

April 19, 1938.

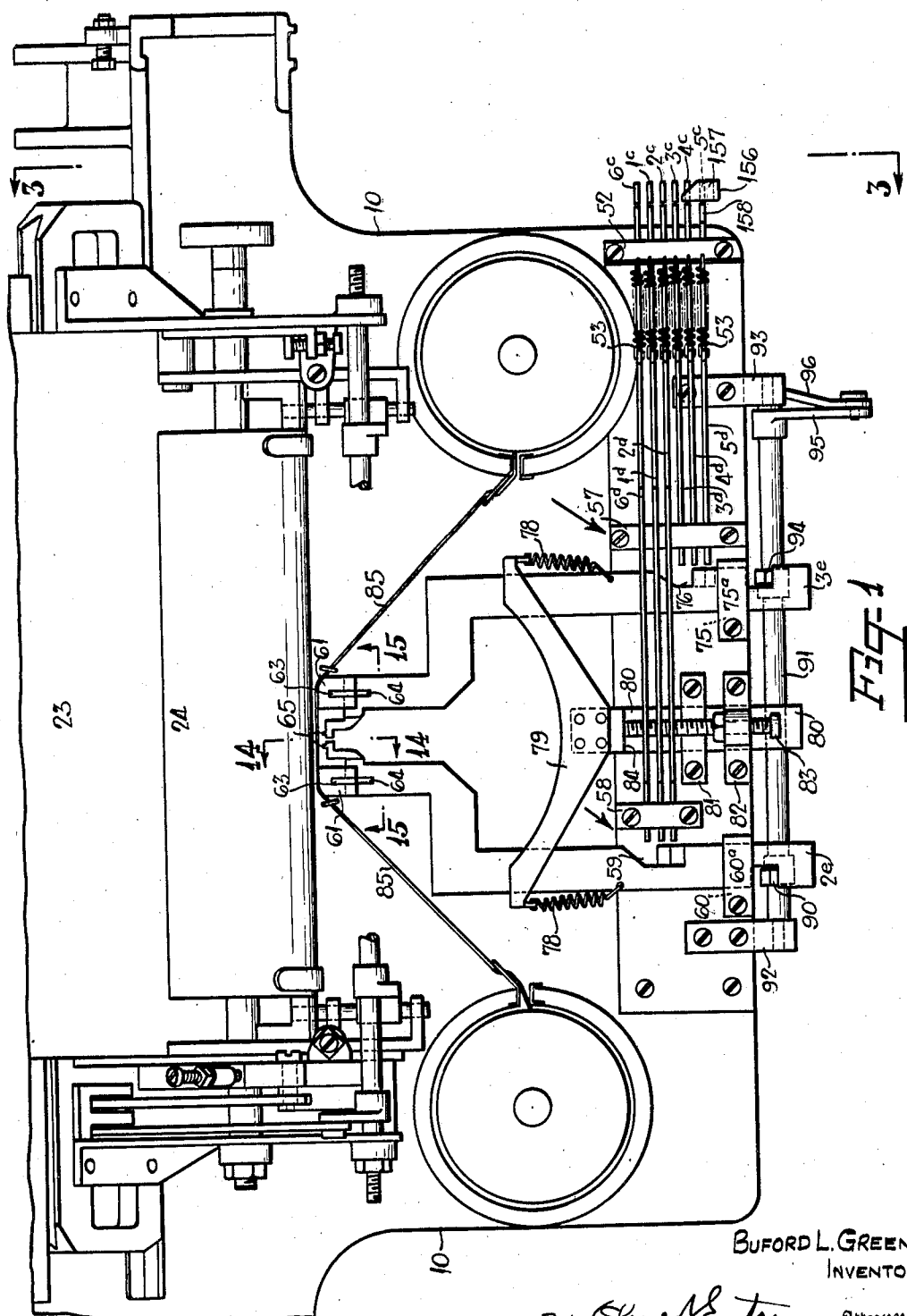
B. L. GREEN

2,114,295

CODE PRINTING APPARATUS

Filed May 29, 1935

7 Sheets-Sheet 1



April 19, 1938.

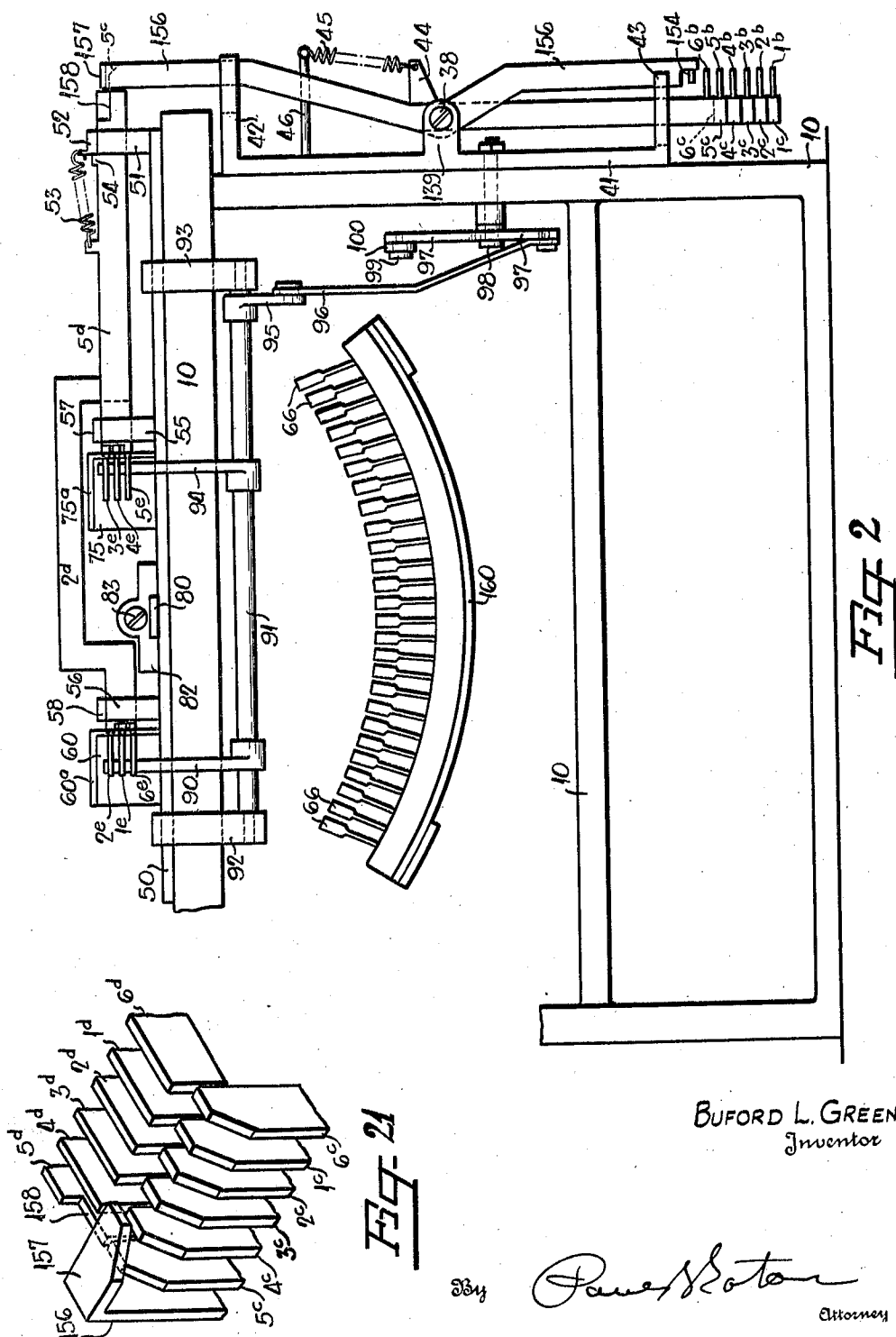
B. L. GREEN

2,114,295

CODE PRINTING APPARATUS

Filed May 29, 1935

7 Sheets-Sheet 2



April 19, 1938.

