Aug. 31, 1926. 1,597,769

C. M. CREWS

TYPEWRITING MACHINE

Filed Sept. 26, 1924 3 Sheets-Sheet 1

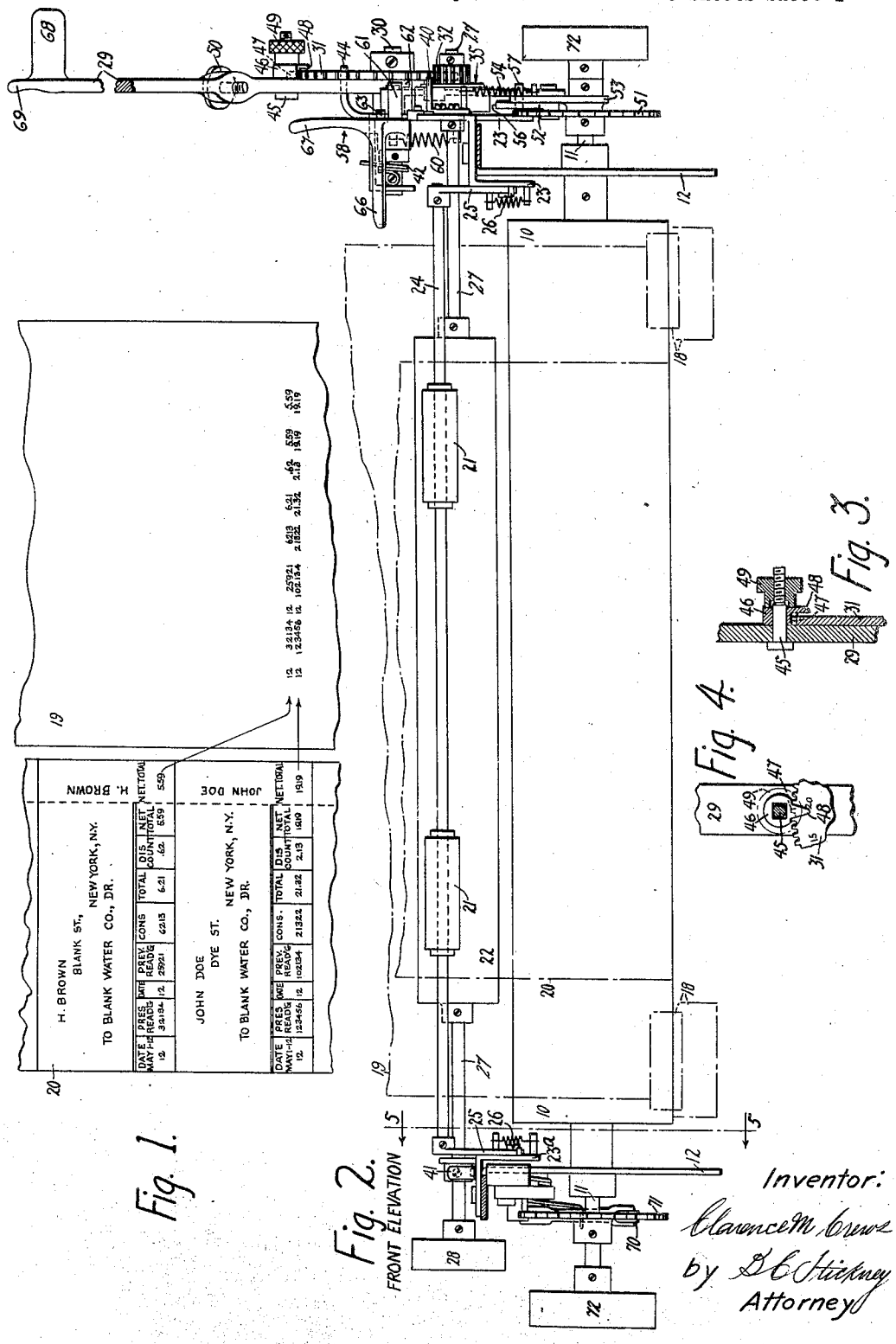


Fig. 2. FRONT ELEVATION

Fig. 1.

Fig. 3.

Fig. 4.

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Fig. 5.

