Note: Within nine months of the publication of the mention of the grant of the European patent in the European Patent Bulletin, any person may give notice to the European Patent Office of opposition to that patent, in accordance with the Implementing Regulations. Notice of opposition shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European Patent Convention).
Description

Field of the invention

[0001] The invention relates in general to a table arrangement and particularly to a foldable table arrangement. Even more particularly, the invention relates to table arrangement with a foldable table top.

Background of the invention

[0002] It is well known that different tables or similar are frequently used as work surfaces or similar in many different environments, e.g. as a support for different objects and/or activities. It is also well known that various tables or similar have a foldable table top. Such tables are typically designed to occupy a negligible floor area when they are folded and unused, and to occupy a larger floor area when they are unfolded and used.

[0003] A foldable table that occupies a negligible floor area when it is unused is particularly advantageous in small spaces, e.g. in small compartments in vehicles, trains or aeroplanes and other means of conveyance, but also in small booths, cubicles and rooms or similar within various buildings or other stationary or partly stationary installations such as caravans and trailers or similar.

[0004] A foldable table that occupies a negligible floor area when it is unused is also advantageous in larger rooms or similar that need a flexible furnishing, e.g. in a room used both as a dining room requiring a number of tables and as a lecture room requiring a plurality of chairs but at the most one or a few tables. The furnishing of such a room is facilitated by tables that are easy to fold and put away, as well as easy to bring out and unfold.

[0005] However, even if a foldable table occupies a negligible horizontal floor area in a folded position it may nevertheless occupy a considerable vertical wall area or similar vertical surface. This is typically the case if the table top of a floor-supported table is folded in a vertical position and then placed in front of a wall, or if the table top of a wall-supported table is folded towards the supporting wall. The folded table top will then cover a part of the wall surface or area, which implies that the use of this surface or area for hanging or otherwise arranging objects or functions that should be more or less continuously visible and/or accessible is considerably impaired. This is particularly disadvantageous if the folded table top covers a display unit or similar that is mounted on a vertical wall area or similar, or prevents a display unit or similar from being mounted on the vertical wall area, e.g. a wall mounted television apparatus or similar, since this excludes or at least reduces the possibility of observing the images displayed on the display unit.

[0006] Moreover, a vertically folded table top would typically not provide any surface for supporting a display unit (e.g. a television apparatus or a computer monitor or similar), a computer, a telephone and similar, even though modern environments frequently demand such functional units. If a functional unit cannot be supported by the table in its folded position or if the unit is covered by the folded table it will typically need a separate table or some other separate support. This is a clear disadvantage in small spaces as mentioned above. This is also a clear disadvantage in connection with larger rooms or similar, since a separate table will decrease the flexibility of the furnishing etc.

[0007] Consequently, there is a need for an improved table arrangement having a foldable or pivotable table top, which table arrangement occupies a negligible horizontal area or similar in it is folded position and a larger horizontal area or similar in it is unfolded position, and which:

- can be easily folded and unfolded to support a flexible furnishing;
- can overcome the problem of covering or potentially covering a display unit or similar, which provides functions that should be more or less continuously visible and/or accessible.

[0008] WO 02/082948 relates to a computer table comprising an underframe and a table platform, which is located in the underframe so that it can pivot about a horizontal axis and can be displaced from a horizontal position into an inclined position. A monitor is mounted underneath the table platform, whereby the screen of said monitor can be viewed through the table platform. The monitor is configured as a flat screen, hinged onto the table platform in a pivoting manner, or as a touch-sensitive screen mounted on the pivotable table platform. The computer table permits an ergonomic adjustment for each individual user and provides optimal working conditions in terms of the available working surface.

[0009] US 6 601 931 concerns an assembly that is provided for supporting a flat monitor in adjacent but underlying relationship to a preferably window pane equipped, preferably rectangularly-configured aperture, provided in a desktop type working platform. An aperture frame extends about perimeter portions of the aperture. A flat monitor support platform is located beneath but adjacent to the aperture. Joining components extend between and interconnect portions of the aperture frame with portions of the flat monitor support platform. A flat monitor is supportable by the platform with the platform generally suspended from the aperture frame with the aperture frame so positioned in the aperture. The flat monitor viewing screen with the flat monitor so supported is viewable through the aperture. The inclination of the flat monitor viewing screen is adjustable if desired. Various aperture frame structures, flat monitor support platforms, and
The invention provides for a foldable table arrangement that can be used both as a display unit (e.g. a television apparatus or a computer monitor) and as a table.

This is accomplished by a foldable table arrangement comprising a foldable table top having a rear side and a substantially flat front side. The table top is supported by at least one base member end at least one foldable table top support member. The foldable table top support member is pivotally secured to the base member and the table top for pivoting the table top relative to the base member, so as to keep the front side of the table top continuously visible in at least one viewing direction during the pivotal movement. The front side of the pivotable table top is provided with at least one durable work surface, which work surface is provided with at least one durable and substantially transparent surface layer. There is at least one display unit visibly arranged behind said durable and substantially transparent surface layer for presenting moving images.

A foldable table arrangement according to the above is particularly advantageous in connection with touch screens arranged to provide functions that should be more or less continuously visible and accessible. Such touch screens can e.g. be used in connection with electronic gaming machines, wherein the invention can be advantageously used as an electronic gaming table for playing table games that are traditionally played in casinos.

Similarly, it is therefore preferred that said durable and substantially transparent surface layer of the table arrangement is a part of a touch screen device that is arranged on or above said display unit to receive and detect touches from at least one user of the foldable table arrangement.

It is preferred that the table arrangement is arranged at the rear side of the backrest of said chair. However, other embodiments may have a base member that is adapted to be supported by a wall or a backrest of a seat.

The touch screen device may be any suitable touch screen device with a durable and substantially transparent surface layer, preferably a capacitive sensing touch screen or a surface acoustic wave (SAW) touch screen. Optical touch screens may also be preferred in some embodiments, e.g. a touch screen based on IR techniques, laser emitting devices and/or based on cameras in combination with image processing techniques etc. Resistive touch screens and force sensing touch screen based on strain gauges or similar may be alternatives, provided that they provide a durable and substantially transparent surface.

It is moreover preferred that a blocking device is arranged to fixate said pivoting table top in substantially any pivoting direction within a range from a substantially horizontal direction to a substantially vertical direction. This gives ergonomic advantages, e.g. enabling a user to lean his forearms on a substantially horizontal table top when touching the touch screen (e.g. typing on a keyboard function or playing games provided by a game function etc), while the direction of the table top can be adjusted between a substantially vertical direction (90°) and a substantially horizontal direction (0°) to achieve the best viewing position when watching movies or similar.

It is preferred that the touch screen device and the display unit are connected to a processing unit arranged to implement at least one of a keyboard function or a mouse function by means of said touch screen device and said display unit.

It is also preferred that the table arrangement is arranged as an electronic gaming table for playing table games, wherein the touch screen device and the display unit are connected to a processing unit arranged to implement a table game by means of said touch screen device and said display unit. The processing unit can be a computer provided with the appropriate software or any other suitable processing unit.

An embodiment of the table arrangement comprises a substantially transparent surface layer that is arranged so as to extend a distance in at least one horizontal direction when the table top is unfolded, which distance is long enough to receive at least two chairs facing the table top and being arranged side by side. This provides for a foldable table arrangement that enables a plurality of user to simultaneously use and touch the touch screen device and the display unit.

Another embodiment of the foldable table arrangement comprises a touch screen device that is arranged to detect and distinguish between several overlapping or simultaneous touches. This provides for a foldable table arrangement that enables a plurality of user to simultaneously use and touch the touch screen of the table.

The invention is moreover disclosing a seat provided with a foldable table arrangement, which i.a. articulates the advantages of having a combined display unit and a table in small spaces.

It is preferred that the table arrangement is arranged at the rear side of the backrest of said chair. However, this is not precluding other solutions for arranging the table arrangement onto a seat or similar seating device.

