

April 19, 1938.

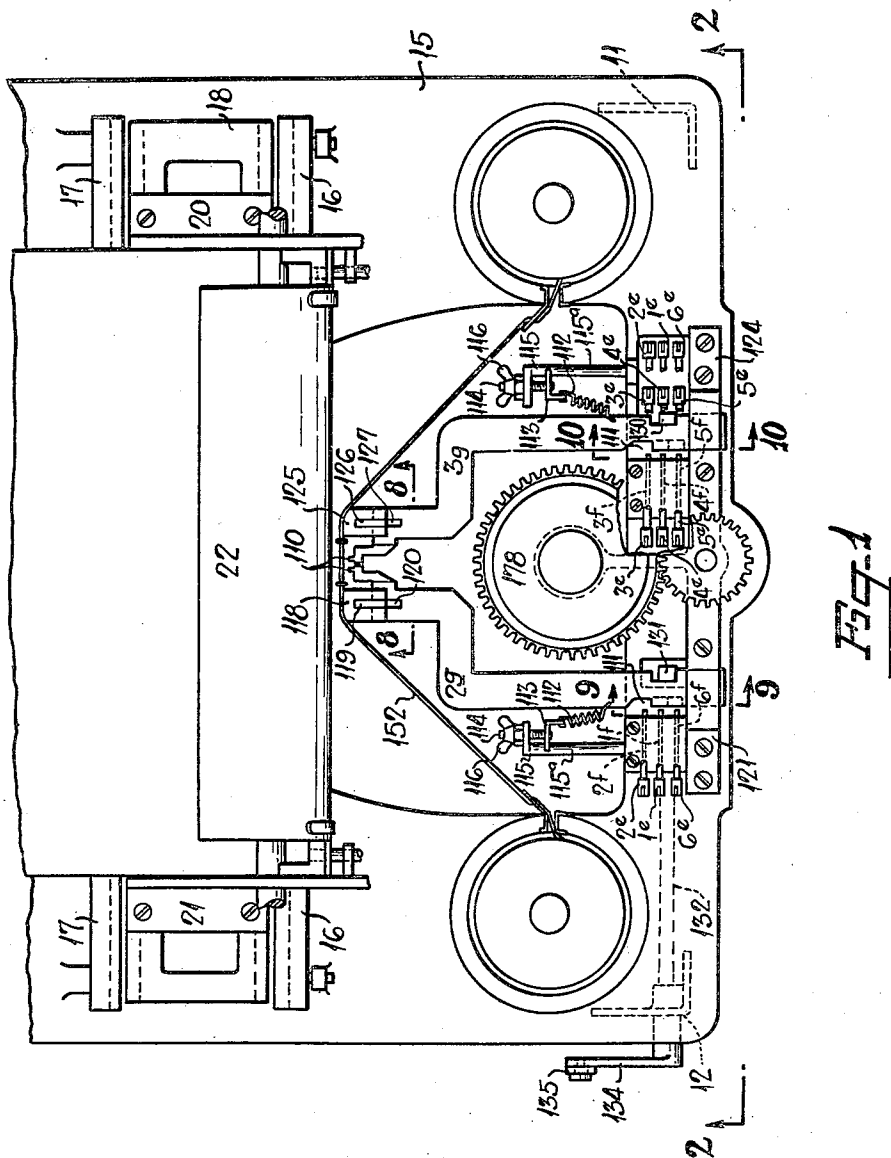
B. L. GREEN

2,114,296

TYPEWRITER

Filed July 20, 1935

6 Sheets-Sheet 1



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April 19, 1938.