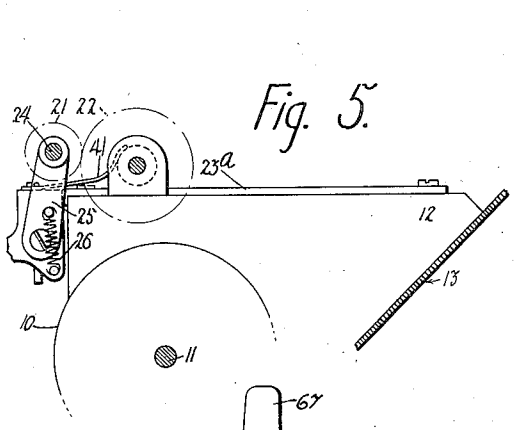


Fig. 6.

Fig. 7.

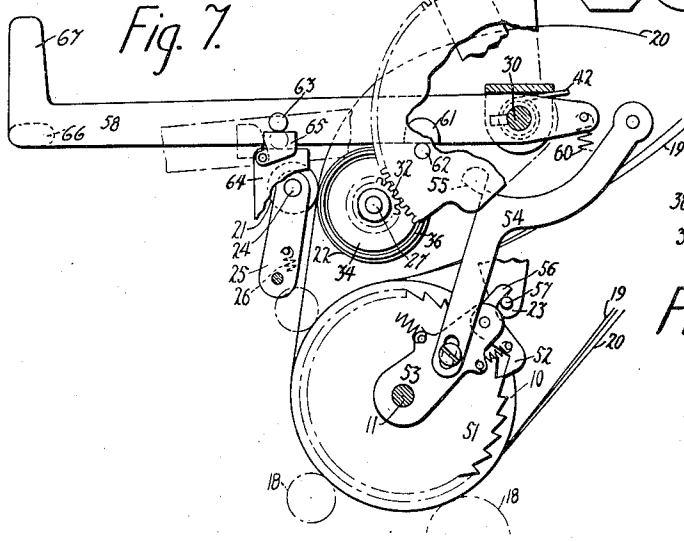


Fig. 9.

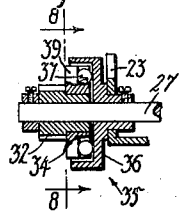
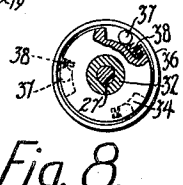


Fig. 8.



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Fig. 10.

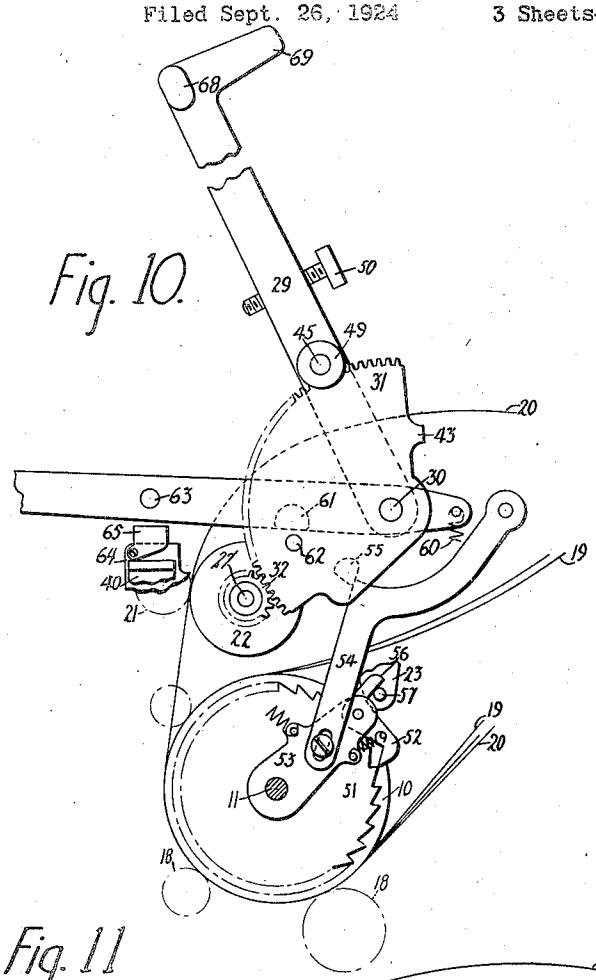
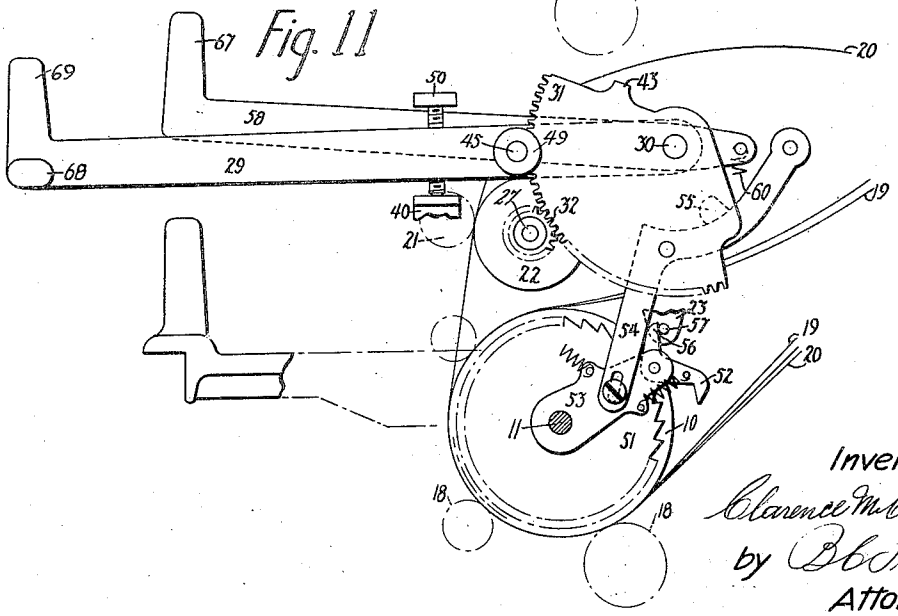


