E. H. LORENZ.

TYPE WRITING MACHINE.

APPLICATION FILED APR. 16, 1909.

1,082,536.

Patented Dec. 30, 1913.

3 SHEETS—SHEET 1.

Fig. 1.

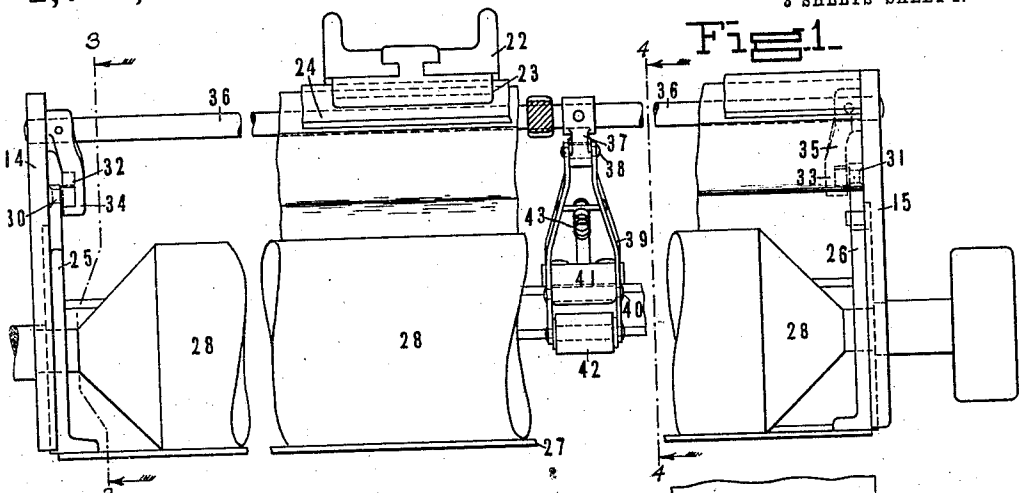


Fig. 2.

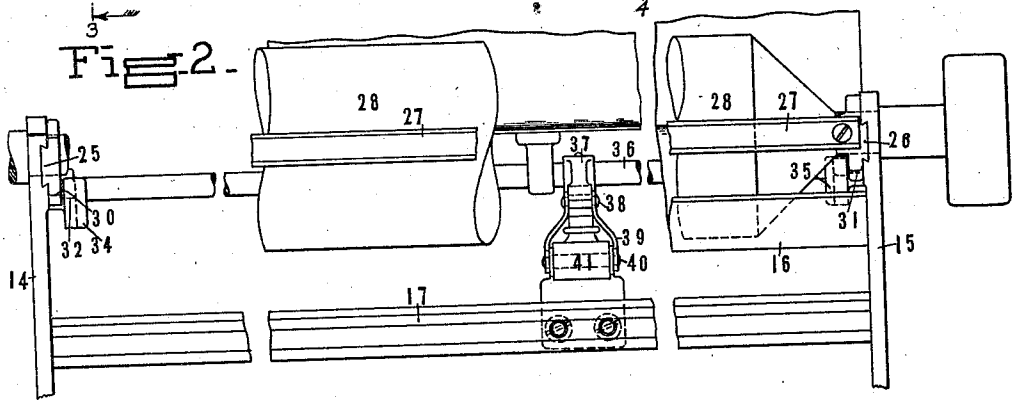


Fig. 3.

