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Isozaki

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[54] **ADJUSTABLE KEYBOARD**

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[52] **U.S. Cl.** ..... **200/239;** 197/98; 248/397; 235/145 R

[51] **Int. Cl.²** **H01H 9/02;** B41J 5/08

[58] **Field of Search** ..... 200/293, 5 R, 5 A; 197/98, 197/186 A; 248/397; 235/145 R; 340/365

[56] **References Cited**

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[57] **ABSTRACT**

A keyboard for a data terminal device which is manually adjustable to a plurality of operating positions best suited to the operator. The keyboard is hinged at its forward edge and has secured thereto a pair of slotted support members which coact with a detent member to position the keyboard in a plurality of elevated positions. The keyboard is normally urged to a home position. Upon disabling the action of the detent member, the keyboard is manually positioned by the operator which is then secured by the detent member.

1 Claim, 2 Drawing Figures

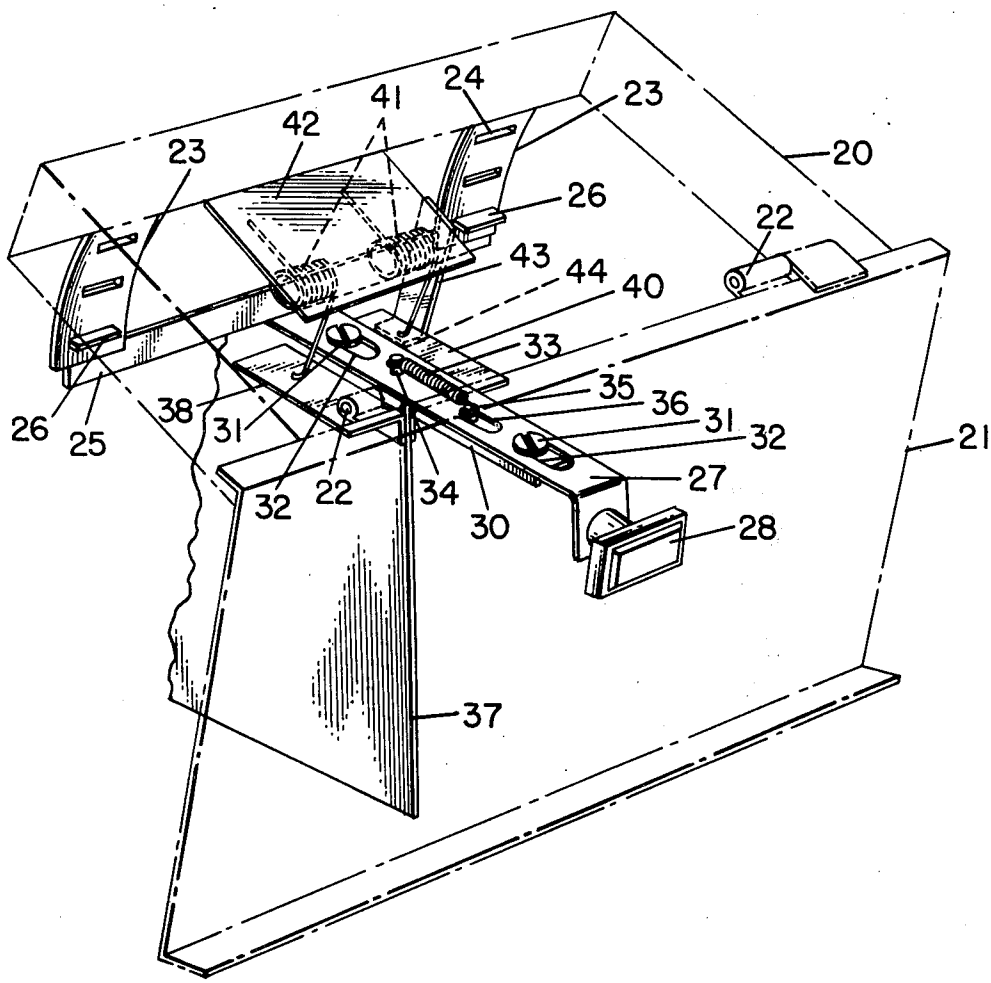


FIG. 1

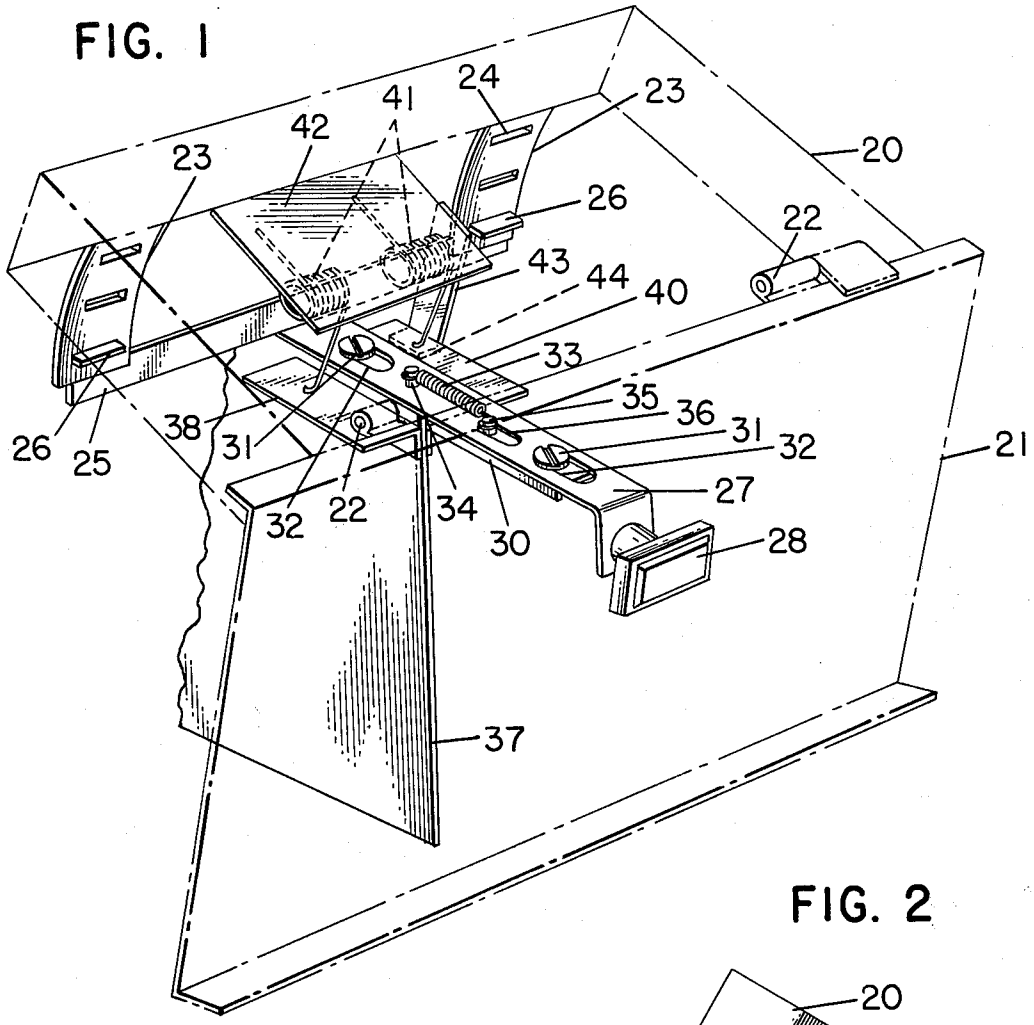
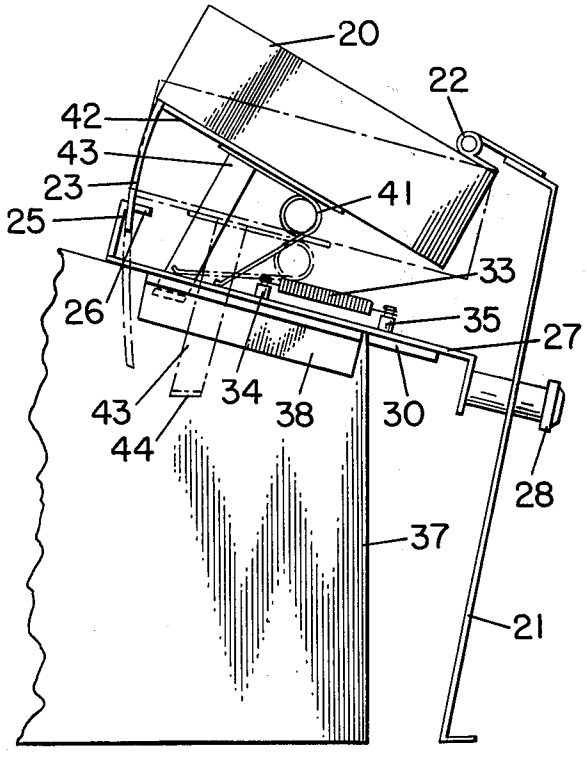

