July 29, 1941. W. A. DOBSON 2,251,122

TYPEWRITING MACHINE

Filed Oct. 26, 1939 2 Sheets-Sheet 1

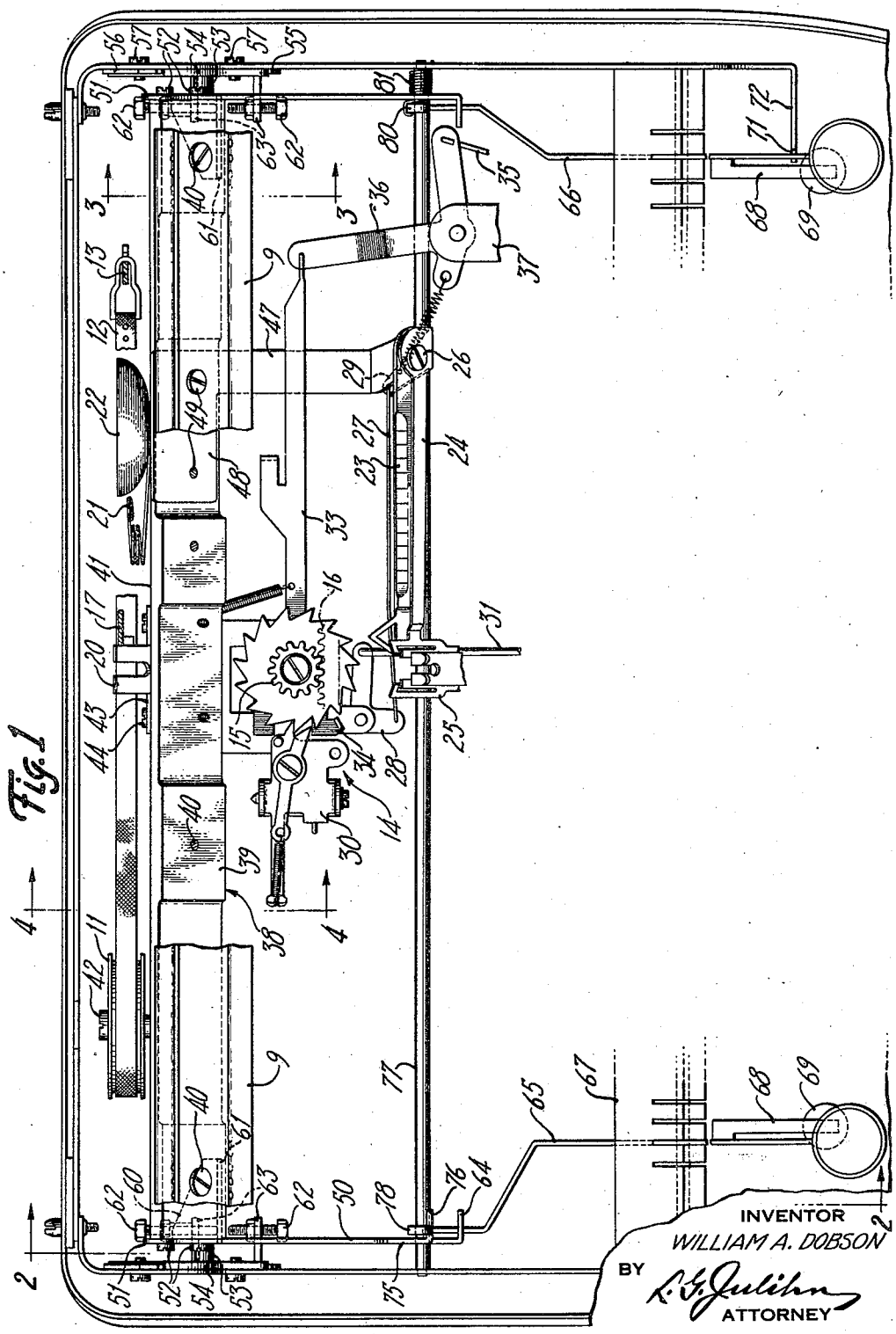


Fig. 1

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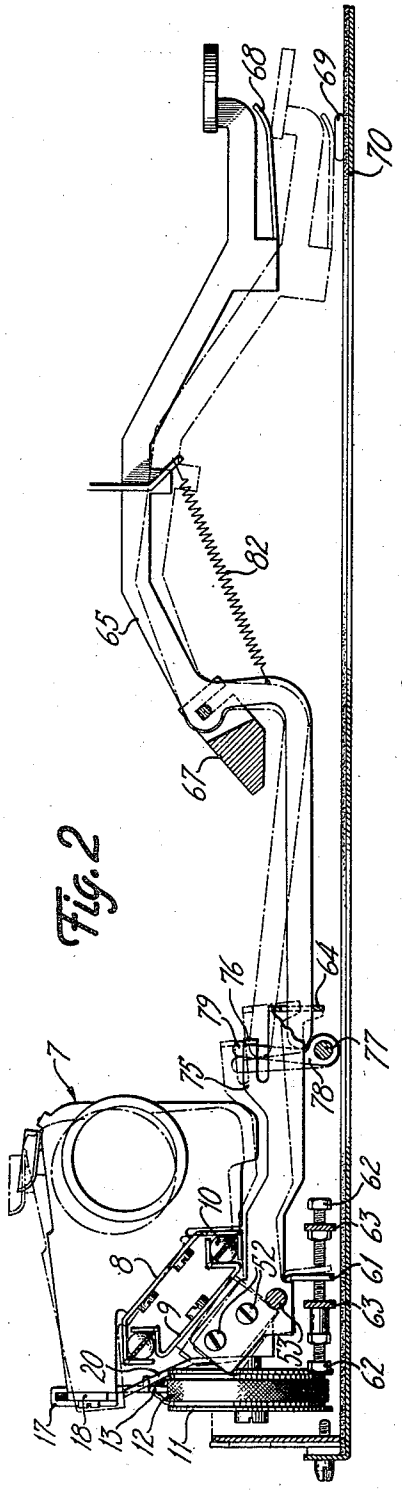