Further advantages of the present invention and embodiments thereof will appear from the following detailed description of the invention.
Brief description of the drawings

[0024]

5 Fig. 1a is a perspective view of a foldable table arrangement T1 according to a floor-based embodiment of the present invention shown in an unfolded position;

10 Fig. 1b is a cross section of the table top A100 along the section line X-X in figure 1a;

Fig. 2 is a perspective view of the floor based table arrangement T1 in fig. 1a-1b shown in a fully folded position;

Fig. 3 is a perspective view of the floor based table arrangement T1 in fig. 1a-1b shown in a partly folded position;

Fig. 4a is a perspective side view of the floor based table arrangement T1 in fig. 2;

15 Fig. 4b is a perspective rear view of the floor based table arrangement T1 in fig. 2;

Fig. 5 is a side view of the floor based table arrangement T1 in fig. 2 with a section of the base pillar A320 taken away to uncover the first table top support member A200 in an extended position;

20 Fig. 6 is a side view of the floor based table arrangement T1 in fig. 1a-1b with a section of the base pillar A320 taken away to uncover the first table top support member A200 in a retracted position;

Fig. 7 is a schematic side view of a touch screen in general;

Fig. 8a is a schematic top view of a resistive touch screen;

Fig. 8b is a schematic cross section of the resistive touch screen in fig. 8a along the section line A-A;

Fig. 9a is a schematic top view of a capacitive sensing touch screen;

Fig. 9b is a schematic cross section of the capacitive touch screen in fig. 9a along the section line B-B;

25 Fig. 10a is a schematic top view of a surface acoustic wave (SAW) touch screen;

Fig. 10b is a schematic cross section of the surface acoustic wave (SAW) touch screen in fig. 10a along the section line C-C;

Fig. 11a is a schematic top view of an IR touch screen;

Fig. 11b is a schematic cross section of the IR touch screen in fig. 11a along the section line D-D;

Fig. 12a is a perspective rear view of a foldable table arrangement T2 according to a second wall-based or chair-based embodiment of the present invention shown in a partly unfolded position and without the base member B300;

30 Fig. 12b is a perspective front view of the foldable table arrangement T2 in fig. 12a shown with the base member B300;

Fig. 13 is a side view of the foldable table arrangement T2 in fig. 12a-12b arranged on a wall or on a backrest of a seat, shown with a section of the wall or backrest taken away to uncover the table arrangement T2 in a fully folded position;

Fig. 14 is a side view of the foldable table arrangement T2 in fig. 12a-12b arranged on a wall or on a backrest of a seat, shown with a section of the wall or backrest taken away to uncover the table arrangement T2 in a fully unfolded position.

Detailed description of preferred embodiments of the invention

A First Embodiment

[0025] The figures 1a-6 show a foldable table arrangement T1 according to a first embodiment of the present invention. The table arrangement T1 comprises a foldable table top A100, a table top support A200 and a base member A300.

The Base Member

[0026] The base member A300 in figures 1a-6 is preferably made of wood, plastic, metal or similar, or a combination of such materials or categories of materials or similar. The base member A300 comprises a base support A310 arranged at the lower end of the base member A300. Said base support A310 is preferably an integral part of the base member A300 and it is adapted to abut a suitable foundation onto which the base member A300 can be placed, supported, attached, secured or otherwise arranged.

[0027] The particular base support A310 shown in figures 1a-6 is adapted to abut a floor in an ordinary room. However, alternative embodiments of the base support A310 may be adapted to abut other foundations e.g. other surfaces in small compartments in vehicles, trains and aeroplanes or in other means of conveyance, but also in small booths, cubicles and rooms or similar in various buildings or other stationary or partly stationary installations such as caravans and trailers or similar. A suitable foundation may also be found on various items arranged within such compartments or rooms or similar.

[0028] Said base support A310 is a substantially oval and flat plate that is adapted to be arranged on a floor in a substantially horizontal position. However, other embodiments of the base support A310 can assume other shapes,
which shapes are likewise adapted to abut a floor or similar. The base support A310 may e.g. have a suitable circular or oval shape as well as a suitable polygonal shape. Moreover, the base support A310 at the lower end of the base member A300 must not consist of a plate. On the contrary, the base support A310 may e.g. consist of a plurality of legs or arms or similar that extend in a suitable direction, e.g. in a horizontal direction. The lower end of the base member A300 can e.g. be provided with one or several horizontal crossbars or similar that is provided with suitable feet or wheels. On the whole, the lower end of the base member A300 according to a first embodiment of the present invention may be provided with a vast variety of feet, wheels or similar. Such feet or wheels or similar may also be adjustable in height or otherwise adjustable so as to enable a more evenly distributed abutment of the foundation in question.

Moreover, as seen in figures 1a-6 it is preferred that the base member A300 comprises a base pillar A320. The base pillar A320 is preferably a hollow member arranged to encompass items or functions that are used in connection with the operation of the foldable table arrangement T1. The base pillar may e.g. be arranged as a storage space for storing tools or articles of consumption or similar and/or arranged to encompass functional units such as a computer unit or an audio unit or similar.

The particular base pillar A320 in figures 1a-6 has the shape of a rectangular box or similar. However, the invention is not limited to any special shape or form of the base pillar A320 and other suitable polygonal, cylindrical or oval tubes or similar are clearly conceivable. In addition, the fact that the exemplifying table arrangement T1 in figures 1a-6 is illustrated with a single base pillar A320 does not mean that the table arrangement T1 is limited to a single pillar or similar. On the contrary, the table arrangement T1 may have several pillars or table legs or similar without departing from the invention. The pillars or legs or similar may even be solid or substantially solid without departing from the invention.

As best seen in figures 1a and 6 the base pillar A320 is arranged to support the table top A100 in a position that is substantially parallel to the base support A310. The upper end of the base pillar A320 is therefore arranged to define a surface on which the table top A100 can rest so as to extend substantially in parallel to the floor on which the base member A300 is intended to be placed, i.e. to extend substantially parallel to the floor as is common for an ordinary table top on an ordinary dining-table or a writing-table or similar.

Moreover, as best seen in figure 4b the upper end of the base pillar A320 is provided with a first horizontal mounting bar A321 that is secured to the upper edge of the base pillar A320 so as to extend in parallel to a first long side A322 of the base pillar A320 and along a pivoting axis A3 as will be further described below.

**The Table Top Support**

As best seen in figures 3-6 the foldable table top support A200 is preferably embodied as an arm, e.g. made of plastic or metal or a combination of such materials or categories of materials. The arm extends and retracts in a telescopic manner or similar. However, alternative embodiments of the foldable table top support A200 may comprise arms or similar that extends and retracts by means of bending and/or in a pivotal manner or similar. Some embodiments of the present invention may even comprise a plurality of arms or similar that extends and retracts in a folding, telescopic and/or bending manner or similar.

The upper support end A210 of the foldable table top support A200 is pivotally secured to a second mounting bar A111 by means of a ball bearing joint or similar. Said second mounting bar A111 is in turn secured to a rectangular mounting frame A112, which in turn is secured to the rear side A110 of the table top A100, see figures 4b-6. It is especially preferred that the second mounting bar A111 is secured near and in parallel to a first long side A113 of the rectangular mounting frame A112 so as to extend in parallel to the pivoting axis A3 as will be further described below. It should be added that other means for pivotally securing the table top support A200 to the table top A100 are clearly conceivable, e.g. hinge-like joints or other pivoting joints or similar. In general it is preferred that the upper support end A210 of the table top support A200 is secured to the table top A100 directly or indirectly (e.g. via said frame A112) in a position that becomes located on or above a first centre axis A1 of the table top A100 when the table top A100 is folded into a vertical position as shown in figures 2, 4a, 4b and 5. It can be further noted that figure 2 shows said first centre axis A1 extending in an essentially horizontal direction that is perpendicular to a second centre axis A2, which second centre axis A2 extends in an essentially vertical direction when the table top A100 is folded into a vertical position.

The lower support end A220 of the foldable table top support A200, as best shown in figures 5-6, is preferably pivotally secured to the base pillar A320 by means of a ball bearing joint or similar. In addition, the lower support end A220 is preferably secured to the base pillar A320 in a position that enables the foldable table top support A200 to extend and retract in a plane that is perpendicular relative to the table top A100. A perpendicular angle reduces the force needed to unfold the table top A100 from the base pillar A320, which is particularly preferred if the table top support A200 is extended to fold the table top A100 by means of a hydraulic or electric motor or similar. To reduce the force required to fold the table top A100 and for the reason of balance it is also preferred that the lower support end A220 is secured to the base pillar A320 in a position directly or slight obliquely below the upper support end A210 when the table top A100 is unfolded as in figures 1a and 6. For the reason of balance it is moreover preferred that the lower support end A220 is secured to the base pillar A320 in a position located at the lower half of the base pillar A320, or at least near or
preferably below the centre of gravity of the base pillar A320.

