Aug. 6, 1935. J. A. B. SMITH 2,010,162

TYPEWRITING MACHINE

Filed July 10, 1931 2 Sheets-Sheet 1

FIG.1.

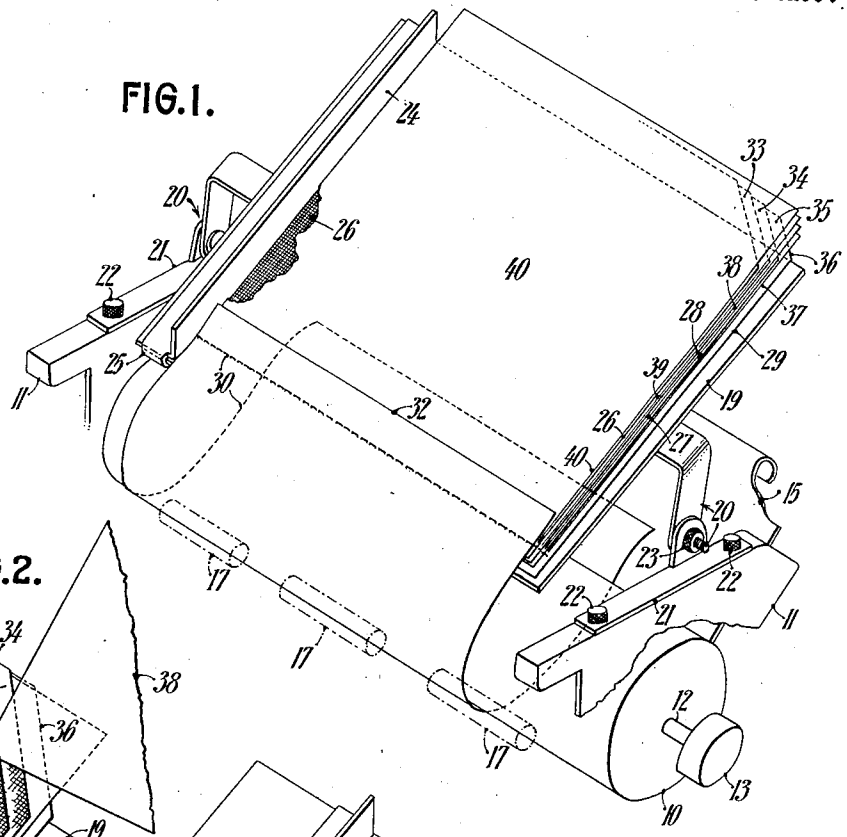
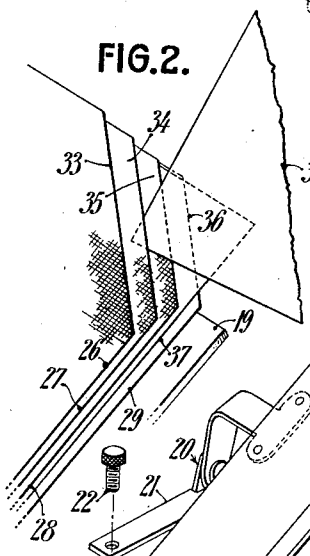


FIG.2.



