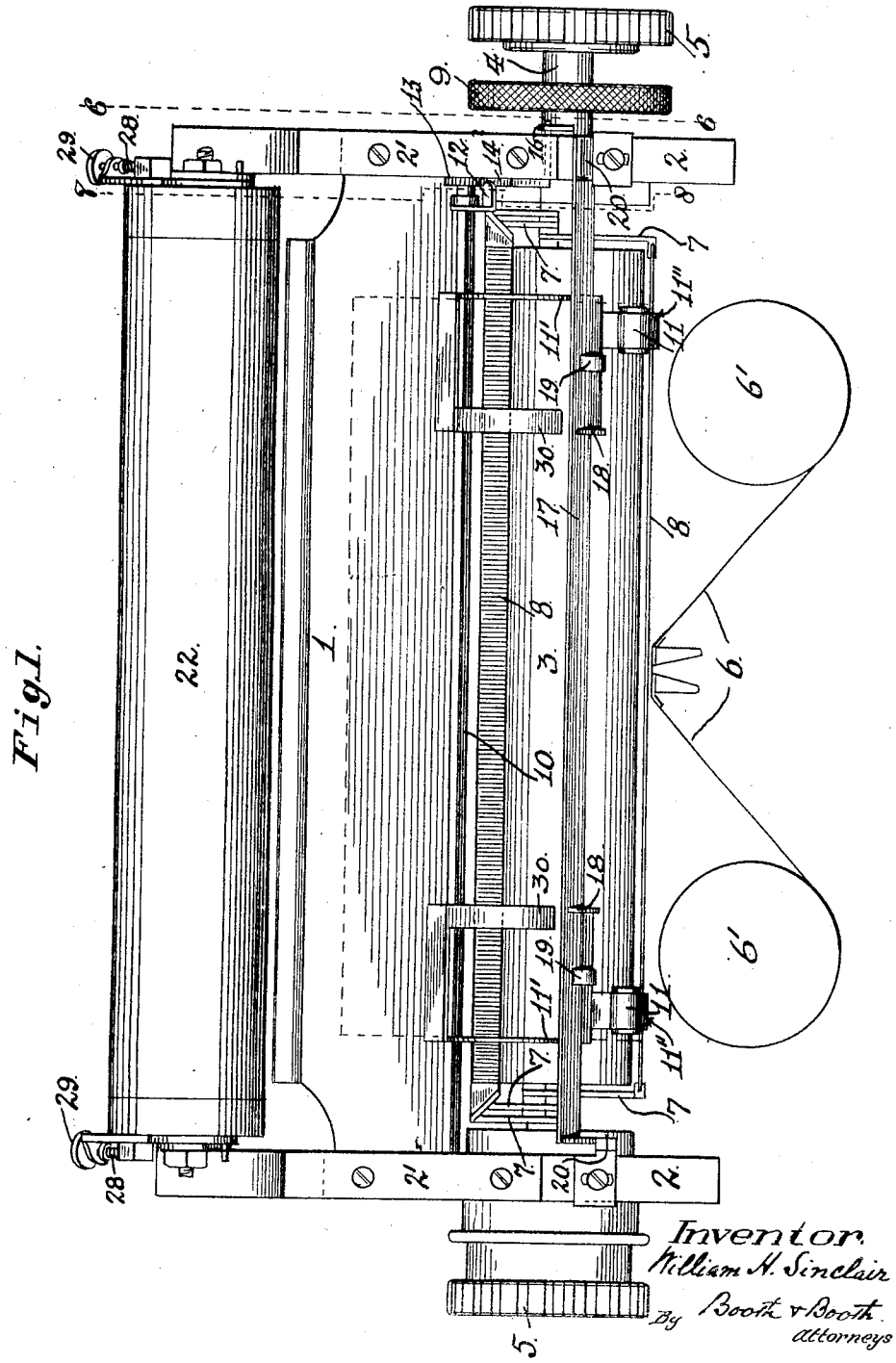
Oct. 28, 1924. 1,513,284

W. H. SINCLAIR

PAPER FEED AND CUTTING MECHANISM FOR TYPEWRITERS

Filed Dec. 12, 1923 3 Sheets-Sheet 1



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1,513,284

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3 Sheets-Sheet 2

Fig. 2.

