United States Patent [19]

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[11] **3,778,125**

[45] **Dec. 11, 1973**

[54] **OFFICE MACHINE WORKTABLE CONSTRUCTION**

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[22] Filed: **Aug. 6, 1971**

[21] Appl. No.: **169,746**

[30] **Foreign Application Priority Data**

Apr. 7, 1970 Germany ..... P 20 16 413.0
Apr. 7, 1970 Germany ..... P 20 16 412.9

[52] **U.S. Cl.** **312/272.5**, 312/208, 312/196, 312/223

[51] **Int. Cl.** **A47b 21/00**, A47b 51/00

[58] **Field of Search** 312/208, 196, 223, 312/272, 272.5

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Primary Examiner—Paul R. Gilliam
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[57] **ABSTRACT**

A worktable particularly for data processing systems which includes one or more keyboards and mechanical or electronic parts of the system which are arranged separate from one another, comprises a table having a support for a printing unit and a console which is carried at the front of the table adjacent the printing unit and mounted for movement vertically. The console is adapted to receive one or more keyboards and to have a rest for holding the work. The console may additionally carry a keyboard which is extendable outwardly from the front face thereof or, which may be moved inwardly into a recessed or completely withdrawn obscured position.

6 Claims, 6 Drawing Figures

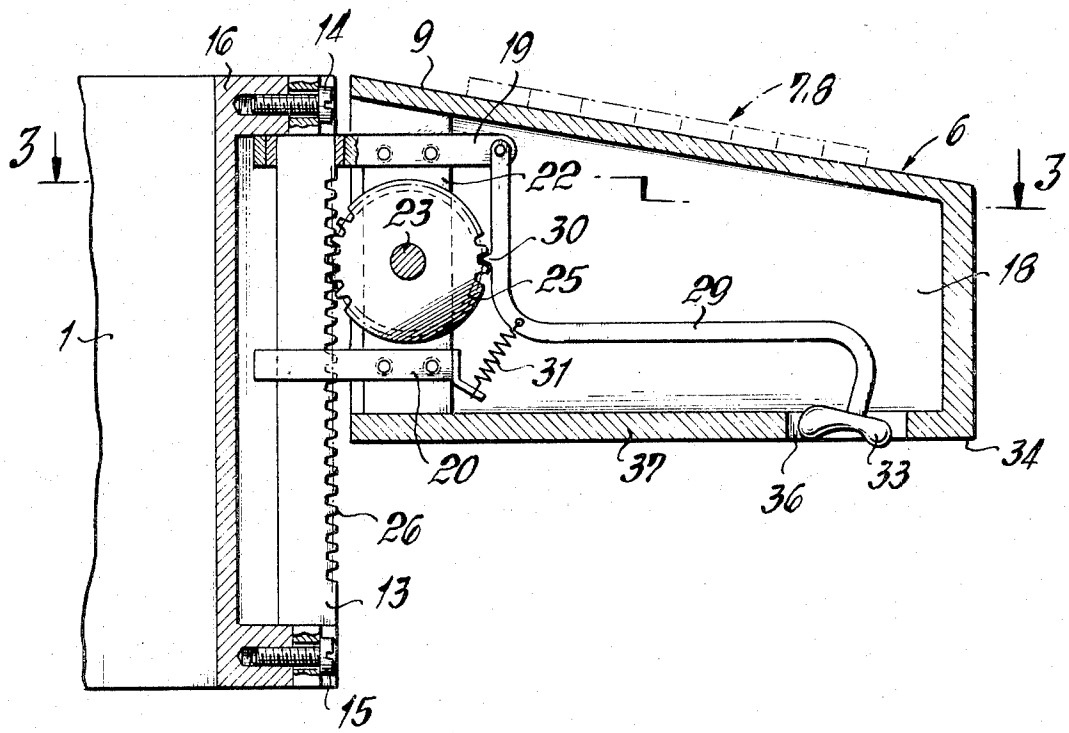

FIG. 1

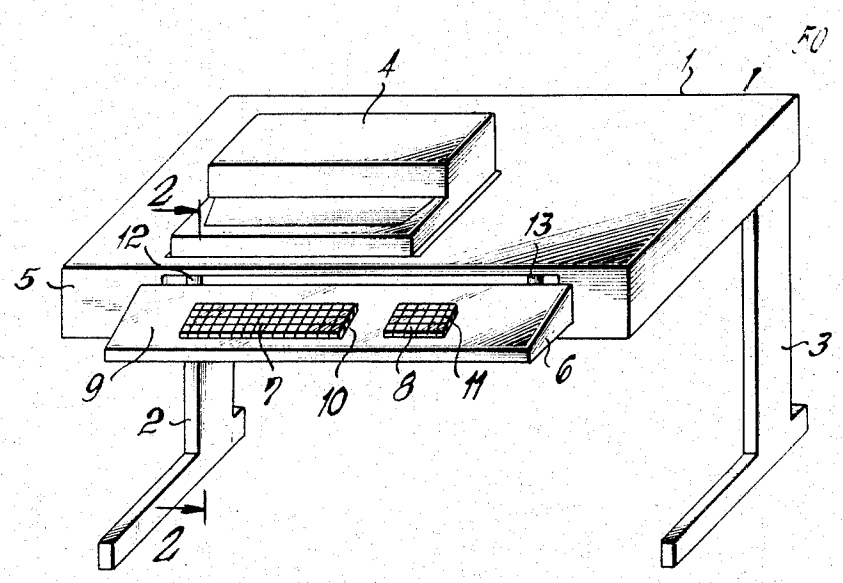

FIG. 2

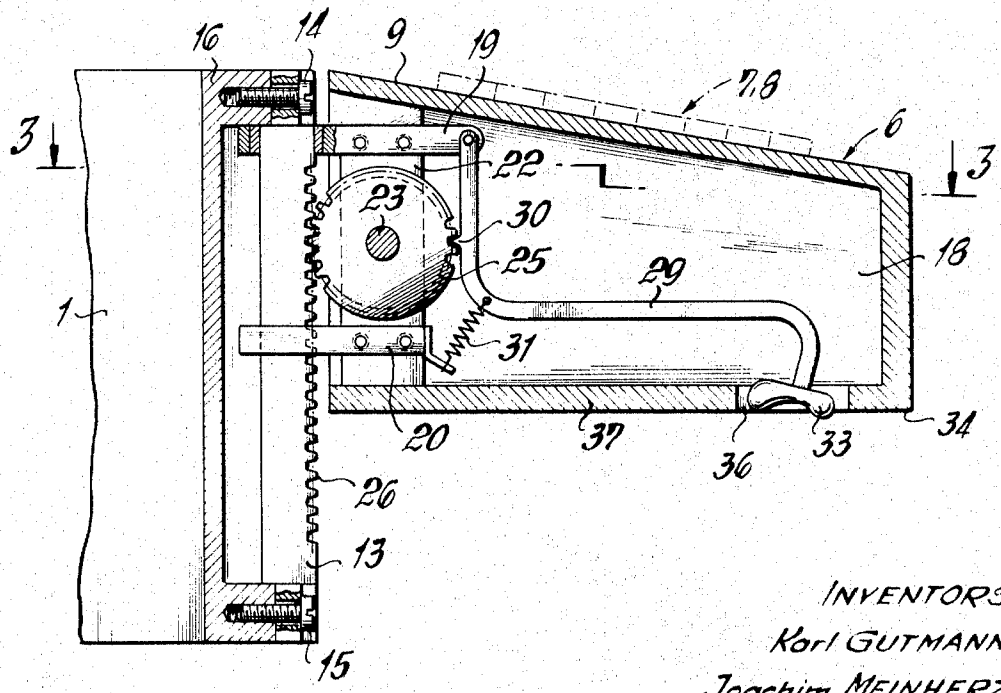

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FIG. 3

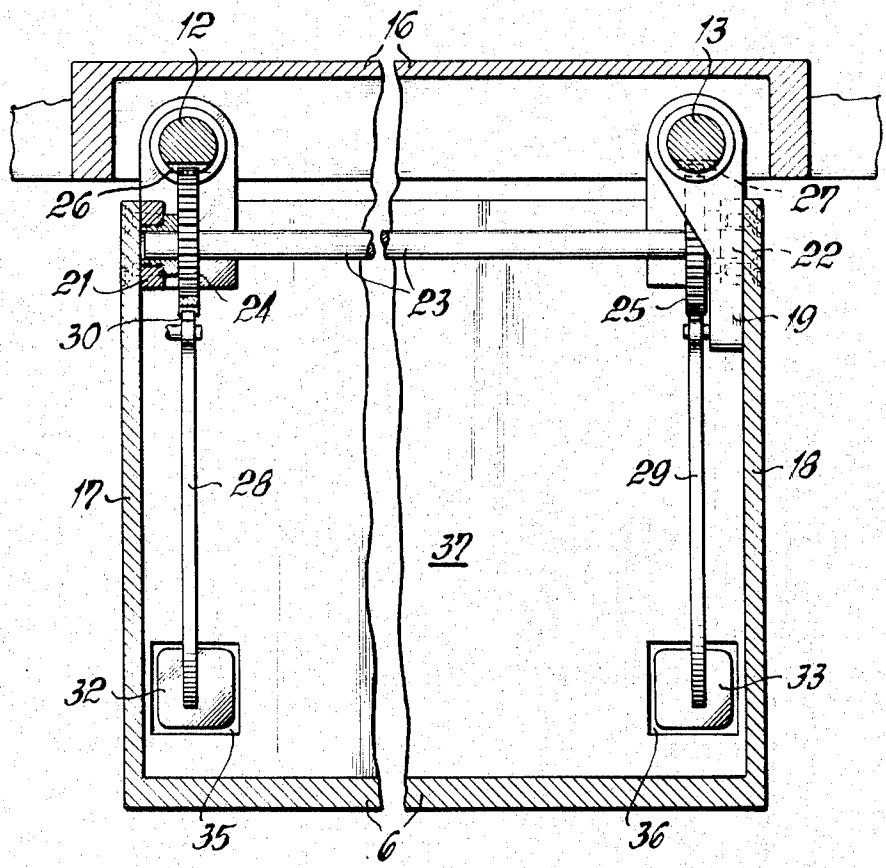

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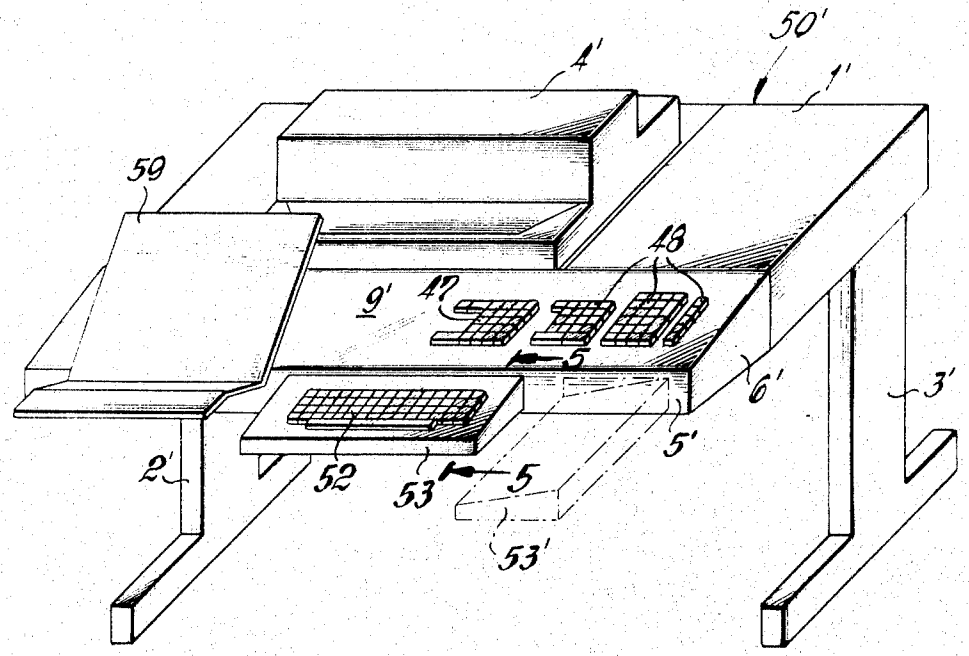
FIG. 4



