June 27, 1939. W. A. DOBSON 2,163,941

TYPEWRITING MACHINE

Original Filed Oct. 23, 1936

Fig. 1

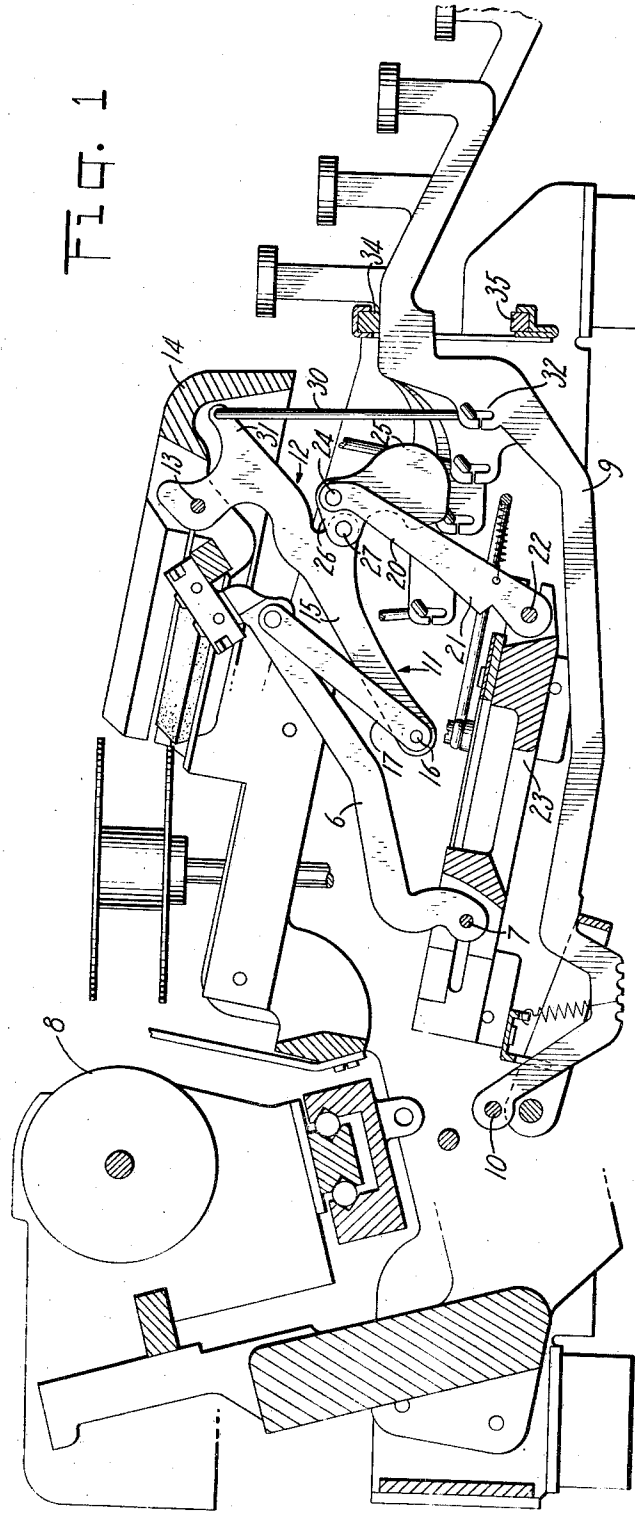


Fig. 4

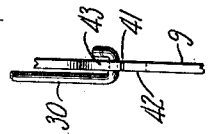


Fig. 2

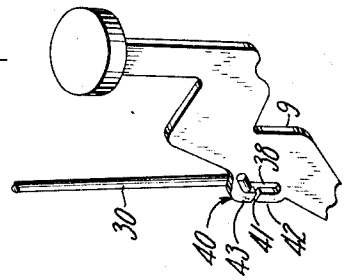
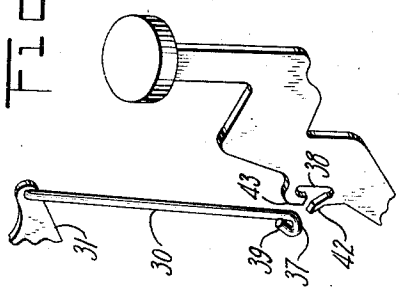


