

[54] **SPACE KEY**

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[51] Int. Cl. **H01h 3/04**
[58] Field of Search 200/172 A; 197/98, 19

[56] **References Cited**

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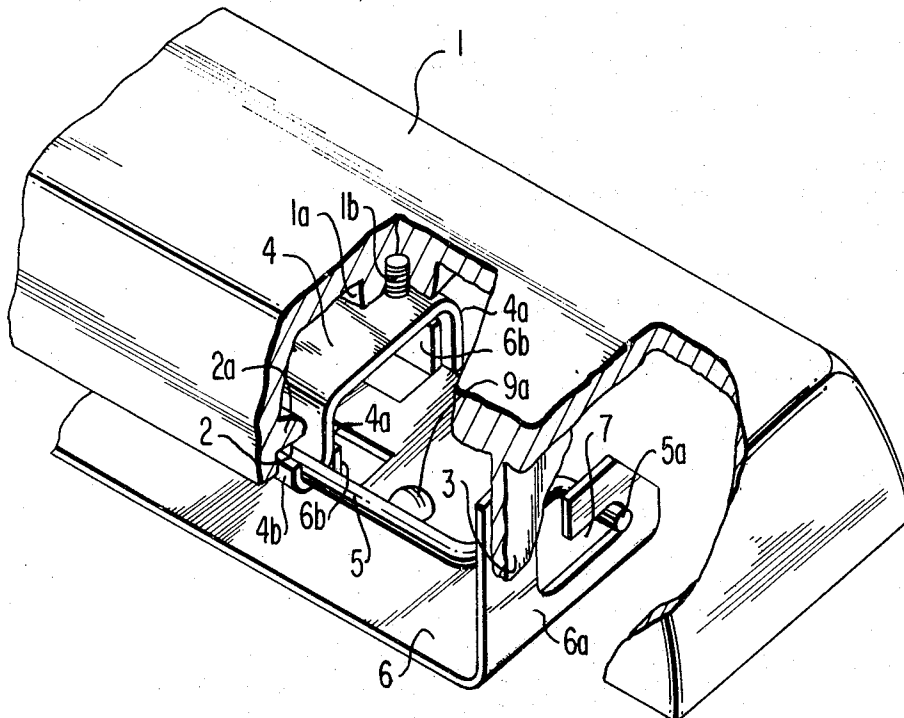
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[57] **ABSTRACT**

A space key includes an elongated upper cover adapted to be touched with fingers, a lower guide plate and a spring disposed between the cover and the guide plate. A stabilizer rod having a center stem portion is rotatably received by the cover and Z-shaped end portions each pointed end of which is pivotably received in a corresponding notch formed in upright portions of the guide plate, whereby upon depressing the upper cover at any portion thereof the cover moves down without inclination toward the guide plate to reliably actuate a switch disposed under the guide plate.