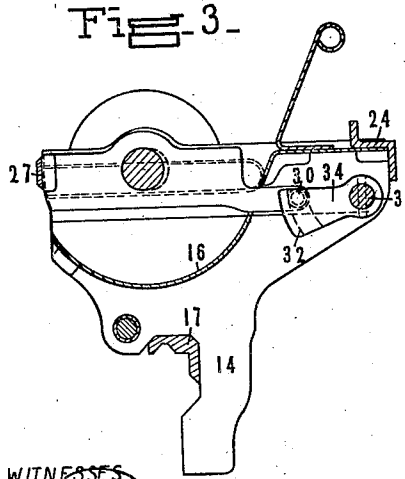
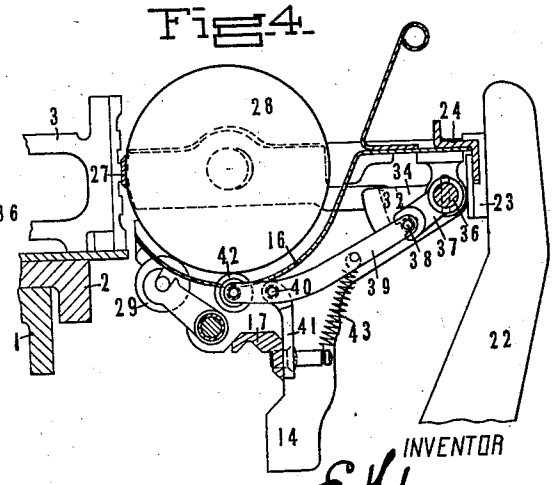


Fig. 4.



WITNESSES

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3 SHEETS—SHEET 2.