Fig. 11



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Patented Aug. 31, 1926. 1,597,769

UNITED STATES PATENT OFFICE.

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TYPEWRITING MACHINE.

Application filed September 26, 1924. Serial No. 739,998.

This invention relates to condensed record typewriting, and particularly to the typing of short bills, such as gas-bills, concurrently with a condensed record-sheet.

It has been customary heretofore to write gas-bills upon individual cards or short forms which were first fed manually through an addressing machine to be addressed and were then turned over to a typist to be typed successively in conjunction with a composite condensed record-sheet or subordinate web. It was necessary to insert each bill in the typewriting machine, type one line upon it, withdraw the bill, and line-space the platen to position the condensed record-sheet for the typing of the next bill.

In accordance with the present invention, the bills are connected end to end into a long strip or web. The web is first fed automatically through an addressing machine with a very great saving of time over the former manual feeding. The web is then passed around the platen of a typewriting machine for typing a single line of entries on each bill in conjunction with a condensed record-sheet, the bills being typed in the same order in which they were addressed. At the conclusion of each bill the condensed record-sheet is advanced one line-space and the continuous bill-web is advanced one form-length to reposition the record-sheet and bill-web for typing of the next bill-form.

One feature of the invention relates to the provision of means in a typewriting machine for thus advancing the record-sheet and bill-web to reposition them in the machine and with relation to each other, at a single operation. To this end provision is made of a main web-feeder comprising a feeding couple independent of the platen and a sweep-handle having a one-way driving connection with the feeding couple to advance the bill-web a form-length at a single stroke of the handle. The bill-web is caused to pass freely around a portion of the platen that is free of co-operating feed-rolls, and the subordinate web or record-sheet, which is wider than the bill-web, is controlled by feed-rolls running upon the platen beyond the side edges of the bill-web. The sweep-handle is also connected to advance the platen one line-space simultaneously with the sweeping forward of the bill-web a form-length. The bill-web and the record-sheet are thus fed different amounts to position them for the typing of the succeeding bill, by a single stroke of the sweep-handle.

It is an object of the invention to provide for changing the feeding stroke of the web-sweeping mechanism to accommodate different lengths of bill-forms, without affecting the feeding of the platen effected by actuation of said mechanism. It is a point, therefore, that the connections from the sweep-handle to the platen are arranged to effect the platen-feeding in the first part of the operation of the sweep-handle, and thereafter to permit the platen to remain stationary, while the sweep-handle completes its stroke, and that the stroke-adjusting means are arranged to curtail or extend the latter portion of the stroke. In this way, the stroke of the handle, and, therefore, the extent of feed of the bill-web, may be adjusted while the platen is still caused to be advanced a line-space at every sweep-handle stroke.

