

April 21, 1936.

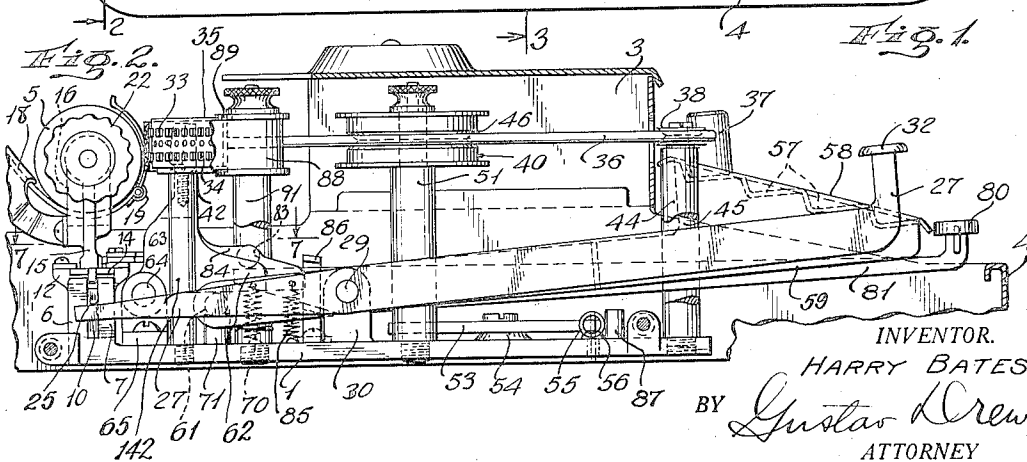
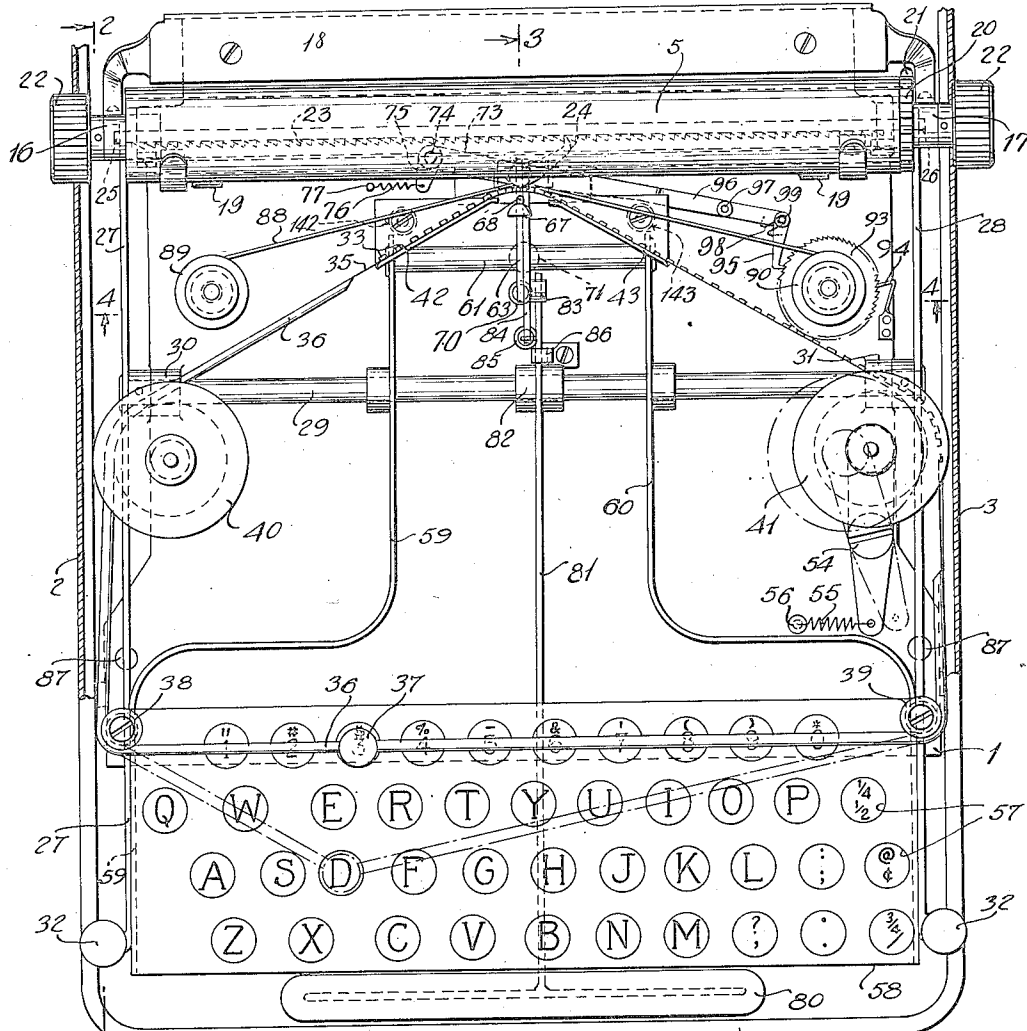
H. BATES

