Feb. 25, 1930. K. GOMMEL 1,748,172

TYPEWRITING MACHINE

Filed Jan. 27, 1927 3 Sheets-Sheet 1

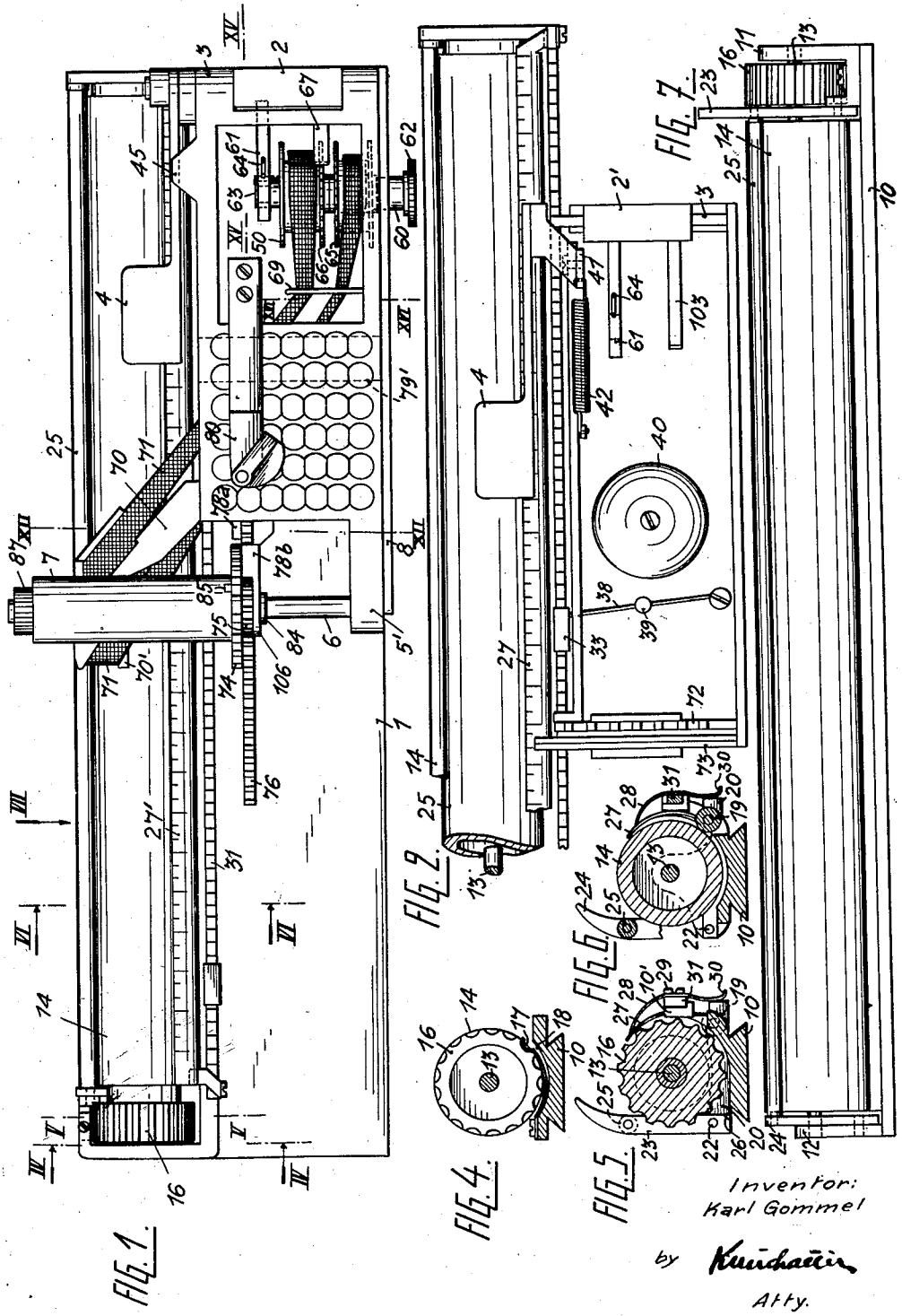


FIG. 1.

FIG. 2.

FIG. 4.

FIG. 5.

FIG. 6.