In some classes of work, for example, where two lines of items are to be written upon each bill, it is desirable to advance the bill-web only a line-space, or a double line-space, between the first and second writing line positions of a bill, and then to sweep it forward nearly a form-length to the first line of the next bill. While the feeding steps of the bill-web will be alternately long and short, it is desired to feed the record-sheet always the same distance. To this end, the connections between the sweep-handle and the platen are arranged to advance the platen a line-space during the first line-space advance of the bill-web. In other words, the bill-web and the record-sheet are advanced in unison for a line-space at the operation of the sweep-handle, after which the platen remains stationary and the advance of the bill-web is continued to any desired extent, determined by the positioning of suitable arresting means.

In order to assist in the rapid accomplishment of this class of work, provision is made of a second handle for operating the sweep-mechanism, which handle is normally limited to a double-line-space stroke, by engagement of the handle with a fixed stop, but may be limited to a single-line-space stroke by the positioning of an interponent in front

of said stop. The bill is advanced from its first to its second writing line position by the actuation of the short range feeding handle, which also line-spaces the record-sheet, and, after the writing of a line in said position, is then advanced to the first writing line position of the succeeding bill by the operation of the sweep-handle.

The machine may also be used for doing various other classes of work which require frequent repositioning of the work-sheets in the machine and relatively to each other. To accommodate the machine to the widest possible range, the web-feeding means is constructed so that it may be adjusted for any length of feeding step desired, that is, the adjustments are not limited to any definite line-space unit or multiples thereof. To this end the connection between the sweep-handle and the web-feeder is effected through a universal clutch, constructed to pick up the feeder at any point to which it may have been advanced, and provision is made of means for controlling the length of stroke of the sweep-handle with micrometric precision.

Other features and advantages will hereinafter appear.

In the accompanying drawings:—

Figure 1 is a diagram showing the relative arrangement of successive entries on the bill-web and on the condensed record-sheet.

Figure 2 is a front elevation of a part of a type-writing machine having the present improvements applied thereto.

Figure 3 is a sectional detail view of the means for adjusting the length of stroke of the platen-sweep handle.

Figure 4 is a sectional side elevation of the mechanism shown in Figure 3.

Figure 5 is a vertical section showing the left end of the platen-frame and of the web-feeder, the section being taken on the line 5—5 of Figure 2.

Figure 6 is a sectional side elevation showing the sweep-mechanism and the connections from said mechanism to the platen for line-spacing the latter.

Figure 7 is a sectional side elevation showing particularly the short range advancing handle for the bill-web.

Figure 8 is a sectional side elevation, partly broken away, of the clutch for effecting a one-way drive between the sweep-handle and the bill-web-feeder, the section being taken on the line 8—8 of Figure 9.

Figure 9 is a vertical sectional view showing the internal construction of the clutch and connected mechanism.

Figure 10 is a sectional side elevation showing the parts in the positions occupied when the sweep-handle has been advanced one line-space.

Figure 11 is a sectional side elevation showing the parts in the positions occupied when the sweep-handle has been advanced to the full limit of its stroke.

The machine comprises a revoluble cylindrical platen 10, journaled by its axle 11 in the ends 12 of a platen-frame 13 that is carried by a carriage 14 that travels in letter-feed and return directions upon front and rear rails 15 and 16 of the machine-frame 17. Front and rear feed-rolls 18 co-operate with the lower side of the platen 10 to grip the margins of a wide condensed record-sheet 19 beyond the bounds of a relatively narrow continuous bill-web 20. There are no feed-rolls within the bounds of the bill-web, so that the bill-web is caused to pass freely around the platen outside of the condensed record-sheet. Provision is made of feed-rolls 21 and 22, mounted on the brackets 23 and 23ª on the ends 12 of the platen-frame, for advancing the bill-web 20 relatively to the platen 10 between the typing of successive entries. The front feed-rolls 21 are mounted on a shaft 24, carried by swinging arms 25, and movable into and out of co-operative relation to the rear feed-roll 22. Double-acting coil-springs 26, connected to the arms 25 and to the brackets 23 and 23ª, to cross dead center, in the movement of the feed-rolls 21 between effective and ineffective positions, serve to maintain said rolls in either of said positions. The feed-roll 22 is mounted upon an axle 27 journaled in the brackets 23 and 23ª, and may be turned by a knob 28 at its left end. A sweep-handle 29, journaled upon a shaft 30, carried by the bracket 23 on the right end of the platen-frame 13, is connected through suitable gearing to sweep the feed-roll 22 to advance the bill-web 20 a form-length when desired. This handle 29 is made fast to a gear-segment 31 also journaled on the shaft 30, which meshes with a smaller gear 32 that is freely rotatable on the extreme right end of axle 27. The small gear 32 is fast to one member 34 of a ball-clutch 35, which effects a one-way driving connection between the gear 32 and complemental clutch-member 36 fast to the axle 27. This clutch 35 is of a well-known form, and comprises balls 37 which are urged by springs 38 toward the reduced ends of tapering recesses 39 in the clutch-member 34, to maintain a driving connection between the clutch-members 34 and 36. Movement of the platen-sweep handle 29 toward the operator, until it is arrested by engagement with a fixed stop 40 on bracket 23, will be effective to sweep the feed-rolls 21 and 22 to advance the bill-web a form-length rapidly. Overfeeding of the bill-web is prevented by a spring-retarder 41 that bears frictionally upon the axle 27. Movement of the handle 29 in the reverse direction will be idle. Provision is made of a spring 42 for returning said handle to its initial, normal, position, determined by en-