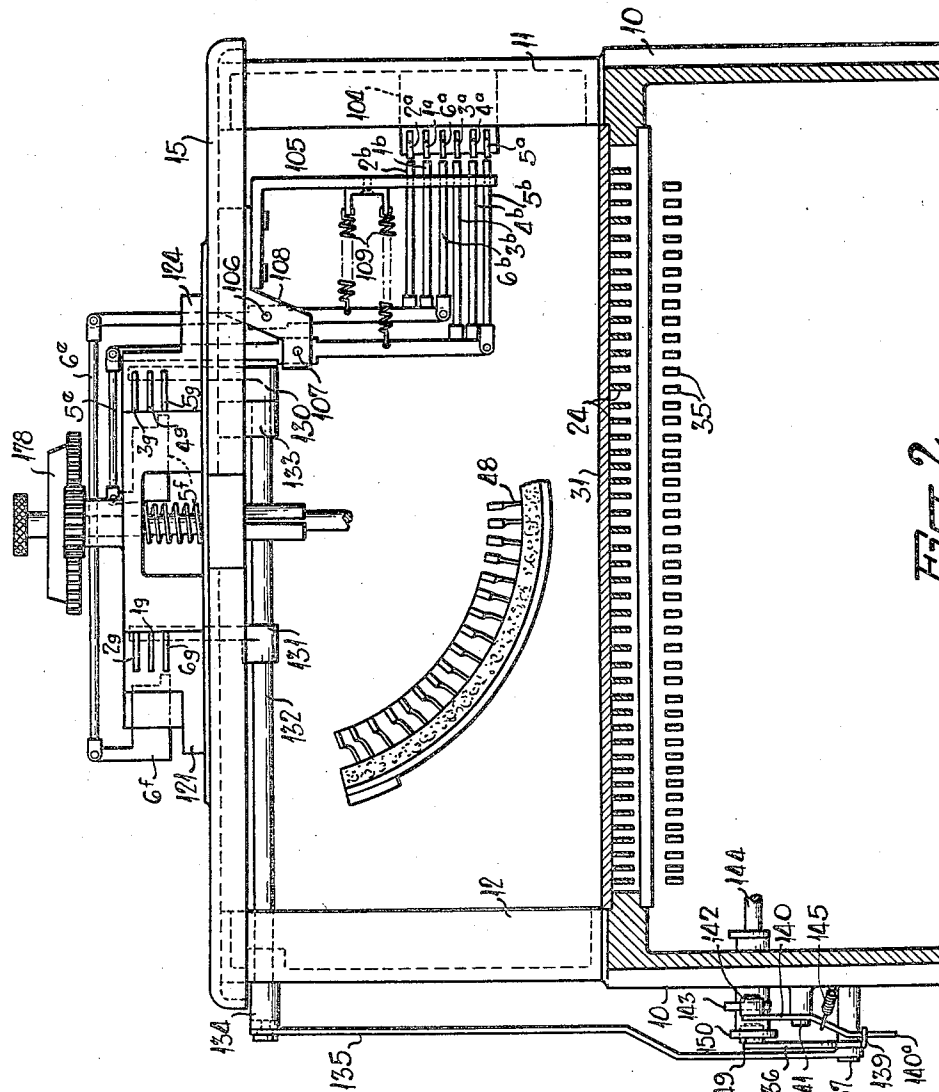
B. L. GREEN

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TYPEWRITER

Filed July 20, 1935

6 Sheets-Sheet 2



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TYPEWRITER

Filed July 20, 1935

6 Sheets-Sheet 3

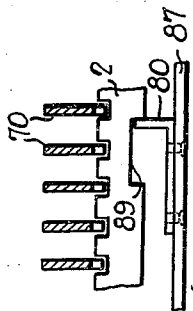
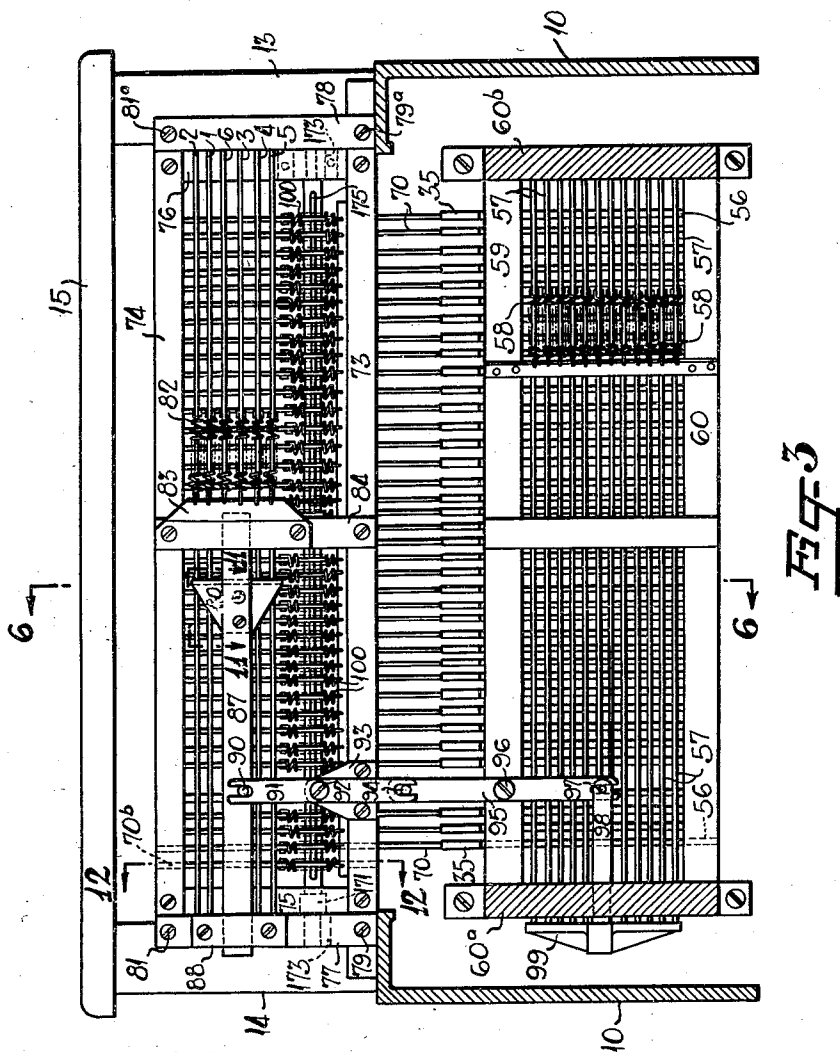


FIG-11

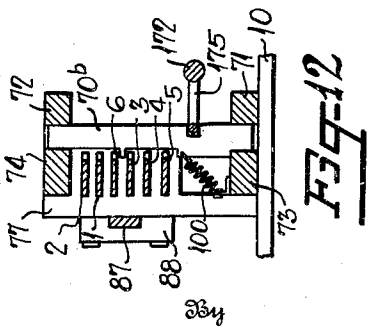


FIG-12

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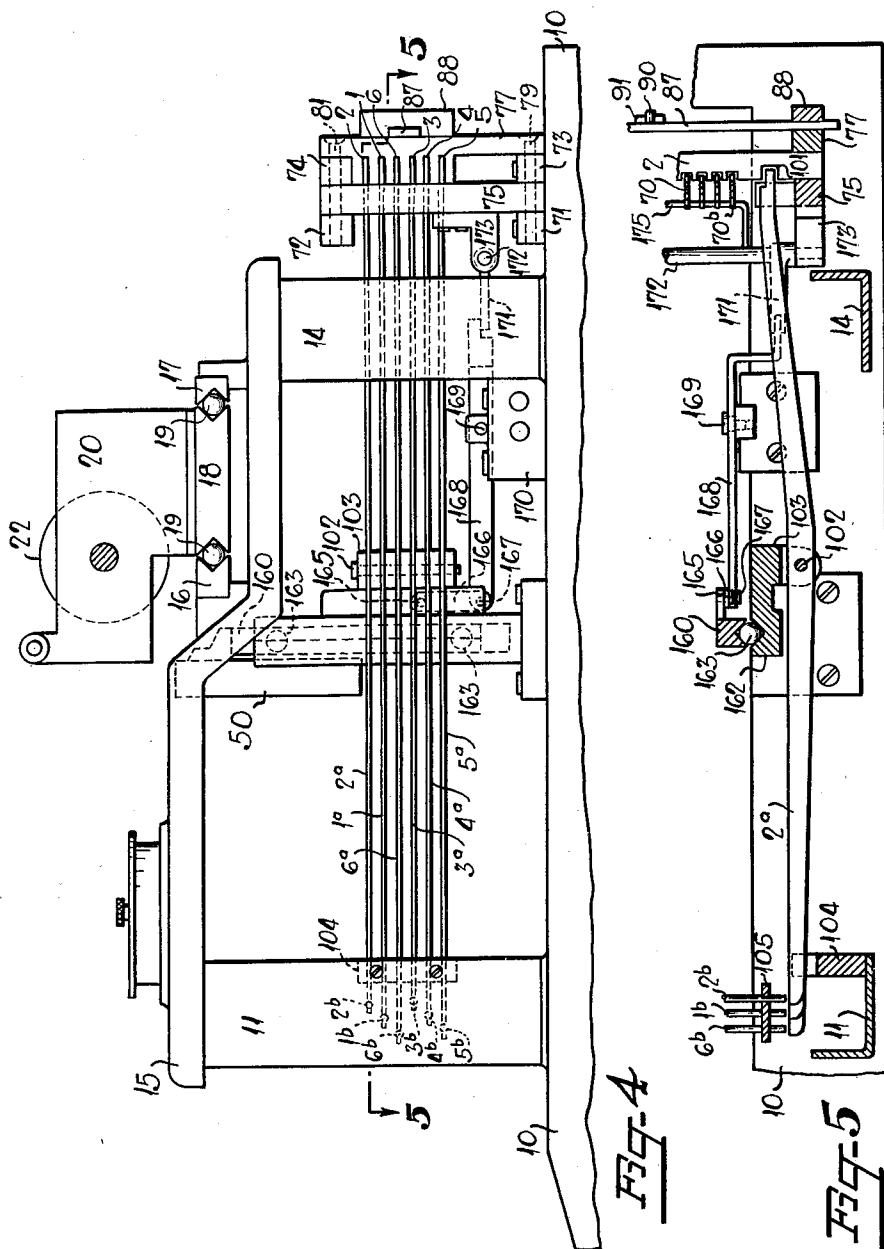
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2,114,296