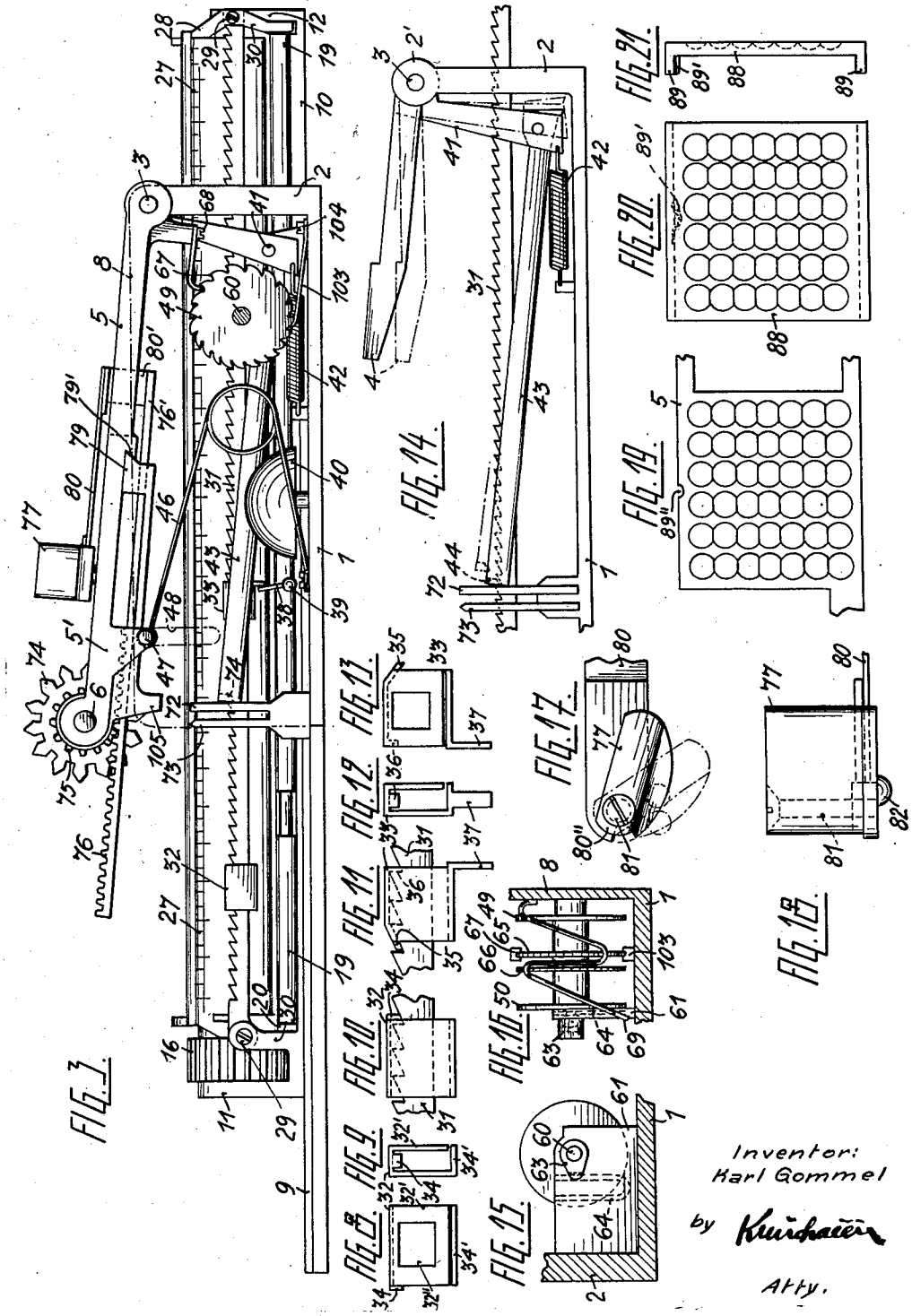
FIG. 7.

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TYPEWRITING MACHINE

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Feb. 25, 1930. K. GOMMEL 1,748,172

TYPEWRITING MACHINE

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FIG. 22.

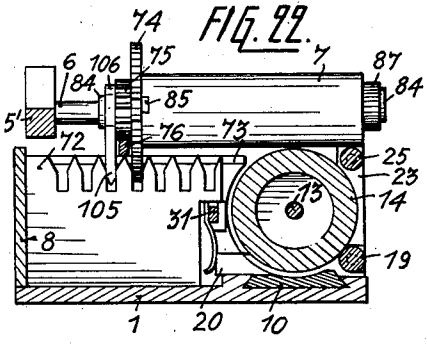


FIG. 23.

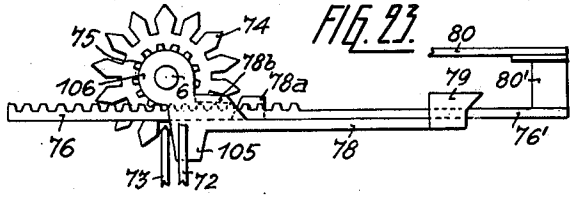


FIG. 24.

