

May 27, 1924.

1,495,649

J. A. B. SMITH

TYPEWRITING MACHINE

Filed Feb. 12, 1921

3 Sheets-Sheet 1

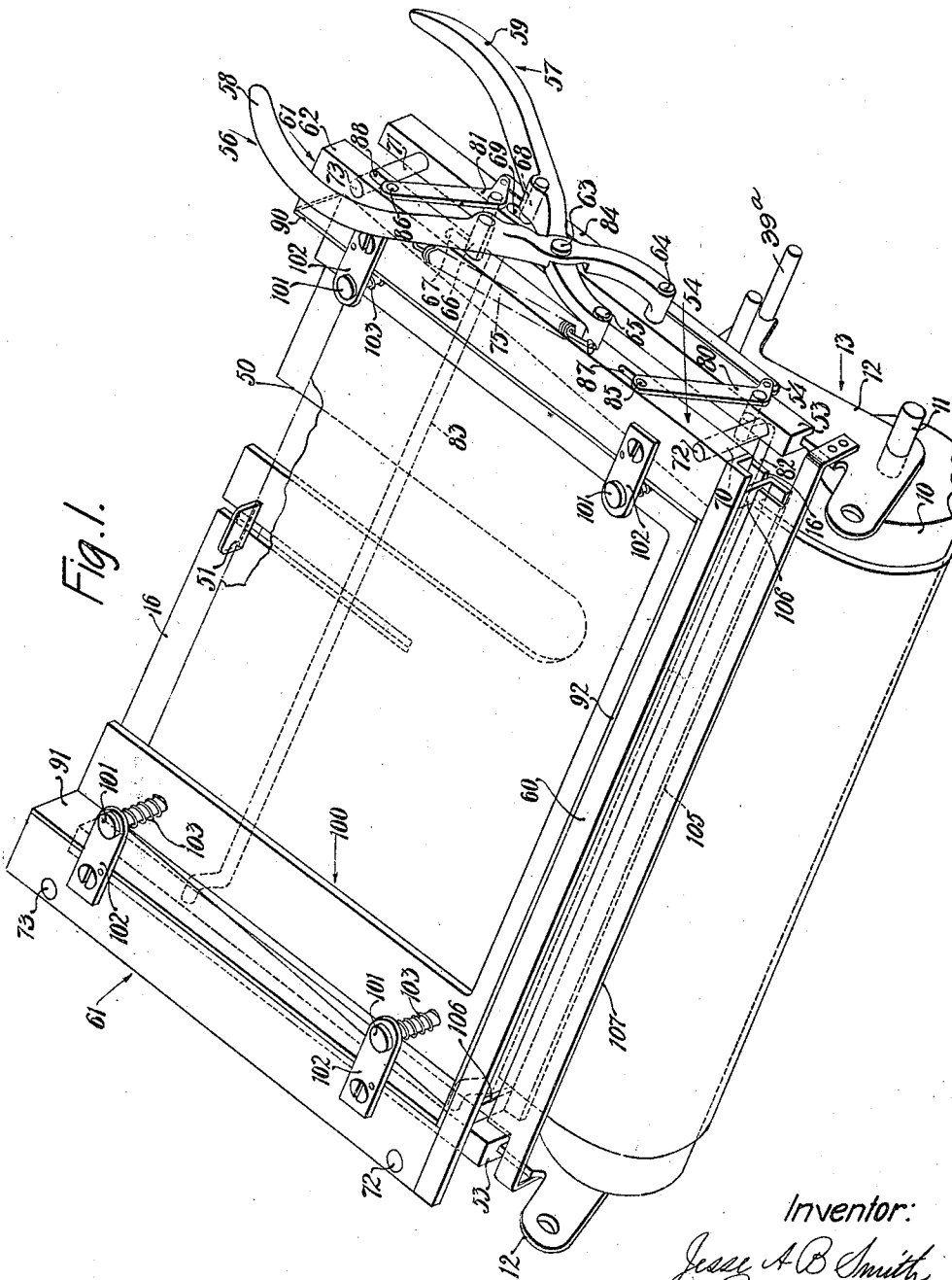


Fig. 1.

