Aug. 18, 1959 B. NITSCHKE 2,900,062

DEVICE FOR ADJUSTING THE STROKE FORCE OF THE TYPE BARS IN POWER-DRIVEN TYPEWRITERS, BOOKKEEPING MACHINES AND THE LIKE

Filed April 10, 1957 3 Sheets-Sheet 1

FIG. 1

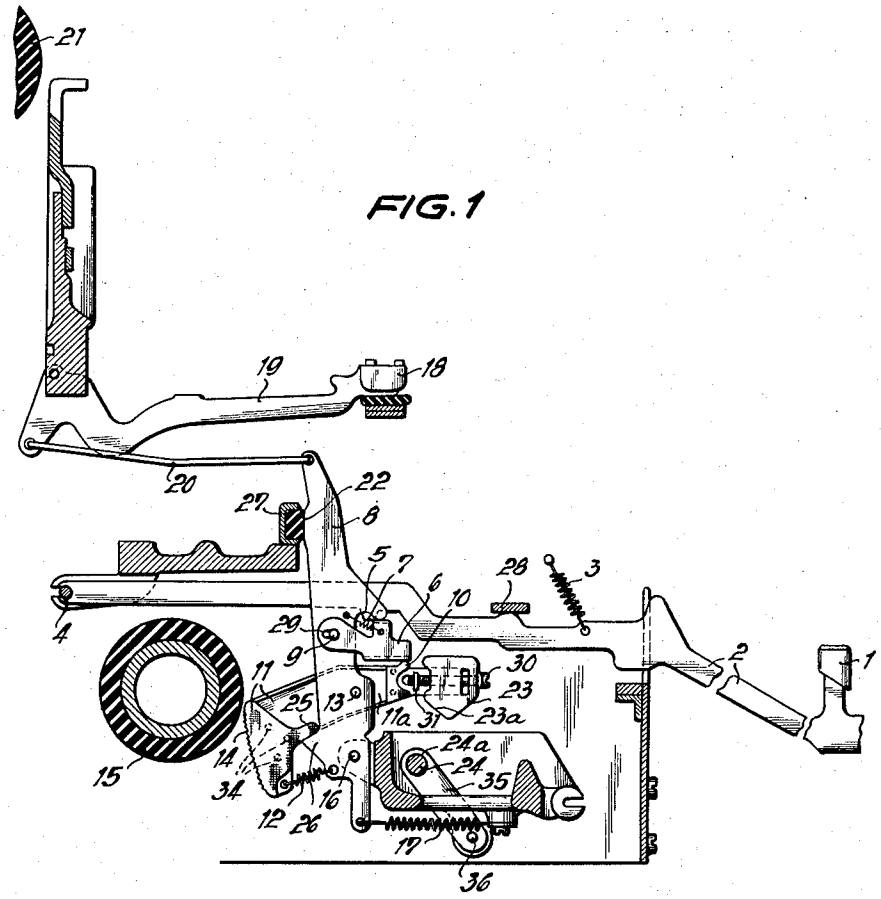


FIG. 2

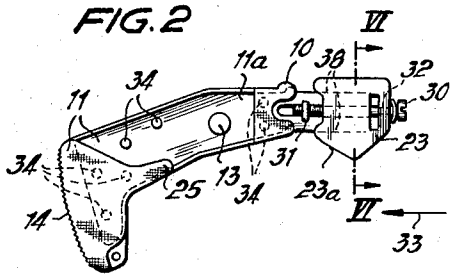
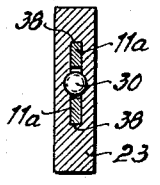


