W. S. IRELAND & W. E. LIPPERT

TYPE WRITING MACHINE.

APPLICATION FILED NOV. 18, 1916.

1,275,434.

Patented Aug. 13, 1918.

3 SHEETS—SHEET 1.

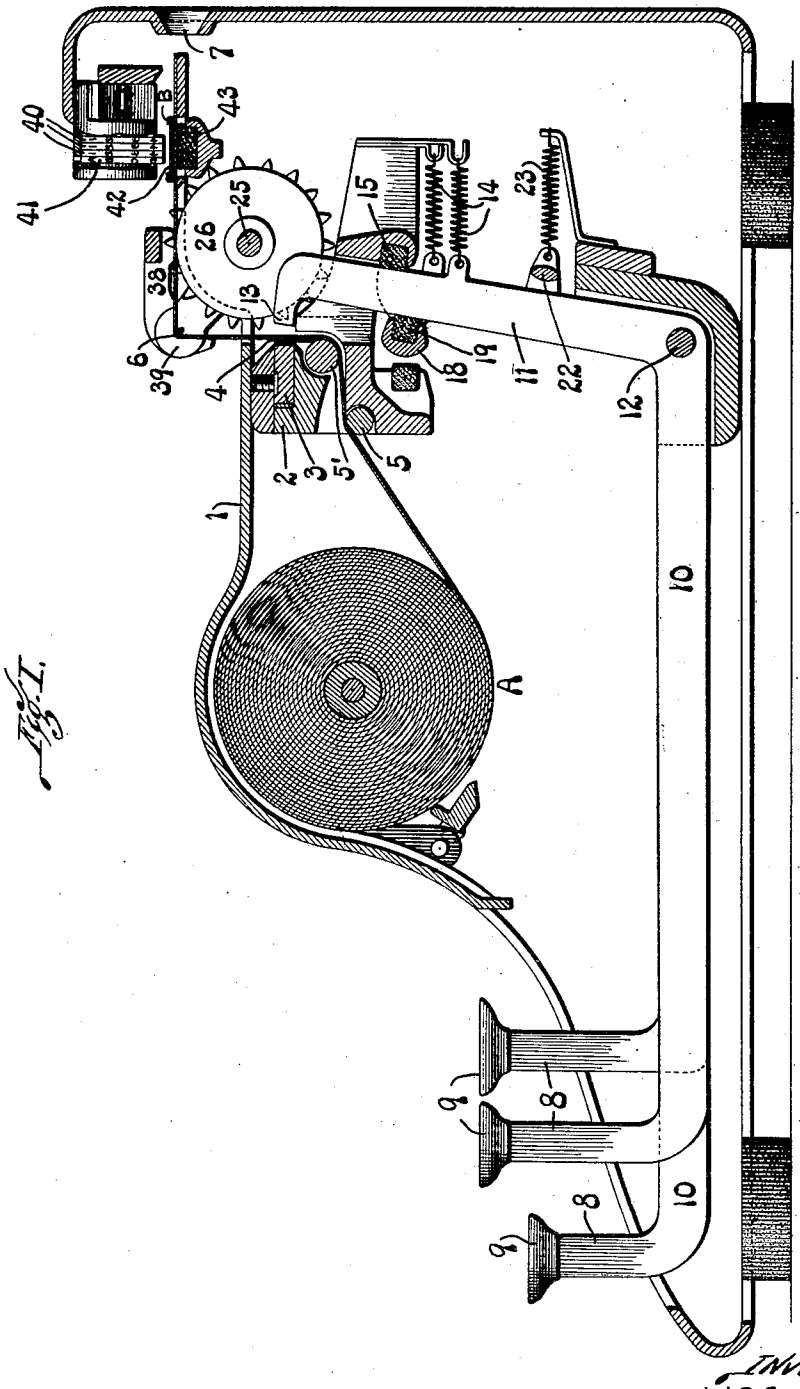


Fig. 1.

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Fig. II.

