ABSTRACT OF THE DISCLOSURE

A typewriter desk mechanism in which a platform upon which a typewriter may be placed is movable between a lower position and an upper position against the action of a stiff spring. The spring is so arranged that sufficient force must be applied to the platform to swing the longitudinal axis of the spring through a balance or equilibrium point after which the spring aids in moving the platform in the particular direction of motion.

The present invention relates, in general, to office furniture and, in particular, to a typewriter desk mechanism which serves to move a typewriter into and out of a housing in a desk or similar piece of furniture.

Various mechanisms are presently available which serve to move a typewriter back and forth between a stored space within a desk and a position at which the typewriter may be used. One of the more common arrangements employs a typewriter platform which undergoes horizontal and vertical movements from a lower position within the housing to an upper position at which the typewriter is used. Normally, the platform and the typewriter move horizontally from the housing to a prescribed point from which the two are moved vertically to the position at which the typewriter is used. The path is reversed when the typewriter is returned to the storage space.

Many typewriter desk mechanisms of this type suffer from one or more serious shortcomings. Some mechanisms are extremely difficult to move back and forth between the two positions. As a result, the user of the typewriter leaves the typewriter at the position at which it is used during periods when not in actual use, for example overnight, instead of storing the typewriter. As a result, this typewriter desk mechanism is not serving its intended purpose.

Another shortcoming of many typewriter desk mechanisms which are presently available is that they employ an excessive number of component parts which contributes to the complexity of the mechanism. The complexity of these units often renders them unreliable and more costly than desirable.

Accordingly, it is an object of the present invention to provide a new and improved typewriter desk mechanism.

It is another object of the present invention to provide a typewriter desk mechanism which is relatively simple in construction, easily manipulated, inexpensive to fabricate, and highly reliable in operation.

Briefly, a typewriter desk mechanism constructed in accordance with the present invention includes a platform upon which a typewriter may be placed and a carriage to which the platform is linked. The carriage is adapted to move along a pair of tracks positioned, for example, along the inside walls of a housing within which the typewriter is stored when not in use. A stiff spring, connected between the carriage and the linkage, is arranged to employ an "over-center" concept. Prior to the application of a prescribed force, the spring alone keeps the platform at a lower position. Once the necessary force is applied, the longitudinal axis of the spring passes over a balance or equilibrium point and the spring urges the platform to an upper position. In order to return the platform to the lower position, sufficient force must be applied to cause the longitudinal axis of the spring to pass back over the balance point with the result that the spring urges the platform to the lower position.

For a better understanding of the present invention, together with other and further objects thereof, reference is made to the following description, taken in connection with the accompanying drawings, and its scope will be pointed out in the appended claims.

Referring to the drawings:

FIGURE 1 is a perspective view of a typewriter desk mechanism constructed in accordance with the present invention;

FIGURE 2 is a sectional view of the typewriter desk mechanism of the present invention with the typewriter platform in its retracted or lower position;

FIGURE 3 is a sectional view, similar to FIGURE 2, with the typewriter platform in its upper position;

FIGURE 4 is a horizontal section taken along line 4-4 of FIGURE 3, and;

FIGURE 5 is a vertical section taken along line 5-5 of FIGURE 3.

Referring to the drawings, a typewriter desk mechanism constructed in accordance with the present invention includes a carriage 10 provided with means for longitudinal movement of the carriage along a pair of tracks 12 (only one of which is shown in FIGURES 2, 3, 4, and 5) positioned along the inside walls 13 of a housing in a desk. In particular, the carriage has a pair of vertical side panels 14a and 14b upon which two pairs of rollers 16a, 18a, and 16b, 18b, respectively, are individually mounted. The rollers are so arranged on the side panels that one roller on each panel is above its associated track, while the other roller is below the track. In this manner, the carriage may be moved along tracks 12. Lance formations 15a and 15b are provided on side panels 14a and 14b, respectively. These lance formations are arranged to abut against stops (not shown) on tracks 12 which limit the outward horizontal movement of the carriage. A transverse rod 19, extending between side panels 14a and 14b, provides transverse rigidity for the carriage.

The typewriter desk mechanism of the present invention further includes a platform 20 upon which a typewriter 22 may be placed. Extending downward from the longitudinal edges of platform 20 is a pair of side panels 23a and 23b.

Platform 20 is connected to carriage 10 by means of a parallelogram linkage having two pairs of links 24a, 24b, and 26a, 26b, whereby the platform moves longitudinally with the carriage. In particular, links 24a and 26a are pivotally connected between side panels 14a and 23a, while links 24b and 26b are pivotally connected between side panels 14b and 23b. Corresponding pivot points of each pair of links 24a, 24b and 26a, 26b have a common horizontal axis. As a result, platform 20 may move in a vertical direction relative to carriage 10 when a force having a vertical component is applied to the leading transverse edge of platform 20. This vertical movement takes place after the platform is moved horizontally out of the housing from the position illustrated in FIGURE 2. Once platform 20 is clear of the opening of the housing and lance formations 15a and 15b hit against the stops on tracks 12, the platform may be moved from its lower position to the upper position illustrated in FIGURE 3.

