W. A. LORENZ.

TYPE WRITING MACHINE.

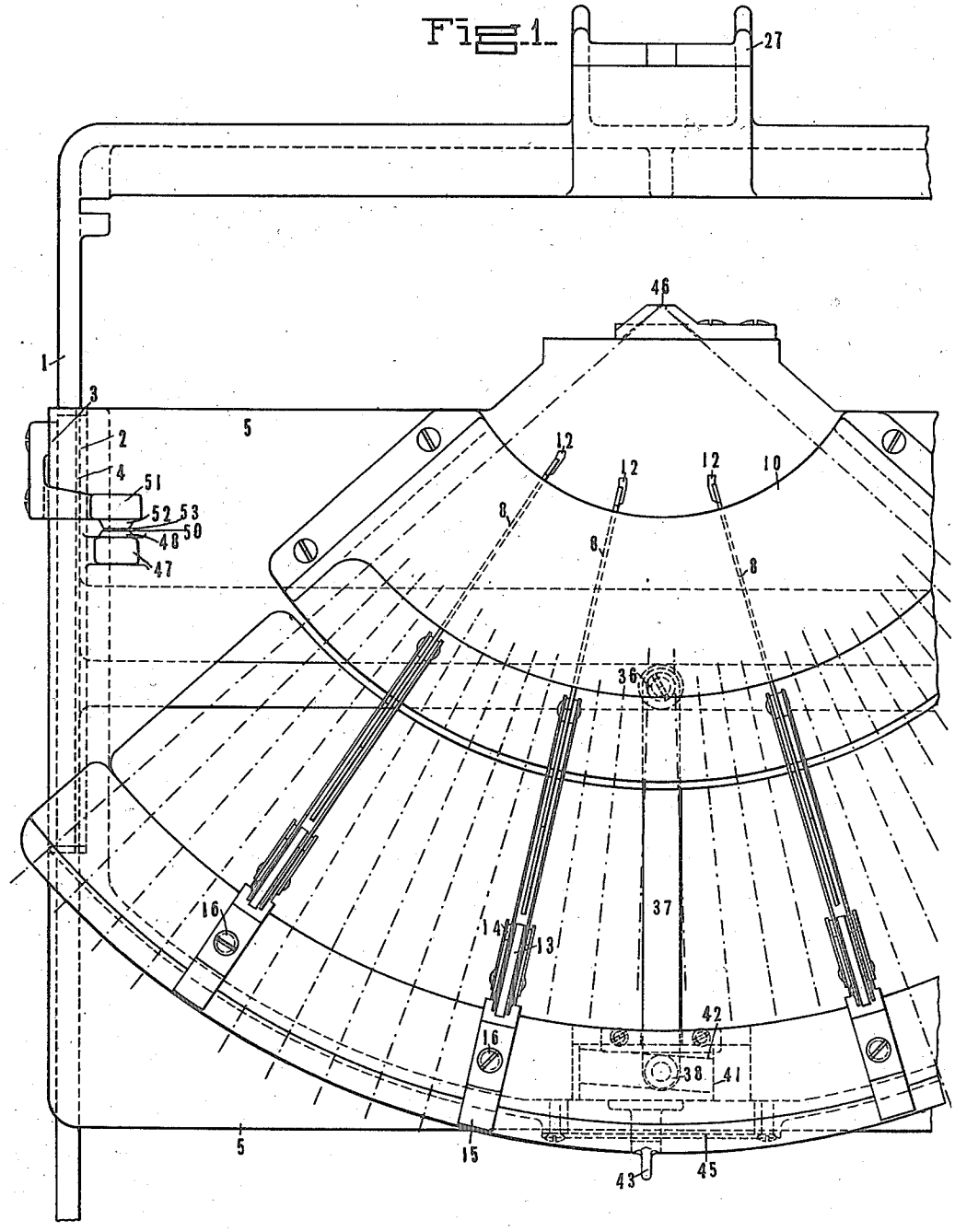
APPLICATION FILED APR. 16, 1909.

1,123,771.

Patented Jan. 5, 1915.

3 SHEETS—SHEET 1.

Fig. 1.



WITNESSES

Nonny Perryce

Daniel J. Dunn

INVENTOR

W. A. Lorenz

BY

Duell Canfield & Duell

ATTORNEYS.

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3 SHEETS—SHEET 2.