Fig. 2

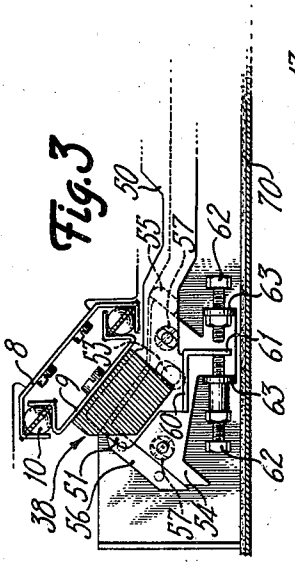


Fig. 3

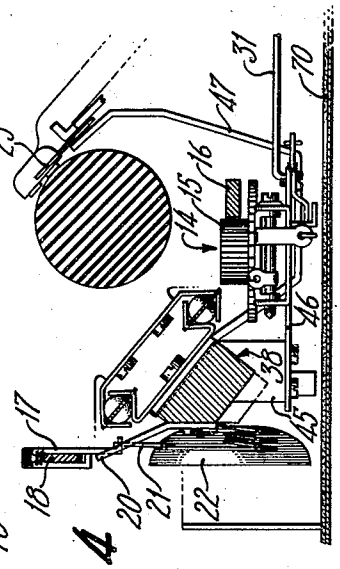


Fig. 4

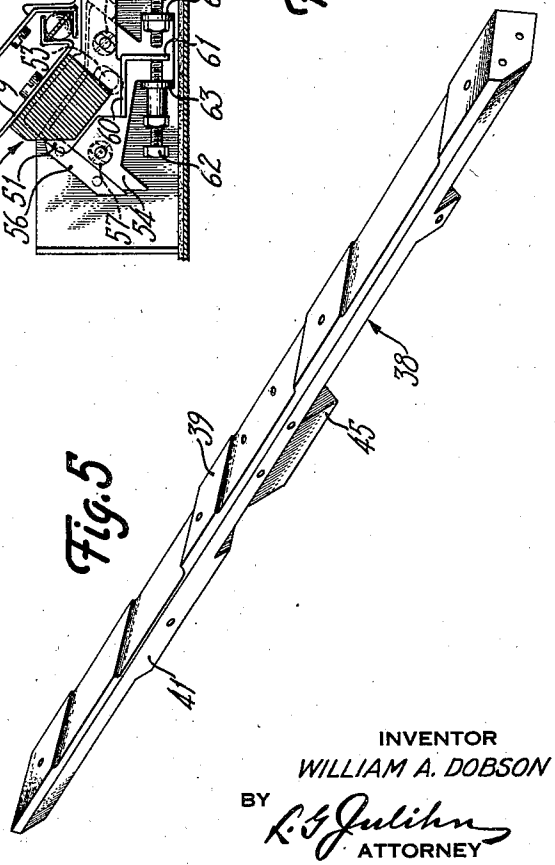


Fig. 5

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UNITED STATES PATENT OFFICE

2,251,122

TYPEWRITING MACHINE

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Application October 26, 1939, Serial No. 301,443

4 Claims. (Cl. 197—73)

This invention relates to case shift mechanisms for typewriting machines, and has reference more particularly to such mechanisms wherein case-shifting is effected by a pivotal movement of the platen carriage.

One of the objects of the invention is to provide an improved case-shift mechanism and associated carriage supporting means of simple, rugged and reliably operative construction, capable of economic manufacture and especially adapted for light-weight typewriters.

Another object is to provide a carriage supporting structure affording a firm support and reinforcement for a carriage rail or trackway of light sheet-metal construction, and adapted for simple mounting on the typewriter frame to afford pivotal case-shift carriage movement.

A further object is to provide a case-shift mechanism having a carriage supporting member adapted for economic manufacture as by die casting and affording simple mounting means for the sundry devices associated with the carriage such as the carriage drive means, the letter-feed mechanism, margin stop mechanism parts, and the line-end signal, as well as the wing scale and the ribbon carrier associated therewith.

In its more specific aspect, the invention provides platen carriage mounting means comprising an elongate solid bar having an upper inclined face upon which the lower carriage rail is secured, the bar providing support and reinforcement for the rail which is preferably formed of light-weight sheet-metal. This supporting bar, being of massive form having ends of appreciable area, is adapted to have plate-like case-shift arms secured to its ends, these arms having pivot pins thereon journaled in bearing plates secured to the main frame, and forming a simple case-shiftable mount for the carriage. The