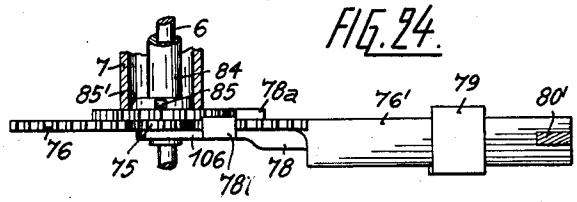
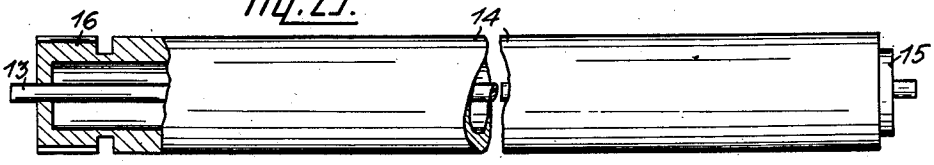


FIG. 25.



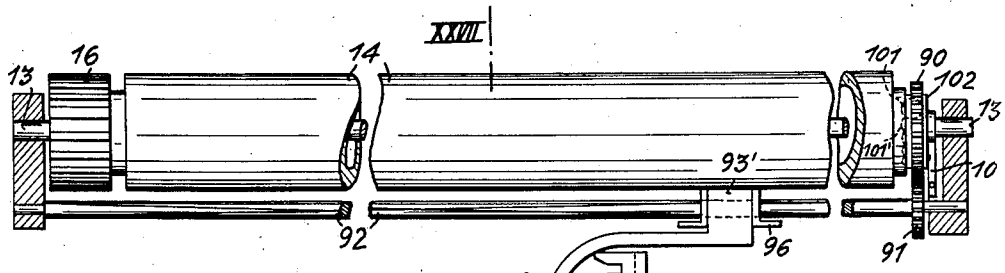


FIG. 26.

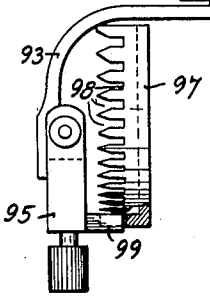
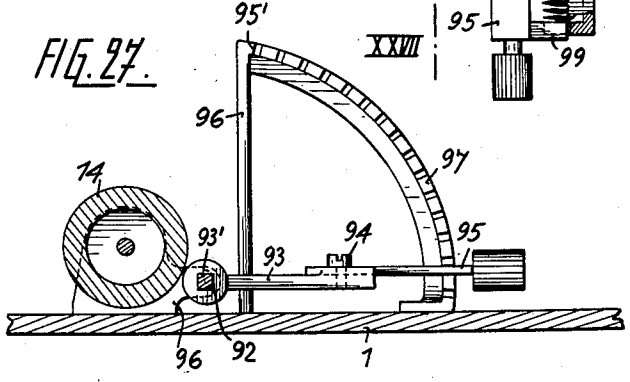


FIG. 27.



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Patented Feb. 25, 1930 1,748,172

UNITED STATES PATENT OFFICE

KARL GOMMEL, OF BERLIN, GERMANY

TYPEWRITING MACHINE

Application filed January 27, 1927, Serial No. 163,999, and in Germany January 30, 1926.

My invention relates to type writing machines and more particularly to machines of the type in which a type cylinder is set by moving an index across a type board and is brought to bear against the paper on the platen.

It is an object of my invention to provide a machine in which simple and reliable means are provided for moving the type cylinder against the platen after it has been set for the desired type, and to this end I arrange the type board to pivot about a pin which extends in parallel to the axis of the type cylinder.

In the drawings affixed to this specification and forming part thereof a device embodying my invention is illustrated diagrammatically by way of example.

In the drawings

Fig. 1 is a plan view of the complete machine,

Fig. 2 is a plan view of the end to which the type board is pivoted, with the type board removed,

Fig. 3 is an elevation of the machine, with the front cover plate removed,

Figs. 4, 5, and 6 are sections on the corresponding lines in Fig. 1,

Fig. 7 is an elevation of the platen viewed in the direction of the arrow "7" in Fig. 1,

Figs. 8 to 13 are detail views indicating the two checks for limiting the motion of the platen,

Fig. 14 is a detail view corresponding to Fig. 3 and showing the spacing key and its accessories separately.