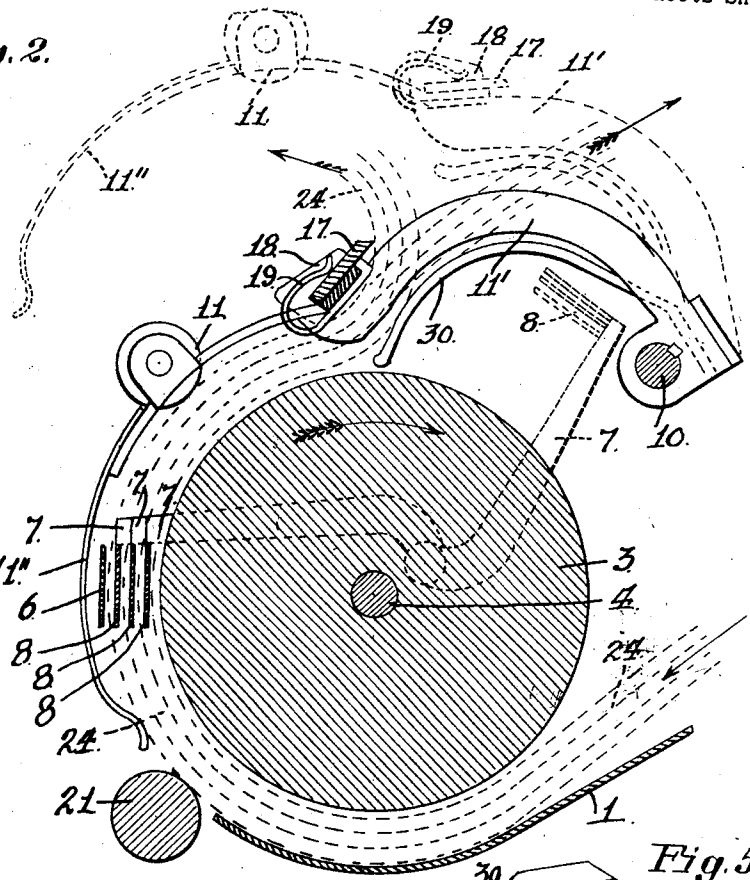


Fig. 3.

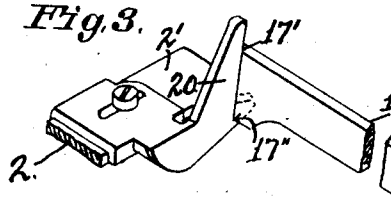


Fig. 5

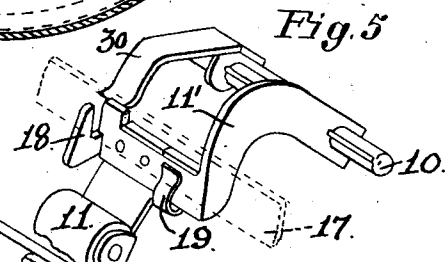
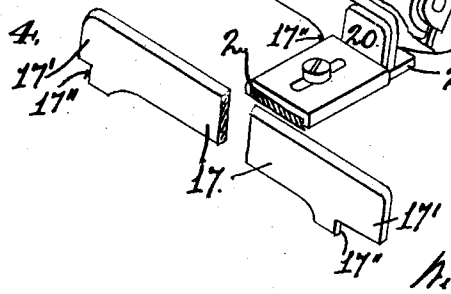


Fig. 4.