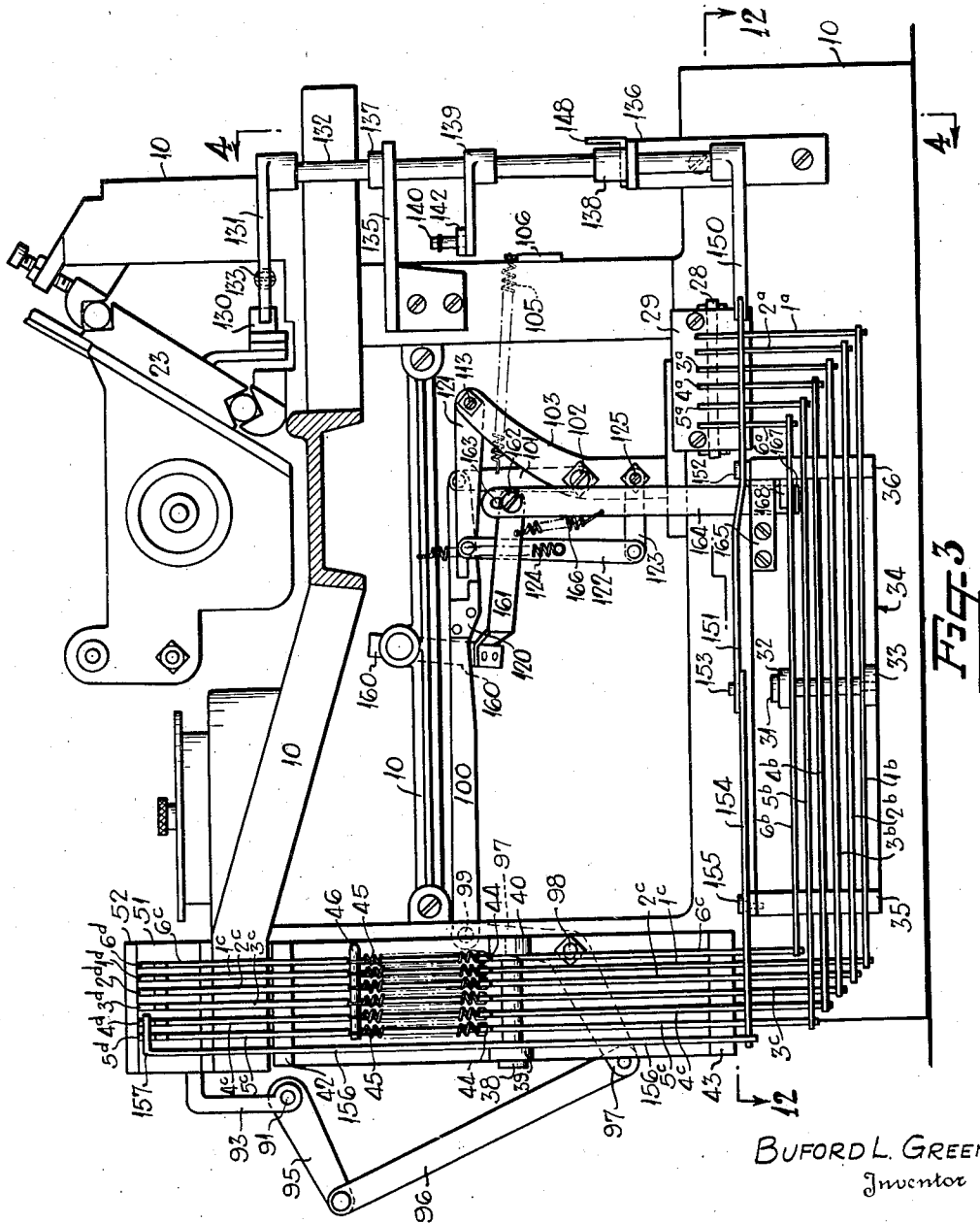
B. L. GREEN

2,114,295

CODE PRINTING APPARATUS

Filed May 29, 1935

7 Sheets-Sheet 3



April 19, 1938.

