 69. I show also, in Fig. 1, but somewhat diagrammatically, type-bars 78, having the usual axis at 81 and the usual type 73. When it is time for the machine to be rendered inoperative, pin 20, pressing downwardly upon trip-lever 1, through arm 4 and connecting rod 40 rocks bail-piece 29 upward in the arc 46 into the path 47 taken by the printing type 73. If now the operator attempts to print an additional line he is unable to do so, for the type strike upon the bail-piece 29 and do not meet the paper. The bail-piece would preferably be faced or covered with a yielding material like leather. The operator thereupon removes his sheet, the pin 20 passes on, the lever 1 is released, and the bail-piece falls, rendering the machine again operative. If, following the rocking of the bail-piece 29 up into its blocking position, the operator desires to print an additional line upon his sheet, he has only to turn the platen forward far enough to free pin 20 from trip-lever 1, and then backward to the required position, and his machine is released for further printing to any extent.

I do not regard my invention as limited to any precise form of indicating means, nor to any precise type thereof, but prefer to employ the several cooperating forms and types described.

In the embodiments of my invention shown in Figs. 4 and 5, the indices are carried upon a sliding standard, and not upon a rotary member. In this modification I use the sheet-controlled feelers or detectors already described, together with their controlling and supporting structure, including the cam-piece 17, indicating the same diagrammatically; but instead of the weighted drum 6 with its tooth 14 I use structure described as follows: I attach to the carriage frame 12 the frame extension 22' by means of the bolt 64'. This frame extension has journaled therein the short shaft or arbor 21', upon the outer end of

which is fixedly attached the pinion 53', and upon the inner end the toothed wheel 5', the said wheel 5' being so stationed that it is engaged by the teeth 11 when in their extended position, but not engaged by them when they are in their retracted position. The frame extension 22' is also supplied with a slide-way, preferably vertical, for the play of standard 6, the face of which is supplied above the indices 6', and below with teeth forming a rack to mesh with the pinion 53'. A lip 102' with which the upper end of the standard is furnished serves as a stop to limit the downward movement of the standard. The standard is also supplied with the outwardly projecting pin 20', and the extreme lower portion 54' of the rack is without teeth. The frame extension 22' carries the outwardly projecting pin 86 bearing the bell 27', and the outwardly projecting pin 70', upon which are journaled the trip-lever 69' and the hammer stem 72' bearing the bell-hammer 26'. The trip-lever 69' has an extension with a lug 71' thereon adapted to engage the stem 72'. The pin 70' is supplied with a coiled spring 55' thereon, one end of which is fastened to the frame extension 22', and the other end of which bears upon the stem 72' in such a manner that the hammer 26' tends to swing upwardly against the rim of the bell 27'. The action of these parts is as follows: The sheet 45 is introduced into the machine as before, and maintains the feelers or detectors 28, and therefore the teeth 11, in their retracted position, as before; but after the sheet has passed, the feelers or detectors 28 are no longer held retracted by it but move into their extended position, as shown. Meanwhile standard 6' has fallen by the force of gravity into its position of rest, since wheel 5' is free of engagement with teeth 11 during the major progress of the sheet, which permits the movement. When the first of the extended teeth 11 comes into engagement with the wheel 5, therefore, the indices stand at 0, the movement of the wheel 5 by the action of said extended teeth will raise standard 6', bringing thereby the first succeeding index (as 12, Fig. 5) into view, and each additional movement forward of the platen will thereafter raise the standard 6' a little higher, bringing line by line other indices into view, the symbol in each case indicating the distance at that moment existing between the printing point and the bottom edge of the sheet, as before, up to the very end. And as before the trip-lever 69' will be operated by the pin 20' so as to strike the bell upon the completion of a predetermined line; and the same pin will operate a mechanism rendering the machine inoperative, if desired, as shown in my other figures.