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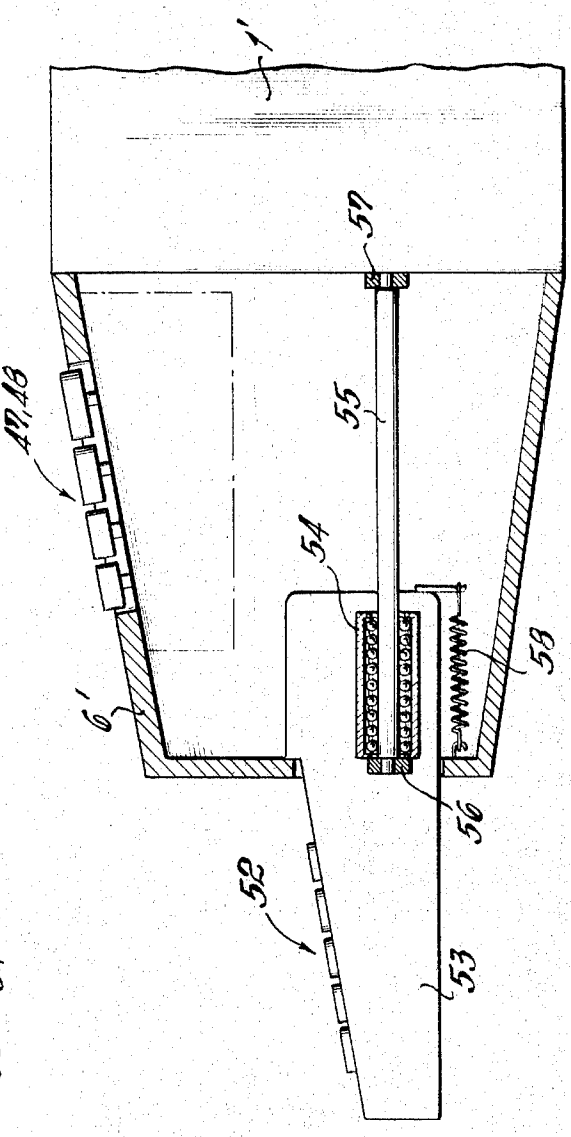

FIG. 5

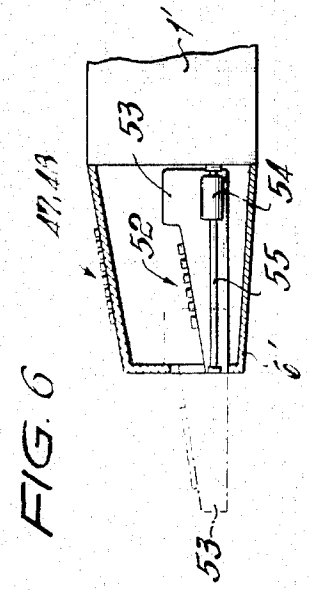

FIG. 6

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OFFICE MACHINE WORKTABLE CONSTRUCTION

BACKGROUND OF THE INVENTION

1. FIELD OF THE INVENTION

This invention relates in general to the construction of office tables and in particular to a new and useful worktable particularly for data processing systems having electronic keyboards and mechanical and/or electrical parts of the system which are arranged separate from one another.