FIG. 6



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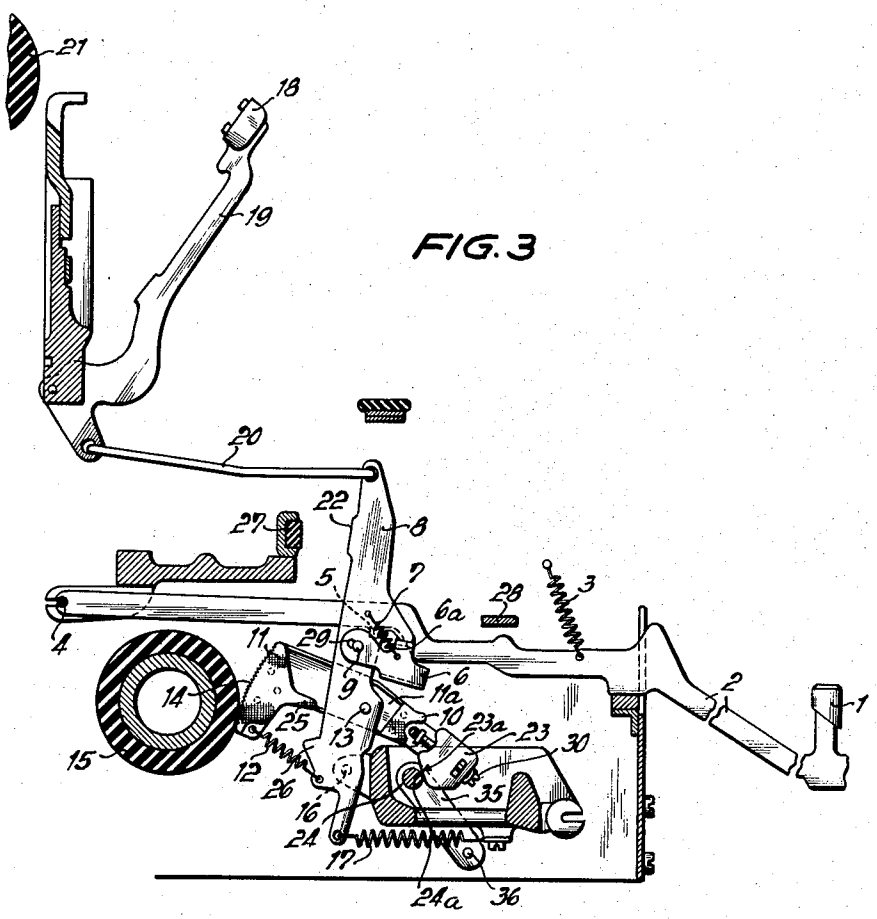
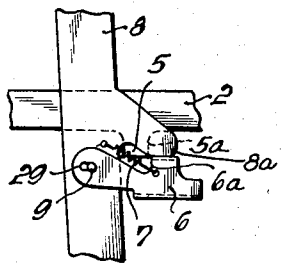


FIG. 3

FIG. 4



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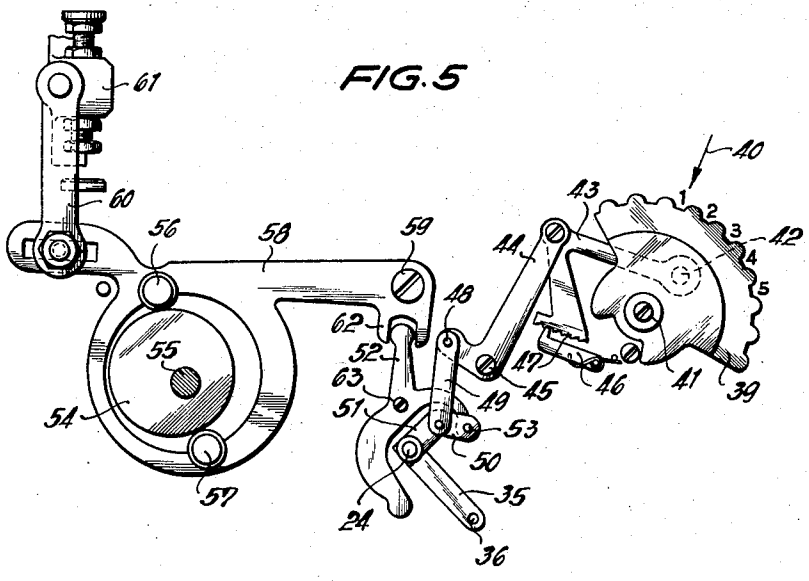
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FIG. 5



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DEVICE FOR ADJUSTING THE STROKE FORCE OF THE TYPE BARS IN POWER-DRIVEN TYPEWRITERS, BOOKKEEPING MACHINES AND THE LIKE

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Claims priority, application Germany April 14, 1956

12 Claims. (Cl. 197—17)

This invention relates to a mechanism for regulating the force of the stroke of type bars of power driven typewriters, bookkeeping machines and the like.