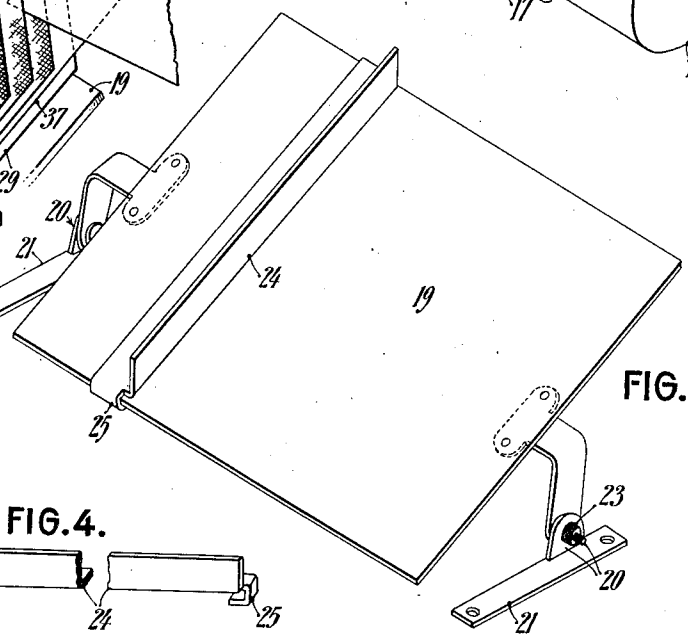


FIG.3.

FIG.4.

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FIG.6.

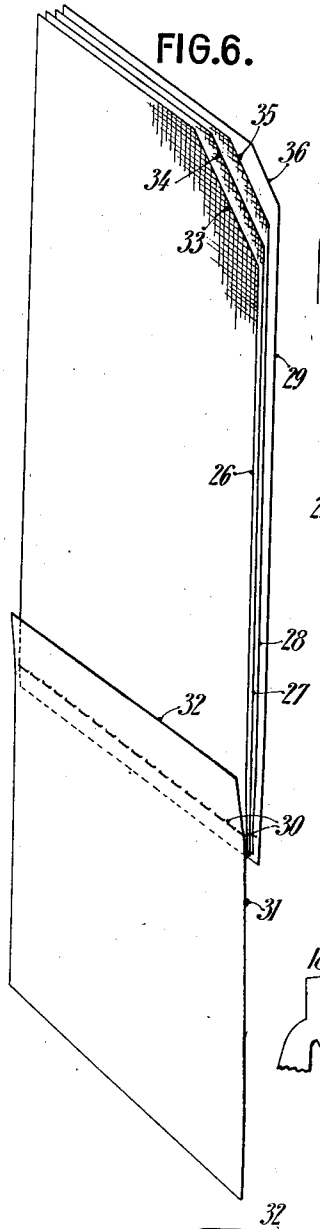


FIG.5.

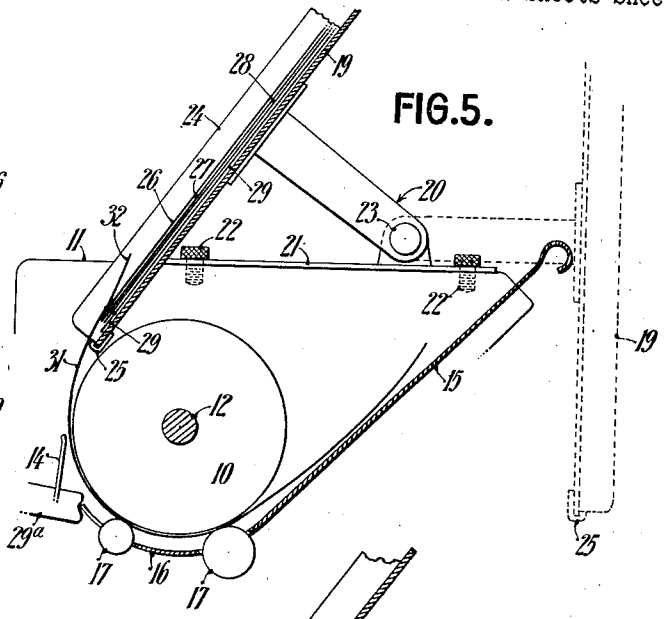


FIG.7.

