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REMOVABLE TYPE AND TYPE BAR ASSEMBLY

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FIG. 1

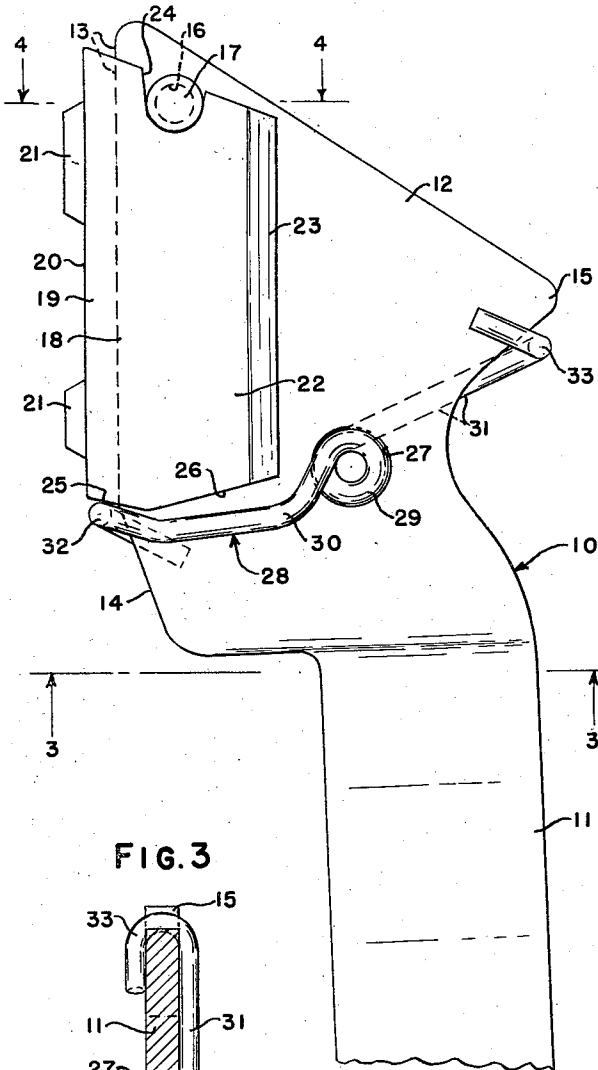


FIG. 2

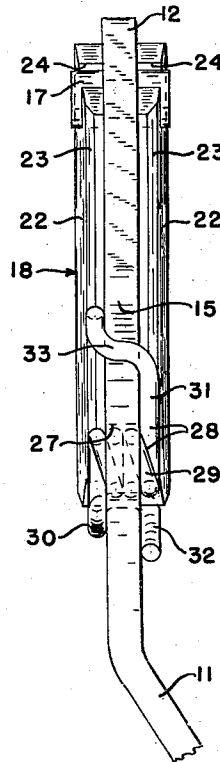


FIG. 3

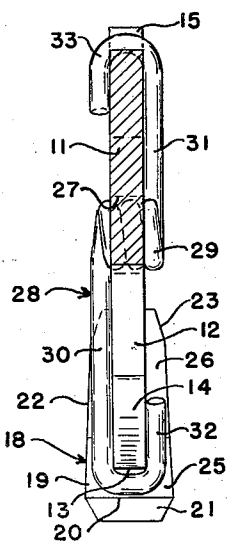
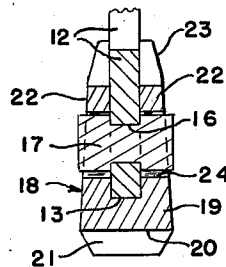


FIG. 4



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REMOVABLE TYPE AND TYPE BAR ASSEMBLY
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This invention relates to type bars for typewriting machines and in particular to type bars having detachable and interchangeable type.

The object of the invention is to provide a detachable type element which, when attached to a type bar, is positively held in alignment against displacement by the centrifugal or impact forces which accompany normal typing operation.

Another object of the invention is to provide a detachable type element which is so mounted on the type bar that the width of the type head is not increased beyond the width of the type face of conventional type.

Another object of the invention is to provide a detachable type element which can be installed or removed quickly and easily by the operator without the need of special tools.

Further objects of the invention are to provide a detachable type and type bar combination wherein the elements are simple in design, economical to manufacture, and simply assembled.

Other objects and advantages will be apparent from the following description taken in conjunction with the appended drawing wherein:

FIGURE 1 is an enlarged fragmentary side elevational view of a type bar and its associated type element and type-securing devices according to the present invention;

FIGURE 2 is a top plan view of the parts shown in FIGURE 1;

FIGURE 3 is a sectional view on the line 3—3 of FIGURE 1; and

FIGURE 4 is a sectional view on the line 4—4 of FIGURE 1.