2. DESCRIPTION OF THE PRIOR ART

It is known to arrange the table top of typewriter tables so that it can be adjusted to the particular height preferred by the respective operator for the operation of the typewriter keyboard. For such constructions the table top is provided with an adjustable portion or support which is suspended on so-called gas springs to provide an adjustable support at relatively low cost. Such arrangements cannot be used for data processing systems which are frequently equipped with box-shaped table tops and which include a plurality of mechanical and electrical units of the system which are separately arranged. The adjustability of such a large and heavy area tables is not feasible because the parts are too heavy and must be secured on the underframe with greater stability. For office machine tables for data processing systems including those having keyboards which are connected with the various units, not mechanically but only by electrical connections, there is no adjustability in height for the table tops and also for the operating keyboards.

Computers or data processing systems which require the manual input of numerical or alpha-numerical symbols as well as for the input of work commands, are usually equipped with several keyboards, namely an alpha-keyboard, a numerical keyboard and one or more command keyboards. In the known computer or data processing systems these keyboards are usually located at equal levels, side by side, in an inclined front portion of the table top. The table top also accommodates the printing unit and other mechanical or electrical partial units of the computer or the data processing system. The alpha keyboard is located directly in front of the printer, while the numerical keyboard as well as the command keyboard are located to the right of the alpha keyboard. In order to make it easy for the operator to feed the data into the various keyboards in order to handle the records, e.g. the vouchers from which the data must be read and put in, there is provided usually to the left of the alpha keyboard, a recorder holder in the form of a slanting board. In general, the feed of numerical values into the numerical keyboard is usually done with th operator's right arm outstretched, and it has been found in practice that the difference between the record holder to the left of the alpha keyboard and the numerical keyboard as well as the command keyboard still farther to the right is too great. Working at such a table is therefore very strenuous and leads to considerable fatigue and muscle cramp after a relatively short working period. It has already been proposed that this deficiency can be remedied by arranging the record holder so that is is displaceable in order to be able to bring the keyboards farther removed from it closer up. This, however, involves the disadvantage that the alpha keyboard is at least partly covered by the record holder.

A further disadvantage of the known keyboard arrangement is that the alpha keyboard and the other keyboards are normally operated with one hand and with the arm in a stretched position and they are all arranged at the same level, which is an incorrect arrangement from the viewpoint of work hygiene. The operation of the alpha keyboard, as is known, usually occurs with the lower arm bent and therefore it should be arranged at a lower height than the other keyboards operated with one hand with the arm stretched.

SUMMARY OF THE INVENTION

In accordance with the invention there is provided an office machine table, in particular for data processing systems having electronic keyboards, where it is possible to adjust the keyboards of the data processing systems to the position of the individual keyboards which are most favorable for the operator in accordance with standard work hygiene arrangements and also in accordance with the worker's operating techniques and, without requiring any excessive energy cost and without impairing the necessary stability of the table top and the respective construction thereof. In accordance with the invention the front of the mounting table for the data processing systems includes a console or support bracket which is adjustable in height and which is adapted to carry one or more keyboards. With such an arrangement the entire table does not have to be mounted for vertical movement but only the much lighter console carrying the keyboards is adjustable to this desired height. Since the keyboards are in connection with the other units of the data processing system which are secured on the table top, the adjustable mounting of the console is such that the connecting electrical cables are easily accommodated for vertical adjustable movement.

In accordance with a further feature of the invention the console is formed of a box-shaped configuration with a cover which is advantageously inclined downwardly towards the front and which carries the keyboards which are to be adjusted in height. Construction permits a favorable arrangement and interconnection of the keyboards which are carried on the inclined cover by wiring which extends through the console and is connected under the table to various elements supported on the table. This means that all of the parts of the keyboard, in particular the electrical junctions and electronic components, can be accommodated in a protected location within the console and within the table.