TYPEWRITER

Filed July 20, 1935

6 Sheets-Sheet 4



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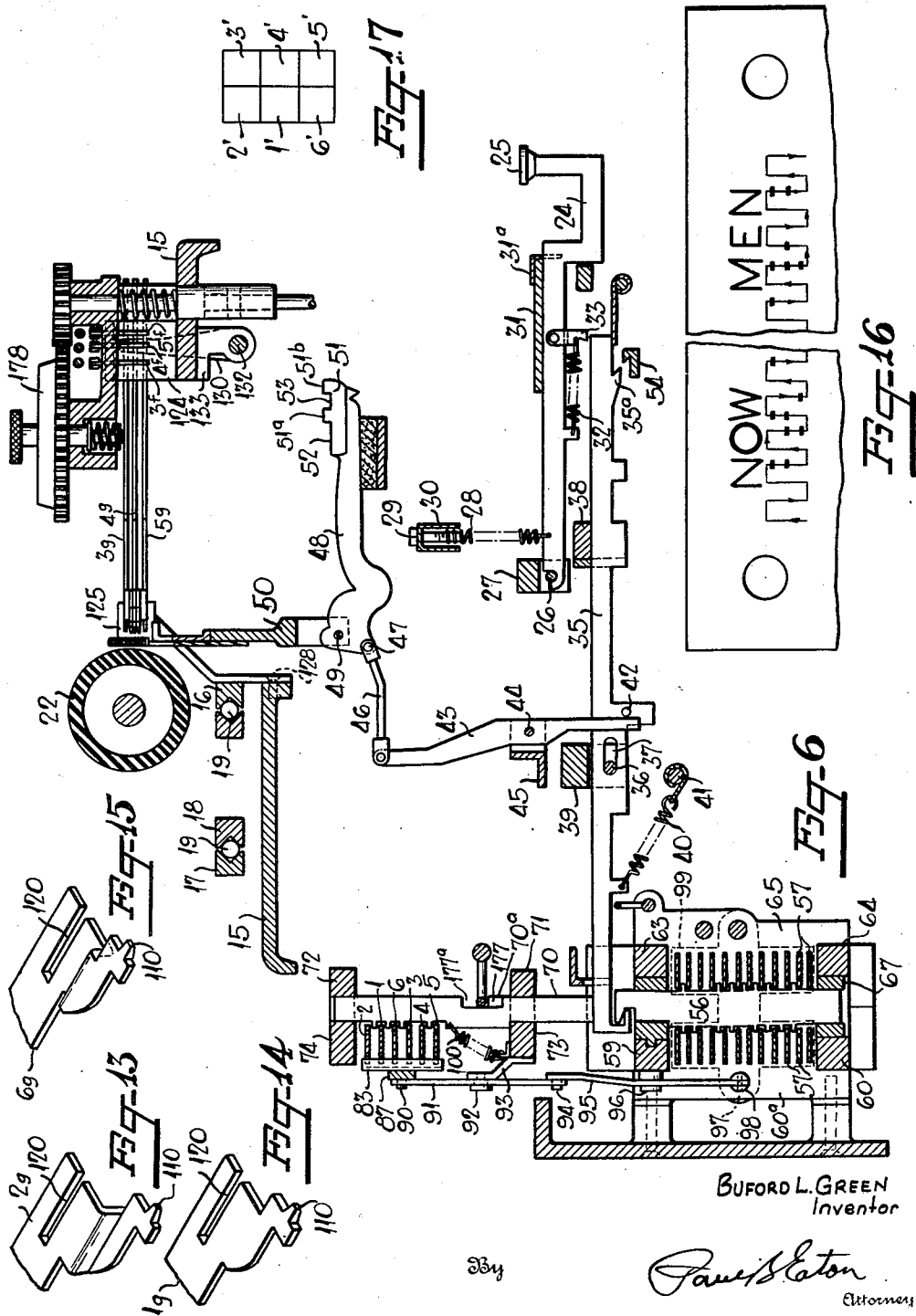
B. L. GREEN

2,114,296

TYPEWRITER

Filed July 20, 1935

6 Sheets-Sheet 5



April 19, 1938.