Referring particularly to FIGURE 1, type bar 10 comprises a shank 11 and a flat, outer, striking end or head 12 which mounts a type element as hereinafter described. The remainder of the type bar 10 is not shown but is entirely conventional, being provided with means for its pivotal support in a type bar segment and means for swinging the head 12 toward a paper-holding platen in the usual manner of typewriting machines.

The head 12 of type bar 10 is shaped to provide a flat front edge 13, which serves as an aligning surface, and an adjoining edge portion 14 which is preferably slanted inward toward shank 11 of the type bar for reasons which will appear later. The rear edge of the head 12 is provided with a protruding portion or heel 15. Adjacent the outer end of front edge 13, a hole 16 is provided in head 12 through which pin 17 extends so as to project substantially equidistantly from either side of the head 12. The pin 17 may be secured in position by swaging both ends of the pin to a predetermined size, as best seen in FIGURE 4.

Type element 18 is provided with a face portion 19 having an outer surface 20 which may carry upper and lower case type 21 of the same letter in conventional style, foreign language type, special style type, or special characters, as desired. Side portions 22 extend from the face portion 19 on either side so as to form a channel or slot for receipt of head 12. Preferably, as best shown in FIGURES 3 and 4, the external surfaces of side portions 22 are slightly tapered inward and rearward, and are provided with a beveled rear edge 23, thereby reducing the width of element 18 toward the rear.

At the outer end of type element 18, axially-aligned slots 24 are provided in side portions 22 to receive the

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pin 17, as shown, so as to locate the type element 18 for proper alignment on type bar 10. The inner end of type element 18 is provided with a beveled cam surface 25 extending a short distance down the inner edges of side portions 22, preferably at an angle of the order of 15 degrees to the normal to surface 20, for reasons which will hereinafter appear. The remainder of the inner edge of each side portion 22 may be beveled inwardly as shown at 26.

A torsion spring 28 is provided to detachably hold type element 18 in place on head 12 during operation of the machine. Adjacent the inward end of head 12, a hole 27 is provided to house the helically-coiled portion 29 of spring 28. As shown in FIGURE 3, coil portion 29 of spring 28 fits closely in hole 27 and the ends of the coil terminate in arms 30 and 31. Arms 30 and 31 extend along and in contact with the opposite side surfaces of head 12 and terminate in U-shaped or hooked ends 32 and 33, respectively. Arm 30 extends forward and its end 32 hooks over the slanted edge 14 substantially at the junction of that edge with the aligning edge 13. Arm 31 extends to and its end 33 hooks over the rear edge of head 12 at a point on the inner side of the apex of the heel 15. It will now appear that the arms 30 and 31, aided by the hooked ends 32 and 33, prevent lateral displacement of the spring 28 relative to the head 12. Torsion spring 28 is so shaped that when type element 18 is in place on head 12, the hooked end 33 cooperates with heel 15 to anchor the spring, and end 32 on arm 30 impinges upon beveled surface 25 to constantly urge the element 18 outwardly and rearwardly against the pin 17.

When the type element is in attached position, it will be apparent that the entire assembly is constructed so as to be no wider than the type face 19. During operation of the machine, the releasable spring portion of the device is not placed under extra strain, but the pin 17 serves as an abutment preventing movement of the element 18 under the influence of the centrifugal forces generated when the type bar is swung from its rest position to the printing point. During impact of the type element against the platen, the type element is held firmly by abutment with edge 13.

The operation of the above-described parts in removing and replacing type elements 18 will be apparent. The operator grasps the type element 18 between thumb and forefinger and exerts pressure to the left and downward as viewed in FIGURE 1. The end 32 of spring arm 30 is cammed downward by the beveled surface 25, free movement of the spring being insured by the provision of slanted edge 14 adjoining the bottom of edge 13. The downward movement of type element 18 removes the latter from engagement with the pin 17, and element 18 may then be withdrawn to the left and replaced by another element.

In replacing the element 18, the operator grasps it between thumb and forefinger, as before, and slides the inward end of the element onto the type bar 10 with sides 22 on either side of the head 12. To allow the pin 17 to enter slots 24, the operator must exert pressure downward against arm 30 of spring 28 by pushing the element 18 downward, and then the element 18 may be moved to the right until the slots 24 are aligned with the pin 17. Type element 18 is then pressed first upward, and then to the right, as viewed in FIGURE 1, by the spring arm 30 or by the operator, to seat the face 19 firmly against the aligning edge 13 and the pin 17 in the slots 24. In this position, the pin 17 serves as a type-locating fixed abutment which, in cooperation with the slots 24, aids aligning edge 13 in positioning the type in correct alignment on the type bar 10. The engagement of the end 32 of torsion spring 28 with beveled cam surface 25 forces and holds the type element 18 in engagement with the pin 17

and against the aligning edge 13 of head 12. It has been found that the inclination of the surface 25 at a comparatively small acute angle to the normal to the type-carrying surface 20 is sufficient in practice to firmly secure type element 18 against the aligning edge 13 without making it difficult to remove and replace the type element.