gagement of a lug 43 on the gear-segment 31 with a stop 44 on the bracket 23, whenever the handle is released.

The stroke of the sweep-handle 29 may be adjusted either by line-space units or to a finer degree. The teeth of the gear-segment 31 are arranged at line-space intervals, and provision is made of means for connecting the handle to the segment 31 in any tooth-space thereof. Such means comprises a threaded pin 45, Figure 3, extending through the handle 29, a locking member 46 slidable on the pin and having teeth 47 to interfit with the teeth of the gear-segment 31, and an index-pointer 48 upon it, and a nut 49 threaded onto the pin to retain said locking member 46 in co-operative relation with the gear-segment 31. A knurled headed screw 50, received in the handle 29, co-acts with the fixed stop 40 for limiting the forward movement of the handle. Microscopic adjustment of such forward movement may be effected by turning the screw 50.

It is desired to effect a line-space movement of the platen to line-space the condensed record-sheet 19 when the sweep-handle 29 is drawn forward to sweep the bill-web 20 a form-length. To this end, provision is made of a ratchet-wheel 51 fast on the right end of the platen-axle 11, with which a pawl 52, carried by a swinging arm 53, pivoted on the platen-axle, co-operates. An operating arm 54, pivoted on the bracket 23, has pin-and-slot connection with this swinging arm, to oscillate it to impart a feeding movement to the pawl. A lug 55 on the gear-segment 31 engages this operating arm 54 to impart the necessary feeding movement to it in the initial portion of the advance of the sweep-handle 29, and, as has been previously stated, the parts are so designed and proportioned that a line-space advance is imparted to the platen 10 during the first line-space advance of the rolls 21 and 22. During this time, the pawl 52 is in engagement with the ratchet-wheel 51, and the lug 55 is caused to travel along a vertical face of the operating arm 54 to swing said operating arm about its pivot, and thereby impart feeding movement to the pawl 52 through the oscillating arm 53. At the end of a line-space advance of the platen, a tail 56, Figure 11, on the pawl 52 engages a pin 57 on the bracket 23 and rocks the pawl 52 about its pivot, out of engagement with the ratchet-wheel 51, so that the platen is permitted to remain idle during the further advance of the sweep-handle 29. At about the same time that the pawl 52 is disengaged from the ratchet-wheel, the lug 55 on the gear-segment rides off of the vertical face of the operating arm 54, and travels along a cam-surface of said arm that is concentric with the shaft 30. The lug 55, therefore, causes no further advance of the operating arm 54, but does not permit the arm to return to its normal position until the gear-segment 31 has been returned.

In doing some classes of work, it is desired to advance the web alternately through long and short steps, for example, where there are two lines to be written on every bill, or in the writing of checks, where a definite number of lines is to be written on every check. For doing this class of work, provision is made of a second handle 58 arranged to operate the sweep-mechanism through a short range to advance the work between successive lines on the same form, while line-spacing the condensed record-sheet for each advance of the web. The handle 58 is pivoted on the shaft 30, and is normally held at the upper limit of its movement against a stop 59 by a spring 60 connected to the tail of the handle and to the bracket 23. The handle 58 has a lug 61 to overlie a projection 62 on the gear-segment 31, so that as the handle is advanced, the gear-segment is rotated to operate both the web-sweeping mechanism and the platen-line-spacing mechanism described. A projecting stop 63 on the handle normally co-operates with a fixed stop 64 to limit the stroke of the handle 58 to two line-spaces (see the dot-and-dash position of Figure 7). It may be desired, however, to limit the stroke of this handle 58 to a single line-space, in which case an interponent 65, pivoted on the stop 64, may be swung into position to be effective. When the interponent 65 is effective, the web and the record-sheet are simply fed in unison by the web-feeding means and the platen, each being advanced a single line-space at a full actuation of the handle 58.

