

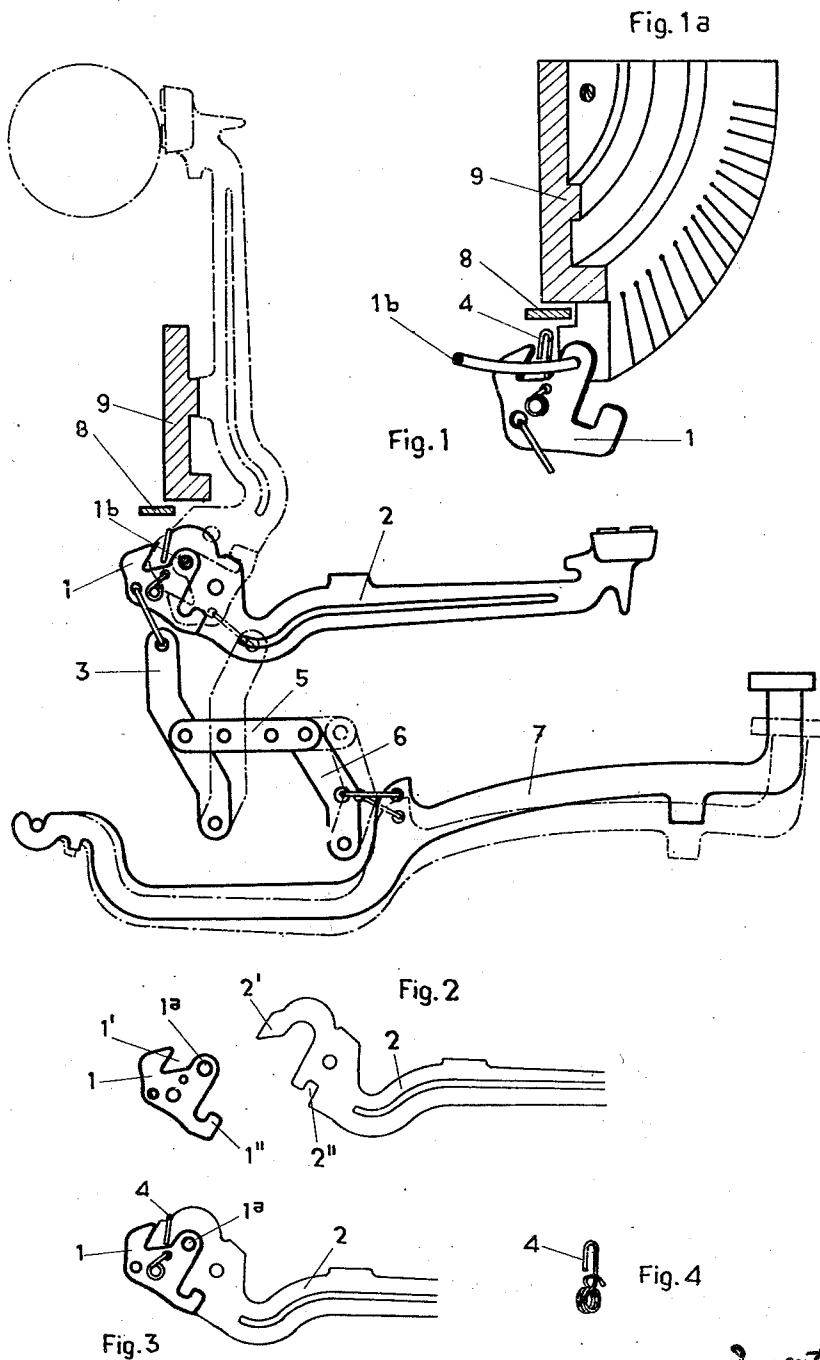
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TYPE BAR ACTUATING MECHANISM FOR TYPEWRITERS

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TYPE BAR ACTUATING MECHANISM
FOR TYPEWRITERS

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This invention is for improvements in the type bar actuating mechanism for typewriters.

In modern typewriters one important object to achieve is particularly that of providing a "soft" or "easy" keyboard. This requires provision of a type bar actuating mechanism with which depressing of the key bars is soft or easy, in order to reduce as much as possible the fatigue of the typist and at the same time to increase the writing speed of the typewriter.

It has heretofore been customary to cause the type bars to be actuated by a mechanism of a type, similar to that shown in U. S. Patent No. 2,248,691, i. e., by means of a conjunction lever which is engaged in a slit of the rear end of the type bar to be actuated. The arrangement of such conjunction levers gives rise to a great inconvenience as said levers describe such a movement that the fixing journal of the conjunction lever (sliding in the slit of the type bar) gets too near to the point of fulcrum of the type bar itself and, owing to the gradually greater resistance which ensues, the keys gradually become stiffer, and cause loss of time in operating, imperfect impression of the letters, unsatisfactory multiple copies, etc.