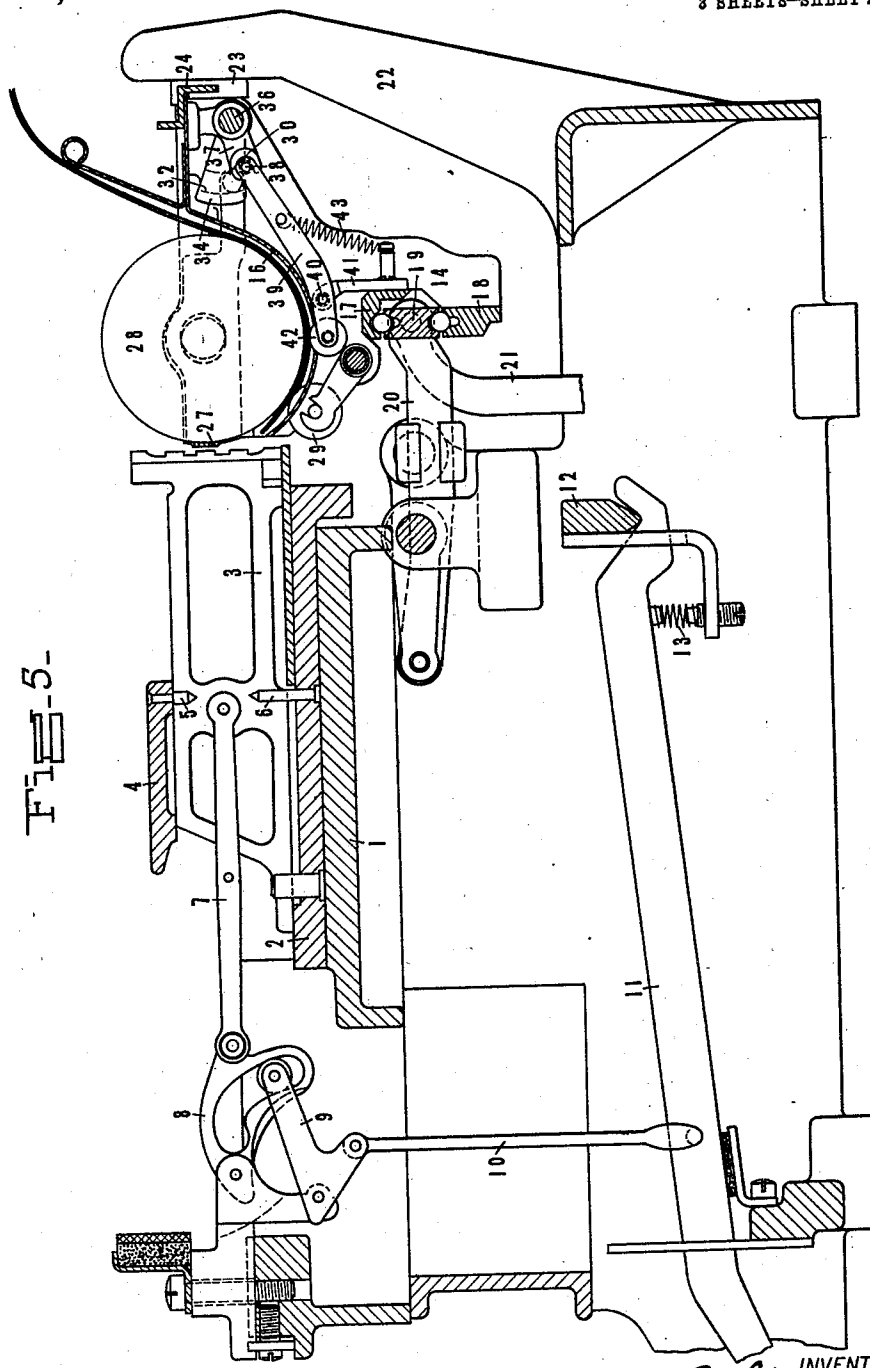


Fig. 5.

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3 SHEETS—SHEET 3.

Fig. 6.

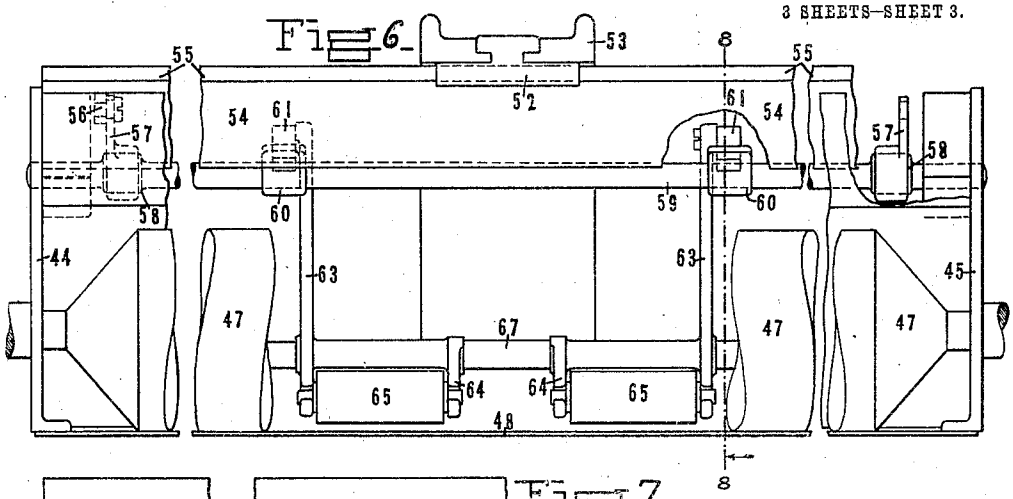


Fig. 7.

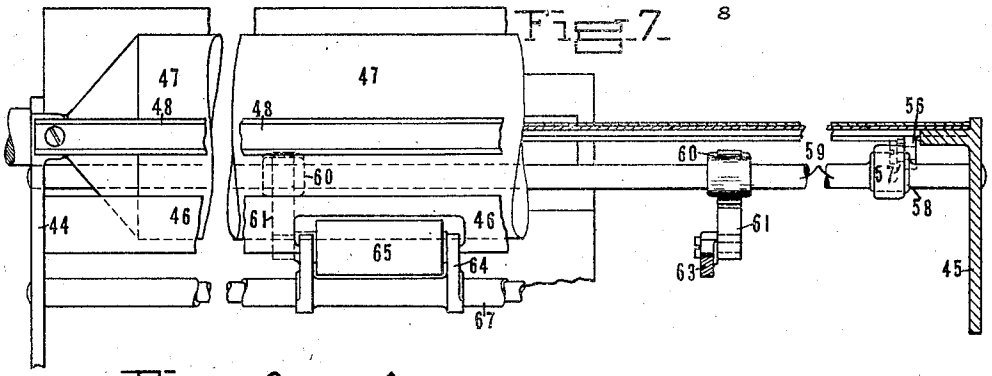


Fig. 9.