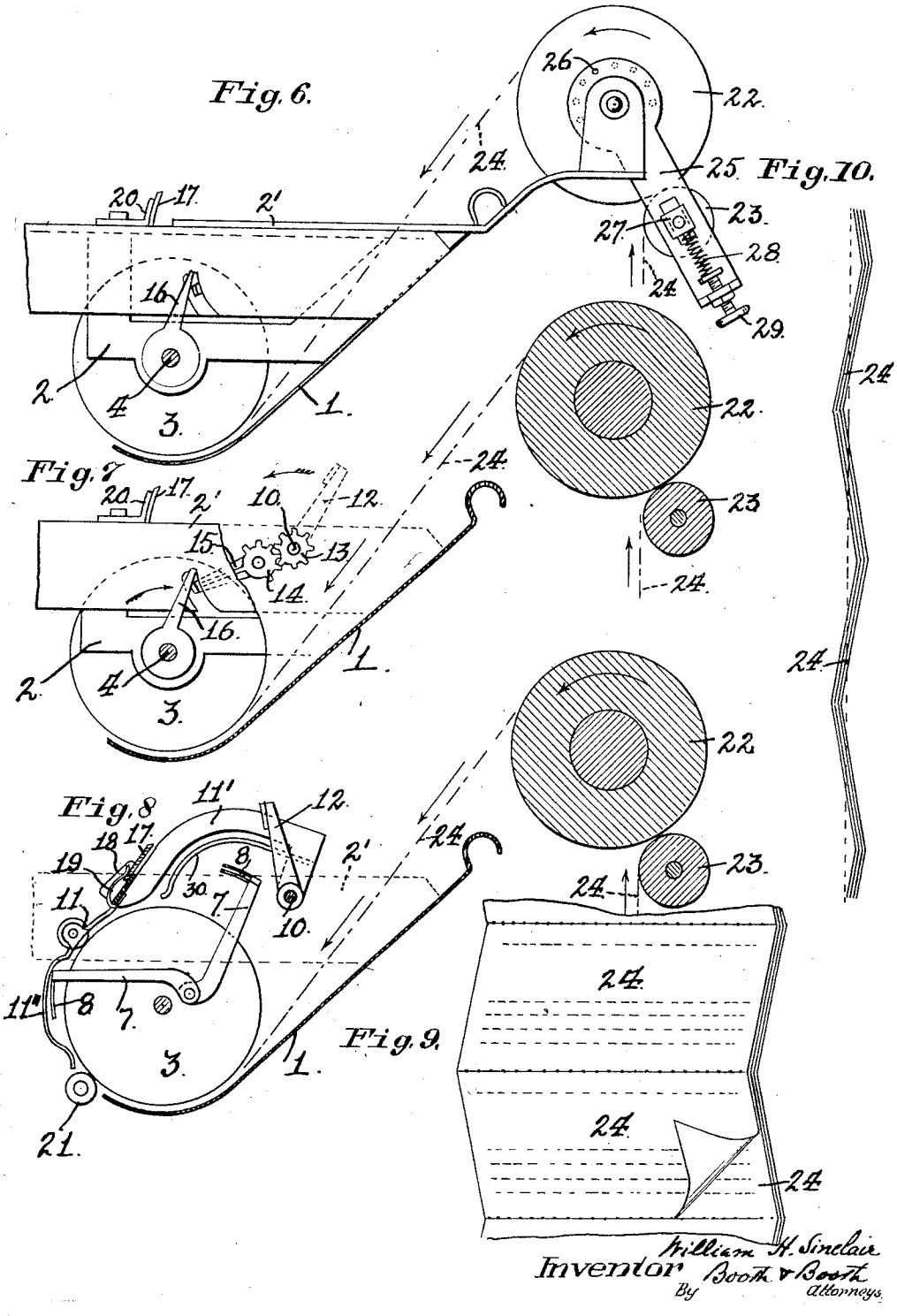
Inventor.
William H. Sinclair
By Booth & Booth
Attorneys

Oct. 28, 1924. 1,513,284

W. H. SINCLAIR

PAPER FEED AND CUTTING MECHANISM FOR TYPEWRITERS

Filed Dec. 12, 1923 3 Sheets-Sheet 3



Patented Oct. 28, 1924. 1,513,284

UNITED STATES PATENT OFFICE.

WILLIAM H. SINCLAIR, OF BERKELEY, CALIFORNIA, ASSIGNOR TO MANIFOLD IMPRESSIONS CORPORATION, OF CARSON CITY, NEVADA, A CORPORATION OF NEVADA.

PAPER FEED AND CUTTING MECHANISM FOR TYPEWRITERS.

Application filed December 12, 1923. Serial No. 680,132.

To all whom it may concern:

Be it known that I, WILLIAM H. SINCLAIR, a citizen of the United States, residing at Berkeley, in the county of Alameda and State of California, have invented certain new and useful Improvements in Paper Feed and Cutting Mechanism for Typewriters, of which the following is a specification.

My invention relates to means for manipulating the record paper as it is supplied to and is printed upon by typewriting machines, when said paper is in the form of a continuous strip stored on rolls, or in various folded forms, fanfolded, interfolded, or superfolded as such forms commercially appear.