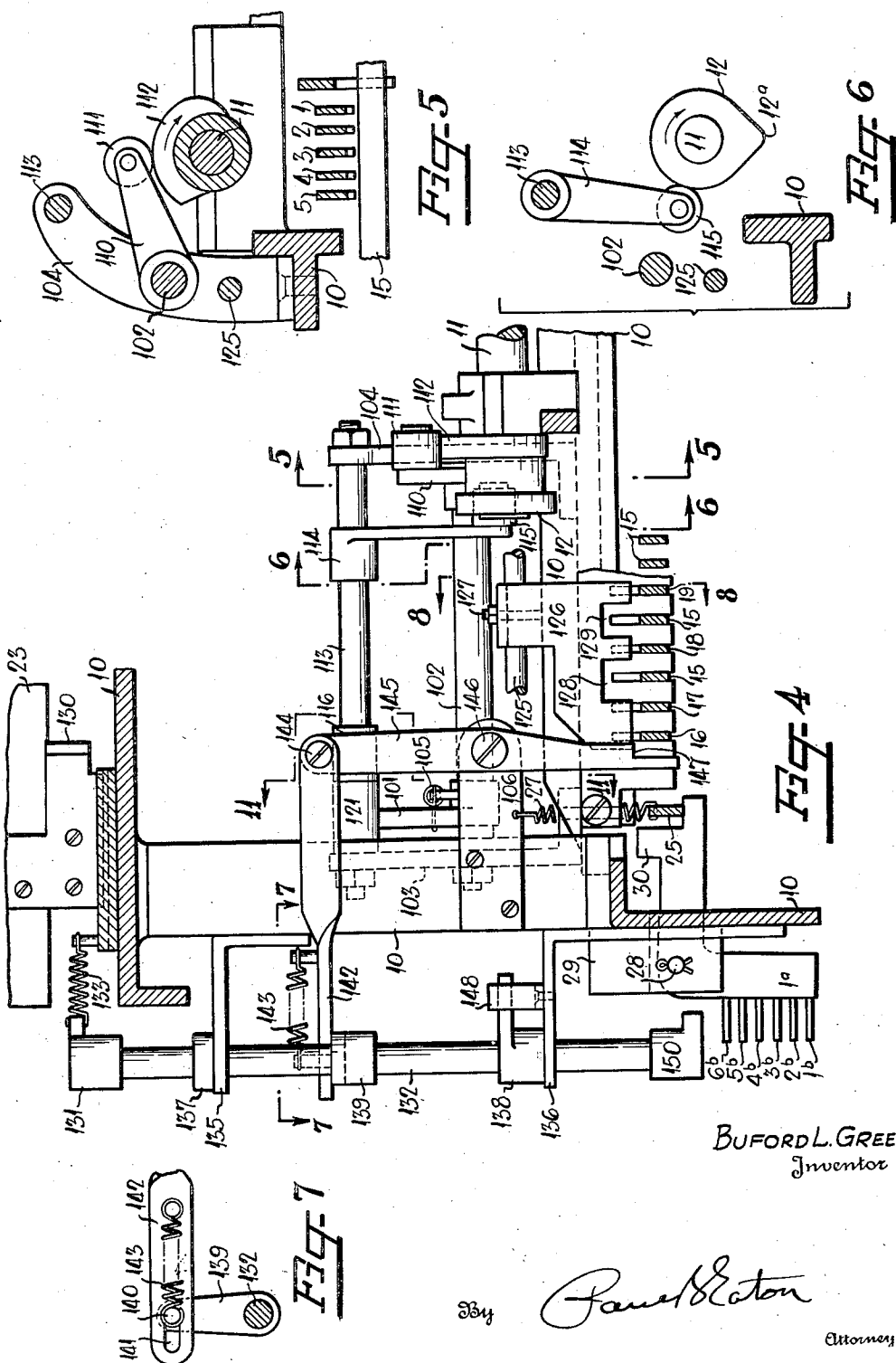
B. L. GREEN

2,114,295

CODE PRINTING APPARATUS

Filed May 29, 1935

7 Sheets-Sheet 4



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2,114,295

CODE PRINTING APPARATUS

Filed May 29, 1935

7 Sheets-Sheet 5

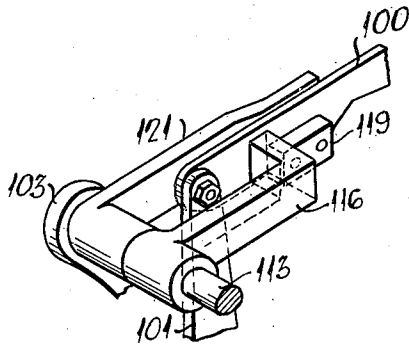


Fig. 10

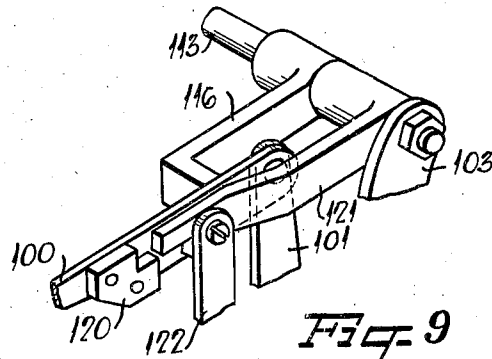


Fig. 9

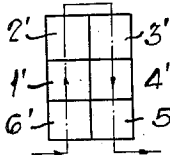


Fig. 23

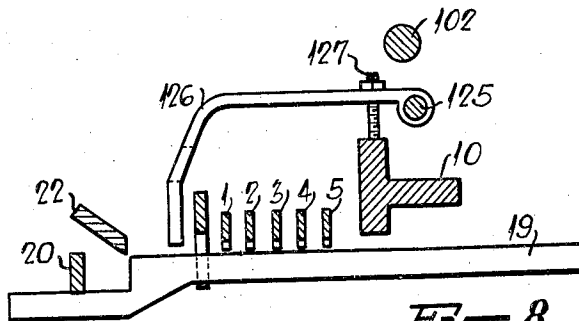


Fig. 8

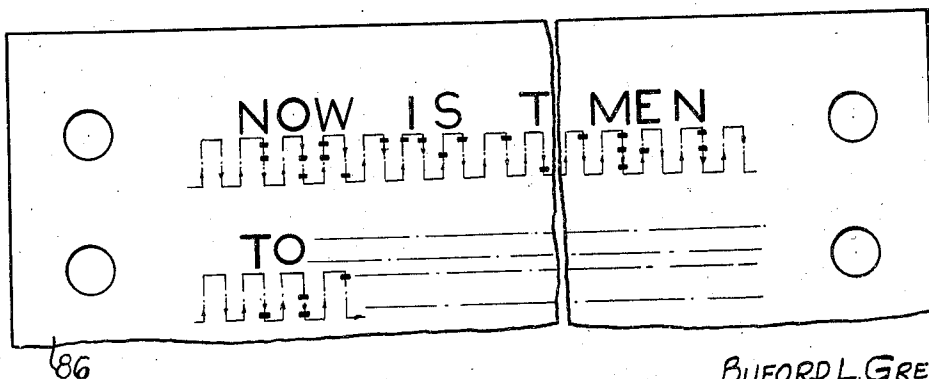


Fig. 22

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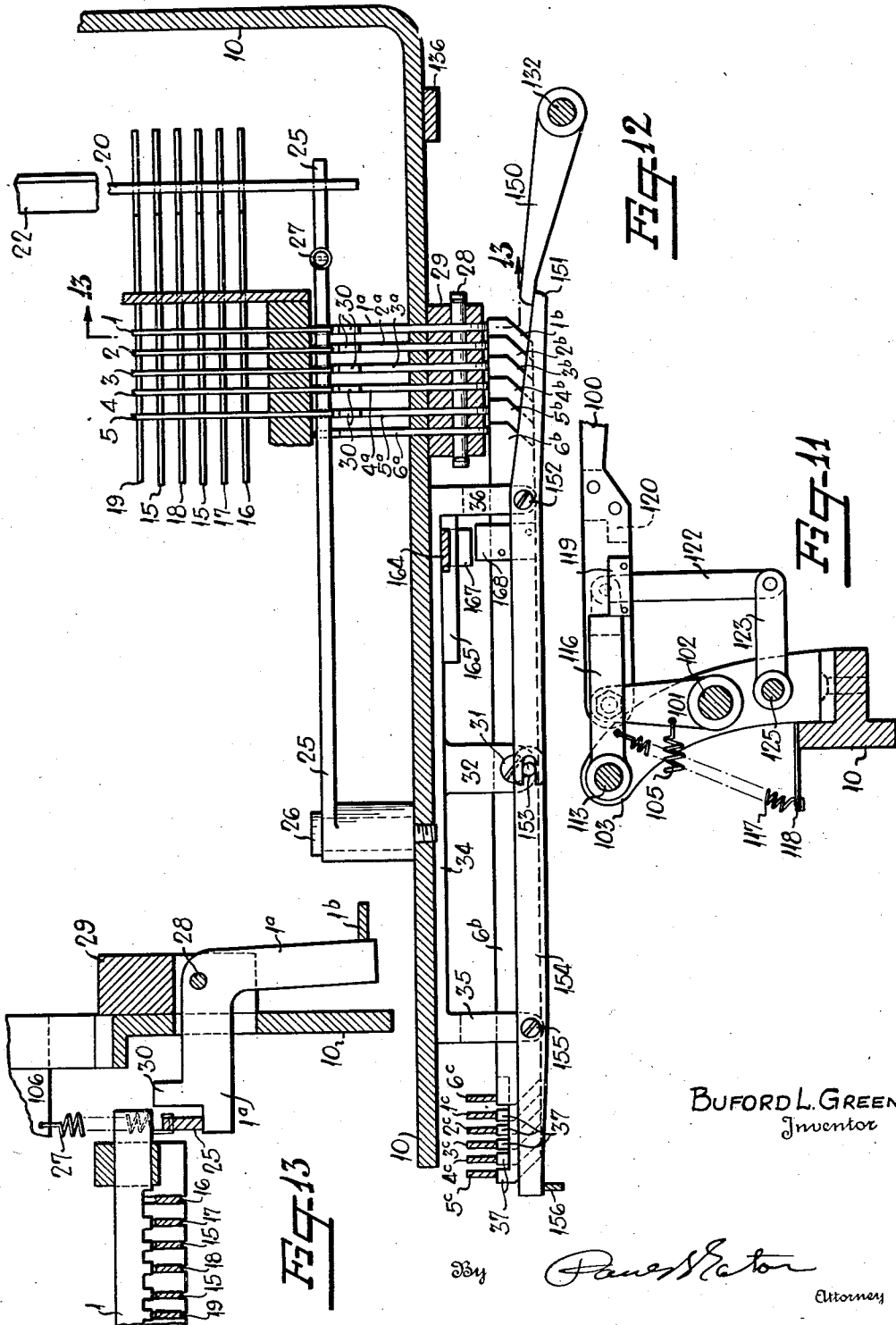
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2,114,295

CODE PRINTING APPARATUS

Filed May 29, 1935

7 Sheets-Sheet 6



April 19, 1938.

