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(54) **ADJUSTABLE CUP HOLDER**

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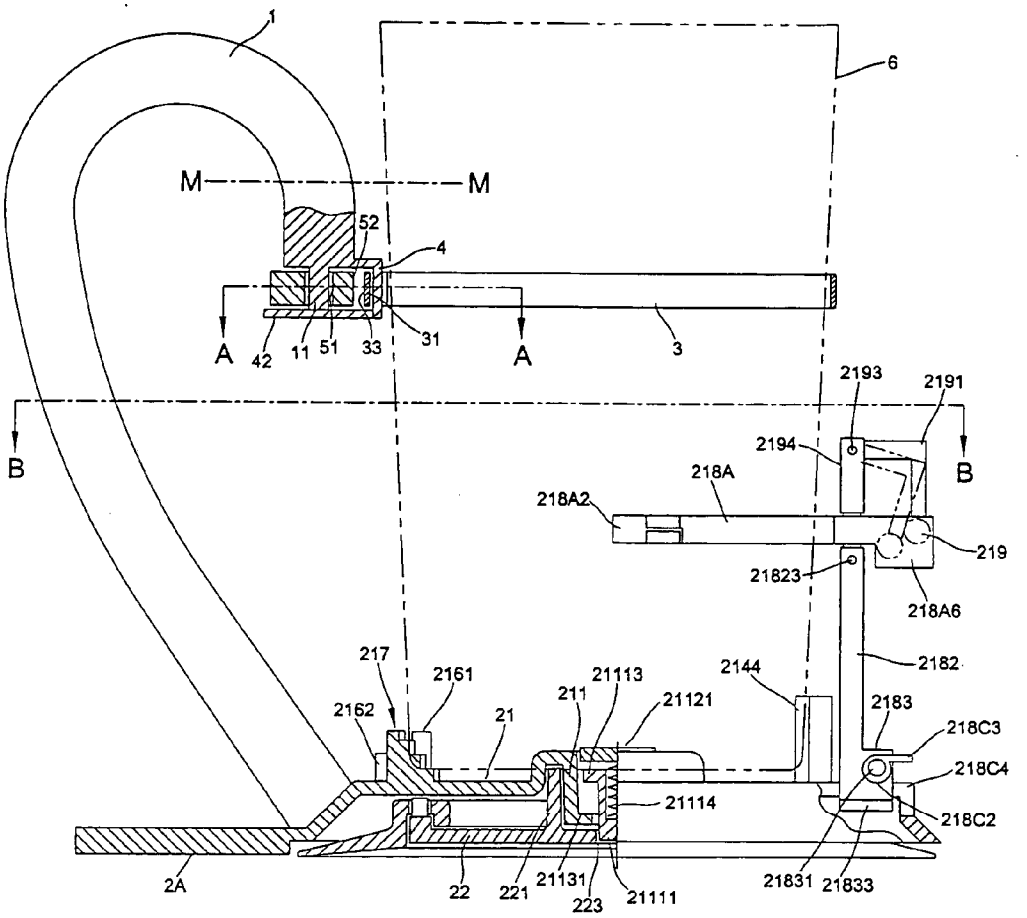
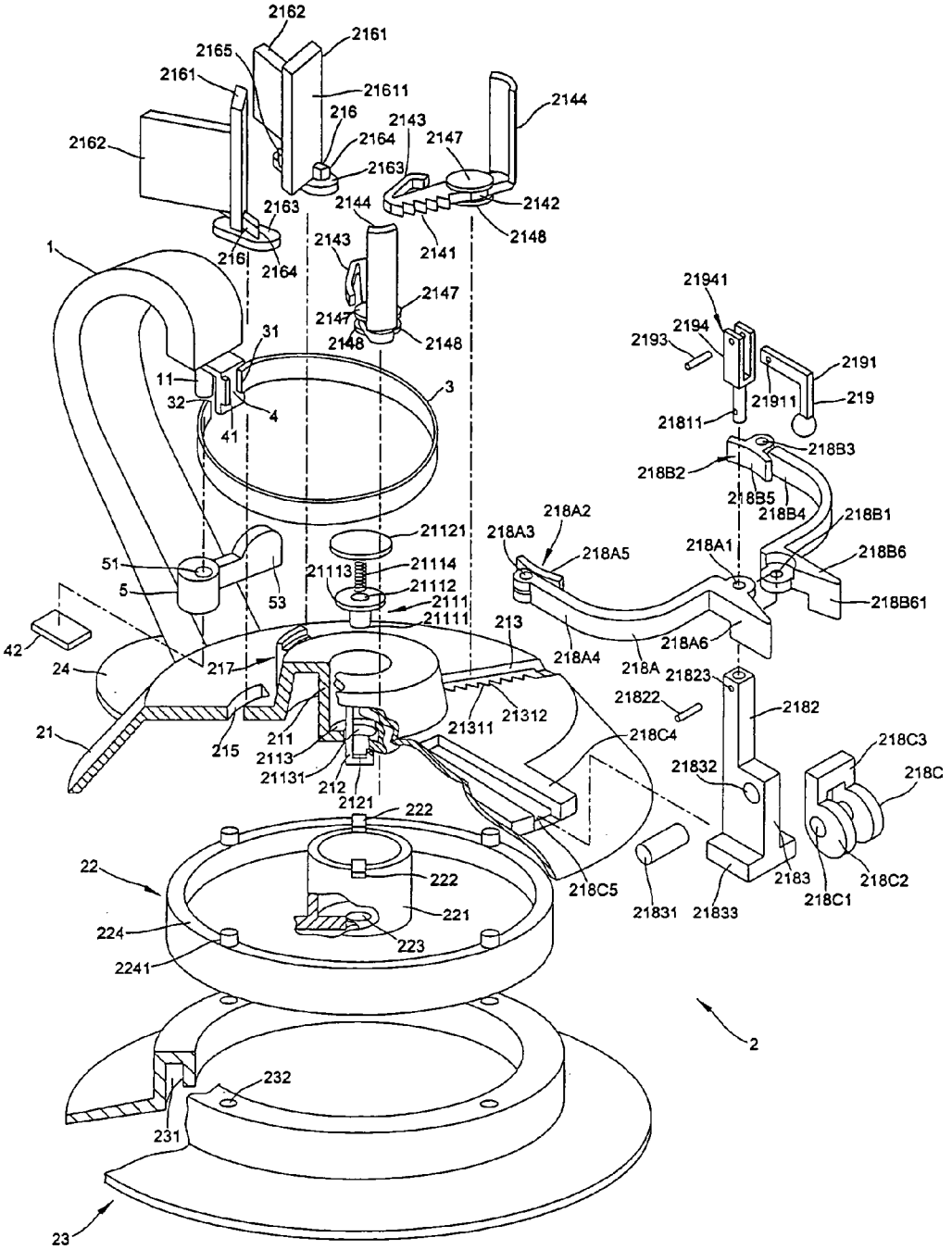
(57) **ABSTRACT**