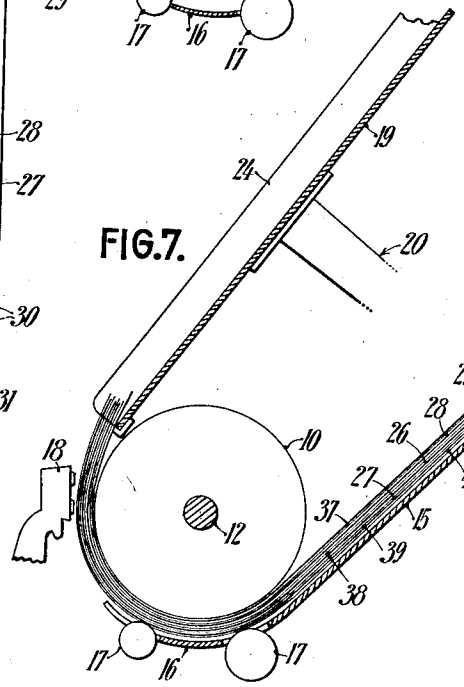
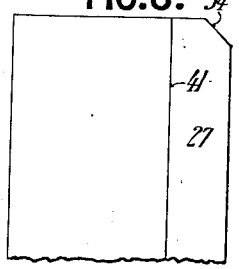


FIG.8.



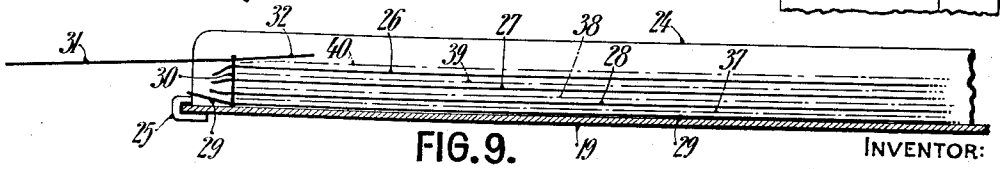


FIG.9.

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Patented Aug. 6, 1935 2,010,162

UNITED STATES PATENT OFFICE

2,010,162

TYPEWRITING MACHINE

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Application July 10, 1931, Serial No. 549,812

9 Claims. (Cl. 197—126)

This invention relates to typewriting machines, and more particularly those provided with platens around which the work-sheets are fed, as for example, the Underwood typewriting machine.

The principal object of the invention is to provide for ready interleaving and gathering of similar work-sheets with carbon sheets for manifolding.

A feature of the invention is that the carbon-sheets are received in a work-sheet-gathering box-element that is mounted over the platen, and the work-sheets are rapidly gathered one by one in said box between the stationary carbons. Said gathering box preferably inclines upwardly and rearwardly from the platen.

The carbon-sheets at their lower ends are stitched to a binder, which is flexible, so as to pass up and down around the typewriter-platen, said binder being of a length to extend from the open lower end of the gathering box down around the platen, to be gripped by the feed-rolls at the under side of the platen, thereby holding the carbons against displacement during the insertion of the work-sheets between the carbons. The carbon-sheets remain permanently connected to the platen until worn out.

The set of carbons has a backing sheet of paper, and the stitches pass through the binding, and through the backing sheet, and through the lower edges of the carbons, the line of stitching extending entirely across the sheet, thus making a firm structure not liable to injury from handling, and forming a gage for the lower ends of the work-sheets.

The binder extends downwardly from the row of stitches, and the carbons and backing sheet extend upwardly from said row of stitches.

The carbon-set element, with its binding trailer or flap, may be inserted at the rear of the platen by the aid of the usual paper-shelf, in the same manner as an ordinary work-sheet. The platen is rotated, thus bringing the carbons up in front and entirely above the platen, so that they recline within the gathering box, which inclines rearwardly from the delivery side of the platen; the top of the binder being now about even with the lower end of the box.

The usual feed-rolls of the platen now permanently hold the tongue or flap with the carbons in the machine, and also keep the carbons steady while work-sheets are inserted edgewise one by one to interleave with the carbons and gather against the bottom and side gages. The bottom edges of the work-sheets descend to a gathering gage consisting of the row of binding stitches, and the sheets are gathered against a gage-plate, provided upon said gathering box. Each work-sheet is inserted between the leaves and merely dropped in the box, against the left-hand side thereof. The right-hand side of the box is cut away or omitted for convenience of the operator's hand.

