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W. A. DOBSON

1,908,327

TYPEWRITING MACHINE

Filed April 19, 1930

FIG. 1.

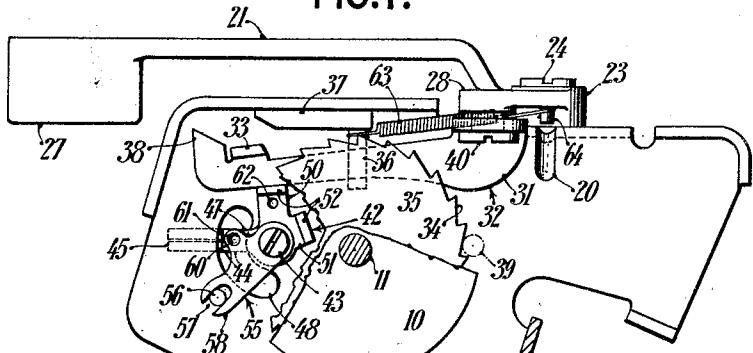


FIG.4.

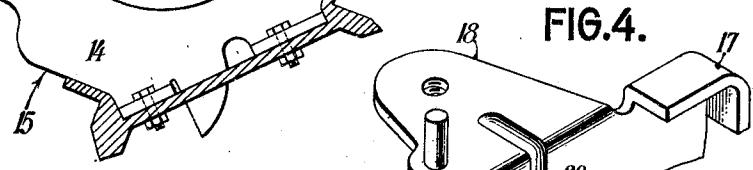


FIG. 2.

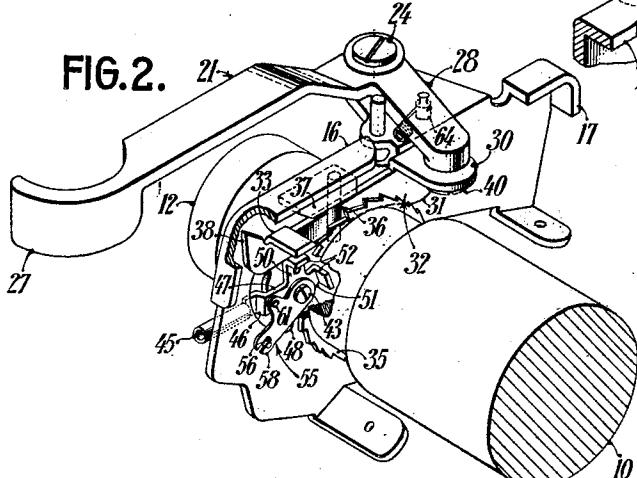


FIG. 5.

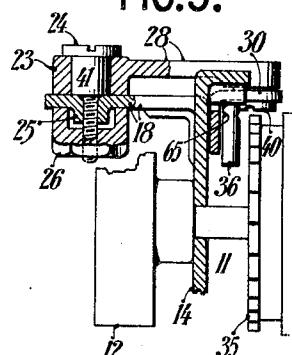
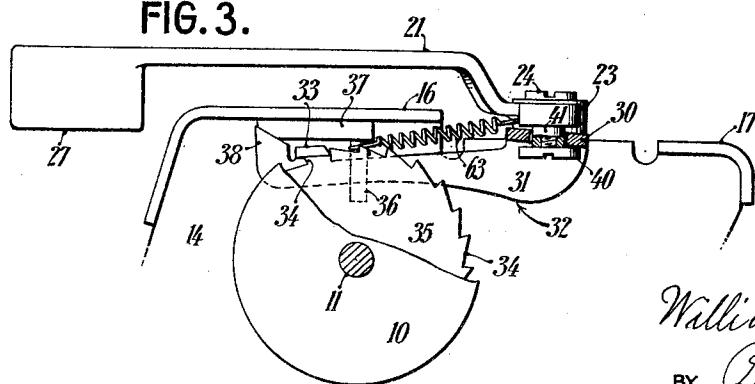


FIG. 3.



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TYPEWRITING MACHINE

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This invention relates to the platen-carriage and its line-spacing mechanism in portable typewriting machines of the Underwood class.