2,038,073

TYPEWRITER

Filed Jan. 19, 1934

2 Sheets-Sheet 1



INVENTOR.

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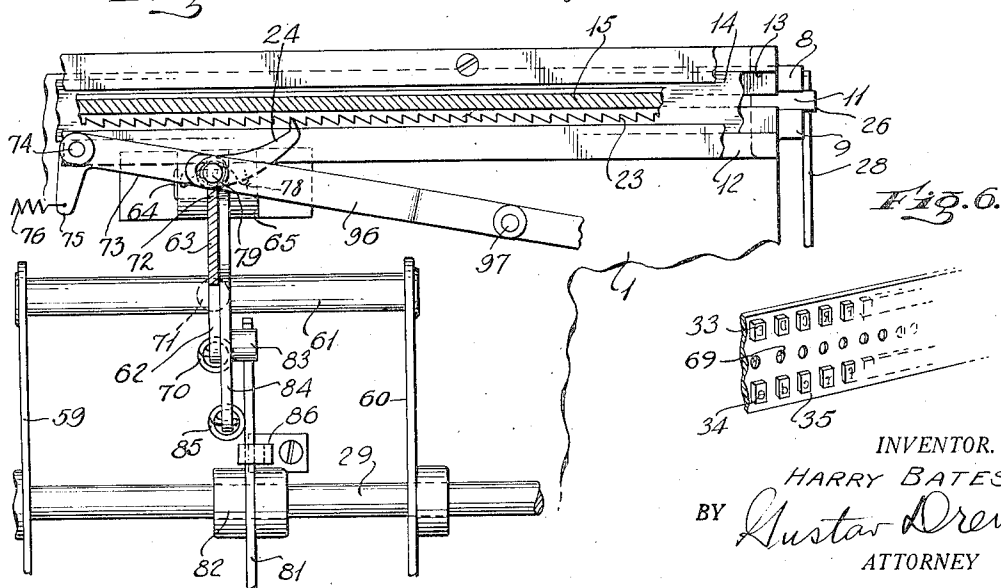
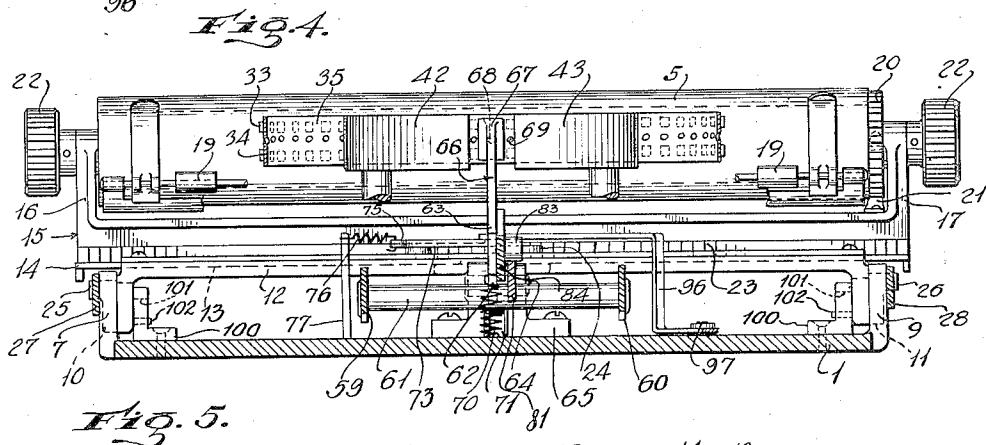
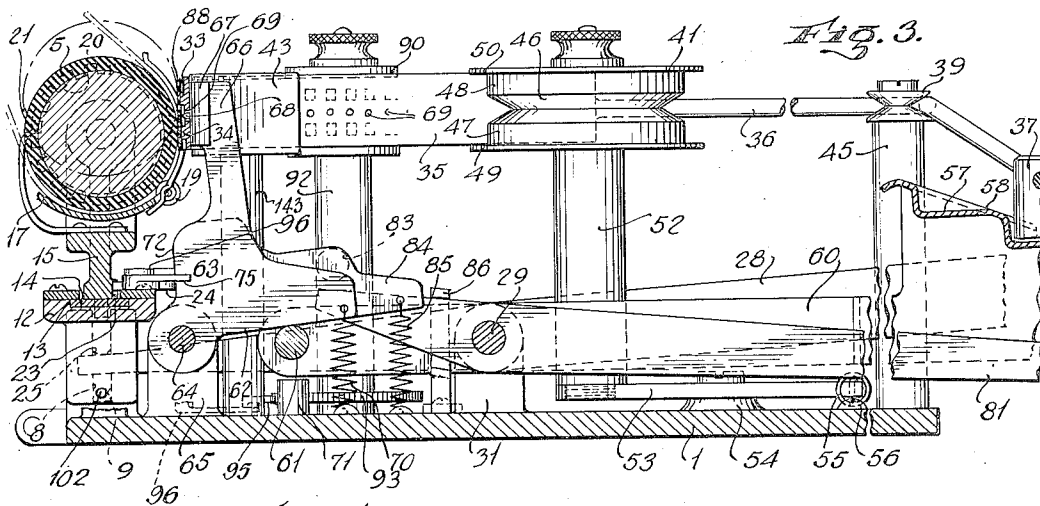
H. BATES

