BEARING ARRANGEMENT

The present invention relates to a bearing arrangement, in particular for a computer with telecommunication apparatus, the computer comprising a system unit, a keyboard unit and a display unit, whereby the named units are mounted so that they can rotate about a common axle and the keyboard unit and the system unit are locked in a closed position and in an open position, in which the keyboard unit and the system unit are arranged at an angle of rotation of 180° with respect to the closed position, and the display unit can be rotated and locked in a position of 0 to 90° with respect to the system unit.

By means of a design of this kind the device only needs to be opened by 180° for the input of data or for the marking of the display unit and, because it is locked in this position, it forms a stable base for the rotatable display unit which can be fixed in the desired position. This device configuration - keyboard unit unfolded by 180° with respect to the system unit and locked - can be used with advantage for mobile operation, for example in a train, whereby the display unit rests on the system unit.

The present invention seeks to provide a bearing arrangement between the system unit and the keyboard unit, which bearing arrangement on the one hand allows a simple rotation of the two parts and at the same time in the closed state and in the open state secures the two device units against an undesirable rotation.

According to the invention, there is provided a bearing arrangement, for a computer with telecommunication apparatus, the computer comprising a system unit, a keyboard unit and a display unit mounted to rotate about a common axle, wherein the keyboard unit and the system unit are arranged externally and are locked in a closed position and in an open

position, in which the keyboard unit and the system unit are arranged at an angle of rotation of 180° with respect to the closed position, and the display unit can be rotated and locked in a position of 0 to 90° with respect to the system unit, wherein the bearing arrangement comprises elements which are rotatably arranged on the axle, which elements are connected to the system unit and to the keyboard unit, whereby the elements are moved against spring power and, overcoming a blocking element, are moved into the named positions and are locked.

By providing a blocking element the two cited defined positions of the system unit with respect to the keyboard unit can therefore be easily realized. The user of the device is given the feeling that, for example during the unfolding procedure, first of all he must overcome the blocking element with simultaneously increasing spring pressure in order to arrive in turn in the other position of use with decreasing spring pressure.

In this respect, a projection can be connected to the system unit and a bar can be connected to the keyboard, whereby on the projection a lug is arranged which points in the direction of the bar, acts as blocking element and has edges which rise in a wedge shape, whereby, moreover, the spring acts on the bar, and whereby the projection is secured on the axle against displacement. When the keyboard unit is rotated out of the closed or folded position or state into the open or unfolded positionor state, a lateral surface of the bar under spring pressure strikes the rising edge of the lug. The pressure of the spring then increases up to the tip of the lug and subsequently, after the named lateral surface of the bar strikes the falling edge, the pressure of the spring gradually decreases again until the open end

position is reached.

The spring itself can be arranged as a spiral compression spring on the axle between the bar and a rotary axle receptacle. In this respect, the elements fastened to the system unit and to the keyboard unit can be secured against an undesirable displacement on the axle against the spring power by means of corresponding stops on the bearing points. According to a preferred embodiment a pressing bush is fastened to the axle, which pressing bush comes to rest on the projection.

For a better understanding of the present invention, and to show how it may be brought into effect, reference will now be made, by way of example, to the accompanying drawings, in which:

In each case in a perspective representation

Figure 1 shows an exploded drawing of the device;

Figure 2 shows the device in the open state;

Figure 3 shows an enlarged view of the circular section A in Figure 2;

Figure 4 shows a detail of the hinge connection;

Figure 5 shows the device in the closed state;

Figure 6 shows an enlarged view of the circular section B in Figure 5;

Figure 7 shows a detail of the folding connection.

Figure 1 shows in a perspective exploded drawing the substantial assembly of the device 1 which is assembled in the middle of the picture.

The system unit 3 located in the upper level of the picture has, in addition to the control elements 4 and 9 and the aerial 6, a computer platform 15 with the computer and memory 16, corresponding modules 17 and components, for example loudspeaker 18 and microphone for communication operation, corresponding plug-in elements for receiving, for example, headphones, battery compartment 7 and additional peripheral

components, for example non-volatile memories, card-reading devices etc. The computer platform 15 is closed by the covering 19 which has a rotary axle receptacle 20 on a longitudinal side. This covering 19 has on its side directed away from the computer platform 15 additional entrances, reachable from the outside, for the introduction of SIM cards or miniature cards for telephone operation. When the device is switched on, a telephone connection can be established by inputting digits by way of the keyboard 27 or by touching symbols appearing on the LCD display 22 or by writing digits or characters by means of the input pen 14 on the LCD display 22. The surface of the system unit 3 which is outermost when the device is in the closed state is free of control elements, like the outer side of the keyboard unit 2, so that an unintentional initiation of any functions when the device is switched on by mistake is excluded.