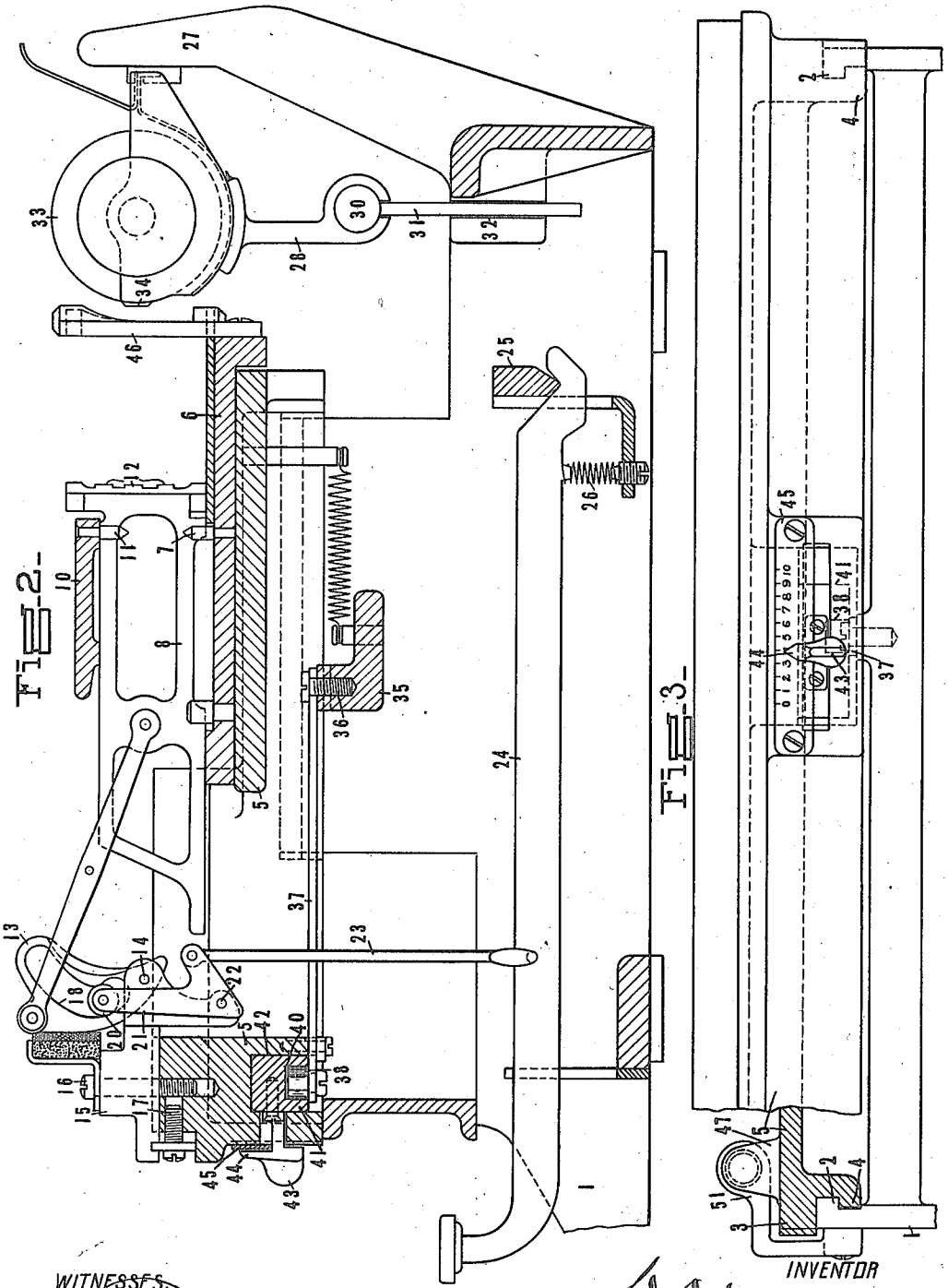

FIG. 2.

FIG. 3.

WITNESSES:

Norman Perry

Daniel F. Dunn

INVENTOR

W. A. Lorenz

BY

Duell, Warfield & Duell

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3 SHEETS—SHEET 3.

FIG. 4.