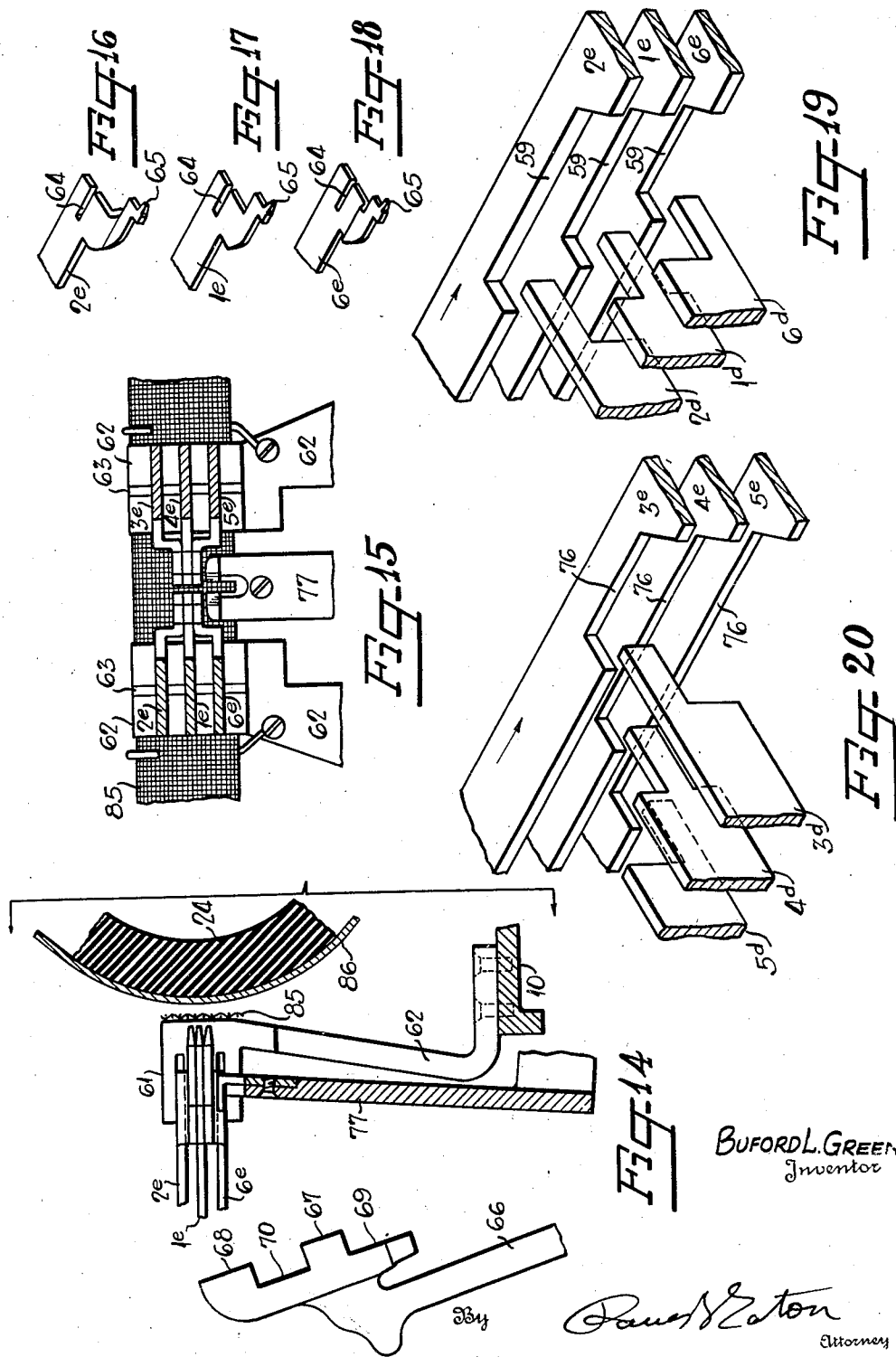
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2,114,295

CODE PRINTING APPARATUS

Filed May 29, 1935

7 Sheets-Sheet 7



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UNITED STATES PATENT OFFICE

2,114,295

CODE PRINTING APPARATUS

Buford L. Green, Charlotte, N. C.

Application May 29, 1935, Serial No. 24,064

22 Claims. (Cl. 178—25)

This invention relates to a telegraph printer and more especially to a certain improvement on the type of printer shown in the patent to Morton, 1,791,740 of Feb. 10, 1931, and is adapted to be operated and controlled by the transmitter shown in my copending application, Serial No. 1,148 filed January 10, 1935.

It is an object of this invention to provide a telegraph printer adapted to be operated to print a character comprising a set of from one to five impulses, with a fixed impulse for actuating the shift mechanism of the printer and at the same time printing on the control sheet reproduced by the printer, a shift impulse control character. The mechanism herein shown and described can likewise be operated by the conventional perforated tape transmitter sending up to five impulses for each character and in the event of the use of a tape transmitter for controlling the herein described apparatus the separate shift impulse transmitted by the tape transmitter of course operates the shift mechanism and causes the herein shown and disclosed mechanism to print the shift code character on the control sheet upon operation of the shift mechanism of the printer.

It is another object of this invention to provide a telegraph printer adapted to be controlled by a set of electrical impulses for reproducing a printed sheet preferably to be used for the controlling of other transmitting machines or which may be placed in a line-casting machine, type-setting machine and the like as disclosed in my co-pending applications, Serial No. 404,331, filed Nov. 2, 1929, and Serial No. 517,171, filed Feb. 20, 1931, and Serial No. 688,753, filed Sept. 9, 1934.

It is a further object of this invention to provide a telegraphic printer having type bars for printing legible characters and having means operable upon actuation of a type bar for printing a code character in association with the legible character written by the type bar, but printing the code character by means entirely remote from the type bar.

It is still a further object of this invention to provide a telegraph printer having a plurality of type bars adapted to be actuated by means controlled by sets of impulses transmitted to the printer for printing on a suitable sheet the legible characters appearing on the type bars and having a plurality of means controlled by the selection of a type bar for actuation, and adapted to automatically print a pre-determined number of cell controls on the sheet in association with the legible characters printed.

There are many advantages of the therein dis-

closed and described apparatus over and above the apparatus shown and described in my copending applications, 426,854, filed Feb. 7, 1930; and 546,380, filed June 23, 1931; and 712,065, filed Feb. 19, 1934. In the three mentioned co-pending patent applications, the type bars for printing the legible characters had one or more raised projections thereon for printing simultaneously with the printing of the legible character one or more cell controls for controlling a character reproducing machine, such as telegraphic printer, type-setting machines and the like. By having the cell control printing projections disposed on the type bars printing the legible characters, it often happens that the type bars in the typewriter get out of alinement and this causes the cell controls to be printed on the control sheets slightly out of alinement. On account of the fact that the photo-electric cell scanning mechanism in the character reproducing machines set forth in the above mentioned applications, travels along a predetermined path, it sometimes occurs that the cell controls will not be in direct alinement with the scanning means, resulting in a mis-selection in the character reproducing machine. By providing separate code printing means to print one or more cell control shaded portions on the control sheet while the type bar prints the legible character, perfect alinement of the code character is obtained. The fact that the legible character is not in alinement makes no difference in the selection made by the control sheet placed in a character reproducing machine because as previously pointed out in said co-pending patent applications, the legible character plays no part in the control of the character reproducing machine but merely acts as a guide in proof reading the control sheet and for editing purposes.

Perfect alinement of the cell controls on the code sheet reproduced by the herein disclosed printer is obtained on account of the cell control printing members having a very short stroke and being disposed in close proximity to the control sheet at all times, whereas, the swinging type bar in the conventional typewriter or telegraphic printer has a long stroke with a pivot point removed several inches from the point of contact with the control sheet. This may permit variation in the point on the control sheet at which the cell controls are printed, whereas, in the present instance the cell controls are placed at the exact position desired and therefore the scanning mechanism in the character reproducing machine which scans the control sheet produced by the

herein disclosed printer is in perfect alinement with the cell controls and therefore perfect results are obtained by the character reproducing machine.

- 5 A still further object of the invention is to provide a telegraphic printer, typewriter and the like, having means for printing legible characters and having other means for printing cell controls and also provided with means for automatically
10 printing a shift character upon actuation of the shift mechanism of the printer.

- A still further object of the invention is to provide in a typewriter, means for preventing the printing of any character in the first letter space
15 of a line when the carriage is returned to starting position.

- It is a further object of this invention to provide in a typewriter a plurality of push bars operated by a striking ball and providing means
20 controlled by certain of said push bars when actuated for a non-character printing operation to prevent the printing of any cell controls on the control sheet during the actuation of said special bars for a non-character printing operation.