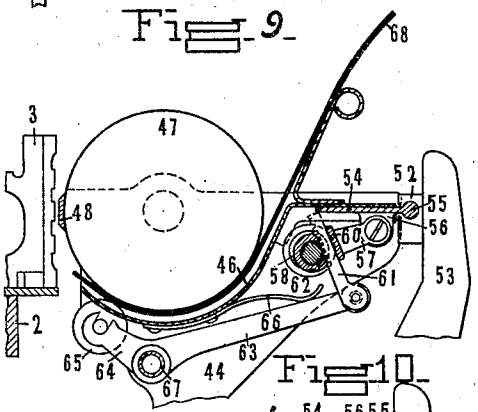


Fig. 10.

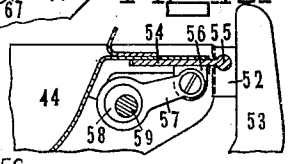
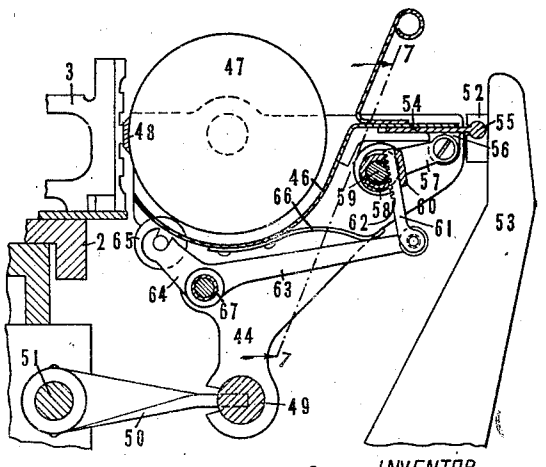


Fig. 8.



WITNESSES

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UNITED STATES PATENT OFFICE.

EDWARD H. LORENZ, OF HARTFORD, CONNECTICUT, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE NOISELESS TYPEWRITER COMPANY, OF MIDDLETOWN, CONNECTICUT, A CORPORATION OF CONNECTICUT.

TYPE-WRITING MACHINE.

1,082,536. Specification of Letters Patent. Patented Dec. 30, 1913.

Application filed April 16, 1909. Serial No. 490,300.

To all whom it may concern:

Be it known that I, EDWARD H. LORENZ, a citizen of the United States, residing at Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Type-Writing Machines, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to typewriting machines and one of the objects thereof is to provide new and improved means for adjusting the platen with respect to the printing plane.

Another object is to provide in a machine employing type bars which have limited movements in the direction of the platen, means whereby the platen may be moved automatically to a proper printing position to receive the pressure of the type when printing is to be effected upon an impression sheet or impression sheets of varying thickness or thicknesses.

Another object is to provide means for holding the platen in fixed position during printing.

Other objects will be in part obvious and in part pointed out hereinafter.

The invention accordingly consists in the features of construction, combinations of elements and arrangement of parts which will be exemplified in the construction hereinafter set forth, and the scope of the application of which will be indicated in the following claims.

In the accompanying drawings, wherein is illustrated two of the various possible embodiments of my invention, Figure 1 is a plan view, partly broken away, of my improved adjusting mechanism; Fig. 2 is a front elevation thereof; Fig. 3 is a sectional view taken substantially on line 3—3 of Fig. 1, looking in the direction of the arrows; Fig. 4 is a similar view taken substantially on line 4—4 of Fig. 1, looking in the direction of the arrows; Fig. 5 is a sectional view taken transversely of the machine, showing the key action and type bar in elevation and the automatic adjusting mechanism for the platen, the section of the carriage being taken substantially on the same line as that shown in Fig. 4; Fig. 6 is a view in plan of a different embodiment of platen-adjusting mechanism, certain of the parts being broken away in the interest of clearness of illustration; Fig. 7 is a partial view of the mechanism shown in Fig. 6, the part broken away, being taken substantially on the line 7—7 of Fig. 8, looking in the direction of the arrows; Fig. 8 is a sectional view on the line 8—8 of Fig. 6, looking in the direction of the arrows; Fig. 9 is a sectional view showing the parts illustrated in Fig. 8, but in another position; Fig. 10 is a sectional view of the rear portion of the carriage showing one of the eccentric adjustments.

