April 8, 1930. J. A. B. SMITH 1,753,670

TYPEWRITING MACHINE

Filed Oct. 29, 1926 2 Sheets-Sheet 1

Fig. 1.

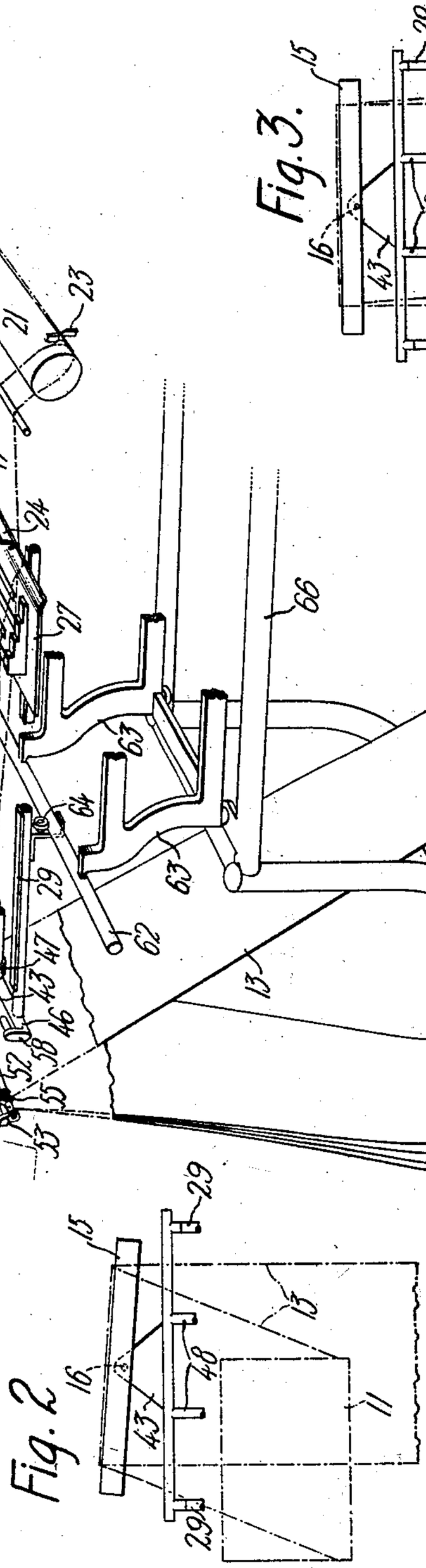


Fig. 2

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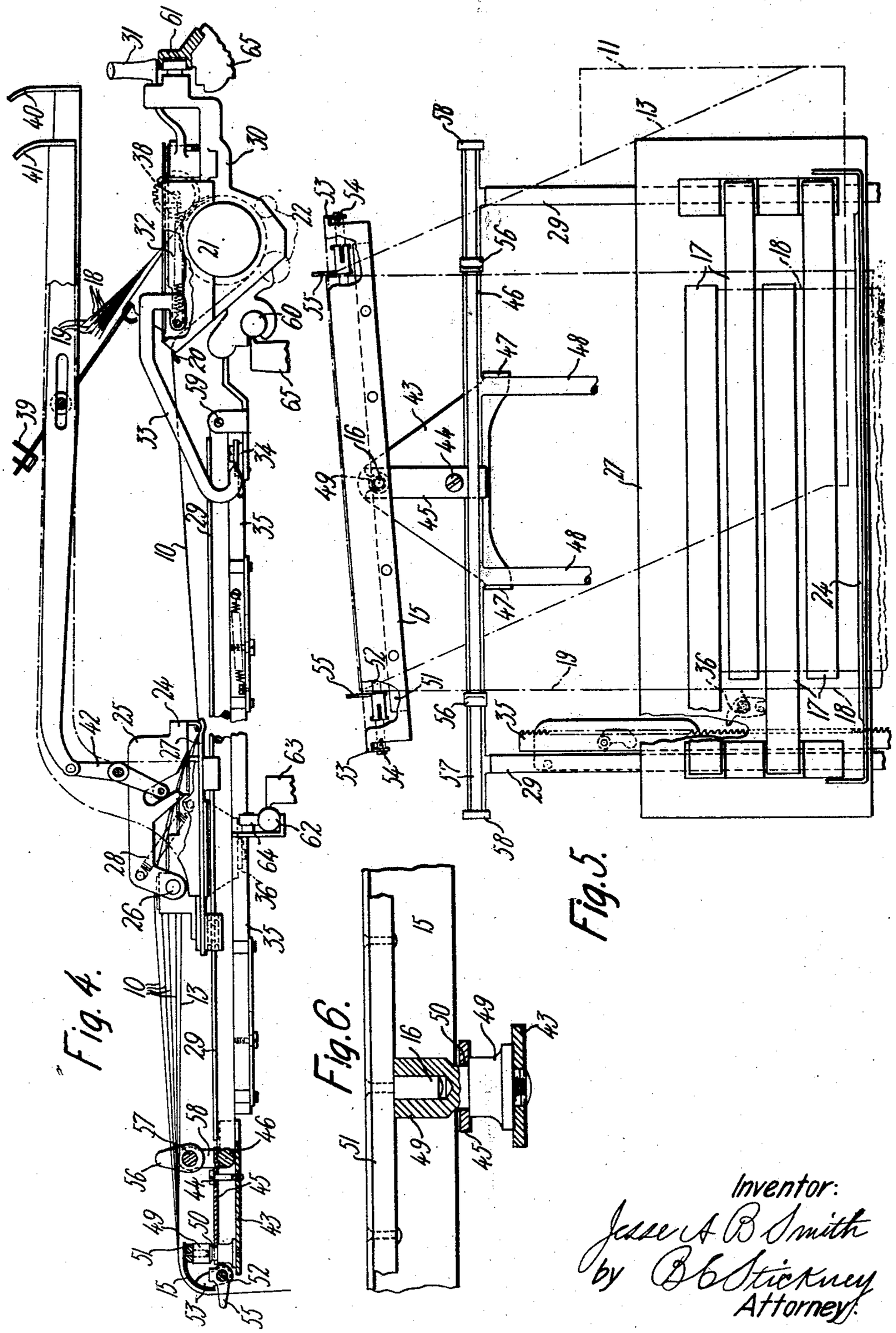


