

[54] **KEYBOARD KEY LOCK MECHANISM**

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[51] Int. Cl. **G05g 11/00**

[58] Field of Search **74/483 PB, 502, 503, 527, 74/528, 529, 531, 532; 403/315, 319; 235/26, 27, 59 T, 123, 130 KD, 131 FD; 360/60**

[56] **References Cited**

UNITED STATES PATENTS

2,917,944 12/1959 Hills 74/529 X

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[57] **ABSTRACT**

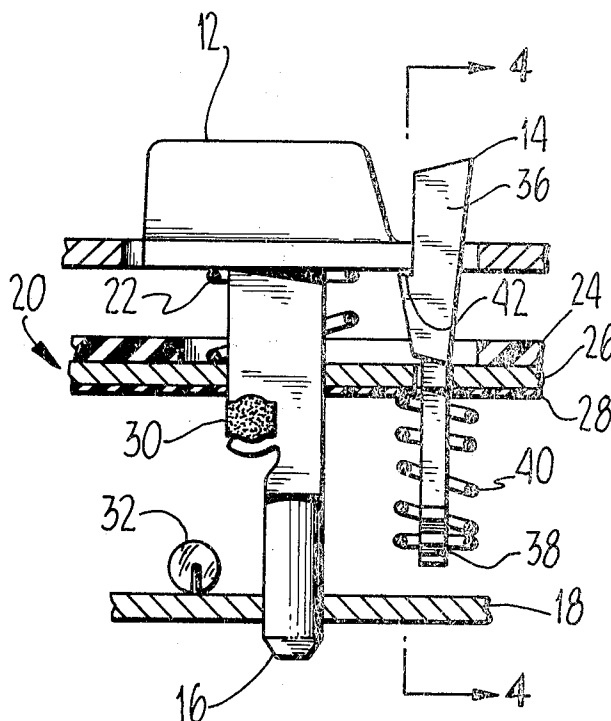
A lock mechanism for preventing the accidental depressing of a keyboard key. The mechanism comprises a stem adapted to fit through an aperture in the key-

board mounting plate, a return spring extending between the bottom of the mounting plate and the bottom of the stem for resiliently urging the key stem into a position normal to the mounting plate, and a locking key having on one side surface a latch adapted to fit beneath the edge of the adjacent keyboard key. The latch, therefore, prevents accidental depressing of the key until the operator first releases the locking key.

With the rapid development and greatly increased use of digital computing equipment, there is a corresponding increase in the use of keyboard equipment by which an operator may communicate with the computer. Normally, a computer input keyboard consists of a main keyboard for inserting data and a control keyboard containing function keys which, when actuated, will direct the computer to perform certain operations on the inserted data.

The accidental actuation of certain function keys may produce disastrous results. For example, a computer that has been programmed to perform a certain operation may have a function key which, when depressed, will clear the entire program. It is apparent that it is most desirable that such a function key should be equipped with some means of preventing its accidental actuation.