2,038,073

TYPEWRITER

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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

2,038,073

TYPEWRITER

Harry Bates, New York, N. Y., assignor to Bates Laboratories, Inc., New York, N. Y., a corporation of New York

Application January 19, 1934, Serial No. 707,258

14 Claims. (Cl. 197—57)

This invention relates to typewriters in general.

Among the objects of the present invention, it is aimed to provide an improved universal keyboard typewriter having a type support, a single impression creating action common to all of the type and a selector operatively associated to be guided by said keyboard in turn to position the type selected whereby a writing machine or typewriter construction of comparatively low cost can be produced which is perfectly practical for use by a one-finger operator or for use as an educational machine for children and which on account of its low cost can be used to advantage as a feeder or advertising medium for the more expensive universal keyboard typewriters.

It is still another object of the present invention to provide an improved typewriter having a type support, a single impression producing action common to all of the type, a character designating chart actuatable in turn to actuate said impression producing action relative to a platen, and a selector operatively connected with said type support and operatively associated with said chart to be guided by said chart to select the type desired preparatory to actuating said chart for a type impression.

It is still another object of the present invention to provide a one-finger operated typewriter having a plurality of character designating areas, a selector and a flexible type support to be positioned by the selector to correspond to the character in registration with such selector.

It is still another object of the present invention to provide an improved type selector for a typewriter in which the type is mounted upon a flexible band and a selector is operatively connected to such band to position the band according to the position of the selector relative to a character designating device.

It is still another object of the present invention to provide an improved type selector for a typewriter having a universal keyboard equipped with a plurality of character designating areas corresponding to the position of the keys relative to one another of the universal keyboard of a typewriter, a selector, and a plurality of type corresponding to said areas to be positioned by said selector in printing position according to the area in registration with said selector.

These and other features, capabilities and advantages of the invention will appear from the subjoined detail description of one specific embodiment thereof illustrated in the accompanying drawings in which

Figure 1 is a plan view partly in section of a typewriter made according to the present invention;

Fig. 2 is a fragmental section on the line 2—2 of Fig. 1;

Fig. 3 is a fragmental section on the line 3—3 of Fig. 1;

Fig. 4 is a section on the line 4—4 of Fig. 1;

Fig. 5 is an enlarged fragmental section showing the platen escapement; and

Fig. 6 is an enlarged fragmental perspective of a portion of the type support.

