

Nov. 17, 1931.

S. A. DEAN

1,832,622

TYPEWRITER

Filed Oct. 22, 1927

3 Sheets-Sheet 1

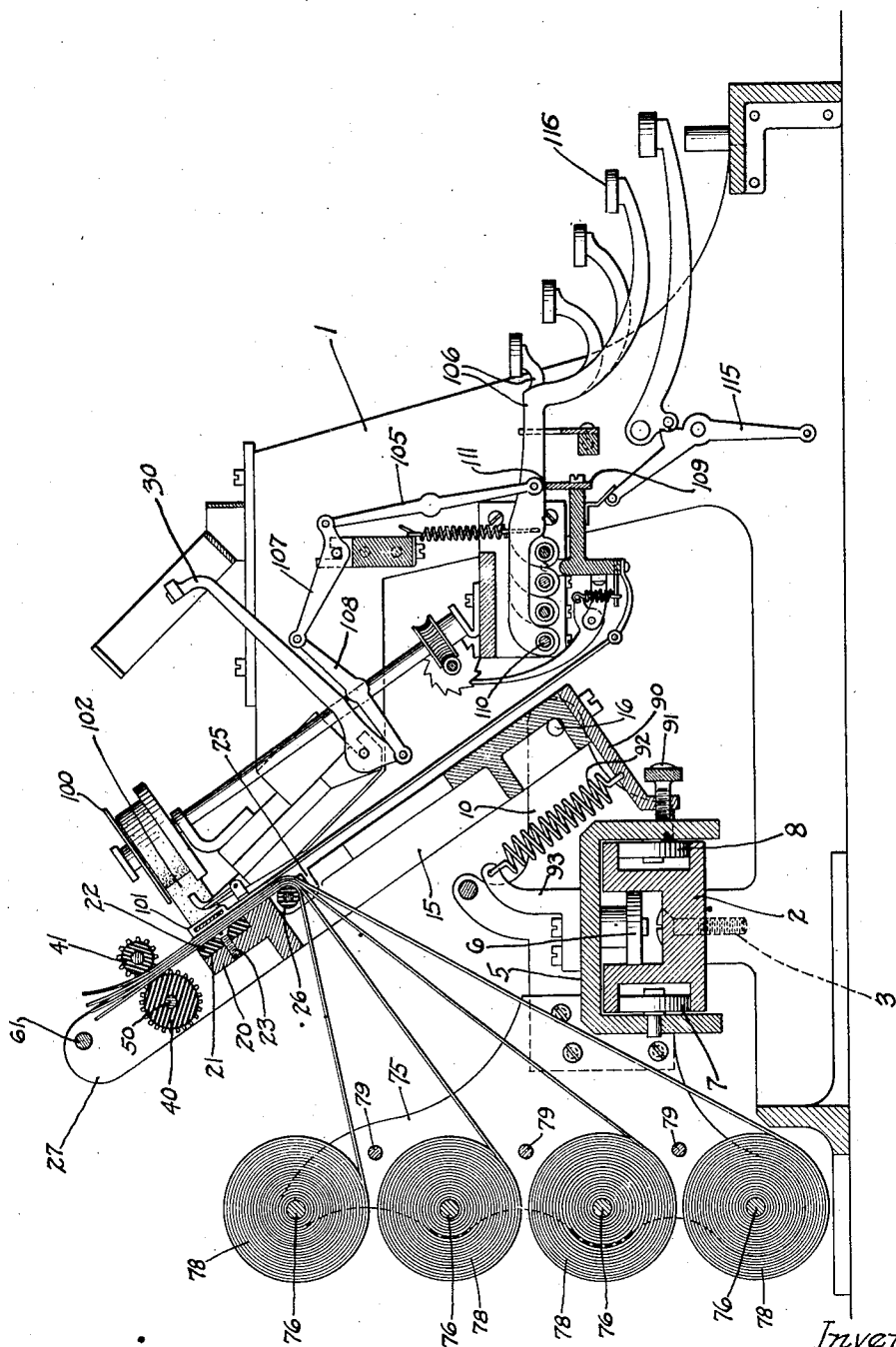


FIG. 1

Inventor
SEWARD A. DEAN
By *Paul, Paul & Moore*
ATTORNEYS

Nov. 17, 1931.