Figs. 15 and 16 are sections on the corresponding lines in Fig. 1,

Figs. 17 and 18 are a plan view and an elevation, respectively, on a larger scale, showing the end of the index,

Fig. 19 is a plan view showing the arrangement of the types on the type board,

Fig. 20 is a plan view and

Fig. 21 is an end elevation of an exchangeable type board,

Fig. 22 is a section on the line XXII—XXII in Fig. 1,

Figs. 23 and 24 are an elevation and a plan view, respectively, of the mechanism for setting the type cylinder,

Fig. 25 is a plan view of the platen,

Fig. 26 is a plan view, and

Fig. 27 is an elevation of an appliance for typing music, in section on the line XXVII—XXVII in Fig. 26.

Referring now to the drawings, 1 is the base plate of the machine, 2 is a vertical web at the right-hand end of the plate, 3 is a pin inserted in an eye 2′ at the upper end of the web 2, 4 is a spacing key and 5 is a type board, both pivotally carried on the pin 3, 5′ is an extension at the lefthand end of the type board, and 6 is a pin secured in this extension, on which pin the type cylinder 7 is rotatably carried on a sleeve 84 which is slidably held on the pin 6 but does not rotate while the type cylinder is free to rotate on the sleeve 84. Preferably the space intermediate the type board 5 and the base plate 1 is covered by a detachable front plate 8.

The platen carriage 10 is preferably dovetailed at the base and adapted to be inserted between corresponding jibs 9, 9 on the base plate 1, as best seen in Fig. 22. 11 and 12 are uprights at the end of the carriage 10, and 13 is the shaft of the platen 14 which is carried in the uprights 11 and 12. The platen 14 is made of rubber or other suitable material with a central tube in which the shaft 13 is seated, and two end discs 15 and 16, the lefthand end disc 16 being a fluted hand wheel, the pitch of the flutes corresponding to the spacing of the lines. A spring pawl 17 is arranged below the platen 14 in a recess 18 of the carriage 10 and adapted to engage the flutes in the end plate 16. The platen is fed by hand but obviously the usual lever and pawl mechanism might be provided instead.

19 is the impression roller which is carried on pins 22 at both ends, the pins being held in slides 20, 20 at both ends of the platen, one of which slides is shown in Fig. 5. Motion is imparted to the slides through the medium of levers 23 and 24 which are fulcrumed on pins 22 of the carriage 10. The ends of the levers are provided with inclined faces 26 so that they will be held in a final position

after having displaced the slides. 25 is a stay connecting the two levers 23, 24 and serving for guiding the paper which comes from the platen 14.

27 is a cover plate for the platen 14 which may be graduated as indicated at 27′, 28 are tongues cut from the cover plate 27 at both ends and secured to a rack 31 by means of screws 29, the rack in turn being held by lugs 10′ which are secured to or integral with the carriage 10. 30 is an extension at the lower end of each tongue 28 which exerts pressure on the end of the corresponding slide 20, forcing the roller 19 against the paper or the platen and holding the levers 23 and 24 with their stay 25 in a definite position, that is, in the vertical position shown in Fig. 5 or in the inclined position in which their faces 26 engage the ends of the slides 20.

32 and 33 are two margin checks which are adapted to be displaced on the rack 31. As will appear from Figs. 8 to 13, the checks are substantially rectangular parts bent from a strip of plate so that a gap is formed between one of their vertical webs 32′ and the adjacent horizontal flange 34′ and this web engages the corresponding face of the rack under resilient pressure. In order to prevent too high frictional resistance between the face of the rack and the web, the web may be partly cut away as indicated at 32″ in Fig. 8. The check 32 is provided with a vertical tooth 34 at one end and the check 33 is provided with an inclined tooth at its opposite end, as the tooth 34 engages the vertical faces and the tooth 35 engages the inclined faces of the teeth in the rack 31. Sufficient space is provided between the flange 34′ and the lower edge of the rack 31 to permit lifting of the teeth 34 or 35 out of the teeth of the rack when it is desired to displace the checks on the rack. Preferably a vertical shorter tooth 36 is provided at the end of the check 33 which is opposite the tooth 35, this additional tooth serving to keep the check engaged with the rack in case the inclined faces of the teeth should force the tooth 35 out of the teeth of the rack. 37 is a lug depending from the lower flange of the check 33 for operating the rod 38 of the hammer 39 for the bell 40.

42 is a spring secured on the base plate 1 at one end and to an arm 41 depending from the spacing key 4, 43 is a pull bar which is pivoted to the arm 41 at one end and engages the teeth of the rack 31 by means of a single tooth 44. Normally the tooth 44 is engaging the rack. When the spacing key 4 is depressed the tooth 44 moves through the distance of one pitch on the rack 31 from the left in Fig. 3 to the right and engages behind the vertical face of the following tooth. When the spacing key is released the spring 42 will return the bar 43 to its initial position so that by engagement of the tooth 44 with the vertical flange the platen is fed through one pitch. Abutments (not shown) are provided for limiting the stroke of the spacing key to prevent overrunning of the platen.