5 The portable machine is required to be compact, light, simple, inexpensive and not apt to get out of order, and it is the aim of this invention to provide a line-spacing mechanism which shall meet all the exacting 10 requirements for an Underwood portable machine.

A feature of the present invention is a platen-frame end made entirely in one piece pressed up from sheet-metal and having 15 mountings thereon for the reciprocating members of the line-spacing mechanism, and also for the line-space regulator, the whole forming a durable, reliable, light, compact 20 device which can be cheaply manufactured as a unit and applied to the bed-portion of the typewriter-carriage.

The upper edge portion of the carriage-end plate is bent over to form a flange directed inwardly towards the platen, and 25 providing a pocket or confined space in which are assembled a line-space pawl and line-space regulator. The pawl at its rear end is pivoted to a short arm of a bell-crank line-space lever, the latter being pivoted upon an arm which is bent outwardly 30 from the top of said carriage end plate.

The line-space pawl includes a body-portion which lies along the inner face of the carriage end plate, and at its rear is bent 35 over to form an ear which is pivoted to the line-space lever. The pawl has at its front end another bent-over ear to form a tooth for driving engagement with the ratchet-wheel on the platen. The pawl has also at its 40 front end an upwardly-projecting, cam-shaped tooth, the purpose of which is to engage a cam-block which is fixed to the under side of the inturned flange on the carriage end plate, and by such engagement to lock 45 the platen against overthrow.

The line-space wheel may be brought very close to the platen-frame end, making it unnecessary to prolong the carriage beyond the 50 requirements for a portable machine, while it is also rendered practicable to employ a

left-hand platen-knob upon the projecting platen-axle, said knob being beneath the line-space lever, and lower than the bent-out arm which carries the latter.

The short arm of the bell-crank lever extends to a point back of the line-space wheel, but does not interfere with the travel of the work-sheet around the platen, nor make it necessary to reduce the width of the work-sheet.

The overthrow tooth of the pawl and the cam-block are both directly under the in-turned flange of the end plate, so that stiffness is secured, and consequent accuracy and reliability of the overthrow-preventing function.

A hollow bearing is drawn down at the outer end of the arm, and through this is threaded a shoulder-screw, to form a stable fulcrum for the line-space lever. The threaded stem of the screw extends far below the arm, and a hollow jam-nut or shell is threaded thereon, the jam-nut being of large diameter and housing the drawn-down bearing. The upper edge or face of the nut is of great diameter, and bears up against the bores of the arm and binds the screw very effectively. The bent-over arm and the described parts form an inexpensive and solid mounting for the lever.

A stiffening rib may be provided where the arm is bent out from the carriage end plate, thus permitting the use of relatively light metal without undue weakness of the plate and arm.

The pawl is normally out of mesh with the line-space ratchet-wheel and slides backward and forward upon a rest that is mounted at the forward end of the pawl. The rest is compound and shiftable, having two portions, either of which may be swung into use by means of a handle that is secured to the rest-device or regulator, which is pivoted to the inner face of the carriage end plate. One rest supports the pawl at a higher position than the other, so that the pawl may engage the ratchet-wheel at a point to rotate the platen for either one or two line-spaces before it is arrested by its overthrow stop. The handle-portion of

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this regulator extends through an opening that is cut in the side plate, and is thus rendered accessible.

Other features and advantages will hereinafter appear.

In the accompanying drawing,

Figure 1 is a cross-sectional view, looking toward the left side of an Underwood portable typewriter, broken away in part, and 10 having my invention applied thereto.

Figure 2 is a perspective view of the structure shown in Figure 1.

Figure 3 is an operational view, showing the drive-pawl engaging a stop-plug and preventing overthrow of the ratchet-wheel in a well known way.

Figure 4 is a detail view illustrating a preferred construction for mounting the line-space lever.

20 Figure 5 is a front view of the left end of the typewriter shown in Figure 1 broken away in part. This view illustrates a preferred mounting of the line-space lever and the compact mounting of the drive-pawl for the platen ratchet-wheel.

