

Table for Automotive Vehicle

BACKGROUND OF THE INVENTION

1. Field of the Invention

5 The invention, in general, relates to a foldable table unit of the kind which may be removably hung on the steering wheel of an automotive vehicle and, more particularly, to a table unit comprising pivotally connected table top member and support members provided with a
10 latching arrangement for releasably arresting their relative angular disposition in a plurality of orientations.

2. Summary of the Prior Art

 British Patent Specification 2,218,624 discloses a table of the general kind provided with upper and lower
15 sheets, the lower one serving to support it on a steering wheel of a vehicle. Pegs are protruding from the lower surface of the lower sheet to be placed against upper peripheral portions of the steering wheel to prevent the arrangement from sliding in a downward direction during
20 use. The angular disposition of the two sheets is determined by a slotted strip and a set screw arranged at a lateral side of the sheets. A container is provided at the lower margin of the upper plate facing the driver to prevent articles placed on the sheet from sliding off.
25 It is not possible to move the upper sheet into a horizontal disposition relative to the lower sheet hung on a steering wheel. Thus, its utility is rather limited, and its usefulness as a food table is questionable. Also, the adjustment mechanism is such that it cannot support

any significant weight unless the set screw is tightened by a tool. Such extreme tightening may, however, not be possible if such table is made from plastic materials of the kind commonly used in injection molding processes.

5 U.S. Patent 4,890,559 discloses a table arrangement of the kind under consideration in which the lower portion comprises a box-like member to be seated on a steering wheel. Such an arrangement would ordinarily defy arresting against rotation relative to the steering
10 wheel. However, an upper table member may in this arrangement be moved into a horizontal disposition. The adjustment mechanism for defining the relative angular position of the table member and the box-like support member comprises leg members perforated by a plurality of
15 apertures and axially aligned opening in the box-like support member for receiving a common pin. The pin is ordinarily stored within the box-like support member. Not only is this a rather cumbersome adjustment arrangement, it also is inconvenient for the legs may protrude
20 into the space occupied by the legs of the occupant of the vehicle, thus impeding entry into and egress from the vehicle.

OBJECTS OF THE INVENTION

It is a primary object of the invention to provide a
25 collapsible or foldable table unit for use in an automotive vehicle which is of simple by aesthetical pleasing construction.

A further object of the invention is to provided a table unit of the kind herein set forth which is sturdy
30 in its collapsed as well as erected condition.

Yet another object of the invention is to provide a table unit of the kind suspendable from the steering

wheel of a vehicle in a plurality of selective radial and horizontal dispositions.

It is also an object of the invention to provide a table unit with a simple but effective and safe adjustment mechanism which allows selective adjustability of the table top relative to its support structure.

Other objects will in part be obvious and will in part appear hereinafter.

BRIEF DESCRIPTION OF THE SEVERAL DRAWINGS

10 The novel features which are considered to be characteristic of the invention are set forth with particularity in the appended claims. The invention itself, however, in respect of its composition and manufacturing techniques, together with other objects and advantages thereof, will be best understood from the following description of preferred embodiments when read in conjunction with the drawings, in which:

Fig. 1 is a perspective side view from below of a first embodiment of a table unit in accordance with the invention;

Fig. 2 is a perspective side view of the table of Fig. 1 seen from above;

Fig. 3 is a perspective side view from above of a second embodiment of a table unit in accordance with the invention;

Fig. 4 is a perspective view, with parts broken away, of the table of Fig. 3 in its collapsed condition; and

Fig. 5 is an view of the interior of the table unit.

30 DETAILED DESCRIPTION OF THE SEVERAL EMBODIMENTS

In the first embodiment shown in perspective in Figs. 1 and 2, a lid serving as a table top 1 is pivotally connected at its forward edge to a receptacle member 3 by means of hinges (not shown). The lower surface of the table top 1 and the upper surface of the receptacle member 3, hereinafter sometimes referred to as lower member, are provided with complementary upstanding marginal lips which, in effect, form recesses. The table top 1 and the receptacle 3 thus respectively form complementary lid and bottom of a container which may be used to store any desired article.