Many studies have been made since 1890 up to the present to eliminate the above-mentioned difficulties, and as a result, most of the known typewriters now make use of a pulling element, of metallic wire, attached to the type bar end in such a manner that the pulling element can follow the path of the type bar, thereby pulling and moving it, so that its other end which carries the type, is pressed against the paper arranged on the rubber roller of the typewriter. This partial advantage of the known type bar actuating devices is, however, accompanied by another great inconvenience, namely, the fact that the type bars are not singly, easily and rapidly, removable from their supporting segment. To remove any type bar in such known devices, it is necessary first to extract from one side of the segment, the semicircular axis on which all the 42 or 45 type bars are supported. This is a great inconvenience both for the manufacturer and for the repairer as may be readily understood.

U. S. Patent No. 2,198,520 shows a small conjunction plate which is inserted in the segment for each type bar; said plates are inserted beside the rear end of each type bar, into the same segment slit in which the type bar is fixed. This conjunction plate is an improvement over earlier mechanisms, as clearly described in said Patent No. 2,198,520, but the arrangement of said plates

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requires consideration of the fact that in cutting the slits of the segment the width of said slits must be increased to make the space for the conjunction plates.

The improvement according to the present invention consists in the fact that applicant has discovered an arrangement whereby a conjunction plate can be made to cooperate with the rear end of the type bar, not by arranging this plate to the side of its respective type bar end, but by inserting and hooking the plate to said type bar in the same plane as the bar end, the bar end and the plate operating within the segment slit, so that all segment slits need be only the width of the thickness of the type bar end.

The improvement according to this invention is achieved by the particular shape of said plate and of the corresponding rear end of each type bar.

The invention will be easily understood from the following description made with reference to the annexed drawing, in which:

Figure 1 shows a modern type bar actuating mechanism for typewriters with "soft" actuation of the keys, to which the improvement according to this invention is applied.

Figure 1a is a view partly in section and partly in perspective showing the plate of this invention in its relation to the segment and the semicircular axis.

Figure 2 shows the end of the type bar and the conjunction plate according to this invention;

Figure 3 shows the same inserted and hooked together;

Figure 4 shows the spring holding the plate in inserted and hooked position on the type bar.

With reference to the annexed drawing: 1 indicates the plate according to this invention and 2 indicates the type bar; 3 is the pulling element with one end attached to the plate 1 and with its other end mounted on a straight bridge (not shown) arranged beneath the semicircular segment 9. 5 and 6 are other actuating elements of the mechanism and 7 is the key bar. 4 is a spring, of the type shown in Figure 4 used in maintaining the type bar in inserted and hooked position with its plate.

The plate 1 has a bore 1a through which passes the semicircular axis 1b which is common to all plates and which is inserted in a corresponding bore of the semicircular segment; the plate 1 has a cutout 1' at the left of the bore 1a and a hook 1'' at the right of said bore as shown in Figure 2.

Correspondingly, the rear end of the type bar 2 has a complementary shape allowing said type bar end to be inserted and to be hooked on said

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plate; the type bar end has a hook 2' at the left, and a cutout 2'' at the right, of a central cutout area, which cutout area receives that central part of the plate 1 which contains the bore 1a as shown in Figure 2.

The manner in which the type bar end is inserted in and hooked on the plate is clearly visible from Figure 3.

The spring 4 is a safety means. One end of spring 4 is fastened to the plate. The other end of spring 4 is U-shaped and is hooked over the type bar end which end is notched or is provided with a recess to retain the U-shaped end of spring 4.

As may be seen and understood from Figure 1, which shows the two terminal positions of the type bar (the rest position being shown in full lines and the writing position being shown in broken lines) during the actuating movement from rest to writing position, plate 1 activates the type bar 2 with its hook portion 1'', while the cutout 1' retaining the type bar end hook 2' aids in preventing the type bar from becoming unhooked from the plate under the impact of the type bar both at the end of the actuating movement as well as at the end of the return movement. Such unhooking is further avoided, not only by reason of the common universal bar 3 known in all typewriters, but by the spring 4.

To remove a single type bar 2, it is merely necessary to pull on it from the type end so as to extract it from the segment, exerting sufficient pull to overcome the tension of spring 4 (after having, of course, removed all interference to this operation caused by the said universal bar). To re-insert the single type bar it is sufficient to push it into alignment with the plate, overcoming again the resistance of the U-shaped end of the spring 4, under which the hook 2' must enter.