The manipulation of said paper contemplated by my invention comprises, first, its cutting into desired lengths as the imprint upon it is successively completed; and second, in case plural papers are supplied, as, for example, in manifolding, the feed of said papers in such wise as to maintain their surface registry as they pass the line of type impact.

One object of my invention is to provide a simple and effective cutting means associated with the platen and platen carriage of the machine and adapted to readily permit the paper to be severed into lengths as it is printed.

Another object is to so mount and arrange said cutting means that it will not interfere, either by reason of its position or its function, with other parts of the typewriter. Another object is to specially adapt said cutting means both in position and character of mounting, for use in connection with manifolding devices of the class or type in which relatively narrow manifolding ribbons or ribbon-like sections, independent of the travel of the paper, extend the length of the platen in the line of type impact and are adapted to be moved into and removed from functional position.

Another object is to provide for controlling the feel of a plurality or group of superposed papers in such wise that their surface registry in the line of type impact shall be automatically preserved.

Another object of my invention is to adapt a typewriter for producing the necessary plural copies of bills, way-bills, requisitions, order-forms, invoices and the like, from continuous paper in whatever form, and especially from folded forms, as in common use. With these objects in view my invention consists in the novel paper feed and cutting mechanism which I shall now fully describe, by reference to the accompanying drawings in which—

Fig. 1 is a top plan view of a typewriter showing my paper cutting and feeding mechanism applied thereto, one of the manifolding ribbons being shown depressed to functional position in the line of type impact, the other manifolding ribbons being elevated.

Fig. 2 is a side elevation, enlarged, of the paper cutting mechanism, the longitudinally extending members of said mechanism of the typewriter to which it is applied being in cross section; the dotted lines showing elevated positions and the operation of severing the paper sheets against the cutting blade.

Fig. 3 is a perspective detail, broken, showing the end-bearings of the cutting blade on the end-frames of the platen carriage of the machine.

Fig. 4 is a perspective view, broken, of the cutting-blade.

Fig. 5 is a perspective detail, showing the mounting of the cutting blade on the paper-finger.

Fig. 6 is an end elevation, on the line 6—6 of Fig. 1, showing the paper feeding mechanism.

Fig. 7 is an end view similar to Fig. 6, broken and sectioned in part, to show the means for elevating the paper fingers and cutting blade.

Fig. 8 is a section on the line 8—8 of Fig. 1.

Fig. 9 is a perspective view of a group of paper sheets showing the alternating differently directed creases of a type of paper known as "interfolded."

Fig. 10 is an edge view of said interfolded paper.

Referring to Fig. 1, the numeral 1 is the paper-guide apron of a typewriter. 2 is the platen-carriage. 3 is the platen, having shaft 4 and turning knob 5.

6 is the main inking ribbon, and 6′ are its winding spools. 7 indicates pairs of arms, between each of which extends a

manifolding ribbon 8, adapted by a swinging movement of the arms to be carried down into functional position in the line of type impact, in order, in conjunction with the main ribbon, to enable an original and duplicate paper sheet to be printed. As this form or type of manifolding device is now well known and is fully disclosed in Letters Patent of the United States No. 1,502,178 dated July 22, 1924, to which patent reference may be had, I shall herein avoid unnecessary confusion by not entering into a description or illustration in detail of the manifolding feature. It will, therefore, be sufficient to state that the arms 7 are either directly or indirectly carried by and accompany the platen carriage and are mounted to swing down to carry the manifolding ribbons 8 into position and up to remove them therefrom, and that in order to effect this movement, the knob 9 in Fig. 1 is herein shown as being the initial operating means, the transmitting connections being understood to be substantially the same as those disclosed in the patent above referred to.

Mounted between the end frames 2′ of the platen carriage, and journaled to rock on its axis, is a bar 10 which carries the paper-fingers 11″, the function of which is to guide the advancing paper after it passes the printing line. The fingers 11 are moved towards the surface of the platen by rocking the bar 10, by means of a manually operated lever 12 seen in Fig. 1; but when the manifolding ribbons 8 are thrown up out of functional position the paper-fingers are lifted away from the platen automatically, by suitable means, say, for example, those shown in Fig. 7, comprising the interengaging gear members 13 and 14 on the rocking bar 10 and on a lever 15, respectively, which lever is operated by the contact of a finger 16 actuated by the knob 9 which raises the manifolding ribbons. Thus far the machine and parts described are substantially those disclosed in the above named patent and, as far as I am concerned, prior art, except in so far as they enter into combinative relation with my invention which may be said to begin at this point.