The table top 1 may be pivoted relative to the receptacle or lower member by a predetermined angle α so that even though the lower member 3 may in use be disposed at an inclination, the table top 1 may nevertheless be disposed substantially horizontally. In order to arrest the angular disposition α , there is provided between table top 1 and lower member 3 an adjustment fixture comprising a support strut 4 pivotally mounted at one of its ends to the underside of the table top 1, by means not shown, and which may be set to rest against the upper surface of the lower member 3. The different angular dispositions α of the table top 1 relative to the lower member 3 are a function of the pivotal positions of the support strut 4.

A mounting fixture 5 is slidably connected to the lower surface of the lower member 3 by a feather and groove connection 6. The relative position of the mounting fixture 5 relative to the lower member 3 may be arrested by means not shown but well known in the art. The mounting fixture 5 is provided with hooks 7 adapted to be placed over peripheral portions of a steering wheel 10 (shown in phantom) of a vehicle when the lower member 3 is positioned thereon. The hooks 7 may be shaped, or may be made of a resilient material, to engage the steering

wheel with sufficient friction to prevent movement of the table unit relative to the steering wheel. The hooks may also be hingedly mounted so that they may be folded into the lower member into a substantially flush relationship with surrounding surface portions thereof. The proximity of the mounted table unit to the driver of the vehicle is determined by the extent to which the mounting fixture 5 has been moved out of the lower member 3. A groove 8 and a recess 9 are provided within the surface of the table top 1 to prevent spilling of liquids over the driver or dashboard of the vehicle, by securing mugs or bottles in the recess 9.

The reference characters used in describing the second embodiment of the invention shown in Figs. 3 to 5 will be the same as those previously use but raised by 10. The table top 11 and the lower member 13 of the second embodiment are connected to each other by hinges 21 depicted at a front portion 12 of the table unit which faces away from the user when the table unit is hung on a steering wheel. In this embodiment, the support struts 14 are a plurality of bent wires 22 pivotally mounted in a simple manner on the undersurface 24 of the table top 11. The table top 11 and the lower member 13 may be form of a polymeric material, such as high impact polyethylene, but it will be understood that any other material may be used to equal advantage. Accordingly the mounting brackets (not shown) of the support struts 14 may preferably be integrally formed with the table top 11, by an injection molding process. The support struts 14 are aligned with toothed racks 25 formed in the upper surface of the lower member 13 and may be received therein when the table top 1 is erected. In Fig. 3 the support struts 14 are shown to be set into the rack 25; in Fig. 5 the support struts 14 are folded against the undersurface 24 of the table top 11.

The mounting fixture 15 of the second embodiment of a table unit is seen to be a wire-like loop member 17 shaped to fit over a steering wheel 10. Preferably, the points of engagement of the loop 17 with the steering wheel 10 are spaced relatively far apart in order to ensure a safe position of the table unit upon the steering wheel 10. The loop 17 is substantially U-shaped having two straight legs 29 connected by a hanger portion 27 and provided with an angularly bent portion 28 disposed within the lower member 13. The hanger 27 is bent into a configuration approximating the curvature of a steering wheel and is attached to extensions of the legs 29 disposed normal to the surface of the lower member 3 and connected to the legs 29 by branches extending therefrom in opposite directions in parallel to the plane of the lower member 13. As seen in Fig. 5, the legs 29 are slidably mounted in slide bearings 32 above the bottom 26 of the lower member 13. The position of the legs 29 shown in Fig. 5 corresponds to the position of the mounting fixture 15 shown in Fig. 4. To assume their withdrawn position as shown, the legs 29 are pulled out by a distance indicated in Fig. 5 by "x". In this position, the angularly bent portions 28 abut against abutments 33.

A lock 30 is provided between the table top 11 and the lower member 13 so that the container formed by the table top and lower member may be locked.

Within the lower member 13, there are provided partition walls 34 to provide separate compartments for articles to be stored therein. Similar or complementary partition walls 35 are formed in the undersurface of the table top so that the compartments will be closed in the collapsed condition of the table unit. These partition walls also serve to increase the stability of the arrangement. Optionally, the partition wall may be provided with gaskets or resiliently compressible coatings to

provide water-proof compartments.