Fig. 5.

Fig. 4.

Fig. 6.

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UNITED STATES PATENT OFFICE

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TYPEWRITING MACHINE

Application filed October 29, 1926. Serial No. 144,934.

This invention relates to novel mechanism for improving the operation of typewriting machines in which the various plies of a continuous web are concomitantly typed with the aid of intervening carbons.

Some of the Underwood billing machines are designed for the handling of detached ply-webs which are supplied to the machine from a spool or roll rotatably mounted under the machine at the rear thereof.

The original ply, where it feeds into the typewriter, is subjected to tension, while the other plies are slack. This places on the original ply all the strain necessary to unwind the roll. Moreover, owing to the peculiar arrangement of the machine over the roll, and to the fact that the web is mounted on a traveling carriage while the roll is stationary, the strain on the web is not even, that is, one edge thereof is under a greater stress than the other, especially when the carriage is moved to its extreme positions, causing the web to become skewed. In addition to this, the machine is provided with an automatic web-feeding mechanism which is effective to kick the web forward ahead of the regular line-feeding mechanism on the platen.

It will be apparent that when line-spacing the platen to kick the web forward at the extreme positions thereof, the web is liable to tear at the tensioned edge. Means are, however, provided for equalizing the tension of the web so that both edges thereof will be under the same tension. To this end there is provided an equalizing bar pivotally mounted at the rear of the carbon-carrier frame, over which the web is drawn to the platen. This equalizing bar is pivotally mounted at the center and is rocked during movement of the carriage in a manner to take up or compensate for the skew of the web and thereby equalize the tension throughout its width.

Other features and advantages will hereinafter appear.

In the accompanying drawings,

Figure 1 is a perspective view of an Underwood fanfold typewriting machine having the invention applied thereto.

Figures 2 and 3 are diagrammatic views showing the relative position between the carriage and the web-supply roll.

Figure 4 is a cross-sectional view, in elevation, through the center of the machine, illustrated in Figure 1. This machine is provided with an automatic web-feeding device working independently of the platen.

Figure 5 is an enlarged plan view showing the equalizing member and other improvements.

Figure 6 is a detail showing the pivot for the web-equalizer.

The machine in connection with which this invention is illustrated is especially designed for handling webs having detached plies, such plies having printed forms. These plies are indicated by the numeral 10 and are wound together on a roll or spool 11 rotatably mounted on a shaft 12. The roll is unwound by tensioning the original or outer form 13, which is used as a leader, and by letting the other plies 10 sag in a container 14.

The web is passed over a swiveled equalizing device or swingle bar 15 which is pivotally mounted on a stud 16. Then the plies are threaded between carbon blades 17 and each ply is interleaved with carbons 18 secured to said blades. The assembled web, which is generally indicated by the numeral 19, is then inserted over a rear table 20 and is fed around the platen 21 by means of co-operating feed-rolls 22 and is positioned to the printing line in which it is typed by means of type-bars 23.