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FIG. 2


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ADJUSTABLE KEYBOARD

BACKGROUND OF THE INVENTION

Prior keyboards used in business machines such as cash registers, data terminal devices, adding machines, etc. have been designed for an operator whose characteristics with respect to height, arm reach etc., have been averaged out. It has been found that with respect to those operators who do not conform to the average statistics, use of the keyboard has produced error, fatigue, etc., due to the elevated position of the keyboard. In the case of mechanical business machines, it was not economically feasible to provide an adjustable keyboard due to the mechanical structure of the keyboard. But with the advent of electronic data terminals, wherein the keyboard is connected to the various elements of the terminal by electrical circuits rather than by mechanical elements, the limitation described above has been removed. It is therefore an object of this invention to provide a keyboard for use on a data terminal device which is manually adjustable by the operator to a position which provides greater efficiency in the operation of the keyboard. It is another object of this invention to provide an adjustable keyboard which is simple to adjust to any desirable elevation and which is low in cost.

SUMMARY OF THE INVENTION

In order to carry out these objects, there is provided a keyboard hinged to a terminal device at its forward edge. Mounted on its rear edge are a pair of support arms each containing a plurality of aligned slots. Slidably mounted on the terminal device is a detent member supporting a pair of locking detent arms which coact with the slots in the support arms to position the keyboard in a selected position. A resilient member normally urges the keyboard to a predetermined home position. By actuating the detent member to release the keyboard, the operator can rotate the keyboard against the action of the resilient member to the position most suitable for operation by the operator.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a generally perspective view of the keyboard showing the mechanism for adjusting the elevational position of the keyboard.

FIG. 2 is a side elevational view of the keyboard shown in FIG. 1.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to FIG. 1, there is shown a perspective view of the mechanism for adjusting the keyboard of a data terminal device to various elevational positions. As shown, the keyboard **20** is attached to the top edge of the front panel **21** of a terminal device by means of a pair of hinges **22**, allowing the keyboard to be rotated about the edge of the terminal device. Secured to the rear underside of the keyboard **20** are a pair of curved support arms **23** each containing a plurality of slots **24**. While only three slots **24** are shown, it is obvious that any number of slots can be used depending on the number of positions of the keyboard that are desired for the installation.

Associated with the support arm **23** is an elongated detent arm **25** having at each end an upturn hook portion **26** which coacts with the slots **24** in each support

arm **23** to position the keyboard at a predetermined elevational position. The detent arm **25** is secured to one end of a slide member **27**, the other end of which is bent at a 90° angle and to which is attached a push-button member **28**. The slide member **27** is slidably supported on an angle member **30** by means of a pair of screw members **31** mounted to the angle member **30** and which extend through elongated slots **32** located in the slide member **27**. The length of the slots **32** will control the length of movement of the slide member **27**. The slide member **27** is normally urged in a direction towards the front of the terminal device by a spring **33** mounted between a stud **34** secured to the slide member **27** and a stud **35** secured to the angle member **30** and which extends through an elongated slot **36** located on the slide member **27**.