transverse bar, being adapted for manufacture as by die casting, also affords an economic mounting on the various faces for the sundry devices and mechanisms associated with the carriage. The case-shift carriage mechanism constructed in accordance with the invention has the advantages of simple and economic construction and assures that the various associated devices and mechanisms be maintained in accurate relation with the platen and its carriage; also affording further advantages in the assembly and maintenance of the machine.

Other objects and advantages will hereinafter appear.

In the drawings:

Figure 1 is a plan view of the typewriter embodying the invention, illustrating only the typewriter mechanisms and structure closely relating to the invention; the platen carriage and upper rail being removed and other parts broken away to facilitate illustration.

Figure 2 is a transverse sectional view through the typewriter as shown in Figure 1, the view being taken on a line 2—2 of Figure 1 showing the case-shift mechanism in normal and case-shifted positions.

Figure 3 is a fragmentary sectional view taken on line 3—3 of Figure 1.

Figure 4 is a fragmentary transverse sectional view taken on line 4—4 of Figure 1, and

Figure 5 is a perspective view of the bar embodying the mount for the platen carriage and associated devices, removed from the machine.

The typewriter embodying the invention includes the usual platen carriage 7 slidably mounted on carriage rails 8, 9 and cooperating rollers 10, to guide the platen in line-typing movement under influence of a carriage drive spring acting on a drum 11 which tensions a band 12 attached at its free end to an arm 13 on the carriage 7, all in the well-known manner. The movement of the carriage in line-typing is controlled by the usual letter-feed escapement mechanism 14 having a pinion 15 cooperating with a rack 16 on the carriage. The typing margins are determined in the usual manner by margin stops 17 adjustably carried on a rack bar 18 and cooperating with a fixed counter-stop 20, see Figure 4; one of the margin stops also cooperating with a line-end signal including a striker 21 and bell 22.