As shown in Figs. 1 and 3, there is provided a base 1 to which there is preferably connected a frame having the side walls 2 and 3 and the front wall 4, the rear wall being broken away.

For supporting a platen 5, there are provided the uprights 6, 7 and 8, 9 extending upwardly from the rear end of the sides of the base 1. The uprights 6, 7 are spaced from one another and the uprights 8, 9 are spaced from one another slidably to receive the laterally extending portions 10 and 11 of the casting 12 which is provided with a horizontally extending recess 13 slidably to receive the flanged base 14 of the bracket 15. The bracket 15, see Fig. 4, has uprights 16, 17 at its ends terminating in journals for the shaft of the platen 5.

Any suitable paper guide may be provided for the platen 5, such for instance as the guide plate 18 and similarly any suitable line space feed for the paper may be provided, such for instance as the rollers 19 for frictionally maintaining the paper in feeding engagement with the platen 5 and the notched wheel 20 and spring detent 21 for predetermining the line spacing feed. The platen 5 may be provided as shown with the usual knurled knobs 22 for turning the platen 5 by hand. Any suitable line spacing mechanism, not shown, may be supplied, in addition to the knobs 22 as is well known in typewriter construction of today. For letter spacing the bracket 15 and therewith the platen 5, the base 14 is provided with a plurality of teeth 23 to be engaged by the pawl 24 hereinafter more fully to be described.

In the present instance, the platen itself is raised, that is shifted to provide for printing upper case letters and the like. For so actuating the platen, the lateral extensions 10 and 11 of the casting 12 have diminished portions 25 and 26 extending laterally of the uprights 7, 8 and 9, 10 to be engaged by the upper faces of the rear ends of the bars 27 and 28 which are fixed to the shaft 29 journaled in the bearings 30 and

31 extending up from the base 1. The front ends of the bars 27 and 28 are provided with the shift keys 32 disposed adjacent to the inner faces of the side walls 2 and 3.

5 The upper case type 33 and lower case type 34 in the present instance are mounted on the flexible band 35 which is preferably composed of a suitable thin gauge metal strip in which the type 33 and 34 are impressed. The ends of the band 35 are connected to the round extensible belt 36 preferably composed of rubber or the like. The belt 36 has mounted thereon the key 37, the position of which will in turn determine the position of the type 33 or 34 selected.

15 The flexible band 35 and the belt 36 together constitute an endless band which is guided around the two small rollers 38, 39, the large rollers 40, 41 and the inclined guide plates 42, 43. The rollers 38 and 39 are channeled to anchor the belt 36 against accidental displacement and are rotatably mounted on the upper ends of the posts 44, 45 extending upwardly from the base 1 disposed outwardly of the shift bars 27, 28. The large rollers 40, 41 not only have a channel 46 centrally disposed to receive the belt 36 when registering with the same but in addition the cylindrical faces 47 and 48 between the flanges 49 and 50 to support the flexible band 35.

The roller 40 is rotatably mounted at the upper end of the post 51 extending upwardly from the base 1 just to the front of the bearing 30 for the shaft 29. The roller 41 on the other hand is rotatably mounted at the upper end of the post 52 extending upwardly from the rear end of the lever 53 fulcrumed to the boss 54 formed on the base 1.

The front end of the lever 53 is connected by the spring 55 to the abutment 56 secured to the base 1 for urging the roller 41 to take up the slack in the combined endless band 35 and 36. The guide plates 42 and 43 are mounted on the posts 142 and 143 extending up from the base 1 and have their rear faces converge toward the rear and spaced from one another at their rear ends.

45 To cooperate with the key 37, there is provided a plurality of character designating areas 57, in the present instance on a plate or board 58. The character designating areas 57 preferably are formed in four laterally extending rows corresponding in position relative to one another to the position of the keys of a universal keyboard. The character designating areas 57 are preferably depressed as indicated in Fig. 2. The keyboard 58 has rearwardly extending side arms 59 and 60 which are pivotally mounted on the shaft 29 and extend rearwardly thereof to the cross rod 61 which connects the ends of the arms 59 and 60 to one another.