4 Claims, 4 Drawing Figures



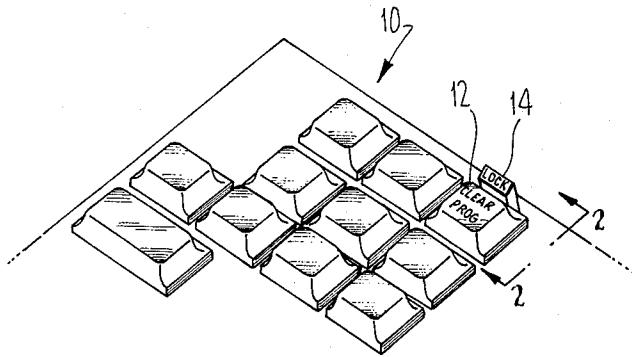


Fig. 1

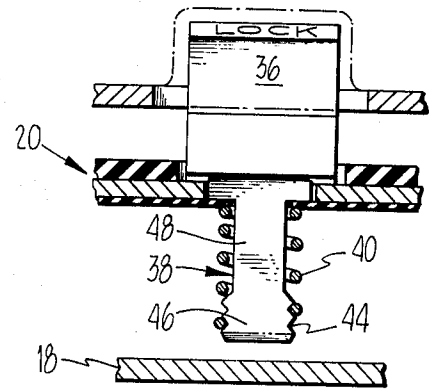


Fig. 4

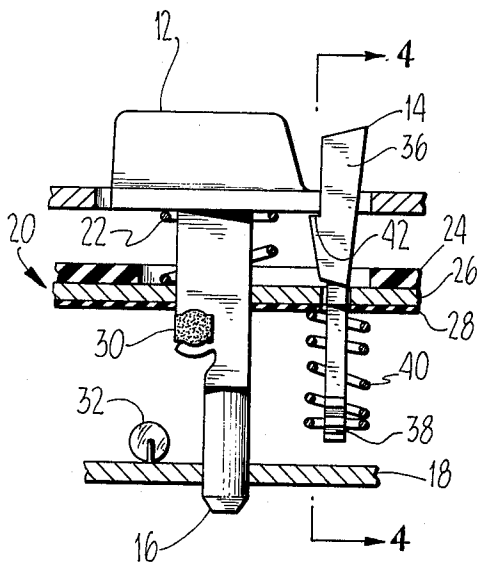


Fig. 2

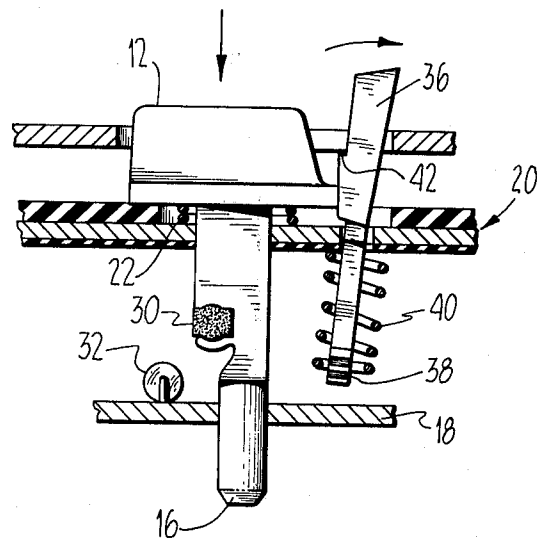


Fig. 3

KEYBOARD KEY LOCK MECHANISM

The invention disclosed herein comprises a simple and inexpensive locking mechanism provided with a latch that fits under the adjacent function key to prevent the depressing of that key until the locking mechanism is actuated.

In the drawings which illustrate a preferred embodiment of the invention:

FIG. 1 is a perspective drawing illustrating a section of a typical keyboard containing the locking mechanism;

FIG. 2 is an elevation view taken along the line 2—2 of FIG. 1 and illustrates the locking mechanism and the associated keyboard key;

FIG. 3 is another side elevation view showing the actuation of a key after release of the locking mechanism; and

FIG. 4 is an elevation view of the locking mechanism taken along the lines 4—4 of the FIG. 2.

Turning now to a description of the preferred embodiment of the invention, FIG. 1 illustrates a portion of a keyboard 10 which may, for example, be part of an input terminal to a computer. It is assumed that the keys illustrated may comprise a portion of the function key section of a keyboard and it may be assumed that key 12 may be used, for example, to instruct the computer to clear a particular program. It is quite apparent, therefore, that any accidental depressing of key 12 may produce disastrous results and it is, therefore, necessary to provide key 12 with a lock 14 which will prevent inadvertent actuation of key 12.

FIG. 2 is an elevation view illustrating the details of key 12 and its associated lock 14. The key 12 may be a keyboard component such as described in U.S. Pat. No. 3,693,123, comprising a key stem 16 mounted between a lower base member 18 and a mounting plate 20 and normally maintained in a non-actuated or rest position by a return spring 22. As explained in detail in the above-referenced patent, mounting plate 20 is comprised of a resilient cushioning layer 24, supported by a carbon steel core 26 under which is a resilient spacing layer 28 provided to reduce key noise and to improve the touch of the key by decreasing break-away force.

Affixed to key stem 16 and normally abutted against spacing layer 28 is a small bar magnet 30 which, when key 12 is depressed, will actuate a reed switch 32 that is coupled to the appropriate circuitry to perform the necessary function directed by the actuation of key 12.

In order to prevent accidental actuation of key 12, a lock 14 is provided. Lock 14 is comprised of a key 36 extending above mounting plate 20 and a lock stem 38 connected to the lower end of key 36 and extending through an aperture in mounting plate 20. A return spring 40 extends between the lower end of stem 38 and mounting plate 20 to urge the stem and locking key 36 into a position perpendicular to the mounting plate 20.

Key 36 of lock 14 is provided with a latch 42 which

comprises a small step section perpendicular to the longitudinal axis of key 36 and stem 38, and underlying the bottom surface of key 12 so that key 12 will rest upon latch 42. Function key 12 is thus locked and its accidental actuation is prevented.

To actuate function key 12, it is first necessary to tilt locking key 36 so that latch 42 is released from the bottom of function key 12 and is best shown in FIG. 3. After release of latch 42, function key 12 may be depressed. When key 36 is released, and function key 12 is permitted to return up to its non-actuated position, return spring 40 will urge latch 42 back into its locking position.

Return spring 40 extends between the lower surface of mounting plate 20 and the lower end of stem 38. Spring 40 may be affixed to the lower end of stem 38 by a pin (not shown) having a length larger than the diameter of spring 40 and extending through the lower end of stem 38; however, the preferred method of mounting spring 40 is by providing "threads" 44 formed in the stem at the lower end 46 of stem 38 as best shown in FIG. 4. Thus, lower end 46 of stem 38 is constructed slightly wider than the midsection 48 of the stem and the lower end is provided with grooves that act as threads upon which spring 40 may be screwed and supported as shown in FIG. 4.

What is claimed is:

1. In combination with a manual keyboard key depressible perpendicularly to a keyboard mounting plate, a lock mechanism for preventing inadvertent actuation of said key, said lock mechanism comprising:
 - a manually actuatable locking key positioned adjacent the keyboard key;
 - a stem section connected to said locking key and extending through an aperture in the keyboard mounting plate;
 - resilient means coupled to the end of said stem section opposite to said locking key for urging said stem section into a position perpendicular to said mounting plate; and
 - a latch on said locking key, said latch having a step surface substantially perpendicular to the longitudinal axis of said stem section and positioned to engage said keyboard key when said stem section is positioned perpendicular to said mounting plate.
2. The combination claimed in claim 1 wherein said resilient means is a coil spring positioned between said mounting plate at the end of said stem section opposite said locking key.
3. The combination claimed in claim 2 wherein said stem section has, on the end opposite said locking key, a threaded portion adapted to engage a portion of said coil spring.
4. The combination claimed in claim 1 wherein the step surface on said latch engages said keyboard key by underlying the bottom surface of said key when said stem section is positioned perpendicular to said mounting plate.

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