W. J. NEIDIG & C. B. STEWART.

TYPE WRITING MACHINE.

APPLICATION FILED MAY 24, 1912.

1,071,780.

Patented Sept. 2, 1913.

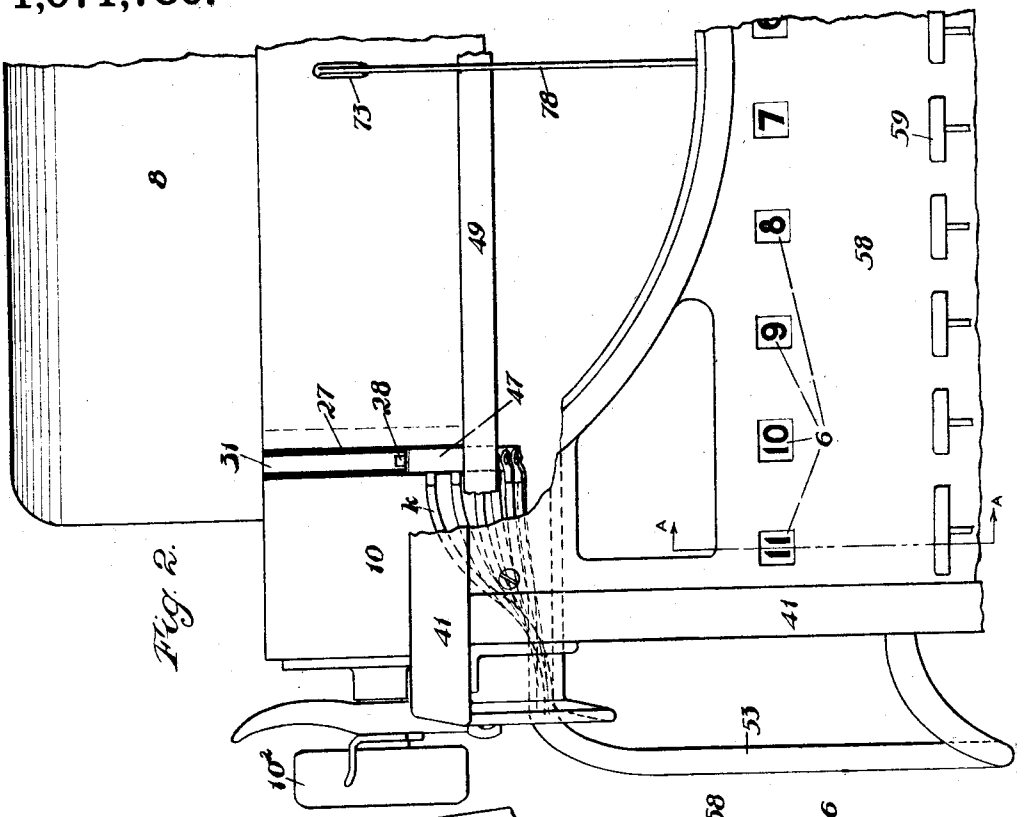


Fig. 2.

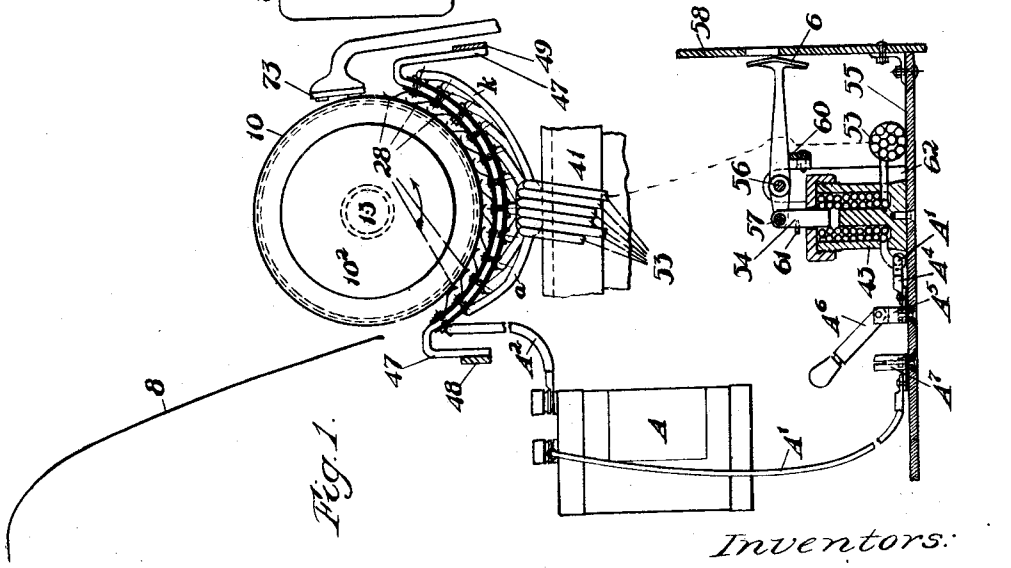


Fig. 1.