Similar reference characters refer to similar parts through the several views of the drawings.

Referring now to the drawings, and particularly to the embodiment illustrated in Figs. 1 to 5 inclusive, 1 denotes a portion of the framing of the machine which carries the top plate or bed 2 which supports the several type bars one of which is shown at 3. The type bars slide across this bed, being suitably guided by a cap plate 4 and pins 5—6, and are actuated by means of a link 7, cam 8 and lever 9, this latter mechanism being connected, by means of the rod 10, with the key lever 11 pivoted upon the bar 12. A spring 13 urges the key lever and associated parts to normal position. The actuated mechanism for the type bars is adapted to thrust the type toward the platen to a predetermined position where they are positively arrested, said mechanism, broadly, being similar to that disclosed in patent to W. P. Kidder, No. 567,241, patented September 8, 1896.

The platen frame consists of a pair of end frames 14 and 15 to which are secured a trough 16 and the rails 17 and 18, having oppositely disposed grooves between which is interposed a grooved rail 19 supported in suitable balancing arms 20. The entire carriage may be shifted vertically by means of the links 21 connecting the shift rail 19 with any suitable shifting mechanism not herein shown.

22 indicates an upstanding portion of the frame of the machine, which constitutes a fixed backing or abutment for the platen frame, said abutment having a vertically-disposed portion which receives a vertically-sliding block 23, said block receiving a

downwardly-bent tongue 24 of the platen carriage which slides longitudinally in the block when the carriage is fed for letter-spacing.

Dove-tailed in the end portions 14 and 15 of the platen carriage respectively, are roll slides 25 and 26, to the forward ends of which are attached the printing platen 27, which is provided with a substantially plane face for receiving the impact of the types and a curved rear face conforming to the platen roll 28, which is journaled in the slides 25 and 26. The platen rests against the platen roll and is held thereby against recession during the printing operation. The carriage is also provided with paper rolls 29 supported with suitable arms and provided with suitable springs for pressing the rolls against the paper that is fed between them and the platen roll.

The slides 25 and 26, which carry the printing platen and platen roll, are provided with extensions at the rear, to which are secured pins 30 and 31, said pins engaging cam grooves 32 and 33 in arms 34 and 35, one of which is secured to each end of a shaft 36 extending longitudinally of the carriage and journaled in the end pieces 14 and 15 thereof. The shaft 36 carries a forked arm 37 engaging with a pin 38 in the bifurcated lever 39. This lever is pivoted at 40 in an upstanding bracket 41 and its forward end is provided with a roller 42 which rests upon the platen roller 28, as is clearly shown in Fig. 4 of the drawings. A retractile spring 43 draws the rear end of lever 39 downwardly and presses the roller 42 upwardly against the platen roll.

Having described this embodiment of my invention, the operation thereof, which to a large extent should be obvious, is substantially as follows: At this point it may be noted that normally the platen 27 lies substantially in the normal printing plane, that is, in a position where the type faces will just reach or barely touch the same when projected to impression, so that when a single sheet is interposed between the platen and the type faces the proper pressure to produce printing will be exerted thereupon. The operator, in inserting several sheets of paper, passes the same under the platen roller 28 and over the feed roller 29, the paper also passing between the feeler roller 42 and the platen roll. The passing of the paper between the platen roll 28 and the feeler roller 42 will cause the latter to be depressed, raising the rear end of the lever 39, which will oscillate arm 37 and shaft 36, thereby, through cam grooves 32 and 33, which engage pins 30 and 31, drawing the slides 25 and 26 rearwardly and thereby carrying the platen roll and printing platen backwardly away from the normal printing plane. The positions assumed by the several parts are shown in Fig. 5, where the platen is properly positioned for printing upon that number of sheets which will thereafter be fed over the platen.