5 Claims, 3 Drawing Figures



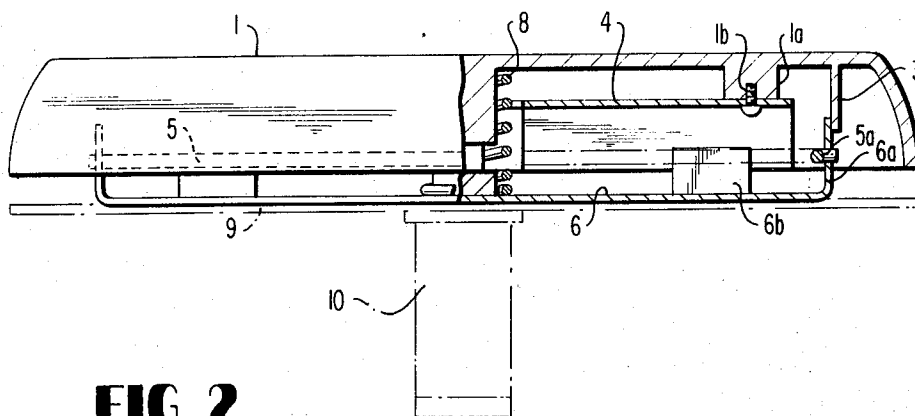
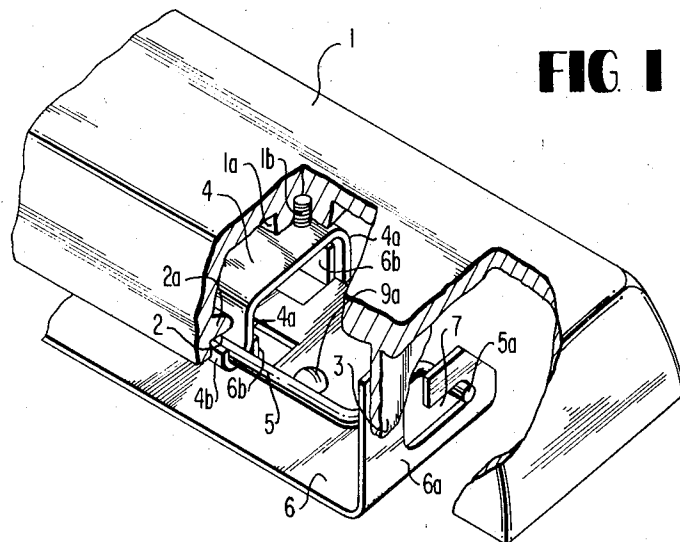
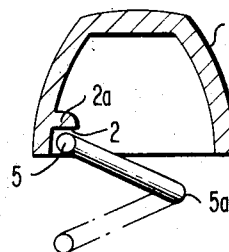


FIG 3



1

SPACE KEY

BACKGROUND OF THE INVENTION

Field of the Invention

This invention relates to a key called a space bar or space key which is employed in a typewriter or a terminal keyboard of a computer.

It is an object of the invention to provide a space key.

It is a more specific object of the invention to provide the structure of a space key in which its upper cover moves down without inclination in response to depression force applied thereto at any portion thereof to thereby actuate reliably a switch disposed underside the structure.

SUMMARY OF THE INVENTION

According to the invention, there is provided a space key which comprises an elongated upper cover, a lower guide plate, a spring disposed between the upper cover and the guide plate. A stabilizer rod having a long stem portion is rotatably received by the upper cover and Z-shaped end portions each pointed end of which is pivotably received in a corresponding notch formed in upright portions of the guide plate on the lateral ends thereof. The upper cover, having downwardly extending protuberances slidably in contact with upright portions of the guide plate, is moved down without inclination in response to depression force applied to the cover at any portion thereof to reliably actuate a switch mounted under the guide plate.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is an enlarged perspective view of one embodiment of a space key according to the invention with a portion of an upper cover broken away to show the inner structure.

FIG. 2 is a side elevational view of the space key shown in FIG. 1 with a right half portion of the upper cover broken away to show the inner structure.

FIG. 3 is an explanatory cross-sectional view showing the operation of a stabilizer rod.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Now, one embodiment of the invention will be explained with reference to the drawing, particularly, FIG. 1 showing in perspective view, an elongated upper cover 1 having a generally trapezoidal cross-section. The cover 1 is formed in its lower inside portion with an elongated protuberance 2a along one of the longer side walls extending downward to provide a stepping portion 2. Further, it is formed with plate-like protuberances 3 extending downward from the cover portions adjacent the respective shorter side walls, which are in contact at their inner faces with the outer faces of respective bent end portions or upright end portions 6a of a lower guide plate 6.

Keep plate 4 is secured to protuberances 1a formed inside the cover 1 in the vicinity of the lateral end portions by screws 1b, and has two side wall portions 4a extending downward which are slidably in contact at their inner faces with the respective outer faces of transversely opposing upright portions 6b formed by cutting appropriate lateral end portions of the lower guide plate 6, with one of the side wall portions 4a having an out-

2

wardly extending curved portion 4b the margin of which abuts upon the stepping portion 2 of the cover 1.

The stepping portion 2 and the curved portion 4b carry therebetween a stabilizer rod 5 having Z-shaped or crankshaft-like end portions the respective bent ends 5a of which are pivotably received in respective notches 7 formed in the upright end portions 6a of the guide plate 6.

The location of the notch 7 is preferably selected so that it supports pivotably the end 5a of the stabilizer rod 5 at the center of the operation range of compression and expansion of a spring 8 which is disposed to space away the cover 1 from the guide plate 6 at their center portion.