In my Fig. 6 is shown, another embodi-

ment, the indices in this case being carried by a weighted drum 6° which is similar to the weighted drum 6 as in Fig. 3, but removed from the platen axis and placed upon the axis 21° with the wheel 5°. The carriage frame 12 has attached to it by means of screws 84° the frame extension 82°, in which is journaled shaft 21°, bearing upon its inner end the fixedly attached wheel 5° and upon its outer end the drum 6° also fixedly attached thereto. A shield-pointer 34°, attached to frame extension 82°, is shaped like that shown in Fig. 3 and has the same functions. The bell-striking mechanism is also essentially the same as that before described, except that it may here be attached directly to the carriage frame 12, and it is actuated by the pin 20° carried by drum 6°. The embodiment illustrates how sheet-controlled teeth may be made to act upon a toothed wheel instead of upon a drum having a single projection or tooth.

An embodiment of my invention containing fewer elements is described as follows: Fig. 8 is an end view of the platen and carriage frame of a front-strike typewriting machine, the platen turning upon the arbor 13, which is journaled in the ends 12 of the carriage frame in the usual manner, and Fig. 13 is a front view of the same in cross-section, on the line B B. Taking this structure as a basis, I attach to the end of the platen 10 the circular piece 81° by means of the screws 52°. Fitted over the periphery of this core-piece 81° is the annular piece 98°, supplied with a series of radial holes or wells 48°, the same corresponding in number and function to the channels 48 of my preceding figures. This annular piece 98° is in turn fitted with the annular rim 97°, supplied with smaller holes each centrally stationed over the wells 48°. Within each chamber thus formed is placed the loosely fitting tooth or plunger 28°, the head 99° of which is larger than the shank, constructed so for retaining purposes. The annular pieces 98° and 97° are so shaped that they will be held in position by a radial lip or flange at the outer edge of the core-piece 81°, and the diameter of the whole is the same as that of the platen, or smaller. It will be seen that this constitutes a platen head essentially like that described above, adapted to be overlapped by the paper sheet and supplied with extensible and retractible feelers or detectors constructed to act as teeth. In my preceding figures however I show the feelers or detectors 28 as pressed radially by very light springs, in addition to the force of gravity; here I show them as actuated by the force of gravity alone. The projecting ends 11 are also absent in this embodiment. Upon the platen arbor is placed washer 87°, and against it sleeve 66° having a flange 65° to which is riveted the lever 62°. This

lever 62° has a downwardly extending portion 90°, journaled upon which by means of the inwardly projecting pin 74° is the swing-piece 75°. The lower portion of this swing-piece bears the inwardly projecting stop-pin 79°, and the inwardly and outwardly projecting pin 70°, the inwardly projecting portion of the pin 70° having journaled thereon the trip-lever 69°, and the outwardly projecting portion, the hammer-stem 72°, the two pieces being connected by the bail-pin 95° to rock as a unit. When in the position shown in Fig. 8 both the stop-pin 79° and the trip-lever 69° lie adjacent to the periphery of the annular rim 97°, so that they will be engaged by the teeth constituted by the outer portions of feelers or detectors 28° when the latter are extended but will not be engaged when the said feelers or detectors are held back by the paper sheet. And as the swing-piece 75° bearing these parts is pivoted, it will be seen that they can be swung away from the rim 97° until the tooth-portions of feelers or detectors 28° will not engage upon them even when extended. The mechanism controlling the position of the swing-piece 75° consists of the releasing lever 67°, which is journaled upon the lever 62° by means of the pin 68°, the inwardly projecting pin 73° on the releasing lever, the inwardly projecting stop-pin 78° on the piece 90° to limit the movements of the releasing lever, the inwardly projecting pin 76° on the upper portion of the swing-piece 75°, and the connecting bar 77° journaled at either end upon the pins 73° and 76°. A spring 91° connecting the pin 89° on the piece 90° and the pin 88° on the piece 77° serves to hold the parts in their operative position as shown, or in their secondary released position with the lever 67° pushed backward toward the paper table 8. A second spring 94° connects the pin 92° on the piece 75° with the pin 93° on the hammer stem 72°, thus tending to draw the bell hammer 26° toward the platen arbor 13, upon which is stationed the bell 27°. The bell is held in its lateral position by means of the inner sleeve 43° and the usual twirler 60 at the end of the arbor 13, the twirler having an inner shoulder 32, Fig. 12, upon it. This portion of my mechanism is completed by attaching to the carriage frame 12 the segment-rack 61° by means of the bolts 63°, the segment-rack having notches along its inner edge adapted to receive the edge of the adjusting lever 62°, which is preferably made of resilient material, and having also numerals opposite the notches to guide the operator in making his adjustments. The addition of the piece 50°, the function of which, like that of the cam-surface 50 on the tooth-controlling piece 17 shown in my earlier figures, is to keep the feelers or detectors from interfering with the leading