In addition, the above described foldable table top support A200 is supplemented by two supplementary table top supports A230, A230’. The two supplementary table top supports A230, A230’ are arranged at different ends of the second long side A114 of the rectangular mounting frame A112. The above mentioned first horizontal mounting bar A321, which is secured to the base pillar A320 of the base member A300, is arranged to extend through the two supplementary supports A230, A230’. It is preferred that the supplementary table top supports A230, A230’ are implemented by means of ball bearings so as to form two pivoting joints with the first horizontal mounting bar A321 extending through the supports A230, A230’. The accordingly formed joints allow the table top A100 to pivot around a pivoting axis A3 relative to the base member A300, which pivoting axis A3 preferably extends substantially in parallel to the above mentioned first centre axis A1 (see fig. 2). It follows that the first horizontal mounting bar A321, extends substantially along said pivoting axis A3. It should be added that other supplementary means for pivotally securing the table top A100 to the base member 300 is clearly conceivable, e.g. hinge-like joints or other pivoting joints or similar.

In general it is preferred that the supplementary table top supports A230, A230’ are secured to the table top A100 directly or indirectly (e.g. via a frame A112) in a position that becomes located on or below the first centre axis A1 of the table top A100 when the table top A100 is folded into a vertical position as shown in figures 2, 4a, 4b and 5. It is also generally preferred that the two supplementary table top supports A230, A320’ are secured to the base pillar A320 on the opposite side of the base pillar A320 relative to the position in which the lower support A220 of the foldable table top support A200 is secured to the base pillar.

Since the pivoting axis A3 is secured on or near the upper edge of the base pillar A320 it is possible to utilise the substantially vertical outside of the rectangular base pillar A320 as an end position or stop position, towards which the table top A100 pivotally folds into a substantially vertical position from its substantially horizontal resting position on the upper end of the base pillar A320. A folded vertical position is shown in figures 2, 4a-5 whereas an unfolded horizontal position is shown in figures 1a and 6.

In general it is preferred that at least the first table top support A200 is provided with a blocking device (not shown) that keeps a folded table top A100 from unfolding unintentionally. The blocking device may e.g. be implemented by means of a pin or similar that is either manually or automatically engaged to stop any unintentional unfolding. The blocking device may alternatively or complementary be implemented by means of a damper, e.g. a hydraulic damper or similar, which slows down an unintentional as well as an intentional unfolding of the table top A100. In addition, it is particularly preferred that the blocking device is arranged so as to enable a fixation of the table top A100 in substantially any direction between a substantially horizontal direction (0°, c.f. fig. 6) and a substantially vertical direction (90°, c.f. fig 5), so as to e.g. enable an adjustment of the viewing angle. This may e.g. be accomplished by said hydraulic damper. The blocking device may alternatively be implemented by means of a pin or similar that is either manually or automatically engaging one or several interaction holes.

In embodiments comprising a single foldable table support A200 and/or a single supplementary table top support A230 or similar it is preferred that the support A200, A230 is secured to the table top A200 on or near the second centre axis A2 of the table top A100. In embodiments comprising a plurality of foldable table supports A200 and/or a plurality of supplementary table top supports A230, A230’ or similar it is preferred that the supports A200, A230, A230’ are secured to the table top A100 in a substantially symmetric fashion relative to the second centre axis A2 of the table top A100. The reason for this is that a substantially symmetrical arrangement increases the stability of the foldable table arrangement T1, especially when the table top A100 is folded in a vertical position as illustrated in figures 2, 4 and 6.

The Table Top

The substantially oval table top A100 in figures 1a-6 is preferably made of wood, plastic or metal or a combination of such materials or categories of materials. It is preferred that the table top A100 has a rather light weight structure, while still preserving the feeling and function of a stable and solid table top. It is therefore preferred that table top A100 is at least partly hollow, e.g. that is assumes a box-like form or similar, while still preserving a stiff frame. The internal space of the table top A100 may therefore e.g. be provided with a stiffening honeycomb structure or similar. It should be added that the table top A100 may assume a vast variety of shapes that may be suitable for a table top, e.g. a suitable circular or oval shape as well as a suitable polygonal shape or similar, or some irregular shape or any other suitable shape.

With respect to the external shape of the table top A100 it can be seen in figures 1a-6 that the table top A100 comprises a substantially flat rear side A110 and a substantially flat front side A120. The surface of the substantially flat front side A120 is made of a durable material, e.g. a durable metal, plastic, glass or ceramic, or a combination of such durable materials or similar. Hence, the surface of the front side A120 is arranged as a durable work surface that is essentially resistant to impacts, scratches and spills of liquids or similar wear and tear. Said work surface is at the very least resistant to the wear and tear that may be imposed on the upper surface of an ordinary dining-table, writing-table or conference table or similar. It is preferred that the whole front side A120 of the table top A100 or at least the greater part of the front side A120 is arranged as a work surface. However, alternative embodiments of the front side A120 may
only have a *small* work surface or several *small* work surfaces.

[0043] The work surface of the table top A100 in figures 1a-6 is additionally provided with a durable and substantially rigid and transparent surface layer A125. The durable transparent surface layer A125 is made of plastic, glass or some other suitable transparent or at least substantially transparent material or combination of such materials that is resistant to heavy wear or at least resistant to the wear and tear that is imposed on the upper surface of an ordinary dining-table, writing-table or conference table or similar. It is preferred that the transparent surface layer A125 constitutes the greater part of the substantially continuous work surface, i.e. preferably the greater part of the front side A120. However, alternative embodiments of the front side A120 may only comprise a *small* work surface or possibly several *small* work surfaces that are provided with a durable and substantially transparent surface layer A125.

The Display Unit

[0044] The table top A100 in figures 1a-6 is provided with a display unit A130 that is arranged more or less immediately behind the transparent surface layer A125 of the table top A100 for presenting moving images. This has been illustrated in figure 1b, which shows a cross section of the table top A100 taken along the section line X-X in figure 1a. This is also illustrated in figure 2, which shows the foldable table arrangement T1 in a *fully* folded position with a part of the surface layer A125 taken away to uncover the front surface of the display unit A130.

[0045] The display unit A130 can e.g. be an ordinary television apparatus or a computer monitor or similar or even a video projector or a similar image projector. It is particularly preferred that the display unit A130 is a so-called flat screen, e.g. a plasma screen or a LCD screen or a similar thin screen that has a limited depth, e.g. a depth of preferably less than 30 cm and more preferably less than about 15 cm and even more preferably less than about 7 cm and most preferably less than about 3 cm. The display unit A130 can be coupled to power supply by means of an ordinary power cable or by any other suitable means. Some embodiments of the table top A100 may even be provided with a battery or similar, which obviates the need for cables etc, which in turn can increase the mobility of the foldable table arrangement T1. The display unit A130 can moreover be coupled to a LAN or a WAN or similar data network by means of a wire or wireless connection or some other suitable connection. Besides the services provided locally by the LAN or WLAN in question the service may also be the more remote services, such as those provided by the Internet and/or or a Cable-TV net or similar.

The Table Top and the Display Unit

[0046] It should be clear from the above discussion that the foldable table arrangement T1 in figures 1a-6 comprises a foldable table top A100 that is provided with a durable work surface on its front side A120 and a transparent layer A125 that is a part of this work surface. It should also be clear that the foldable table top A100 is provided with a display unit A130 that is arranged within said table top A100 behind said transparent layer A125 for displaying moving images. It is moreover clear that the foldable table arrangement T1 can be used both as a vertical or horizontal display unit and as horizontal table, which is particularly advantageous in rooms and compartments or similar that needs a flexible furnishing. The table arrangement T1 can also overcome the risk of covering or hiding a display unit (e.g. a wall mounted television apparatus or computer monitor or similar), since the table arrangement T1 itself comprises a display unit A130 that is continuously visible to a viewer during the folding and unfolding of the table top A100. Hence, the need for a special wall mounted display unit or similar is eliminated or at least significantly reduced, since the foldable table arrangement T1 in figures 1a-6 itself can be used both as a table and as a replacement for a wall mounted display unit or similar.

The Table Top, the Display Unit and a Touch Screen

[0047] The durable transparent surface layer A125 which is arranged in front of the display unit A130 is preferably utilized as a part of a touch screen A140, which provides a user with further advantages, as will be further explained below.

[0048] However, first we will discuss the general structure of a touch screen and then the specific structures of the most commonly used touch screens.