The rod 61 is provided to engage the lower edge of the forwardly extending arm 62 of the impression producing bracket 63 which is pivotally mounted on the shaft 64 journaled in the bearing 65 extending upwardly from the base 1. The bracket 63 has an upwardly extending arm 66 which is provided with a contact finger 67 having a rear face concave relative to a substantially vertical axis. Extending rearwardly from the finger 67, there is provided a positioning pin 68 to cooperate with the orifices 69 formed in the flexible band 35 to center the type selected preparatory to making an impression. The spring 70 connecting the arm 62 to the base 1 urges the arm 62 against the rod 61 and urges the rod 61 in turn into engagement with the boss 71 extending upwardly from the base 1.

The bracket 63 has an elongated rear edge 72 to engage the pawl 24 adjacent its pivotal connection with the arm 73 secured to the pivotal pin 74, which in turn has fixed to it the arm 75 connected by the spring 76 with the abutment 77 extending upwardly from the base 1. In order resiliently to urge the pawl 24 into engagement with the teeth 23, there is provided the spring 78 extending from the front edge of the arm 73 around the rear face of the pivotal pin 79 and then to the front edge of the arm 24.

From the foregoing, it will appear that when the key 37 is guided to register with the character designating area corresponding to the type selected, a corresponding type on the band 35 will be positioned between the rear ends of the plates 42, 43 in printing position, whereupon the depression of the board 58 by the depression of the key 37, the pin 68 will engage the orifice 69 adjacent the type selected to center the type and the rod 61 will thereupon actuate the bracket 63 rearwardly to cause the type selected to make an impression, through a suitable inking arrangement, on the paper supported on the platen 5. At the same time by actuation of the pawl 24 by the bracket 63, the pawl 24 will advance to a succeeding tooth and upon the release of the board 58, the spring 76 will cause the pawl 24 after an impression in the regular way to advance the platen a letter space.

In order to advance the platen 5 a letter space without making any impression, the space bar 80 is provided disposed between the front edge of the board 58 and the front wall 4 of the frame. The bar 80 is mounted on the arm 81 extending rearwardly and connected to the sleeve 82 journaled in the shaft 29. The arm 81 extends rearwardly of the sleeve 82 and rests under the projection 83 extending from the side of the bracket 84. The bracket 84 is preferably disposed adjacent to the bracket 63, is also pivotally mounted on the pin 64 and is also provided with an elongated rear edge to engage the pawl 24 and the arm 73, see Fig. 5. The bracket 84 however has no upward extension to cooperate with the type support 35 so that upon the depression of the space bar 80 merely the spacing pawl 24 will be actuated to advance the platen a letter space. The front arm of the bracket 84 is also connected by a spring 85 to the base 1 normally to maintain the bracket 84 with its projection 83 pressing the bar 81 against the extension 85 of the stop bracket 86 secured to the base 1.

Preferably as shown, the platen 5 is normally positioned to receive a lower case impression from one of the type 34 when the lateral extensions 10, and 11 rest on the bottom of the recesses between the uprights 7, 8 and 9, 10 and the platen 5 will in turn be positioned to receive an upper case impression from one of the type 33 when the shift bars 27 or 28 are depressed to engage the projections 87.

In the present instance, the inking mechanism consists essentially of a ribbon 88 fed from the supply spool 89 to the take up spool 90 and extending between the type supporting band 35 and the paper on the platen 5. The supply spool 89 is preferably mounted on the upper end of the post 91 and the take up spool 90 fixed to rotate with the post 92. The post 92 has fixed thereto the toothed wheel 93 adjacent to the base 1. A holding pawl 94 secured to the base 1 engages the toothed wheel 93 against displacement when the ribbon feed is at rest. A feeding pawl 95 is preferably pivotally connected to the lever 96 75

pivotally mounted on the pin 97 which has a slot and pin connection with the pivot pin 79. For resiliently maintaining the pawl 95 in engagement with the toothed wheel 93 the spring 98 is provided extending from the front edge of the lever 96 around the rear face of the pin 99 and then to the front edge of the pawl 95.

In order to anchor the casting 12 against accidental removal from the base plate 1, the brackets 100 are secured to the base plate 1 and have vertically extending slots 101 for receiving the pins 102 extending laterally from the portions 10 and 11 respectively of the casting 12.

It is obvious that various changes and modifications may be made to the details of construction without departing from the general spirit of the invention as set forth in the appended claims.