edge of the entering sheet, renders the mechanism more completely operative. This piece is attached thus: Upon the frame 12 is placed inwardly projecting pin 57^a, Figs. 8 and 14, having thereon the compressible coiled spring 58^a and the loosely journaled piece 50^a, the lower portion of the latter being shaped to conform to the contour of the platen head. The pin 56^a, also projecting inwardly from the carriage frame 12, holds this piece 50^a in position and guides it as it is moved laterally. The piece 50^a extends far enough under the platen to keep the pieces 28^a from interfering with the entering sheet.

In order to permit of a backing-up movement I cut the lower inner edge of the piece with a slant 59^a, so that if the tooth-portion of feelers or detectors 28^a are backed up against it they will strike upon the slant and press the piece to one side outwardly against the action of the coiled spring 58^a. The piece 50^a is returned by a reverse transverse movement to its original position through the action of spring 58^a. The action of this modification is thus: The sheet 45 during the time that it overlaps upon the ends of the feelers or detectors 28^a holds them in a retracted position so that they do not engage upon the trip-lever 69^a or the stop-pin 79^a, but those feelers or detectors lying beyond the end of the sheet are not thus retracted, and when they come to these parts in their path act upon them, first ringing the bell and then bringing the platen into a locked engagement against stop-pin 79^a so that the machine, or a part thereof, is rendered inoperative. By using the adjusting lever 62^a to bring the trip-lever 69^a farther from or nearer to the printing point, the operator is able to adjust the mechanism so as to furnish a signal at any predetermined distance from the end of the sheet. The principle is illustrated diagrammatically in my Figs. 10 and 11. The platen is released, as when entering the sheet, or for further printing, by throwing the releasing lever 67^a forward toward the paper-table. The stop-pin 79^a can of course be omitted, and the bell-signal used alone. The adjusting mechanism can also be omitted, the mechanism being constructed to give a signal at a fixed distance from the end of the sheet. Furthermore, the retractable combine feelers or detectors and teeth not only in this modification but in the other forms of the invention, although preferably of the plunger type shown, sliding radially in channels, may take other forms, as for instance the form shown in Fig. 9 at 28^e where they are pivoted upon the pins 96^e.

The essential action would be the same whether pivoted or sliding.

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 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 application filed Dec. 15, 1909, Serial No. 533,309. The branch of the general invention which 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 series of sheet-controlled movable teeth moving simultaneously with the platen, and indicating means actuated by the said teeth and caused to indicate through the turning of the platen.

2. In a typewriting machine, in combination, a carriage, a platen, a series of sheet-controlled movable teeth moving simultaneously with the platen, and indicating means on the said carriage to cooperate with the said teeth and caused to indicate through the turning of the platen.

3. In a typewriting machine, in combination, a carriage, a platen, a series of sheet-controlled retractable projections or teeth connected therewith, and indicating means on said carriage to cooperate with the said teeth and through the latter caused to indicate through the turning of the platen.