[0049] Figure 7 shows the typical general structure of a touch screen 700. The touch screen 700 includes a transparent substrate 710. The transparent substrate 710 is frequently composed of a rigid glass material or similar, although sometimes a flexible material, such as plastic, is used. Various additional layers of materials forming touch sensitive elements 720 of the touch screen 700 are formed on top of the substrate 710. The touch sensitive elements 720 include transducers and circuitry that are necessary to detect a touch by an object, in a manner that can be used to compute the location of such a touch. A cable 730 is attached to the circuitry so that various signals may be brought onto or off of the touch screen 700. The cable 730 is connected to an external controller 740. The external controller 740 coordinates the application of various signals to the touch screen 700, and performs calculations based on responses of the touch...
sensitive elements to touches, in order to extract the (X, Y) coordinates of the touch. The (X, Y) coordinates of the touch
can then be coordinated with the images that is displayed on the underlying display unit A130 in a well known manner.
This coordination can be performed by the external controller 740 or some other suitable controller, e.g. an ordinary
personal computer (PC) coupled to the display unit A130.

[0050] There are at least four well known and commonly used touch screen technologies that utilize this basic structure:
resistive, capacitive, surface acoustic wave (SAW) and infrared (IR).

[0051] Figure 8a is a schematic top view of a resistive touch screen 800. Figure 8b is a schematic side view of the
resistive touch screen 800, shown as a cross section of the touch screen 800 taken along the section line A-A in fig. 8a.
The touch sensitive elements 820 of the resistive touch screen 800 includes a lower circuit layer 821; a flexible spacer
layer 822 containing a matrix of spacer dots 823; a flexible upper circuit layer 824; and a flexible top protective layer
825. All of these layers are transparent. The lower circuit layer 821 often comprises conductive materials deposited on the
transparent substrate 810, forming a circuit pattern. An external controller 840 is connected to the touch screen circuitry via cable 830. Conductors in the cable 830 are connected to the circuitry within the lower circuit layer 821 and the upper circuit layer 824. The external controller 840 coordinates the application of voltages to the touch screen circuit elements. When the resistive touch screen 800 is pressed, the pressing object, whether a finger, a stylus, or some other object, deforms the top protective layer 825, the upper circuit layer 824, and the spacer layer 822, forming a conductive path at the point of the touch between the lower circuit layer 821 and the upper circuit layer 824. A voltage is formed in proportion to the relative resistances in the circuit at the point of touch, and is measured by the external controller 840 connected to the other end of the cable 830. The controller 840 then computes the (X, Y) coordinates of the point of touch.

[0052] Figure 9a is a schematic side view of the capacitive sensing touch screen 900. Figure 9b is a schematic side view of the
capacitive sensing touch screen 900, shown as a cross section of the touch screen 900 taken along the section line B-B in fig. 9a. The touch sensitive elements 920 include a transparent conductive metal oxide layer 921 formed on the face of a transparent substrate 910, and metal contacts 922, 923, 924 and 925 arranged on the conductive metal oxide layer 921 at the corners of the touch screen 900. The metal contacts 922, 923, 924 and 925 are connected by circuitry conductors (not shown) in a cable 930, which cable 930 is connected to an external controller 940. The external controller 940 cause voltages to be applied to the metal contacts 922, 923, 924 and 925, creating a uniform electric field across the surface of the substrate 910, and field propagates through the transparent metal oxide layer 921. When a finger or other conductive object touches the touch screen 900, it capacitively couples with the screen causing a minute amount of current to flow to the point of contact from each corner contact. The current flow is proportional to the distance from the corners to the point of contact and the controller 940 measures the current flow proportions and computes the (X, Y) coordinates of the point of touch.

[0053] Figure 10a is a schematic top view of a surface acoustic wave (SAW) touch screen 1000. Figure 10b is a schematic side view of the SAW touch screen 1000, shown as a cross section of the touch screen 1000 taken along the section line C-C in fig. 10a. The touch sensitive elements 1020 include an arrangement of acoustic transducers 1021 and sound wave reflectors 1022 formed on the face of a transparent substrate 1010. The sound wave reflectors 1022 are capable of reflecting high frequency sound waves that are transmitted along the substrate surface, and are placed in patterns conducive to proper wave reflection. Four acoustic transducers 1021 are formed on the substrate 1010, which transducers are used to launch and sense sound waves on the substrate surface. A cable 1030 is bonded to the substrate 1010, and contains conductors (not shown) that connect the acoustic transducers 1021 to an external controller 1040. This external controller 1040 applies signals to the acoustic transducers 1021, causing high frequency sound waves to be emitted across the substrate 1010. When an object touches the touch screen, the sound wave field is disturbed. The transducers 1021 detect this disturbance, and external controller 1040 uses this information to calculate the (X, Y) coordinate of the touch.

[0054] Figure 11a is a schematic top view of an optical touch screen implemented as an IR touch screen 1100. Figure 11b is a schematic side view of the IR touch screen 1100, shown as a cross section of the touch screen 1100 taken along the section line D-D in fig. 11a. The touch sensitive elements 1120 include an array 1121 of photodiodes arranged on two adjacent sides 1122, 1123 of a rectangular transparent substrate 1110 with a corresponding array of photo sensors 1124 arranged on the two other adjacent sides 1125, 1126 of the transparent substrate 1110. These diode/sensor pairs 1121, 1124 are connected by means of a cable 1130 to an external controller 1140. The diode/sensor pairs 1121, 1124 establish an optical grid across the screen. Any object that touches the screen disturbs this grid, causing drops in the signals and external controller 1140 uses this information to calculate the (X, Y) coordinate of the touch.

[0055] The advantages of resistive touch screens include a high-touch resolution (you can use your finger or any stylus) and a resistance to dirt, dust, water and light. The disadvantages include a decreased clarity and that sharp objects can damage the resistive layers.

[0056] The advantages of capacitive touch screens include high clarity and high durability, good resistance to dirt, grease, moisture and light and a high touch resolution. However, a disadvantage is that a capacitive touch screen cannot easily be used with gloves or other electrically insulating items.

[0057] The advantages of SAW touch screens include high-touch resolution, high clarity and durability, good resistance
to light with no drift operation thus negating the need for recalibration. On the other hand, one should preferably use a
finger, a gloved hand, a soft tip stylus or similar energy absorbing item to touch the screen.

[0058] The advantage of IR touch screens include immunity to drift and high clarity and durability. Since the optical
grid floats above the screen, a touch event can be registered before the user’s fingers reach the screen. On the down
side, it is susceptible to dust, needs special bezels for daylight use, and has parallax problems on curved screens.

[0059] We have now briefly discussed the pros and cons of resistive, capacitive, surface acoustic wave (SAW) and
infrared (IR) touch screens. It can be concluded that the durable transparent surface layer A125 in front of the display
unit A130 can be utilized as the substrate in a touch screen A140, especially if the surface layer A125 is made of a
suitable glass or similar. The durable transparent surface layer A125 can e.g. be the substrate 810, 910, 1010, 1110 in
a resistive, capacitive, SAW or IR touch screen respectively.

[0060] However, a resistive touch screen 800 is not particularly suitable, since the touch sensitive elements 820
arranged on top of the substrate 810 can be damaged by sharp objects or similar. As a contrast, the touch sensitive
elements 920, 1020, 1120 of a capacitive touch screen, a SAW touch screen or an IR touch screen respectively can be
arranged on the side of the exposed areas of the transparent surface layer A125 and the touch elements may also be
covered in various ways, e.g. by means of a further durable and transparent sealing or layer or similar. It may be added
that the above mentioned metal oxide layer 921 in a typical capacitive touch screen 900 is highly durable.

[0061] Hence, the touch screen A140 in the table top A100 of the foldable table arrangement T1 is preferably a
capacitive, a SAW or an IR touch screen or similar, even though a resistive touch screen or similar may be an alternative
if the resistive touch screen can be made durable enough. It should be added that several small touch screens can be
arranged adjacent to each other so as to create a larger touch screen A140 that covers the whole surface of a large
display unit A130.