Fig. 3



INVENTOR
WILLIAM A. DOBSON
BY
L. G. Julian
ATTORNEY

Patented June 27, 1939 2,163,941

UNITED STATES PATENT OFFICE

2,163,941

TYPEWRITING MACHINE

William A. Dobson, Wethersfield, Conn., assignor to Underwood Elliott Fisher Company, New York, N. Y., a corporation of Delaware

Original application October 23, 1936, Serial No. 107,175. Divided and this application October 21, 1938, Serial No. 236,224

3 Claims. (Cl. 197—32)

This invention relates to typewriting machines and more particularly to the type action and key lever assemblies thereof.

The general object of the invention is to provide an inexpensive but reliably operative connection between cooperating parts of a typewriter mechanism, as for example, a link and lever connection, by which to facilitate installation and assembly of the related parts, and permit convenient separation of the connection to facilitate replacement or repair of the parts.

Other objects and advantages will hereinafter appear.

This application is a division of my co-pending application, Serial No. 107,175, filed October 23, 1936.

In the accompanying drawing:

Figure 1 is a sectional view of a typewriting machine taken on a central fore and aft plane through the machine, showing a complete central type action, and a number of typical key-levers only for several of the outer type actions.

Figures 2 and 3 are fragmentary perspective views of the key-lever and link connections, the mentioned parts being shown in the respective views, in assembled and separated condition, and

Figure 4 is a fragmentary rear elevation of the separable connection shown in Figures 2 and 3.

In the present embodiment of the invention illustrated in the drawing, an improved front-strike noiseless typewriter is shown by way of example only, it being apparent as the specification proceeds that the improvements herein set forth are adaptable to type actions of various designs as well as other typewriter mechanisms. A brief description of the type action illustrated will suffice to set forth the nature and uses of the improvements therein.

Type-bar 6, one of an arcuate array of type-bars pivoted on an arcuate pivot-rod 7, is arranged to swing rearwardly to strike a platen 8 in typing, being actuated by a type action mechanism by depressing a key-lever 9 pivoted at 10. The type action may include a primary toggle 11 operated by an actuating lever 12 fulcrumed on an arcuate pivot rod 13 disposed in a front segment 14, the latter having a comb structure for mounting the other actuating levers of the type action system, not shown, in an arcuate array substantially corresponding to the array of the type-bars 6. The primary toggle 11 includes an arm 15 of the actuating lever 12 flexibly connected at 16 to a second toggle arm 17, the latter being flexibly connected to the type-bar 6 adjacent the type-head thereof.

The type action may also include a secondary or auxiliary toggle 20 having an arm 21 pivoted at 22 on a lower segment 23 which also carries the pivots 7 of the type-bars 6, this segment having at its forward and rear portions, comb slots for guiding the type-bars 6 and the toggle arms 21, respectively. Arm 21 is flexibly connected at 24 to a flyweight 25, a portion 26 of which constitutes another arm of the secondary toggle 20. The flyweight 25 is pivotally carried at 27 on the actuating lever 15, whereby the secondary toggles 11 and 20, causing the arms of the primary toggle 11. The type action is manually actuated by the key-lever 9, through a link 30 articulated at its upper end to a forward extension or arm 31 of the actuating lever 12, link 30 being flexibly connected at 32 to the key-lever 9. It will be seen that upon actuation of key-lever 9, link 30 transmits the actuating power to the type action, at the arm 31 of the actuating lever 12 which sets in motion the respective toggles 11 and 20, causing the arms of the primary toggle 11 to move to a substantially straight condition as the type-head of the type-bar 6 approaches the platen 8. During this action, the secondary toggle causes the flyweight 25 to swing in an orbit defined by the co-action of the secondary toggle arms 21, 26, the momentum of the flyweight 25 bringing the type-head into contact with the platen in a "squeeze" action. It will be seen from this that, during the latter part of the type-bar stroke, the type-bar 6 is actuated primarily by the momentum of the flyweight 25, in that the key-lever 9 is stopped before the type-bar 6 reaches its printing position. The key-lever 9 is movable between an upper stop 34 and a lower stop 35, the latter defining the limit to which the key-lever may be depressed.