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3 Sheets—Sheet 2

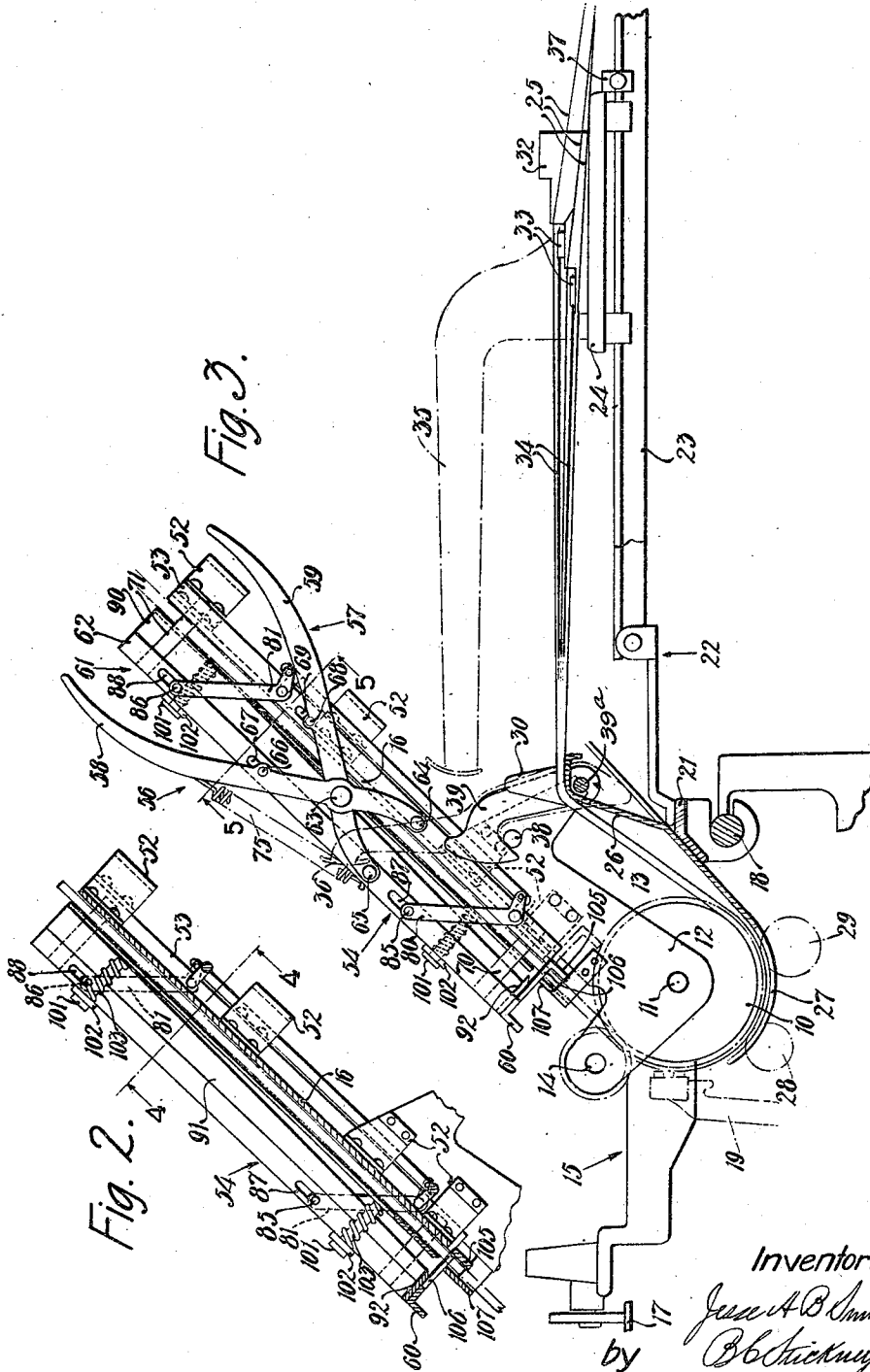


Fig. 2.

Fig. 3.

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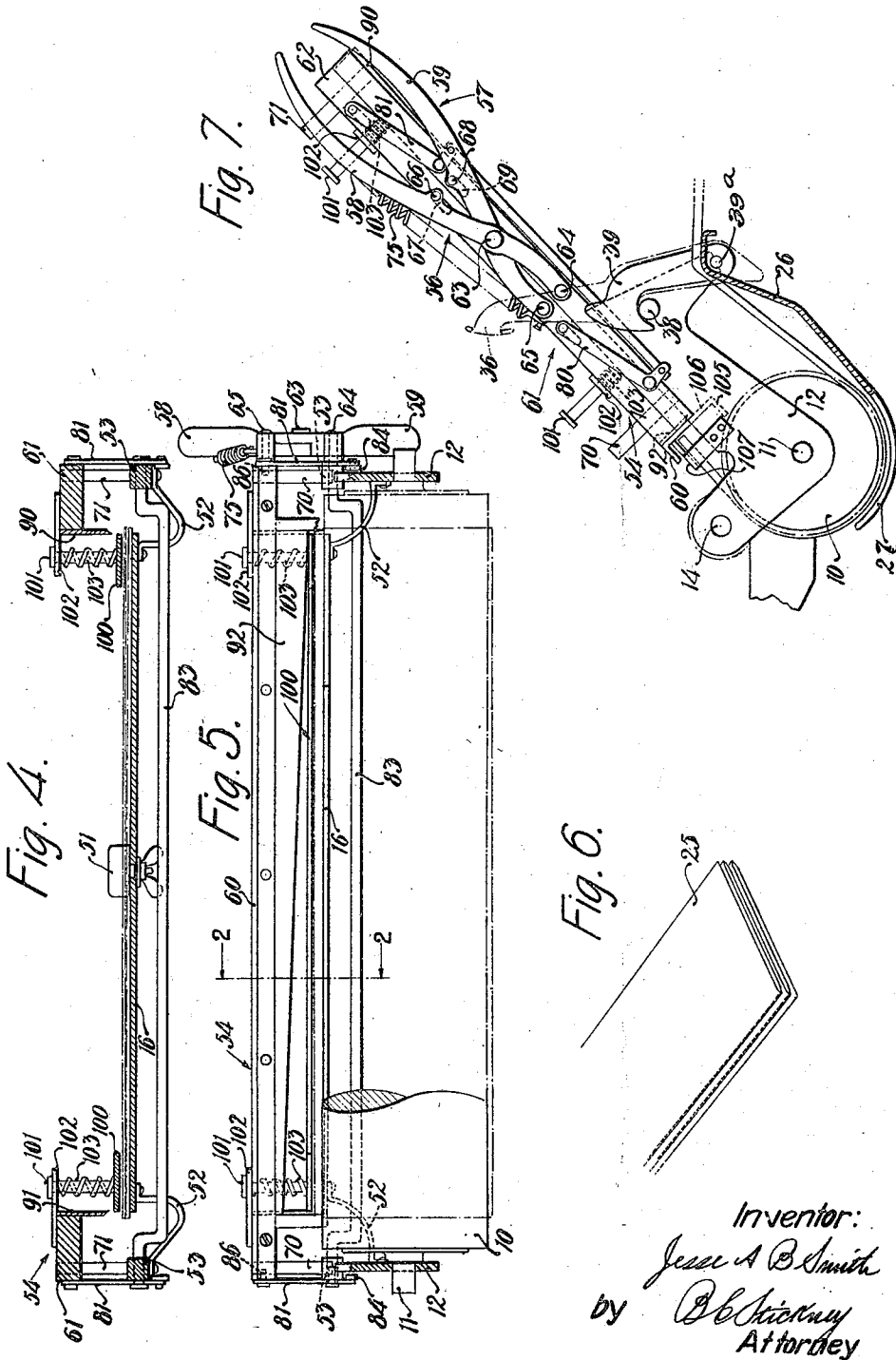
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J. A. B. SMITH

TYPEWRITING MACHINE

Filed Feb. 12, 1921

3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE.