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UNITED STATES PATENT OFFICE.

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TYPE-WRITING MACHINE.

1,071,780. Specification of Letters Patent. Patented Sept. 2, 1913.

Application filed May 24, 1912. Serial No. 699,600.

To all whom it may concern:

Be it known that we, WILLIAM J. NEIDIG and CLINTON B. STEWART, citizens 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.

Our invention relates more particularly to typewriting machines and the like printing line by line upon a paper sheet; and our improvement has for its object to indicate during a plurality of sheet positions the distance from the current printing point to the bottom edge of the sheet, or to a point a known distance therefrom, and this automatically, regardless of the length of the sheet, without care or thought on the part of the operator in advance of the operation of the device. Portions of our mechanism are adapted to be used in other combinations for similar sheet-position-indicating purposes.

We attain our object by means of the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is an end view of our device, partly in cross-section, as applied to a typewriting machine, but with certain well-known portions of the said machine omitted; and Fig. 2 is a front view of the same, but with certain portions of the typewriting machine partly broken away.

Similar symbols of reference refer to similar parts in the several figures.

With reference to the usual well-known typewriting machine structure, 8 is the paper-table, 10 the platen roller for advancing the sheet, 13 the axis or arbor for the same, 10^2 the platen twirler, 48 and 49 bars on the platen carriage, 41 the main frame of the machine, and 73 the printing type on the type-bar 78 connected with the usual keys 59. This structure is well-known in the art and need not be more closely described. Taking now this structure as a basis, we insert in the surface of the platen the annular conductor 31, insulated by means of the annular insulation 27 from adjacent parts. Against this conductor 31 we place a series of paper-feelers 28, the same being supported on the piece 47, which is attached at either end to the bars 48 and 49, in such a manner as to be insulated therefrom and from each other but in such a manner as that each shall contact with the conductor 31. These feelers are preferably made of a very thin resilient material, and each is a conductor. From each of the feelers 28 leads an insulated wire *a*—*k* into and through the cable 53 to a suitable series of solenoids 43, except that the first feeler, or the one nearest the paper-table 8, has its insulated wire lead to the source of current A instead of to a solenoid directly. That is to say, the insulated wire *a* leads to the first solenoid in the series, shown in partial cross-section in Fig. 1, and the next wire to the next solenoid, and so on to the last, or wire *k*. These solenoids are mounted on the transversely extending plate 55, which is attached to the front plate 58 for convenience. Each has the usual core surrounded by the usual coil of wire, the wire being connected in each case at one end with one of the wires in the cable 53, and at the other with the wire A^1. Each solenoid is supplied with the reciprocating plunger 54 having thereon the stop 61 to prevent complete contact between the plunger and the core and thus obviate the necessity of overcoming the force of the residual magnetism that might be latent in the magnet or solenoid. To this plunger is connected by means of the pin 57 the index-carrier 6 journaled upon the pin or shaft 56, the said shaft being supported at the ends by the support 62 on the plate 55, on which is the bar 60 adapted to serve as a stop for the carrier 6. The shaft 56 and stop 60 may conveniently be common to all the solenoids in the series. One portion of the face of the carrier 6 is supplied with indices adapted to be raised into view opposite apertures in the front plate 58 of the machine, as shown in Fig. 2, where the carriers are shown as having indicating position, as against the non-indicating position shown in Fig. 1. The insulated wire A^1, after being tapped into by insulated wires from each of the solenoids, is connected by means of the conductor A^4 with the conducting switch-piece A^5, the switch-lever A^6, and the switch-piece A^7, all of which are insulated from the supporting plate 55, and thence leads to the source of current A.

The mechanism operates as follows: A sheet of paper is placed upon the paper table 8 and advanced around the platen roll in the usual way, passing under the feelers 28 in its progress and lying between them and the conductor 31 during the printing of the

major portion of the sheet, if a long one. It is understood that the switch-lever A^6 has been lowered into contact with the switch-piece A^7, so as to give the operator the full use of the mechanism. Eventually the bottom edge of the sheet will pass from under feeler 28 lying nearest the paper table 8, and there will be established an electrical connection between the conductor 31 and source of current A through the wire A^2, though not as yet a complete electrical circuit. The moment however the edge of the sheet makes a further advance past the next feeler 28 a complete electrical circuit is established, namely through the wire A^2, first feeler 28, conductor 31, second feeler 28, wire a (to and through cable 53), first solenoid coil, wire A^1, switch-parts A^4, A^5, A^6, A^7, wire A^1 again, to the source of current A; and by the establishment of the circuit the solenoid 43 is electrified and the plunger 54 pulled downward by magnetic attraction, raising the index upon the carrier 6 into indicating position. The process is repeated when the bottom edge of the sheet passes from under the next feeler 28, the second solenoid being thereupon electrified and the second index brought into indicating prominence, and so on until the last feeler is passed by the non-conducting sheet of paper. It will be perceived that as each feeler must lie at a fixed distance from the printing point, and each when closing its circuit always brings into operation the same index-raising solenoid, the carriers 6 may be supplied with indices adapted to inform the operator of the extent of his remaining bottom margin line by line. We prefer to space the feelers 28 at line-space intervals apart, but it is not necessary that these be the intervals. We prefer to use indices giving the remaining bottom margins in line-space units, in a manner involving no mental calculation on the part of the operator, but it is not essential that the units and indices be those shown, nor the arrangement of parts. It is to be noted that by the use of the switch A^6 and its coöperating parts the operater is enabled, if he desires, to close his circuit only when consulting his indices, thus economizing in his consumption of electricity, the right indices always being raised when the circuits are thus closed and falling back into non-indicating position by gravity when the circuits are broken.