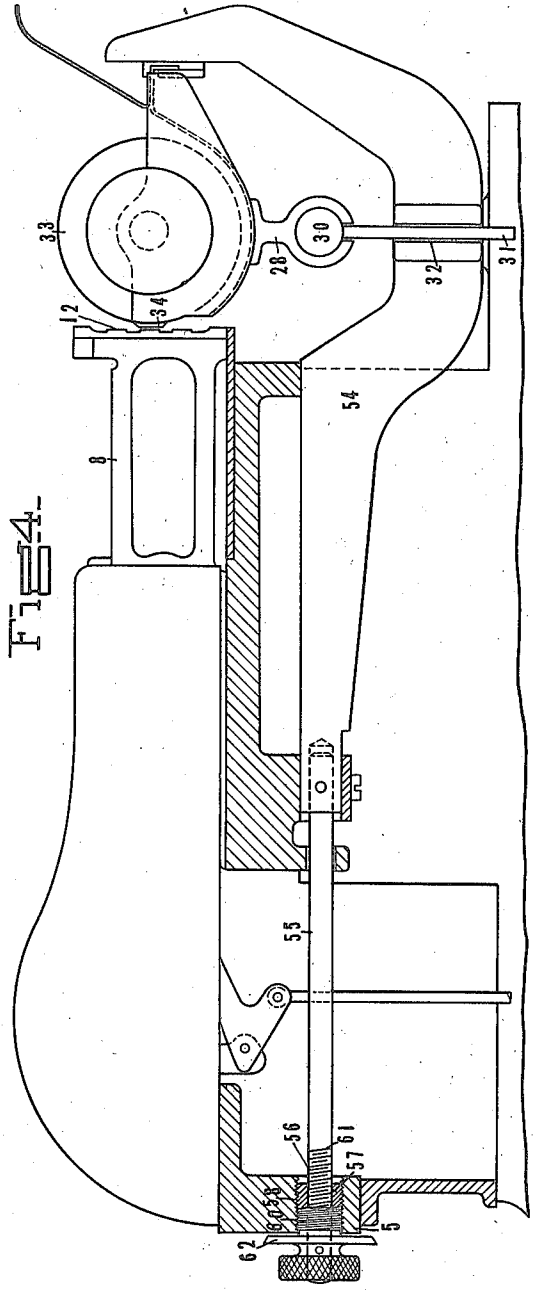
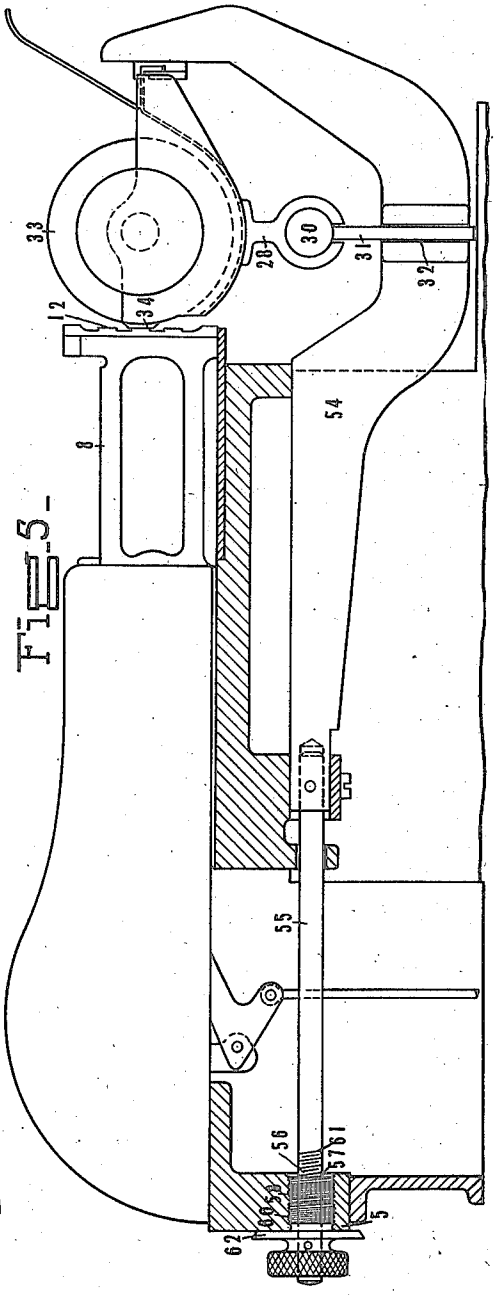


FIG. 5.



WITNESSES

Norman Perry

Daniel J. Dunn

INVENTOR

W. A. Lorenz

BY

Duell Warfield & Duell

ATTORNEYS.