The mounting construction includes a support on the table for spaced vertically extending guide members or columns which form a rack which is engaged by a rotatable gear carried on the console. The gear is rotatably supported on an upright member on the console which is secured by straps which engage around the vertical rack support so that there is easy vertical guiding movement for the console portion. Means are also provided for locking the console at a selected elevation which includes a member having a tooth which is engageable with the rotatable gear on the console table to prevent its rotation and thus lock the table at an adjusted height. The locking means may be usually disengaged by contacting an unlocking lever to permit the vertical adjustment of the console in respect to the associated table. Particularly advantageous in the structural simplicity, the good guiding stability, and the small space

requirement of the inventive arrangement. The locking mechanism is relatively simple and inexpensive to manufacture and offers a means for stably fixing the console in the desired position, and it is not particularly subject to wear. The provision of a locking lever with a tooth projection which engages in a rotatable gear means that small vertical adjustment may be easily accomplished.

In the preferred arrangement the console includes means for rotatably supporting a transverse shaft which carries a locking gear adjacent each end which is engageable with associated fixed upright rack members forming guide columns on the table. The locking elements are in the form of lever members which are pivotal on a guide bracket for the upright rack members and which include an extension extending through the bottom of the console which may be easily engaged for releasing the rotatable gears to permit displacement of the console upwardly and downwardly on the guide columns. For relatively wide consoles the locking device can be operated at two different points simultaneously in a positive and power-coupled manner and the stability of the fixation is therefore greatly increased. The rack members may be made separate from the guide columns if so desired, but it is preferred that the guiding and the gear driving connection function be incorporated in a single member in order to save parts and expense.

In another embodiment of the invention the console is adapted to contain an additional keyboard which is mounted for extension or retraction within the console table.

The invention provides not only the advantage that the keyboards which operate in different manners can be arranged at the most favorable height in each instance but also it is possible to arrange the keyboard so that the distance from the record holder is no longer too great. The fact that during certain posting jobs, the alpha keyboard is hardly needed or not needed at all, is taken into account by mounting the alpha keyboard so that it may be pushed into the console table when not in use so that it will not hinder the operator. The keys of the numerical and command keyboards are arranged in the inclined surface of the console table and the console table includes a front wall in which the alpha keyboard is mounted so that it may be either extended or retracted as desired. The alpha keyboard is advantageously mounted on a slide by roller bearing bushings which permit the inward and outward sliding of the mounting on a plurality of rod members. This mounting permits easy movement of the alpha keyboard without any possibility of frictional grabbing. The slide mounting is advantageously placed under a spring biasing force which urges it outwardly and it is provided with a locking device which is releasable by a key. It is therefore possible to move the alpha keyboard when it is needed from the hidden retracted position to an operating position at which it is exposed outwardly without appreciable loss of time by the simple pressure of a key.

A further improvement of the invention with respect to the work orientation and work hygiene comprises the mounting of a console so that it is connected with the table top or a supporting frame of the table. This makes it possible to adjust all the keyboards jointly to the height most comfortable for the respective operator without making it necessary to arrange the entire table top of the computer table so that it is adjustable.

Accordingly it is an object of the invention to provide an improved work table particularly for data processing systems which includes a fixed table and a console which is mounted on the table for vertical adjustable movement and which is adapted to carry one or more keyboards.

A further object of the invention is to provide a worktable particularly for data processing systems and which includes a console which is movable on a worktable and which carries an extendable and retractable mounting for an alpha keyboard.

A further object of the invention is to provide a table for office operating equipment which is simple in design, rugged in construction and economical to manufacture.

The various features of novelty which characterize the invention are pointed out with particularity in the claims annexed to and forming a part of this disclosure. For a better understanding of the invention, its operating advantages and specific objects attained by its uses, reference should be had to the accompanying drawing and descriptive matter in which there is illustrated preferred embodiments of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

In the drawing:

FIG. 1 is a front perspective view of an office machine table having a keyboard console which is adjustable in height as constructed in accordance with the invention;

FIG. 2 is a section taken along the line 2—2 of FIG. 1;

FIG. 3 is a section taken along the line 3—3 of FIG. 2;

FIG. 4 is a view similar to FIG. 1 of another embodiment of the invention;

FIG. 5 is a section taken along the line 5-5 of FIG. 4;

FIG. 6 is a section similar to FIG. 5 and on a reduced scale showing the keyboard in a retracted position.