JESSE A. B. SMITH, OF STAMFORD, CONNECTICUT, ASSIGNOR TO UNDERWOOD TYPE-WRITER COMPANY, OF NEW YORK, N. Y., A CORPORATION OF DELAWARE.

TYPEWRITING MACHINE.

Application filed February 12, 1921. Serial No. 444,308.

To all whom it may concern:

Be it known that I, JESSE A. B. SMITH, a citizen of the United States, residing in Stamford, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Typewriting Machines, of which the following is a specification.

The present invention relates to typewriting machines of the continuous billing variety, one form of which is set forth in the patent to Wernery and Smith, No. 1,132,055, granted March 16, 1915, and provides a means for trimming the side edges of a fan-fold web used in such machines and for severing the forms from the fan-fold web, thus remedying certain objections which have arisen in connection with machines of this type.

The fan-fold webs used in continuous billing machines are perforated at their edges to facilitate the folding and the accurate superposing of the printed forms. When the sheets of the web are separated after typing, the perforations leave a ragged edge which detracts from the general appearance of the bill. Users of fan-fold webs sometimes trim the side edges of the webs before introducing them into the machine. This is objectionable, however, since the separate sheets creep relatively to each other in the operation of typing the forms.

It is, therefore, desirable to trim the side edges of the web after the forms have been typed. For this purpose, there is provided a cutter-frame mounted on the front paper-table and provided with two side cutters for trimming the edges of the web and a front cutter for simultaneously severing the printed forms. The frame may be connected to the carriage by a parallel-motion linkage operated by two handles, like a pair of pliers, the cutter-frame being guided in its downward movement by pins fixed to the paper-table and projecting into said frame. The provision of a front cutter in place of the usual fixed knife is desirable, since the use of the latter in separating forms usually leaves a ragged edge.

Both the side knives and front knife of the cutter-frame have their cutting edges inclined with respect to a horizontal plane, so that the side knives will commence cutting

at the top of a form and the front knife at one side, the knives cutting continuously along the respective edges to be cut or trimmed. The front knife is so positioned with respect to the side knives that it will have severed the forms before the side knives have completed the trimming of the edges, thus insuring sharp, square corners at the bottom of the forms. It should be noted that in connection with the trimming of the edges the superposed forms are separated.

A clamp is provided for clamping the typed forms to the paper-table while the cutter is being operated, said clamp being rendered effective by the operation of the handles governing the cutter-frame. The clamp is designed to press the forms against the paper-table before the knives reach the printed forms, a lost-motion device taking care of the excess movement of the cutter-frame over that of the clamp.

The cutter-frame is provided at its lower end with a shelf over which the fan-fold web is fed, this shelf serving as a means to bring the new leading edge of the fan-fold web, after a set of forms have been severed therefrom, back into the path which the fan-fold web occupied when being fed over the table.

Other features and advantages will hereinafter appear.

In the accompanying drawings,

Figure 1 is a perspective view of the invention applied to an Underwood continuous billing machine, only the necessary co-operating parts of the machine being shown.

Figure 2 is a vertical section taken on the line 2—2 of Figure 5.

Figure 3 is an end view, partly sectioned, of the device shown in Figure 1, showing the cutter-frame in raised, or ineffective, position.

Figure 4 is a section taken on the line 4—4 of Figure 2.

Figure 5 is a section taken on the line 5—5 of Figure 3.

Figure 6 is a view of a fan-fold web, showing the perforations.

Figure 7 is a view similar to Figure 3, but showing the cutter-frame in lowered, or effective, position.

A platen 10 is fixed on a shaft 11 journaled in the end supporting plates 12 of a

movable frame 13. The latter frame comprises said plates 12, a connecting sleeve (not shown) mounted on a rod or shaft 14 journaled in the end walls of the main carriage frame 15, and a front paper-table 16. The main carriage frame 15 is mounted for letter-space movement upon front rail 17 and rear rail 18 on the fixed frame of the machine, and may be controlled by type-keys (not shown) operating type-bars 19.

The carriage is provided at the rear with a cross-bar 21, to which is fixed an extension 22 in the form of a frame comprising side rails 23 forming runways for a carbon-carriage 24.

A web of work-sheets 25, fan-folded as shown in Figure 6, may be fed from any suitable source over the carbon-carriage 24, over a rear paper-table 26, between guides 30, beneath platen 10, and thence to front paper-table 16. The web is guided around the platen by a paper-apron 27, and is fed by the usual front and rear feed-rolls 28 and 29.

The carbon-carriage comprises stepped side supporting members 32 having detachably connected therewith inwardly-extending carbon-attaching bars or fingers 33, said fingers being projected alternately from opposite sides at different levels, so as to enter between the alternate folds of the fan-fold web. Carbon-sheets 34, interleaved between the folds of said web, may be attached at their ends in any appropriate manner to said bars or fingers 33. The carbon-carriage is free to move forwardly, so that it may be pulled along with the web of work-sheets and interleaved carbons by the web-feeding means during the typing of a set of forms. When said set of forms has been typed, the platen-moving frame 13 is released by means of a handle 36 and swung about the shaft 14 to raise the platen, so that the web may be straightened out. The carbon-carriage is then returned to its rearward position by pushing upon handle 35, thus retracting the carbon-sheets prior to severing the forms from the web. A stop 37 may be provided to limit the rearward movement of the carriage. The platen-moving frame 13 is normally held in its lowered position by the engagement of pins 38 under catches 39 mounted on a shaft 39^a journaled in the main carriage frame, the handle 36 being formed as an extension of one of said catches 39.