A wing scale 23 is provided at the front of the platen, the scale being carried on a bar on which an arm 24 of a ribbon carrier 25 is pivotally mounted at 26. The ribbon carrier 25 is vibrated concomitantly with the actuation of the letter-feed mechanism 14 through a link 27 extending between a bell crank 28, arranged to actuate the said mechanism, and a pendent arm 29 on the ribbon carrier. The bell crank 28 is operatively connected to a dog rocker 30 of the letter feed mechanism by a link, not shown. A link 31 connects the bell crank 28 with a universal bar, not shown, actuatable by any of the type actions, in the usual manner.

Back spacing of the carriage is effected by reciprocation of a slide arm 33 carrying a dog 34 adapted to cooperate with the escapement wheel of the letter-feed mechanism 14, the slide arm 33 being actuated from the usual back-spacer key on the keyboard which is operatively connected

to the slide arm 33 by a link 35 and bell crank 36 pivoted on a bracket 37 fixed on the machine.

In accordance with the invention, a massive elongate bar 38, adapted to be manufactured as by die casting, is arranged transversely of the machine beneath the lower carriage rail 9, the bar 38 having a plurality of angularly related faces including an inclined face 39 on which the rail 9 is secured as by screws 40 threaded into the bar. For compactness and to afford certain operating advantages, the carriage rails 8 and 9 are inclined at a substantial angle, as more clearly shown in Figure 2, and the bar face 39 is correspondingly inclined to receive the carriage rail 9.

A rear face 41 of the bar 38 is substantially vertical in the normal position of the bar and is thus adapted to provide mounting for the carriage actuating spring drum 11, the margin defining counterstop 20, and the line-end signal comprising the striker 21 and bell 22. The spring drum 11 has a stud 42 mounting same, this stud being threadedly engaged in the bar 38. The counterstop 20 includes lugs 43 which lie against the face 41 of the bar and are secured thereto by screws 44. The bell 22 has a mounting stud, not shown, passing therethrough and threadedly engaged in the bar 38; a bracket member of the striker 21 being clamped between the bell and the face 41 of the bar. The line-end signal as herein shown forms the subject matter of my co-pending application Serial No. 281,820, filed June 29, 1939.

To provide a mounting for the letter-feed mechanism 14, the bar 38 has a boss 45 projecting downwardly therefrom, as more clearly shown in Figure 4, to the bottom face of which is secured a mounting plate 46 on which the operating parts of the letter-feed mechanism are carried.

The wing scale bar 23 has a bracket arm 47 integral therewith, which projects rearwardly beneath the platen as shown in Figure 4 for support on the bar 38. The rear end of the bracket arm 47 forms a mounting plate 48 which is preferably secured to the underside of the lower carriage rail 9 by screws 49 passing through the rail and threaded into the plate 48; the bar 38 being recessed at this region to admit the plate, see Figure 1.

The supporting bar 38, being of solid massive form, provides at each end a flat face of substantial area, on each of which end faces is secured a plate-like arm 50 forming part of the case-shift mechanism, each arm 50 including an end portion 51 having apertures receiving screws 52 engaged in threaded holes in the bar 38 to hold the arm 50 securely on the bar. Each arm 50 has a pivot pin 53 projecting outwardly therefrom and journaled in a plate 54 adjustably carried on each of the side members of the main frame. The manner of mounting the plates 54, as shown in Figure 3, is substantially similar to that shown and described in my application Serial No. 124,541, filed February 8, 1937 now Patent No. 2,178,682, issued November 7, 1939. The plates 54 are each made adjustable in order to vary the position of the platen to or from the printing point of the typewriter. Accordingly, each plate has parallel side edges engaging guide members 55, 56, and the plate is held in adjusted position by clamp screws 57 extending through elongate slots in the main frame and threaded into the plate 54.

Each of the arms 50 includes an inwardly projecting flange 60 from which extends downwardly a stop lug 61, the members 60, 61 being preferably integral with the arm 50 and formed by bending portions thereof as shown. The stop lug 61 determines the upper and lower case-shift positions of the platen by engaging with adjustable stop screws 62 threadedly carried on ears 63 extending from each of the plates 54.