The upper right-hand corners of the carbons and backing sheet are cut off, the cutaways being graded, thus providing lips or guides for the interleaving operation. The lower left-hand corner of the work-sheet is placed upon the lip which projects from the undermost carbon, and the sheet is then dropped in the gathering box, lying against the left-hand side, the operation being very simple. The first work-sheet is inserted between the lowermost carbon and the backing. Then the next work-sheet is inserted between the lowermost carbons, and so on.

The last sheet is placed upon the uppermost carbon, and its lower edge is caught by a work-sheet clip, which extends upwardly from the top of the operating tongue or flap, this carrier being preferably a border which extends about half an inch above the transverse line of stitching, so that the lower end of the top work-sheet can be very readily clipped thereby.

After the work-sheets are interleaved with the carbons and gathered, the platen may be rotated backwardly in the usual manner, thus running downwardly and backwardly the tongue, whereby the carbon-element is pulled down into the machine, together with the work-sheets. This backward rotation of the platen continues far enough to bring the carbon-leaves and gathered work-sheets into position for the typing of the first line thereon.

The gathering box may be hinged upon the typewriting machine, so that it can be swung downwardly to a position back of the typewriter, for convenience in dropping the typewriter into the usual typewriter-desk.

Said table may not only be hinged, but also mounted detachably upon the platen-frame of the typewriter, so that it may be detached from the machine when the invention is not in use.

The left-hand side of the box may be made adjustable across the bottom. After typing a page, the work-sheets may be grasped between the fingers at the upper right-hand corner (where the corners are stepped) and withdrawn from the carbon element by one stroke of the hand, while the carbon-element remains in the machine, for receiving a fresh load of work-sheets.

Other features and advantages will hereinafter appear.

In the accompanying drawings,

Figure 1 is a perspective view of the platen and accompanying parts of a machine, showing the carbon-element lying flat in the gathering box after interleaving and gathering of the work-sheets.

Figure 2 is an enlarged view of the right-hand corner of the gathering box, showing the insertion of a work-sheet.

Figure 3 shows in perspective the gathering box.

Figure 4 shows in perspective the side removed from the bottom of the box.

Figure 5 is a sectional side view corresponding to Figure 1.

Figure 6 shows in perspective the carbon-element.

Figure 7 is a sectional side view, showing the set of carbon-sheets and gathered work-sheets in printing position on the platen.

Figure 8 shows separately a carbon-pack having one narrowed carbon.

Figure 9 is an enlarged view of a part of Figure 5.

The drawings show an ordinary platen 10 journaled in end plates 11 of its frame by means of a shaft 12 and operated by the ordinary knob 13. There is shown also the usual wing-scale 14 (Figure 5) and the usual paper-table 15, having an apron-extension 16. 17 indicates the feed-rolls and 18 a type-bar. According to the invention, a gathering table-element 19 is mounted on the end plates 11 of the platen-frame by means of a hinge 20 and brackets 21, removably secured to said plates 11 by screws 22.

The box 19 is held rearwardly and tangentially inclined above the front portion of the platen 10 by means of lock-nuts 23.

The left-hand side 24, with sliders 25 clasping the horizontal edges of the table 19, is frictionally mounted on the left-hand portion of the bottom of the box, and may thus be adjusted in parallelism.

Three carbon-leaves are illustrated in Figure 6, viz., 26, 27, 28, also a backing sheet 29, all being bound near their lower edges by means of a line of stitching 30, which secures the leaves to the top of a driving flap or tongue 31, made of flexible but relatively stiff material.

This flap or tongue is substantially as wide as the carbons, and projects above the line of stitching, so as to form a clip or tab 32.

The right-hand upper corners of the carbons 26, 27, 28 and backing sheet 29 are cut off and graded so as to form three overlapping lips or margins 33, 34, 35, acting as guides or insertion-slots facilitating the interleaving of the work-sheets. A triangular cutaway 36 is made in the backing sheets 29, for simultaneous withdrawal of the typed sheets.