When a set of forms has been typed, the platen rotated about shaft 14 to an elevated position so that the web may be drawn out in practically a straight line, and the carbon-carriage has been returned to its rearward position, it is necessary to sever the typed forms from the web, and, in addition, it is desirable to cut off the side edges of the web to separate the latter into single sheets having smooth edges. The means for

accomplishing these objects simultaneously at a single operation are now to be described.

The front table 16 is provided with a slot 50, enabling the operator to grasp the typed forms and draw them forwardly until the gage 51 is reached. The table 16 is attached by members 52 to side bars 53 fixed to the supporting plates 12 of the shiftable platen frame, the table being thus spaced inwardly from the sides of the frame 13. An upper frame 54 is mounted on the side bars 53 for motion such that the plane of the frame is always parallel to the plane of table 16, and the direction of its movement is perpendicular thereto. The upper frame comprises a front member 60, and side members 61 having vertical flanges 62. The parallel-motion mechanism connects flanges 62 with the side bars 53. At one side there are provided two levers 56 and 57 pivoted together intermediate their ends at 63. The rear ends of the levers form a pair of handles 58, 59, like that of a pair of pliers. The forward end of lever 56 is pivoted on a side bar 53 at 64, and the forward end of lever 57 is pivoted on a flange 62 at 65. On the opposite side of pivot 63, lever 56 is provided with a pin 66 adapted to reciprocate in a slot 67 in flange 62, and lever 57 is provided with a pin 68 adapted to reciprocate in a slot 69 in side bar 53. Each side bar 53 is provided with pins 70 and 71 at the ends thereof extending into openings 72 and 73 in side members 61.

From the above description, it will be seen that by pressing handles 58 and 59 together against the action of a rather strong spring 75, the forward ends of levers 56 and 57 will move together, carrying the upper frame toward the table 16. The pins 70 and 71 in the openings 72 and 73 constrain the upper frame to movement in a line perpendicular to table 16, with the plane of the frame parallel to that of the table. The lost motion is taken up by pins 66 and 68 moving to the opposite ends of slots 67 and 69. The levers operate in the familiar manner of a pair of pliers.

To obtain a parallel-motion control on the opposite side of the machine, there is provided at each side a pair of similar bell-cranks 80 and 81 fixed to ends of transverse rock-shafts 82 and 83 journaled in the side bars 53. The respective arms of the bell-cranks are mounted parallel to each other, the lower arms being connected by a bar 84, so that motion of one bell-crank on each side will transmit a similar motion to the other bell-crank on the same side. Also, motion of the bell-cranks on one side will transmit a similar motion to the bell-cranks on the other side through the shafts 82 and 83. The upper ends of the bell-cranks are provided with pins 85, 86, operating in slots 87, 88, in the flanges 62 of the upper frame.

When the handles 58, 59 are pressed together to move the upper frame toward the table 16, the upper arms of the bell-cranks on the sides of the handles will be rocked downwardly, (pins 85, 86 moving to the opposite ends of their slots), thus rotating shafts 82 and 83, and hence the bell-cranks on the opposite side of the machine. It is thus apparent that the motion of the upper frame relative to table 16 on both sides of the machine is the same, and subject to the same control.

The upper frame is provided at the inner edge of each side member 61 with vertically-disposed knives 90, 91, respectively, for cutting off the side edges of the webs to separate the forms into single sheets. The knives have their cutting edges inclined so that the rear of these edges (see Figure 2) will cut into the web first when the upper frame is pressed toward the table 16, thus obtaining a clean, sharp edge. Similarly the front member 60 is provided at its inner edge with a vertical knife 92 for severing the forms from the webs, said knife having its cutting edge inclined in the same manner as knives 90 and 91. By referring to Figure 4, it will be seen that the knives 90 and 91 operate in planes just beyond the side edges of table 16, so as to produce a shearing, as well as cutting, action when the knives slide past the edges of the table. Similarly the front knife 92 operates in a plane just in front of the forward edge of table 16 (see Figure 7) to produce a similar shearing and cutting action. The front knife is positioned lower than the side knives, so that it completes its cutting action sooner, thus insuring sharp corners when the side knives reach these corners.

To aid the cutting and shearing action of the knives, there is provided a U-shaped clamp 100 adapted to be pressed against the table 16 adjacent the three edges thereof where cutting takes place. The clamp is suspended from the side members 61 of the upper frame by headed bolts 101 vertically slidable in brackets 102 fixed to said side members (see Figure 1). The flat U-shaped clamp 100 is fixed to the lower ends of the bolts. Springs 103 surround the bolts, and are interposed between the upper surface of the clamp and the lower surface of each bracket. When the handles 58 and 59 are pressed together, the upper frame is lowered, as previously described, carrying the clamp 100 downwardly. The clamp contacts with the table 16 before the upper frame has reached the limit of its travel. Further downward movement of the frame tends to force the bolts upwardly through the openings in the brackets against the action of the springs 103. The clamp is thus pressed firmly against the web on the table 16, and holds it firmly along the edges to be cut.

When the clamp is open, Figure 5, the web may advance under the clamp and over the table 16, the latter co-operating with the clamp to form a guideway for the web, the clamp normally resting below the edge of the shearing knife, to shield the web therefrom.