Extending between carriage 10 and the parallelogram
linkage is a stiff spring 30. One end of spring 30 is hooked onto transverse rod 19, while the other end of the spring is hooked to a second transverse rod 28 extending between links 26a and 26b. Rod 28 provides additional transverse rigidity to the mechanism. The arrangement of spring 30 and links 26a and 26b is such that the common axis of the pivot points on side panels 14a and 14b of this pair of links (point 29a of link 26a) is located ahead of the longitudinal axis of the spring, as represented by a straight line 31b between the ends of the spring, with respect to the initiation of a movement of platform 20 from its lower position in FIGURE 2 (after the platform has been moved horizontally out of the housing) to its upper position in FIGURE 3. This condition is made possible for the particular embodiment of the invention which is illustrated by the elbow shaped links 26a and 26b and the rod 28 being secured to these links at their ends. As platform 20 is moved from its lower position to its upper position, transverse rod 28 moves in the direction of arrow 32 in FIGURE 2. At some point after sufficient force has been applied to platform 20 to overcome the effect of spring 30, the longitudinal axis of the spring coincides with straight line 31b which passes through pivot point 29a. Prior to this condition, spring 30, being sufficiently stiff, tends to keep platform 20 at its lower position. Beyond this condition, the platform is urged upward by spring 30. At the completion of the movement of platform 20 from its lower position to its upper position, pivot point 29a is located behind the longitudinal axis of spring 30 as illustrated in FIGURE 3. In order to return platform 20 to its lower position, sufficient force must be applied to the platform to overcome the stiffness of spring 30 to cause the longitudinal axis of the spring to pass over pivot point 29a in a direction opposite to the one described previously.

Each of the side panels 14a and 14b is provided with a curved slot 32a and 32b, respectively, through which fingers 25a and 25b are inserted at the respective ends 24a and 24b of these slots 32a and 32b. The movement of the carriage along a pair of tracks, said carriage also having a first transverse rod extending between said longitudinal edges of said carriage, one of said longitudinal edges of said carriage having a slot therein; a platform upon which a typewriter may be placed, said platform having a pair of longitudinal edges; a parallelogram linkage having two pairs of links pivotally connected between said longitudinal edges of said carriage and said longitudinal edges of said platform with corresponding pivot points of each pair of links having common axes, one pair of said links being elbow shaped and a second transverse rod extending between the ends of said elbow shaped links, whereby said platform moves longitudinally with said carriage and may move in a vertical direction relative to said carriage from a lower position to an upper position; a platform, one of said sides of which projects through said slot in said longitudinal edge of said carriage and is adapted to engage a stationary obstruction when said platform is moved to said upper position to lock said carriage against longitudinal movements; and a spring extending between said first and second transverse rods, the common axis of the pivot points on said carriage of one pair of said links located ahead of the longitudinal axis of said spring with respect to the initiation of a movement of said platform from said lower position to said upper position and located behind said longitudinal axis with respect to the completion of said movement of said platform from said lower position to said upper position.

2. A typewriter desk mechanism comprising: a carriage having a pair of longitudinal edges and means for longitudinal movement of said carriage along a pair of tracks, one of said longitudinal edges of said carriage having a slot therein; a platform upon which a typewriter may be placed; a parallelogram linkage having two pairs of links pivotally connected between said carriage and said platform with corresponding pivot points of each pair of links having common axes, whereby said platform moves longitudinally with said carriage and may move in a vertical direction relative to said carriage from a lower position to an upper position, one of said links having a finger which projects through said slot in said longitudinal edge of said carriage and is adapted to bear against an edge of
said slot to limit movement of said carriage from said upper position to said lower position; means interconnecting one pair of said links; and a stiff spring having one end secured to said carriage and the other end secured to said interconnecting means, the common axis of the pivot points on said carriage of said one pair of links located ahead of a straight line between said ends of said spring with respect to the initiation of a movement of said platform from said lower position to said upper position and located behind said straight line with respect to the completion of said movement of said platform from said lower position to said upper position, the stiffness of said spring alone being sufficient, in the absence of any externally applied forces, to maintain said platform in said lower position and said finger on said link bearing against said edge of said slot in said longitudinal edge of said carriage.

3. A typewriter desk mechanism according to claim 1 wherein said carriage has a pair of vertical side panels upon which two pairs of rollers are individually mounted for said longitudinal movement of said carriage.

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BOBBY R. GAY, Primary Examiner.

J. L. KOHNEN, Assistant Examiner.