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## (54) Support arm

(57) The present invention is for a support arm intended to support devices and means of variouas kinds. Computer keyboards, monitors and other devices are examples of fields of use for support arms according to the invention. The support arm enables continuous setting of height and inclination of a supported object and comprises a first mounting arm (25) for mounting on to a base, a second arm (centre part) and an outer arm (27) which carries a keyboard tray or the like. At a frame or base (3) the centre part has two brake drums (1, 2) which may rotate freely on shaft (23, 24) which are mounted to the frame (3), where the mounting arm (25) and the outer arm (27) are fixedly mounted one on each of the brake drums. Brake straps (4, 5) are arranged tensioned around the brake drums and means are arranged to continuously reduce the tension of the brake straps and enable setting of the support arm in a desired position.

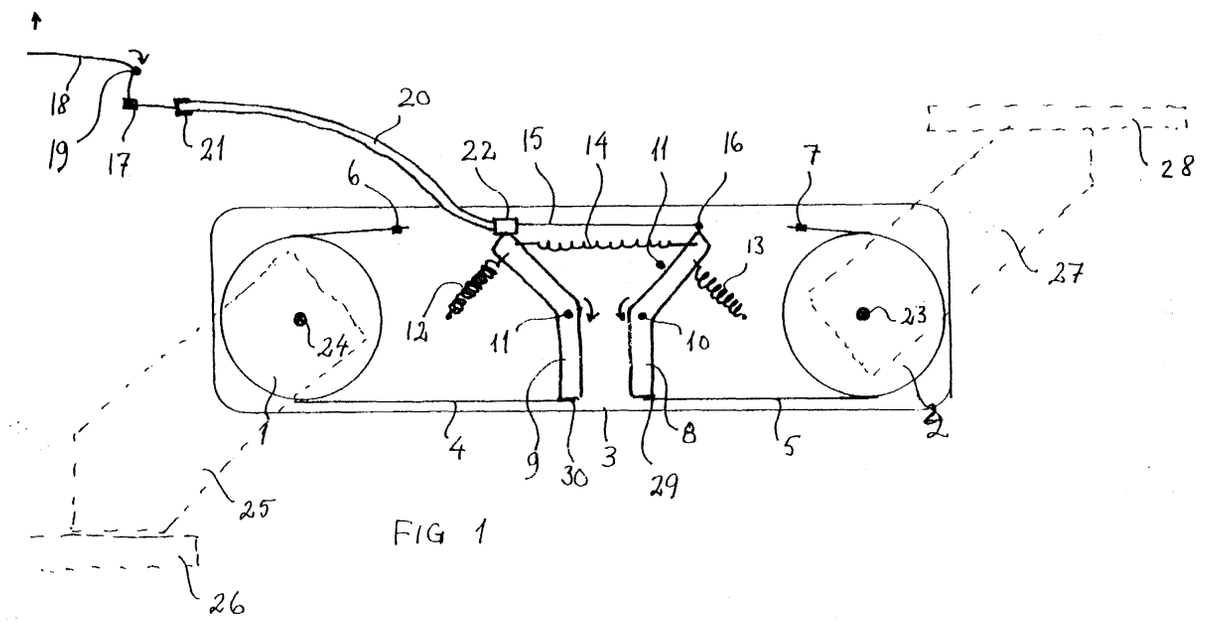


FIG 1

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## Description

**[0001]** The present invention is for an infinitely adjustable support arm intended to carry various equipment and devices. Keyboards for computers, monitors and other devices are examples of fields of use for support arms according to the invention.

**[0002]** Keyboards and other computer components are often separate units which by wire or wireless connection are in communication with the computer unit. It is always essential that keyboard and monitor are correctly positioned relative to the user, both height as well as inclination and turning are essential setting parameters. These units may be put on a desktop or a special computer table, in the latter case separate boards or planes may be arranged for each separate unit. However, keyboard and also monitor are often put on surfaces which are carried by support arms which allows increased freedom to set the desired position and to change this and also gives this possibility independent of which furniture that the equipment is used together with.

**[0003]** The support arm is kept in its desired position by a locking mechanism which can be released when the setting is to be changed, usually there is one locking means for the height setting and one for the setting of the inclination relative to a horizontal plane. There is also often a gas spring or other means having the same function in order to counter that the arm by its own weight falls down to its lowermost position and to facilitate the setting.

**[0004]** It is known in the art at for example drawing tables to arrange them with a fixed stand, having a horizontal shaft with a swivel arm which in turn carries the board swivelling on a second horizontal shaft. The weight of the table is balanced at both the shafts by springs. Such a table has adjustable height and inclination. Locking at the desired position is by a means having brake discs and an endless chain between sprocket wheels on both shafts. It is also known to make use of an endless, non-flexible strap instead of a chain. This kind of locking means mainly have an on-off function and they are suitable to break or dampen the movements of the device. It is also known to make use of a parallelogram constuction built by rods between meansat the two horizontal shafts. Similar device may also be used for design at which the height only is freely adjustable within the limits given by the arms.