The front member 60 of the upper frame is provided with a ledge or shelf 105 suspended at a somewhat lower level by arms 106. The rear edge of the shelf lies adjacent the cutting edge, so that, after the front knife 92 has severed a set of forms, the uncut portion of the web will lie on the shelf and be in a position to be led back along the same path over the table as the cut-off section, without any additional adjustment. A guide plate 107 is secured to the side plates 12 of the frame 13 to prevent the sheets from falling forward.

A complete operation of the device is as follows:

A set of forms is fed around the platen, over shelf 105, along table 16, and beneath clamp 100, until fully typed. The platen-frame is then swung about shaft 14 to raise the platen. The handle 35 is pushed rearwardly to return the carbon-carriage and carbons to their rearward position. The platen-frame is swung back to its normal position, and the web is then drawn up to the gage 51 and the handles 58 and 59 pressed together against the action of spring 75. The upper frame moves vertically downward, pressing the clamp firmly against the web and table, the front knife severing the forms from the web and the side knives cutting off the edges of the web comprising the perforated sections, thus separating the forms into single sheets. The ends of the web rests on shelf 105 ready to be fed along table 16.

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 continuous billing typewriting machine, the combination with a revoluble platen to receive a fan-folded web therearound, of a cutting device at the delivery side of the platen whereby the folded side edges at both sides of said web may be trimmed therefrom, said cutting device comprising knives at the opposite side edges of said web and extending longitudinally thereof, means to co-operate with the platen to advance the web along said knives, and means to actuate said knives concomitantly.

2. In a continuous billing typewriting machine, the combination with a revoluble platen to receive a fan-folded web therearound, of a cutting device whereby the folded side edges at both sides of said web may be trimmed therefrom, said cutting de-

vice comprising knives at the opposite side edges of said web and extending longitudinally thereof, means to co-operate with the platen to advance the web along said knives, means to actuate said knives concomitantly, and a device to clamp said web while the folded edges are being trimmed therefrom.

3. In a continuous billing typewriting machine, the combination with a revoluble platen to receive a fan-folded web therearound, of a trimming device at the delivery side of the platen whereby the folded side edges at both sides of said web may be trimmed therefrom, said trimming device comprising knives at the opposite side edges of said web, means to co-operate with the platen to advance the web to the knives, means to actuate said knives while the web is stationary, and a clamping device at the delivery side of the platen to clamp said web while the folded edges are being trimmed therefrom, said clamping device mounted to act on the side portions of said web adjacent the lines along which trimming is effected by said knives.

4. In a continuous billing typewriting machine, the combination with a platen for a fan-folded web, of a cutting device whereby the folded side edges at both sides of said web may be trimmed therefrom, said cutting device comprising knives at the opposite side edges of said web and extending longitudinally thereof, means to co-operate with the platen to advance the web along said knives, a clamping device to clamp said web while the folded edges are being trimmed therefrom, and a single manually-operable device for actuating said clamping device and said knives concomitantly.

5. In a continuous billing typewriting machine, in combination, a carriage, a platen journaled in said carriage and around which a web of sheets is adapted to be fed, said web being folded at its side edges and divided into forms adapted to be typed, a front paper-table carried by said carriage adjacent said platen and over which said web is adapted to be fed, and a cutter-frame carried by said carriage adjacent said front paper-table and comprising a front knife for severing the typed forms and side knives for simultaneously trimming the folded edges of said forms to separate the sheets of said web, said knives lying outside, but adjacent, the limits of said front table, said frame being normally in ineffective position but adapted to be lowered to effective position, said knives being disposed, and adapted to operate, in a plane perpendicular to the plane of said web and table.

6. In a continuous billing typewriting machine, in combination, a carriage, a platen journaled in said carriage and around which a web of sheets is adapted to be fed,

said web being folded at its side edges and divided into forms adapted to be typed, and means carried by said carriage for simultaneously severing the typed forms and trimming the opposite folded edges thereof to separate the sheets of said web while the latter is stationary.

7. In a continuous billing typewriting machine, in combination, a carriage, a platen journaled in said carriage and around which a web of sheets is adapted to be fed, said web being folded at its side edges and divided into forms adapted to be typed, a front paper-table carried by said carriage adjacent said platen and over which said web is adapted to be fed, and means carried by said carriage adjacent said front table for simultaneously severing the typed forms and trimming the folded edges thereof to separate the sheets of said web.

8. In a continuous billing typewriting machine, the combination of a revoluble platen, a frame in which the platen is mounted to be swung between a typing position and a carbon-releasing position, means for feeding a fan-fold web under and around the platen from the rear thereof, and a cutter on the swinging frame, at the delivery side of the platen, for trimming off the folded side edge or edges of form-sections of the web which have been advanced beyond the platen.

9. In a continuous billing typewriting machine, in combination, a carriage, a platen journaled in said carriage and around which a web of sheets is adapted to be fed, said web being folded at its side edges and divided into forms adapted to be typed, a front delivery paper-table carried by said carriage adjacent said platen and over which said web is adapted to be fed, and a cutter-frame carried by said carriage adjacent said front paper-table and comprising a front knife for severing the typed forms and opposite side knives for simultaneously trimming the folded edges of said forms to separate the sheets of said web while it is stationary.

10. In a continuous billing typewriting machine, in combination, a carriage, a platen journaled in said carriage and around which a web of sheets is adapted to be fed, said web being folded at its side edges and divided into forms adapted to be typed, a front paper-table carried by said carriage adjacent said platen and over which said web is adapted to be fed, and a cutter-frame carried by said carriage adjacent said front paper-table and comprising a front knife for severing the typed forms and side knives for simultaneously trimming the folded edges of said forms to separate the sheets of said web, said knives lying outside, but adjacent, the limits of said front table, said frame being normally in ineffective position but adapted to be lowered to effective position.