The present invention is in related to an adjustable cup-holder, which is able to hold different types of cups. An adjustable cup-holder comprises: a bottom; a handle, a lower end of the handle connecting the bottom; and a horizontally flexible ring; wherein the flexible ring and an upper end of the handle are in an adjustable connection for different dimensions of cups.

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2148
31
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41
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217
21822
2182
21312
21311
218C4
218C3
21
211
215
2113
21131
212
2121
21832
218C
222
22
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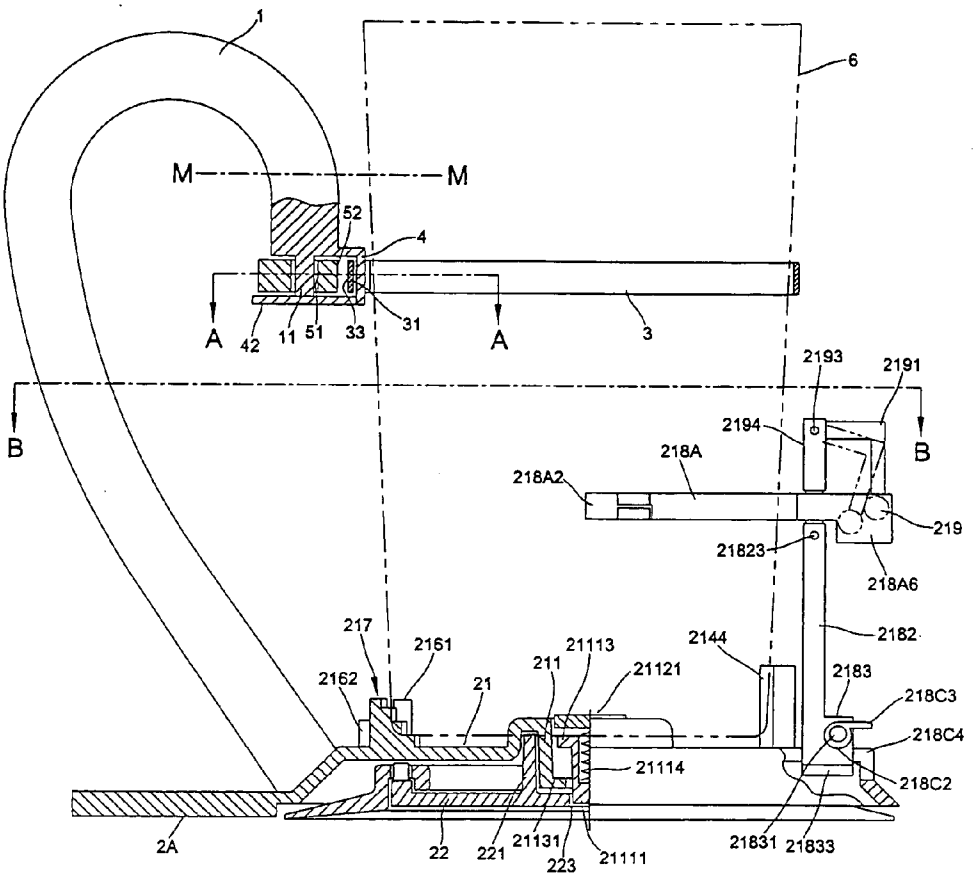
FIG.1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M
M
52
4
A
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11
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33
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A
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B
219
21823
218A6
217
2161
2162
21
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21113
21121
2144
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FIG.2

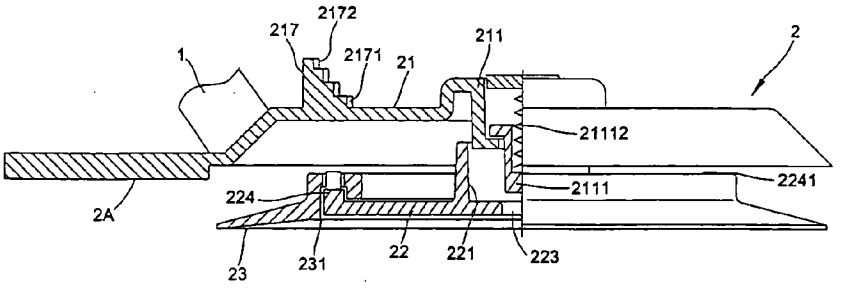
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FIG.3