I claim:

1. The combination with a universal key for a typewriter, of an endless flexible strip having type formations thereon and including an extensible portion, a plurality of guides engaging the inner face of said strip to determine the path of movement of said strip, a plate containing a plurality of position defining areas for said key arranged in a plurality of rows and corresponding to the type on said strip, said key being fixed to said strip and movable with said strip to register with any of said position defining areas in turn to actuate said strip into the type selecting position corresponding to the area in registration with said key, said extensible portion providing for the lengthening of the strip to enable said key to register with any one of said position defining areas.

2. The combination with a paper supporting platen, of an endless band having type formations thereon, a plate containing a plurality of position defining areas arranged in a plurality of rows and corresponding in number and position to the keys of a universal keyboard and also corresponding to the type on said band, a key fixed to said band and movable to register with the position defining area corresponding to the type to be selected, rollers for engaging the inner face of, and supporting said endless band when actuated by said key, and a take up operatively connected to one of said rollers to take up the slack if any in said endless band, said take-up being yieldable to cooperate with the movement of said band to enable said key to register with any one of said position defining areas.

3. In a typewriter having a common printing center, the combination with an endless flexible strip having type formations thereon and including an extensible portion, a plurality of guides engaging the inner face of said strip to determine the path of movement of said strip, a plate containing a plurality of position defining areas corresponding to the type on said strip, a key fixed to said strip and movable to register with the position defining area corresponding to the type on said strip to be selected in turn to move the type selected on said strip to the printing center, and an impression producing action actuatable by said plate to effect an impression of the type selected, said extensible portion providing for the lengthening of the strip to enable said key to register with any one of said position defining areas.

4. In a typewriter having a common printing center, the combination with an endless flexible strip having type formations thereon and including an extensible portion, a plurality of guides en-

gaging the inner face of said strip to determine the path of movement of said strip, a plate containing a plurality of position defining areas corresponding to the type on said strip, a key fixed to said strip and movable to register with the position defining area corresponding to the type on said strip to be selected in turn to move the type selected on said strip to the printing center, said extensible portion providing for the lengthening of said strip to enable said key to register with any one of said position defining areas, an impression producing action actuatable by said plate to effect an impression of the type selected, said strip having a plurality of centering orifices, and a projection on said impression producing action to register with the orifice of the type selected to center the type selected when an impression is effected.

5. In a typewriter having a common printing center, the combination with an endless flexible strip having type formations thereon and including an extensible portion, a plurality of guides engaging the inner face of said strip to determine the path of movement of said strip, a pivotally mounted bracket having a plate at one end thereof containing a plurality of position defining areas corresponding to the type on said strip, a key fixed to said strip and actuatable to register with the position defining area on said plate corresponding to the type on said strip selected in turn to move the type selected on said strip to the printing center, said extensible portion providing for the lengthening of said strip to enable said key to register with any one of said position defining areas, and an impression producing action operatively associated with said bracket to be actuated to effect an impression when said plate is actuated.

6. The combination with a paper supporting platen, of a vertically slidable bracket for said platen, a common printing center, an endless flexible strip having an extensible portion and another portion, an upper row and a lower row of type formations on said latter portion, a plurality of guides engaging the inner face of said strip to determine the path of movement of said strip, a plurality of position defining areas corresponding to the type on said strip, a key fixed to said strip and movable to register with said position defining areas according to the type to be selected and in turn actuate the type selected to said printing center, a take-up device supporting one of said guides and being yieldable to cooperate with said extensible portion and the movement of said strip to enable said key to register with any one of said position defining areas, said platen normally being positioned to receive an impression from a type in the lower row on said strip, and a shift mechanism for shifting said platen into position to receive an impression from the type in the upper row of said strip.

7. The combination with a paper supporting platen, of a vertically slidable bracket for said platen, a common printing center, an endless flexible strip comprising an extensible portion and another portion, a plurality of pairs of type formations on said latter portion, one type of each pair being disposed in an upper row of type and the other type of each pair being disposed in a lower row of type, a plurality of guides engaging the inner face of said strip to determine the path of movement of said strip, a plate having a plurality of position defining areas, each position defining area corresponding to the two type of each pair on said strip, a key fixed to said strip

and movable into registration with said position defining areas according to the type to be selected and in turn actuate the type selected to said printing center, a take-up device supporting one of said guides and yieldable to cooperate with said extensible portion and the movement of said strip to enable said key to register with any one of said position defining areas, means operatively associated with said plate and key to actuate the type selected into impression producing position, said platen being normally disposed to receive an impression from type in the lower row on said strip, and a shift mechanism operatively associated with said vertically slidable bracket to raise said bracket and platen into position to receive an impression from the type in the upper row of said strip.