11. In a continuous billing typewriting machine, in combination, a carriage, a platen journaled in said carriage and around which a web of sheets is adapted to be fed, said web being folded at its side edges and divided into forms adapted to be typed, a front paper-table carried by said carriage adjacent said platen and over which said web is adapted to be fed, a cutter-frame carried by said carriage adjacent said front paper-table and comprising side knives for simultaneously trimming the folded edges of said forms to separate the sheets of said web, said knives lying outside, but adjacent, the limits of said front table, said frame being normally in ineffective position but adapted to be lowered to effective position, and means for lowering said frame to said effective position.

12. In a continuous billing typewriting machine, in combination, a carriage, a platen journaled in said carriage and around which a web of sheets is adapted to be fed, said web being folded at its side edges and divided into forms adapted to be typed, a front paper-table carried by said carriage adjacent said platen and over which said web is adapted to be fed, a cutter-frame carried by said carriage adjacent said front paper-table and comprising a front knife for severing the typed forms and side knives for simultaneously trimming the folded edges of said forms to separate the sheets of said web, said knives lying outside, but adjacent, the limits of said front table, said frame being normally in ineffective position but adapted to be lowered to effective position, means for lowering said frame to said effective position, and means for guiding said frame in a direction at right angles to said table, comprising guide-pins fixed on said carriage, said frame having openings adapted to receive said pins.

13. In a continuous billing typewriting machine, in combination, a carriage, a platen journaled in said carriage and around which a web of sheets is adapted to be fed, said web being folded at its side edges and divided into forms adapted to be typed, a front paper-table carried by said carriage adjacent said platen and over which said web is adapted to be fed, a cutter-frame carried by said carriage adjacent said front paper-table and comprising a front knife for severing the typed forms and side knives for simultaneously trimming the folded edges of said forms to separate the sheets of said web, said knives lying outside, but adjacent, the limits of said front table, said frame being normally in ineffective position but adapted to be lowered to effective position, means for lowering said frame in a plane parallel to said table, said means comprising a parallel-motion linkage between said carriage and said frame, and means for guiding said

frame in a direction at right angles to said table, comprising guide-pins fixed on said carriage, said frame having openings adapted to receive said pins.

14. In a continuous billing typewriting machine, in combination, a carriage, a platen journaled in said carriage and around which a web of sheets is adapted to be fed, said web being folded at its side edges and divided into forms adapted to be typed, a front paper-table carried by said carriage adjacent said platen and over which said web is adapted to be fed, a cutter-frame carried by said carriage adjacent said front paper-table and comprising a front knife for severing the typed forms and side knives for simultaneously trimming the folded edges of said forms to separate the sheets of said web, said knives lying outside, but adjacent, the limits of said front table, said frame being normally in ineffective position but adapted to be lowered to effective position, means for lowering said frame in a plane parallel to said table, said means comprising a parallel-motion linkage between said carriage and said frame, and means for guiding said frame in a direction at right angles to said table, comprising guide-pins fixed on said carriage, said frame having openings adapted to receive said pins, said linkage comprising means whereby it may be operated to actuate said frame, said last-named means comprising extensions of said linkage to form handles adapted to be grasped by the operator.

15. In a continuous billing typewriting machine, in combination, a carriage, a platen journaled in said carriage and around which a web of sheets is adapted to be fed, said web being folded at its side edges and divided into forms adapted to be typed, a front paper-table carried by said carriage adjacent said platen and over which said web is adapted to be fed, a cutter-frame carried by said carriage adjacent said front paper-table and comprising a front knife for severing the typed forms and side knives for simultaneously trimming the folded edges of said forms to separate the sheets of said web, said knives lying outside, but adjacent, the limits of said front table, said frame being normally in ineffective position but adapted to be lowered to effective position, and means for lowering said frame in a plane parallel to said table, said means comprising a parallel-motion linkage between said carriage and said frame on one side thereof, means for guiding said frame in a direction at right angles to said table, comprising guide-pins fixed on said carriage, said frame having openings adapted to receive said pins, and interconnected linkages connecting said carriage and frame on each side thereof for transmitting the parallel motion of the frame on one side to the other

side thereof, said parallel-motion linkage comprising means whereby it may be operated to actuate said frame.

16. In a continuous billing typewriting machine, in combination, a carriage, a platen journaled in said carriage and around which a web of sheets is adapted to be fed, said web being folded at its side edges and divided into forms adapted to be typed, a front paper-table carried by said carriage adjacent said platen and over which said web is adapted to be fed, a cutter-frame carried by said carriage adjacent said front paper-table and comprising a front knife for severing the typed forms and side knives for simultaneously trimming the folded edges of said forms to separate the sheets of said web, said knives lying outside, but adjacent, the limits of said front table, said frame being normally in ineffective position but adapted to be lowered to effective position, and means for lowering said frame to said effective position, the lower edge of each of said knives being inclined to the plane of the table, so that when said frame is lowered, each knife will commence cutting at one end of the edge to be cut and proceed progressively until the other end of said edge is reached.

17. In a continuous billing typewriting machine, in combination, a carriage, a platen journaled in said carriage and around which a web of sheets is adapted to be fed, said web being folded at its side edges and divided into forms adapted to be typed, a front paper-table carried by said carriage adjacent said platen and over which said web is adapted to be fed, a cutter-frame carried by said carriage adjacent said front paper-table and comprising a front knife for severing the typed forms and side knives for simultaneously trimming the folded edges of said forms to separate the sheets of said web, said knives lying outside, but adjacent, the limits of said front table, said frame being normally in ineffective position but adapted to be lowered to effective position, and means for lowering said frame to said effective position, said front knife being so positioned relatively to said side knives as to sever the forms completely before said side knives have completely trimmed the side edges.