- 25 Some of the objects of the invention having been stated, other objects will appear as the description proceeds, when taken in connection with the accompanying drawings, in which:—

- Figure 1 is a top plan view of the front portion
30 of a telegraphic printer showing a portion of my invention applied thereto;

Figure 2 is a front elevation of a portion of a telegraphic printer and showing portions of my invention applied thereto;

- 35 Figure 3 is a side elevation partly in section and taken along the line 3—3 in Figure 1;

Figure 4 is a rear elevation partly in section and taken along the line 4—4 in Figure 3;

- Figure 5 is a vertical sectional view taken along
40 the line 5—5 in Figure 4;

Figure 6 is a vertical sectional view taken along the line 6—6 in Figure 4;

Figure 7 is a sectional plan view taken along the line 7—7 in Figure 4;

- 45 Figure 8 is a vertical sectional view taken along the line 8—8 in Figure 4;

Figure 9 is an isometric view of the means for preventing a code printing operation and showing the mechanism appearing in the central portion
50 of Figure 3;

Figure 10 is an isometric view which is the reverse of Figure 9;

Figure 11 is a vertical sectional view taken along the line 11—11 in Figure 4;

- 55 Figure 12 is a sectional plan view taken along the line 12—12 in Figure 3;

Figure 13 is a vertical sectional view taken along the line 13—13 in Figure 12;

- Figure 14 is a vertical sectional view taken along
60 the line 14—14 in Figure 1;

Figure 15 is a vertical sectional view taken along the line 15—15 in Figure 1;

Figure 16 is an isometric view of the printing end of the upper left code printing member "2e"
65 shown in Figures 1, 14 and 15;

Figure 17 is an isometric view of the middle code printing member "1e" as shown in Figures 14 and 15;

- Figure 18 is an isometric view of the end of
70 the lower code printing member "6e" as shown in Figures 14 and 15;

Figure 19 is an isometric view of the junction point of the horizontal links and the left-hand code printing members and looking in the direction of the arrow in Figure 1;

Figure 20 is an isometric view of the junction point of the horizontal links and the right-hand code printing members as shown in Figure 1, and looking in the direction of the arrow in Figure 1;

Figure 21 is an isometric view of the junction
80 point of the vertical levers and the horizontal links leading to the code printing members for controlling actuation of the same and showing the mechanism appearing in the right lower corner of Figure 1 and the upper left corner of Figure 3;

Figure 22 is a view of a control sheet produced by the herein disclosed printer being on a very much enlarged scale;

Figure 23 is an enlarged schematic view of a 15 control area on a control sheet used for controlling a printer.

Referring more specifically to the drawings, the numeral 10 indicates portions of a telegraphic printer frame as is disclosed in the above referred
20 to patent to Morton. This telegraphic printer has a drive shaft 11 driven by any suitable means such as disclosed in said above referred to patent, and has the conventional cam 12 on the end thereof which, in said patent, is connected to suitable
25 levers, not shown, for locking the permutation bars against moving when the push bars for actuating the type bars are allowed to move against the lower side of the permutation bars. The said Morton structure also has permutation bars
30 which are indicated in this application by reference characters 1, 2, 3, 4 and 5. The Morton structure also has a plurality of push bars 15 for actuation of the type bars and additional push bars 16, 17, 18 and 19 for carrying out certain non-
35 printing operations as will be hereinafter described, said non-printing push bars, all being conventional, in the Morton patent. The reset ball 20 is adapted to normally hold the push bars away from the permutation bars. After a pre-
40 determined number of the permutation bars have been actuated, the releasing ball 20 is moved upwardly to allow one of the push bars to move into a set of coinciding notches in the bottom of the permutation or selecting bars, said release
45 ball being actuated by conventional means shown in said Morton patent. Each of the push bars 15, to 19 inclusive, is provided with a spring as indicated by reference character 21 in Figure 1 of said Morton patent, for normally moving the push
50 bars upwardly into contact with the permutation bars and the reset ball 20 normally holds the push bars against the tension of their associated spring and prevents engagement with the permutation bars. The push bars are actuated when
55 one of them moves into a set of notches in the permutation bars by means of conventional striking ball 22 which is also indicated by reference character 26 in said Morton patent.

The said telegraphic printer is also equipped
60 with a suitable carriage mechanism 23 having a suitable platen 24 therein which is equipped at each end thereof with perforating mechanisms for perforating the marginal portions of the control sheet as it is printed. This perforating
65 mechanism is shown and described in detail in my co-pending application, Serial No. 712,065, and a description of the same is not deemed necessary in the present application. The permutation bars 1 to 5 inclusive are moved selectively in the conventional manner to the right in Figure 13 and towards the observer in Figure 12, by conventional impulse controlled means, not shown, but being substantially the same as set forth in the said patent to Morton. Or they may be con- 75

trolled by impulses coming from a tape transmitter or from a transmitter shown in my co-pending application Serial No. 1,148, filed Jan. 10, 1935.

5 When a set of impulses for a selection of a printed character has been transmitted to move certain of the permutation bars 1, 2, 3, 4 and 5, the next step is the swinging of a lever 25 on its pivot 26 (Fig. 12). This lever is normally pulled
10 upwardly against the lower edge of release ball 20 by means of tension spring 27, and when the selection has been made and the reset ball 20 is allowed to move upwardly by the conventional mechanism, the lever 25 of course swings on its
15 pivot to cause the free end thereof to follow the upward movement of release ball 20. This causes lever 25 to move away from one end of the bell crank levers 1a to 5a inclusive pivoted as at 28 in a comb 29 disposed on the exterior of frame 10.
20 The bell cranks 1a to 5a each have a projection 30 thereon which is adapted to engage the lower edge of a permutation bar when the bar is moved by an impulse. The permutation bars 1 to 5 which have been moved will prevent the corresponding bell cranks 1a to 5a from rotation.
25 The outer legs of the bell cranks 1a to 5a inclusive, project downwardly and are adapted to be engaged respectively by the rear end of levers 1b to 5b inclusive. Bell crank 6a is not controlled by the permutation bars 1 to 5, but is controlled by the basket shift mechanism to be hereinafter described.

The levers 1b to 5b inclusive are pivoted as at 31 between outstanding projections 32 and 33
35 projecting from a plate 34 secured to the frame of the typewriter. Projecting from the end portions of plate 24 are combs 35 and 36 in which the levers 1b to 5b inclusive are mounted for sliding movement. The forward ends of levers 1b to 5b inclusive, except 5b, have each a tongue
40 37 thereon and are adapted to engage the lower ends of upstanding levers 1c to 5c respectively. These levers 1c to 5c inclusive, are pivoted as at 38 between projections 39 and 40 projecting outwardly from a plate 41 secured to the printer frame. The plate 41 has projecting from the
45 upper and lower ends thereof combs 42 and 43 in which levers 1c to 5c inclusive are slidably mounted. These levers 1c to 5c inclusive are normally pressed in a counter clockwise direction in Figure 2 by means of each of said levers having a lug 44 thereon having secured thereto a tension spring 45, the other end of which is connected to a pin 46 secured in the typewriter
50 frame.

The other end of levers 1c to 5c inclusive, are normally held in engagement with levers 1b to 5b inclusive, by means of springs 45. The tension springs 45 also hold the upper ends of levers 1c to 5c inclusive, in close proximity to the ends
60 of code printer locking bars 1d to 5d inclusive, thus holding the upper ends of the bars 1c to 5c inclusive, slightly removed from the printer locking bars 1d to 5d inclusive and providing a
65 small operating clearance between said bars.

Secured on the upper side of the top of typewriter frame 10 is a bracket 50 which has projecting upwardly from the right-hand end thereof a comb 51 in which all of the printer locking bars 1d to 5d inclusive, are slidably mounted, and are loosely confined in said comb by means of a cap
70 plate 52 to which a tension spring 53, for each of the printer locking bars, is secured. The other ends of said tension springs are secured to the
75 code printer locking bars to normally force the

code printer locking bars to unlocking position. Each of these bars has a projection 54 thereon adapted to engage the cap plate 52 to limit the right-hand movement of said bars, the printer locking bars being shown in unlocking position 5 in Figures 2, 19 and 20.

Centrally disposed and upwardly projecting from bracket 50 is a comb 55 in which are slidably mounted the left-hand ends of printer locking bars 3d, 4d and 5d. The printer locking bars 1d, 2d and 6d bow upwardly in order to pass over comb 55 and the right-hand code printer bars 3e, 4e and 5e then extend downwardly and are slidably mounted in a comb 56 projecting upwardly from the left-hand end of bracket 50 as
15 seen in Figure 2. Combs 55 and 56 have suitable cap plates 57 and 58 respectively for loosely confining the printer locking bars in position in said combs.

Bracket 50 has mounted on the upper side 20 thereof a comb 60 in which are slidably mounted the code printer bars 2e, 1e and 6e, reading from top to bottom. Comb 60 has an L-shaped member 60a secured thereto to loosely confine the code printing bars 2e, 1e and 6e respectively, in position therein.
25

Each of the code printer bars has a notch 61 in the right-hand side thereof as seen in Figure 1, of different lengths to receive the locking bars 2d, 1d and 6d respectively, when these are moved
30 to lock the code bars against a printing operation.