[0062] The table arrangement T1 comprising a foldable table top A100 provided with a display unit A130 and a touch
screen A140 can be equipped with or at least have access to a ordinary personal computer (PC) unit (not shown) or
similar, e.g. arranged in the base pillar A320 of the table arrangement T1. The computer unit is connected to the display
unit A130 and the touch screen A140 in a well known manner, and the monitor, the keyboard and the mouse functions
of the computer unit are likewise implemented by means of the display unit A130 and the touch screen A140 in a well
known manner. These functions can be supported by the table arrangement T1 in a folded position as well as in an
unfolded position and there is consequently no need for a separate table or similar to support the monitor, keyboard and
mouse. This is particularly advantageous in small spaces and in spaces that require a flexible furnishing. This is the
same for other functions that can be implemented by means of the display unit A130 and the touch screen A140, e.g.
a telephone and various control panels and similar.

[0063] The table arrangement T1 comprising a foldable table top A100 provided with a display unit A130 and a touch
screen A140 having a durable surface can also be used as a table in its horizontal unfolded position and as a substitute
for the traditional blackboard or whiteboard in its vertical folded position. Hence, a lecturer can write on the touch screen
A140 with a finger or a stylus or similar. The external controller of the touch screen will then extract the coordinates of
the finger or similar and the coordinates can then be converted by a computer unit to a resulting line or similar that is
displayed on the underlying display unit A130 in a well known manner. This combined use is particularly advantageous
in spaces that require a flexible furnishing. It is also advantageous since the resulting image on the display unit A130
can be easily stored for later use, e.g. for printing or replaying purposes. A further advantage is that the resulting image
on the display unit A130 can be easily transmitted to other distributed display units, which e.g. can be a particular
advantage in large rooms where the audience in the back of the room can be provided with one or several distributed
display units.

[0064] The table arrangement T1 comprising a foldable table top A100 provided with a display unit A130 and a touch
screen A140 having a durable surface can also be used simultaneously as a touch screen and as a table. It is then
preferred that certain areas of the touch screen A140 can be inactivated if this is necessary or suitable. The inactivation
can be of different kinds. The inactivation of an area of the touch screen A140 can e.g. result in a presentation of a
certain color or pattern or similar on the corresponding area of the underlying display unit A130, so as to indicate the
inactivated area of the touch screen. This facilitates the perception of the areas of the touch screen A140 that are still
active. The inactivation of an area of the touch screen A140 may also result in a simple inactivation of the touch function,
whereas the underlying display unit A130 continues to display certain images. The inactivation of the touch screen A140
can be accomplished by means of signal processing and/or by means of inactivating a certain touch screen in the case
where several adjacent touch screens are used to cover the whole surface of a large display unit A130. It should be
added that the touch screen A140 and the underlying display unit A130 can be dynamically partitioned so that each user
of a plurality of users can have a separate area dedicated to himself. The partitioning of the touch screen A140 can be
accomplished by means of signal processing and/or by dedicating a certain touch screen to a certain user in the case
of several adjacent touch screens.
A Second Embodiment

[0065] Figures 12a-14 shows a foldable table arrangement T2 according to a second embodiment of the present invention. The table arrangement T2 comprises a table top B100, a foldable table top support B200 and a base member B300.

The Base Member

[0066] The base member B300 is preferably made of plastic, metal or similar, or a combination of such materials or categories of materials or similar. The base member B300 comprises a base support B310 that is adapted to abut a suitable foundation onto which the base member B300 can be placed, supported, attached, secured or otherwise arranged. The particular base support B310 shown in figures 12b-14 is adapted to abut, or being mounted onto, or being a part of the wall in a room or the rear side of the backrest of a passenger seat in a bus, in a train, in a boat or in an aeroplane or some other vehicle. The base support A310 may e.g. be mounted by means of screwing, gluing, welding, form-fitting or by some other suitable fastening means. However, alternative embodiments of the base support B310 may be adapted to abut other foundations e.g. other surfaces in small compartments in vehicles, trains and aeroplanes or in other means of conveyance, but also in small booths, cubicles and rooms or similar in various buildings or other stationary or partly stationary installations such as caravans and trailers or similar. A suitable foundation may also be found on various items arranged within such compartments or rooms or similar.

[0067] The base support B310 in figures 12b-14 is a substantially flat plate with a quadratic or rectangular shape, which base support B310 is adapted to be arranged on a wall on the backrest of a seat in a substantially vertical position. However, the base support B310 can assume a vast variety of alternative shapes that are adapted to abut a vast variety of foundations. The base support B310 may e.g. have a suitable circular or oval shape as well as a suitable polygonal shape or similar.

[0068] As best seen in figure 12b the lower end of the base support A310 is provided with a horizontal and cylindrical mounting bar B321, which is secured to the lower end of the base support A310, so as to extend in parallel to a pivoting axis B3 as will be further described below. The lower end of the base support B310 is also provided with a folding stop B322 against which the arm of the table top support B200 can rest in a horizontal and fully unfolded position as shown in figure 14.

The Table Top Support

[0069] The foldable table top support B200 is preferably embodied as an arm made of plastic or metal or a combination of such materials or categories of materials. It is preferred that the table top support B200 folds and unfolds in a pivotal manner or similar, though alternative embodiments of the foldable table top support B200 may comprise arms or similar that folds and unfolds by bending or telescoping or in some other suitable manner. Some embodiments of the present invention may even comprise a plurality of arms or similar that folds and unfolds in a pivotal and/or by bending or telescoping manner or similar.

[0070] The upper support end of the foldable table top support B200 is pivotally secured to the rear side B110 of the table top B100 by means of a hinge joint B210 or similar, see in particular figure 12a. It is preferred that the hinge joint B210 is secured at the centre of the rear side of the table top B200, so as to allow the table top B100 to pivot around a pivoting axis A3 that extends in parallel to a first horizontal centre axis B1 of the table top B100. It is preferred that the hinge joint B210 allows the table top B100 to pivot around the axis B3 with a frictional resistance or similar, which enables the table top B100 to be tilted in substantially any position along its pivotal range, e.g. to be tilted at any angle within a tilting range of about 0-90°, i.e. tilted in any position between a substantially horizontal position and a substantially vertical position. Naturally, the table top support B200 may be pivotally secured to the table top A100 by other suitable means besides a hinge joint or similar. It should also be added that figures 12a-12b show said first centre axis B1 extending in an horizontal direction that is essentially perpendicular to a second centre axis B2, which extends in an essentially vertical direction when the table top B100 is folded into a vertical position.

[0071] The lower support end of the foldable table top support B200 is preferably implemented as a mounting tube B230 that is pivotally secured outside the cylindrical horizontal mounting bar B321 of the base support A310, so as to allow the table top support B200 to pivot relative to the base support 310 around an axis B4 that extends substantially in parallel to the above mentioned pivoting axis B3. In addition it is preferred that the mounting tube B230 is pivotally secured outside the cylindrical mounting bar B321 so as to allow the table top support B200 to pivot around the axis B4 with a frictional resistance or similar, which enables the table support B200 to be tilted in substantially any position along its pivotal range, e.g. to be tilted at any angle within a tilting range of about 0-90°, i.e. tilted in any position or direction between a substantially horizontal position and a substantially vertical position.

[0072] In general it is preferred that the hinge joint B210 at the upper support end of the table top support B200 is
provided with a blocking device (not shown) or similar that keeps the horizontally unfolded table top B100 in figure 14 from accidentally rotating in a counter-clockwise direction around the pivoting axis B3 when it is used as a table top. In addition, it is particularly preferred that the blocking device is arranged so as to enable a fixation of the table top B100 in substantially any direction between a substantially horizontal direction (0°, c.f. fig. 14) and a substantially vertical direction (90°, c.f. fig. 13), so as to e.g. enable an adjustment of the viewing angle. The blocking device may e.g. be implemented by means of a pin or similar that is either manually or automatically engaging one or several interaction holes to stop any unintentional folding. The blocking device may also be implemented by means of a friction function that is manually or automatically tighten when the table top B100 is positioned in the desired direction. Other suitable blocking devices arranged according to other principles are clearly conceivable, e.g. a resilient blocking knob protruding from the base support B310 just above the upper surface B120 of the unfolded table top B200 in figure 14.

The Table Top

[0073] The substantially rectangular table top B100 in figures 12a-14 is preferably made of plastic or metal or a combination of such materials or categories of materials. It is preferred that the table top B100 has a rather light weight structure, while still preserving the feeling and function of a stable and solid table top. It is therefore preferred that table top B100 is at least partly hollow, while still preserving a stiff frame. The internal space of the table top B100 may therefore e.g. be provided with a honeycomb stiffening structure or similar. It should be added that the table top B100 may assume a vast variety of shapes that may be suitable for a table top, e.g. a suitable circular or oval shape as well as a suitable polygonal shape or similar, or some irregular shape or any other suitable shape.