17 is a cutting blade. It is set edgewise and is carried as seen best in Fig. 5 by the shank-frames 11′ of the paper fingers 11. These shank-frames 11′ are slidably feathered upon the rocking bar 10, Fig. 5, whereby the paper-fingers may be caused to relatively recede from or approach each other linearly on the bar, in order to accommodate different widths of paper; and in order to permit this adjustment without moving the cutting blade 17 longitudinally, said blade is relatively slidably carried by the shank frames 11′ being guided and held by fingers 18 and light springs 19 on said frames as is shown in Fig. 5. Also the cutting blade at each end as seen clearly in Figs. 3 and 4 is notched to form a tongue 17′ adapted to rest upon the end frames 2′ of the platen carriage 2 and to form a shoulder 17″ adapted to abut against the inner face of said end frames. The ends of the blade are further controlled and positioned by the stops 20 adjustably mounted, as shown in Fig. 3, on said end frames. Now by reference to Figs. 1 and 3 it will be seen that when the paper-fingers are moved down to operative position as in Fig. 2, the cutting-blade 17 rests its end tongues 17′ upon the end frames 2′ of the platen carriage and is rigidly supported thereby against downward pressure due to tearing off the paper against it, so that no extra pressure is imposed upon the paper-fingers which would tend to possible interference with the manifolding ribbons 8, or to blur and mar the carbon duplicate papers. Also the cutting-knife, by being shouldered at 17″ between the end frames of the platen-carriage is held against linear displacement if and when the paper-fingers are adjusted relatively to each other along the rocking bar 10, since said fingers simply slide along the blade. Finally, by means of the stops 20, the blade will resist a tilting tendency due to the operation of tearing off the paper against it. By reference to Fig. 2 it will be seen by the dotted lines that when the manifolding ribbons 8 are thrown up to an elevated position for any purpose, as for example to renew them, the paper-fingers 11 will also rise and will carry the cutting-blade 17 with them, so that they and said blade present no interference with the operation of ribbon renewal. It will also be seen that the cutting-blade 17 may at any time be readily lifted from its mountings and as easily replaced. 30, in Figs. 1 and 2 are guard fingers carried by the bar 10 and adapted to separate and protect the paper from the ribbons 8 when the latter are elevated. In the most complete adaptation of the invention it will be seen that a simple and effective billing-machine is provided by the application of the novel cutting-blade to a manifolding typewriter employing ribbon-like manifolding members which are fixed in position with relation to and independent of the travel of the paper, since said paper indicated in Fig. 2 in dotted lines and designated by 24, advances beyond the manifolding members, and may be severed into lengths against the cutting blade without regard to the manifolding members which do not participate in the travel of the paper, as the ordinary carbon sheets do in practise. The operation of severing into lengths is clearly shown in Fig. 2. It should, moreover, be pointed out that the type of manifolding members herein shown is particularly adapted for use with a com-

mercial and well known form of paper commonly called "interfold" shown in Figs. 9 and 10, and which is folded or creased only transversely, its side edges being free and open whereby the manifolding ribbons are free to pass transversely of the paper.

But the use of such "interfold" paper presents a problem which together with its solution according to my invention, I shall now point out.

Paper of this form is alternately folded in opposite directions as seen in Figs. 9 and 10. One of these folds namely that which presents the ridge or convex side of the crease inwardly to the platen will comparatively freely pass under the paper fingers 11 without any serious tendency, by buckling outwardly, to jam under or against said fingers; but the succeeding fold which presents its ridge or convex side outwardly from the platen would naturally, upon meeting with the fingers, buckle outwardly and produce a jam seriously interfering with the smooth feed of the paper. The smooth feeding of the creased paper is to a certain extent insured by setting up the adjustable stops 20 to somewhat increase their frictional contact with the ends of the cutting blade, thereby causing increased resistance of the paper fingers against the lifting tendency of the paper creases; but to fully obviate the difficulty, the paper entering tongue extremities 11″ of the paper fingers are carried down around the face of the platen as shown in Figs. 2 and 5 to a line in close proximity to the feed pinch-rolls 21 of said platen, and said tongue extremities are arched over the manifolding ribbons 8 thereby providing ample room and freedom for the usual characteristic movements of said ribbons, namely their oscillation to present fresh surfaces to type impact, as is common in this form of manifolding device, and avoiding undue pressure upon said ribbons and paper sheets. Therefore, due to the proximity of the tongue extremities 11″ to the feed pinch rolls 21 the troublesome fold of the paper has no time nor space in which to bulge outwardly but will pass freely and smoothly under the tongue extremities and, though it bulge in the arch of said extremities, it will be smoothly guided by the gentle curve of the arch and give freedom to the manifolding ribbons. This same freedom also follows the other or reverse fold of the paper.