**[0005]** The present invention is for a supporting device for keyboards and the like which makes possible simultaneous setting and locking at desired position with regard to both height and inclination. The object of the invention is to then combine both settings in the same mechanism which in itself has a gradually braking function which simplifies the setting. It is another object of the invention to make it possible that this mechanism simultaneously affects the two motions with unequal breaking forces. The characterising features of the invention are apparent from claim 1. Embodiments of the invention has those further characteristics which are apparent from the other claims.

**[0006]** The invention will below be described more in detail with reference to the example of a preferred embodiment which is shown in the enclosed figures.

**[0007]** Figure 1 is a side view of the mechanism of the device.

**[0008]** Figure 2 shows parts of the device and the braking mechanism.

**[0009]** Figure 3 is a top view of the device of figure 1.

**[0010]** The support arm as shown in the figures comprises three parts, one centre part having a board or frame 3, a mounting arm 25 for fixed or tumable mounting on a table top or the like and an outer arm 27 which fixedly or tumably carries a keyboard tray or the like. What is here named mounting arm 25 and outer arm 27 may in some embodiments be very short arms so that they may be named sockets.

**[0011]** The locking and breaking mechanism comprises two "break drums" 1, 2 which are carried by the frame 3 at shafts 23, 24 around which the drums may rotate freely. The mounting arm 25 and the outer arm 27 are fixedly mounted one on each drum. Breaking straps or the like 4, 5 extend themselves some rounds around each drum and out from it. One end of the strap is fixed to the centre part by means of a bracket 6, 7, the other end of the strap is fixed to the outer end of one out of two lever arms 8, 9 at the fixing points 29, 30. The lever arms are mounted on to the centre part 3 so that they may swivel around the shafts 10, 11. Springs 12, 13, 14 are arranged so that the lower ends (fig 1) of the lever arms are pulled in a direction towards each other so that the brake straps 4, 5 are tensioned around the brake drums and prevent turning of these relative to the centre part 3.

**[0012]** In order to change the setting of the support arm the lever arms 8, 9 may be brought to turn as indicated by arrows in figure 1, by actuating an operating handle 18 or corresponding means. The handle may turn on a shaft 19 which in the embodiment which is shown in the figures is to be fixedly mounted on to the tray 28. When turned in the direction of the arrow the handle actuates a wire 15 which runs inside a casing 20. One fixed point 21 of the casing is fixed relative to the shaft 19, the other fixed point 22 is fixed relative to the lever arm 9. The outer ends of the wire are fixed to the lever arm 8 at the bracket 16 and at the handle 18 at the bracket 17. The movements of the lever arm 8 are limited by a stop pin 11.

**[0013]** When the handle 18 is forced upwards (in fig 1) as shown by an arrow the lever arm 8 will move to the stop 11 whereupon the lever arm 9 moves in proportion to the movement of the handle 18. Thus the brake drum 2 is first disengaged, which may be achieved by a choice of suitable springs, and the movement of the handle can be interrupted if one only desires to change the inclination of the tray 28. When the movement of the

handle 18 continues also the brake drum 1 is disengaged and the three parts 3, 25, 27 may be set in desired positions relative one another. Due to the friction between brake drum and brake strap the disengaging of the brake drums is not abrupt but gradual. The position of the stop pin 11 is adapted so that there is a desired remaining resistance against turning at the brake drum 2 is achieved at this end position of the lever arm 8.

**[0014]** Other variations and embodiments are possible within the frame of the inventive idea. One such embodiment is that the brake drums are cambered which brings advantages as to the direction and functioning of the brake straps in co-operation with the operating means. It is also possible to combine the device with e. g. a gas spring in a way which is known in itself in order to further facilitate use of the device at heavy loads such as monitors and the like. Further variations are possible concerning the number of springs and the spiral springs which are shown in the example may be replaced by other means having corresponding function.

## Claims

1. Support arm for continuous setting of height and inclination of a supported object, comprising a first mounting arm (25) for mounting on to a base, a second arm (centre part) and an outer arm (27) characterized in that the centre part at a frame or base (3) has two brake drums (1, 2) which may rotate freely on shaft (23, 24) which are mounted to the frame (3), where the mounting arm (25) and the outer arm (27) are fixedly mounted one on each of the brake drums, that brake straps (4, 5) are arranged tensioned around the brake drums and that means are arranged to continuously reduce the tension of the brake straps and enable setting of the support arm in a desired position.

2. Support arm according to claim 1 characterized in that one end of each of the brake straps (4, 5) are fixed to the frame (3) and the other ends each are fixed to a lever arm (8, 9) which are rotatably mounted to the frame (3).