The table unit in accordance with the invention offers numerous advantages over prior art table units. Not only may it be used as a table when mounted on the
5 suspended from the steering wheel of an automobile, but it may also be used as a container or receptacle for many different items. For instance, it may be used to store flatware, plates and items of food; or it may be used to store literature. It may be taken as a piece of luggage
10 to be packed and unpacked anywhere. Thus, the table unit may serve an additional function which in certain circumstances may be invaluable. It is, of course, possible to dress the outward appearance and, indeed, the internal lay-out of the table unit to suit any particular purpose.
15 It may double as a suitcase or picnic basket, its lid functioning as a table. It may be made of polymeric material, wood, metal or processes natural materials. It may be laminated with suitable cover materials such as fabrics or leather. And it may be used to conceal from
20 third parties whatever its owner wishes to conceal.

In accordance with the invention the table unit is at one of its surfaces provided with hooks adapted to engage peripheral portions of a steering wheel at the side thereof facing a driver. While such hooks are known
25 in principle (see, for instance, German Utility Model 1,867, 782), the invention offers a significant improvement by hooks which are covered by a resilient or high-friction material, or which are wedged on the steering wheel, to prevent the table unit from sliding around the
30 steering wheel which is otherwise locked against rotation by disengaging the ignition key, for instance. In accordance with the invention it would also be possible to provide a plurality of snap-fit clamps or a flexible or resilient annulus to engage the steering wheel. However,
35 the table unit being substantially independent of its

mounting fixture, only the latter need be adjusted or shaped to suit given steering wheel configurations.

Another advantage is derived from a mounting fixture including a slide for adjusting the extent to which it
5 may be withdrawn from the table unit for adjusting the proximity to which the table unit may be moved toward its user, given the degree of inclination of the steering wheel. It may be adjusted such that the table may be used a writing surface, or it may be positioned to allow
10 its user to eat from a plate without having to bend over it in an unnatural manner.

In this respect, another advantage is derived from the fact that the slide comprises a groove and feather arranged parallel to the lower member of the table unit.
15 Preferably, the groove and feather arrangement is provided between a flat member which forms a part of a suspension unit for the table, and the bottom of the lower member.

Alternatively, the slide arrangement may be constituted by a wire-like loop of generally U-shaped configuration the arms of which are slidably arranged within the lower member and are provided with intermittent brake or arresting means. The member connecting the arms on the outside of the table unit is preferably shaped for
25 use as a carrying handle as well as for fitting over a steering wheel. The loop, sometimes referred to as a hanger, is preferably resilient and is provided with flared end sections for cooperating with corresponding locating or arresting apertures in the lower member. It
30 is thus possible to provide in the lower member a plurality of stops to accommodate withdrawal and setting of the hanger at various distances outside of the table unit. In particular, if the hanger is formed of a resilient metal or plastic and if the lower member is formed of

plastic the bearing or slide surfaces in the lower member may be configured to receive the hanger in a press-fit or snap-fit manner. By placing the arms of the hanger inside of the table unit, elements which would otherwise protrude excessively from the table unit are effectively avoided.

In another advantageous embodiment of the invention, the top and lower members of the table unit are interconnected by a hinge and may thus be folded together. It is thus possible, with the hinge being remote from the user, to align top and lower members such that the top is disposed substantially horizontally regardless of the inclination of the steering wheel of a vehicle. Alternatively, the top may be aligned at any desired inclination to make use of it as a writing surface or to prevent spilling over the dashboard of a vehicle.

For arresting the orientation of the top relative to the lower member there is provided between the bottom surface of the top and the upper surface of the lower member, remote from the hinge, a support fixture which is pivotally journaled in one of the top or the lower member and which may rest, when the table unit is unfolded, against the other of the top and lower member. By folding down the support fixture, top and lower members can be folded into their collapsed state.

Preferably, the top member or the lower member, as the case may be, is provided with indentations or apertures for selectively arresting the support fixture in a plurality of angular positions to defined the disposition of the table top relative to the lower member. Where the table unit is made of plastic material, as by an injection molding process, the indentations or apertures may be formed integrally. Otherwise, such indentations may be provided by inserts affixed to the appropriate part of

the table unit.

The support fixture may advantageously be formed as a U- or V-shaped wire loop provided at its arms with flared-out portions for pivotal mounting and resilient retention in opposing apertures provided in one of the top and lower members of the table unit. The connection between the arms may then be placed in any one of the indentations or apertures in the other of the top and lower members.

10 In accordance with a further advantageous embodiment of the invention, partition walls may be provided on the upper surface of the lower member to provide pockets or compartments for the orderly storage of articles.