4. In a typewriting machine, in combination, a carriage, a platen, a series of sheet-controlled spring-pressed retractable projections or teeth connected therewith, and indicating means on said carriage to cooperate with the said teeth and through the latter caused to indicate through the turning of the platen.

5. In a typewriting machine, in combination, a platen, a series of sheet-controlled retractable projections or teeth connected therewith, a cam to hold the teeth retracted from their extended position during certain inoperative stages in their rotative movement, and indicating means to cooperate with the said teeth.

6. In a typewriting machine, in combination, a platen, an operative member, means for giving said member a constant starting position, indicating means called into operation through said member, and a series of sheet-controlled retractable projections or teeth adapted to operate said member to move simultaneously with the platen from such position.

7. In a typewriting machine, in combination, a platen, a series of sheet-controlled retractable projections or teeth connected therewith, a rotary member supplied with a weight to restore it to a constant starting position and adapted to be engaged by the said teeth, and indicating means called into operation through said member.

8. In a typewriting machine, in combination, a platen, a series of sheet-controlled retractable projections or teeth connected therewith, and a series of indices controlled by the said teeth.

9. In a typewriting machine, in combination, a platen, a series of indices, a plurality of independently movable paper-feelers controlled by the sheet as advanced by the platen, and means controlled by the said paper-feelers for giving the indices successive indicating prominence coordinately with the arrival of the sheet in predetermined sheet positions.

10. In a typewriting machine, in combination, a platen, a series of sheet-controlled retractable projections or teeth connected therewith, and means controlled by the said teeth and through the latter operated by the turning of the platen whereby a signal is given when the end of the sheet attains a predetermined distance from the printing point.

11. In a typewriting machine, in combination, typewriter mechanism including a platen, a series of sheet-controlled retractable projections or teeth connected with the platen, and means controlled by the said teeth and through the latter operated by the turning of the platen to render a part or parts of said mechanism inoperative when the end of the sheet attains a predetermined distance from the printing point.

12. In a typewriting machine, in combination, typewriter mechanism including a platen, a series of sheet-controlled retractable projections or teeth connected with the platen, and means controlled by the said teeth to render a part or parts of said mechanism inoperative when the end of the sheet attains a predetermined distance from the printing point, and adapted to be operated to automatically release the machine for further use.

13. In a typewriting machine, in combination, a platen, a series of sheet-controlled retractable projections or teeth connected therewith, an operative member operatively controlled by the said teeth and having a constant starting or initial position, and a series of indices called into operation through said member.

14. In a typewriting machine, in combination, a platen, a series of sheet-controlled retractable projections or teeth connected therewith, an operative member operatively controlled by the said teeth and having a constant starting or initial position, and

means called into operation through said member to give a signal when the end of the sheet attains a predetermined distance from the printing point.

15. In a typewriting machine, in combination, typewriter mechanism including a platen, a series of sheet-controlled retractable projections or teeth connected with the platen, an operative member operatively controlled by said teeth and having a constant starting or initial position, and means operatively related with said operative member to render a part or parts of said mechanism inoperative when the end of the sheet attains a predetermined distance from the printing point.

16. In a typewriting machine, in combination, typewriter mechanism including a platen, a series of sheet-controlled retractable projections or teeth connected with the platen, an operative member operatively controlled by the said teeth and having a constant starting or initial position, and means controlled by the operative member to render a part or parts of said mechanism inoperative and adapted to release the same through continued rotation of said member.

17. In a typewriting machine, in combination, a platen, a series of projections or teeth moving in unison with the platen and having in operation a retracted position and an extended position for each tooth, a second series of projections or teeth connected with the first series of teeth and having an operative and an inoperative position, and indicating means with which said second series of projections or teeth coacts.

18. In a typewriting machine, in combination, a platen, indicating means, a series of individually retractable sheet-controlled platen-connected projections or teeth operatively related with said means, and means for holding said projections or teeth in their retracted position, to permit of free sheet-insertion.