45 is a lateral projection on the frame of the type board which is adapted to engage the spacing key 4 when the frame is depressed so that the spacing key 4 is operated, and the platen 14 is fed forward through one pitch, as often as the frame is depressed.

When it is desired to return the platen to its initial position at the right of the machine the spacing key 4 is depressed until the end of the bar 43 abuts against the wall 2. The end is inclined so that the end of the bar 43 is raised out of the teeth of the rack 31, when its end is thus abutting.

A spring 46 which engages below the pin 47 returns the type board 5 to its normal position after it has been depressed, its upward motion being limited by a curved slot 48 in the front plate 8, as shown in dot-and-dash lines in Fig. 3.

The ribbon spools are free to rotate on a pin 60 which is adapted to be displaced in parallel in a hole in the front plate 8 and a corresponding hole in a web 61 which extends in parallel to the cover plate and at right angles to the transverse web 2. Each spool is provided with end plates 49 and 50 and 65 and 66. The inner end plates 65 and 66 are provided with ratchet teeth on their outer rims and adapted to cooperate with a pair of pawls 67 and 103. A handle 62 is secured on the projecting end of the pin 60 and by means of this handle the end plates 65 and 66 are alternately placed opposite the pair of pawls. In Fig. 1 the handle 62 has been pulled out and the plate 66 of the rear spool is cooperating with the pawls. If the handle 62 is pushed home, as shown in Fig. 16, the end plate 65 of the front spool is placed in cooperative position with respect to the pawl. The pawl 67 is secured on a lug depending from the type board 5 by means of a screw 68 and serves for rotating that plate 65 or 66 which is placed opposite it by axial displacement of the pin 60, as will be described, and the pawl 103 merely serves for holding the plate in position. 104 is a screw by which the pawl 103 is attached to the base plate 1. It will be understood that one of the plates 65 or 66 will be turned as often as the type board 5 is depressed.

Any suitable means may be provided for holding the pin 60 in position, for instance, it may be provided with a cam 63 at one end, which extends into a slot in a web 61. The cam has two shoulders which are alternately engaged by a U-shaped spring 64 housed in a recess of the web 61. Any other means may be provided for this purpose.

In Fig. 1 it has been assumed that the inner end plate 66 of the spool 50 is cooperating with the two pawls 67 and 103. Fig. 16, on the other hand, shows the parts in the

position in which the pin 60 has been pushed home by its handle 62, causing the plate 65 to be placed in cooperative position with the pawls.

The ribbon 71 is guided by means of a wire 69 which is secured to the front plate 8 as will appear from Fig. 16, and is curved into the shape of the letter W. The ribbon is looped across a guide 70′ at the end of a curved arm 70 which is secured to the type board 5. It will appear that the ribbon moves upwards at the guide 70′ and is returned through the wire 69 in stretched condition, passing immediately below the type cylinder 7. This one-sided guiding of the ribbon is very favorable to the visibility of the written matter as the ribbon only passes across the paper at the point where the impression is made.

The proper position of the type cylinder is ensured by the cooperation of a rack 72 with V-shaped teeth, a roof-shaped web 73 and a star wheel 74 on the type cylinder, as best seen in Fig. 22. 105 is a lug secured on the sleeve 84 which, as mentioned, is free to slide on the pin 6 but does not partake in the rotation of the type cylinder. A pinion 75 is inserted between the lug 105 and the star wheel 74 and a rack 76 is adapted to mesh with the pinion so as to rotate the type wheel.

The setting of the type wheel is effected by means of the index 77 which is pivotally carried at the outer end of a spring 80, the other end of which is secured on a bracket 80′ projecting downwards through an opening in the frame of the type board 5, which bracket 80′ is, in turn, connected with a rearward extension 76′ of the rack 76. The rack is free to reciprocate in a slot of a slide 79 which is guided in a corresponding preferably dovetailed slot 79′ in the lower face of the type board 5. 78^a and 78^b are a vertical and a horizontal ear, respectively, for guiding the rack 76 in the vicinity of the lug 105, both ears being integral with a part 78 connecting the slide 79 with the pin 6 through the medium of an eye 106, which constitutes an extension of the lug 105 and is placed in the sleeve 84.