GENERAL DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to the drawings in particular, the invention embodied therein comprises an office machine table generally designated **50** which includes a box-shaped table top **1** which is supported on upright legs **2** and **3**. The table provides a means for mounting, for example, a complete data processing system which includes a printing unit **4** which is mounted on the table top **1** and in addition various other electrical or electromechanical units of a data processing system can also be accommodated.

In accordance with the invention a console **6** is mounted on the table top **1** in a manner permitting vertical adjustment thereof. The console **6** comprises an elongated narrow low box-shaped construction with an inclined top cover **9** which accommodates separate keyboards **7** and **8** in openings **10** and **11** respectively.

As shown particularly in FIG. **2** and **3**, the table top **1** is provided with a recess in which are positioned two laterally spaced vertical guide columns **12** and **13** which are secured by securing bolts or screws **14** and **15** to a rail-like structure **16** arranged in the front face of the table top. The console **6** carries two vertically spaced guide members or holders **19** and **20** which are

mounted at side walls 17 and 18. The guide members 19 and 20 are slidably guided on guide columns 12 and 13 of the support table 1. A shaft 23 is rotatably mounted on two side plates 21 and 22 and extends between the holders 19 and 20. The side plates 21 and 22 are fastened to the side walls 17 and 18, respectively, of the console. Gears 24 and 25 are fixed to the shaft 23 adjacent the respective ends and they engage with racks 26 and 27 which are formed on the outer surface of the guide columns 12 and 13. The gears 24 and 25 thus rotate synchronously during the upward and downward motion of the console 6.

Locking means are provided for locking the console in an adjusted vertical position which includes a locking lever 28 and 29 which is pivotally mounted to the upper support bracket 19 adjacent each gear 24 and 25 and urged in a direction to cause a projecting tooth 3 thereof to engage with the gear teeth of the associated gear by the action of a biasing spring 31. The outer ends of both ratchet levers 28 and 29 are provided with respective handles 32 and 33 which project outwardly through openings 35 and 36 at the underside of the front portion of the console 6. By contacting these end plates 32 and 33, such as by the knees of the operator, it is possible to lift the projection 30 out of engagement with the gears 24 and 25 in order to facilitate the movement of the console either upwardly or downwardly to a desired position. The manual pressure on the elements 32 and 33 from below and upwardly pivots the associated levers 28 and 29 to free the gears for rotation which permits the upward or downward movement. As soon as the desired adjusted position of the console is reached the ratchet levers 28 and 29 are released and the springs 31 urge the associated levers in a direction to cause re-engagement of the tooth 30 into the associated gear 24 and/or 25. This causes the locking of the console 6 in the adjusted position.

In the above embodiment the console 6 is arranged so as to protrude at the front 5 of the table top 1. It is also possible to arrange the console within a cutout portion of the table 1 for adjustment of height if so desired, in which case it would protrude only partially or not at all from the front edge of the table top 1. The length or the width of the console can be designed as desired and the inclined top surface may be made as low or as high as desired.

In the embodiment shown in FIGS. 4 to 6 there is provided an office table generally designated 55 which includes parts which are similarly designated to those of FIGS. 1 to 3 but with primes. In this construction the console 6' forms a continuation of the front of the table top 1', and the cover 9' for the console is inclined at an angle of about 10°. In this construction a numerical keyboard 47 and several command keyboards or programming keyboards 48 are located in the face of the inclined cover 9. An alpha keyboard 52 is centered approximately in relation to the posting machine or printer 4' which is located in the table top 1'. The alpha keyboard 52 is arranged on a slide member or slide mounting 53 having linear movable roller bushings 54 which provide for easy frictionless roller movement of the slide mount on supporting rods 55 which are secured to the table top 1 by holder elements 56 and 57. The slide mount 53 may be pushed all the way into the console 6 as indicated in FIG. 6 or pulled out completely as shown in FIG. 5. The use of the spherical ball bushing 54 insures a clearance-free stable and yet easily displaceable mounting of the slide 53 in the console 6. A locking device (not shown) is provided which is releasable by pressure on a key to permit the slide to be locked in position as shown in FIG. 6 or which may be released by the locking device to cause a biasing spring 58 to urge it to the outward position shown in FIG. 5.