It is an object of the invention to provide each type bar operating mechanism with a contact portion which cooperates with a driving cylinder and with a counter stop which is operative just before the striking of the type head. Another object of the invention resides in a mechanism in which the abutting surface of each striking member is adjustable by means of a screw in order to adjust each type very accurately as to the force of the impact. It is also an object of the invention to adjust the force of the stroke of a plurality or all of the type bars and to adjust the type bars of the capital letters as well as the small letters and the various numbers and punctuation marks.

Further objects will be apparent from the following description when considered in connection with the accompanying drawings in which:

Figure 1 is a side elevation partly in section of the type bar actuating mechanism,

Fig. 2 is the detail of the actuator on an enlarged scale,

Fig. 3 is a side elevation similar to Fig. 1 showing a type bar just before striking the platen,

Fig. 4 is a side view of a detail showing the actuating connection with a key lever,

Fig. 5 is a side elevation partly in section of a setting mechanism, and

Fig. 6 is a cross section taken on line 6—6 of Fig. 2 in the direction of the arrows.

Fig. 1 shows the various parts in the position of rest and as shown each type key 1 is mounted on its type lever 2 with a spring 3 connected to normally force the type lever against a common stop bar 28. If the type key 1 is depressed from its initial position, Fig. 1, the lever 2 will pivot around its bearing pin or position 4 with the lever moving clockwise. This will result in a projecting member 5 of the key lever 2 contacting and depressing a link 6 to pivot around a pin 9 against the action of a spring 7, the pin 9 being mounted and secured on an actuating lever 8 and projecting into a slot 29 in the link 6. Due to this movement, the link 6 will press on a projection 10 of an arm 11*a* having a contact portion 11 with the latter being connected by a tension spring 12 with the lever 8. The arm 11*a* is pivotally mounted on the lever 8 by a pin 13. As shown in Fig. 3 the friction surface 14 of the contact portion 11 will thus engage the driving roller 15 to be actuated thereby.

The friction surface 14 and the projection 10 may be advantageously made of a synthetic or artificial material which may be sprayed on a metallic base of the arm 11*a*, as shown in Fig. 2, whereby by depressions and holes 34 in the metallic base to provide a secure connection.

The contact portion 11 will be carried along by the rotating drive cylinder 15 and the arm 11*a* will be

swung or rotated clockwise around the pivot 13. As a result of the rotation of the arm 11*a*, the lever 8 will be rotated clockwise around its pivot 16 against the tension of a spring 17. Thereby a tension rod 20 connected to the upper end of the driving lever 8, will be pulled to the right, Fig. 3, so that the type lever 19 will be raised in known manner, so that the type head 18 will be struck against a sheet of paper on the platen 21. Upon the swinging of the driving lever 8, the upper bent-over edge of the link 6 will slide off the lower edge of the projection 5 of the type lever 5. The link 6 will thus be swung by the spring 7 until it abuts with its bent-over part on the lower edge of a projection 8*a*, Fig. 4.

According to the invention an abutment or impacting part 23 is adjustably mounted on the arm 11*a* which abuts against a counter stop 24*a* of a stop rod 24 shortly before the type head 18 strikes the platen. Hereby upon further swinging of the drive lever 8 due to its inertia, the friction surface 14 of the contact portion 11 will be lifted from the drive cylinder 15. After such lifting action of the drive connection, the contact portion 11 will be swung counterclockwise by its spring 12 around its pivot 13 until it strikes against a stop 26 on the lever 8 by means its edge portion 25.

After the type head 18 has struck the platen 21, the lever 8 will return to its initial position by means of the spring 17 as shown in Fig. 1, the lever 8 by its projecting edge 22 striking a stop abutment 27. The link 6 will at the same time rest again under the projecting member 5 of the key lever 2 as soon as the key 1 is released. If, however, the key 1 is still depressed, then a repeated stroke of the type bar will be avoided in that the link 6 upon the return swing of the driving lever 8 to the left will result in the edge 6*a*, Fig. 4, abutting against the edge 5*a* of the projection 5 of the key lever 2 during the further left movement of the driving lever 8 so that the spring 7 will be tensioned and the pin 9 will slide in the slot 29. The projection 5 of the key lever 2, which has been depressed, cannot cooperate with the link 6. After the key 1 is released, the projection 5 of the lever 2 will move upwardly so that the link 6, under the pull of the spring 7, will slide along the projection 8*a* until it is again under the projection 5 of the key lever 2 in the initial position according to Fig. 1.