Referring to the embodiment illustrated in Figs. 6 to 10 inclusive, the carriage comprises two side pieces 44 and 45 secured together by means of the trough 46 and supporting the platen roll 47 and the printing platen 48. The carriage is pivoted and slides upon the carriage rail 49, shown in Fig. 8, the rail being supported by means of arms 50 upon the balancing shaft 51 journaled in the frame of the machine. The carriage block 52 is tongued in a groove in the fixed rear abutment 53 so as to be capable of moving vertically and endwise when the platen carriage is shifted. Secured to trough 46 is a plate 54 having a tongue 55 which is received in a recess of the block 52. This enables the carriage to move horizontally with respect to the block when letter-spacing movements thereof are forwarded.

The sides 44 and 45 attached to the carriage are capable of movement forward and back with relation to the plate 54 thereof, moving the printing platen 48 which is carried by the sides to or from the faces of the types. This movement of the sides 44 and 45 and the carriage frame with relation to the plate 54 is effected as follows: The plate 54 is provided with ears 56 which extend downwardly, and these ears are pivoted to eccentric rods 57 which engage eccentrics 58 upon the eccentric shaft 59, said shaft being journaled in the end walls of the carriage. The shaft 59 is encircled by a pair of yokes 60, said yokes supporting the racks 61 having teeth meshing with pinion teeth 62, in the present instance, on the shaft 59 itself, this construction being clearly shown in Figs. 8 to 10. The racks 61 are pivoted to levers 63 connected respectively to yokes 64, which support at their forward ends paper feed rolls 65 that bear against the platen roll 47 being held against said roll by means of a flat spring 66 shown in Fig. 8. The yokes 64 are pivotally supported by a shaft or rod 67 which extends longitudinally of the carriage.

The operation of this last described embodiment of my invention is as follows: The paper upon which printing is to be effected, indicated at 68, is passed between the paper feed roll 65 and the platen roll 47, as shown in Fig. 9 of the drawings. The paper will press the roll 65 downwardly a distance depending upon the thickness thereof, and thereby move the lever 63 upwardly together with the rack 61. This rotates shaft 59 together with the eccentrics 58 and moves the larger diameter of the eccentrics forwardly from the position shown in Fig. 8 to that shown in Figs. 9 or 10. The connecting rods 57 are secured to the longitudinal plate 54

which is held by means of the carriage block 52 to the rear abutment 53, causing the entire body of the carriage together with the platen roll and printing platen to be moved backwardly toward the fixed abutment 53 and open up a space, as shown in Fig. 9, between the platen and the faces of the type. The proportion and arrangement of the parts are such that whatever thickness of paper is inserted between the platen roll 47 and the paper roll 65, the position of the platen will be moved rearwardly to such position as will enable the proper printing pressure to be applied to the paper.

It will, accordingly, be seen that I have provided mechanism of the above character well adapted to attain, among others, all the ends and objects above pointed out and which will operate automatically to adjust the platen to the proper position to receive the printing pressure irrespective of the number of sheets upon which printing is to be effected. The adjusting operation of the platen being entirely automatic, no care or attention is required on the part of the operator, it being merely necessary to insert the sheets in the machine in the usual manner, whereupon the platen will automatically move to such position as will permit of the proper printing pressure to be applied by the type bars.

As many changes could be made in the above construction and many apparently widely different embodiments of this invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

The term "platen" used in many of the following claims is to be understood as including either the form of platen illustrated and described in this application, or the usual platen roll used on many styles of typewriters.

Having described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In a typewriting machine, the combination with the type carriers, of a platen, and means for automatically varying the distance of the platen from the common plane assumed by the faces of the types when they are projected to impression.