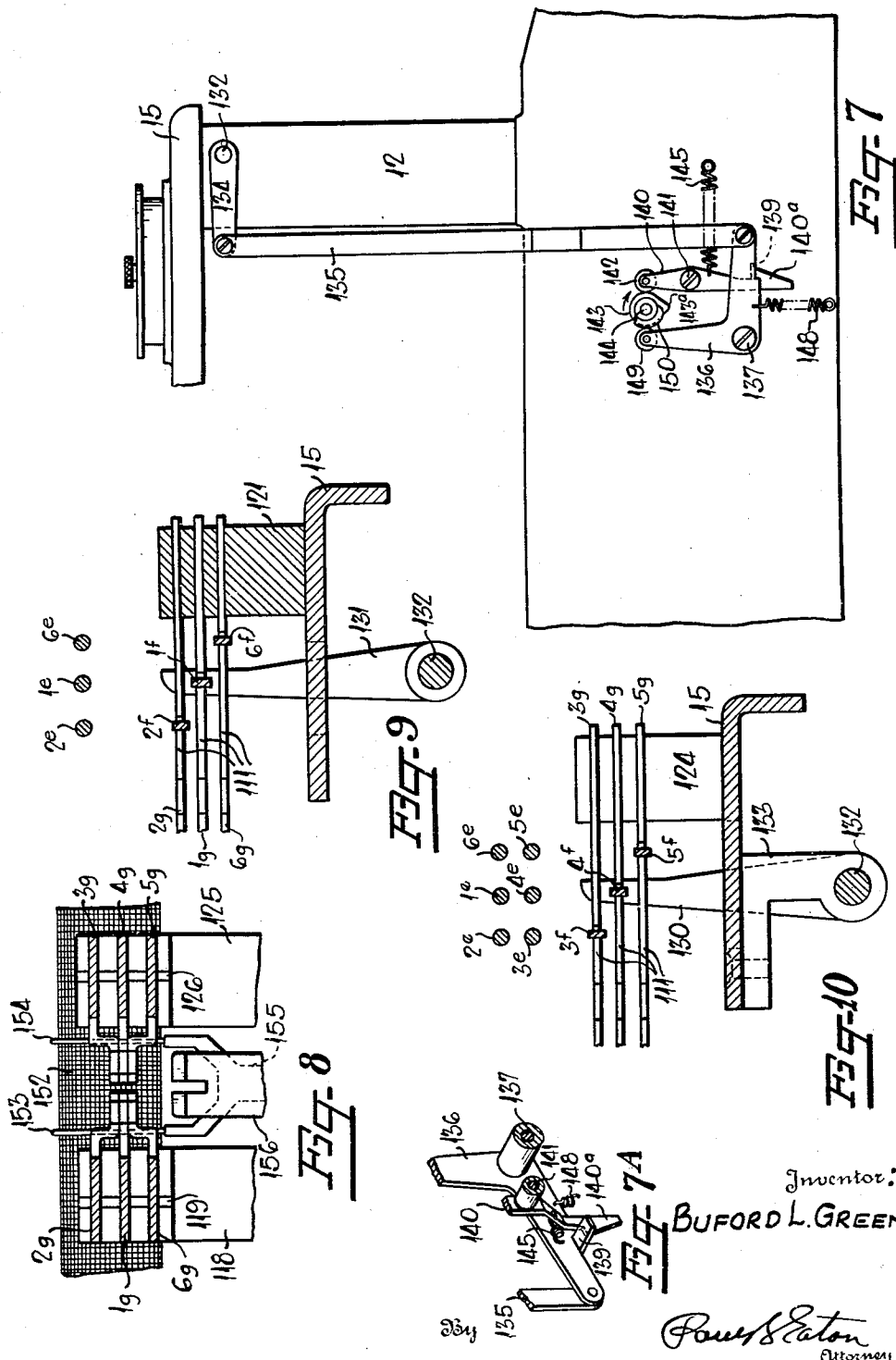
B. L. GREEN

2,114,296

TYPEWRITER

Filed July 20, 1935

6 Sheets-Sheet 6



UNITED STATES PATENT OFFICE

2,114,296

TYPEWRITER

Enford L. Green, Charlotte, N. C.

Application July 20, 1935, Serial No. 32,421

13 Claims. (Cl. 197-1)

This invention relates to a coding apparatus and more especially to a coding apparatus adapted to be used in connection with a manually operated typewriter such as that shown in my copending patent application Serial No. 712,065, filed February 19, 1934.

Heretofore, in preparing control sheet for transmitting a set of electrical impulses to a character reproducing machine for reproducing a printed sheet such as line-casting machines, typesetting machines and the like, as disclosed in my co-pending patent applications Serial No. 404,331, filed November 2, 1929, Patent No. 2,067,182, of January 12, 1937; Serial No. 517,171, filed February 12, 1931, Patent 2,067,184 of January 12, 1937; and Serial No. 688,753, filed September 9, 1934, Patent No. 2,067,186 of January 12, 1937; it has been a very difficult problem to obtain perfect alinement of the cell control areas. The reason for this error in alinement chiefly was the result of the legible character and the code character being placed on the same type bar and since this type bar is pivoted at a point several inches from the point of printing, a certain amount of variation in the printing will naturally result, on account of slight mis-alinement of type bars thereby causing the control sheet to be inaccurate and when placed in a character reproducing machine a mis-selection in the character would occasionally result. By providing a separate code printing means to print one or more cell control shaded portions on the control sheet while the type bars print the legible character, perfect alinement of the code character is obtained, even though the legible character may be out of line.

It is, therefore, an object of this invention to provide a means for preparing a control sheet on a typewriter having means for printing a legible character and an independent means for printing cell controls simultaneously with the printing of the legible character.

It is another object of this invention to provide in a manually operated typewriter two independent means for simultaneously printing code characters and legible characters and also means for preventing the printing of code and legible characters when a functional key bar is operated.

The herein disclosed structure is very similar to the structure shown in my co-pending patent application Serial No. 24,064, filed May 29, 1935, the main difference being that in the said application the separate code printing means were associated with a typewriter operated by electrical impulses, whereas, the present structure shows these separate code printing bars associated with

a manually operated typewriter, the principle of printing being the same in both applications, but the present structure shows how the separate printing bars are selected and actuated upon manual actuation of a key bar or a type bar. Many of the features are not fully shown in the present drawings, as these details are more fully shown in said co-pending application, Serial No. 24,064.

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 of a typewriter showing my invention applied thereto and omitting the key bars;

Figure 2 is a sectional elevation taken along line 2-2 in Figure 1;

Figure 3 is a rear elevation of the typewriter but showing the framework in section;

Figure 4 is a side elevation of the upper portion of the typewriter looking at the right-hand portion of Figure 1;

Figure 5 is a sectional plan view taken along line 5-5 in Figure 4;

Figure 6 is a longitudinal view taken along line 6-6 in Figure 3;

Figure 7 is an elevation of a portion of the left-hand side of Figure 1;

Figure 7A is an isometric view looking at the opposite side of the lower portion of Figure 7;

Figure 8 is a sectional view taken along line 8-8 in Figure 1;

Figure 9 is a vertical sectional view taken along line 9-9 in Figure 1;

Figure 10 is a vertical sectional view taken along line 10-10 in Figure 1;

Figure 11 is a sectional detail view taken along line 11-11 in Figure 3;

Figure 12 is a vertical sectional view taken along line 12-12 in Figure 3;

Figure 13 is an isometric view of the printing end of the upper left code printing member "2g" shown in Figures 1 and 8;

Figure 14 is an isometric view of the printing end of the left center code printing bar "1g" shown in Figure 8;

Figure 15 is an isometric view of the printing end of the lower left code printing bar "6g" shown in Figure 8;

Figure 16 is a view of a control sheet produced by the herein disclosed code printing apparatus being on a very much enlarged scale;

Figure 17 is an enlarged isometric view of a control area on a control sheet used for controlling a printer, type-setting machine and the like.