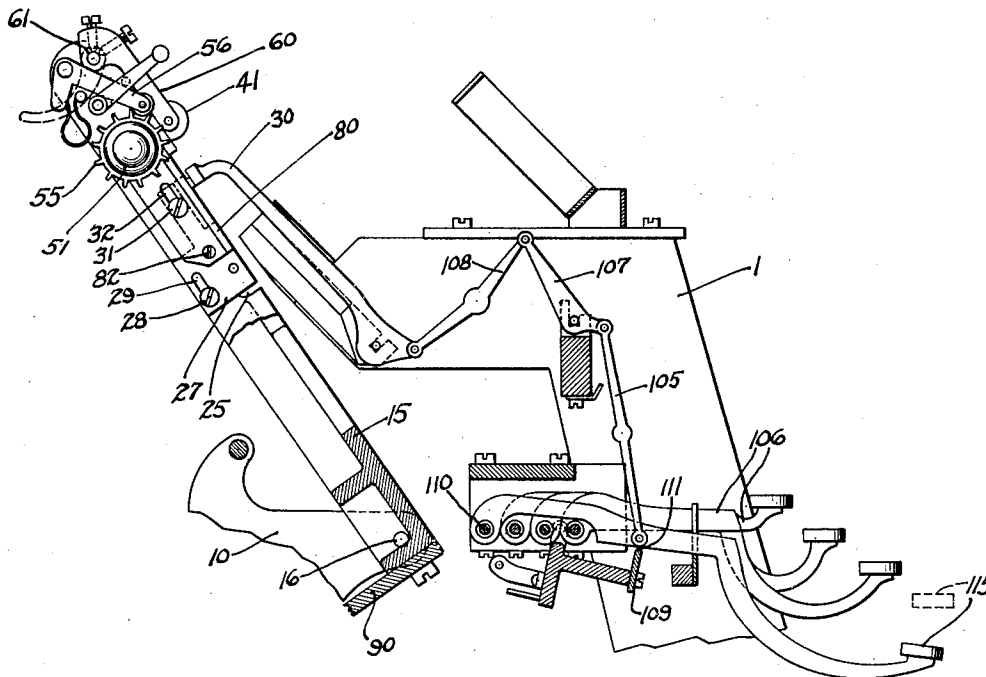
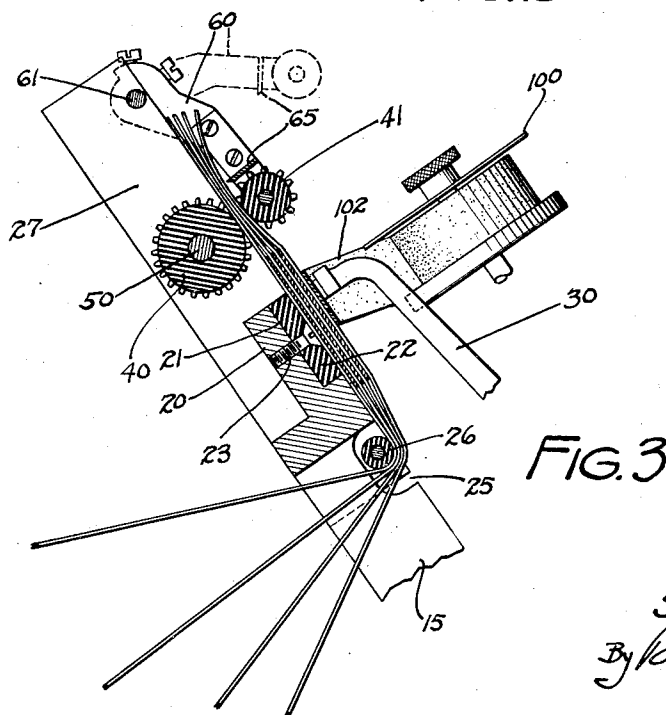
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3 Sheets-Sheet 2