[0074] With respect to the external shape of the table top A100 it can be seen in figures 12a-14 that it comprises a substantially flat rear side B110 and a substantially flat front side B120. The surface of the substantially flat front side B120 is made of a durable material, e.g. a durable metal, plastic, glass or ceramic or a combination of such durable materials or similar. Hence, the surface of the front side B120 is arranged as a durable work surface in the same way as the previously described surface on the front side A120 of the table top A100 in the foldable table arrangement T1.

[0075] The work surface on the front side of the table top B100 is also provided with a durable and substantially rigid and transparent surface layer B125 in the same way as said work surface on the front side A120 of the table top A100 in the table arrangement T1. Hence, the durable transparent surface layer B125 is preferably made of plastic, glass or some other suitable transparent or at least substantially transparent material or combination of such materials, which is at least resistant to the wear and tear that is imposed on the upper surface of an ordinary dining-table, writing-table or conference table or similar. It is also particularly preferred that the transparent surface layer B125 constitutes the greater part of the substantially continuous work surface, i.e. preferably the greater part of the front side B120.

The Display Unit

[0076] The table top B100 in figures 12a-14 is provided with a display unit B130 that is arranged more or less immediately behind the transparent surface layer B125 for presenting moving images in the same way as the display unit A130 in the table top A100 of the above mentioned table arrangement T1. This has been illustrated in figure 12b, which shows the foldable table arrangement T2 in a partly folded position with a part of the surface layer B125 taken away to uncover the front surface of the display unit B130.

[0077] The display unit B130 is preferably a flat computer monitor, but other display units are also conceivable, e.g. an ordinary television apparatus such as a so-called flat screen, e.g. a plasma screen or a LCD screen or a similar thin screen that has a limited depth, e.g. a depth of preferably less that about 30 cm and more preferably less than about 15 cm and even more preferably less than about 7 cm and most preferably less than about 3 cm. The display unit B130 can be provided with electric power and communication means and similar in the same way as previously described in connection with the display unit A130 of the table arrangement T1 so as to enable a connection to one or several of such resources as LAN, WLAN, Internet, Cable-TV etc.

The Table Top and the Display Unit

[0078] It should be clear from the above discussion that the foldable table arrangement T2 in figures 12a-14 comprises a foldable table top B100 that is provided with a durable work surface on its front side B120 and a transparent layer B125 that is a part of this work surface. It should also be clear that the foldable table top B100 is provided with a display unit B130 that is arranged within said table top B100 behind said transparent layer B125 for displaying moving images. It is moreover clear that the foldable table arrangement T2 can be used both as a vertical and horizontal display unit and as a horizontal table, which is particularly advantageous in rooms and compartments or similar that needs a flexible furnishing. The table arrangement T2 can also overcome the risk of covering or hiding a display unit (e.g. a wall mounted television apparatus or computer monitor or similar), since the table arrangement T2 itself comprises a display unit B130
that is continuously visible to a viewer during the folding and unfolding of the table top B200. Hence, the need for a special wall mounted display unit or similar is eliminated or at least significantly reduced, since the foldable table arrangement T2 in figures 12a-14 itself can be used both as a table and as a replacement for a wall mounted display unit or similar.

[0079] The foldable table arrangement T2 is particularly advantageous when it is arranged on the rear side of the backrest of a passenger seat in e.g. a bus, a train, a boat or an aeroplane or some other vehicle as illustrated in figures 13-14. A foldable table arrangement T2 can then be used both as a table and as a display for watching a movie or similar. This is not possible if a traditional foldable table is used; since a traditional table in it is vertical folded position will cover a display unit that is arranged at the rear side of the backrest of the passenger seat in front of a passenger. On the other hand, if a display unit is arranged at the rear side of a traditional foldable table it will certainly be visible when the table is folded in its vertical position. However, the display unit will face the lap of the passenger when the table is unfolded in its horizontal position, which makes the display impossible to watch.

The Table Top, the Display Unit and a Touch Screen

[0080] The durable transparent surface layer B125 arranged in front of the display unit A130 is preferably utilized as a part of a touch screen B140 in the same or similar way as the transparent surface layer A125 in the table top A100 of the above mentioned table arrangement T1.

[0081] The table arrangement T2 comprising a foldable table top B100 provided with a display unit B130 and a touch screen B140 can be equipped with an ordinary personal computer (PC) unit (not shown) or similar, e.g. arranged behind the display unit B130 in the table top B100, or arranged on the wall or in the seat or similar on which the table arrangement T2 is arranged. The computer unit is coupled to the display unit B130 and the touch screen B140 in a well known manner and the monitor, the keyboard and the mouse functions of the computer unit are likewise implemented by means of the display unit A130 and the touch screen A140 in a well known manner. These functions can be supported by the table arrangement T1 in a folded position as well as in an unfolded position and there is consequently no need for a separate table or similar to support the monitor, keyboard and mouse. Consequently, there is no need for a separate table or similar to support said monitor, keyboard and mouse, which is advantageous in small spaces and in spaces that require a flexible furnishing. This is the same for other functions that can be implemented by means of the display unit B130 and the touch screen B140, e.g. a telephone and various control panels and similar functions.

[0082] This is particularly advantageous in hotel rooms and in passenger compartments in public vehicles such as e.g. buses, boats or aeroplanes etc and other public spaces etc, since it enables a service provider to offer the customer different functions by configuring the computer and the accompanying display unit B130 and touch screen B140 in different ways. A hotel guest or passenger may for example require access to a computer and possibly the Internet, while another guest or passenger may only require access to Cable-TV or similar. In addition, various control panels for controlling the light and the air quality etc in a room or in the surroundings of a passenger seat may also be implemented by configuring the computer and the accompanying display unit B130 and touch screen B140. The configuration is preferably implemented by means of software that is loaded and executed on said computer in a well known manner. It should also be added that the table arrangement T2 is typically firmly fixated to a wall or the rear of a backrest of a seat or similar, which makes it very difficult to steal. This is not the case with an ordinary computer and its associated wire or wireless keyboard and/or mouse.

[0083] The present invention has now been described by means of two exemplary embodiments. However, the invention is not limited to the embodiments described above. On the contrary, the foldable table arrangements T1, T2 may for example have other shapes and sizes and they may also comprise further units and functions. Moreover, the table tops A100, B100 can also be partly foldable, e.g. so that only a half, a third or a quarter of the table top A100, B100 or some other fraction of the table top A100, B100 is foldable. Similarly, the touch screen is not limited to a resistive touch screen 800, a capacitive sensing touch screen 900, a surface acoustic wave (SAW) touch screen 1000 or an IR touch screen 1100 as mentioned above. On the contrary, the touch screen may be any suitable touch screen, e.g. a force sensing touch screen based on strain gauges or similar, or an optical touch screen based on laser emitting devices and/or based on cameras in combination with image processing techniques etc.

[0084] In addition, it should be emphasised that a foldable table top A100, B100 provided with a touch screen device A140, B140, 700, 800, 900, 1000, 1100 gives ergonomic advantages. A person that interacts with the touch screen of the table top is free to choose anything between a substantially vertical direction (90°) for the table top to a substantially horizontal direction (0°) for the table top. This enables the user to lean his forearms on a substantially horizontal table top when touching the touch screen (e.g. typing on a keyboard function or playing games provided by a game function etc), while the direction of the table top can be adjusted between a substantially vertical direction (90°) and a substantially horizontal direction (0°) to achieve the best viewing position when watching movies or similar.

[0085] A foldable table arrangement according to the above is particularly advantageous in connection with touch screens arranged to provide functions that should be more or less continuously visible and accessible. Such touch
screens can e.g. be used in connection with electronic gaming machines, wherein the invention can be advantageously used as an electronic gaming table for playing table games that are traditionally played in casinos. The electronic gaming table may simulate a number of different casino games, e.g. including but not limited to blackjack, twenty-one, red dog, baccarat, craps and roulette etc.

Moreover, as described above a variety of well known touch sensing technologies are commonly applied in connection with touch screen systems, including acoustic, resistive, capacitive and infrared technologies. These technologies are traditionally implemented to detect a sequence of touches that occur one at the time. However, improvements have been made, which enable a detection and a distinguishing of several overlapping or simultaneous touches, e.g. by means of sampling techniques utilizing the fact that two touches are rarely occurring exactly simultaneously and/or the fact that two touches are usually made by different forces and/or occupies smaller or larger areas of the touch screen, see e.g. the patent US 6,856,259 (Sharp). This is particularly advantageous when a plurality of users are simultaneously using the table according the present invention.