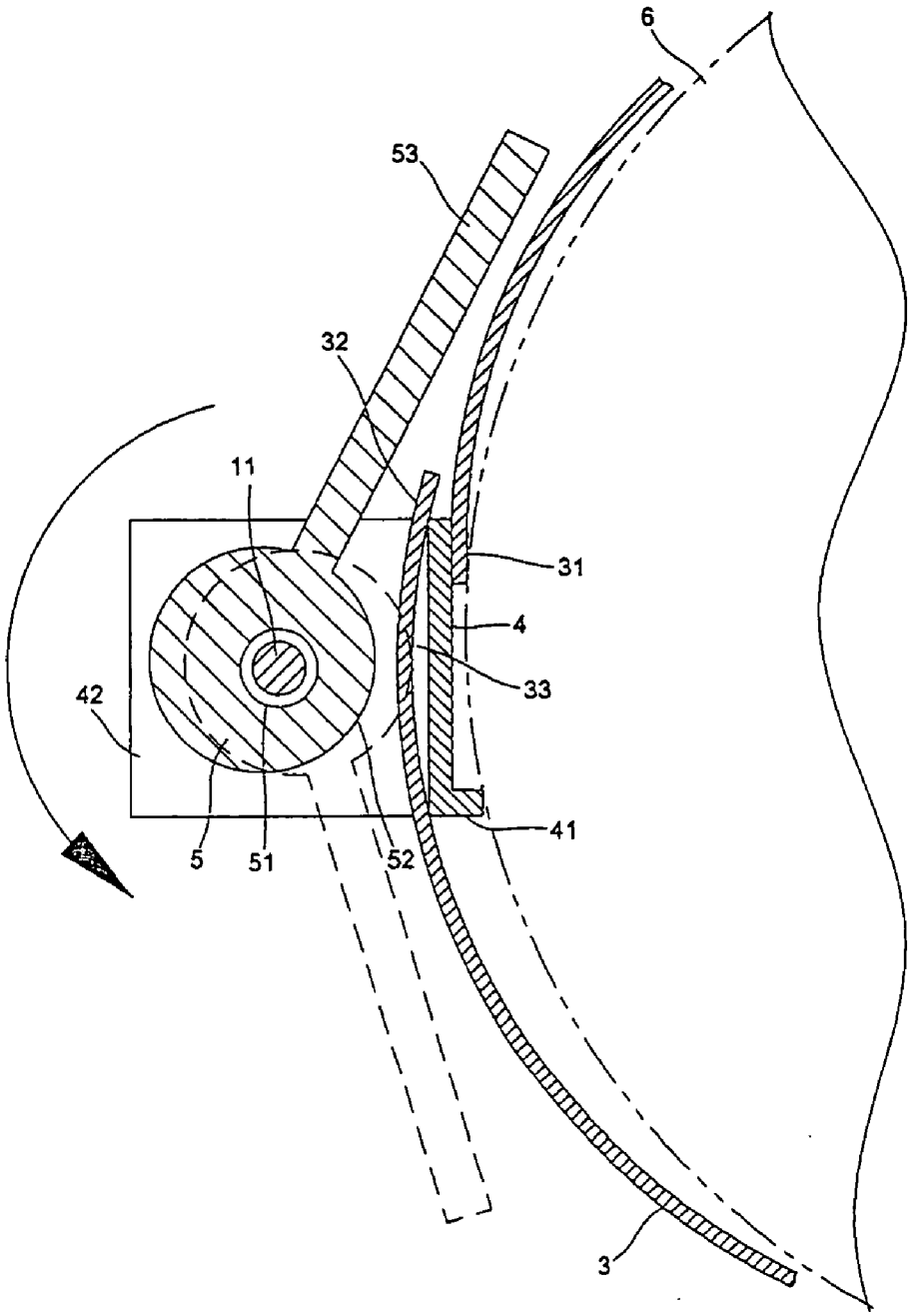

FIG.4

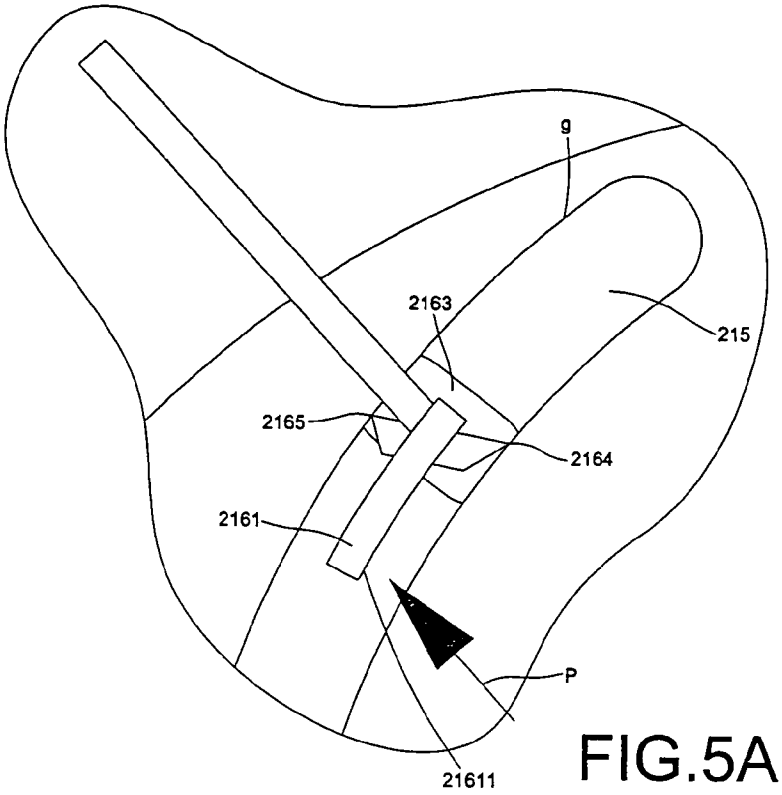
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FIG.5A