The display unit 11 represented in the middle of the picture is composed of the covering frame 21, the LCD display 22 with ribbon cable 26, the spacing plate 23, the display housing 24 and a holding part 33. Two rotary axle receptacles 25 are in turn arranged on the display housing 24 on one of its longitudinal edges.

As already mentioned, for the purposes of character input by means of the input pen 14, the display unit 11 can be supported either flat within the receptacle 10 of the system unit 3 or can be set upright at a specified angle of up to 90° and locked in this position. The display unit 11 can also be rotated by an angle greater than 90° in order to make possible better access to the replaceable peripheral units on the upper side of the system unit 3.

The keyboard unit 2 shown in the lower half of the picture comprises the keyboard 27 with the ribbon cable 28, which keyboard is introduced into the keyboard

housing 29 and is locked there, for example by means of the holding device 30. A cover 31 is snapped onto the outer side which is present when the device is in the folded state, which cover 31 makes access possible to the component parts of the keyboard unit 2 if necessary. Moreover, the resting place 13 for the input pen 14 is formed in the keyboard housing. In turn, on the outer regions of a longitudinal edge of the keyboard housing there are conically running bearing bushes 32 to receive the axle 33 which is common to all three components.

Figure 2 shows the device 1 in the open, or unfolded state, i.e. the keyboard 2 is rotated by 180° with respect to the system unit 3. The display unit 11 is located within a receptacle 10 of the system unit 3.

The projection 34 mounted on the axle 33 is firmly connected to the system unit 3 and the bar 35 likewise mounted on the axle 33 is firmly connected to the keyboard unit 2. Further bearing points for the axle 33 are formed by the bearing bushes 32 on the keyboard unit 2 and the rotary axle receptacle 20 on the system unit 3.

A spiral compression spring 41 is arranged on the axle between the bar 35 and the rotary axle receptacle 20. The projection 34 is secured against a displacement on the axle by means of a pressing bush 36 which can also be fastened on to the axle by means of a screw connection. In the direction of the bar 35 the projection 34 has a lug 37 with edges 38 and 39 which rise in a wedge shape.

Upon rotation of the keyboard unit 2 out of the closed state into the state with 180° opening, the bar 35 arrives with its lateral surface 40 first of all at the edge 39 of the lug. With further rotation of the keyboard unit the tip of the lug is overcome against the force of the spiral compression spring 41, and the

keyboard unit 2, with the sliding of the surface 40 of the bar 35 along the other edge 38 by way of spring power, is moved into the position shown in Figures 2 to 4 and is locked there.

During the closing procedure of the keyboard unit 2 in the direction of the system unit 3, proceeding from the state of the device parts according to Figure 4, the lateral surface 40 of the bar 35 strikes the edge 38 of the lug 37, overcomes the tip of the lug against spring power of the spiral compression spring 41 and slides on the edge 39 of the lug 37 into the position shown in Figures 5 to 7. In this position the keyboard unit and the system unit are in turn fixed with respect to each other.

CLAIMS

1. Bearing arrangement, for a computer with telecommunication apparatus, the computer comprising a system unit, a keyboard unit and a display unit mounted to rotate about a common axle, wherein the keyboard unit and the system unit are arranged externally and are locked in a closed position and in an open position, in which the keyboard unit and the system unit are arranged at an angle of rotation of 180° with respect to the closed position, and the display unit can be rotated and locked in a position of 0 to 90° with respect to the system unit, wherein the bearing arrangement comprises elements which are rotatably arranged on the axle, which elements are connected to the system unit and to the keyboard unit, whereby the elements are moved against spring power and, overcoming a blocking element, are moved into the named positions and are locked.

2. Bearing arrangement according to claim 1, wherein a projection is connected to the system unit and a bar is connected to the keyboard unit, whereby a lug is arranged on the projection, the lug pointing in the direction of the bar, acting as blocking element and having edges which rise in a wedge shape, whereby, moreover, the spring acts on the bar, and whereby the projection is secured on the axle against displacement.

3. Bearing arrangement according to claim 2, wherein the spring is arranged as a spiral compression spring on the axle between the bar and a rotary axle receptacle.

4. Bearing arrangement according to claim 1, wherein the elements are secured on the axle against displacement by a pressing bush which comes to rest on the projection.

5. Bearing arrangement substantially as herein described, with reference to the accompanying drawings.

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