In manifolding a plurality of creased or folded papers, especially when said papers are surface ruled as indicated in Fig. 9, and therefore, require accurate registration and the maintenance thereof throughout a considerable length of travel, it is obvious that the outermost of the grouped papers in feeding about the platen will have to travel farther than the innermost, and this in time will throw their surface rulings out of registry at the printing line. To remedy this the relatively varying travel or feed of the paper sheets is compensated by mounting rotatably upon the platen carriage at its back a compensating roll 22, Figs. 1, 6, 7 and 8 with associated pinch roll 23. The group of papers 24 is fed between the pinch roll 23 and compensating roll 22, and over said roll 22 and thence under the platen 3 as indicated in Figs. 6, 7 and 8, thus effecting a reversal of position of the individual papers with respect to the compensating roll and the platen. Then, with due regard to the respective lengths of the arcs over and in contact with which the paper group passes, the variation in travel of the several papers of the group will be corrected and registry of ruled surface maintained at the printing line, so that without manual manipulation or loss of time it is practicable to sever the printed papers against the cutting blade. In order to relatively adjust the necessary respective lengths of arcs, the pinch roll 23 as shown in Fig. 6 is carried in arms 25 pivotally mounted upon the axis of the roll 22 and adapted to be set in predetermined position by the pin 26. To regulate the pressure of the pinch roll 23 it is carried in sliding boxes 27 controlled by springs 28, the tension of which is under the control of screws 29, Fig. 6.

It will be noted that the compensating roll 22 and the pinch roll 23, serve the further desirable purpose of initially flattening or ironing out, to a great extent, the creases of the paper 24 so that together with the additional precautions following the extended paper finger tongue extremities 11″ and the adjustment of the stops 20, no difficulty is found in having the paper feed quite smoothly through the machine. Moreover, said pinch roll and compensating roll function to hold the paper against sidewise displacement and to direct it squarely and accurately to the platen.

I claim:

1. In combination with a platen and platen-carriage of a typewriter, and a pair of paper-fingers carried by the platen-carriage adapted to guide the paper after passing the line of type impact said paper-fingers being mounted for relative adjustment lengthwise of the platen, a cutting-member slidably fitted upon both said paper-fingers, and extending parallel with the platen, to enable the typed paper to be severed into lengths.

2. In combination with a platen and platen-carriage of a typewriter, and paper-fingers carried by the platen-carriage adapted to guide the paper after passing the line of type impact, a cutting-member carried by said paper-fingers, and extending parallel with the platen, to enable the typed paper to

be severed into lengths, said cutting-member resting at each end upon the end frames of the platen carriage, to resist the stress imposed upon it by the pressure due to severing said paper.

3. In combination with a platen and platen-carriage of a typewriter and paper-fingers carried by the platen carriage adapted to guide the paper after passing the line of type impact, said paper-fingers being mounted for adjustment lengthwise of the platen, a cutting member slidably fitted upon said paper-fingers, and extending parallel with the platen, to enable the typed paper to be severed into lengths, the ends of said cutting-members bearing against and between the inner faces of the end frames of the platen-carriage to hold said member against linear displacement.

4. In combination with a platen and platen-carriage of a typewriter and paper-fingers carried by the platen carriage adapted to guide the paper after passing the line of type impact, said paper-fingers being mounted for adjustment lengthwise of the platen, a cutting-member slidably fitted upon said paper-fingers and extending parallel with the platen to enable the typed paper to be severed into lengths, the ends of said cutting-member resting upon the end frames of the platen-carriage to resist the stress imposed upon it by the pressure due to severing said paper, and said cutting-member ends being shouldered against the inner faces of the carriage end-frames to hold the cutting member against linear displacement.