It will be understood, of course, that either of the handles 29 and 58 may be used exclusively, or that they may be used in conjunction with each other, according to the requirements of the work, and that, in either case, the record-sheet will be line-spaced at every actuation of either of the handles. The handle 58 has a horizontal arm 66 extending toward the left, by which its sheet-feeding movement is effected, and a vertically-extending arm 67 which may be used for returning the carriage. The handle 29, which is considerably longer than the handle 58, has a horizontal arm 68 extending toward the right, by which it may be rotated, and a vertically-extending arm 69 which may be used for returning the carriage.

The exact feeding steps of the platen may be controlled in the usual manner by the co-operation of a detent 70, Figure 2, with the usual line-feeding ratchet 71 on the left end of the platen-axle 11. The platen 10 may be advanced, if desired, independently of

the web-feeding mechanism by rotation of one of the platen-turning knobs 72, or by actuation of the usual line-space mechanism, of which the ratchet-wheel 71 forms a part. In doing work which requires frequent advance of the inside sheet, relatively to the outside sheet or web, provision may advantageously be made of a retarder or drag, to prevent misplacement of the outside sheet. This retarder may consist of a friction-clamp 73, carried by arms 74 fast on a shaft 75 that is revolubly mounted in the rolled upper end of the rear paper-table 76. A spring 77, Figure 6, connected to the rear paper-table and to an arm of the clamp 73, holds the clamp with light pressure against the outside sheet or web on the rear paper-table. The clamp 73 may be turned around the rear paper-table, out of the way, when not desired for use, and will also be held in that position by the spring 77.

The machine may be used for writing gas-bills in the following manner: A long condensed record-sheet 19, with a superposed carbon, is placed in the machine around the platen 10, and a continuous bill-web 20, comprising a succession of bills, connected end to end, and having the addresses already stamped thereon, is passed around the platen outside of the record-sheet 19 in a position to escape the feed-rolls 18, is led between the web-feeding rolls 21 and 22, and positioned at the writing line. A single line of entries is then typed on the first bill, and the sweep-handle 29, which has been previously adjusted for the particular length of bill in use, is drawn forward a full stroke. This line-spaces the record-sheet 19 and advances the writing line of the second bill to the writing position in the machine. This sequence of operations is continued until all of the bills have been written.

In the case of bills or checks having two writing lines, the web is alternately fed from the second writing line of one form to the first writing line of the next by the sweep-handle 29, and from the first to the second writing line by the short-range handle 58, the record-web being line-spaced concomitantly with each advance of the web. In every case the carriage 14 is returned by the handle that is used for feeding the web and record-sheet.

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

Having thus described my invention, I claim:—

1. In a typewriting machine for typing simultaneously upon a continuous main web and upon a continuous subordinate web, in combination, platen-feeding means for the subordinate web, a separate feeding means for the continuous main web, and common operating means for both feeding means constructed to sweep forward the continuous main web a long distance, independently of the platen, and to platen-feed the subordinate web a short distance at a single sweep of said operating means.

2. In a typewriting machine for typing simultaneously upon a continuous main web and upon a continuous subordinate web, in combination, platen-feeding means for the subordinate web, an independent direct feeding means for the continuous main web, adjustable operating means including a handle for the independent feeding means to advance the main web a predetermined length at a single oscillation of said handle, and means actuated by said operating means to jointly advance the subordinate web a line-space by the platen.

3. In a typewriting machine for typing simultaneously upon a continuous main web and upon a continuous subordinate web, in combination, mechanism to sweep the main web forward a predetermined length at a single direct operation, and means operated by the web-sweeping mechanism to advance the subordinate web at first in unison with the main web for a line-space length, and then to release the subordinate web, during the further sweep of the main web.

4. In a typewriting machine for typing simultaneously upon a continuous main web and upon a continuous subordinate web, in combination, means to platen-feed the subordinate web, means to directly sweep the main web forward concurrently with the platen-feed of the subordinate web and continue the feeding sweep of the main web, and means to change the relative length of the sweep of the main web-feed without changing the platen-feed of the subordinate web.

