UNITED STATES PATENT OFFICE

2,542,868

DETACHABLE PLATEN MOUNTING FOR TYPWRITING OR LIKE MACHINES


Application January 31, 1949, Serial No. 73,802

2 Claims. (Cl. 197—145)

1 This invention relates to a detachable platen mounting for typewriting or like machines.

In using office machines, particularly typewriters, for different kinds of work it frequently is desirable to replace a relatively hard platen with a relatively soft platen, or vice versa, according to whether maximum quietness of operation, or maximum manifolding capacity is desired. The average operator is not able to, or will not take the trouble to make such a change unless it can be done without using any appreciable mechanical aptitude.

It has been proposed heretofore to provide a removable platen mounting construction in which one end of the platen is journaled in a support, e. g. a carriage end plate, in such manner that it may be released so as to permit the platen to be tipped or tilted about its other end, and then moved endwise to disengage its other end from its supporting and journaled means, thus enabling a platen having the desired different characteristics to be substituted by a reverse operation. Examples of prior constructions embodying this basic concept are disclosed in the patent to Myers 1,496,940, and Haneley 2,028,280.

An object of the present invention is to provide a detachable platen and mounting or supporting means thereof of the general class referred to above, but which is of improved construction enabling the platen to be removed from or inserted in operative position more easily than has been possible heretofore.

A representative construction embodying the invention in a preferred form is illustrated in the accompanying drawings, in which:

Figure 1 is a fragmentary front elevation view, partly in section, of a typewriter carriage and removable platen embodying the invention, the platen being shown in its normal position in dotted lines, and being shown in full lines in the position to which it may be tipped for being removed from the carriage;

Figure 2 is an exploded perspective detail view showing a line-spacing spindle and associated parts;

Figure 3 is a vertical cross section on the line 3—3 of Figure 6;

Figure 4 is a detail fragmentary view, partly in section on the irregular line 4—4 of Figure 5, and partly in elevation, drawn on an enlarged scale, showing the right-hand end of the removable platen locked in normal operative position in the carriage;

Figure 5 is a cross section on the line 5—5 of Figure 4; and

Figure 6 is a vertical longitudinal sectional view of the left-hand end of the platen, the associated supporting part of the carriage and line-spacing mechanism.

6 In the drawings illustrating a preferred embodiment of the invention there is shown a typewriter carriage A on which is supported for easy removal and replacement a platen or cylinder B. In most respects the carriage is of standard or well-known construction and includes end plates 1 and 2 on which the platen is journaled at its opposite ends. The arrangement is such that the right-hand end of the platen may be released from its journal support and tipped upwardly from the normal dotted line position to the full line position shown in Figure 1, and then withdrawn toward the right so as to disassociate the left-hand end of the platen from its journal support on the carriage end plate 1.

At its right-hand end the platen is provided with a hub 3 secured to the platen by screws, one of which is shown at 4 in Figure 4. A stub shaft 5 is secured to the platen hub 3 by set screws 6. The outer end of the stub shaft 5 is equipped with a finger knob 7 having a hub 8 secured to the shaft 5 by means of set screws 9. Between the platen hub 3 and the knuck hub 8 is a bearing sleeve 10 in which the shaft 5 is freely rotatable. The sleeve 10 is formed with an exteriorly grooved part 11 adapted to be received in an open-end seat 12 in the carriage end plate 2, the arrangement being such that the sleeve 10 may be inserted in the seat 12 from above, and removed from the seat by upward swinging movement from the dotted line position to the full line position shown in Figure 1.

Normally the sleeve 10 is held in the position shown in Figure 4 and shown in dotted lines in Figure 1 by a retainer or latch 13. The latch 13 is so constructed and arranged as normally to maintain the sleeve 10 firmly in its operative position, but so as to be releasable readily for enabling the right-hand end of the platen to be tipped upwardly for removal. In the form shown, the latch 13 is pivoted as at 14 on the carriage end plate 2, and is provided with a finger piece 15 and with a cam face 16 adapted to engage the sleeve 10 and press it firmly into its seat 12 when the latch 13 is swung from the position shown in dotted lines in Figure 5 to the position shown in full lines in this figure.