The handle 77 of the index is adapted to pivot about a pin 81 at the outer end of the spring 80 and is free to turn about its pin through a certain angle which is limited by an abutment 80″ on the spring 80. 82 is a hemispherical projection on the lower face of the handle 77 adapted to engage corresponding hemispherical depressions in the type board, as best seen in Fig. 19.

As a rule the index will be in the position indicated in Fig. 1 in which its hemispherical projection 82 is not engaging any of the depressions in the type board. When the hemispherical projection is placed in one of the depressions the type cylinder 7 is displaced and rotated on its pin 6 into the position which corresponds to the desired type, and the type is printed on the paper when the index is depressed, causing the key board 5 to be depressed also. This operation is performed when it is desired to print a small letter. In order to print a capital letter the handle 77 is rotated as far as permitted by the abutment 80″, and this causes a corresponding displacement of the slide 79 and the type cylinder, so that a capital letter moves into the position of the corresponding small letter. Similarly, those types may be exchanged, which normally require exchanging, as for instance a bracket or the like.

The front end of the hollow type cylinder 7 is supported on a disc 85′ which is secured to the rear face of the star wheel 74 or integral with the star wheel, as shown in Fig. 24, and 85 is a tooth or pin projecting from the perimeter of the disc 85 and extending into a slot at the end of the type cylinder, so that the type cylinder is positively connected with the star wheel 74. A nut 87 on the rear end of the sleeve 84 holds the cylinder 7 in position, so that it may be exchanged after the nut has been unscrewed. If desired, the key board may be exchanged as well or preferably a supplementary key board is placed on the existing one. Such a key board 88 is shown in Figs. 20 and 21. Its jibs 89 hold it in position on the key board frame. Longitudinal displacement is prevented by pins 89′ or the like engaging recesses 89″ in the rim of the key board frame. The adaptability of the machine is practically universal, due to the exchangeability not only of the type cylinder but also of the key board.

When the type board 5 is depressed the star wheel 74 will enter one of the grooves in the rack 72 and at the same time the body of the web 73 will enter the space intermediate two of the V-shaped teeth of the star wheel 74 with its ridge. This causes the type cylinder to be adjusted axially as well as radially. An additional axial adjustment is effected by the lug 105 entering another of the grooves in the rack. The cooperation of the parts is facilitated by the inclined faces with which they engage before being finally seated.

Referring now to Figs. 26 and 27, 90 is a gear wheel at the end of the platen 14 which is opposite the handle 16 and 91 is a pinion on a square shaft 92 which is carried in parallel to the platen 14 in the carriage 10. The gear wheel 90 is free to rotate on the shaft 13 of the platen but is under the action of a spiral spring 100 which is secured to the boss of the gear wheel at one end, and to the platen carriage at the other. 93 is a lever the end of which is seated on the shaft 92 by means of a boss 93′ with a square hole therein. A handle 95 is pivoted to the lever at 94. The lever 93 is held against displacement in parallel with the platen 14 by abutments 96

engaging both ends of the boss 93′ and secured to the base plate 1. 97 is a sector which is also secured to the base plate 1 or may be integral therewith. The end of the sector which is facing the handle 95 is provided with V-shaped teeth 98 which are adapted to be engaged by a lug 99 on the handle 95. The spring 100 tends to rotate the platen and the shaft 92 through the medium of the gearing 90, 91, so as to move the lever 93 and its handle 95 into their highest position which is limited by an abutment 95′ at the sector 97.

101 is a ball inserted in a bore of the gear wheel 90, 102 is a spring exerting axial pressure on the spring and tending to force it into hemispherical depressions 101′ in the face of the platen 14.

By turning the handle 16, which in this case is not provided with the pawl 17 as shown in Fig. 4, it is possible to vary the relative position of the platen and the gear wheel 90 when the lever 93 is on the abutment 95′ preventing rotation of the shaft 92 and consequently of the gear wheel 90.

The pitch of the hemispherical depressions 101′ corresponds to the pitch of the lines, so that it is possible to write letters or the words to a tune by placing a type cylinder on the pin 6 instead of a music cylinder. When writing music, however, the ball 101 and its cooperating depressions 101′ serve for setting the platen to systems of music lines. When the platen has been adjusted for a system of music lines the ball 101 serves as an abutment for the gear wheel 90 for setting the pitch of the music by means of the lever 93, its handle 95 and the teeth 98 of the sector 97. The teeth 98 are of such size that when the handle 95 is displaced from one tooth space to the next the platen is rotated and the paper is displaced through such a distance that the note to be written is printed on the paper only for a single graduation of higher or lower pitch. By inserting the tooth 99 in a tooth space of the sector 97 the platen 14 with the paper thereon is adjusted for a line or a space intermediate two lines and held in this position, and by depressing the index handle 77 the note is printed on the paper as described with reference to the typewriting machine. When a system has been completed the platen is fed to the next system by rotating the handle 16.