The ends of the code printing bars disposed next to the platen 24 are guided in a suitable comb 61 disposed on the upper end of a bracket 62 secured to the frame of the typewriter. This
35 comb has a plurality of parallel horizontally disposed slots for receiving the forward end of the code printing bars and it also has a vertically disposed rib 63 for guiding the code printing bars in their movement which is adapted to fit into slot 64 in the ends of code printing bars 2e, 1e and 6e. Each of these code printing bars 2e, 1e and 6e have laterally disposed projections
40 thereon having a pointed portion 65 for printing a dot or cell control on the control sheet immediately below the printed legible character which is printed by the conventional type bar. This type bar is shown in Figure 14 and indicated by reference character 66. It will be noted that this type bar has projections 67 and 68 on which
45 the shift and unshift characters, respectively, appear and the face of the type bar is cut away as at 69 and 70, to prevent the type face from striking the front side of the projection 65 in a combined code printing and character printing
50 operation.

Bracket 50 has projecting upwardly therefrom a comb 75 in which the code printing bars 3e, 4e and 5e are slidably mounted. These bars, likewise, have notches 76 of varying lengths therein for the reception of the left-hand end of bars 3d, 4d, and 5d (Figs. 1 and 2), to lock the code printing bars 3e, 4e and 5e against a printing operation. Comb 75 has secured thereto a plate 75a to loosely confine the code printing bars 3e, 4e and 5e in position. The other ends of the code printing bars are in close proximity to the platen of the typewriter and are confined in a comb identical to the comb 61 previously described, except it is opposite hand. The ends of
60 the code printing bars 3e, 4e and 5e have lateral projections thereon with printing projections associated therewith which are identical to the structure shown in Figures 16, 17 and 18, except the structure is opposite hand. These printing
65 bars

bars also have slots therein for the reception of a vertically disposed rib identical to the rib 63 previously described for the other side of the code printing mechanism. Like reference characters apply to the comb and the structure of the ends of the printing bars for the right-hand side of the apparatus as previously described for the left-hand side.

Rising upwardly between the two combs which guide the ends of the code printing bars next to the platen is the conventional type bar guide 77. Each of the code printing bars 1e to 6e, inclusive, have secured thereto one end of a tension spring 78, whose other end is secured to the bracket 79 whose intermediate portion is secured to slide 80 slidably mounted on bracket 50 by means of blocks 81 and 82. Block 82 has a projection on the top thereof in which is threadably mounted a set screw 83 whose rearward end engages a portion 84 on slide 80 whereby the position of bracket 79 can be adjusted to regulate the tension applied to the code printing bars by means of the springs 78 thereby regulating the intensity of the printing operation of these code printing bars.

The type bars and code printing bars print by means of first engaging a conventional ribbon 85 which is broad enough to be disposed between both the code printing bars and the type printing bars on the one side and sheet 86 on the other side which is held by the platen.

Each of the code printing bars 2e, 1e and 6e has coinciding notches therein in which a lever 90 is adapted to project, said lever 90 being fixed on a shaft 91 mounted in bearings 92 and 93 secured to the bracket 50. Each of the code printing bars 3e, 4e and 5e also have coinciding notches therein adapted to receive lever 94 also fixedly secured on shaft 91, the purpose of said notches and levers being to normally hold the code printing bars in a non-printing operation against the tension of their impelling spring 78.

The shaft 91 has fixedly secured thereon a lever 95 which has pivotally secured in the free end thereof a link 96 which projects downwardly and inwardly and is pivotally secured at its other end to one end of a bell crank lever 97 which is pivoted as at 98. To the upper end of lever 97 is pivotally secured as at 99, one end of link 100 which projects backwardly through the printer and has its rear end pivotally secured to the upper end of a lever 101 which is fixedly secured to a shaft 102 mounted for oscillation between brackets 103 and 104 and normally moved towards the rear of the typewriter by means of a tension spring 105 whose other end is secured to a suitable spring perch 106 secured to the typewriter frame.

Brackets 103 and 104 are secured at their lower ends to a cross member of the typewriter frame. Shaft 102 has fixed thereon near bracket 104 a lever 110 (Figs. 4 and 5), which has a roller on the free end thereof adapted to follow a cam 112 fixed on shaft 11. Cam 112 has a high side and a low side and roller 111 is caused to follow this cam by means of the tension spring 105. Mounted for oscillation between the upper ends of brackets 103 and 104 is a shaft 113 which has fixed thereon a lever 114 having a roller 115 which is adapted to follow cam 12 fixed on shaft 11 and which has been previously described (Figs. 4 and 6).

Shaft 113 has fixed thereon an arm 116 to which is secured one end of a tension spring 117 whose other end is secured as at 118 (Figs. 9, 10 and 11). This spring causes roller 115 to follow cam 12 at all times. Cam 12 has a high point 12a, the purpose of which will be presently described.

Link 100 has a projection 119 fixed thereto and arm 116 has an intumed end adapted to engage projection 119 and block the movement of link 100 when it is disposed in the rear of projection 119 as shown in Figure 10, as link 100 is normally pulled towards the rear of the typewriter by tension spring 105.

While roller 111 is on the high side of cam 112, the arm 100 is held in its forward position, shown in Figure 10, to relieve pressure of block 119 on the intumed end of arm 116. In the meantime, cam 112 is holding the link 100 in forward position through lever 101 to hold the code printing bars out of operation. After the high portion of cam 112 rides from beneath the roller 111 the link 100 is pulled rearwardly by spring 105 to cause projection 119 to engage the intumed portion of lever 116. Then the high point 12a of cam 12 engages roller 115 and shaft 113 is oscillated and arm 116 is moved upwardly at its free end so that its intumed portion is removed from the path of block 119 which allows the link 100 to move backwardly very quickly under the tension of spring 105 and this moves the upper ends of levers 90 and 94 rearwardly of the machine and withdraws them from engagement with the code printing bars 1e to 6e, and the spring 78 of the code printing bars moves the selected code printing bars quickly rearwardly of the typewriter into engagement with the ribbon 85 to print the code of the code printing bars which are selected for operation.

It is seen that when roller 111 is no longer supported by the high side of cam 112 that the tension spring 105 exerts rearward pressure on link 11 and causes block 119 to press against the intumed end of arm 116, so that when the high point 12a of cam 12 passes roller 115 to move the free end of arm 116 upwardly out of the path of block 119, then the tension spring 105 quickly moves the link 100 towards the rear of the machine and releases the code printing bars which have been selectively released for a printing operation. This causes a quick movement of the code printing bars to print the code on the sheet in the carriage mechanism.

On the opposite side of link 100 from where block 119 is positioned, there is secured another block 120 (Figs. 3 and 9), which has a notch in the upper rear surface thereof which is adapted to engage at times the forward end of a lever 121 loosely mounted on shaft 113 in close proximity to lever 116.

It is to be observed that there is some clearance between the upper portion of block 120 and the free end of lever 121 so that in the normal operation of the machine, for the common code printing mechanism, which has just been described, there will be no engagement between lever 121 and block 120. This will allow the code printing bars to be operated and will not in any way interfere with such code printing operation. However, there are certain functional operations of the machine which are carried out from time to time, and at which time there is no code printing operation carried out. In such events, it is desired to block movement of the code printing bars for such functional operation.

Therefore, it is seen that there is pivotally secured near the free end of lever 121 a link 122 (Figs. 3, 9 and 11), which projects downwardly and is pivotally secured to a lever 123 secured on a shaft 125 mounted for oscillation between the brackets 103 and 104. The link 122 is normally moved upwardly to hold the lever 121 in the position shown in Figures 3 and 9 by means of ten-

sion spring 124 having one end thereof secured to the said link and its other end to a portion of the frame of the typewriter.