In order that the latch 13 may be held releasably in its operative or latching position it is provided with a spring finger detent 17 adapted to engage a fixed pin 18 carried by the end plate...
2. Preferably the detent 17 is formed integrally with a shroud 19 secured to the latch 13 by screws 20 passing through the shroud and having threaded engagement with the latch 13. The shroud provides a cover for the platen hub 5, the latch 13 and the inner end of the sleeve 10, thereby enhancing the appearance of the assembled parts adjacent to the right-hand end of the platen shown in Figure 3. The mounting of the shroud 19 in the latch 13 by the screw and slot connections 20–21 enables the detent finger 17 to be adjusted so as to determine the latched position of the retainer 13 as that in which the proper pressure will be exerted upon the bearing sleeve 10.

The left-hand end of the platen is journaled on the carriage end plate 1 and is operatively associated with line-spacing mechanism by which the platen may be turned through one line space or multiple line spaces, or through fractional line spaces. As shown in Figure 6 the carriage end plate 1 is best to provide an outward horizontal part 22, the left end of which is turned downwardly to provide a depending ear 23. A bearing sleeve 24 extends through the carriage end plate 1 and has its outer end threaded to receive a nut 25 which cooperates with a shoulder 26 on the sleeve 24 for clamping the sleeve in place. A hollow spindle 27 journaled in the sleeve 24 extends outwardly through an opening 28 in the ear 23 and into the hub 29 of a finger knob 30, set screws 31 securing the hub 29 and spindle 27 in fixed assembly. The hub 29 is formed with a reduced part 32 by which the hub is journaled in the opening 28 of the ear 23. As will be described later, turning of the knob 30 and the spindle 27 serves to rotate the platen either a line space or a fractional line space as may be desired.

Mounted to turn freely on the spindle 27 and located to the right of the bearing sleeve 24 is a line spacing ratchet wheel 33 which is fixed to a line spacing coupling ring 34 to be described in more detail hereinafter. The ratchet wheel 33 is adapted to be operated by known mechanism including a combined carriage return and platen line spacing lever (not shown) such as connections between the lever and the ratchet wheel 33 including a pawl 35 carried by a rockable lever 36 adapted to be actuated by the line-spacing lever (not shown) for causing the pawl 35 to engage the ratchet wheel 33 and turn it about the platen axis. A selector shield 37 equipped with a finger piece 38 is mounted for adjustment around the ratchet wheel 33 to enable the operator to select the number of complete line space increments through which the platen is to be turned upon operation of the line-spacing lever (not shown).

New and improved means are provided for coupling the spindle 27 to the platen B, and for coupling the platen to the line spacing ring 34. As shown in Figure 6, the left end of the platen B is provided with a hub 39 secured to the platen by screws 40. The hub 39 is formed with an axial opening 41, the outer end of which is adapted to receive the inner end portion of the spindle 27 which projects toward the carriage end plate 2 end is rounded or tapered as at 42 for facilitating placing of the hub 39 in the position shown in Figure 6 in which the platen and spindle 27 are centered with respect to each other. The hub 39 is formed with cylindrical outer end part 43 which receives for sliding movement a disk part 44 to which are fixed three guide pins 45 extending through bearings or bushings 46 secured in holes 47 in the platen. Springs 48 positioned between the central hole 49 and the disk part 44 in the disk 50 shown in Figures 5 and 6. When the parts are assembled, the ring 50 is fast with the disk part 44 and the finger 51 projects inwardly through a slot 53 in the hub 39 so as to intersect the platen axis. In order that the disk 44 may be operatively coupled to the line-spacing ring 34 in rotational driving relationship, the disk is formed with three circumferentially spaced radial extensions 54–55–56 which are toothed respectively at 55, 55 and 56 so as to be engageable with internal 57, 57 and 58 respectively. The teeth 55, 55 and 58 are tapered, as best shown in Figure 6, to facilitate movement of the disk 44 from the left of the toothed part 56 of the ring 34 to a position in which the toothed part of the ring surrounds and is engaged by the teeth on the disk 44.