18. In a continuous billing typewriting machine, in combination, a carriage, a platen journaled in said carriage and around which a web of sheets is adapted to be fed, said web being folded at its side edges and divided into forms adapted to be typed, a front paper-table carried by said carriage adjacent said platen and over which said web is adapted to be fed, a cutter-frame carried by said carriage adjacent said front paper-table and comprising a front knife for severing the typed forms and side knives

for simultaneously trimming the folded edges of said forms to separate the sheets of said web while the latter is stationary, and means for clamping said web to said table adjacent the edges to be cut.

19. In a continuous billing typewriting machine, in combination, a carriage, a platen journaled in said carriage and around which a web of sheets is adapted to be fed, said web being folded at its side edges and divided into forms adapted to be typed, a front paper-table carried by said carriage adjacent said platen and over which said web is adapted to be fed, a cutter-frame carried by said carriage adjacent said front paper-table and comprising a front knife for severing the typed forms and side knives for simultaneously trimming the folded edges of said forms to separate the sheets of said web, said knives lying outside, but adjacent, the limits of said front table, said frame being normally in ineffective position but adapted to be lowered to effective position, and means for clamping said web to said table, comprising a U-shaped clamp adapted to be pressed against said web at the front and sides thereof adjacent the edges to be cut.

20. In a continuous billing typewriting machine, in combination, a carriage, a platen journaled in said carriage and around which a web of sheets is adapted to be fed, said web being folded at its side edges and divided into forms adapted to be typed, a front paper-table carried by said carriage adjacent said platen and over which said web is adapted to be fed, a cutter-frame carried by said carriage adjacent said front paper-table and comprising a front knife for severing the typed forms and side knives for simultaneously trimming the folded edges of said forms to separate the sheets of said web, said knives lying outside, but adjacent, the limits of said front paper-table, said frame being normally in ineffective position but adapted to be lowered to effective position, means for clamping said web to said table, comprising a U-shaped clamp carried by said cutter-frame adapted to be pressed against said web at the front and sides thereof adjacent the edges to be cut, said clamp being normally ineffective but movable with said frame to effective position when the frame is lowered, said clamp being adapted to contact with said table before the frame has reached the limit of its travel, and a lost-motion connection between said frame and clamp to allow for the excess motion of said frame.

21. In a continuous billing typewriting machine, in combination, a carriage, a platen journaled in said carriage and around which a web of sheets is adapted to be fed, said web being folded at its side edges and divided into forms adapted to be typed, a

front paper-table carried by said carriage adjacent said platen and over which said web is adapted to be fed, a cutter-frame carried by said carriage adjacent said front paper-table and comprising a front knife for severing the typed forms and side knives for simultaneously trimming the folded edges of said forms to separate the sheets of said web, said knives lying outside, but adjacent, the limits of said front paper-table, said frame being normally in ineffective position but adapted to be lowered to effective position, means for clamping said web to said table, comprising a U-shaped clamp carried by said cutter-frame adapted to be pressed against said web at the front and sides thereof adjacent the edges to be cut, said clamp being normally ineffective but movable with said frame to effective position when the frame is lowered, said clamp being adapted to contact with said table before the frame has reached the limit of its travel, a lost-motion connection between said frame and clamp to allow for the excess motion of said frame, and a spring positioned between said frame and clamp, the excess motion of said frame being adapted to compress said spring to press said clamp firmly on said table.

22. In a continuous billing typewriting machine, in combination, a carriage, a platen journaled in said carriage and around which a web of sheets is adapted to be fed, said web being folded at its side edges and divided into forms adapted to be typed, a front paper-table carried by said carriage adjacent said platen and over which said web is adapted to be fed, a cutter-frame carried by said carriage adjacent said front paper-table and comprising a front knife for severing the typed forms and side knives for simultaneously trimming the folded edges of said forms to separate the sheets of said web, a spring normally holding said frame in ineffective position, and means for lowering said frame to effective position against the action of said spring.

23. In a continuous billing typewriting machine, the combination with a revoluble platen to receive a fan-folded web therearound, of means at the delivery side of the platen for concomitantly trimming the opposite folded side edges of the used portion of the fan-folded web away therefrom and transversely shearing the used portion of the web from the unused portion.

24. In a continuous billing typewriting machine, the combination with a revoluble platen to receive a fan-folded web therearound, of means at the delivery side of the platen for concomitantly trimming the opposite folded side edges of the used portion of the fan-folded web away therefrom and severing the used portion of the web from

the unused portion, said trimming and severing means comprising parallel knives adjacent the folded side edges, a shearing knife extending transversely of said web, and a manually-operable device to actuate all of said knives concomitantly.

25. In a continuous billing typewriting machine, the combination with a revoluble platen to receive a fan-folded web therearound, of means at the delivery side of the platen for concomitantly trimming the opposite folded side edges of the used portion of the fan-folded web away therefrom and shearing the used portion of the web from the unused portion, and clamping means at the delivery side of the platen to clamp the fan-folded web adjacent the lines along which cutting is to be effected.

26. In a continuous billing typewriting machine, in combination, a carriage, a platen journaled in said carriage and around which a web of sheets is adapted to be fed, said web being folded at its side edges, a front paper-table carried by said carriage adjacent said platen and over which said web is adapted to be fed, and a cutter-frame carried by said carriage adjacent said table and comprising opposite side knives, said cutter-frame being held normally in ineffective position but adapted to be lowered to effective position to permit said knives to trim the folded edges of said web to separate the sheets of the web while the latter is stationary.