UNITED STATES PATENT OFFICE.

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

TYPE-WRITING MACHINE.

1,123,771. Specification of Letters Patent. Patented Jan. 5, 1915.

Application filed April 16, 1909. Serial No. 490,210.

To all whom it may concern:

Be it known that I, WILLIAM A. 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 changing the relation of the platen with respect to the printing mechanism.

Another object is to provide, in a machine employing type bars which have a limited thrust in the direction of the platen, means whereby the entire bank of type bars and their actuating mechanisms may be moved toward or from the platen.

Another object is to provide a new and improved device for gaging the thickness of paper or the number of sheets to be inserted in the platen carriage and upon which printing is to be effected.

A further object is to provide improved means for indicating the position of the type-bars relative to the platen.

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 one of the various possible embodiments of my invention, Figure 1 is a plan view of a portion of a typewriting machine, showing the arrangement of the type-bars and their actuating devices; Fig. 2 is a central longitudinal section through the machine, showing one of the type-bars and its actuating mechanism in elevation; Fig. 3 is a front view of a portion of Figs. 1 and 2, showing the indicator, a portion of the top plate of the machine being shown in section; Fig. 4 shows a modified form of paper gaging device in one position; and Fig. 5 shows the same in another position.

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

Referring now to the drawings, 1 represents the frame of the machine, which is provided at the upper portion of each of its side members with a tongue 2 adapted to engage projecting tongues 3 and 4 of a top plate 5. This top plate is movable from front to rear of the machine by means hereinafter described. The top plate 5 is provided with a plate 6 having pins 7 for guiding the type-bars 8 at their lower edges, the upper edges of the type-bars being supported and guided by an upper plate 10 having depending guide-pins 11. The type-bars 8, in the present instance, are provided with a plurality of type faces 12.

The actuating mechanisms for the several type-bars, one of which is shown in elevation in Fig. 2, comprises toggle cams 13 pivoted at 14 in blocks 15 adjustably mounted upon the plate 5. These blocks are held in position upon said plate by clamp screws 16, and each block may be independently adjusted as by means of an adjusting screw 17. The cam groove 18 of the toggle cam 13 is traversed by a roller 20 carried by a lever 21 which is pivoted at 22 to depending portions of the blocks 15, said lever being adapted to be swung by means of a link 23 connected with the key-lever 24. The key-levers, in the present instance, are pivoted upon the bar 25 and are held in their normal upward positions as by means of springs 26.

Affixed to the rear portion of the machine is a fixed abutment 27 against which rests the rear portion of the carriage frame. The carriage frame is provided with a pair of depending brackets 28 which slide upon the carriage rail 30, the latter having secured thereto a pair of vertical guides 31 which may be moved vertically in guides 32 in the frame of the machine.

The carriage frame is provided with the usual platen roller 33 in front of which is located a straight faced platen 34 the rear surface of which conforms to the contour of the platen roller. Fastened to the frame

of the machine is a cross member or brace 35, to which is secured a pivot screw 36, said screw engaging a rod or link 37, the other end of which is provided with a roller 38 which runs in a cam slot 40 of a cam slide 41. This slide moves endwise in a suitable groove or slot 42 provided in the front portion of the plate 5 and may be adjusted by means of a projecting post or finger piece 43 attached to the slide. This finger 43 is provided with a pointer 44 which passes over a scale 45 fastened upon the front portion of the plate 5 as shown in Fig. 3 of the drawings. By moving the pointer to the left, the cam slot 40 will pass over the roller 38 and move the entire top plate 5, together with the type guide 46 secured thereto, the actuating mechanism and the type-bars, rearwardly, and by moving the pointer to the right, all the above parts are moved forwardly or toward the key-board of the machine.

The graduation of the scale 45, shown in Fig. 3, may be such as will indicate to the operator the number of sheets of paper to be inserted in the carriage, and by bringing the pointer to the figure indicative of that number of sheets, the parts may be so adjusted that the type-bars will effect printing properly upon that number of sheets.