The angle member **30** is secured to one side of an upright support member **37** mounted within the terminal device. Secured to the other side of the support member **37** is a second angle member **38** positioned opposite a rear portion **40** of the angle member **30**. Both the angle member **38** and the rear portion **40** of the angle member **30** each support one end of an associated torsion spring **41**. The other ends of the torsion springs **41** engage a plate **42** secured to the underside of the keyboard **20**. The action of the torsion springs **41** is to move the keyboard in an upright direction. This upright movement is limited by a depending arm **43** secured to the plate **42** and having an L-shaped lower end portion **44** which will engage the portion **40** of the angle member **30** upon movement of the keyboard in an upright direction.

In operation, the keyboard **20** will normally be urged into its top-most position by the action of the torsion springs **41** on the plate **42**. In this position, the spring **33** will move the slide **27** forward until the hook portion **26** of the detent arm engages the lower-most slots **24** in the support arm **23** thus locking the keyboard in this position as shown in FIG. **1**. If it is desirable to adjust the keyboard to a position which is comfortable to the operator, the operator pushes the button **28** inwardly. This action moves the slide against the action of the spring **33** to disengage the hook portions **26** from the support arms **23**. The operator will then rotate the keyboard **20** in a downward direction to one of two positions corresponding to the location of the slots **24** in the support arms **23**. If the lower-most position is selected, the operator will hold the slide in its disengaged position until the proper slots **24** are aligned with the hook portions **26**. The pressure on the button **28** is then released allowing the spring **33** to move the hook portions **26** through the aligned slots **24** in the support arms **23** thus positioning the keyboard at the elevation selected by the operator. It is obvious that by reversing the movement of the spring **33** and the mounting of the hook portions **26** of the detent arm **25** that the locking and unlocking of the keyboard can be accomplished by movements reverse to the movements of the slide **27** and push button **28** described above.

It will be seen from this construction that the keyboard can be rotated by simply activating the push button and moving the keyboard to the desired elevational position. Whenever the keyboard is required to be used by another operator, simply depressing the push button will allow the keyboard to automatically return to its home position if this is the required position. If not, the operator may adjust the keyboard to its new position.

Thus, it will be seen that this construction allows any number of operators to easily adjust the keyboard during the time they are using the terminal device.

While there has been described a form of the invention and its mode of operation, it will be apparent to those skilled in the art that changes may be made in the apparatus described without departing from the spirit and scope of the invention as set forth in the appended claims and that in some cases, certain features of the invention may be used to advantage or modified without corresponding changes in other features, while certain features may be substituted for or eliminated as appreciated by those skilled in the art.

What is claimed is:

1. A data terminal device comprising

a. a housing having a front panel extending generally in a vertical direction;

b. a keyboard pivotally mounted to the top edge of said front panel for rotational movement around said panel to a plurality of adjusted operating positions;

c. a first support member positioned adjacent to and intermediate the top and bottom edges of said front panel;

d. a pair of torsion springs mounted between said first support member and the lower portion of said keyboard for normally urging said keyboard to a first adjusted position;

e. a plurality of depending support arms secured to the lower portion of the keyboard, each of said support arms having control surfaces which are arranged on said support arms in the same direction as the rotation of said keyboard;

f. a locking assembly slidably mounted on said first support member for movement in a direction to engage and lock said support arms in a plurality of adjusted positions including a second support member slidably mounted on said first support member and extending to a position adjacent the front panel of the terminal device;

g. a push button member secured to one end of said second support member and extending through said front panel to a position for selective movement by the operator of the terminal device;

h. a detent member secured to the other end of said second support member, said detent member having a plurality of upstanding hook portions each positioned adjacent the control surfaces of a corresponding support arm;

i. and an extension spring mounted between said first support member and said second support member for normally moving the second support member in a direction to move the hook portions of said detent member into engagement with one of the control surfaces of said support arms thereby locking the keyboard in an adjusted position, said second support member being moved by movement of said push button in a direction against the action of said extension spring to disengage the hook portions of said detent member from said arm members whereby the keyboard can be moved against the action of said torsion springs to another adjusted operating position.

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