Referring more specifically to the drawings, the numeral 10 denotes all portions of the base member of a suitable typewriter frame which is shown more in detail in my co-opending patent application, Serial No. 712,065. This frame has posts 11, 12, 13 and 14 secured to the upper side thereof which, in turn, support a cap plate 15. Secured to the upper portion of cap plate 15 are rails or raceways 16 and 17 between which 10 is mounted a rectangular carriage 18. Trucks 19 are disposed between the carriage 18 and rails 16 and 17 for holding the rectangular carriage member 18 in its proper relation for movement with respect to the rails 16 and 17.

Suitable brackets 20 and 21 extend upwardly from carriage 18 and these members have mounted therebetween a platen 22 around which a control sheet is placed while it is being prepared.

The typewriter is provided with a plurality of key levers 24 for operating the key bars. Each of the key levers which operates a type bar has a key button 25 on the forward upper end thereof and is pivotally mounted on rod 26 fixed in a comb 27 which is secured to the sidewalls of the typewriter. The rear ends of key levers 24 have a notch on their upper surface and a shoulder immediately in front of the notch which engages the rod 26. The key levers are held in position by means of each key lever having secured thereto a tension spring 28 whose upper end is secured to an adjusting screw 29 mounted in a transverse U-shaped bar 30, disposed across the machine so that each key bar can be adjusted independently of the other key bar, as to tension.

It is evident that various key levers have different shapes to cause the key buttons 25 to be disposed at the proper place on the key board, but essentially, the structure of all is the same.

The front ends of key levers 24 are restrained from upward movement beyond a given point by a transversely disposed plate 31, the springs 28 serving to hold the key levers normally against the lower surface of this plate. A comb 31a separates the key levers. Each key lever which is designed for operating a drive bar has secured to the lower side thereof a tension spring 32, the other end of said spring being secured to a trip lug 33 pivoted at its upper end on key lever 24. Each key lever moves a drive bar for engagement by a striking bail, which, in turn, actuates a type bar to print a character.

Also, for the key levers controlling the carriage shift and back spacer mechanism, there are drive bars 35, which are all shaped in a similar manner. These drive bars 35 are supported for sliding movement on a transversely disposed rod 36 penetrating a slot 37 in the drive bars, which bars are mounted in combs 38 and 39 to space them properly apart from each other. Secured to each drive bar 35 is one end of a tension spring 40 which has its other end connected to a transversely disposed shaft 41.

It is seen that spring 40 normally pushes the drive bar 35 towards the front of the machine and causes the left-hand portion thereof to be pulled downwardly. Secured to the side of each drive bar 35 is a pin 42 which is adapted to rest against the lower end of a lever 43, said lever 43 being pivoted as at 44 in a comb 45.

Pivotally secured to the upper end of lever 43 is a link 46 which has its other end pivotally connected as at 47 to a type bar 48. This type bar

is pivotally connected as at 49 to basket 50 of the typewriter.

By referring to Figure 6, it is seen that type bar 48 has a type face 51 thereon which has surfaces 51a and 51b for printing shift and unshift legible characters. This type face 51 has notches 52 and 53 therein into which the ends of the separate code printing bars are adapted to fit while the legible characters and code characters are being simultaneously printed. In all of said co-pending patent applications, except Serial No. 24,064, the legible characters have been disposed upon the faces 51a and 51b and the code characters have been disposed at the same level at a point where cutaway portions 52 and 53 occur, thereby causing the code and legible characters to be printed by the same type bar. Since the code characters are printed by separate and independent means in this apparatus, it is necessary to cut away the portions 52 and 53 in order to allow the surfaces 51a and 51b to properly engage the control sheet when the type bars are actuated.

When a key bar 24 is depressed, a suitable striking bail 54 moves to the left in Figure 6 thereby engaging the hooked portion 35a on the lower side of the drive bar and causing pin 42 to rotate the lever 43 in a clockwise manner in Figure 6 about pivot 44. It is evident that this will cause link 46 to move to the right and to rotate the type bar 48 in a counter-clockwise manner about pivot point 49 to print a legible character on the control sheet.

The selecting mechanism on the rear of the typewriter is similar to that shown in my co-pending patent application, Serial No. 712,065. This comprises a plurality of first selector bars 56 which have on the upper edge thereof a notch which is engaged by the rear reversely bent end of drive bar 35. When the front end of a drive bar is depressed by a key lever, the first selector bar 56, which is associated with the key bar depressed, is raised.

Before the striking bail 54 moves a drive bar 35 towards the rear of the machine and out of the notch in the upper end of its first selector bar, certain of the second selector bars are allowed to move under their spring tension to engage certain projections on the raised first selector bar. When the rear end of the push bar 35 raises one of the first selector bars 56, certain of the second selector bars 57 are allowed to move to the left in Figure 3 under the tension of their respective springs 58 which will cause the measurement of the particular character to be taken in the typewriter, to operate an indicator as shown in patent application Serial No. 712,065.

The first and second selector bars are mounted in a framework comprised of two portions. The rear portion comprises the upper and lower transverse bars 59 and 60, which have integral therewith combs 60a and 60b. This portion of the framework is secured to the rear wall of the typewriter base 10. The front portion of the frame is similar to the rear portion and comprises upper and lower transversely disposed bars 63 and 64 joined together by combs 65. Between the members 59 and 60, 63 and 64, is slidably mounted a magazine 67 which contains first selector bars 56.

Each of the push bars 35 has resting on the upper side thereof one of vertically disposed bars 70, 70a or 70b, which has notches in the rear face thereof for engaging the notches in trans-

versely disposed sliding bars 1 to 6 inclusive. Bars 70, 70a and 70b are slidably mounted in combs 71 and 72 and are confined in these combs by longitudinal bars 73 and 74. Each bar 70 is normally pulled downwardly by an individual spring 100.

The combs 71 and 73 normally rest on top of base member 10 and are held at their ends in spaced relation to each other by means of vertically disposed posts 75 and 76, said post 75 also acting as a comb for guiding certain levers which will be later described, (see Fig. 5).

Posts 77 and 78 also rise from base member 10 and are secured to the outer edge of longitudinally disposed bar 73 by any suitable means such as screws 79 and 79a. The screws 79 penetrate the members 77, 73, 75 and 71 on the left-hand side of Figure 3, and the screw 79a penetrates members 78, 73, 76 and 77 on the right-hand side of Figure 3 to form a rigid framework for the longitudinally disposed bars 1 to 6 inclusive, which cooperate with the bars 70 in the selection of a code character. Screw 81 penetrates the upper end of members 77, 74, 75 and 72 on the left-hand side of Figure 3, to hold the upper ends of these members together, whereas, bolt 81a penetrates the upper end of members 78, 74, 76 and 72 to hold these members in a like manner.