While the above described mechanism is useful to the operator in deciding where to position the type with relation to the platen when sheets of a predetermined thickness are employed, the operator may not know precisely where to place the type with relation to the platen when paper of a different or unknown thickness is to be employed. In order, however, to enable the operator to decide at once the proper place to adjust the type with relation to the platen under the last mentioned conditions, a paper gaging device, shown in Figs. 1 and 3, is employed. This paper gaging device comprises an upstanding bracket or finger 51 fixed to the frame of the machine, having a projecting portion 52 provided with a gaging face 53, and coöperating with this part is a similar bracket or finger 47 carried by the sliding plate 5. This part has also the forwardly extending portion 48 provided with a gaging face 50 which opposes face 53. This last-mentioned bracket may be adjustable in the top plate 5 if desired, or it may be affixed thereto as shown in the drawings. When it is desired to gage a certain thickness of paper, it is inserted between the gaging faces 50 and 53 which have previously been separated. The gaging face 53 is then closed upon the paper pressing it against the gaging face 50. When the gaging faces have been closed upon the paper with the proper pressure, the paper is then slipped from between the said faces and inserted in the carriage, in which position the entire top plate, together with the type-guide 46, the type-bars and their actuating mechanisms, will be positioned properly for printing with the desired degree of pressure.

From the above description it will be seen, therefore, that the top plate 5 which carries the bank of type-bars together with the actuating devices therefor, is movable from front to rear of the machine so as to vary the relation between the type faces and the printing platen, as when it is desired to effect printing upon a greater or less number of sheets or sheets of different thicknesses inserted in the platen carriage.

In Figs. 4 and 5 of the drawings is shown a different embodiment of the paper gaging device wherein the same coöperates with the center-tie. In this embodiment the front top portion of the frame of the machine is not made adjustable as in the preceding embodiment, but the center-tie of the machine, represented at 54, which carries the platen carriage, is movable forward and backward by means of a suitable adjustment, said adjustment, in the present instance, comprising a rod 55 threaded at 56 in an adjustable nut 57. Nut 57 is threaded at 58 in the frame of the machine. The thread 60 of the nut 57, in the present instance, may be of a relatively fine pitch, and the thread 61 of the rod 55 of a coarse pitch, so that by turning nut 57 as by means of the knob the difference in the pitches of the thread will provide a suitable forward movement for the rear end of the rod 55 and also for the center-tie 54. The knob of the nut 57 is provided with an enlarged collar 62. By screwing the collar 62 closely against the frame 5, no space will be left between that part and the frame, as shown in Fig. 5; but by a rotation of nut 57, in the opposite direction, the collar 62 may be moved from the frame as shown in Fig. 4, leaving a space between said collar and the frame. This space may be enlarged until the desired number of thicknesses of paper to be printed upon may be inserted. The face of collar 62 may then be closed against the paper and the paper removed therefrom and inserted in the carriage, the platen of which will then be in the proper position to receive printing from the types. It will, accordingly, be seen that I have provided mechanism well adapted to attain, among others, all the ends and objects above pointed out in a simple, yet efficient manner.

The operation of changing the relative position between the types and the platen may be easily and conveniently effected from a position near the key-board and the amount of such adjustment may be readily determined by the operator by means of a scale upon the front portion of the machine. The gaging devices shown in both

embodiments of the invention are of simple construction and will operate with great facility to effect the relative adjustment between the platen and the types whereby printing may be effected with the desired degree of pressure.

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.

It is also to be understood that the language used in the following claims is intended to cover all of the generic and specific features of the invention herein described and all statements of the scope of the invention, which, as a matter of language, might be said to fall therebetween.

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

1. In a typewriting machine, in combination, a relatively fixed key board, a type bed having a plurality of type carriers thereon, a platen, and means for moving the type bed relatively to said key board and platen.

2. In a typewriting machine, the combination with a platen fixed against rearward movement, of a bank of type bars, a key lever for each type bar, intermediate mechanism between each key lever and each type bar for actuating the same, and means for simultaneously adjusting a plurality of said type bars and their intermediate mechanism bodily toward or from the platen and relatively to the key levers.

3. In a typewriting machine, the combination with a frame, of a platen rigidly held against movement in a fore and aft direction at all times, a plurality of type bars and actuating mechanism therefor, and means for simultaneously adjusting the type bars and actuating mechanism toward and from the fixed platen.

4. In a typewriting machine, the combination with the platen carriage carrying a relatively fixed platen, a plurality of type-bars, actuating mechanism therefor, slidable supports for the actuating mechanism and the type-bars, and a single means for moving said supports forward and backward, whereby the type-bars and their actuating mechanism are adjusted toward or from the platen.