Inventor
SEWARD A. DEAN
By Paul, Paul & Mone
ATTORNEYS

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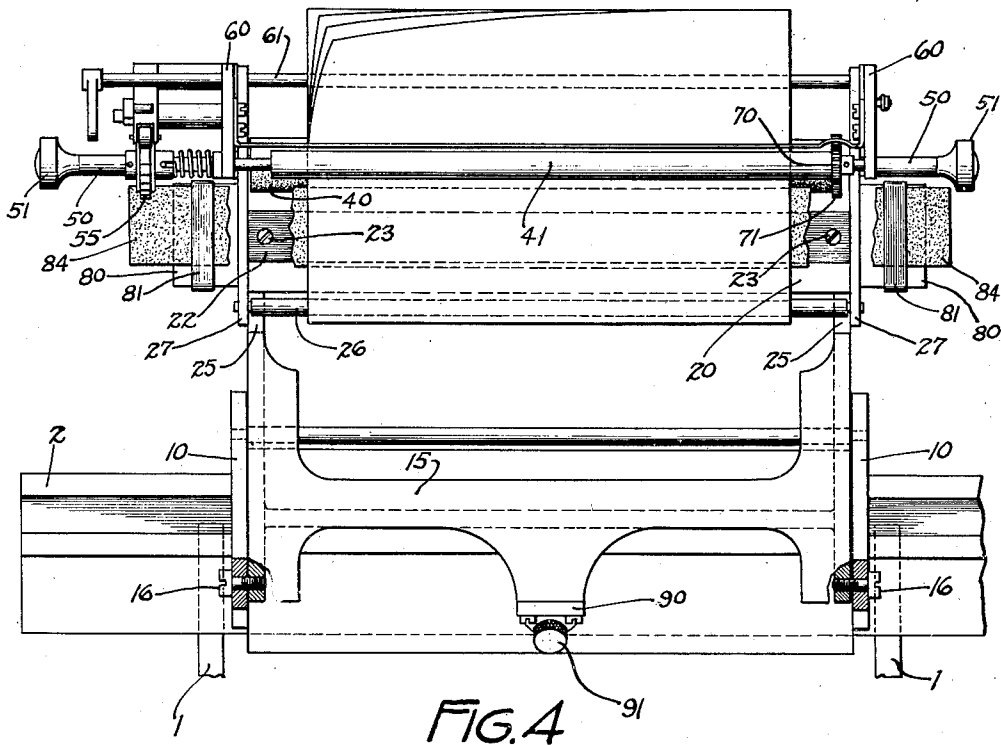
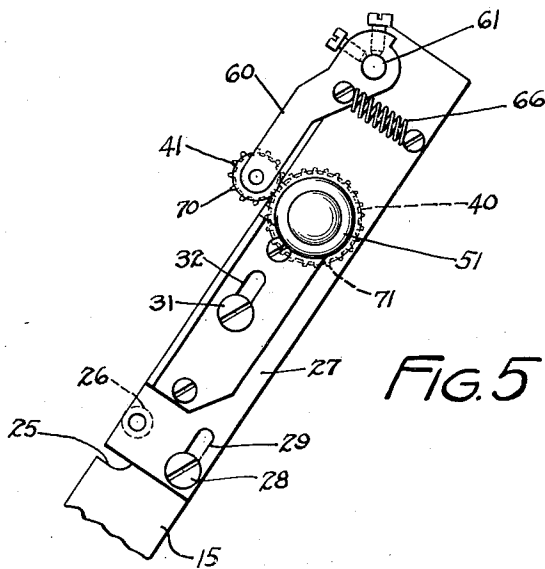
S. A. DEAN

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TYPEWRITER

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3 Sheets-Sheet 3



Inventor
SEWARD A. DEAN
By Paul, Paul & Moore
ATTORNEYS

UNITED STATES PATENT OFFICE

SEWARD A. DEAN, OF HASTINGS, MINNESOTA

TYPEWRITER

Application filed October 22, 1927. Serial No. 228,049.