3. Support arm according to claim 2 characterized in that the lever arms are affected by one or more springs (12, 13, 14) or corresponding means so that the brake straps are actuated to be tensioned around the brake drums.

4. Support arm according to claim 3 characterized in that the lever arms at the ends which are opposite to the brake straps are affected by a movement actuator for reducing the tensioning force at the brake straps.

5. Support arm according to claim 4 characterized in that the lever arms are affected by a wire (15) which runs in a surrounding casing (20) where one end (16) of the wire is attached to the one lever arm (8) and the other end (22) is attached to the other lever arm (9).

6. Support arm according to claim 4 or 5 characterized in that the springs (12, 13, 14) or corresponding means have been selected so that when the wire is pulled into the casing then there movement of one lever arm (8) and after that of the other lever arm (9).

7. Support arm according to claim 6 characterized in that the outer arm (27) is connected to the first brake drum (2) to be set free.

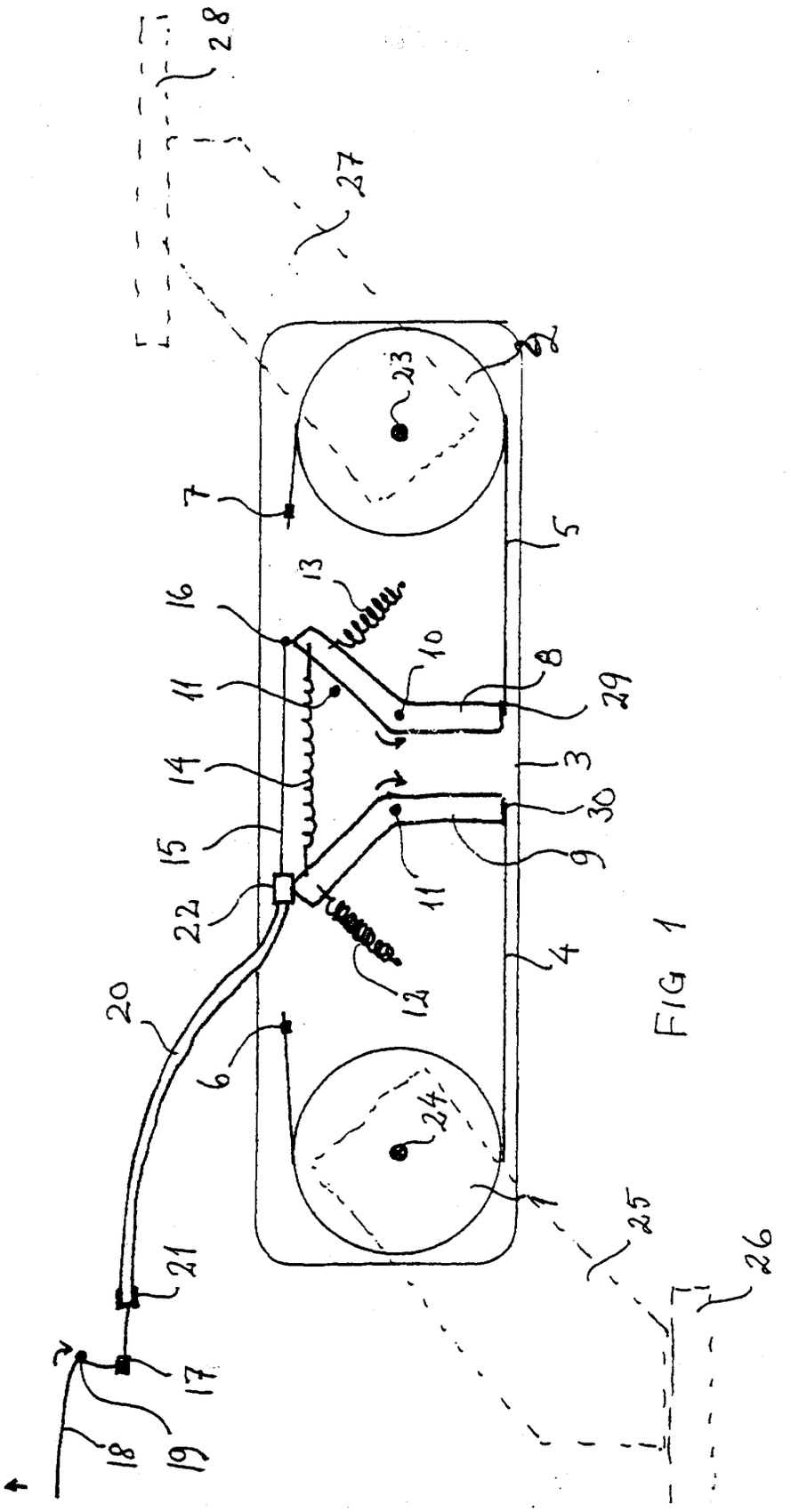
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FIG 1