Each of the elements of my detachable-type type bar is simply and economically manufactured. The pin-and-slot positioning abutment is economically made and may be easily and precisely located. The torsion spring 28 is easily installed in its precisely-located hole 27, is self-securing with respect to the type bar 10 and does not extend from the opposite faces of the type bar beyond the type element 18. The assembled elements are light and strong.

While there is herein described, and in the drawing shown, an illustrative embodiment of the invention, other constructions, arrangement of parts, details and features may be comprehended in the invention, and I desire to be limited, therefore, only by the scope of the appended claims.

I claim:

1. A type bar assembly for typewriting machines having detachable type comprising, in combination, a type bar member having a shank and an outer striking head shaped to provide a type-aligning edge, a protruding type-locating abutment fixed on said striking head adjacent the end of said edge remote from said shank, a type element mounted on said head abutting said edge and having portions flanking the opposite faces of said striking head, the end of said element remote from said type bar member shank having a locating portion for detachable engagement with said abutment and the other end of said element having a beveled surface, and spring means secured to said member and biased to urge said type element toward engagement with said member by cooperative engagement with said surface.

2. A type bar assembly for typewriting machines having detachable type comprising, in combination, a type bar member having an outer striking head adapted to provide a type aligning edge, a protruding type locating abutment on said striking head adjacent one end of said edge, a type element mounted on said head abutting said edge and having portions flanking the opposite faces of said striking head, one end of said element having a locating portion for detachable engagement with said abutment and the other end of said element having a beveled surface, and spring means secured to said member and biased to urge said type element toward engagement with said member by cooperative engagement with said surface, said spring means comprising a torsion spring having a central coil portion lying in a hole provided in said type bar member, said spring having arm portions extending from either end of said coil portion flanking the opposite faces of said member, one of said arm portions being adapted for engagement with a portion of said member and the other arm portion being adapted to engage the beveled surface of said type element.

3. A detachable-type type bar for typewriting machines comprising, in combination, a type bar member having a shank and a flat outer striking head shaped to provide a type-aligning edge and carrying a type-locating pin secured thereto, said pin projecting from the opposite faces thereof, a type element fitting over said edge and having portions flanking the opposite faces of said striking head, the end of said element remote from said type bar member shank being slotted for detachable engagement with said locating pin, the other end of said ele-

ment having a surface beveled at an acute angle to the plane normal to the type-carrying face of said element; and spring means secured to said member and adapted to engage said beveled surface, whereby said type element is secured in spring-biased engagement with said locating pin and with said edge.

4. A detachable-type type bar for typewriting machines comprising, in combination, a type bar member having a flat outer striking head shaped to provide a type aligning edge and carrying a type locating pin secured thereto, said pin projecting from the opposite faces thereof, a type element fitting over said edge and having portions flanking the opposite faces of said striking head, one end of said element being slotted for detachable engagement with said locating pin, the other end of said element having a surface beveled at an acute angle to the plane normal to the type carrying face of said element; and spring means secured to said member and adapted to engage said beveled surface, whereby said type element is secured in spring biased engagement with said locating pin and with said edge, said type bar member having a hole therethrough and said spring means comprising a torsion spring having a central coil portion lying in said hole and having arm portions extending from either end of said coil portion flanking the opposite faces of said member, whereby said coil portion is secured in said hole, one of said arm portions having a hooked end for engagement with an edge of said member and the other arm portion having a portion adapted to engage the beveled surface of said type element, whereby said element is spring-biased both toward said locating pin and toward said type aligning edge.

5. A type bar assembly having detachable type comprising, in combination, a type bar member having a flat outer striking head shaped to provide a type-aligning edge and an oppositely protruding heel portion, a type-locating pin secured to said member and projecting from the opposite faces thereof adjacent the outer end of said edge, a type element fitting over said edge and having side portions flanking the opposite faces of said striking head, the outer end of said element having aligned slots in said side portions for engagement with said locating pin, the inner end of said element having a surface beveled at an acute angle to the plane normal to the type-carrying face of said element, said member having a cylindrical hole therethrough, and a torsion spring having a central helically-coiled portion lying within and closely fitting said hole and having arm portions extending from either end of said coiled portion and flanking the opposite faces of the striking end of said member, one of said arm portions having a hooked end for engagement with the protruding heel portion of said member and the other arm portion having a hooked end portion adapted to engage the beveled surface of said type element and to hook over the type bar member, said spring being biased to urge said element into engagement with said locating pin and said edge.

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