5. In a typewriting machine, the combination of a platen, means for preventing a movement of the platen during printing, a plurality of type carriers, actuating mechanism therefor, and cam means for moving the actuating mechanism and the type-bars toward or from the platen for varying the strength of the impressions made by the type.

6. In a typewriting machine, the combination with the platen carriage carrying the platen, a fixed abutment for the platen carriage, a plurality of type carriers, actuating mechanism therefor, cam means for moving said actuating mechanism and the type carriers toward or from the platen, and means for indicating the extent of movement given those parts.

7. In a typewriting machine, the combination with the platen carriage provided with a fixed platen, an abutment against which the platen carriage rests, a plurality of type carriers, actuating means therefor, a slidable support for the actuating mechanism and the type carriers, and cam means for moving said support endwise to vary the position of the actuating mechanism and type carriers with respect to the platen.

8. In a typewriting machine, the combination with the platen carriage, of a platen carried thereby, an abutment which forms a backing for the platen carriage and prevents yielding thereof during printing, a plurality of type-bars, a slidable plate upon which the type-bars rest and across which they slide when projected to impression, guides for the type-bars positioned upon said plate, actuating mechanism for the type-bars positioned upon said slidable support, and cam means coöperating with said support and adapted to move the same forwardly or rearwardly, whereby the type carriers and actuating mechanism are correspondingly moved with respect to the platen.

9. In a typewriting machine, the combination with the platen carriage, a platen carried thereby, a fixed abutment for the platen carriage, a plurality of type carriers, actuating mechanism therefor, a plate mounted to slide upon suitable guides provided in the frame of the machine, said plate being interposed in the support of the type carriers, means for moving said plate and the actuating mechanism of the type-bars toward or from the platen, and means for indicating the extent of such movement.

10. In a typewriting machine, the combination with the platen carriage, a platen carried thereby, a fixed abutment for the platen carriage, a support mounted to slide in suitable guides formed in the frame of the machine, a plurality of type carriers resting upon said support, actuating mechanism for the type carriers, blocks for supporting said actuating mechanism adjustably mounted on said support, and cam means for moving said support forward and backward, whereby the actuating mechanism and the type carriers may be adjusted with respect to the platen.

11. In a typewriting machine, the combination with the platen carriage, a platen carried thereby, a fixed abutment for the platen carriage, a plurality of type carriers, actuating mechanism therefor, a support for said type carriers and actuating mechanism mounted in suitable guides provided in the frame of the machine, said support being slidable forwardly or backwardly in said guides, and cam means for moving said support, whereby the type carriers and actuating mechanism may be moved toward or from the platen.

12. In a typewriting machine, the combination with the platen carriage, a platen carried thereby, a fixed abutment for the platen carriage, a plurality of type carriers, actuating mechanism therefor, a support mounted to slide upon suitable guides provided in the frame of the machine, the type carriers and the actuating mechanism resting upon said support, cam means operative from a position near the key-board for moving said support forwardly or rearwardly, and a scale coöperating with said cam means to indicate the amount of movement given said support.

13. In a typewriting machine, the combination with the platen carriage, a platen carried thereby, a fixed abutment located behind the platen carriage and adapted to hold the same against recession during printing, a plurality of type carriers, actuating mechanism therefor, a slidable frame interposed between the support of the type carriers and the actuating mechanism, said frame being slidable transversely in guides formed in the frame of the machine, cam means coöperating with said frame whereby the latter, the type carriers and actuating mechanism may be moved toward or from the platen, a scale, and means coöperating with said scale for indicating the extent of such movement.

14. In a typewriting machine, the combination with the platen carriage, a platen carried thereby, a fixed abutment for the platen carriage, a plate mounted to slide forwardly and rearwardly in suitable guides provided in the framework of the machine, type carriers mounted upon said plate, actuating mechanism for the type carriers, adjustable blocks mounted upon said plate upon which said actuating mechanisms are pivotally connected, a member mounted to slide in the front wall of the frame of the machine, said member being provided with a cam-slot, a roller adapted to traverse said cam-slot, links connecting said roller with the frame of the machine, means for moving said slidable member whereby said roller will be caused to traverse said cam-slot, thereby moving said plate and the type carriers and actuating mechanism with respect to the platen, a scale located upon the front wall of the machine, and means connected with said slidable member which coöperates with said scale to indicate the extent of movement of said slidable member, whereby the position of the type carriers and actuating mechanism with respect to the platen may be determined.