The carbon-set, with its driving flap 31, as shown in Figure 6, is attached to the platen by introducing the device permanently between the platen and the feed rolls. It lies flat, and may abut the gage 24. As shown in Figures 1 and 5, in this position the stitching 30 is slightly above the lower edge of said box 19, and the driving flap 31 is still gripped between the platen and the feed-rolls 17, thus establishing a mechanical coupling between the carbon-set and said platen, and insuring the parallelism of the stitching 30 with the platen-axis.

The machine is now ready for the interleaving of the blank work-sheets. Presented by its lower left-hand corner, the bottom blank 37 is first inserted edgewise through the slot 35 between the lowermost carbon 28 and the backing 29, and is simultaneously gathered to the left against the gage 24, and is also pressed down as far as it will go, i. e., until it is gathered against the line of stitching 30. A second blank 38 (see Figure 2) is then likewise introduced through the slot 34 between the carbons 27 and 28, and so on. The top blank 40 is slipped under the clip 32 and laid directly upon the uppermost carbon 26, and is passed laterally and down until it abuts simultaneously the gage 24 and the line of stitching 30.

The blank work-sheets being thus gathered upon the carbons, the platen may be rotated in counterclockwise direction in the usual manner, whereby the assemblage of carbons and work-sheets is pulled down into the machine, first by means of the driving-flap 31, then by direct contact with the platen and the feed-rolls 17, until it reaches the printing position shown in Figure 7. During said movement, the top work-sheet 40 is kept in its registered position by the clip 32, which moreover facilitates the running of the manifolding pack between the platen and the feed-rolls 17.

After typing, the assemblage is again run up on the table, and the four printed work-sheets 37, 38, 39, 40 are grasped between the thumb and the forefinger at their upper right-hand corners, and withdrawn as a unit from the carbon-set by one stroke of the hand, due to the cutaway 36, provided in the backing sheet 29.

This easy and quick removal of the printed sheets leaves the carbon-sheets still connected to the platen and in their original positions upon the interleaving table 19, ready to receive a new set of blanks. The operation is repeated as long as the carbons endure.

When it is not desired to use the device, the lock-nuts 23 may be unlocked and the table 19 swung downwardly in a position (shown in dotted lines in Figure 5) back of the typewriter, more convenient for the dropping of the typewriter into the usual typewriter-desk; or the table element 19, with its attached parts 20, 21, 23 and 24, may be easily removed from the platen-frame 11 by merely unscrewing the four thumb-screws 22 (Figure 3).

The backing sheet, which is numbered 29, aids in giving body to the assemblage, having some stiffness and thickness, and tends to keep the carbons from wrinkling and creasing, and also protects the platen from injury from the type-blows.

If desired, the carbon element may be inserted downwardly (flap first) in the machine at the front, by a suitable lip 29a provided upon the machine below the printing line, as seen at Figure 5, and shown in Patent No. 1,489,224.

The clip 32 holds the outer work-sheet, and is convenient when inserting the device bottom end first at the front downwardly around the platen, since said clip holds the bottom edge of the main work-sheet against displacement during this operation.

The carbon-element, however, may be inserted downwardly at the back of the platen, by first swinging the box or table-element rearwardly about its hinge, until the box takes the dotted-line vertical position at Figure 5. This uncovers the ordinary work-table at the rear of the platen,

and permits the ready insertion of the carbons, head first, downwardly at the back of the platen and forwardly and up around the same.

One of the carbons 41 may be about two-thirds the width of the others, Figure 8, so that when typing a bill, the column of amounts will not be typed upon the underlying carbon-copy.

The clip has a further advantage, as it enables the operator, in case an extra carbon-copy is required, to insert and gather an extra work-sheet with its loose carbon beneath the main work-sheet, so that all three of said sheets will be retained by said clip. Thus the capacity of the carbon-element may be temporarily increased as occasion requires, while it remains permanently connected to the platen for co-operation with the platen and gathering table.