In order that the disk may be turned smoothly from the toothed part of the ring 34 when the platen is journaled in its normal position, and in order that the platen may be turned through a fractional line space increment, a rod or pin 57 is mounted for sliding movement in the hollow spindle 27 and has its inner end arranged to engage the finger 51 carried by the disk 44 so that the disk may be pushed toward the right in Figure 6 to remove it from engagement with the ring 34. Fixed to the outer end of the rod 57 is a finger button 59. A sleeve 59, fixed to the rod 57 adjacent to the button 59, is formed with an external flange 60 which is adapted to engage an internal flange 61 on the knob hub 29 for limiting the outward movement of the rod 57 and the button 58 under the urge of a spring 62 interposed between the button 58 and the left end of the hub 29. Normally the spring 62 holds the button 58 and rod 57 in the position shown in Figure 6 in which the right-hand end of the rod 57 is disengaged from the finger 51 carried by the fractional line spacing disk 44. By pressing the button 58 toward the right, the rod 57 will be caused to push the finger 51 and the disk 44 to the right to disengage the teeth 55, 55 and 56 from the teeth 56 of the ring 34.

The mechanism for coupling the finger knob and the spindle 27 in rotational driving relationship with the platen B includes a radial arm 63 secured to the inner end portion of the spindle 27 and having its outer end bent to provide a broad flat thin tongue 64 extending parallel to the platen axis and toward the end plate 2. The broad flat faces of the tongue are disposed substantially tangentially to imaginary circles concentric with respect to the spindle axis. When the parts are in the assembled relationship shown in Figure 6 the tongue 64 projects through the general plane of the teeth 56 on the ring 34, and into one of three openings 65, 65 and 65 in the disk 44. The openings are spaced circumferentially from each other and are displaced angularly with respect to the disk extensions 54, 55 and 56 so that each opening lies midway between two adjacent disk extensions. The drawings show the parts so positioned that the tongue 64 projects into the disk opening 65, whereby when the spindle 27 and arm 63 are rotated, the tongue
5  

64 will drive the disk and hence the platen rotationally.

When it is desired to effect only a fractional line spacing movement of the platen, the button 53 is pushed inwardly to disengage the disk 44 from the ring 34 as described above, enabling the knob 36 to turn the platen through the medium of the spindle 27 and the arm 63 while the line spacing ring 34 and ratchet wheel 33 remain stationary.

A particular advantage provided by the present invention is the ease with which the platen may be tipped and otherwise manipulated for placing it in or removing it from its normal position. This advantage results more particularly from the novel formation and arrangement of the holes 65°, 66° and 67°, and the tongue 64. As shown in Figure 5, each of the holes 65°, 66° and 67° is substantially rectangular and includes two opposed sides which extend parallel to one another and substantially or generally radially with respect to the axis of the disk 44. These two sides of each hole are so spaced as snugly or closely to engage or embrace the two longitudinally extending edges of the tongue 64. The other two sides of each of the openings 65°, 66° and 67° are mutually opposed and are spaced from each other so as to provide substantially more clearance with respect to the flat surfaces of the tongue 64 than would be required for accommodating the tongue when the spindle 27 and the platen are axially aligned. In a general way, the inner and outer sides of the openings are tangent to imaginary circles concentric with the axis of the disk 44.

The platen can most easily be placed in its operational position by first turning the spindle 27 to place the tongue 64 above the axis of the spindle 27 as shown in Figures 1 and 6, and then inserting the tilted platen endwise to the left to the position shown in full lines in Figure 1 in which the tongue 64 is received by the openings 65°. The ample clearance between the broad faces of the tongue 64 and the inner and outer sides of the opening 65° makes it possible for the platen to be inserted in the tilted position, and then swung downwardly to horizontal position without any binding between the tongue 64 and the sides of the disk opening 65°.