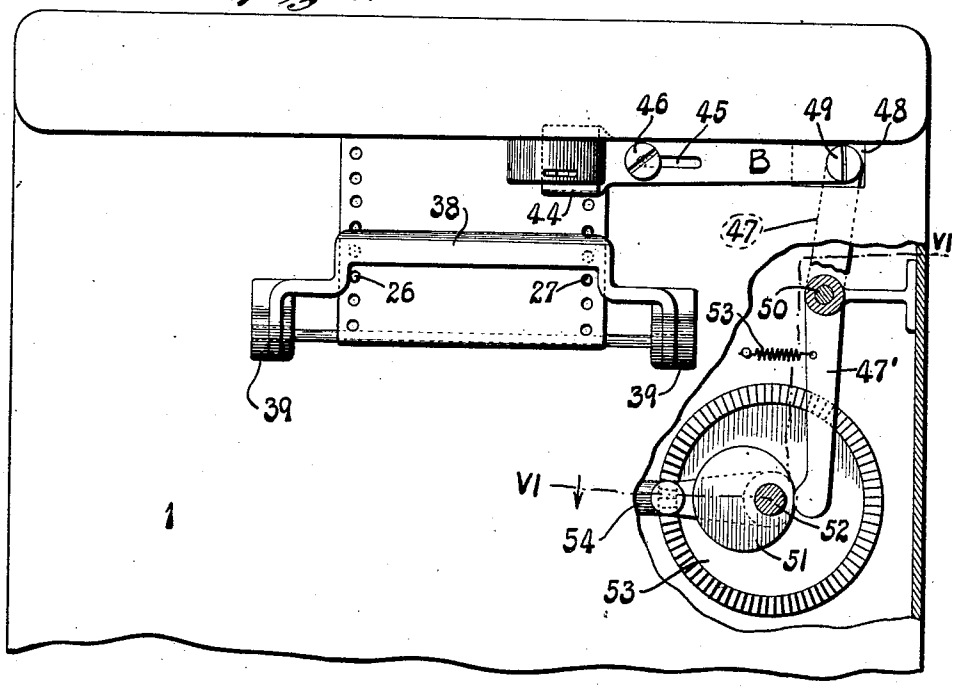


Fig. III.

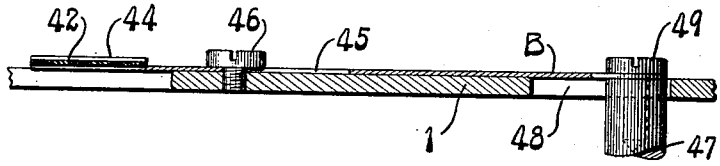
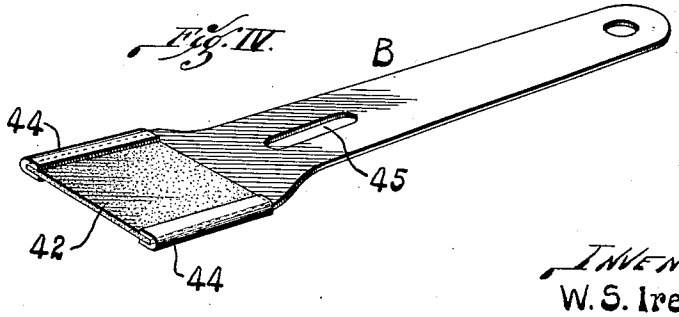


Fig. IV.



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3 SHEETS—SHEET 3.

Fig. V.

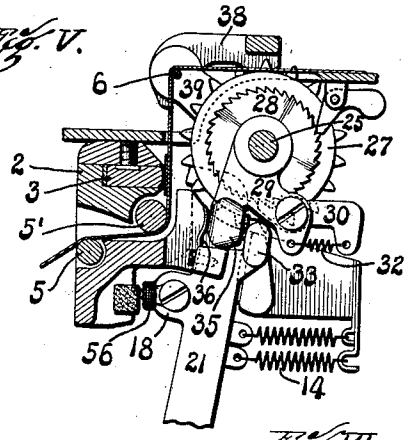


Fig. VI.