The abutment part 23 is provided adjustably on the arm 11*a* of the contact portion 11 and in the structure disclosed in Fig. 2 the abutment part 23 is slidable on the guide 38 of the contact portion 11. The part 23 can be accurately adjusted by a screw 30 and can be held in such adjusted position and the screw 30 grips in a nut 31 which is set in the arm 11*a* of the contact portion 11. The abutment part 23, which may be made of an artificial or synthetic material, grips in the ring nut 32 of the screw 30 so that it may rotate in the part 23, but is not slidably mounted.

If the abutment or impacting part 23 is moved in the direction of the arrow 33, Fig. 2, then the abutment surface 23*a* will contact the counter abutment 24*a* through a smaller rotary angle of the contact portion 11 relative to the initial position according to Fig. 1. This results in the type striking mechanism following a shorter path initiated by the driving cylinder and thereby the force stroke is diminished. Upon counter rotation of the screw 30, the part 23 will be moved in direction opposite the direction of the arrow 33 whereby the contact portion 11 will move through a larger angle from the initial position of Fig. 1 to the abutting position of the surface 23*a* against the counter abutment 24*a*.

The abutting surface 23*a* of the part 23 which during

typing abuts against the counter surface 24*a* of the rod 24, is arranged at a sharp angle relative to the guide 38. Hereby it will be possible to accurately set the impacting position of the part 23 and thus the portion 11 is adjusted by the screw 30.

The abutting surface 23*a* is further arranged in such a way that the pivot 13 of the portion 11 is below the extension of the surface 23*a*. Thus the impact part 23, Fig. 3, in the abutting position, will have a softer contact with the counter abutment 24*a* since due to the flexibility of the impact part 23 which is made of an artificial or synthetic material, and due to the angular position of the impact surface 24*a*, a sliding action, even if slight, will produce a small sliding action between the impact surface 23*a* and the counter impact surface 24*a*. Thereby the usual noise and vibrations will be avoided or at least greatly reduced.

The arrangement of the impact part 23 on the arm 11*a* of the portion 11 relative to the counter abutment 24*a* on the rod 24 is of necessity so provided that in the impact position according to Fig. 4, the reaction of the impact force on the surface 23*a* is directed in the direction of the further movement of the pin 13 of driving lever 8. Upon impact an impulse from the counter abutment 24*a* on the impact part 23 will therefore be absorbed in the sense of a further movement of the driving lever 8. Thereby the free further movement of the type impact mechanism after the completion of the driving connection between the driving cylinder 15 and the contact portion 11 will cease.

The counter abutments 24*a* for a plurality of type impact members 8, 20, 19 are preferably arranged on a common rod 24. Hereby the structure will be considerably simplified. The rod 24 is therefore adjustable so that the distance of the counter abutment 24*a* from the impact surface 23*a* will be regulated. The adjustment of the distance is accomplished in such a way that the portion 11 may be rotated through a larger or smaller angle until it will assume the initial position according to Fig. 1. Thus the impact force for all the type mechanisms 8, 20, 19 may be regulated together to agree with the total forces or the desired pressure force.

For this purpose the rod 24 is mounted on two links 35, one only being shown in Fig. 1, pivotally mounted on a bearing 36. In order to adjust the rod 24 there is mounted in the frame of the machine, preferably where it can be easily reached, a setting member 39, Fig. 5, which as shown is in the form of a setting segment which may be provided in its periphery with teeth, for example 1 to 5, with a depression between each two adjacent teeth. The adjustment of the setting member 39 can be set relative to an arrow 40 on the frame of the machine. The member 39 is connected to a double-armed angle lever 43 by means of a pivot pin 42 and as shown the member 39 pivots on a pin 41. The lever 43 has a plurality of ratchet teeth 47 thereon which cooperate with a ratchet link 46 which latter is under the influence of a spring to force the ratchet 46 against the teeth 47 whereby the respective setting of the wheel 39 will be maintained. A crank arm or lever 44 is connected to the crank arm or lever 43 and this lever 44 pivots on a pin 45. On one arm of the crank arm 44 there is secured a pin 48 on which a link 49 is mounted at one end with the other end secured to two links 50 and 51 rigidly secured to each other. The link 51 is connected to the rod 24 so that by rotation of the setting member 39 the rod 24 will be swung around the bearing 36. By adjusting the member 39, the rod 24 may be set for a greater or smaller distance of the impact part 23 and thus the impact force for all the type bars will be regulated as a whole.