The devices shown in the drawings and described herein have a number of general objects in common with those of certain copending applications for Letters Patent filed by William J. Neidig, one of the present joint inventors, and to a certain extent utilize various principles and features which are common to the devices shown and described in the said applications. Some of the said common principles and features are claimed broadly in the applications of William J. Neidig aforesaid, filed April 20, 1908, Serial No. 428,212; December 13, 1909, Serial No. 532,928; and May 20, 1912, Serial No. 698,440. The present invention is distinguished by the characteristic features which are specified in the following claims.

Having thus clearly explained the nature and object of our invention, and the manner of applying it, we claim as new and desire to secure by Letters Patent—

1. In a typewriting machine, in combination, a platen roll for advancing the sheet, a plurality of electrical circuits, paper-feelers in said circuits, and electrically actuated indicating means rendered operative under the control of said paper-feelers to indicate the position of the sheet.

2. In a typewriting machine, in combination, a platen, a plurality of paper-feelers, and a plurality of individually distinguishable indicating devices each separately controlled by a paper-feeler.

3. In a typewriting machine, in combination, a platen, a plurality of paper-feelers, a plurality of separately operated indices, and means controlled by the paper-feelers for bringing the indices into indicating prominence at the predetermined sheet positions.

4. In a typewriting machine, in combination, a platen, a plurality of separately operated index-carriers, and means controlled by the sheet for bringing the index-carriers into indicating position.

5. In a typewriting machine, in combination, a platen, a plurality of electrical circuits, a plurality of index-carriers controlled by electrical devices in the said circuits, and controlling devices in connection with the said circuits for controlling the operation of said electrical devices.

6. In a typewriting machine, in combination, a platen, a plurality of electrical circuits, electro-magnetic devices in the said circuits, index-carriers brought into indicating position thereby, and sheet-controlled means for controlling the time of action of the said devices.

7. In a typewriting machine, in combination, a platen, a plurality of index-carriers, a plurality of electrical circuits, solenoids in the said circuits connected to control the operation of the said carriers, and means for timing the action of the solenoids.

8. In a typewriting machine, in combination, a platen, a plurality of electrical circuits, solenoids in the said circuits, paper-feeler means, and indicating means controlled by said paper-feeler means through the said solenoids.

9. In a typewriting machine, in combination, a platen, a plurality of separately operated indices each having an indicating position and a non-indicating position, and means for bringing one index into indicat-

ing position at one printing position of the sheet and another index into indicating position at another printing position of the sheet through mechanism automatically controlled in the typewriting operation.

10. In a typewriting machine, in combination, a platen, a plurality of separately-operated visual indicating devices, and sheet-controlled means for causing the several devices to give visually distinguishable indications at different constant points in the progress of the sheet, to indicate the said progress.

11. In a typewriting machine, in combination, a platen, a plurality of electrical circuits, means controlled by the sheet for closing a given circuit when the end of the sheet attains one distance from the printing point and closing another given circuit when the end of the sheet attains another distance from the printing point, and indicating devices in the said circuits for visually indicating the sheet positions.

12. In a typewriting machine, in combination, a platen, a plurality of indices, a plurality of electrical circuits, a plurality of devices in said circuits adapted to bring said indices into indicating prominence, and means controlled by the sheet for closing said circuits, thereby indicating the position of the sheet.

13. In a typewriting machine, in combination, a laterally movable carriage, a platen thereon, a series of indices mounted independently of the carriage, and means for bringing said indices into indicating prominence coördinately with the arrival of the sheet into constant line-positions, including actuating means for the indices, means on the carriage for controlling said actuating means, and connecting means between the controlling means and the actuating means.

14. In a typewriting machine, in combination, a laterally movable carriage, a platen thereon, paper-feeler means also thereon, a series of indices mounted independently of the carriage, and means controlled from the carriage by said paper-feeler means for bringing said indices into indicating prominence.

15. In a typewriting machine, in combination, sheet-advancing means, a plurality of paper-feelers, and electrically-actuated indicating means rendered operative under the control of said paper-feelers to indicate successive positions of the sheet.

16. In a typewriting machine, in combination, a platen, a plurality of paper-feelers controlled by the sheet at said platen, and electrically-actuated indicating means rendered operative under the control of said paper-feelers to indicate successive positions of the sheet.

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."