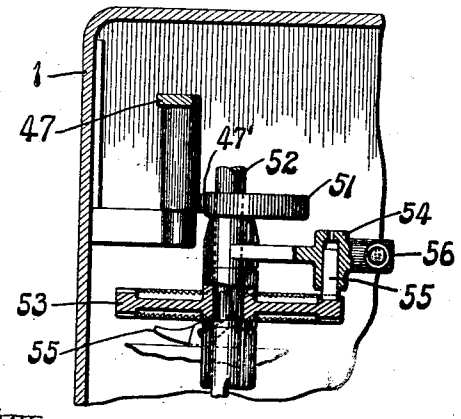
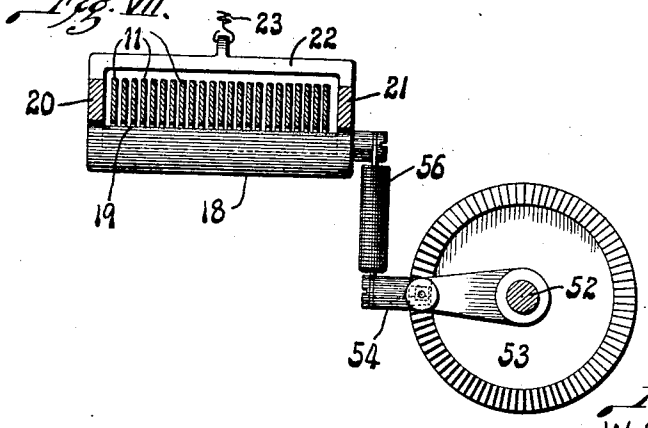


Fig. VII.



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UNITED STATES PATENT OFFICE.

WARD S. IRELAND, OF ST. LOUIS, MISSOURI, AND WALTER E. LIPPERT, OF CINCINNATI, OHIO, ASSIGNORS, BY DIRECT AND MESNE ASSIGNMENTS, TO NATIONAL SHORTHAND MACHINE COMPANY, OF ST. LOUIS, MISSOURI, A CORPORATION OF DELAWARE.

TYPE-WRITING MACHINE.

1,275,434. Specification of Letters Patent. Patented Aug. 13, 1918.

Application filed November 18, 1916. Serial No. 132,073.

To all whom it may concern:

Be it known that we, WARD S. IRELAND and WALTER E. LIPPERT, citizens of the United States of America, residents, respectively, of the city of St. Louis, State of Missouri, and of Cincinnati, in the county of Hamilton, State of Ohio, have invented certain new and useful Improvements in Typewriting Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

Our invention relates to improvements in typewriting machines, and more particularly to inking devices adapted for use in shorthand machines. One of the objects of the invention is to produce a very simple and inexpensive inking device. Another object is to produce an inking device that can be easily and quickly applied to, or removed from, a typewriting machine. A further object of the invention is to produce a shorthand machine having auxiliary type characters for printing consecutive numbers, identification characters or other matter, and a simple auxiliary inking device associated with such type characters.

With the foregoing and other objects in view the invention comprises the novel construction, combination and arrangement of parts hereinafter more specifically described and illustrated in the accompanying drawings wherein is shown the preferred embodiment of the invention; however, it is to be understood that the invention comprehends changes, variations and modifications which come within the scope of the claims hereunto appended.

Figure I is a longitudinal section of a shorthand machine, embodying the features of our invention.

Fig. II is a plan view of the rear portion of the machine, a portion of the housing being broken away to show the means for shifting the inking web.

Fig. III is an enlarged longitudinal section taken through the inking web and web holder.

Fig. IV is a perspective view of the inking web and web holder.

Fig. V is a side elevation, partly in section, illustrating the paper feeding device.

Fig. VI is a vertical section taken approximately on the line VI—VI, Fig. II.

Fig. VII is a horizontal section showing the key levers, the universal bar operable by said key levers, and the ratchet and pawl device driven by the universal bar.

To illustrate the preferred form of the invention, we have shown a shorthand machine provided with a housing 1, a type holder 2 in said housing (Figs. I and V) a type bar 3 secured in said type holder, and a main inking ribbon 4 adjacent to the line of type on the type bar 3. The paper passes from a supply roll A, over a roller 5, under and partially around a roller 5′, in front of and over a rod or roller 6, and then to a paper feeding device whereby it is unwound from the roll and fed through an opening 7 at the rear of the machine.