27. In a continuous billing typewriting machine, in combination, a carriage, a platen journaled in said carriage and around which a web of sheets is adapted to be fed, said web being folded at its side edges, a front paper-table carried by said carriage adjacent said platen and over which said web is adapted to be fed, and a cutter-frame carried by said carriage adjacent said table and comprising side knives, said cutter-frame being held normally in ineffective position but adapted to be lowered to effective position to permit said knives to trim the folded edges of said web to separate the sheets of the web, the cutting edges of said knives being inclined to the plane of the table and web, so that when said frame is lowered said knives will commence cutting at the upper end of the web and cut progressively longitudinally of said web.

28. In a continuous billing typewriting machine, in combination, a carriage, a platen journaled in said carriage and around which a web of sheets is adapted to be fed, said web being divided into forms adapted to be typed, a front paper-table carried by said carriage adjacent said platen, and a cutter-frame carried by said carriage adjacent said table and comprising means for severing the typed forms, said frame being provided with a shelf over which said web is adapted to be fed onto said table, the leading edge of

the uncut web portion being adapted to rest on said shelf after the typed forms have been severed, said web being thus in position to be fed to said table.

29. In a continuous billing typewriting machine, the combination with a revoluble platen, of a paper-table at the delivery side of the platen to receive therefrom the typed forms on superposed webs fed around the platen, means to sever the used forms from the webs comprising a knife extending across said webs and mounted for downward movement, said table being provided with a shearing edge to co-operate with said knife, a normally ineffective clamp to press said webs against the paper-table adjacent said shearing edge, said clamp and table normally forming a guideway through which the web advances from the platen, and a manually-operable device for actuating said clamp and said knife concomitantly.

30. In a continuous billing typewriting machine, in combination, a revoluble platen around which a plurality of superposed webs divided into successive forms are fed, a paper-table at the delivery side of the platen to receive said webs from the latter, a transverse knife extending over said webs at the lower end of said paper-table and mounted for movement toward said paper-table, said paper-table being provided with a shearing edge to co-operate with said knife, a shelf adjacent the shearing edge of said paper-table and normally having its upper surface in the same plane as the upper surface of said paper-table, and manually-operable means to actuate said knife and to lower said shelf to withdraw the support of the latter from the webs adjacent said shearing edge, said shelf moving upwardly at the end of the cutting action to raise the leading edges of the unused portions of the webs to the level of the paper-table to guide them thereover.

31. In a continuous billing typewriting machine, the combination of a revoluble platen to receive a fan-folded web therearound, means to effect relative shifting between the web and interleaved carbons, means for holding the web to the platen for line-space feed of the web by the platen, a carriage movable with the platen in letter-feed and return directions, and cutters on the carriage at the delivery side of the platen and effective upon a typed portion of the web which is in advance of the carbons and operable when the web is stationary, for trimming off the opposite folded side edges of form-sections of the web which have been advanced beyond the platen.

32. In a continuous billing typewriting machine, the combination of a revoluble platen to receive a fan-folded web therearound, means to effect relative shifting between the web and interleaved carbons,

means for holding the web to the platen for line-space feed of the web by the platen, a carriage movable with the platen in letter-feed and return directions, cutters on the carriage at the delivery side of the platen and effective upon a typed portion of the web which is in advance of the carbons and operable when the web is stationary, for trimming off the opposite folded side edges of form-sections of the web which have been advanced beyond the platen, a clamp operable ahead of the cutters to hold the web for the cutting operation, and means connected to both the clamp and the cutters for actuating and fixing the order of operation of the same.

33. In a continuous billing typewriting machine, the combination of a revoluble platen to receive a fan-folded web therearound, a carriage movable with the platen in letter-feed and return directions, a table on the carriage on the delivery side of the platen for receiving and supporting the form-sections of the web which have been advanced beyond the platen, a cutter for trimming off the folded side edge or edges of the form-sections resting on the table, a clamp, and means for throwing the clamp against the table to hold the web form-sections firmly thereto for the cutting operation.

34. In a continuous billing typewriting machine, the combination of a revoluble platen to receive a fan-folded web therearound, a carriage movable with the platen in letter-feed and return directions, a table on the carriage on the delivery side of the platen for receiving and supporting the form-sections of the web which have been advanced beyond the platen, a knife blade or blades for trimming off the folded side edge or edges of the form-sections resting on the table, a carrier for the knife blades, a clamp on the carrier, having its gripping surface normally positioned beyond the knife edges, means for throwing the cutter-frame toward the table, first to cause the clamp to engage the web and hold the same to the table, and then to cause the knife blade or blades to operate on the web thus held, and a yielding connection for the clamp to the cutter-frame to permit continued movement of the latter with the knives after the clamp has been arrested by the table.

35. In a continuous billing typewriting machine, the combination of a revoluble platen, means for feeding a fan-fold web under and around the platen from the rear thereof, means at the intake side of the platen for effecting a relative shift between the web and interleaved carbons, and a cutter at the delivery side of the platen and clear of the carbons, for trimming off, while the web is stationary, the opposite folded

side edges of form-sections of the web which have been typed and advanced beyond the platen and the carbons.

36. In a machine for typewriting upon fan-folded webs, the combination with a revoluble platen and a holder to carry carbons interleaved with the plies of web, the carbons traveling with the web during the typing operation, and the web and carbons being also relatively shiftable, of means to co-operate with the platen to feed the web, and means on the delivery side of the platen and in advance of the carbons for shearing off the opposite folded side edges of the web.

37. In a machine for typewriting upon fan-folded webs, the combination with a

revoluble platen and a holder to carry carbons interleaved with the plies of web, the carbons traveling with the web during the typing operation, and the web and carbons being also relatively shiftable, of a gage to co-operate with the leading edge of the web to determine the length of the typed form to be severed, and means at the delivery side of the platen and in advance of the carbons for shearing off the gaged typed form from the web and concomitantly trimming off the opposite folded side-edge portions of said typed form.

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Witnesses:

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