My novel type writing machine is also applicable to writing in which the words are not placed in horizontal but in vertical lines, for instance, Chinese writing. In this case a type cylinder is provided in which the types are not arranged in parallel to a generatrix of the type cylinder but to a tangent, and preferably the types on the type board are arranged in parallel to the platen.

As mentioned, the type cylinder and the type board may be exchangeable and therefore it is possible to alternately print German and Chinese, or any other types, with the same machine.

It is not absolutely indispensable that the axis about which the type board and the index are pivoting should extend in parallel to the axis of the type cylinder as the pivotal axis of these parts might also be arranged in parallel to the axis of the platen, or in any other position, but parallel arrangement of the pivotal axis and the axis of the type cylinder is preferable.

I wish it to be understood that I do not desire to be limited to the exact details of construction shown and desicribed for obvious modifications will occur to a person skilled in the art.

I claim:—

1. A typewriting machine comprising a frame, a type support, a pivot on said frame about which said type support is adapted to rock, a type cylinder rotatably carried on said support with its axis extending in parallel to said pivot, a type board on said support arranged intermediate said cylinder and said pivot, an index adapted to be displaced with respect to said type board and mechanism operatively connected with said index for setting said type cylinder in conformity with the position of said index.

2. A typewriting machine comprising a frame, a type support, a pivot on said frame about which said type support is adapted to rock, a type cylinder rotatably carried on said support with its axis extending in parallel to said pivot, a type board on said support arranged intermediate said cylinder and said pivot, an index adapted to be displaced with respect to said type board, a pinion on said type cylinder, a rack operatively connected with said index and meshing with said pinion, a guide or support in which said rack is carried to slide, and means for displacing said rack on said board in parallel to the axis of said type cylinder.

3. A typewriting machine comprising a frame, a type support, a pivot on said frame about which said type support is adapted to rock, a type cylinder rotatably carried on said support with its axis extending in parallel to said pivot, a type board on said support arranged intermediate said cylinder and said pivot, an index adapted to be displaced with respect to said type board, mechanism operatively connected with said index for setting said type cylinder in conformity with the position of said index, a platen carriage and platen on said frame, a graduated cover plate for said platen, and springs constituted by tongues cut from said cover plate for holding it engaged with said platen.

4. A typewriting machine comprising a frame, a type support, a pivot on said frame about which said type support is adapted to rock, a type cylinder rotatably carried on said support with its axis extending in parallel

to said pivot, a type board on said support arranged intermediate said cylinder and said pivot, an index adapted to be displaced with respect to said type board, mechanism operatively connected with said index for setting said type cylinder in conformity with the position of said index, a platen carriage and platen on said frame, a graduated cover plate for said platen, springs constituted by tongues cut from said cover plate for holding it engaged with said platen, extensions on said springs, and an impression roller adapted to be forced against said platen by said extensions.

5. A typewriting machine comprising a frame, a type support, a pivot on said frame about which said type support is adapted to rock, a type cylinder rotatably carried on said support with its axis extending in parallel to said pivot, a type board on said support arranged intermediate said cylinder and said pivot, an index adapted to be displaced with respect to said type board, mechanism operatively connected with said index for setting said type cylinder in conformity with the position of said index, a platen carriage and platen on said frame, a graduated cover plate for said platen, springs constituted by tongues cut from said cover plate for holding it engaged with said platen, extensions on said springs, slides in said platen carriage adapted to be displaced by said extensions, an impression roller carried on said slides, and means acting on said slides for moving them against the action of said extensions.

6. A typewriting machine comprising a frame, a type support, a pivot on said frame about which said type support is adapted to rock, a type cylinder rotatably carried on said support with its axis extending in parallel to said pivot, a type board on said support arranged intermediate said cylinder and said pivot, said support defining an opening intermediate said pivot and said board, ribbon spools arranged on said frame below said opening, an index adapted to be displaced with respect to said type board, and mechanism operatively connected with said index for setting said type cylinder in conformity with the position of said index.

7. A typewriting machine comprising a frame, a type support, a pivot on said frame about which said type support is adapted to rock, a type cylinder rotatably carried on said support with its axis extending in parallel to said pivot, a type board on said support arranged intermediate said cylinder and said pivot, said support defining an opening intermediate said pivot and said board, ribbon spools arranged on said frame below said opening, end plates on said ribbon spools, ratchet teeth on the edges of those end plates which face each other, a pawl operatively connected with said type support and adapted to engage said teeth, an index adapted to be displaced with respect to said type board, and mechanism operatively connected with said index for setting said type cylinder in conformity with the position of said index.