Reference signs

<table>
<thead>
<tr>
<th>T1</th>
<th>Foldable Table Arrangement</th>
<th>820</th>
<th>Touch Sensitive Elements</th>
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<tbody>
<tr>
<td>A1</td>
<td>First Centre Axis</td>
<td>821</td>
<td>Lower Circuit Layer</td>
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<tr>
<td>A2</td>
<td>Second Centre Axis</td>
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<td>Flexible Spacer Layer</td>
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<td>A3</td>
<td>Pivoting Axis</td>
<td>823</td>
<td>Spacer Dots</td>
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<td>A100</td>
<td>Table Top</td>
<td>824</td>
<td>Flexible Upper Circuit Layer</td>
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<td>A110</td>
<td>Rear Side</td>
<td>825</td>
<td>Flexible Top Protective Layer</td>
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<td>Second Mounting Bar</td>
<td>830</td>
<td>Cable</td>
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<td>A112</td>
<td>Mounting Frame</td>
<td>840</td>
<td>External Controller</td>
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<td>A113</td>
<td>First Mounting Frame Long Side</td>
<td>900</td>
<td>Capacitive Sensing Touch Screen</td>
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<td>Transparent Substrate</td>
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<td>Front Side</td>
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<td>Touch Sensitive Elements</td>
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<td>Foldable Table Top Support</td>
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<td>A210</td>
<td>Upper Hinge-Like Joint</td>
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<td>Metal Contact</td>
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<td>A230</td>
<td>Supplementary Table Top Support</td>
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<td>External Controller</td>
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<td>A230'</td>
<td>Supplementary Table Top Support</td>
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<td>Surface Acoustic Wave (SAW) Touch Screen</td>
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<td>First Long Side</td>
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<td>Sound Wave Reflectors</td>
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<td>Display Unit</td>
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<td>Touch Screen</td>
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<td>Mounting Tube</td>
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<td>1140</td>
<td>External Controller</td>
<td>B300</td>
<td>Base Member</td>
</tr>
<tr>
<td>T2</td>
<td>Foldable Table Arrangement</td>
<td>B310</td>
<td>Base Support</td>
</tr>
<tr>
<td>B1</td>
<td>First Centre Axis</td>
<td>B321</td>
<td>Mounting Bar</td>
</tr>
</tbody>
</table>
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Claims

1. A foldable table arrangement (T1, T2) comprising:

- a foldable table top (A100, B100) having a rear side (A110, B110) and a substantially flat front side (A120, B120);
- at least one table top support member (A200, A230, A230’, B200);

characterized by:

- the at least one table top support member (A200, A230, A230’, B200) being pivotally secured to the base member (A300, B300) for pivoting the table top (A100, B100) relative to the base member (A300, B300) from a horizontal position to a vertical position, so as to keep the front side (A120, B120) of the table top (A100, B100) continuously visible in at least one viewing direction during the pivotal movement,
- the front side (A120, B120) of the pivotable table top (A100, B100) being provided with at least one durable work surface;
- said work surface being provided with at least one durable and substantially transparent surface layer (A125, B125);
- the at least one display unit (A130, B130) being visibly arranged behind said durable and substantially transparent surface layer (A125, B125) for presenting moving images.

2. The table arrangement (T1, T2) in claim 1, characterized by:

said base member (A300, B300) being adapted to be supported by a floor, a wall or a backrest of a seat.

3. The table arrangement (T1, T2) in claim 1, characterized by: said display unit (130, B130) being a flat screen or an image projector.

4. The table arrangement (T1, T2) in claim 2, characterized by: a blocking device arranged to fixate said pivoting table top (A100, B100) in substantially any pivoting direction within a range from a horizontal direction to a vertical direction.

5. The table arrangement (T1, T2) in claim 1, characterized by: said display unit (130, B130) being a part of a touch screen device (A140, B140, 700, 800, 900, 1000, 1100) arranged on or above said display unit (A130) so as to receive and detect touches from at least one user of the foldable table arrangement (T1, T2).

6. The table arrangement (T1, T2) in claim 5, characterized by:

said touch screen (A140, B140) being a capacitive touch screen (900), a SAW touch screen (1000) or an optical touch screen (1100).

7. The table arrangement (T1, T2) in claim 5, characterized by:

said touch screen device (A140, B140, 700, 800, 900, 1000, 1100) and said display unit (A130, B130) being connected to a processing unit arranged to implement at least one of a keyboard function or a mouse function by means of said touch screen device (A140, B140, 700, 800, 900, 1000, 1100) and said display unit (A130,
8. The table arrangement (T1, T2) in claim 5, characterized by:

being arranged as a electronic gaming table for playing table games, wherein said touch screen device (A140, B140, 700, 800, 900, 1000, 1100) and said display unit (A130, B130) are connected to a processing unit arranged to implement a table game by means of said touch screen device (A140, B140, 700, 800, 900, 1000, 1100) and said display unit (A130, B130).

9. The table arrangement (T1, T2) in claim 8, wherein said table game is one of: a twenty-one game, a red dog game, a baccarat game, a roulette game or a craps game.

10. The table arrangement (T1, T2) in claim 5, wherein the substantially transparent surface layer (A125, B125) is arranged so as to extend a distance in at least one horizontal direction when the table top (A100, B100) is unfolded, which distance is long enough to receive at least two chairs facing the table top (A100, B100) and being arranged side by side.

11. The table arrangement (T1, T2) in claim 5, wherein the touch screen device (A140, B140, 700, 800, 900, 1000, 1100) is arranged to detect and distinguish between several overlapping or simultaneous touches.

12. The table arrangement (T1, T2) according to claim 1, wherein it is provided in a seat.

13. The table arrangement (T1, T2) in claim 12 characterized by said table arrangement (T2) being arranged on the rear side of the backrest of said seat.

Patentansprüche

1. Klappdtischaufbau (T1, T2) mit:

   - einer Klappdtischplatte (A100, B100) mit einer Rückseite (A110, B110) und einer im Wesentlichen flachen Vorderseite (A120, B120);
   - mindestens einem Basiselement (A300, B300);
   - mindestens einem Tischplattenstützelement (A200, A230, A230', B200);

   dadurch gekennzeichnet, dass:

   - mindestens eine Tischplattenstützelement (A200, A230, A230', B200) an dem Basiselement (A300, B300) schwenkbar gesichert ist, zum relativ zu dem Basiselement (A300, B300) Verschwenken der Tischplatte (A100, B100) von einer horizontalen Position zu einer vertikalen Position, um so die Vorderseite (A120, B120) der Tischplatte (A100, B100) in zumindest einer Blickrichtung während der Schwenkbewegung kontinuierlich sichtbar zu halten,
   - die Vorderseite (A120, B120) der verschwenkbaren Tischplatte (A100, B100) mit zumindest einer beständig Arbeitsfläche versehen ist;
   - wobei die Arbeitsfläche mit zumindest einer beständig und im Wesentlichen transparenten Oberflächenschicht (A125, B125) versehen ist;
   - die zumindest eine Anzeigeeinheit (A130, B130) visuell hinter der beständig und im Wesentlichen transparenten Oberflächenschicht (A125, B125) angeordnet ist, zum Darstellen von bewegten Bildern.

2. Tischaufbau (T1, T2) nach Anspruch 1, dadurch gekennzeichnet, dass:

   das Basiselement (A300, B300) dazu eingerichtet ist, durch einen Boden, eine Wand oder eine Lehne eines Stuhls gestützt zu werden.
3. Tischaufbau (T1, T2) nach Anspruch 1, dadurch gekennzeichnet, dass:
   die Anzeigeeinheit (A130, B130) ein flacher Bildschirm oder ein Bildprojektor ist.

4. Tischaufbau (T1, T2) nach Anspruch 2, gekennzeichnet durch:
   eine Blockiereinrichtung, die zum Fixieren der verschwenkbaren Tischplatte (A100, B100) in im Wesentlichen
   irgendeiner Schwenkrichtung innerhalb des Bereiches von einer horizontalen Richtung zu einer vertikalen Rich-
   tung eingerichtet ist.