The clip 32 forming a pocket in which the bottom of a work-sheet is seated, and being coupled to the platen by the flap 31, constitutes an efficient page-end indicator to gage the untyped margin at the bottom of the work-sheets. In thus functioning the clip 31 co-operates with the printing-line scale 14. When the top of the clip 31, which may extend substantially above the line of stitching 30, and thus above the bottom edge of the work-sheet, shows above or somewhat below the top of said scale, as may be easily discerned either at the usual printing-point gap (not shown), at the center of said scale 14, or at either end of said scale, the operator is apprised thereby that the limit of typing which the work-sheet seated in the clip may hold has been reached or is about to be reached. Thus, there is obviated the liability of the typing running in unsightly proximity to the bottom edge of the sheet. The bottom untyped margins of the work-sheets are neatly and uniformly gaged. It will be obvious that the device may function as a page-end indicator in the typing of single work-sheets without manifolding, and that, for such use, the carbon-sheets may be omitted, the trail or flap 31 being in this case stitched directly to the backing sheet 29 to form the work-sheet-seating and page-end-indicating pocket or clip 32.

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. Apparatus for the purpose specified, including a set of carbon-sheets and a flap to which they are stitched at their lower ends, said flap extending up above the sitching to form a front clip to receive the lower margin of the front work-sheet.

2. Apparatus for the purpose specified, including a set of carbon-sheets and a flap to which they are stitched at their lower ends, said flap extending up above the stitching to form a front clip to receive the lower margin of the front work-sheet, and the upper right-hand corners of the carbons being cut off in broadly stepped relation, to afford a series of steps upon which to lay the work-sheets for guiding them one by one between the carbons in the interleaving operation.

3. Means whereby work-sheets may be rapidly gathered and interleaved for manifolding, including a set of carbon-sheets and a flap to which they are attached by a line of stitching at their lower ends, said flap extending up above the stitching to form a front clip to receive the lower margin of the front work-sheet, and the upper right-hand corners of the carbons being cut off in broadly stepped relation, to afford a series of steps upon which to lay the work-sheets for guiding them one by one between the carbons in the gathering and interleaving operation, and a gathering board of ample capacity for supporting a work-sheet in flat condition, said board extending upwardly and rearwardly from the platen and supporting in inclined position the upwardly and rearwardly extending pack of carbons, said board having a clear right-hand side to permit manipulation and gathering of the sheet by the right hand of the operator, the inclination of the board being sufficiently steep so that each inserted sheet tends to drop against the line of stitching, and the board having a left-hand side-edge gathering gage, extending throughout its length, whereby it is only necessary to insert the work-sheets one by one between the packed carbons and drop them as far as they will go, and press them to the left as far as they will go, thereby gathering the sheets at their bottom edges and their side edges.

4. In a typewriting machine, the combination with a revoluble platen, its frame and feed-rolls, of a work-sheet-gathering table tangentially carried by said frame with respect to the delivery side of said platen, and having a work-sheet-gathering gage, means for normally detaining a pack of carbon-leaves flat upon said table, while connected to the platen, a driving tongue coupling said carbon-pack to said platen, and stitching forming a line across said carbon-leaves to fasten said pack to said driving tongue, and to serve as a bottom gathering gage for the work-sheets, said driving tongue projecting beyond said stitching above the uppermost carbon-sheet so as to form a clip serving as holder and guide for the uppermost work-sheet.

5. Apparatus for the purpose specified, including a set of carbon-sheets and a flap to which they are stitched at their lower ends, said flap extending up above the stitching to form a front clip to receive the lower margin of the front work-sheet, and also including a backing sheet held to the carbon-sheets by said stitching, said backing sheet having its upper left-hand corner cut away, and the carbon-sheets being also cut away, the cutaways being of graduated dimensions to form overlaps for slip-ways for the interleaving of the work-sheets.