In order to prevent slipping of the web when line-spacing, the machine is provided with an automatic means for advancing or feeding the web ahead of the line-spacing movement of the platen. Said means, which are illustrated in the application of Adolph G. Kupetz, Serial No. 726,927, filed July 19, 1924 (now Patent No. 1,611,595, dated December 21, 1926), include a clamp 24 extending the full width of the web and supported at the ends thereof by means of plates 25 pivotally mounted on studs 26. Said clamp is resiliently held in engagement with a carbon-carrier plate 27 by means of a spring 28. The carbon-carrier plate 27 is slidably mounted on rails 29 laterally travelling with a carriage

30. Each time that the platen is line-spaced by operation of a line-space handle 31, a slide 32 is moved rearwardly and, by means of a co-operating link 33 and a reversing bell-crank 34, a rack 35 is moved forwardly in a manner to engage a pawl 36 carried by the carbon-carrier plate 27 and move it toward the platen an amount slightly larger than a line-feeding space. In this manner the web is drawn forwardly toward the platen each time the same is line-spaced.

After typing a form the platen is elevated or swung on a shaft 38 and the web is straightened and pulled forward against a length gage 39. While holding the leading edge of the web against said gage, a sliding handle 40 is moved toward a carbon-carrier handle 41 to thereby release the clamp 24 by means of a co-operating bell-crank 42, which is pivotally mounted on the handle 41. Then the carbon-carrier plate 27 is moved backwardly by means of the handle 41, which is fast thereto, to thereby present the carbons to fresh forms.

The web-supply roll 11 is mounted under the machine-frame at the rear thereof and is about three feet below the web intake. The width of the web is usually about ten inches although sometimes much wider webs are used. Heretofore it has been customary to feed or warp the webs over a fixed cross-bar at the rear of the machine and when the platen was line-spaced at extreme positions of the carriage the edges of the web were liable to tear on account of uneven strains on the edges thereof, due to its skewed condition produced by the travel of the carriage.

The equalizing member 15 is made in the form of an attachment, and includes a bracket 43 fast by means of a screw 44 and a clamping bar 45 to a cross-bar 46 which serves as a means for tying the rails 29 together. Said bracket is held against lateral displacement by means of ears 47, which engage reinforcing rods 48. The stud 16 is secured to the equalizing member 15 and is pivotally journaled in a supporting screw 49 carried by the bracket 43 at the rear end thereof. This screw may be provided with a recess 50 for receiving a slotted end of the clamping bar 45. Said equalizing member 15 may be made of a thin sheet metal reinforced by a cross-bar 51 and a cross-rod 52 mounted on ears 53 by means of screws 54. Said rod may serve also as a means for supporting side gages 55 which are adjustably mounted thereon. The metal plate 15 is rounded or arcuate, to ease the web as it warps around the same.

In order to hold the web in alignment when the platen is shifted to its extreme positions, there is provided a pair of side gages 56 slidably mounted on a bar 57 mounted on the cross-bar 46 by means of end plates 58.

The carriage 30 and the rails 29 are secured together by means of screws 59. The carriage is slidably mounted on rails 60 and 61. The rear ends of the rails are supported by a cross-rail 62 fast to a back extension 63 of the machine-frame, by means of intervening wheels 64 carried by the longitudinal rails 29. The frame-extension 63 may form an integral part of the machine-frame indicated by the numeral 65, and is supported by a stand 66.

Variations may be resorted to within the scope of the invention, and portions of the improvements may be used without others.

Having thus described my invention, I claim:

1. In a billing machine provided with a letter-feeding carriage having a platen, the combination with a stationary web-supply-roll, of a web-supporting swingle-bar over which the web warps, said bar pivotally mounted between its ends on said carriage to support said web between said roll and said platen and to distribute the tension of the skewed web upon movement of said carriage, and side gages for the web upon said swingle-bar.

2. In a billing machine provided with a letter-feeding carriage having a platen, the combination with a stationary web-supply-roll, of a swingle-bar over which the web warps, said swingle-bar mounted on said carriage to distribute the tension of the skewed web upon movement of said carriage, by yielding to the edge of the web on one hand, and on the other hand to take up the slack of the other edge of said web, adjustable side gages for the web upon said swingle-bar, and adjustable side gages for said web upon said carriage adjacent to the swingle-bar.