Shaft 123 has fixedly secured thereon a rearwardly and downwardly projecting lever 126 (Figs. 4 and 8), having a broadened end portion. The downward movement of this lever 126 is limited by means of set screw 127 adjustably secured therein and whose lower end engages a portion of the typewriter frame 10. The rear end of member 126 has a pair of notches 128 and 129 cut therein so that this member 126 will not in any way interfere with the conventional push bars 15 of the typewriter, the conventional push bars 15 being connected to a type bar for a printing operation.

However, there are certain functional push bars in the machine which do not operate a type bar but which operate certain mechanisms of the machine such as the carriage return bar 16, line feed mechanism bar 17, blot out or unshift mechanism bar 18 and bar 19 for operating the shift mechanism. When these special bars are operated, of course, no printing operation is carried out, therefore, in order to prevent, by any possible chance, a printing operation from being carried out, the release means for the code printing bars are automatically locked against movement when these special push bars are selected for operation.

When the permutation bars 1 to 5 inclusive, are selectively moved to select one of the special push bars 16 to 19 inclusive, so that this push bar is allowed to be pressed upwardly into a set of coinciding notches in the permutation bars 1 to 5 inclusive, then it is seen that as one of these special push bars is moved upwardly it will engage the rear end of lever 126 and will slightly oscillate shaft 125 which will move link 122 downwardly and cause the free end of arm 121 to move further downwardly than is shown in Figure 9 and will block the printing control link 100 because the free end of arm 121 will be moved low enough to be in the path of the lower portion of block 120 secured on link 100.

Special or functional push bar 16, when selected, not only oscillates shaft 125 and blocks link 100 against operation, but also operates the conventional carriage return mechanism.

Now, it is evident, by referring to some of my above referred to co-pending applications, that the control sheet produced by certain of my typewriter mechanisms, as well as that produced by this mechanism, has the first space in a line left blank so that an extra spacing code character can be placed in this first space. Let us suppose that this mechanism is being actuated and controlled by such a control sheet having the first space in the line void of any shaded cell control. Then of course, it is seen from the above referred to co-pending patent applications, that the scanning of six blank cell controls automatically returns the carriage to starting position. Now, in the present instance, if this occurred upon scanning the blank space at the beginning of the line, it is evident that the mechanism would not be operable because upon the scanning of the first space, the carriage return mechanism would be operated thus getting nowhere, because it would never reach the second space in the line for actual scanning of the characters. It is necessary to prevent, in the present instance, the operation of the carriage return mechanism if all of the spaces of the first letter space of a line on the control sheet controlling this machine, are

blank, therefore, it is seen that the conventional carriage mechanism has the projection 130 thereon (Figs. 3 and 4), which, upon the carriage being fully returned to starting position, engages the free end of levers 131 fixed on the end of vertically disposed shaft 132 and normally held in the position shown in Figure 4 by means of a tension spring 133.

Shaft 132 is mounted for oscillation in brackets 135 and 136 secured to the frame of the typewriter and is held in position for rotation by means of collar 137 disposed above bracket 135 and secured to the shaft and the hub of an arm 138 secured to the shaft immediately above bracket 136.

Secured on shaft 132 is a lever 139 which has a pin 140 in the free end thereof penetrating a slot 141 in link 142. A tension spring 143 is connected to the end of said pin and its other end to the link 142 to provide a resilient connection between pin 140 and link 142. The link 142 projects into the machine and is pivotally connected as at 144 to the upper end of a lever 145 pivoted as at 146 and having a shoulder 147 near its lower end which is adapted to block upward movement of the carriage return bar 16, when it is selected by the scanning of six blank cell controls in the first letter space of a line, therefore, this prevents the push bar 16 from moving member 126 and oscillating shaft 125 and also prevents unlocking of link 100 to release the code bar printing mechanism. The carriage return mechanism not being operated, the carriage is allowed to advance one space ready for the writing of the first character appearing in the line. Movement of shaft 132 under the tension of spring 133, except what is necessary to cause it to move to normal position to where it will engage the projection 130 as the carriage is being returned to normal position, is prevented by means of the arm 138 engaging a stop bracket 148 secured on bracket 136.

On the lower end of shaft 132 is secured a lever 150 which normally rests against the rear end of lever 151 pivoted as at 153 in the rear end of lever 154 (Figs. 3 and 12). Lever 154 is pivoted as at 155 and normally rests against the inner edge of a lever 156 which is pivoted as at 38 (Figs. 2 and 3), and whose upper end is turned rearwardly of the machine as at 157 and is adapted to engage the right-hand end of locking bar 4d (Fig. 1). It is to be noted at this point that locking bar 5d is cut away as at 158 to prevent portion 157 from engaging locking bar 5d.

When the carriage is returned to starting position it is seen that lever 150 will oscillate lever 151 in a clockwise direction in Figure 12, which will oscillate lever 154 in a counter clockwise direction in Figure 12 which will move the lower end of lever 156 away from the machine and move the upper end, of course, inwardly towards the machine which will move code locking bar 4d into engagement with the code printing bar 4e and lock this code printing bar 4e against a printing operation.

This code printing bar 4e prints a cell control which signifies a carriage return operation and therefore this mechanism prevents the printing of a carriage return operation on the control sheet 86 produced by the herein disclosed apparatus, when the carriage is standing at fully returned position.

Connected to the basket 160 of the typewriter or printer mechanism is an arm 161 which projects rearwardly and outwardly from the machine

and has a shoulder screw 162 secured therein which penetrates a slot 163 in the upper end of a link 164 mounted for sliding movement between the bracket 34 and a plate 165 secured to said bracket 34. A tension spring 166 is secured at its ends to arm 161 and link 164 to provide a resilient connection between said parts so that if for any reason the basket should be raised while movement of link 164 should be prevented no breakage or damage of parts would result. This resilient connection might be necessary because on the lower end of link 164 there is an out-turned projection 167 which is normally in a position so that it will not block movement of the lever 6b. When a shift of the basket mechanism of the machine takes place, then of course, link 164 will be moved upwardly to cause the projection 167 thereon to be in the path of a projection 168 secured on lever 6b (Figs. 3 and 12). This prevents the rear end of lever 6b from following bell crank lever 6a and holds it in a position where it will hold the code locking bar in unlocking position. This will allow code printing bar 6b to be actuated to print cell control 6' on the control sheet as long as the basket of the machine is held in shift position.

Figure 22 shows a portion of a control sheet produced by the herein disclosed apparatus. The direction of scanning is indicated by an irregular line passing through the cell controls. It is seen in Figure 23 that beneath each space provided for a legible character there is a control area having six spaces indicated as 6', 1', 2', 3', 4' and 5'. It is, of course, clear that code printing bar 6e prints in the space 6', and code printing bar 1e prints in the space 1', and so on. Therefore, if code printing bars 6e and 4e are selected for a printing operation, for indicating a character, then of course, areas 6' and 4' for example, would have a printed dot therein indicating these two control areas as being shaded.

When a blot out is placed on the control sheet in the transmitter, of course, there would appear no printed matter on the control sheet 86 produced by the herein-disclosed apparatus, for the sending of a blot out.

In Figure 22 no extra space code character is shown in the first space, as this has been fully described in some of my copending applications, above referred to, but of course it is to be understood that this mechanism has a type bar for the printing of the extra space character in the first space of a line, if desired, after a line has been written, but of course, the transmitter in transmitting this line would transmit the extra spacing character in the first instance, because it would appear on the transmitting sheet but would be placed on the transmitting sheet after the line has been written and it was found that justification required the extra spacing characteristic, and at which time, of course, the extra spacing characteristic would be placed at the beginning of the transmitting sheet, but the sheet produced by the herein-disclosed printing apparatus, of course, would produce the extra spacing characteristics as the first operation in a line so that this sheet 86 could be used for the control of other transmitters or for the control of linecasting machines, type-setting machines and all other types of character reproducing machines as set forth in my previous co-pending patent applications 404,331; and 517,171.

Cell control area 6' is the cell control for the shift mechanism. In the present arrangement of the control sheet with the cell controls there-

on, this sixth cell control is placed so that it will be scanned first in the scanning of a control area for a character so that when the sheet is used in a transmitter or a type-setting machine, it will give the shift mechanism time for operation by the time the scanning operation of the entire control area has been completed.

In the drawings and specification there has been set forth a preferred embodiment of the invention, and although specific terms are employed, they are used in a generic and descriptive sense only, and not for purposes of limitation, the scope of the invention being set forth in the appended claims.