That is, upon depressing the upper cover 1, the stabilizer rod 5 moves from the position A shown in FIG. 3 to the position B while pivoting about its ends 5a, so that by positioning the ends 5a at the operation center of the spring the stroke of the stabilizer rod 5 becomes minimum, the side shift of the end 5a within the notch 7 is restricted to a minimum, and the rocking of the cover 1 in the widthwise direction is obviated, whereby smooth depression operation is provided.

In FIG. 2, there are shown in side view and partially in cross-section, a base board 9 for fixedly supporting the guide plate 6 by screws 9a, and a switch 10 mounted on the underside of the base board 9 coaxial with the spring 8.

According to the invention, even when one of the lateral end portions of the upper cover 1 is depressed, the other free end is also simultaneously moved down by means of the stabilizer rod 5 and the center spring 8 is effectively compressed while maintained in the horizontal state, so that the guide plate 6 abuts uniformly upon the center switch 10 without any increase of depression stroke of the cover to actuate the switch reliably.

Further, when the upper cover 1 is moving down, both plate-like projections or protuberances 3 of the cover 1 slide upon the upright end portions 6a of the guide plate 6 and both side walls 4a of the fixed plate 4 slide upon the opposing upright portions 6b of the guide plate 6, so that the front and rear, right and left rocking of the cover 1 is effectively prevented thereby allowing smooth depression movement thereof.

In the prior art space keys, upon depressing one end of the upper cover the other free end rises up through a leverage action with the center spring acting as a pivot and the spring is compressed one-sidedly, so that an increased depression stroke of the cover is required to actuate the switch; this results in front and rear, right and left rocking of the cover causing the switching operation difficult. In contrast to the foregoing prior art, the instant invention obviates the drawback of the prior space key, provides smooth movement of the key, and thereby actuates quickly and accurately the switch, whereby very effective and practical space keys are provided.

What is claimed is:

1. A space key to actuate reliably a switch disposed under a guide plate, said key comprising:
 - an elongated upper cover having downwardly extending protuberances,
 - a lower guide plate having upright portions in slidable contact with said protuberances of said upper

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cover to guide downward movement of said upper cover,

a spring disposed between said upper cover and said guide plate, and

a stabilizer rod having a center stem portion extending in the lateral direction of said upper cover and rotatably received by one wall portion of said upper cover and generally Z-shaped end portions, the pointed ends of which are pivotably received in corresponding notches formed in upright portions of said guide plate,

wherein said upper cover moves down without inclination in response to depression force applied thereto at any portion.

2. The space key as specified in claim 1 further including: a keep plate secured to the underside of said upper cover to rotatably receive said stabilizer rod together with a stepping portion of said upper cover, which has downwardly extending wall portions in slidable contact with the upright portions of said guide plate.

3. The space key as specified in claim 1, wherein said notches are located at about the center of the operation range of compression and expansion of said spring.

4. In a space key comprising an upper cover, a lower guide plate, and a spring disposed between said upper cover and guide plate to space one away from the other, and constructed so that in response to depression of said upper cover, a switch mounted on the underside of said guide plate and coaxial with said spring is actuated, the improvement wherein:

said upper cover has, in its inside lower portion, a stepping portion extending in the lengthwise direction along one of the longer downwardly extending walls and is formed with plate-like protuberances close to the lateral end portions of said upper cover;

a keep plate is secured inside said upper cover extending between said plate-like protuberances which has downwardly extending laterally elongated wall portions one of which opposing said stepping portion has an outwardly extending curved portion;

said guide plate has upright end portions, each formed with a notch, which are slidably in contact with the corresponding plate-like protuberances, and has further provided upright leaf portions so as to be in slidable contact with the corresponding wall portions of said keep plate; and

a stabilizer rod having Z-shaped end portions is disposed so that its straight center portion is received between said stepping portion of said upper cover and said curved portion of said keep plate and each of said Z-shaped pointed end portions is movably received in a corresponding notch formed in said guide plate.

5. The space key as specified in claim 4, wherein said notches are located substantially at the center of the operation range of compression and expansion of said spring.

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