5. In a typewriting machine for typing simultaneously upon a continuous main web and upon a continuous subordinate web, in combination, means to directly sweep the continuous main web forward and simultaneously platen-feed the subordinate web a line-space, and means co-operative with the sweeping means to line-space the main web at will.

6. In a typewriting machine for typing simultaneously upon a continuous main web and upon a condensed subordinate web, in combination, manual means to directly sweep the continuous main web forward and simultaneously to line-space the subordinate web, and separate manually operable means co-operative with the web-sweeping means, to line-space the main web at will.

7. In a typewriting machine for typing simultaneously upon a continuous main web and upon a condensed subordinate web, in combination, means to continuously sweep the main web forward and simultaneously to line-space the subordinate web, and separate

manually operable means co-operative with the web-sweeping means to jointly line-space both the main and subordinate webs at will.

8. In a typewriting machine, the combination with a platen and feeding means co-operating with the platen to line-space an inside web, of an independent feeding couple to advance an outside web relatively to the inside web, manual sweeping mechanism for adjustably operating the independent couple to advance the outside web a long distance at a single operation, and manual means co-operative with the sweeping mechanism to line-space the inside web a fixed distance.

9. In a typewriting machine, the combination of a platen, a pair of web-feeding rolls, sweep gearing for rapidly rotating the feeding rolls to sweep the web forward, and a universal one-way clutch independent of the platen and directly connecting the sweep gearing to the feeding rolls to positively rotate the feeding rolls in one direction through distances of predetermined extent.

10. In a typewriting machine, the combination of a platen, a web-feeding couple independent of the platen, sweep gearing for rapidly rotating the feeding couple, a one-way clutch positively connecting the sweep gearing to the feeding couple, means to adjust the sweep of the gearing to continuously feed the web any predetermined length, and independent means co-operative with the sweep gearing to limit the sweeping movement thereof to a line-space feed of the web.

11. In a typewriting machine, the combination with a platen and feed-rolls co-operating therewith, of web-feeding mechanism including a web-feeding couple independent of the platen, a sweep gearing to positively rotate the feeding couple in a feeding direction, means co-operative with the feeding of the web-feeding couple to effect a line-feeding of the platen, and means co-operative with the sweep gearing to jointly line-feed the web and platen.

12. In a typewriting machine, the combination with a platen and feed-rolls co-operating therewith, of a feeding couple independent of the platen, sweep mechanism for operating the independent feeding couple comprising a handle, a sweep gear, and a universal one-way clutch, means for limiting the advancing movement of the handle, means for limiting the return movement of the gear, and means for fixing the handle to the gear in various adjusted positions.

13. In a typewriting machine, the combination with a platen and feed-rolls co-operating therewith, of a feeding couple independent of the platen, sweep mechanism for operating the independent feeding couple including a handle, a sweep gear, and a universal one-way positively-driven clutch, means for limiting the advancing movement of the handle, means for limiting the return movement of the gear, and means for line-space gaging the handle to the gear to predetermine the sweep of the gear.

14. In a typewriting machine, the combination with a platen and feed-rolls co-operating therewith, of a feeding couple independent of the platen, sweep mechanism for operating the independent feeding couple comprising a handle, a sweep gear, and a universal one-way clutch, means for limiting the advancing movement of the handle, means for limiting the return movement of the gear, means for adjusting the handle relatively to the gear to change the stroke of the handle, and a stop-screw carried by the handle to engage the handle-limiting means for procuring micrometric adjustments of the stroke of the handle.

15. In a typewriting machine, the combination with a carriage, a platen, and feed-rolls co-operating with the platen, of an independent feeding couple, means comprising a handle for simultaneously sweeping the independent feeding couple forward and line-spacing the platen, and means comprising a handle for simultaneously line-spacing the platen and the independent feeding couple, each of said handles having an upstanding arm whereby it may be moved for returning the carriage.

16. In a typewriting machine for typing upon a narrow outside sheet and a relatively wide inside sheet, the combination with a platen, of feed-rolls running on the platen outside the bounds of the narrow sheet for advancing the wide sheet relatively to the narrow sheet, and a friction drag at the introductory side of the platen for yieldingly opposing advance of the outside sheet to prevent its being drawn forward by the inside sheet when the latter is advanced by the platen.