5. In combination with a platen and platen-carriage of a typewriter and paper-fingers carried by the platen carriage adapted to guide the paper after passing the line of type impact, said paper-fingers being mounted for adjustment lengthwise of the platen, a cutting-member slidably fitted upon said paper-fingers and extending parallel with the platen to enable the typed paper to be severed into lengths, the ends of said cutting-member resting upon the end frames of the platen-carriage to resist the stress imposed upon it by the pressure due to severing said paper, and said cutting-member ends being shouldered against the inner faces of the carriage end-frames to hold the cutting member against linear displacement and stops on said platen-carriage end-frames to hold the cutting member against tilting stress.

6. In combination with a platen and platen-carriage of a typewriter and paper-fingers carried by the platen-carriage adapted to guide the paper after passing the line of type impact, said paper-fingers being mounted for adjustment lengthwise of the platen, and for movement to and from functional position with relation to the face of the platen; a cutting member slidably fitted upon said paper-fingers and extending parallel with the platen to enable the typed paper to be severed into lengths, the ends of said member when the paper-fingers are in functional position, resting upon the end frames of the platen-carriage and shouldered against and between said frames.

7. In combination with a platen and platen-carriage of a typewriter and paper-fingers carried by the platen-carriage adapted to guide the paper after passing the line of type impact, said paper-fingers being mounted for adjustment lengthwise of the platen, and for movement to and from functional position with relation to the face of the platen; a cutting member slidably fitted upon said paper-fingers and extending parallel with the platen to enable the typed paper to be severed into lengths, the ends of said member when the paper-fingers are in functional position, resting upon the end frames of the platen-carriage and shouldered against and between said frames, and adjustable stops on the platen carriage adapted for varying frictional contact with said cutting-member.

8. In combination with a rotatable platen and a traveling platen carriage of a type-impact typewriter; a manifolding member associated and traveling with said carriage and mounted lengthwise of the platen in the line of and adapted to receive the type impact said manifolding member being independent of the travel of the paper; a pair of paper fingers mounted on the platen-carriage adapted to guide the paper as it advances beyond the line of type impact; said paper fingers being mounted for adjustment lengthwise of the platen; and a cutting member slidably fitted upon both said paper-fingers parallel with the platen, to enable the typed paper to be severed into lengths.

9. In combination with a platen and platen-carriage of a typewriter; a manifolding member mounted lengthwise of the platen in the line of type impact and independent of the travel of the paper; means for moving said manifolding member into and out of functional position; paper-fingers carried by the platen-carriage, mounted for movement to and from the platen; a cutting member carried by said paper-fingers to enable the typed paper to be severed into lengths and means dependent upon the movement of the manifolding member for simultaneously moving the paper-fingers.

10. In combination with a platen and platen-carriage of a typewriter; a ribbon-like manifolding member mounted lengthwise of the platen in the line of type impact and independent of the travel of the paper; pinch feed-rollers associated with the platen; a pair of paper-fingers carried by the platen carriage, and mounted for adjustment lengthwise of the platen, said pa-

per-fingers being arched freely over the manifolding member, the paper entering extremities of said fingers lying in proximity to the pinch rollers; and a cutting member slidably fitted upon both the paper-fingers lengthwise of the platen to enable the typed paper to be severed into lengths.

11. In combination with a platen and platen-carriage of a typewriter, a manifolding member associated therewith; a rotatable paper-travel compensating roll carried by said platen-carriage and lying parallel with the platen, said roll being positioned and adapted to receive preliminarily upon an arc of its surface a plurality of superposed papers and to direct them to the platen in reverse order of superposition and means associated with said roll for predetermining the length of arc contact of said papers upon the roll relatively to their arc of contact upon the platen.

12. In combination with a platen and platen-carriage of a typewriter, a manifolding member associated therewith; a rotatable roll carried by said platen-carriage and lying parallel with the platen, said roll being positioned and adapted to receive preliminarily a plurality of superposed papers and to direct them to the platen and means associated with said roll for predetermining the length of arc contact of said papers upon the roll relatively to their arc of contact upon the platen consisting of a pinch-roll adjustable in an arc about the axis of the main roll.

In testimony whereof I have signed my name to this specification.

WILLIAM H. SINCLAIR.