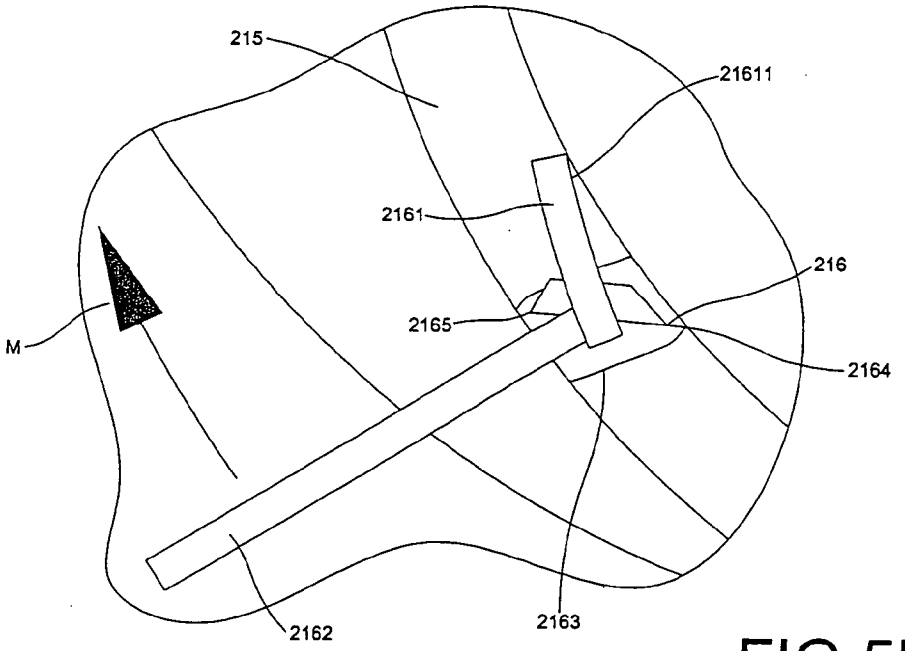
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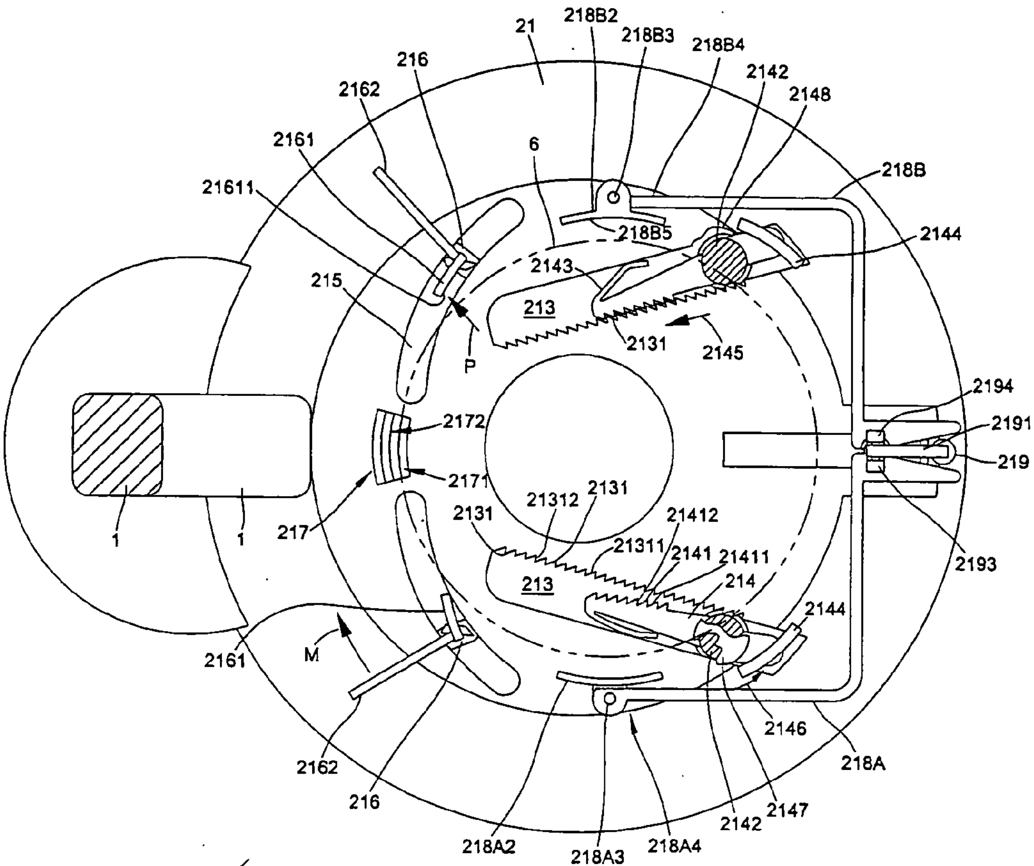
FIG.5B