15 Preferably, such partition walls in the lower member are either of sufficient height, or are complemented by corresponding partition walls in the lower surface of the top member, to provide enclosed individual compartments in the collapsed condition of the table unit. It is within the ambit of the invention to water-proof the interior of the table unit, or individual compartments therein, by providing appropriately placed gaskets or by matching surfaces of appropriate resilience. The partition walls may either be integrally formed with the table unit in which case they contribute to the stability thereof.

20 In another advantageous embodiment of the invention, the table unit may be provided with appropriate latches so that top and lower members may be securely locked when in their collapsed condition to provide for easy transportation and to prevent undesired access by third persons.

Preferably, the table top is of generally rectangu-

lar configuration with rounded or bevelled corners and may be provided with a circumferential groove and other indentations to prevent spilling and to provide secure placement of articles on its surface.

5 The invention will be understood by those skilled in the art not to be limited in its use or application to the examples described herein. It may be equally useful and usable in all conveyances provided with steering wheels or other structures on which the table top may be
10 suspended.



What is claimed is:

1. A foldable table unit for use in an automotive vehicle or the like including a steering wheel, comprising:
 - 5 means for forming a table top,
 - means for supporting said table top means;
 - means for pivotally connecting said table top means to said supporting means for movement between open and closed positions;
 - 10 means for maintaining selective angular orientations between said table top means and said supporting means;
 - means provided in said supporting means for releasably connecting said table unit to said steering wheel;
 - 15 means forming at least one recess in one of said table top means and said supporting means in facing relationship with the other of said table top means and said supporting means thereby to form a substantially enclosed container means when said table top means and said supporting means are in their closed position; and
 - 20 means for locking said table top means and said supporting means in their closed position.
2. The table unit of claim 1, wherein said means releasable connecting means comprises hook means adapted to
 - 25 engage said steering wheel.
3. The table unit of claim 2, wherein said hook means is adapted to engage said steering wheel at separated peripheral portions thereof.
4. The table unit of claim 3, wherein said supporting
 - 30 means comprises slide means for movably mounting said hook means, whereby the position of said table unit rela-

tive to said steering wheel is adjustable.

5. The table unit of claim 4, wherein said slide means is connected to said supporting means by a feather and groove connection.

5 6. The table unit of claim 5, wherein said slide means comprises arresting means for setting the position of the table unit relative to said steering wheel.

7. The table unit of claim 3, comprising substantially U-shaped hanger means comprising a pair of substantially
10 parallel arms slidably mounted in said supporting means and provided with means for selectively arresting said hanger means relative to said supporting means in any one of a plurality of positions, said arms being connected to each other exteriorly of said table unit by said hook
15 means.

8. The table unit of claim 7, wherein said arms extend into the interior of said container means.

9. The table unit of claim 3, wherein said pivotal connecting means comprises hinge means.

20 10. The table unit of claim 9, wherein said means for maintaining selective angular orientations comprises support means selectively erectible between said table top means and said supporting means remote from said hinge means.

25 11. The table unit of claim 10, wherein said support means is elongate and is at one of its ends pivotally connected to one of said table top means and said supporting means and is at the other of its ends selectively arrestible at the other of said table top means and said
30 supporting means.



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12. The table unit of claim 11, wherein the other of said table top means and said supporting means is provided with a plurality of sequentially positioned indentations for selectively receiving the other of said ends of said support means.

13. The table unit of claim 10, wherein said support unit comprises at least one substantially U-shaped member.

14. The table unit of claim 1, wherein said recess is provided with partition means for forming a plurality of compartments.

15. The table unit of claim 14, wherein said partition means extend into engagement with the other of said table top means and said supporting means.

16. The table unit of claim 15, wherein the other of said table top means and said supporting means is provided with partition walls placed complementarily to the partition walls in said one of said table top means and said supporting means.

17. The table unit of claim 14, further comprising means for water-proofing at least one of said compartments.

18. The table unit of claim 17, wherein said water-proofing means comprises gasket means.

19. The table unit of claim 14,7, wherein said water-proofing means comprises resilient material means adapted to be engage by said partition walls.

20. The table unit of claim 1, wherein said table top means in its face opposite said supporting means is provided with recess means extending substantially around



the periphery of said face.

21. The table unit of claim 20, wherein said table top means in its face opposite said supporting means is provided with recess means for securing articles placed
5 therein.