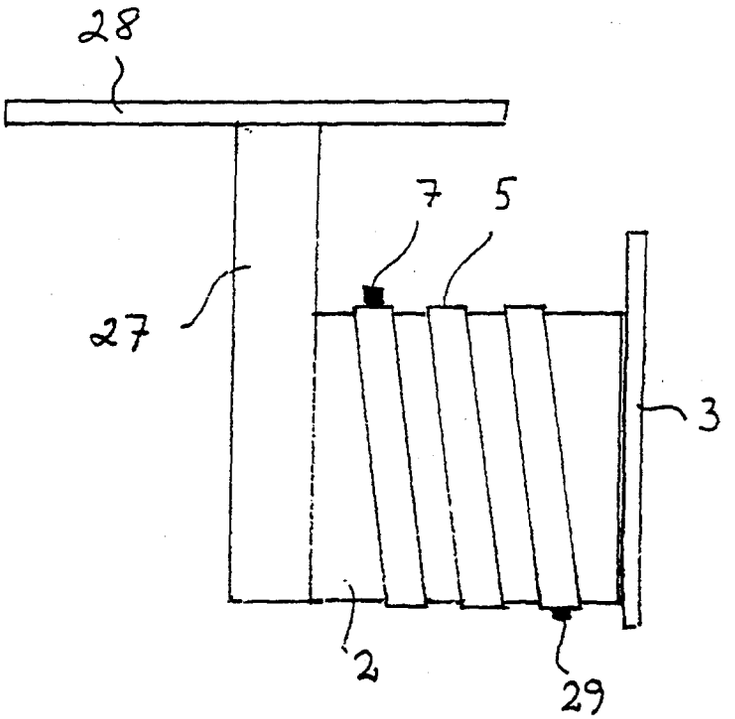


FIG 2

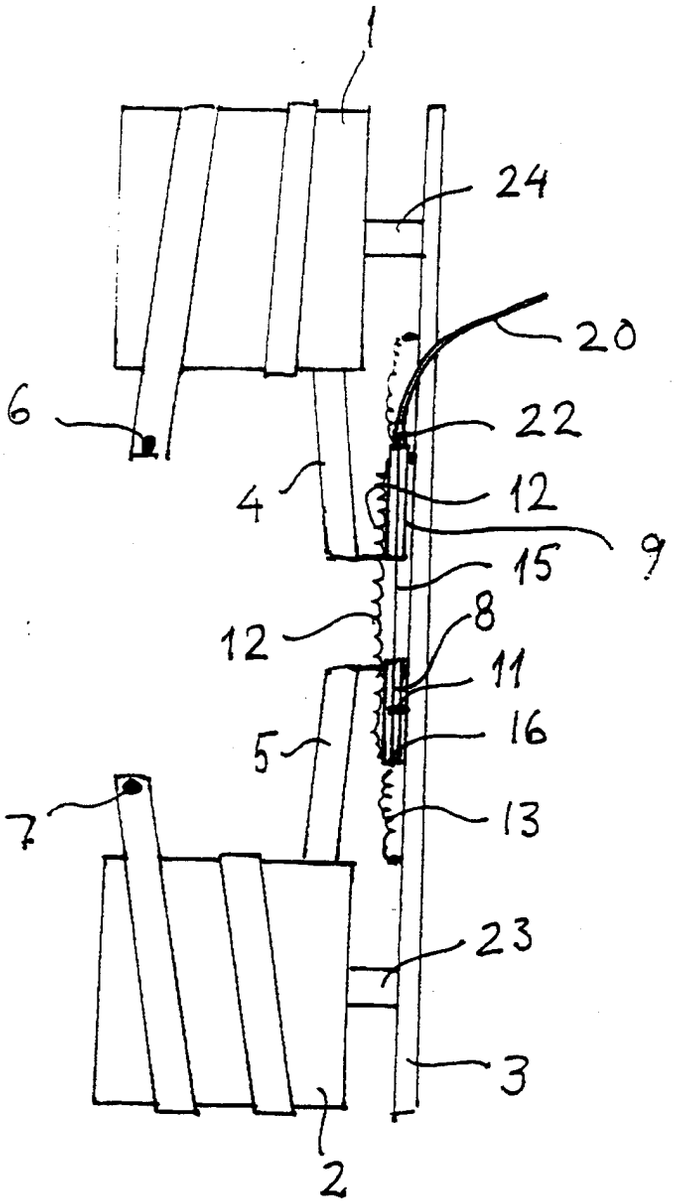


FIG 3

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# EUROPEAN SEARCH REPORT

Application Number
EP 00 85 0197

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The present search report has been drawn up for all claims

| Place of search | Date of completion of the search | Examiner |
|---|---|---|
| VIENNA | 15 January 2001 | Bencze |

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