8. A typewriting machine comprising a frame, a type support, a pivot on said frame about which said type support is adapted to rock, a type cylinder rotatably carried on said support with its axis extending in parallel to said pivot, a type board on said support arranged intermediate said cylinder and said pivot, said support defining an opening intermediate said pivot and said board, ribbon spools arranged on said frame below said opening, a pin on which said ribbon spools are carried, means for displacing said pin axially, end plates on said ribbon spools, ratchet teeth on the edges of those end plates which face each other, a pawl operatively connected with said type support and adapted to engage the teeth of that end plate which is being presented to it upon displacement of said pin, an index adapted to be displaced with respect to said type board, and mechanism operatively connected with said index for setting said type cylinder in conformity with the position of said index.

9. A typewriting machine comprising a frame, a type support, a pivot on said frame about which said type support is adapted to rock, a type cylinder rotatably carried on said support with its axis extending in parallel to said pivot, a type board on said support arranged intermediate said cylinder and said pivot, said support defining an opening intermediate said pivot and said board, ribbon spools arranged on said frame below said opening, means for guiding the ribbon on the spools in the shape of a loop with substantially parallel reaches, an index adapted to be displaced with respect to said type board, and mechanism operatively connected with said index for setting said type cylinder in conformity with the position of said index.

10. A typewriting machine comprising a frame, a type support, a pivot on said frame about which said type support is adapted to rock, a type cylinder rotatably carried on said support with its axis extending in parallel to said pivot, a type board on said support arranged intermediate said cylinder and said pivot, an index adapted to be displaced with respect to said type board, mechanism operatively connected with said index for setting said type cylinder in conformity with the position of said index, a platen carriage on said frame, a rack on said carriage, a spacing key adapted to rock about said pivot, a tooth operatively connected with said spacing key, and adapted to engage said rack, and means operatively connecting said key and said type support.

11. A typewriting machine comprising a frame, a type support, a pivot on said frame

about which said type support is adapted to rock, a type cylinder rotatably carried on said support with its axis extending in parallel to said pivot, a type board on said support arranged intermediate said cylinder and said support, an index adapted to be displaced with respect to said type board, said index having a spring and a pin adapted to engage depressions in the type board, and means for displacing said pin with respect to said spring, and mechanism operatively connected with said index for setting said type cylinder in conformity with the position of said index.

12. A typewriting machine comprising a frame, a type support, a pivot on said frame about which said type support is adapted to rock, a type cylinder rotatably carried on said support with its axis extending in parallel to said pivot, a type board on said support arranged intermediate said cylinder and said support, an index adapted to be displaced with respect to said type board, said index having a spring, a pin adapted to engage depressions in the type board, a handle on said spring adapted to pivot about a pin thereon, and mechanism operatively connected with said index for setting said type cylinder in conformity with the position of said index.

13. A typewriting machine comprising a frame, a type support, a pivot on said frame about which said type support is adapted to rock, a type cylinder rotatably carried on said support with its axis extending in parallel to said pivot, a type board on said support arranged intermediate said cylinder and said pivot, an index adapted to be displaced with respect to said type board, mechanism operatively connected with said index for setting said type cylinder in conformity with the position of said index, a platen carriage on said frame, a spacing key adapted to rock about said pivot and operatively connected with said carriage, and means operatively connecting said type support and said spacing key so that the spacing key partakes in the downward motion of said type support.

14. A typewriting machine comprising a frame, a type support, a pivot on said frame about which said type support is adapted to rock, a type cylinder rotatably carried on said support with its axis extending in parallel to said pivot, a type board on said support arranged intermediate said cylinder and said pivot, an index adapted to be displaced with respect to said type board, mechanism operatively connected with said index for setting said type cylinder in conformity with the position of said index, a platen carriage on said frame, a rack on said carriage, a margin check on said rack, resilient means for operatively connecting said check and said rack, and a stop on said check permitting movement of said check transversely so as to disengage said check from the teeth of said rack.

15. A typewriting machine comprising a frame, a type board adapted to be displaced with respect to said frame, a pin on said frame, a sleeve adapted to be displaced on said pin, a type cylinder on said sleeve, a pinion on said sleeve, a rack meshing with said pinion, an index operatively connected with said rack, a support adapted to be displaced on said type board and defining a slot in which said rack is guided, said index comprising a spring to the end of which a pin adapted to engage depressions in said type board is secured.

In testimony whereof I affix my signature.

KARL GOMMEL.