Each arm 50 extends forwardly of the bar 38 and has its forward end bent laterally to provide an apertured lug 64 through which the rear ends of case-shift levers 65, 66 project. Each case-shift lever 65, 66 is fulcrumed on a fixed transverse bar 67 on which certain elements of the type action system, not shown, may be pivoted. Each lever 65, 66 has adjacent its key-carrying forward end a resilient tongue 68 adapted to engage a button 69 of cushioning material secured preferably to the bottom member 70 of the typewriter mask to quietly arrest the case-shift lever in depressed position. The right-hand case shift lever 66 may be operated to lock in depressed position and thus serve as a case-shift lock, this lever being adapted to be sprung laterally while being depressed, by a wedging action in engagement with an inclined face 71 of a lug 72, and to be latched under said lug when fully depressed to hold the platen in upper case position. Release of the case-shift lock lever 66 may be readily effected by urging the key thereof laterally so as to sufficiently spring the lever to disengage lug 72 and thereafter permit the lever key to rise to normal position.

It will thus be seen that as the key of either case-shift lever 65 or 66 is depressed, the lever swings about its pivot on bar 67 to raise the rear end of the lever which, being disposed within the apertured lug 64 of the corresponding arm 50, swings this arm, the bar 38 and the entire platen carriage, about the axis of the pivots 53 to move the platen to upper case position as defined by the stop lug 61 engaging one of the stop screws 62, as shown in the dot-and-dash outline in Figure 2. As the case-shift mechanism parts approach the upper case posiiton, the resilient tongue 68 comes into engagement with the button 69 to quietly arrest the mechanism, the tongue 68 yielding slightly so that the lug 61 comes into firm engagement with the stop screw.

Means are provided to releasably lock the mechanism in normal lower case position, the same being automatically released incident to the manual actuation of either case shift lever 65 or 66. On either one of the arms 50, herein the leftward arm, a forwardly projecting finger 75 is provided, the free end of this finger being bent laterally to form a lock lug 76. A cross shaft 77 is disposed to extend transversely of the machine and is pivoted on the side members of the main frame. At the end adjacent the stop lug 76, the shaft 77 has fixed thereon a hook arm 78 projecting upwardly from the shaft and having a hook-like end 79 adapted to hook over the upper edge of the lock lug 76. The rear end of the case-shift lever 65, extending through the apertured lug 64, engages the front edge of the hook arm 78, as shown in Figure 2. As the lever 65 is actuated, the rear end thereof swings upwardly and rearwardly and so coacts with the hook arm 78 as to wedge same rearwardly and thus cause the hook end to disengage the lock lug 76. An arm 80, which may be similar to the hook arm 78, is fixed on the cross shaft 77 adjacent the case-shift lever 66 at the other side of the ma-

chine. It will be seen that the corresponding arm 50 does not include a stop lug such as 76 in that a single locking hook is considered ample in view of the manner of mounting the case-shiftable platen carriage. However, for economy in manufacture, the arm 80 may be identical in form to the hook arm 78. The forward edge of the arm 80 has the rear end of the corresponding case-shift lever 66 cooperative therewith in a manner similar to the coaction of the other lever 65 with the hook arm 78. A torsion spring 81, surrounding the cross shaft 77, is anchored at one end on the main frame, t. e other end engaging the arm 80 to thereby rotate the cross shaft 77 so that the hook 78 tends to engage the lock lug 76.

It will thus be seen that as either case-shift lever 66 is actuated, the hook arm 78 is disengaged from the lug 76. It will be noted that the rear end of each lever 65, 66 has an initial idle movement in the aperture of the associated lug 64 before the lever 50 is moved, this initial movement of the lever being ample to first release the locking mechanism before the platen is actuated in case shifting. As the depressed case-shift lever is released from upper case position, the parts assume their normal lower case position during which the hook arm 78, under the influence of the spring 81, latches over the lock lug 76. After the platen carriage and arms 50 come to rest in lower case position, the case shift lever 65 or 66 continues to swing under influence of its restoring spring 82 until the rear end of the lever rests against the lower end of the aperture in lug 64.