This invention relates to a continuous billing typewriting machine. Among the objects of the invention are to provide means whereby a plurality of webs of paper may be fed across a platen, from a plurality of paper supply rolls movable with the platen and carriage; to provide adjustment of the platen conformably to the varied thickness of the number of sheets passing over the platen; to arrange the feed rolls immediately adjacent the platen to eliminate waste of that portion of the paper lying between the feed rolls and the platen; to allow the platen to swing away from the type toward the paper supply rolls to obtain sufficient looping or looseness in the paper webs to permit introduction of the carbon paper therebetween; to provide means for holding the carbon in a stationary position in opposition to the platen and in the printing zone; to provide a swinging platen support arranged in such relation to the type as to reduce the angle of contact to the minimum for all swinging adjustments of the platen frame; to provide means for obtaining micrometric swinging adjustments of the platen relative to the type; to provide means for yieldably holding the platen at printing position; and generally to provide a compact construction wherein the depth of the machine, or its measurement from front to back is not materially increased.

Features of the invention include all the details of construction; the proportioning and arrangement of the keys per se, and the arrangement to permit the pivoting of the platen frame to be made at a relatively great distance from the printing point; the arrangement of the means for carrying the paper rolls; the manner of mounting of the platen carrying frame and paper carrying rolls upon the carriage; the arrangement of the rolls and platen carrying frame with reference to the carriage and to the rolls and type; the adjustable mounting of the guide roll platen and feed rolls with reference to the frame; the specific relation of the parts upon the pivoted platen frame; the method and means for securing the strips of carbon paper upon the platen frame and across the

platen; and the arrangement and proportioning of the keys and centering thereof to reduce the length while at the same time maintaining the same degree of throw for all key bars at that point where they engage the universal bar.

Advantages and features of the invention will be set forth in a description of the drawings forming a part of this application, and in said drawings

Figure 1 is a vertical transverse section showing the application of my invention to a typewriter, with the type bar retracted;

Figure 2 is a fragmentary view similar to Figure 1 but showing the type bar in printing position, and showing the upper part of the platen carrying frame and mechanism in end view;

Figure 3 is an enlarged detail section showing the details of the upper part of the platen frame in relation to the type bars, and showing the sheets and carbon paper therebetween;

Figure 4 is a face view showing a portion of the carriage and the platen carrying frame, and elements carried thereby, viewed from the inner side and showing the paper properly positioned for use; and

Figure 5 is a large end view of the platen carrying portion of the platen frame and showing the means for adjusting this portion, all viewed from the end opposite to that shown in Figure 2.

The side frames of a typewriter machine are generally designated 1. The carriage track or support is designated at 2 and is arranged at the rear lower portion of the machine and suitably secured as by means of screws 3 to the side frame 1. Translatable longitudinally of the carriage track or bar 2 is the carriage 5 supported and centered by rollers 6, 7 and 8. Secured in this instance flatly against each opposite end of the carriage is a plate 10 which extends forwardly and rearwardly of the carriage. Pivoted between the forward extensions of these plates is a platen-carrying frame 15 generally of the configuration best shown in Figure 4. Pivots 16 such as screws swingably but removably secure

the frame 15. The upper side 20 of the frame constitutes a platen support which is recessed at the forward side as at 21. Within the notch is fitted a strip of material 22 which forms the platen and this strip of material is suitably held by screws 23. It will be seen that the platen extends the full length of the swingable frame 15, see Figure 4, and that it is arranged in opposition to the type, see Figures 2 and 3. The platen lies a substantial distance upwardly from the pivotal points 16 of the swinging frame 15, so that the angle which the face of the platen makes with the face of the type is reduced to the minimum, for all swinging adjustments of the platen frame. This is an important feature because it is evident that if the number of sheets of paper and carbon paper therebetween is increased, the thickness of this superposed paper at the point where the impression is made may be materially increased. Therefore, it is desirable to have the pivot at a substantial distance from the platen so that the angle of engagement can be kept at a minimum.