2. In a typewriting machine, the combination with the platen, of a plurality of type carriers, and means controlled by the number of impression sheets positioned upon the platen for regulating the distance of the latter from the common plane assumed by the faces of the types when they are projected to impression.

3. In a typewriting machine, the combination with the platen, of a plurality of type carriers, a platen roll disposed behind the platen, and means engaging the impression sheets positioned upon the platen roll for automatically adjusting the position of the platen with respect to the normal printing plane.

4. In a typewriting machine, the combination with the platen, of a plurality of type carriers, a platen roll, and means, the variation of which is determined by the thickness or thicknesses of the impression sheet or sheets carried by the platen roll, for regulating the position of the platen with respect to the normal printing plane.

5. In a typewriting machine, the combination with the platen, of a plurality of type bars each of which has a predetermined throw in the direction of the platen to a normal printing plane, a paper roll carried by the platen carriage, and means engaging the paper carried by the paper roll for automatically varying the distance thereof from the normal printing plane.

6. In a typewriting machine, the combination with the platen carrier, of type bars movable to a normal printing plane, a paper roll upon the platen carrier, a platen disposed in front of the paper roll, and means carried by the platen carrier adapted to engage the paper carried by the platen roll for automatically moving the platen to such position behind the normal printing plane as will enable the impression sheets to receive the proper degree of pressure from the types.

7. In a typewriting machine, the combination with the platen carrier, of a plurality of type bars movable to a normal printing plane, a platen fixed upon the platen carrier, a paper roll located behind the platen, a finger mounted upon the platen carrier which engages the impression sheets positioned upon the paper roll, and means actuated by said finger for moving the platen carrier and thereby varying the position of the platen with respect to the normal printing plane.

8. In a typewriting machine, the combination with the carriage, of a platen carrier adjustably mounted thereon, a plurality of type bars each of which has a limited throw in the direction of the platen, a platen, a platen roll journaled upon the platen carrier and engaging the back face of the platen to form a backing therefor, a feeler mounted upon the platen carriage and adapted to engage with the impression sheets carried by the platen roll, and means actuated by said feeler to automatically move the platen carrier to a position dependent upon the number of impression sheets carried by the paper roll.

9. In a typewriting machine, the combination with the carriage, a platen carrier adjustably mounted thereon, a paper roll

upon the platen carrier, and means upon the platen carrier which engages the impression sheets upon the paper roll and automatically adjusts the platen carrier upon the carriage.

10. In a typewriting machine, the combination with type bars, actuating means for each of the type bars which determines its throw in the direction of the platen to a normal printing plane, a carriage, a platen frame adjustably mounted thereon, a platen fixed upon the platen frame, a paper roll journaled thereon behind the platen and which furnishes a backing for the latter, means adapted to adjust the platen carrier upon the carriage, whereby the platen may be moved toward or from the normal printing plane, and a feeler connected with said adjusting means and engaging the paper upon the paper roll.

11. In a typewriting machine, the combination with a plurality of type bars movable to a normal printing plane, a carriage, a platen frame adjustably mounted thereon, a shaft journaled upon the carriage, a pair of arms one of which is mounted upon each end of said shaft, cams formed upon said arms, means upon the platen frame for engaging said cams, a feeler pivotally mounted upon the carriage and operatively connected with said shaft, and a platen roll mounted upon the platen frame, said feeler being adapted to engage with the paper carried by the platen roll and actuate said cams whereby the platen frame is moved rearwardly with respect to the normal printing plane.

12. In a typewriting machine, the combination with type bars each of which has a limited throw in the direction of the platen to a normal printing plane, a carriage, a platen roll journaled thereon, a feeler pivotally mounted upon the carriage and adapted to engage with the paper upon the platen roll, and means for automatically adjusting the platen roll toward or from the normal printing plane.