6. Apparatus for the purpose specified, including a set of carbon-sheets and a flap to which they are stitched at their lower ends, said flap extending up above the stitching to form a front clip to receive the lower margin of the front work-sheet, and the upper right-hand corners of the carbons being cut off in broadly stepped relation, to afford a series of steps upon which to lay the work-sheets for guiding them one by one between the carbons in the interleaving operation, one of said carbon-sheets having its right-hand portion omitted, to prevent manifolding columns of amounts on one of the work-sheets.

7. Apparatus for the purpose specified, including a set of carbon-sheets and a flap to which they are stitched at their lower ends, said flap extending up above the stitching to form a front clip to receive the lower margin of the front work-sheet, and the upper right-hand corners of the carbons being cut off in broadly stepped relation, to afford a series of steps upon which to lay the work-sheets for guiding them one by one between the carbons in the interleaving operation, said clip having a capacity to hold a plurality of work-sheets with their carbons.

8. Work-sheet gathering and locating means

permanently secured to a typewriting machine, and including a set of gathering leaves stitched together at their lower ends, and having a tongue projecting downwardly from said set of leaves and caught between said feed-rolls and said platen as the leaves extend above the delivery side of the platen, said tongue with said leaves forming a unit which is shiftable around the platen, but which remains permanently connected to the platen by means of said rolls during introduction and withdrawal of successive batches of work-sheets, and also including a sheet-gathering board for supporting said set of leaves as a unit in flat condition at the delivery side of the platen, said board extending upwardly and rearwardly from the top of the platen, and having a clear right-hand side to permit manipulation and gathering of the work-sheets between said leaves by the right hand of the operator, the inclination of the board being sufficiently steep to enable each gathered work-sheet to drop between the leaves down to said line of stitching, and the board having a left-hand gathering gage, against which said set of leaves is set, to bring said line of stitching parallel to printing line on the platen, said gage being sufficiently long to true the line of stitching, whereby the work-sheets may be gathered one by one between the leaves and dropped against the stitching and pressed to the left to said gathering gage, thereby evening up the work-sheets at their bottom edges and also at their side edges, said tongue then serving to draw the assemblage of leaves and gathered work-sheets back around the platen to true printing position, bringing the bottom edges of the work-sheets mechanically into parallelism with the line of typing, said gathering leaves being coated with carbon for manifolding the gathered work-sheets, the top margin of said tongue extending above said line of stitching, to form a front clip to hold the front work-sheet by its lower margin.

9. Work-sheet gathering and locating means permanently secured to a typewriting machine, and including a set of gathering leaves stitched together at their lower ends, and having a tongue projecting downwardly from said set of leaves and caught between said feed-rolls and said platen as the leaves extend above the delivery side of the platen, said tongue with said leaves forming a unit which is shiftable around the platen, but which remains permanently connected to the platen by means of said rolls during introduction and withdrawal of successive batches of work-sheets, and also including a sheet-gathering board for supporting said set of leaves as a unit in flat condition at the delivery side of the platen, said board extending upwardly and rearwardly from the top of the platen, and having a clear right-hand side to permit manipulation and gathering of the work-sheets between said leaves by the right hand of the operator, the inclination of the board being sufficiently steep to enable each gathered work-sheet to drop between the leaves down to said line of stitching, and the board having a left-hand gathering gage, against which said set of leaves is set, to bring said line of stitching parallel to the printing line on the platen, said gage being sufficiently long to true the line of stitching, whereby the work-sheets may be gathered one by one between the leaves and dropped against the stitching and pressed to the left to said gathering gage, thereby evening up the work-sheets at their bottom edges and also at their side edges, said tongue then serving to draw the assemblage of leaves and gathered work-sheets back around the platen to true printing position, bringing the bottom edges of the work-sheets mechanically into parallelism with the line of typing, said gathering leaves being coated with carbon for manifolding the gathered work-sheets, the top margin of said tongue extending above said line of stitching, to form a front clip to hold the front work-sheet by its lower margin, and the upper right-hand corners of the carbons being cut off to form a broad series of introductory steps, upon which to lay the work-sheets in succession, for guiding the work-sheets between the carbon-leaves at the gathering operation.

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