In an Underwood portable typewriting machine a usual platen 10 is mounted on a shaft 11. A finger-wheel 12 for rotating the platen is usually mounted on the right-hand end of the shaft 11, which is journaled in a sheet-metal right end plate (not shown) and a sheet-metal left end plate 14 of a usual platen-frame 15.

35 The end plate 14 is bent inwardly to form flange-portions 16 and 17, and outwardly to form an arm 18. The latter may be pressed with an integral stiffening rib 20.

A line-space lever 21 has a hub 23 for receiving a pivot-screw 24 threaded in a 40 downwardly-extending boss 25 drawn in the end of arm 18. A lock 26 having a cup form for housing the boss 25 may secure screw 24.

45 The lever 21 has a forwardly-extending arm 27 and an inreaching arm 28. Upon the under side of the inner end of the latter is mounted an integral flange 30 disposed approximately in a horizontal plane below the arm 28 and transversely disposed to the 50 plane of a body-member 31 of a ratchet-wheel drive-pawl generally designated as 32. The left face of the body-member 31 is disposed against the right face of the left end plate 14, which thereby helps to guide the pawl 32 in a vertical working plane. A tooth 33 may be bent at right angles to the body-member 31 for engaging with teeth 34 of a ratchet-wheel 35 on the platen-shaft.

60 at the left end of the platen. To help keep the body-member 31 in position against the end plate 14 a down-reaching pin 36 is fastened in a stop-block 37 which is strongly fastened against the under side of the inreaching flange 16.

65 To prevent sudden engagement of the

tooth 33 with the ratchet-wheel 35 from overthrowing the latter, the forward end of the block 37 may be beveled, as shown in Figure 1, for engagement with the beveled end of an upreaching integral stop-lug 38 on the forward end of the pawl 32, as shown in Figure 3. A usual detent-roller 39 also helps to prevent overthrow.

The full angular movement of the arm 28 is sufficient to move the pawl rearward a distance to rotate the platen 10 through a double line-space. To determine whether the usual throw of the line-space lever is to rotate the platen a single or a double line-space, the starting position of the tooth 33 may be varied or regulated for engaging a differently positioned tooth 34 of the ratchet-wheel 35. To this end, the flange 30 (see Figure 3) has an aperture slightly larger than a shoulder-screw 40 passed through it for fastening it to the arm 28, and the length of a shoulder-portion 41 of the screw 40 is greater than the thickness of the sheet-metal stock of the flange 30. Also instrumentalities are provided adjacent the forward end of the pawl 32, between the end plate 14 and the platen 10, for supporting the pawl in a starting position for single line-spacing or double line-spacing.

According to the present invention, these supporting instrumentalities include a sheet-metal pawl-regulator member generally designated as 42 pivoted on a shoulder-screw 43, which is threaded in a tapped hole in the end plate 14. The pawl-regulator member 42 has a forwardly-extending arm 44 whose outer end 45 has a tubular form for convenience when being grasped by an operator's fingers. The outer tubular end 45 is disposed adjacent the outer or left face of the end plate 14 and is connected by an integral inreaching offset 46 to an inner arm-portion 47, which is disposed against the inner face of the end plate 14. The offset 48 passes inwardly through a curved slot 110 in the end plate.

The pawl-regulator member 42 further includes two radial pawl-supporting arms 50 and 51 of unequal lengths, the arm 51 being shorter than the other and in the rear thereof, and each arm is provided with an inreaching lug 52. The pawl 32 may rest on the lug 52 of the longer arm 50, as shown in Figure 1, and the pawl-tooth 33 is positioned for engaging a tooth 34 of the ratchet-wheel which is positioned equivalent to one line-space distance from the rearmost position of the pawl-tooth 33.

By simply moving the tubular end 45 down, the shorter arm 51 is swung to an upright position and the longer arm 50 is swung forward, permitting the pawl 32 to drop onto the lug 52 of the shorter arm. The pawl-tooth 33 is now set for engaging a tooth 34 of the ratchet-wheel, which is posi-

tioned a distance from the rearmost position of the pawl-tooth which corresponds to two line-spaces.