As the type action operates under momentum of the flyweight 25 after key-lever 9 engages the lower stop 35, the link 30 continues to travel downwardly in an idle motion which is accommodated preferably at the connection 32 between link 30 and key-lever 9. The link 30 may be a wire formed at its lower end in a crook 36 to provide a pivot pin 37 which is journaled for pivotal and sliding movement, in an elongate slot 38 in the key-lever 9. While the type action is being manually actuated, that is, during the initial part of the type-bar stroke, the pivot-pin 37 is at the upper end of slot 38, and as the type action moves by momentum, the pin 37

rides along slot 38 to accommodate the idle movement of link 30. The end portion 40 of the crook 36 is in a plane parallel with link 30 but at an angle with the axis of the link so as to overlie the solid portion of key-lever 9 to assure smooth action and prevent axial dislodgment of the pin 37 from the slot 38.

In readiness for assembly into the typewriter, link 30 is completely formed, that is, same has the crook 36 formed thereon which includes the lateral pin 37 and the end portion 39. The slot 38 is disposed in a suitable portion of the key-lever 9 so that one wall 40 of the slot is formed by a marginal portion of the key-lever, the slot being elongated in a direction corresponding generally to the idle movement of the link 30. To permit insertion of pin 37 into the slot, the wall 40 is separated on a line 41, thus forming a projecting tongue 42 which normally is aligned with the other portion 43 of the wall 40. By bending the tongue 42 outwardly, or laterally of the key-lever 9, as shown in Figure 3, an entrance for the pin 37 into the slot 38 is provided, the tongue being bent back to normal form after the pin is within the slot.

From the foregoing description of the type action arrangement, it will be seen that the arms 31 of the actuating levers 12 are disposed generally in an arcuate array, from which it will be seen that the links 30, being connected to corresponding arms 31 of the type action system, hang therefrom in a manner so that the lower end of each link, that is, the pivot pin 37, is near the slot 38 of the corresponding key-lever 9. It is to be noted that certain of the key-levers 9, particularly those toward the extreme sides of the type action system have their portions which carry the slots 38, extending inwardly so that the links, depending in an arcuate array, are near the slots. Preparatory to connecting each link to its key-lever, the tongue 42 is bent outwardly and the pivot pin 37 of each link is inserted into its slot 38, starting with the outermost type action and progressing across the machine or beginning at the middle type action and working outwardly in each direction therefrom. When all of the connections 32 are thus completed, it is a simple matter to restore each of the tongues 42 to normal form and thereby close the entrance of the slot, this operation being easily accomplished as by a pair of pliers applied to the wall 41 of each slot. The arrangement of the crook end portion 40 to project away from the slot wall 41, leaves the tongue 42 unencumbered, and same may be fully gripped by pliers.

Although in the present embodiment, the improved pin and slot connection is set forth as being advantageous in the organization of a front-strike noiseless type action, it will be apparent that same may be used with equal advantage with other parts or mechanisms of a typewriter wherein a pin and slot device may serve as a separable connection between two cooperative parts.

Having thus described my invention, I claim:

1. In a type-action for typewriters, in combination, a lever and a connecting link, said lever having an elongate slot, said link having a crook slidably engaging said slot, one wall of the slot being formed by a marginal portion of the lever, said wall having a line of separation forming a tongue projecting alongside the slot and bendable to open or close the slot for removal of the link-crook therefrom.

2. In a type-action for typewriters, in combination, a key-lever and a connecting link, said key-lever having a slot elongated in the direction of operative motion of the link, said link having a crook slidably engaging said slot, one wall of said slot being formed by a marginal portion of the key-lever, said wall having a line of separation adjacent one end of the slot, forming an elongate tongue and a member abutting the free end of said tongue, said tongue being bendable laterally to open the slot for removal or admission of the link-crook.

3. In a type-action for typewriters, in combination, a key-lever and a connecting link, said key-lever having a slot elongated in the direction of operative motion of the link, said link having a crook slidably engaging said slot, one wall of said slot being formed by a marginal portion of the key-lever, said wall having a line of separation adjacent one end of the slot, forming an elongate tongue and a member abutting the free end of said tongue, said tongue being bendable laterally to open the slot for removal or admission of the link-crook, the free end of said crook overlying the body of said key-lever opposite the said wall.

WILLIAM A. DOBSON.