3. In a billing machine provided with a letter-feeding carriage having a platen, the combination with a stationary multiple-web-supply-roll, of a horizontally-disposed tension-equalizing lever, and means whereby said lever is pivotally mounted intermediate the extremities thereof on said machine, said lever extending across the path of the web and said web warping over said lever, the latter conditioned to equalize the tension of the skewed web and guide the same upon movement of said carriage by yielding to one edge of said web and correspondingly operating as a lever to simultaneously take up the slack of the other edge thereof.

4. In a billing machine provided with a letter-feeding carriage having a platen, the combination with a stationary web-supply-roll and a web fed from said roll to said platen, of a web-guiding compensatory swingle-bar over which the web warps, said swingle-bar pivoted midway of its ends on said carriage in such manner as to swing upon movement of said carriage to extreme positions, in order to yield at one side of the skewed web and to correspondingly and positively take up the slack of the other side of said web.

5. In a billing machine having a letter-

feeding carriage with a rotatable platen mounted thereon, the combination with a stationary web-supply-spool and a web fed therefrom over said carriage to said platen, of means for transversely distributing the tension on the edges of said web due to its skewed condition when the carriage is moved to extreme positions, including a swingle-bar over which said web warps, a pivot whereby said swingle-bar is mounted upon said carriage, midway between the ends of the swingle-bar, said swingle-bar yieldable at either end to the tension of the web and simultaneously taking up the looseness in the opposite edge of the web.

6. In a billing machine having a carriage with a rotatable platen mounted thereon and a carbon-carriage movable with said first carriage, the combination with a stationary web-supply-spool and a web fed therefrom over said carbon-carriage to said platen, of means for transversely distributing the tension of the edges of said web when the carriage is moved to extreme positions, including a self-swivelling cross-bar over which the web warps, a support provided with a pivot thereon whereby the cross-bar is loosely pivoted to the support intermediate the extremities of the cross-bar, to enable either end of the cross-bar to take up slack in the web when the bar is turned by tensioning the other edge of the web, and means for mounting said support upon said carbon-carriage.

7. In a billing machine having a letter-feeding carriage with a rotatable platen mounted thereon, the combination with a stationary web-supply-spool and a web fed therefrom to said platen, of means for transversely distributing the tension on the edges of said web due to its skewed condition when the carriage is moved to extreme positions, including a cross-bar over which the web warps from the spool to the platen, said cross-bar pivotally mounted midway of its ends on said carriage to travel therewith, there being web-guides on said carriage and corresponding web-guides on said cross-bar on both sides of the pivotal point thereof.

8. In a billing machine provided with a carriage having a platen thereon, the combination with a stationary web-supply-roll, of a pivoted tension-balancing lever over which said web warps, including a rounded cross-bar, a pivot beneath said cross-bar intermediate the extremities thereof, and a bracket secured to said carriage provided with a mounting for said cross-bar.

9. In a billing machine provided with a movable carriage having a rotatable platen thereon, the combination with a web-supply-roll in relatively stationary location and a web fed from said roll to said platen, of a pivoted tension-balancing lever for said web including a cross-bar having an arcuate plate thereon, a shaft secured beneath said plate, there being web-guides on said machine, corresponding spaced web-guides mounted on said shaft, and a pivotal mounting on said machine to support said balancing lever thereon.

10. In a billing machine having a letter-feeding carriage provided with a rotatable platen, and also having a stationary web-supply-roll and also a carbon-carrier upon said carriage and a line-space mechanism associated with said platen, the combination of auxiliary means for automatically feeding said carbon-carrier with said web toward said platen simultaneously with the operation of said platen line-space mechanism, and means for transversely distributing the longitudinal tension of said web between said platen-carriage and supply-roll caused by its skewed condition produced by the travel of said carriage, including a swingle-bar over which the web warps, said swingle-bar mounted on said carriage between said auxiliary web-feeding means and said supply-roll, in order to relieve excess tension on one edge of said skewed web on the one hand by yieldingly receding, and, on the other hand, by positively advancing in order to correspondingly absorb the slack of the other edge of said web.

11. In a billing machine having a letter-feeding carriage provided with a rotatable platen, and also having a stationary web-supply-roll, the combination with a line-space mechanism associated with said platen for feeding the web about the same, of auxiliary means to initially feed said web from said roll to said platen, and means for transversely distributing the longitudinal tension of said web when it skews at the movements of said carriage, including a swingle-bar over which the web warps, said swingle-bar pivoted upon said carriage, said auxiliary web-feeding mechanism being between said swingle-bar and the platen.

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