The members 77 and 78 have notches cut therein forming a comb-like member for the reception of the bars 1, 2, 3, 4, 5 and 6 and to allow sliding movement of these bars. The longitudinal permutation bars which slide in comb-like members 77 and 78 each have a spring 82 secured thereto, (Fig. 3), the other end of said spring being secured to spring perch 83 which, in turn, is fastened to bar 84 secured to the side of transverse bars 73 and 74. These springs 82 normally pull these bars 1 to 6 inclusive to the left in Figure 3. The movement to the left of bars 1 to 6 inclusive is limited by means of an angle-shaped member 80 which is secured to sliding bar 87, said sliding bar being slidably mounted in bearing 88 and between bar 84, and spring perch 83, (Figs. 3 and 11). Each of the bars 1 to 6 inclusive has a notch 89 cut therein into which outstanding leg of angle member 80 projects. Therefore, it is seen that bars 1 to 6 inclusive are held in contact with the outstanding leg of angle member 80 at all times by means of springs 82.

The bar 87 has a pin 90 projecting from the rear side thereof which is adapted to fit in a slot in the upper end of lever 91, said lever 91 being pivoted as at 92 to bracket 93 which bracket is secured on the side of longitudinally disposed bar 73. The lower end of lever 91 is forked and is adapted to fit over a pin 94 in the upper end of a lever 95, said lever 95 being pivoted as at 96 to frame portion 50. The lower end of lever 95 is also forked and fits over a pin 97 in a bar 98 which is slidably mounted in post 60a and is fixedly secured in return bracket 99 for returning the second selector bars 57 to normal position. The method of operating this return bracket has been previously described in my co-pending application Serial No. 712,065, and repetition of the description is not deemed necessary at this time; however, it will be noted that when return bracket 99 returns the permutation or selector bars 57 to normal position, the bars 1 to 6 inclusive, will be simultaneously returned to their normal position.

As the bar 98 moves to the right in Figure 3, the lever 97 will be caused to rotate in a counter-

clockwise manner about pivot point 92. When this is done the upper end of lever 91 will move the bar 87 and the angle member 80 to the right to return the permutation bars 1 to 6 inclusive to their normal position. Each of the bars 70, as well as bars 70a and 70b, has a tension spring 100 connected thereto, the other end of said springs being connected to longitudinal bar 73 which normally pulls the lower end of bars 70 downwardly into engagement with the rear ends of push bars 35.

When a key bar 24 is depressed thereby causing the rear end of push bar 35 to raise the bar 70 upwardly certain of the bars 1 to 6 inclusive, will be allowed to move to the left in Figure 3, and the other will be blocked. These bars control the code printing means for printing the cell control areas 1' to 6' respectively, as shown in Figure 13, and it will be seen in the following description how the bars which are allowed to move to the left will block the corresponding code printing bar from printing in their areas and also how the ones which are prevented from moving to the left will allow the corresponding cell controls to be printed.

The permutation bars 1 to 6 inclusive, each have a notch 101 therein into which are adapted to fit levers 1a to 6a respectively, (Fig. 5), said levers being pivoted as at 102 in comb 103. The front ends of bars 1a to 6a inclusive are adapted to slide in a comb 104 which is secured to post 11 of the typewriter frame. The front ends of these bars also normally contact links 1b to 6b inclusive which have their ends slidably mounted in a bracket 105 which is secured to the cap plate 15 of the typewriter frame. The left-hand end (Figure 2) of these links are pivotally connected to the lower end of levers 1d to 6d respectively, the levers 1d, 2d and 6d being pivoted as at 106 and the levers 3d, 4d and 5d being pivoted as at 107 in bracket 108, said bracket 108 being secured to the lower side of cap plate 15.

Pivotally secured to the upper end of levers 1d to 6d inclusive, are links 1e to 6e respectively, which have their other ends pivotally secured to blocking bars 1f to 6f. The ends of each of these blocking bars are adapted to block, at times, the inward movement of the code printing bars 1g to 6g respectively, said bars 1g to 6g having a pointed end 110 on the end nearest the platen 22 for printing a code character on the control sheet directly below the legible character which is printed by type bars 40.

Figures 13, 14 and 15 show the printing ends of bars 2g, 1g and 6g, which are opposite hand to bars 3g, 4g and 5g, shown in Figure 6. The construction of all of the bars is similar but the ends are bent so as to properly position the pointed end 110.

Each of the blocking bars 1f to 6f inclusive are held normally out of the path of the code printing bars 1g to 6g inclusive, by means of tension springs 109 which have one end thereof connected to the lower ends of levers 1d to 6d inclusive and the other end secured to bracket 105. These code printing bars each have a notch 111 cut in the side thereof at different locations into which the respective blocking bars 1f to 6f are adapted to enter and prevent the code printing bars 1g to 6g inclusive from moving towards the platen 22, (Figs. 1, 9 and 10). Each of the code printing bars has one end of a tension spring 112 secured thereto, the other end of said tension spring being connected to an angle bracket 113 which is secured to a pin 114, said pin 114 being

loosely mounted in L-shaped member 115 and having a wing nut 116 thereon for regulating the tension of the spring 112 thereby providing means for varying the intensity of the stroke that the code printing bars will strike the control sheet. The bracket 113 slidably engages portion 115a of L-shaped member 115, said portion 115a acting as a guide for the bracket. The ends of the code printing bars 1g, 2g and 6g nearest the platen are slidably mounted in a comb 118, said comb having a rib 119 therein which is adapted to fit into slots 120 in the ends of the code printing bars to hold the bar in a fixed position in the comb. The front ends of these bars are slidably mounted in a comb 121 which is secured to the top plate 15. In a like manner the code printing bars 3g, 4g and 5g have their ends, which are nearest the platen 22, mounted in a comb 125 having a vertically disposed rib 126 therein which is adapted to fit into the slot 127 in the end of the code printing bar. Comb 125 is similar in all respects to comb 118 and both of said combs are secured to cap plate 15 as at 128 (Fig. 6). The front ends of bars 3g, 4g and 5g are slidably mounted in comb 124 which is secured to top plate 15.