8. The combination with a key for a typewriter, of a movably mounted endless band having type formations thereon, a plurality of position defining areas for said key arranged in a plurality of rows and corresponding to the type on said band, said key being fixed to said band, and means associated with said band to tension and guide it and yieldable to permit movement of said band to enable said key to register with any one of said position defining areas in turn to actuate said band into the type selecting position corresponding to the area in registration with said key.

9. The combination with a key for a typewriter, of a movably mounted endless band comprising an extensible portion and a portion for carrying type formations, and a plate having a plurality of position defining areas for said key arranged in a plurality of rows corresponding to the type on said band, said key being fixed to said band, and said extensible portion providing for lengthening of the band to enable said key to register with any one of said position defining areas in turn to actuate said band into the type selecting position corresponding to the area in registration with said key.

10. The combination with a key for a typewriter, of a movably mounted endless band having an extensible portion and carrying type formations, a plurality of position defining areas for said key arranged in a plurality of rows corresponding to the type on said band, said key being fixed to said band, and means associated with said band to tension and guide it and yieldable to permit said extensible portion to provide for the lengthening of the band to enable said key to register with any one of said position defining areas in turn to actuate said band into the type selected position corresponding to the area in registration with said key.

11. The combination with a key for a typewriter, of a movably mounted endless band including an extensible portion and a metal band portion having type formations on said metal portion, a plurality of guides engaging the inner face of said band to determine the path of movement of said band, and a plurality of position defining areas for said key arranged in a plurality of rows and corresponding to the type on said band, said key being fixed to said band and said band being movable about said guides and said extensible portion providing for the lengthening of the band to enable said key to register with any of said position defining areas in turn to actuate said band into the type selecting position corresponding to the area in registration with said key.

12. The combination with a paper supporting platen, of a common printing center, an endless type carrying band, a plurality of guides engaging the inner face of said band to determine the path of movement of said band, a pivotally mounted bracket having a plate at one end thereof containing a plurality of position defining areas corresponding to the type on said type carrying band, a key fixed to said type carrying band and movable to register with the position defining area on said plate corresponding to the type on said carrying band selected, and in turn to actuate the type selected to said printing center, a take-up device supporting one of said guides to take up the slack in said band and yieldable to cooperate with the movement of said band to enable said key to register with any one of said position defining areas, an impression producing means operatively connected to said bracket and actuable, when said plate is depressed into impression producing position, and an escapement for said platen operatively associated with said impression producing action.

13. The combination with a paper supporting platen, of a common printing center, an endless type carrying band, a plurality of guides engaging the inner face of said band to determine the path of movement of said band, a pivotally mounted bracket having a plate at one end thereof containing a plurality of position defining areas corresponding to the type on said carrying band, a key fixed to said type carrying band and movable to register with the position defining area on said plate corresponding to the type on said carrying band selected and in turn to actuate the type selected to said printing center, a take-up device supporting one of said guides to take up the slack in said band and yieldable to cooperate with the movement of said band to enable said key to register with any one of said position defining areas, an impression producing means operatively connected to said bracket and actuable, when said plate is depressed into impression producing position, and a ribbon feed operatively associated with said impression producing action.

14. The combination with a paper supporting platen, of a common printing center, an endless type carrying band, a plurality of guides engaging the inner face of said band to determine the path of movement of said band, a pivotally mounted bracket having a plate at one end thereof containing a plurality of position defining areas corresponding to the type on said type carrying band, a key fixed to said type carrying band and movable to register with the position defining area on said plate corresponding to the type on said carrying band selected and in turn to actuate the type selected to said printing center, a take-up device supporting one of said guides to take up the slack in said band and yieldable to cooperate with the movement of said band to enable said key to register with any one of said position defining areas, an impression producing means operatively connected to said bracket and actuable, when said plate is depressed, into impression producing position, a space bar, a blank letter spacing action operatively connected to said space bar, and an escapement for said platen operatively associated with said blank spacing action.

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