The key actuated devices preferably include a series of angular levers each having an upwardly extending arm 8 at its front end (Fig. I) and a character key 9 at the upper end of said arm. Any suitable shorthand code may be used, and the character keys 9 are preferably, but not essentially, provided with characters corresponding to the line of type characters on the type bar 3. Each of the key levers includes an arm 10 extending rearwardly from its arm 8, and an arm 11 extending upwardly from the rear portion of said arm 10. The series of key levers is pivotally supported by a pivot member 12 located at the junctions of the lever arms 10 and 11. The upper end of each lever arm 11 is provided with a forwardly extending printing hammer 13 which lies adjacent to the type 3, as shown in Fig. I. Restoring springs 14 (Fig. I) tend to retain the key levers in engagement with an abutment 15.

When one of the finger keys 9 is depressed, the key lever associated therewith turns about the axis of pivot member 12 and a printing hammer 13 moves toward the type 3, thereby forcing the paper and inking ribbon toward the type and printing one of the type characters on the paper. The key levers may be operated independently of each other, or any desired number of key levers may be operated simultaneously.

The universal bar associated with the key levers includes a transverse abutment holder 18 (Figs. I, V and VII) arranged in front of the lever arms 11 and provided with a yieldable abutment 19 which en-

gages all of said lever arms 11. The universal bar also includes a pair of arms 20 and 21 pivotally supported by the pivot member 12, arranged on opposite sides of the lever arms 11, and secured near their upper ends to the transverse abutment holder 18. 22 designates a connecting member uniting the arms 20 and 21 of the universal bar, said connecting member being located at the rear of the lever arms 11. 23 designates a restoring spring (Fig. I) tending to retain the universal bar in the position shown in the drawings. The transverse abutment 19, forming part of the universal bar structure, is so arranged that the universal bar will move in response to movements of any one of the key levers.

The paper feeding device comprises a rotatable shaft 25, a pair of toothed wheels 26 and 27 fixed to said shaft, a ratchet wheel 28 also fixed to the shaft (Fig. V) and a pawl carrier 29 loosely secured to said shaft. 30 designates a pawl pivoted to the pawl carrier 29, and 32 designates a spring connecting said pawl to the pawl carrier. The spring 32 tends to force the pawl into engagement with the ratchet wheel 28, as shown by dotted lines in Fig. V. The arm 21 of the universal bar is provided with an extension 33 (Fig. V) which coöperates with an arm 35 on the pawl carrier 29. A spring 36, secured to the universal bar, tends to force the arm 35 into engagement with the universal bar extension 33, said arm 35 being so arranged between spring 36 and universal bar extension 33 that the pawl carrier will partake of the movements of the universal bar. It will now be understood that the pawl carrier 29 as well as the universal bar, is under the control of the key levers and that the pawl carrier is adapted to oscillate in response to movements of key levers.

When a key is depressed, or when several keys are depressed simultaneously, the universal bar moves forwardly about the axis of pivot member 12, and the pawl carrier 29 turns about the axis of shaft 25 to advance the ratchet wheel 28 one step, thereby turning the toothed wheels 26 and 27 to unwind the paper and advance it one step. At the end of the paper feeding operation, the printing hammer or hammers 13 force the paper and inking ribbon toward the type to print the selected character or characters. Thereafter, the universal bar and key lever or levers, return to the positions shown in the drawings, and during this movement the paper feeding pawl 30 moves idly along the ratchet wheel 28.

The margins of the strip of paper are preferably perforated, as shown in Fig. II, to receive the teeth which project from the periphery of the feed wheels 26 and 27. 38 designates a pressing device pivotally secured to stationary arms 39 and adapted to engage the paper at points near the teeth of the feed wheels 26 and 27 to prevent the paper from becoming disengaged from said feed wheels during the paper feeding operations.