17. In a typewriting machine, the combination with a platen and co-operating feed-rolls, of a work-feeding couple independent of the platen, mechanism comprising a handle for line-spacing the platen and concomitantly advancing the independent feeding couple more than a line-space, a stop to limit the normal stroke of the handle to determine the extent of advance of the independent feeding couple, and an interponent settable in front of the stop to shorten the normal stroke of the handle, and thereby shorten the advance of the independent feeding couple.

18. In a typewriting machine, the combination with a platen and feed-rolls co-operating therewith, of a feeding couple independent of the platen, sweep gearing connected directly to and independently feeding the couple, two handles operable to differentially actuate the gearing in the same

direction, and a clutch to convey the differential movement of the gearing to the feeding couple.

19. In a typewriting machine, the combination with a web-feeding couple having a pinion, of a sweep gear always in train with the pinion, a handle for operating the gear, a fixed stop to engage with the gear in one direction, a stop carried by the handle to limit the movement of the handle in the opposite direction, the gear teeth being arranged at line-space intervals and indexed, and a toothed interlock set for permanently connecting the handle to the gear at any tooth position thereof.

20. In a typewriting machine, the combination with a web-feeding couple, including a pinion of a sweep gear having teeth at all times in engagement with the pinion for driving the couple, a handle for operating the gear, a stop to limit the movement of the gear in one direction, a stop to limit the movement of the handle in the opposite direction, the gear teeth being arranged at line-space intervals and indexed, a lock carried by the handle to interfit with the gear teeth permanently for connecting the handle to the gear at any tooth space, and a pointer on the lock co-operating with the graduations on the gear to indicate the extent of line-space advance predetermined by the adjustment of the handle.

21. In a typewriting machine, the combination with a platen and co-operating feed-rolls, of an independent feeding couple, a sweep gear for advancing the independent feeding couple, a projection on the sweep gear, a cam-arm in the path of the projection on the sweep gear to be engaged and rocked by the projection, a pawl-carrier driven by the cam-arm, a pawl on the carrier, and a ratchet fast to the platen and driven by the pawl, the cam-arm having a surface to be engaged by the projection on the sweep gear to rock the cam-arm a sufficient distance to advance the platen approximately a line-space, and a surface concentric with the sweep gear to permit the cam-arm to remain idle during further advance of the sweep gear.

22. In a typewriting machine, the combination with a platen and co-operating feed-rolls, of an independent feeding couple, a sweep gear for advancing the independent feeding couple, a projection on the sweep gear, a cam-arm in the path of the projection on the sweep gear to be engaged and rocked by the projection, a pawl-carrier driven by the cam-arm, a pawl on the carrier, a ratchet fast to the platen and driven by the pawl, the cam-arm having a surface to be engaged by the projection on the sweep gear to rock the cam-arm a sufficient distance to advance the platen approximately a line-space, and a surface concentric with the sweep gear to permit the cam-arm to remain idle during further advance of the sweep gear, and a stop to rock the pawl out of engagement with the ratchet when the platen has been advanced a line-space.

23. In a typewriting machine, the combination with a platen and co-operating feed-rolls, of an independent feeding couple, a sweep gear for advancing the independent feeding couple, a projection on the sweep gear, a cam-arm in the path of the projection on the sweep gear to be engaged and rocked by the projection, a pawl-carrier driven by the cam-arm, a pawl on the carrier, a ratchet fast to the platen and driven by the pawl, the cam-arm having a surface to be engaged by the projection on the sweep gear to rock the cam-arm a sufficient distance to advance the platen approximately a line-space, and a surface concentric with the sweep gear to permit the cam-arm to remain idle during further advance of the sweep gear, a stop to rock the pawl out of engagement with the ratchet when the platen has been advanced a line-space, and a detent to regulate the exact extent of the line-space steps of the platen.

24. In a typewriting machine, the combination of a platen, including means to feed a subordinate web therewith, independent means for feeding a main web around the platen, manual means to continuously actuate the main web-feed a work-form dimension, and means cooperative with the continuous actuation of the main web to actuate and arrest the platen-fed web for a line-space dimension.

25. In a typewriting machine, the combination of a platen for typing upon a platen-fed subordinate work-web, a pair of feed-rolls mounted independently of the platen to feed a main work-web around the platen independently thereof, and means to sweep the main work-web by means of said feed-rolls and concomitantly advance the subordinate web a line-space dimension by means of the platen.

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