To hold either of arms 50 or 51 in effective position, a detent-member 55 of spring metal may be mounted by means of the screw 43 engaging through a hole in the detent-member and by a pin 56, fast to the end plate 14, which engages in a slot 57 in an arm 10 58 of the detent-member. An ear 60 of the detent-member 55 may have a leftwardly-extending integral detent bump or knob 61 for engaging in either of two small recesses 62, provided in the pawl-regulator member 15 42; one recess 62 is made in the arm 50 and the other recess in the inner arm-portion 47.

After the lever 21 has been operated and the arm 28 swung to its rearmost position, as determined by engagement of the beveled 20 end of the lug 38 with the beveled block 37, the arm 28 and pawl 32 will be returned to starting position by a return spring 63 which has one end fastened to a downwardly-extending pin 64 in the arm 28, and the 25 other end to the pin 36. As illustrated in Figure 5, the pin 36 will be notched at 65, whereby the spring 63 fastened to the pin will not bind the pawl 32 sliding between the pin and the end plate member 14.

30 It will be seen at Figure 5 that the platen is lengthened out until the line-space wheel 35 is brought right up to the end 14 of the platen-frame, so that the flange at the top thereof practically overlies the line-space 35 wheel 35. This leaves a greatly contracted space between the line-space wheel and the platen-frame end 14, but the line-space train is packed within this limited space by 40 eliminating the bulky slide heretofore employed. The pawl is placed against the inner face of the platen-frame end 14, under the flange 16, and is confined by means of a pin 36 thrust down from the flange; the pawl working in the space between the pin 45 and the flange, and being readily withdrawable or insertible into said space by passing it under said pin.

The pawl so placed is operable by means of the line-space lever, an ear being bent inwardly from the pawl and pivoted upon a shoulder-screw which passes up through the pawl-ear and into the arm 28 of the line-space lever. Said arm at its work-end terminates within the platen-frame, and at its 55 outer end is mounted upon a shoulder-screw, which is threaded into the supporting arm 18 that is bent outwardly from the top of the end of the platen-frame. This gives the pivot 40 of the arm sufficient swing in a 60 substantially straight line, to operate the line-space pawl, and the latter is loosely mounted upon the screw 40, to permit its front end to vibrate over the teeth of the line-space wheel.

65 The platen-knob 12, which approximates

the diameter of the platen 10, is disposed close to the outer side of the platen-frame end 14; and the forwardly-extending arm of the line-space lever 21 is arched over the knob 12, to give ample room for the play of the fingers in manipulating said knob; both the supporting arm 18 and the bell-crank arm 28 being spaced substantially in rear of the platen-knob 12, to give ample finger clearance.

In order to make it feasible to use a supporting arm 18 bent out from the platen-frame end, the latter is stiffened by the struck-up rib 20. The shoulder-screw 41 is threaded down through a long bearing provided by a rib 25 in the outer end of the arm, this rib being housed by the nut 26, which is in the form of a cup, enclosing said bearing 25. By reason of its great diameter, the nut harmonizes with the hub 23 and 80 also secures a strong frictional purchase upon the under side of the arm 18.

One of the solutions of the problem of compactness resides in the improved construction of the line-space regulator, which is a plate placed beneath the line-space pawl 32, and held against the inner face of the platen-frame end 14 by means of shoulder-screw 43, and having bent-out rests for the pawl, to vary its line-spacing effect. This regulator passes out through a slot in the platen-frame end, and is bent forwardly to form an operating handle 45; the screw 43 also securing a spring-plate 55, which detains the line-space regulator at either position. This regulator is compactly confined under the pawl and under the flange 16 of the platen-frame end, and is simple, inexpensive and reliable.

90 Variations may be resorted to within the scope of the invention, and portions of the improvements may be used without others.

Having thus described my invention, I claim:

1. In a portable typewriting machine, the combination with a platen, of a platen-frame having an end in the form of a plate having an inward top flange juxtaposed to the platen, and a line-spacing train in the form of a bell-crank lever pivoted at its elbow upon an arm bent outwardly from the top of said end plate, a pawl lying beneath said flange and flat against the inner face of said end plate and having an inwardly-directed ear bent therefrom and held up against the inner end of said lever-arm by a universal joint, and a guide for the pawl extending down from said flange; the lever with the attached pawl forming a unit detachable from and attachable to said end plate.