The vertical members of the platen-carrying frame 15, at a point adjacent the printing zone, are cut out on their forward sides as at 25, to receive a paper guiding roller 26, the opposite ends of which are stepped in plates 27 which plates are adjustably attached flatly against the outer faces of these vertical members of the frame 15, by means of screws 28 passing through elongated slots 29, see Figures 2 and 5, and also by additional screws 31 passing through slots 32. The roll 26 extends the full length of the platen frame and lies substantially immediately beneath the platen carrying bar 20 of the frame 15. Above this bar and carried by the plates 27 are arranged the paper feed rolls, respectively designated 40—41. These rolls are spaced from the roll 26 in a manner to allow the plates 27 to be adjusted in a direction lengthwise of the frame 15 or generally in a vertical direction so that the rolls 40, 41 can be brought nearer or farther away from the platen. This for the purpose of controlling the length of that portion of the paper lying between the upper end of the platen and feed rolls. This to economize paper as well as allow for variation in spacing of the first printed line from the top of the sheet. This is an important feature of the invention, as well as the adjustability of the paper guide roll 26.

The roll 40 is mounted on a shaft 50, which shaft is extended as shown in Figure 4 laterally through the plates 27, and each extension is provided with a knob 51, so that the roll may be manually rotated, from either end. A suitable ratchet or detent mechanism is provided for yieldably holding the shaft 50 against rotation, and this mechanism includes

a ratchet wheel 55 and a detent 56, along with elements for raising the detent and holding it out of engagement with the ratchet wheel 55, see Figures 2 and 4. This mechanism may be of any well known construction. Cooperative with the roll 40 and lying forwardly of the frame 15 is a roll 41 having its opposite ends rotatably stepped in swinging brackets 60 carried by and non-rotatably secured by their upper ends to rod 61. This rod is rotatably supported by the plates 27 and acts both as a support, and as a means for swinging the brackets 60 and the feed roll 41, to permit insertion of the papers between rolls 40 and 41. These elements 60 also carry a tearing knife 65, which, as best shown in Figure 3, lies immediately above the roll 41 and has an inner tearing edge with which the paper engages. It is understood that the paper is a continuous web drawn from a roll or a series of rolls movable with the carriage and later to be described. It will be noted by inspection of Figure 3 that the knife is arranged a short distance above the meeting line of rolls 40—41. A spring 66 connects one bracket 60 with the plate 27, to yieldably urge the roll 41 against the roll 40. These rolls are geared for movement in unison, the gears being indicated at 70—71.

Means is provided for mounting a series of rolls of paper for movement with the carriage. For this purpose, there are carried by the rearward extensions of the elements 10 of the carriage 5, plates 75, which are elongated in a vertical direction, as shown in Figure 1. These plates are provided with means such as openings for mounting the cores 76 of the rolls of paper 78. The elements 75 are properly braced by rods 79. The paper is brought upwardly, substantially as shown in Figures 1 and 3, and then around the guide roller 26, thence upwardly across, over against the platen, and then between the feed rolls 40—41. Attached to the plates 27 are lateral extensions 80, see Figures 2, 4 and 6. These extensions are parts of angle brackets which are connected to the plates 27 by screws 82. The slots 32 are provided in these plates as well as in the plates 27 and the screw 31 passes through both slots, and this arrangement in conjunction with the slots 29 and screws 28 hold the plates 27 in position and permit translative adjustment in the manner before mentioned. The extensions 80 are provided to receive bands 81 of elastic material, which hold the outer terminals of the strips of carbon paper represented at 84. One or any number of strips can thus be held at opposite ends, in proper relation to the platen and sheets.

Means is thus provided whereby a plurality of webs of paper can be fed across the platen from rolls supported upon and movable with the carriage. The platen and pa-

per rolls are, therefore, both supported upon the carriage and move in unison. Moreover, the platen carrying element is swingable toward the paper rolls to obtain slack in the paper webs.