I claim:

1. A typewriter having type bars for writing legible characters and electrical impulse means for selecting said type bars for actuation and also a rotatable platen for holding a sheet upon which writing is performed by the type bars, means separated from the type bars and controlled by the electrical impulse means for printing cell control characters on the sheet at the same time the legible character is written by the type bar.

2. A typewriter having type bars, a platen for holding a sheet upon which writing is done by the type bars, means separated from the type bars for printing cell control characters in association with a character written by the type bars, means for shifting the typewriter for writing high case characters, and means independent of the type bars and operable by the shifting operation for printing a cell control on said sheet upon the shifting operation and before a type bar is actuated after the shifting operation.

3. A typewriter having type bars and means for actuating the type bars, a carriage mechanism and a platen mounted in the carriage mechanism for holding a sheet for receiving the writing done by the type bars, a plurality of other printing bars operable at the same time as a type bar, means controlled by the selection and actuation of a type bar for selecting for operation certain of the other printing bars, and means operable upon the actuation of a type bar for operating the selected other printing bars for printing control characters in association with the printed character written by the type bar.

4. A typewriter having a set of type bars for writing legible characters, a set of other type bars operable independently of the type bars for writing legible characters, some of which are selected for a printing operation at the same time and by the same selecting means as employed for one of the first named type bars for simultaneously printing a legible character and a control character.

5. A typewriter having a plurality of type bars for writing legible characters, means for operating said bars one at a time for a writing operation, a set of other type bars, means operable by the selection of a type bar for selection and operation of some of said other type bars to write simultaneously a legible character and characters appearing on said other type bars.

6. A telegraphic printer having a carriage mechanism, a platen for receiving a sheet for writing, a plurality of type bars and means controlled by electrical impulses for selecting the type bars for actuation for writing on the sheet, a plurality of other writing bars mounted in the printer for writing shaded areas in close proximity to the character written by the type bars, and means controlled by the means for selecting the

type bars for actuation for selecting certain of the other writing bars for actuation at approximately the same time the type bar is actuated.

7. A telegraphic printer having type bars for writing and having impulse controlled means for selecting the type bars for actuation one at a time, means for printing other characters at the same time the type bar is actuated to write its character, and separate means controlled by the selecting of a type bar for actuation for selecting certain of the other printing means for actuation at the same time as the type bar to print control characters on the same sheet on which the type bar prints its character.

8. In a typewriter adapted to be selectively actuated by electrical impulses and having a plurality of type bars controlled by electrical impulses for writing legible characters, a plurality of other bars for writing code characters on the same sheet at the same time the type bars are actuated, and separate means controlled by the selection of a type bar for actuation for selecting at least some of the other bars for simultaneous movement to print code characters on the same sheet the type bars write and at the same time and in close proximity to the characters written by the type bars.

9. A typewriter having a plurality of type bars and having a plurality of code printing bars, means for selecting the type bars for operation one at a time, means separate from the type bars and controlled by the selection of a type bar for selection and actuation of certain of the code printing bars simultaneously with the type bars.

10. A typewriter having permutation bars operable by sets of electrical impulses, a plurality of type bars controlled by said permutation bars, a plurality of code printing bars controlled by said permutation bars and operable simultaneously with a type bar to write a set of code characters in association with the characters written by the type bar.

11. A typewriter having permutation bars operable by sets of electrical impulses, a plurality of type bars controlled by said permutation bars, a plurality of code printing bars controlled by said permutation bars and operable simultaneously with a type bar to write a set of code characters in association with the character written by the type bar, and means operable upon a shift operation of the typewriter for printing a shift control with some of said code printing bars.

12. A typewriter having permutation bars operable by sets of electrical impulses, a plurality of type bars controlled by said permutation bars, a plurality of code printing bars controlled by said permutation bars and operable simultaneously with a type bar to write a set of code characters in association with the character written by the type bar, a plurality of push bars for actuating said type bars, a plurality of other push bars actuating non-writing mechanisms in the typewriter, a striking bail for moving the push bar selected by the permutation bars, and means for locking the code printing bars against operation when one of said other push bars is actuated.

13. In a typewriter having means for holding a sheet for a writing operation, a plurality of type bars, a push bar for each type bar, a striking bail for engaging a selected push bar for moving the same, a plurality of permutation bars for selecting a push bar for actuation by the striking bail, a plurality of other writing bars for writing code characters on the sheet simultaneously with the

writing by the key bars, and means controlled by the permutation bars for selecting certain of the code printing bars for actuation.

14. In a typewriter having a plurality of type bars, means for holding a sheet on which the type bars are adapted to write, a plurality of permutation bars for selection of a type bar for operation and adapted to be selectively actuated by electrical impulses, a push bar for each type bar, a striking bail for engaging a push bar selected by the permutation bars, a plurality of code printing bars, means controlled by the permutation bars for selecting certain of the code printing bars for actuation simultaneously with the selected type bar to write code characters on the sheet in close proximity to the character written by the type bar.

15. In a printing telegraph receiver, a plurality of type bars, a plurality of function mechanisms, actuating bars therefor, a set of selecting bars controlling the engagement of any one of the actuating bars, a set of code printing bars, means controlled by the selecting bars for selecting certain of the code printing bars for operation simultaneously with its associated type bar, and means controlled by an actuating bar for a function mechanism for locking the code printing bars against a printing operation when a function mechanism is operated.

16. In a printing telegraph receiver, a plurality of type bars, actuating bars therefor, a basket or carriage shift mechanism, a striking bail for moving a selected actuating bar, a plurality of selecting bars for selecting an actuating bar for actuation, a plurality of code printing bars, means controlled by the selecting bars for selecting for actuation one or more of the code printing bars for printing a set of code characters upon actuation of a type bar, an actuating bar for actuating the shift mechanism, and means for automatically writing a code character with a code printing bar when a shift operation is carried out in the typewriter.

17. In a printing telegraph receiver, a plurality of type bars, a plurality of code printing bars arranged to print in close proximity to the point at which the type bars print, a plurality of selecting bars, a plurality of actuating bars controlled by the selecting bars, a striking bail for moving a selected actuating bar, spring means for normally moving the code printing bars towards printing position, means restraining said code printing bars against movement, other means controlled by said selecting bars for restraining said code printing bars against movement, and means for releasing the first restraining means so that the code printing bars not restrained by the other restraining means may move under tension of their springs to printing position.

18. A typewriter having type bars for writing characters, a platen for holding a sheet on which the type bars are adapted to write, means for actuating said type bars, a plurality of code printing bars slidably mounted in front of the platen for writing code characters on the sheet, tension means normally forcing the code printing bars towards the sheet, means for holding the bars away from contact with the sheet, means controlled by the actuation of a selected type bar for releasing certain selected code printing bars for a writing operation which is performed simultaneously with the writing by the type bar.

19. A typewriter having a plurality of selector bars, a plurality of type bars adapted for selection by the selector bars for actuation one at a

time, means for actuating the selected type bar, a plurality of code printing bars, means controlled by the selector bars for selecting certain of the code printing bars for actuation at the same time
5 the selected type bar is actuated to write code characters in close proximity to the type bar character simultaneously with the writing of the type character.

20. A typewriter having a carriage mechanism
10 for holding a sheet for receiving writing, a plurality of type bars, means for selecting and actuating the type bars, means for shifting the relative positions of said carriage mechanism and said type bars, a plurality of code printing bars,
15 means controlled by the selection of a type bar for selecting one or more of the code printing bars for actuation, and means operable upon shifting the relative positions of the carriage

mechanism and the type bars for printing a character with a code printing bar on the sheet.

21. In a typewriter having a plurality of bars for printing dots, a selecting mechanism, means controlled by the selecting mechanism for selecting
5 one or more of the bars for simultaneously printing dots, and means operable after a selection is made of said bars for effecting a printing operation with said selected printing bars.

22. In a typewriter having type bars, means for
10 holding a sheet for receiving the impact of the type bars, a carriage, and means for returning the same for the writing of a line on said sheet, and means normally preventing the writing of a character by the type bars in the first letter space
15 of a line and at the same time advancing the carriage one letter space.

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