115 2. In a portable typewriting machine, the combination with a platen, of a platen-frame having an end in the form of a plate having an inward top flange juxtaposed to the platen, and a line-spacing train in the form

of a bell-crank lever pivoted at its elbow upon an arm bent outwardly from the top of said end plate, a pawl lying beneath said flange and flat against the inner face of said end plate and having an inwardly-directed ear bent therefrom and held up against the inner end of said lever-arm by a universal joint, a guide for the pawl extending down from said flange; the lever with the attached pawl forming a unit detachable from and attachable to said end plate, a shoulder-screw whereon said lever is mounted, said screw threaded down through a boss drawn in said supporting arm, and a nut in the form of a cup threaded upon said screw and housing said boss.

3. In a portable typewriting machine, the combination with a platen, of a platen-frame having an end in the form of a plate having an inward top flange juxtaposed to the platen, and a line-spacing train in the form of a bell-crank lever pivoted at its elbow upon an arm bent outwardly from the top of said end plate, a pawl lying beneath said flange and flat against the inner face of said end plate and having an inwardly-directed ear bent therefrom and held up against the inner end of said lever-arm by a universal joint, and a guide for the pawl extending down from said flange; the lever with the attached pawl forming a unit detachable from and attachable to said end plate, the pawl-pivot moving in an approximately straight line to an extent sufficient to line-space the platen, and the pawl being loosely mounted upon the pivot to permit it to vibrate over the teeth of the line-space wheel.

4. In a portable typewriting machine, the combination with a platen, of a platen-frame having an end in the form of a plate having an inward top flange juxtaposed to the platen, and a line-spacing train in the form of a bell-crank lever pivoted at its elbow upon an arm bent outwardly from the top of said end plate, a pawl lying beneath said flange and flat against the inner face of said end plate and having an inwardly-directed ear bent therefrom and held up against the inner end of said lever-arm by a universal joint, a guide for the pawl extending down from said flange; the lever with the attached pawl forming a unit detachable from and attachable to said end plate, and a platen-knob of approximately the diameter of the platen and connected thereto and disposed close to the outer side of said platen-frame end, the forwardly-extending arm of said line-space lever being arched over the platen-knob, and said outwardly-bent arm of the platen-frame being sufficiently in rear of said knob to afford finger-room therefor.

5. In a portable typewriting machine, the combination with a platen, of a platen-frame having an end in the form of a plate

having an inward top flange juxtaposed to the platen, and a line-spacing train in the form of a bell-crank lever pivoted at its elbow upon an arm bent outwardly from the top of said end plate, a pawl lying flat against the inner face of said end plate and having an inwardly-directed ear bent therefrom and held up against the inner end of said lever-arm by a pivot, a guide for the pawl extending down from said flange; the lever with the attached pawl forming a unit detachable from and attachable to said end plate, and a regulator in the form of a plate also lying against the inner face of said platen-frame end and beneath said pawl, a shoulder-screw holding said plate against the inner face of the platen-frame end, said regulator having bent-over rests for the pawl, to vary its line-spacing effect.

6. In a portable typewriting machine, the combination with a platen, of a platen-frame having an end in the form of a plate having an inward top flange juxtaposed to the platen, and a line-spacing train in the form of a bell-crank lever pivoted at its elbow upon an arm bent outwardly from the top of said end plate, a pawl lying flat against the inner face of said end plate and having an inwardly-directed ear bent therefrom and held up against the inner end of said lever-arm by a pivot, a guide for the pawl extending down from said flange; the lever with the attached pawl forming a unit detachable from and attachable to said end plate, a regulator in the form of a plate also lying against the inner face of said platen-frame end and beneath said pawl, a shoulder-screw holding said plate against the inner face of the platen-frame end, said regulator having bent-over rests for the pawl, to vary its line-spacing effect, said regulator having an operating arm passing out through a slot in the platen-frame end, and bent forwardly to form an operating handle; and a spring-detent plate secured by said screw to retain the line-space regulator in different working positions.

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