In order that a micrometric swinging adjustment of the platen or platen-carrying frame relative to the type can be obtained in conformity to varying thickness of the superposed sheets, a plate 90 is secured to the bottom surface of the platen frame, in this instance immediately adjacent the pivotal point. At the end of this extension is a thumb screw 91 engageable with the front face of the carriage 5. A spring 92 connects the extension 90 with a bracket 93 supported upon the top of the carriage. This spring acts to maintain engagement between the inner end of the adjusting screw 91 and the face of the carriage. When, because of varying thickness of the paper drawn over the platen, it is desired to properly adjust the face of the outermost sheet with respect to the type, the thumb nut is manipulated to obtain this micrometric adjustment. The platen-carrying frame is also thus yieldably held with respect to the type so that impacts do not transmit that amount of jar ordinarily transmitted by impact of the type on other machines. This is a feature of the invention.

In addition to the carbon sheets, the ordinary ribbon is used which is arranged as best shown in Figure 1. Spools are indicated at 100, and one of the loop-like ribbon supports is indicated at 101. The ribbon 102 is threaded through these loops, and is thus held in proper relation between the type and the platen as shown in Figure 1. Any preferred form of ribbon support and feed may be used. This feature forms no part of the present invention except as a means to supply ink for printing on the outer face of the outermost sheet.

In order to increase the distance between the platen and the pivotal point of the platen-carrying frame, and therefore locate the pivotal points 16 adjacent the bottom of the machine, a novel arrangement and construction of the keys has been provided. The idea is to not increase the length of the typewriter from front to back materially, and yet to place the platen carrying frame between the printing face of the type bars and the paper supply, and at the same time to have the pivotal point of the platen frame with the carriage at as great a distance as possible from the platen. It results that the pivotal point of the platen frame is thus placed at a point which would interfere with the keys of the ordinary typewriter because of the great length of these keys. Therefore, the keys have been constructed so that they properly operate the universal bar 109 and

yet are of a minimum length or of such a length as to permit the innermost pivotal point 110 of the set of keys to lie in front of the pivotal point 16 of the platen carrying frame, without increasing the overall depth dimension of the machine. This pivotal point lies at about the middle of the typewriter frame, as measured from front to back.

The keys are generally indicated at 106 and are connected for operating type bars 30, by means of a suitable mechanism including links 105 connected with the keys 106 and with rock levers 107. Links 108 connect levers 107 with the type bars 30. The universal bar 109 by this arrangement lies at a point intermediate the pivotal point of the key and that portion engaged by the finger. It will be understood that when the bar is depressed by the key the feeding of the carriage is obtained. The feeding mechanism has not been shown inasmuch as it forms no part of the present invention. Therefore, no connection beyond the feed operating lever 115 has been shown.

Thus the total overall depth of the machine, including the paper rolls, is only slightly greater than the ordinary types of machines. This is an important feature of the invention and this is possible partly because of the arrangement of the keys which permits of the use of a shorter key than has been usual in any typewriting machine. It will be noticed that the distance from the pivotal point 110 of the key to the point 111 at which the key engages the universal bar 109 is substantially one-third of the distance from this point of engagement to the point of depression 116 of the key.

Therefore, among the advantages of the present invention are included the arrangement permitting the use of stationary carbon paper rather than moving carbon paper; the compactness of the device due to the arrangement of the parts; the arrangement of the pivotal point of the swinging frame at a relatively great distance from the printing zone; the arrangement of the swinging frame at a point between the type faces and the paper supply; the use of a flat platen rather than a roller platen; the adjustable arrangement of the feed rolls in relation to the platen; the mounting of the platen and guide and feed rolls on an element which is adjustable toward the type faces; the arrangement of the feed rolls and paper guiding roll above and below the platen, in adjustable relation to the platen; the construction of the keys permitting shortening of the same, and consequent saving in material and lessening of their height; the maintenance of same degree of throw for the keys; and generally to the construction and arrangement of all of the parts of the machine.

I claim as my invention;

1. A continuous billing typewriter including keys, type bars and a carriage, a frame yieldably pivoted upon the carriage in a manner to swing toward and away from the type bars and automatically constantly adjust itself conformably to paper thickness, and having a platen engageable by the type, said frame having paper-guiding and feeding means to control paper and hold it against the platen.