Let us assume that a key bar 24 has been depressed for the selection of a character and one of the bars 70 is pushed upwardly which will allow the permutation bar 2 to move to the left in Figure 3. When this is done, the lever 2a in Figure 5, will be caused to rotate a slight amount in a clockwise direction about pivot point 102 which, in turn, will push the link 2b away from the observer in Figure 5, or to the left in Figure 2. Upon movement to the left of link 2b in Figure 2, clockwise rotation will be imparted to the lever 2d causing this lever to rotate in a clockwise manner about pivot point 106, thus causing the upper end of lever 2d to move to the right to carry the locking bar 2f to the right and into the notch 111 in the code printing bar 2g. When the end of blocking bar 2f has moved into this notch, the bar 2f cannot move in towards the platen to print a code character. If, in the present instance, the bar 2, in Figure 3 were not allowed to move the code printing bar 2g would have been allowed to move inwardly and print a character. It is, therefore, seen that when it is desired that any selected number of the bars 1g, to 6g inclusive, print a character then the corresponding bars 1 to 6 are not allowed to move to the left in Figure 3 but are blocked by suitable notches in one of the vertically disposed permutation bars 70.

The code printing bars 3g, 4g and 5g have a notch cut in the side thereof into which the upper end of lever 130 is adapted to fit, (Figs. 1, 2, 9 and 10). Likewise, the code printing bars 1g, 2g and 6g have similar notches cut in the side thereof into which another lever 131 is adapted to fit. Both of the bars 130 and 131 are fixedly secured to a shaft 132, said shaft having one end thereof mounted for oscillation in bearing 133 which is secured to the lower side of cap plate 15 and the other end of shaft 132 is mounted in end post 12. The end of shaft 132 projects out beyond the post 12 and has a lever 134 fixedly secured on the end thereof (Figs. 1, 2 and 7). Pivotaly secured to the free end of lever 134 is a downwardly extending link 135 which has pivotally secured at its lower end one end of a bell crank lever 136. This bell crank is pivotally mounted as at 137 to the base frame 10 and the horizontal leg thereof has projecting therefrom a projection 139 (Figs. 2 and 7A), which is normally engaged by a hook

140a on member 140, said member being pivoted as at 141 to base member 10. The upper end of lever 140 has a roller 142 thereon which normally contacts a cam 143 which is fixedly mounted on main drive shaft 144 of the typewriter.

This drive shaft of the typewriter is indicated by reference character 57 in my co-pending application Serial No. 712,065.

A spring 145 normally holds the hook 140a in latched position as shown in Figures 2 and 7, but it is evident that when the high side of cam 143 rotates in a clockwise manner from the position shown in Figure 7, that the member 140 will be caused to rotate in a clockwise manner about pivot point 141 thereby causing the hook portion of 140a to be disengaged from the projection 139 on bell crank 136. When this is done bell crank 136 will be allowed to move downwardly under the tension of spring 148 which spring has one end secured to the bell crank and its other end secured to the base member 10. The vertically disposed leg of bell crank 136 has a roller 149 thereon which is adapted to contact a cam 150, fixedly mounted on main drive shaft 144. It is seen that while the roller 149 is resting upon the high side of cam 150 that the link 135 will be raised in its highest position thereby causing the shaft 132 and its associated levers 131 and 130 to be also held in their farthest position toward the front of the machine. In this position the levers 130 and 131 will hold the code printing bars 1g to 6g inclusive, away from a printing operation as long as the roller 149 rests upon the high side of cam 150.

Immediately after the shaft 144 rotates a sufficient amount to allow the roller 149 to move to the lower side of cam 150 the high side of cam 143a of cam 143 will contact the roller 142 in the upper side of member or lever 140 to cause the hook portion 140a to become disengaged from the projection 139 on bell crank 136. When this is done the lever 136 will be allowed to snap downwardly under the tension of spring 148 and also under the tension exerted by the six individual springs 112 which are connected to the code printing bars 1g to 6g. By providing an arrangement of this type, it is possible to obtain snap action of the code printing bars which is very essential in the printing of a code character.

The basket and ribbon feed arrangement of this typewriter are of a conventional make, however, it might be stated that it is equipped with a ribbon 152 which is held in its proper position by ribbon guides 153 and 154, said ribbon guides projecting up from a forked member 155 which is mounted behind the type guide 156, (see Fig. 8). The basket 50 is connected to suitable guides 160 disposed on each side of the basket, (Figs. 4 and 5), said guides having a groove therein which is adapted to cooperate with a similar groove in upstanding portion of bracket 162. Suitable trucks 163 are disposed between members 160 and 162 for guiding the basket as it is shifted from one position to another. Pivotaly secured to member 160 as at 165 is downwardly extending link 166 which, in turn, is pivotally secured as at 167 to horizontally disposed lever 168. The lever 168 is pivoted intermediate its ends as at 169 to bracket 170 and the other end of said lever 168 normally rests on top of a lever 171 which is fixedly secured on shaft 172. The shaft 172 is mounted for oscillation in suitable bearings 173 secured to the side of posts 75 and 76.

As the code on the shift side is the same as it is on the unshift side with the exception that the number 6 code character is added on the shift side, some means must be devised to release the number 6 code character and allow it to print when the basket is shifted. As there are some characters, such as the period and comma which have number 6 code character on both sides, the U-bar 175 must be extended all the way across the typewriter so that when one of the particular key bars for the period or comma is raised, the U-bar 175 and also bar 70b will be raised to allow the code printing bar 6g to print.

By referring to Figures 5, 6 and 12, it is seen that shaft 172 has secured thereto a U-shaped bar 175 which normally rests in notches cut in the side of bars 70, 70a and 70b. U-bar 175 normally has a clearance on both sides in notch 177 of bars 70 and is not affected by the shifting of the basket of the typewriter, (Fig. 6). When a character appears on both the shift and unshift sections of the key button, such as a period or comma, a bar 70a is provided which is identical in all respects to bar 70 except this bar has a narrow notch 177a with the U-bar 175 resting on the lower side thereof so that the U-bar will be dragged upwardly when this particular key lever is depressed.

When the typewriter basket 50 is shifted upwardly (Fig. 4), so as to print characters on the shift side of the type pallet, lever 168 is oscillated in a clockwise manner, thereby lowering lever 171 and raising U-shaped bar 175 which, in turn, will raise bar 70b, (Fig. 12). Bar 70b controls permutation bar 6 in the selector. Normally, bar 6 moves to the left in Figure 3 and the code printing bar 6g will be locked against printing, but when the basket is shifted it raises bar 70b and blocks permutation bar 6 and allows code printing bar 6g to print. The U-bar 175 can only raise bar 70b, but since the U-bar also rests on the top of notch 177a in bar 70a, it is seen that when a key bar for a period or comma is depressed, the bar 70a moves upwardly, which, in turn, drags U-bar 175 and bar 70b upwardly. This upward movement will block permutation bar 6 and allow code printing bar 6g to print.