19. In a typewriting machine, in combination, a platen, an indicator, and sheet-controlled means including a plurality of independently movable paper-feelers for coordinating the position of the indicator with the position of the sheet, said means giving the indicator a constant starting position and giving it simultaneous movement with the platen from such position.

20. In a typewriting machine, in combination, a platen, a rotary member, means controlled thereby for giving an audible signal, means independent of the platen for restoring the rotary member to a constant position of rest, and sheet-controlled connecting means between the rotary member and the platen.

21. In a typewriting machine, in combination, a rotary member, a positioning weight attached thereto and acting rota-

tively thereon, a bell-striking mechanism controlled by said rotary member, and sheet-controlled connecting means between said member and the platen.

- 5 22. In a typewriting machine, in combination, the printing types, a platen, and a sheet-controlled platen-actuated mechanism for bringing a blocking part into the path of the printing types.
- 10 23. In a typewriting machine, in combination, a platen, printing instrumentalities, a part adapted to be brought between the printing instrumentalities and the sheet, and sheet-controlled platen-actuated means for moving the said part into a position to prevent printing.
- 15 24. In a typewriting machine, in combination, typewriter mechanism including a platen, a rotary member supplied with means for returning it to a constant position of rest when released from connection with the platen, means controlled by said member to render a part or parts of said mechanism inoperative, and sheet-controlled means intermediately connecting the rotary member with the platen.
- 20 25. In a typewriting machine, in combination, typewriter mechanism including a platen, a rotary member supplied with means returning it to a constant position of rest when released from connection with the platen, means controlled by the rotary member to render a part or parts of said mechanism inoperative when the end of the sheet attains a predetermined distance from the printing point, the said member and means automatically releasing the machine for work, and sheet-controlled means for connecting the rotary member with the platen.
- 25 26. In a typewriting machine, in combination, printing instrumentalities, a platen, a rotary member, means for giving the said member a constant starting position, sheet-controlled means for giving the said member simultaneous movement with the platen, and a part adapted to be interposed between the printing instrumentalities and the sheet through the action of the said member.
- 30 27. In a typewriting machine, in combination, a carriage, a platen, a rotary member, sheet-controlled means for coördinating the position of the said member with the position of the sheet-end, including means for giving the member a constant starting position and means for giving it simultaneous movement with the platen therefrom, the type-bars, and a device on the carriage and controlled by the said mem-
- 35 40 45 50 55

ber for preventing the use of the type-bars in printing.

28. In a typewriting machine, in combination, a carriage, a platen, printing instrumentalities, a movable part on the carriage, and means brought into action by the revolving movement of the platen for moving the said part into the path of the printing instrumentalities.

29. In a typewriting machine, in combination, a platen, the type-bars, a bail-piece, and sheet-controlled platen-actuated means for bringing the bail-piece into the path of the type-bars at a predetermined sheet-position so as to prevent their use.

30. 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 a bail-piece through which the use of the printing instrumentalities is prevented under the control of said operative member and in every position of the carriage.

31. In a typewriting machine, in combination, a platen, a paper-feeler-carrier connected to move simultaneously with the platen and supplied with paper-feeler guides, paper-feelers movable along the said guides, and indices controlled by the said paper-feelers.

32. In a typewriting machine, in combination, a platen, a part channeled in substantially radial direction relatively to the platen axis and disposed about said axis, paper-feelers movable in the channels in said part, and indicating means controlled by the said paper-feelers.

33. In a typewriting machine, in combination, a platen, paper-feeler guides disposed about the axis of the said platen, paper-feelers movable along the said guides in substantially radial direction relative to the said axis, and indicating means controlled by the said paper-feelers.

34. In a typewriting machine, in combination, typewriter mechanism including a platen, a series of radial guides revolving simultaneously with the platen, a series of sheet-controlled projections or teeth movable along the said guides, and means co-operating with the said teeth to render a part or parts of the said mechanism inoperative.

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Witnesses:

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