2. A continuous billing typewriter including keys, type bars and a carriage, a frame yieldably pivoted upon the carriage in a manner to swing toward and away from the type bars and automatically constantly adjust itself conformably to paper thickness, and having a platen engageable with the type, said frame having paper-guiding and feeding means arranged immediately adjacent the platen, to control paper and hold it against the platen.

3. A continuous billing typewriter including keys, type bars and a carriage, a frame yieldably pivoted upon the carriage in a manner to swing toward and away from the type bars and automatically constantly adjust itself conformably to paper thickness, and having a stationary platen engageable by the type, said frame having paper-guiding and feeding means to control paper and hold it against the platen, means upon the carriage for mounting a series of paper rolls in a manner to permit the paper to be separately drawn over the platen and unreeled.

4. A continuous billing typewriter including keys, type bars and a carriage, a frame pivoted upon the carriage to swing toward and away from the type bars, and having a platen engageable by the type, said frame having paper-guiding and feeding means to control paper lying against the platen, means upon the carriage for mounting a series of paper rolls in a manner to permit the paper to be separately drawn over the platen and unreeled, said platen frame lying and being swingingly adjustable at a point between the bars and rolls.

5. A continuous billing typewriter including keys, type bars and a carriage, a frame pivoted upon the carriage to swing toward and away from the type bars, and having a platen engageable by the type, said frame having paper-guiding and feeding means to control paper lying against the platen, means upon the carriage for mounting a series of paper rolls in a manner to permit the paper to be separately drawn over the platen and unreeled, said platen frame lying and being swingingly adjustable between the bars and rolls, means for yieldably holding the platen frame in printing position.

6. A continuous billing typewriter including type keys, type bars and a carriage, a frame pivoted upon the carriage to swing

toward and away from the type bars, and having a platen engageable by the type, said frame having paper-guiding and feeding means to control paper and hold it against the platen, means upon the carriage for mounting a series of paper rolls to permit the paper to be separately drawn over the platen and unreeled, said platen frame lying and being swingingly adjustable between the bars and rolls, and said frame having its pivotal point at a substantial distance from and below the platen to reduce to a minimum the angle of contact between platen and type for all adjusted positions of the frame.

7. A continuous billing typewriter including type keys, type bars and a carriage, a frame pivoted upon the carriage to swing toward and away from the type bars, and having a platen engageable by the type, said frame having paper-guiding and feeding means to control paper and hold it against the platen, said feeding and guiding means being adjustable with reference to the platen.

8. A continuous billing typewriter including keys, type bars and a carriage, a frame pivoted upon the carriage to swing toward and away from the type bars, and having a platen engageable by the type, said frame having paper-guiding and feeding means to control paper and hold it against the platen, and means yieldably urging the platen-carrying frame to printing position and permitting it to yield in a direction away from the type to compensate for increased thickness of a varying plurality of sheets of paper.

9. A continuous billing typewriter including keys, type bars and a carriage, a frame pivoted upon the carriage to swing toward and away from the type bars, and having a platen engageable by the type, said frame having paper-guiding and feeding means, and being pivoted at a point substantially midway of the typewriter from front to back, and the innermost pivotal point of the keys lying forwardly of the pivotal point of the platen frame.

10. A continuous billing typewriter including type bars and a carriage, a frame pivoted upon the carriage to swing toward and away from the type bars and having a platen engageable by the type, a series of paper supply rolls mounted upon the carriage in a manner to permit the paper to be separately unreeled from each roll, and brought from a point rearwardly of the platen-carrying frame forwardly over the platen, and means for yieldably holding the platen frame in printing position, and adapting it to automatically constantly adjust itself conformably to paper thickness.

11. In a continuous billing typewriter including type bars and a carriage, a frame pivoted upon the carriage to swing toward

and away from the type bars, and having a platen engageable by the type, and a spring automatically constantly yieldably urging the platen-carrying frame to printing position, and permitting it to yield in a direction away from the type to compensate for increased thickness of a varying plurality of sheets of paper.

In witness whereof, I have hereunto set my hand this 18th day of October 1927.

SEWARD A. DEAN.

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