The case shift mechanism constructed in accordance with the invention presents a number of features advantageous in the construction and operation of the machine. The bar 38 may be economically formed as by die casting and thus a single operation produces this element in a light-weight metal in such form as to afford adequate support and reenforcement for the sheet metal carriage rail, and an adequate, economical support for the sundry devices associated with the platen and carriage, affording an accurate association of these devices with the coacting elements on the carriage. The bar 38, presenting a massive form of relatively inert material, imparts a sound dampening effect to the operating parts of the machine, thus reducing the transmission of sound-producing vibrations. Further, the bar 38 affords a highly desirable means for attaching the case-shift arms 50 thereto, which arms consequently may be constructed in simple, plate-like form, easily fabricated. With the arms 50 secured as shown to the end faces of the bar 38, the relatively light, thin arms are arranged to withstand the bending stress, this stress being imparted in the direction of greater cross section. The advantages of economic construction and quiet dependable operation afforded by the shift-actuating mechanism including the case-shift levers 65, 66 and arms 50, the case-shift lock and the lower case locking means, are readily apparent. The parts are all of simple, light-weight construction and, in the organization shown, embody a reliably operative mechanism.

It will be understood that the invention herein specifically described, is shown in one embodiment for the purposes of illustration, and that the invention may be modified and embodied in various other forms without departing from the spirit or scope of the invention as defined in the appended claims.

What is claimed is:

1. In a platen case-shift mechanism for typewriting machines having a main frame, a platen carriage, and a trackway including rails mounting said carriage for line typing movement; a massive elongate bar underlying and reinforcing one of said rails, said bar presenting end faces, means for mounting and actuating said bar for pivotal case-shift movement of the platen carriage on the main frame, including plate-like arms each secured flatwise to an end face of said bar and having a pivot pin journaled in the main frame, and manually operable case-shift levers each pivoted intermediate its ends on the main frame and each having an arm projecting rearwardly from its pivot, said plate-like arms each extending forwardly from said bar and being articulated to the arm of the corresponding case-shift lever.

2. In a platen case-shift mechanism for typewriting machines having a main frame, a platen carriage, and a trackway including rails mounting said carriage for line typing movement; a massive elongate bar underlying and reinforcing one of said rails, said bar presenting end faces, means for mounting and actuating said bar for pivotal case-shift movement of the platen carriage on the main frame, including plate-like arms each secured flatwise to an end face of said bar and having a pivot pin journaled in the main frame, stop means on the main frame limiting case-shift movement of the platen carriage to upper and lower case positions, said plate-like arms each including a bent-off lug cooperative with said stop means, and case-shift levers each pivoted intermediate its ends on the main frame and each having an arm projecting rearwardly from its pivot, said plate-like arms each extending forwardly from said bar and being articulated to the arm of the corresponding case-shift lever.

3. In a platen case-shift mechanism for typewriting machines having a main frame, a platen carriage, and a trackway including rails mounting said carriage for line typing movement; a massive elongate bar underlying and reinforcing one of said rails, said bar presenting end faces, means for mounting and actuating said bar for pivotal case-shift movement of the platen carriage on the main frame, including plate-like arms each secured flatwise to an end face of said bar and having a pivot pin journaled in the main frame, and manually operable case-shift levers each pivoted intermediate its ends on the main frame and each having an arm projecting rearwardly from its pivot, said plate-like arms each extending forwardly from said bar adjacent and parallel with the arm of the corresponding case-shift lever and each including an apertured member at its forward end, said case-shift lever arm passing through the aperture of said member.

4. In a platen case-shift mechanism for typewriting machines having a main frame, a platen carriage, and a trackway including rails mounting said carriage for line typing movement; a massive elongate bar underlying and reinforcing one of said rails, said bar presenting end faces, means for mounting and actuating said bar for pivotal case-shift movement of the platen carriage on the main frame, including plate-like arms each secured flatwise to an end face of said bar and each having a pivot pin journaled in the main frame, manually operable case-shift levers each pivoted intermediate its ends on the main frame and each having an arm projecting rear-

wardly from its pivot, said plate-like arms each extending forwardly from said bar adjacent the arm of the corresponding case-shift lever and each including a bent-off portion at its forward end defining an aperture, a rock shaft journaled in the main frame, and hook arms secured on said rock shaft, at least one of said hook arms normally engaging the corresponding plate-like arm to lock the carriage against case-shift movement, each hook arm being in alignment with the arm of the corresponding shift lever and presenting a cam at its forward edge, each of said shift lever arms projecting through the aperture of the corresponding bent-off arm portion and engaging the cam of the associated hook arm, each of said shift lever arms having limited free movement in the aperture to swing the associated hook arm to release position in cooperation with said cam.

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