This typewriter is also equipped with an indicating mechanism 178 which has already been described in one of my copending patent applications. It is, therefore, seen that I have provided means whereby code characters may be printed by means independent of the type bars in a manually operated typewriter, thereby making it possible to obtain an exact alignment of the code characters which are to be scanned in subsequent operations.

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 and means for holding a sheet for a writing operation, means for actuating said type bars one at a time, separate code printing means for printing a plurality of dots at the same time the type bar is actuated, a common ribbon adapted to be struck by the actuated type bars, and code printing means, means for effecting a shift operation, and means automatically operable upon effecting of

the shift operation not only for printing said plurality of dots, but for also simultaneously printing a dot with one of the code printing bars for the shift operation.

2. A typewriter having a plurality of type bars and means for operating said type bars for a writing operation, means for measuring the space a character on an actuated type bar will occupy in regular line printing, a plurality of other bars for printing dots at the same time a type bar is actuated and in close proximity to the character written by the type bar, means controlled by the means for operating a type bar for selecting certain of the other bars for operation and means controlled by the measuring means for returning the selecting means for the other bars to normal position.

3. A typewriter having type bars, a ribbon, a platen for holding a sheet upon which writing is to be performed by the type bars striking a portion of said ribbon, a plurality of selectively operable means separated from the type bars for striking another portion of said ribbon, for printing a plurality of dots at the same time the actuated type bar prints its legible character, a selector controlled by the actuation of a type bar for selecting some of the selectively operable means for printing dots, means for shifting the mechanism of the typewriter for the writing of high case characters and means operable while the shift is in operation for not only printing the dots associated with the actuated character but also printing a dot representing the shift operation.

4. A manually operated typewriter having a plurality of type bars, means for actuating the type bars, a platen for holding a sheet to receive writing impressions from the type bars, a plurality of printing bars for printing dots on the sheet adjacent the character written by the type bar, means controlled by the means for actuating a type bar for selecting one or more of the printing bars for operation, means for measuring the space a written character will occupy in regular line printing, and means controlled by the measuring means for returning the selecting means to normal position after the writing of a character and the dots associated therewith.

5. A typewriter having a plurality of type bars, means for actuating the type bars, a platen for holding a sheet to receive writing from the type bars, a mechanism controlled by an actuated type bar for measuring the space a character written by an actuated type bar will occupy in regular line printing, a plurality of printing bars slidably disposed in front of the platen for printing dots on the sheet adjacent the character printed by a type bar, a second mechanism controlled by the first mechanism for selecting one or more of the printing bars for operation at the same time the type bar is operated so that dots will be printed on the sheet adjacent the legible characters and whereby mis-alignment of the type bars will not affect the position of the dots printed by the selected printing bars.

6. A manually operated typewriter having a platen for holding a sheet and having type bars and a plurality of other printing bars slidably mounted immediately in front of the platen, means for actuating the type bars, each of the other printing bars having a projection for printing a dot on the sheet adjacent the character written by a type bar, means normally urging the printing bars to printing position, means for normally locking said printing bars against move-

ment, and means controlled by the means for actuating a type bar for releasing certain of the printing bars for a printing operation simultaneously with the writing of the legible character by the actuated type bar.

7. A manually operated typewriter having a platen for holding a sheet and having type bars and a plurality of other printing bars slidably mounted immediately in front of the platen, each of the other printing bars having a projection for printing a dot on the sheet adjacent the character written by a type bar, means normally urging the printing bars to printing position, means for normally locking said printing bars against movement, means for actuating the type bars, means controlled by the means for actuating a type bar for releasing certain of the printing bars for a printing operation simultaneously with the writing of the legible character by the actuated type bar, and means for returning the releasing means to normal position immediately after a printing operation.

8. A manually operated typewriter having a platen for holding a sheet and having a plurality of printing bars for printing dots on the sheet, said printing bars being disposed for sliding movement immediately in front of the platen and projecting laterally thereof, a plurality of type bars and means for actuating said type bars one at a time, each of the type bars having portions of its face cut away to prevent engagement with the printing bars, means controlled by the means for actuating a selected type bar for effecting a printing operation with some of the printing bars at the same time the actuated type bar writes its character on the sheet.

9. In a typewriter having a platen for holding a sheet and having a plurality of type bars, each of said type bars having a pair of projections thereon bearing raised portions for printing a legible character, a drive bar for actuating each type bar, a key bar for moving each drive bar for actuation, a measuring device controlled by the drive bars, a plurality of other printing bars, a selector for selecting the printing bars for actuation, means for moving the selected printing bars simultaneously with movement of an actuated type bar to print dots on the control sheet immediately adjacent the characters written by the projections on the type bars, and means con-

trolled by the measuring means for returning the selector to normal position after the writing of a character by a type bar.

10. A typewriter having a plurality of type bars and a platen for holding a sheet for receiving writing done by the type bars, a plurality of slidable printing bars disposed in front of the platen, tension means normally urging the printing bars towards said platen, means normally locking the printing bars against movement, and means controlled by an actuated type bar for unlocking one or more of the printing bars for printing dots on the sheet in close proximity to the character written by the type bar.

11. A typewriter having type bars, a platen for holding a sheet for receiving writing from the type bars, means for actuating said type bars, means operable by an actuated type bar for measuring the space occupied by the character on an actuated type bar in regular line printing, a plurality of printing bars slidably disposed in front of said platen and normally held out of engagement with the sheet, and means controlled by the means for actuating the type bars for selecting some of the printing bars for operation to print a group of dots on the sheet at the same time a character is written by a type bar.

12. A typewriter having type bars, a platen for holding a sheet for receiving writing from the type bars, means for actuating said type bars, means for measuring the space occupied by the actuated characters in regular line printing, a plurality of printing bars slidably disposed in front of said platen and normally held out of engagement with the sheet, means controlled by the means for actuating the type bars for selecting some of the printing bars for operation to print a group of dots on the sheet at the same time a character is written by a type bar, and means controlled by the measuring means for returning the means for selecting the printing bars to normal position.

13. In a typewriter having type bars and a plurality of printing bars, drive bars for operating the type bars, other drive bars for performing functional operations in the typewriter, and means controlled by the actuation of a functional drive bar for selecting one or more of the printing bars for a printing operation.

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