For further regulation of the impact force, the rod 24 is adjustable when changing from small letters to capitals or from capital letters to small letters. Thereby the impact force is automatically increased when changing from small letters to capital letters since the capital letters have a larger printing surface to attain a uniform typing. According to Fig. 5 upon adjustment, an eccentric disc 54 is coupled with a drive shaft 55 whereby by means of rollers 56 and 57, a control lever 58 is adjusted around its bearing point 59. By means of link 60 connected to the control lever 58, the type lever segment will be brought to its lower or starting point. The control lever 58 grips with one arm 62 an extended arm 52 which is rotatable around its bearing point 63 and an arm is connected at 53 to the link 50. Therefore, upon adjustment the control lever 58 will be swung clockwise around the bearing point 59 and the arm 52 will swing counterclockwise around its bearing point 63. Thereby the linkage 49, 51 will be raised through the link 50 and the rod 24 will be moved downwardly. Thus the impact force of the type heads will be increased.

I claim as my invention:

1. Mechanism for regulating the striking force of the type heads of power-driven typewriters, bookkeeping machines and the like comprising an actuating lever pivotally connected to a frame of the typewriter and provided for each key lever, a contact portion pivotally mounted on the actuating lever, an impacting part on said contact portion and having an impacting surface, and means for adjustably mounting the impacting part.

2. Mechanism according to claim 1, in which the contact portion is provided with a guide on which the impacting part is adjustably mounted.

3. Mechanism according to claim 1, in which the contact portion is provided with a guide on which the impacting part is adjustably mounted, and in which the means for adjusting the impacting part comprises a screw member.

4. Mechanism according to claim 1, in which the contact portion is provided with a guide on which the impacting part is adjustably mounted, the impacting part being composed of a synthetic material.

5. Mechanism according to claim 1, in which the contact portion is provided with a guide on which the impacting part is adjustably mounted, said impacting surface forming an acute angle relative to the guide.

6. Mechanism according to claim 1, in which the contact portion is provided with a guide on which the impacting part is adjustably mounted, said impacting surface being provided below an extension of the contact portion.

7. Mechanism according to claim 1, in which a rod is provided mounted below the impacting part to form an abutting member for the impacting surface of all the impacting parts.

8. Mechanism according to claim 1, in which a rod is provided mounted below the impacting part to form an abutting member for the impacting surface of all the impacting parts, and in which means are provided to mount the rod so that it may be regulated as to its initial distance from the impacting surface.

9. Mechanism according to claim 1, in which a rod is provided mounted below the impacting part to form an abutting member for the impacting surface of all the impacting parts, and in which means are provided to mount the rod so that it may be regulated as to its initial distance from the impacting surface, said pivotal mounting of the actuating lever and the impacting part determining the direction of movement of the impacting surface.

10. Mechanism according to claim 1, in which a rod is provided mounted below the impacting part to form an abutting member for the impacting surface of all the impacting parts, and in which links are provided to support the rod.

11. Mechanism according to claim 1, in which a rod is provided mounted below the impacting part to form an abutting member for the impacting surface of all the impacting parts, and in which links are provided to support the rod and means are provided to adjust the links and rod relative to the impacting part.

12. Mechanism according to claim 1, in which a rod is provided mounted below the impacting part to form an abutting member for the impacting surface of all the impacting parts, and in which means are provided for adjusting said rod to increase the type head typing force for capital letters as compared with the typing force for small letters.

References Cited in the file of this patent

UNITED STATES PATENTS

2,506,444	Dodge	May 2, 1950
2,750,022	Long	June 12, 1956