15. In a typewriting machine, the combination with the platen carriage, a platen carried thereby, means for holding the platen carriage against recession during printing, a plate mounted in suitable guides provided in the framework of the machine adapted to slide forwardly and rearwardly therein, a plurality of type carriers mounted upon said plate, an actuating device for each of said type carriers, an adjustable block for each of said actuating devices adjustably mounted upon said plate, means for moving said plate in said guides, and means coöperating with said last-mentioned means to indicate the extent of such movement.

16. In a typewriting machine, the combination with the platen carriage and a platen carried thereby, of means for preventing a recession of the carriage during printing, a plate mounted to slide in the frame of the machine, a plurality of type carriers mounted upon said plate, actuating mechanism for the type carriers mounted upon said plate, means for sliding said plate whereby the type carriers and actuating mechanism may be moved toward or from the platen, and a paper gage one portion of which is carried upon the frame of the machine and the other portion upon said slidable plate.

17. In a typewriting machine, the combination with the platen carriage mounted in a fixed portion of the frame of the machine, a plurality of type carriers, an actuating device for each of said type carriers, a slidable support for said type carriers and the actuating devices, and a paper gage comprising a pair of opposed members one of which is mounted upon a fixed portion of the frame of the machine and the other thereof upon said support.

18. In a typewriting machine, the combination with the platen carriage mounted in a fixed portion of the frame of the machine, a plurality of type carriers, an actuating device for each of said type carriers, a support slidably mounted in the frame of the machine for said type carriers and the actuating devices, means for moving said plate toward or from the platen carriage, a paper gaging device comprising a pair of opposed members between which the paper is received, one of said members being mounted upon the frame of the machine and the other thereof upon said support, means for moving said support, and means coöperating

with said last-mentioned means whereby the relative position of the members of said paper gaging device may be indicated.

19. In a typewriting machine, in combination, a movable type-carrier, a platen, the one being adjustable with respect to the other, a fixed member, an adjacent member movable with the adjustable element to indicate by the space between said members the amount of space between the platen and the end of the path of travel of said type-carrier in printing, and means independent of the platen adapted to limit the path of travel of the carrier toward said platen.

20. In a typewriting machine, the combination with the platen carriage carrying the platen, a plurality of type-bars and the actuating mechanism therefor, a movable support for the actuating mechanism and the type-bars whereby they may be moved toward or from the platen, a paper gaging device comprising a pair of opposed jaws one of which is carried by a fixed portion of the machine and the other thereof by said slidable support, means for moving said support whereby said jaws are moved relatively to each other, and means coöperating with said moving means for indicating the position of said jaws relative to each other.

21. In a typewriting machine, in combination, a movable type-carrier, a platen, the one being adjustable with respect to the other, a fixed member, an adjacent member movable with the adjustable element an amount proportional to the amount of adjustment of said element to indicate by the space between said members the amount of space between the platen and the end of the path of travel of said type-carrier in printing, and means independent of the platen adapted to limit the path of travel of the carrier toward said platen.

22. In a typewriting machine, the combination with the frame of the machine comprising a fixed portion and a movable portion, a platen carriage mounted upon the fixed portion, type-bars and actuating mechanism mounted upon the movable portion, and a paper gage comprising a pair of opposed members one of which is mounted upon the fixed portion of the machine and the other upon the movable portion thereof.

23. In a typewriting machine, the combination with the frame of the machine comprising a fixed portion and a movable portion, a platen carriage mounted upon the fixed portion, type-bars and actuating mechanism mounted upon the movable portion, and a paper gage comprising a pair of opposed members one of which is mounted upon the fixed portion of the machine and the other upon the movable portion thereof, means for moving the movable portion of said frame, and means for indicating the extent of movement given to the same cooperating with said moving means.

24. In a typewriting machine, in combination, a platen, a plurality of front strike type bars adapted to coact therewith, means for adjusting each of said type bars separately, and means adapted to simultaneously adjust a plurality of the type bars bodily toward and from the platen to vary the space between the end of their path of travel and the printing surface of the platen.

25. In a front strike typewriting machine, in combination, a platen, a plurality of pressure operated type carriers having a limited path of travel toward the platen and arranged radially to the printing point, key levers for actuating said type carriers, means for adjusting each type carrier separately, and other means for adjusting a plurality of said type carriers by moving the same bodily relatively to the platen and the key levers.

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

WILLIAM A. LORENZ.

Witnesses:
EDWARD H. LORENZ,
NELLIE PHOENIX.