To illustrate the invention, we have shown an auxiliary printing device consisting of counting wheels 40 (Fig. I) provided with peripheral type characters for printing consecutive numbers on the paper, and an identification wheel 41 for printing identification characters on the paper. The identification wheel 41 may be adjusted by hand, and the counting wheels may be operated automatically by any suitable mechanism. In this connection it is to be understood that the invention is not limited to a counting device, nor to an identification device, these elements being shown merely for the purpose of illustrating type members adapted for use in connection with my inking device.

A small inking web 42, arranged between the strip of paper and the type members 40 and 41, is secured at its side margins to a web holder B. 43 designates a platen (Fig. I) arranged below the paper, and also below the inking web 42. This platen 43 may be operated by any suitable mechanism to force the paper and inking web 42 toward the type members 40 and 41. The web holder B, shown most clearly in Fig. IV, is preferably a sheet metal member in the form of a lever, having a pair of oppositely disposed arms 44 which are folded to form grooves for the reception of the side margins of web 42, the folded portions of said arms being firmly forced into engagement with web 42 so as to secure the latter to the web holder B. The arms 44 form the side walls of an opening adapted to receive the type members 40 and 41, and the inking web 42 extends across this opening as shown in Fig. IV. The web holder B is slotted at 45 to receive a guide screw 46 whereby said web holder is detachably secured to the housing 1. A drive lever 47 is provided with a boss which extends through a slot 48 in the top wall of housing 1, said drive lever being secured to the web holder B by means of a pivot screw 49. (Figs. II and III.)

It will be noted that the web holder B is a very inexpensive device, and that it may be easily and quickly applied to or removed from the machine. The screws 46 and 49 preferably constitute the sole means for securing the web holder to the machine.

The drive lever 47 is pivotally supported at 50, (Fig. II) and it has an arm 47′ which engages a cam 51, the latter being fixed to a vertical shaft 52. 53 designates a spring for forcing the drive lever into engagement with cam 51. The means for operating the shaft

52 comprises a ratchet wheel 53 fixed to said shaft, and an oscillatory pawl carrying arm 54 loosely fitted to said shaft. The pawl carrying arm 54 is provided with an opening at a point immediately above the teeth of ratchet wheel 53 (Fig. VI) and a gravity pawl 55 loosely arranged in said opening, engages said ratchet wheel. This ratchet and pawl device is adapted to operate silently, without producing the usual loud clicking sound, the pawl 55 being a small light member adapted to travel over the ratchet teeth without striking noisy blows on the ratchet wheel. 55 designates a retaining pawl (Fig. VI) fitted to the toothed lower edge of ratchet wheel 53. A yieldable link 56, in the form of a helical spring, connects the oscillatory pawl carrier 54 to the arm 21 of the universal bar, see Figs. VI and VII. The axis of the pawl carrier is at a right angle to the axis of the universal bar, and the link 61 is quite free to yield in transmitting movement from the universal bar to the pawl carrier, this being desired on account of the peculiar relative positions of said universal bar and pawl carrier. Another advantage of link 61 lies in the fact that it is free to yield longitudinally to compensate for any undue or abnormal resistance offered to the movement of the means for driving the web holder B.

During each operation of the universal bar, the ratchet wheel 53 advances one step, and the cam 51 turns with said ratchet wheel. The drive lever 47 oscillates in response to the rotary movements of cam 51, and the web holder B moves back and forth in a substantially straight line. It is true that the web holder oscillates slightly, but inasmuch as its movement is approximately in a straight line, we will term this web holder a "reciprocating" element it being understood that the term "reciprocating" is used in its broadest sense, meaning a movement forward and backward.

The printing hammers and the type holding means associated directly with the key levers are claimed in an application filed by W. S. Ireland on Nov. 18, 1916, Serial No. 132,076. The universal bar is claimed in an application filed by W. S. Ireland and W. E. Lippert on Nov. 18, 1916, Serial No. 132,078. The combination of an oscillatory pawl carrier with its axis at an angle to the axis of a key-actuated universal bar, and a spring connecting said parts, is claimed in an application filed by W. S. Ireland on Nov. 18, 1916, Serial No. 132,075. The means for automatically printing consecutive numbers is claimed in an application filed by W. S. Ireland on Nov. 18, 1916, Serial No. 132,072. The identification device is claimed in an application filed by W. S. Ireland on Nov. 18, 1916, Serial No. 132,074. The paper feeding device is claimed in an application filed by W. S. Ireland and W. E. Lippert on Nov. 18, 1916, Serial No. 132,066.