5. Tischaufbau (T1, T2) nach Anspruch 1, dadurch gekennzeichnet, dass:
   die beständige und im Wesentlichen transparente Oberflächenschicht (A125, B125) ein Teil einer Berührungs-
   bildschirmeinrichtung (A140, B140, 700, 800, 900, 1000, 1100) ist, die an oder oberhalb der Anzeigeeinheit
   (A130) angeordnet ist, um so Berührungen von zumindest einem Bediener des Klapp tischaufbaus (T1, T2)
   aufzunehmen oder zu erfassen.

6. Tischaufbau (T1, T2) nach Anspruch 5, dadurch gekennzeichnet, dass:
   der Berührungsbildschirm (A140, B140) ein kapazitati ver Berührungsbildschirm (900), ein SAW-Berührungs-
   bildschirm (1000) oder ein optischer Berührungsbildschirm (1100) ist.

7. Tischaufbau (T1, T2) nach Anspruch 5, dadurch gekennzeichnet, dass:
   die Berührungsbildschirmeinrichtung (A140, B140, 700, 800, 900, 1000, 1100) und die Anzeigeeinheit (A130,
   B130) mit einer Verarbeitungseinheit verbunden sind, die zum Implementieren von zumindest einer Tastatur-
   funktion oder einer Mausfunktion mittels der Berührungsbildschirmeinrichtung (A140, B140, 700, 800, 900,
   1000, 1100) und der Anzeigeeinheit (A130, B130) eingerichtet ist.

8. Tischaufbau (T1, T2) nach Anspruch 5, dadurch gekennzeichnet, dass:
   sie als ein elektronischer Spieltisch zum Spielen von Tischspielen eingerichtet ist, wobei die Berührungsbild-
   schirmeinrichtung (A140, B140, 700, 800, 900, 1000, 1100) und die Anzeigeeinheit (A130, B130) mit einer
   Verarbeitungseinheit verbunden sind, die zum Implementieren eines Tischspiels mittels der Berührungsbild-
   schirmeinrichtung (A140, B140, 700, 800, 900, 1000, 1100) und der Anzeigeeinheit (A130, B130) eingerichtet ist.

9. Tischaufbau (T1, T2) nach Anspruch 8, wobei der Spieltisch einer ist aus:
   einem Einundzwanzigspiel, einem Red dog-Spiel, einem Bakkarat-Spiel, einem Roulette-Spiel oder einem
   Craps-Spiel.

10. Tischaufbau (T1, T2) nach Anspruch 5, wobei die im Wesentlichen transparente Oberflächenschicht (A125, B125)
    dazu eingerichtet ist, sich um einen Abstand in zumindest einer horizontalen Richtung zu erstrecken, wenn die
    Tischplatte (A100, B100) aufgeklappt ist, wobei der Abstand lang genug ist, um zumindest zwei Stühle aufzunehmen,
    die der Tischplatte (A100, B100) zugewandt sind und Seite an Seite angeordnet sind.

11. Tischaufbau (T1, T2) nach Anspruch 5, wobei die Berührungsbildschirmeinrichtung (A140, B140, 700, 800, 900,
    1000, 1100) dazu eingerichtet ist, mehrere
    überlappende oder gleichzeitige Berührungen zu erfassen und dazwischen zu unterscheiden.

12. Tischaufbau (T1, T2) nach Anspruch 1,
13. Tischaufbau (T1, T2) nach Anspruch 12, dadurch gekennzeichnet, dass der Tischaufbau (T2) an der Hinterseite oder der Lehne des Sitzes angeordnet ist.

Revendications

1. Agencement de table pliante (T1, T2) comprenant :
   - un plateau de table pliante (A100, B100) ayant un côté arrière (A110, B110) et un côté avant substantiellement plat (A120, B120) ;
   - au moins un élément de base (A300, B300) ;
   - au moins un élément de support de plateau de table (A200, A230, A230’, B200) ;

caractérisé par :
   - ledit au moins un élément de support de plateau de table (A200, A230, A230’, B200) étant fixé de manière pivotante à l’élément de base (A300, B300) pour faire pivoter le plateau de table (A100, B100) par rapport à l’élément de base (A300, B300) d’une position horizontale à une position verticale, afin de maintenir le côté avant (A120, B120) du plateau de table (A100, B100) visible de façon continue dans au moins une direction d’observation pendant le mouvement de pivotement,
   - le côté avant (A120, B120) du plateau de table pivotant (A100, B100) étant pourvu d’au moins une surface de travail durable ;
   - ladite surface de travail étant pourvue d’au moins une couche de surface durable et substantiellement transparente (A125, B125) ;
   - ladite au moins une unité d’affichage (A130, B130) étant disposée de façon visible derrière ladite couche de surface durable et substantiellement transparente (A125, B125) pour présenter des images en mouvement.

2. Agencement de table (T1, T2) selon la revendication 1, caractérisé en ce que ledit élément de base (A300, B300) est adapté pour être supporté par un sol, un mur ou un dossier de siège.

3. Agencement de table (T1, T2) selon la revendication 1, caractérisé en ce que ladite unité d’affichage (130, B130) est un écran plat ou un projecteur d’images.

4. Agencement de table (T1, T2) selon la revendication 2, caractérisé par un dispositif de blocage agencé pour fixer ledit plateau de table pivotant (A100, B100) substantiellement dans n’importe quelle direction de pivotement dans une plage allant d’une direction horizontale à une direction verticale.

5. Agencement de table (T1, T2) selon la revendication 1, caractérisé en ce que ladite couche de surface durable et substantiellement transparente (A125, B125) fait partie d’un dispositif d’écran tactile (A140, B140, 700, 800, 900, 1000, 1100) placé sur ou au-dessus de ladite unité d’affichage (A130) afin de recevoir et de détecter des contacts tactiles réalisés par au moins un utilisateur de l’agencement de table pliante (T1, T2).

6. Agencement de table (T1, T2) selon la revendication 5, caractérisé en ce que ledit écran tactile (A140, B140) est un écran tactile capacitif (900), un écran tactile à ondes acoustiques de surface (1000) ou un écran tactile optique (1100).

7. Agencement de table (T1, T2) selon la revendication 5, caractérisé en ce que ledit dispositif d’écran tactile (A140, B140, 700, 800, 900, 1000, 1100) et ladite unité d’affichage (A130, B130) sont connectés à une unité de traitement agencée pour mettre en oeuvre au moins une fonction parmi une fonction de clavier et une fonction de souris au moyen dudit dispositif d’écran tactile (A140, B140, 700, 800, 900, 1000, 1100) et de ladite unité d’affichage (A130, B130).

8. Agencement de table (T1, T2) selon la revendication 5, caractérisé en ce qu’il est agencé en tant que table de jeu électronique pour jouer à des jeux de table, dans lequel ledit dispositif d’écran tactile (A140, B140, 700, 800, 900, 1000, 1100) et ladite unité d’affichage (A130, B130) sont connectés à une unité de traitement agencée pour mettre en oeuvre un jeu de table au moyen dudit dispositif d’écran tactile (A140, B140, 700, 800, 900, 1000, 1100) et de
ladite unité d’affichage (A130, B130).

9. Agencement de table (T1, T2) selon la revendication 8, dans lequel ledit jeu de table est un jeu choisi parmi : un
jeu de vingt et un, un jeu de chien rouge, un jeu de baccarat, un jeu de roulette et un jeu de craps.

10. Agencement de table (T1, T2) selon la revendication 5, dans lequel la couche de surface substantiellement trans-
parente (A125, B125) est agencée de manière à s’étendre sur une distance dans au moins une direction horizontale
quand le plateau de table (A100, B100) est déplié, laquelle distance est suffisamment grande pour recevoir au
moins deux chaises situées en face du plateau de table (A100, B100) et placées côte à côte.

11. Agencement de table (T1, T2) selon la revendication 5, dans lequel le dispositif d’écran tactile (A140, B140, 700,
800, 900, 1000, 1100) est agencé pour détecter et distinguer plusieurs contacts tactiles se chevauchant ou simul-
tanés.

12. Agencement de table (T1, T2) selon la revendication 1, dans lequel il est placé dans un siège.

13. Agencement de table (T1, T2) selon la revendication 12, caractérisé en ce que ledit agencement de table (T2) est
placé sur le côté arrière du dossier dudit siège.
Fig. 2
Fig. 4b
Fig. 7

Fig. 8a

Fig. 8b
REFERENCES CITED IN THE DESCRIPTION

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