Because of the angularly displaced positions of the openings 65°, 66° and 67° with respect to the disk extensions 54°, 55° and 56°, each of the openings is disposed diametrically opposite one of the disk extensions. For example, as shown in Figure 4, the disk opening 55° is diametrically opposite the extension 54°. After the platen has been placed in the tilted position with the tongue 64 extending into the opening 65° and is then tilted, the teeth 55° on the extension 54°, which will move more than any other part of the disk 44 during tipping of the platen to its horizontal position, will extend and move parallel to the adjacent teeth 56 on the ring 34. This will enable the teeth 55° to be moved into mesh with the adjacent teeth 56 without substantial binding, the tipping of the platen not bringing about any substantial lack of parallelism between the teeth 55° and the adjacent teeth 56. The teeth 55° and 56° on the disk 34 will be somewhat out of parallelism with the adjacent teeth 56 during the tipping movement, but the teeth 55° and 56° are located at or close to the axis of tipping that the relative movement between these teeth and the teeth 55° is small, and no appreciable binding or interference to tipping can be noticed.

6  

The construction illustrated and described herein embodies the invention in a preferred form but it is intended that the disclosure be illustrative rather than definitive of the invention. The invention is defined in the claims.

We claim:

1. In a typewriting or like machine, a support having spaced end members; a spindle journaled in one of said end members and having an inner end portion projecting towards the other of said end members; a fractional line spacing mechanism including a ring concentric with and spaced radially from said spindle and formed internally with teeth extending parallel to the spindle axis; an arm fast with said spindle and extending radially outwardly therefrom and having at its outer end a flat broad thin tongue projecting parallel to the spindle axis through the general plane of said ring and towards said other of said end members, and having its broad faces tangent respectively to circles concentric with said spindle; a cylindrical platen having at one of its ends means cooperate with said spindle inner end portion for centering said platen end with respect to said spindle; a disk on said platen end having three radial extensions equally spaced circumferentially from each other and having outer toothed portions adapted to mesh with the internal teeth on said ring, said disk also having three openings equally spaced circumferentially from each other and displaced angularly about the disk axis so that there is one such opening angularly midway between each two adjacent disk radial extensions, any one of said openings being adapted to receive said tongue for coupling said spindle to said platen in rotational driving relationship, each of said openings being substantially rectangular and having two opposed substantially radial sides adapted snugly to embrace opposite edges of said tongue, the other two sides of each opening being spaced radially from each other by substantially more clearance than is required for accommodation of said tongue when said spindle and platen are axially aligned; an open end bearing sleeve seat in said other of said end members; a bearing sleeve for journauling the other of said platen ends and being receivable in said seat; and a releasable retainer for holding said sleeve in said seat, re-loading of said retainer permitting said platen to be removed from said support by tilting the platen about said one of its ends and then moving it longitudinally of its axis.

2. In a typewriting or like machine, a support having spaced end members; a spindle journaled in one of said end members and having an inner end portion projecting towards the other of said end members; a fractional line spacing mechanism including a ring concentric with and spaced radially from said spindle and formed internally with teeth extending parallel to the spindle axis; an arm fast with said spindle and extending radially outwardly therefrom and having at its outer end a flat broad thin tongue projecting parallel to the spindle axis through the general plane of said ring and towards said other of said end members, and having its broad faces tangent respectively to circles concentric with said spindle; a cylindrical platen having at one of its ends means cooperate with said spindle inner end portion for centering said platen end with respect to said spindle; a disk on said platen end having three radial extensions equally spaced circumferentially from each other and having outer toothed portions adapted to mesh with the
internal teeth on said ring, said disk also having three openings equally spaced circumferentially from each other and displaced angularly about the disk axis so that there is one such opening angularly midway between each two adjacent disk radial extensions, any one of said openings being adapted to receive said tongue for coupling said spindle to said platen in rotational driving relationship, each of said openings being substantially rectangular and having two opposed substantially radial sides adapted snugly to embrace opposite edges of said tongue, the other two sides of each opening being spaced radially from each other by substantially more clearance than is required for accommodation of said tongue when said spindle and platen are axially aligned; and means journalling the other of said platen ends in said other of said end members in a manner to permit releasing of said other of said platen ends and tilting of said platen to disengage it from said spindle and said tongue.

HENRY J. HART.
WILLIAM H. KUPPER.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

<table>
<thead>
<tr>
<th>Number</th>
<th>Name</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,033,125</td>
<td>Secor</td>
<td>July 23, 1912</td>
</tr>
<tr>
<td>1,496,940</td>
<td>Myers</td>
<td>June 10, 1924</td>
</tr>
</tbody>
</table>