As shown in FIG. 4, a record holder 59 is arranged to the left of the keyboard 52. The numerical keyboard 47 and a part of the command or program keyboard 48 is located directly above the alpha keyboard 52 so that all of these keyboards can be located substantially at the same distance from the record holder 59 at a location most favorable for working without inconvenience. The numerical keyboard 47 and the command or program keyboard 48 are located on a higher plane than the alpha keyboard 52, so that in the vertical direction the most favorable working position of the individual keyboards also exist.

In FIG. 4 a dash-lined indication of a mounting of a keyboard 53', that is, an alpha keyboard, may be provided in which the mounting 53' extends at a right angle to that indicated in the solid lines.

In the embodiment of FIGS. 4 to 6 as in the embodiment of FIG. 1 to 3, the console 6' is not rigidly fastened to the table top 1 but is adjustably mounted for vertical movement by means of holders 19 and 20 which are arranged on vertically extending columns 12 and 13. With the inventive construction it is expedient to secure the record holder 59 so that it is pivotal on a console 6' and to place it loosely on a part of the tabletop 1 so that it will not hinder the displacement and height of the console 6'. This results in an advantage that when the console 6' is set lower, the record holder 59 assumes a steeper position and thus gives a shorter operator a better vision of the records deposited thereon.

The arrangement of the keyboard 47, 48 and 52 in the embodiments of FIG. 4 to 6 offers advantages in respect to working technique and work hygiene but it is also advantageous from the space saving standpoint and it can be applied whenever different keyboards which are operated by one operator in different ways are to be arranged in the most favorable manner for the respective working method.

While specific embodiments of the invention have been shown and described in detail to illustrate the application of the principles of the invention, it will be understood that the invention may be embodied otherwise without departing from such principles.

What is claimed is:

1. An office machine table comprising a table top adapted to contain an office machine such as a machine of a data processing system, at least one mounting column carried on said table top, a console having at least one keyboard, said console having at least one guide member engageable over said mounting column and supporting said console for vertical upward and downward movement along said column, said column including a rack portion, a shaft carried on said console and having a gear which is in engagement with said rack portion, said gear being rotatable upon upward and downward movement of said console, and locking means mounted on said console, said locking means comprising at least one lever pivoted on said console and having a locking tooth engageable with said gear for locking said gear to prevent movement of said con-

sole, a spring biasing said lever toward said gear to cause engagement of said locking tooth, and a release member on said lever in an accessible position for engaging said lever to lift said locking tooth out of engagement with said gear.

2. An office machine table particularly for data processing systems having a table top adapted to contain an office machine according to claim **1**, wherein said console comprises two of said, at least one, keyboard with at least one first keyboard being adjacent said machine table and at least one second keyboard below said first keyboard, and means mounting said second keyboard for movement into and out of said console means.

3. An office machine table, according to claim **2**, wherein said console comprises a box-shaped member having an inclined top surface, containing said first keyboard, said first keyboard including a numerical keyboard set and a command keyboard set, said second keyboard comprising an alpha keyboard.

4. An office machine table, according to claim **3**, including a slide member carried on said console and being movable into and out of said console and adapted to contain at least one second keyboard.

5. An office machine table, according to claim **4**, including means for mounting said slide member for inward and outward movement in respect to said console comprising a rod member on one part and a spherical bushing on the other part and slidably engaged over said rod member.

6. An office machine table, according to claim **4**, including spring means for biasing said slide member to an outward position at which it is exposed out of said console and slide locking means for locking said slide in an inward position withdrawn into said console.

* * * * *