13. In a typewriting machine, the combination with type bars each of which has a limited throw in the direction of the platen to a normal printing plane, a carriage, a platen roll journaled thereon, a feeler pivotally mounted upon the carriage and adapted to engage with the paper upon the platen roll, and cam means interposed between said feeler and the platen carriage for automatically moving the latter with respect to the normal printing plane.

14. In a typewriting machine, the combination with the type bars having a limited path of travel to a normal printing plane, of a paper carrier adapted to carry a plurality of impression sheets, and means for automatically positioning the outermost sheet in the normal printing plane.

15. In a typewriting machine, the combination with the type carriers having a limited movement toward a normal printing plane, of a platen adapted to carry a plurality of impression sheets, and means associated with one of said parts adapted by the insertion of a sheet of paper into the machine to position the outermost impression sheet in the normal printing plane

16. In a typewriting machine, the combination with a type carrier having a limited path of travel, of a platen carriage having a platen adapted to carry impression sheets normally disposed at one end of the path of travel of said type carrier, and means associated with one of said parts for automatically varying the distance between the platen and the type carrier according to the number of impression sheets carried thereby.

17. In a typewriting machine, the combination with a type carrier having a limited path of travel to a normal printing plane, of a carriage, a platen carried thereby adapted to carry a plurality of impression sheets, and means associated with one of said parts for automatically positioning the outermost impression sheet in the normal printing plane.

18. In a typewriting machine, the combination with a type carrier, of an adjustable platen, and means automatically actuated in accordance with the total thickness of the paper to adjust said platen with respect to said type carrier.

19. In a typewriting machine, the combination with a pressure-operated type carrier having a limited path of travel, of an adjustable platen, and means automatically actuated in accordance with the total thickness of the paper to adjust said platen with respect to said type carrier.

20. In a typewriting machine, the combination with a type carrier having a limited stroke, a platen, a relatively fixed abutment, and means adapted to vary the distance between the platen and the abutment to adjust said platen relatively to the normal printing plane simultaneously with and by the insertion of a sheet of paper.

21. In a typewriting machine, the combination with a platen, of a relatively fixed abutment, and means for automatically varying the distance between said platen and said abutment as a sheet of paper is inserted in the machine.

22. In a typewriting machine, the combination with a pressure-operated type carrier, of a platen, a relatively fixed abutment, and means actuated by the paper inserted in the machine for varying the distance between said platen and said abutment.

23. In a typwriting machine, the combination with a pressure-operated type carrier having a limited path of travel to a normal printing plane, a paper carrier, a platen

thereon, an abutment behind said platen, and means actuated by the insertion of a sheet of paper for varying the distance between said platen and said abutment to adjust the same relatively to the normal printing plane.

24. In a typewriting machine, the combination with a silently operated type carrier having a limited path of travel, of a paper carrier, a platen carried thereby, an abutment behind said platen, and means associated with said paper carrier adapted to vary the distance between the platen and the abutment.

25. In a typewriting machine, the combination with a pressure-operated type carrier having a limited path of travel, of a carriage, a platen carried thereby, a fixed abutment behind said carriage, and means on said carriage adapted to vary the distance between said platen and said abutment.

26. In a typewriting machine, the combination with a type carrier having a limited path of travel, of a carriage, a platen carried thereby, a fixed abutment behind said carriage, and means automatically actuated in accordance with the thickness of the paper to adjust said platen with respect to said type carrier.

27. In a typewriting machine, the combination with a pressure-operated type carrier, of a carriage, a platen carried thereby, a fixed abutment behind said carriage, and means automatically actuated in accordance with the total thickness of the paper to vary the distance between the platen and said abutment.

28. In a typewriting machine, the combination with a pressure-operated type carrier having a limited path of travel to a normal printing plane, of a carriage, a platen carried thereby, a fixed abutment behind said carriage, and means carried by the carriage automatically actuated in accordance with the total thickness of the paper to adjust said platen relative to the normal printing plane.

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

EDWARD H. LORENZ.

Witnesses:
CHARLES H. STORRS,
NELLIE PHOENIX.

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