We claim:

1. In an inking device for typewriting machines, a web holder in the form of a lever, an inking web securely attached to said lever, and means for shifting said lever.

2. In an inking device for typewriting machines, a web holder in the form of a lever having an opening, an inking web extending across said opening and securely fixed to said lever, and means for shifting said lever.

3. In an inking device for typewriting machines, an inking web, a sheet metal web holder bent to form grooves for the reception of said inking web, said web holder being firmly secured to said inking web, and means for reciprocating said web holder.

4. In an inking device for typewriting machines, an inking web, a sheet metal web holder folded onto and firmly secured to marginal portions of said inking web, and means for reciprocating said web holder.

5. In an inking device for typewriting machines, a web holder, an inking web firmly secured to said web holder, a drive member, and a screw detachably securing said web holder to said drive member.

6. In an inking device for typewriting machines, a web holder, an inking web firmly secured to said web holder, a guide member to which said web holder is detachably secured, and a drive member to which said web holder is detachably secured.

7. In an inking device for typewriting machines, a web holder, an inking web firmly secured to said web holder, said web holder being provided with a slot, a guide member in said slot, and means for shifting said web holder.

8. In an inking device for typewriting machines, a web holder, an inking web firmly secured to said web holder, said web holder being provided with a slot, a guide member in said slot, and means for shifting said web holder, said means including a drive member pivoted to said web holder.

9. In an inking device for typewriting machines, a web holder having a slot, an inking web firmly secured to said web holder, a guide screw in said slot, a drive member, and a pivot screw connecting said web holder to said drive member.

10. In an inking device for typewriting machines, a web holder, an inking web firmly secured to said web holder, a drive member pivotally connected to said web holder, and key actuated devices for operating said drive member.

11. In an inking device for typewriting machines, a web holder, an inking web firmly secured to said web holder, an oscil-

latory drive member for shifting said web holder, and key actuated devices for operating said oscillatory drive member.

12. In an inking device for typewriting machines, a web holder, an inking web firmly secured to said web holder, a drive lever pivoted to said web holder, and key actuated devices for operating said drive lever.

13. In an inking device for typewriting machines, a web holder, an inking web permanently secured to said web holder, a drive lever pivoted to said web holder, and key actuated devices for operating said drive lever, said key actuated devices including a universal bar and means for transmitting movement from said universal bar to said drive lever.

14. In an inking device for typewriting machines, a web holder, an inking web secured to said web holder, a drive lever pivoted to said web holder, and key actuated devices for operating said drive lever, said key actuated devices including a cam fitted to said drive lever, a shaft secured to said cam, a ratchet wheel secured to said shaft, a pawl carrier for operating said ratchet wheel, and a universal bar connected to said pawl carrier.

15. In an inking device for typewriting machines, a web holder, an inking web secured to said web holder, a lever arm secured to said web holder, a cam for actuating said lever arm, a ratchet wheel for driving said cam, a pawl carrier having a pawl which engages said ratchet wheel, a universal bar connected to said pawl carrier, and key levers arranged to actuate said universal bar.

16. In an inking device for typewriting machines, a web holder, an inking web secured to said web holder, a lever secured to said web holder, a cam, a spring for forcing said lever into engagement with said cam, a ratchet wheel for driving said cam, a pawl carrier having a pawl which engages said ratchet wheel, a universal bar connected to said pawl carrier, and key levers arranged to actuate said universal bar.

17. In an inking device for typewriting machines, a web holder, an inking web secured to said web holder, and means for shifting said web holder, said means including a drive lever connecting to said web holder, a cam for operating said drive lever, a ratchet wheel for operating said cam, a pawl carrier having a pawl which engages said ratchet wheel, a universal bar, and a yieldable link connecting said universal bar to said pawl carrier.

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