The mechanism according to this invention, due to the improvement described, combines two advantages which up to now have not been achieved in the known type bar actuating mechanisms, namely:

- (a) "Soft" actuating of the keys; and
- (b) The possibility of removing any single type bar without the necessity of removing the semicircular axis.

What I claim is:

1. An improved type bar actuating mechanism for typewriters comprising a semicircular segment with slits and a semicircular bore, a semicircular axis inserted in said bore, type bars each inserted with the base end thereof in a slit of the segment, conjunction plates having a complementary shape with the base ends of said type bars, each of such conjunction plates being inserted in a slit of the segment so as to lie in the same plane as and to engage the base end of a type bar so as to function as one piece with said type bar, each type bar being supported by its respective conjunction plate, each of said plates being apertured at a central portion thereof to receive said semicircular axis, and a key-actuated pulling element attached to each of said plates.

2. An improved type bar actuating mechanism for typewriters comprising a semicircular segment with slits and a semicircular bore therein, a semicircular axis inserted in said bore, type bars each inserted with its base end in a slit of the segment, conjunction plates having a complementary shape with the base ends of the type bars, each of said conjunction plates inserted in a slit of the segment so as to lie in the same plane as and to engage the base end of a type bar

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so as to function as one piece with said type bar, each type bar being supported by its respective conjunction plate, each of said plates being apertured at the central portion thereof to receive said semicircular axis, the base end of each type bar having a hook-shaped portion fitting over said central portion of said plate, and a key-actuated pulling element attached to each of said plates.

3. An improved type bar actuating mechanism for typewriters comprising a semicircular segment with slits and a semicircular bore therein, a semicircular axis inserted in said bore, type bars each inserted with the base end thereof in a slit of the segment, conjunction plates having a complementary shape with the base ends of said type bars, each of such conjunction plates being inserted in a slit of the segment so as to lie in the same plane as and to engage the base end of a type bar so as to function as one piece with said type bar, each type bar being supported by its respective conjunction plate, each of said plates being apertured at a central portion thereof to receive said semicircular axis and having a hook portion and a cutout portion, each type bar base end having a complementary hook portion and a cutout portion interfitting with the hook portion and the cutout portion of said plate, and a key-actuated pulling element attached to each of said plates.

4. An improved type bar actuating mechanism for typewriters comprising a semicircular segment with slits and a semicircular bore therein, a semicircular axis inserted in said bore, type bars each inserted with the base end thereof in a slit of the segment, conjunction plates having a shape complementary with the base ends of said type bars, each of such conjunction plates being inserted in a slit of the segment so as to lie in the same plane as and to engage the base end of a type bar so as to function as one piece with said type bar, each type bar being supported by its respective conjunction plate, each of said plates being apertured at a central portion thereof to receive said semicircular axis, each of said plates having a hook portion at one side of said central portion and having a cutout portion at the other side of said central portion, each type bar base end having a hook portion and a cutout portion, said hook portion of said type bar base end being of complementary shape with said cutout portion of said plate and hooking over the central portion of said plate in interfitting engagement with said cutout portion of said plate, said hook portion of said plate being of complementary shape and hooking in interfitting engagement with said cutout portion of said type bar base end, and a key-actuated pulling element attached to each of said plates.

5. An improved type bar actuating mechanism for typewriters as claimed in claim 4 including a spring, one end of which is fixed in said conjunction plate and the other end hooked over the hook portion of said type bar base end for demountably holding said conjunction plate and said type bar in assembled relation.

6. An improved type bar actuating mechanism as claimed in claim 5 in which that end of the spring hooked over the hook portion of the type bar base end is U-shaped and the hook portion of said type bar base end is notched for engagement with the U-shaped end of said spring.

7. In a typewriter having a semicircular segment with slits, a semicircular bore therein and a semicircular axis inserted in said bore, a con-

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junction plate inserted in a slit of said segment and pivotally attached to said axis, a type bar, the base end of said type bar being inserted in said slit in supported engagement with said plate, said plate and said type bar base end lying in the same plane and formed with interfitted, interlocked complementary portions, and a key-actuated pulling element attached to said plate.

8. A type bar having at one end a hook portion and a cutout portion and a complementarily-shaped conjunction plate having a cutout portion and a hooked portion fitting said hook portion and said cutout portion, respectively, of said type bar so as to function as one piece with said type bar, said conjunction plate provided with means for pivotally mounting said conjunction plate and said type bar.

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9. A type bar as set out in claim 8 including resilient means for demountably holding said conjunction plate and said type bar in assembled relation.

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REFERENCES CITED

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

UNITED STATES PATENTS

Number	Name	Date
966,170	Curtis	Aug. 2, 1910
2,198,520	Tombolini	Apr. 23, 1940