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218B
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2145
P
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2172
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2193
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FIG.5

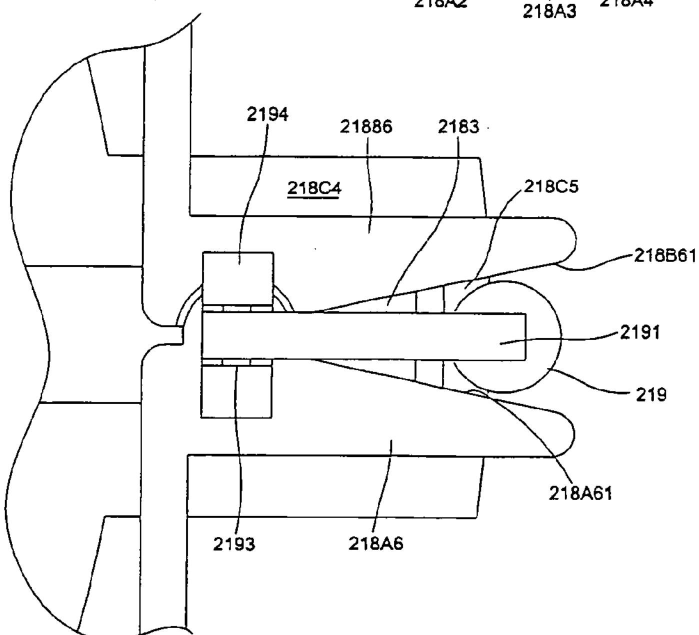

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FIG.5C

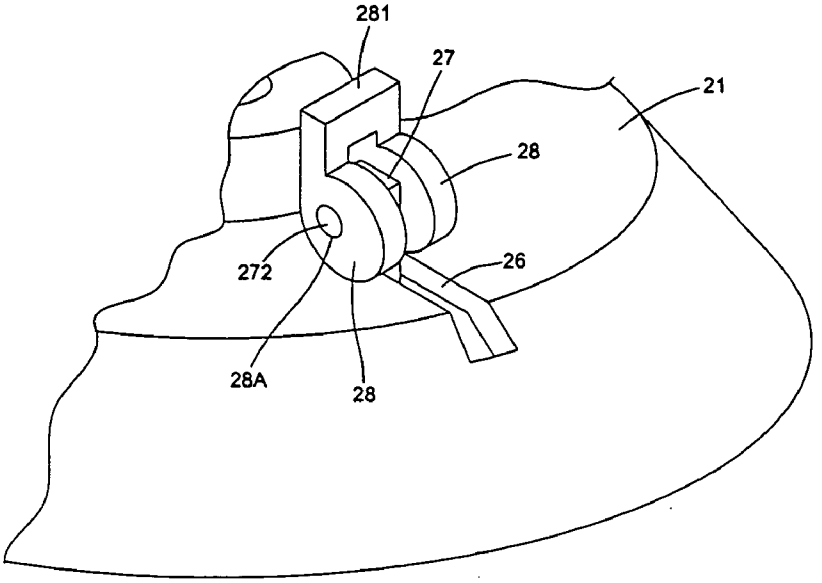


FIG.6

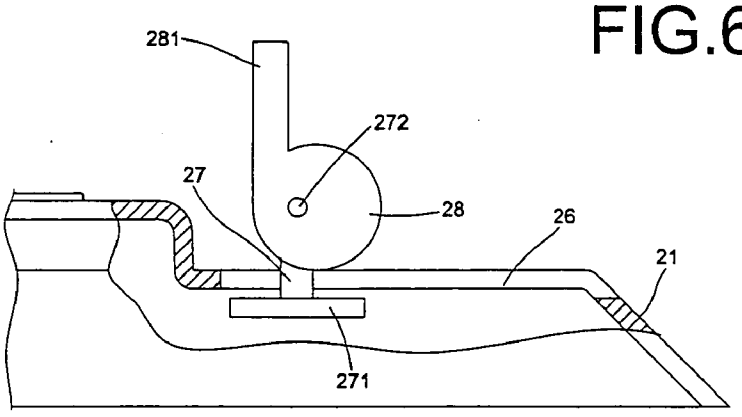


FIG.7

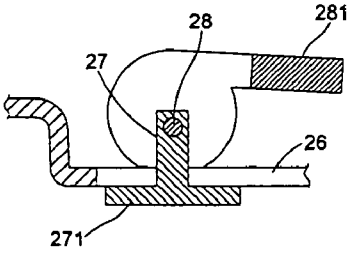
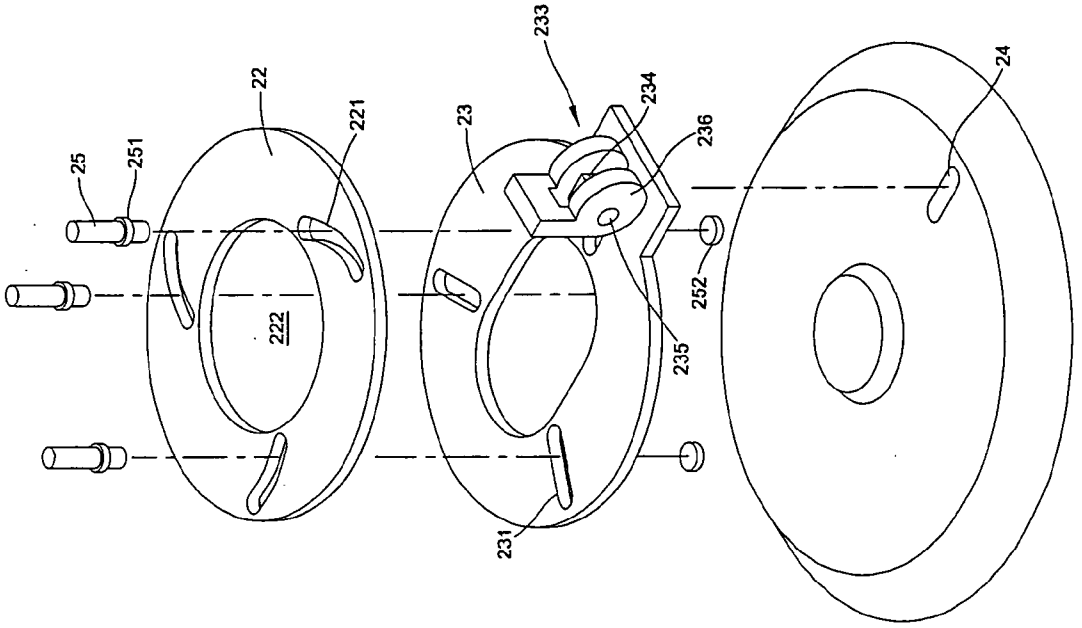
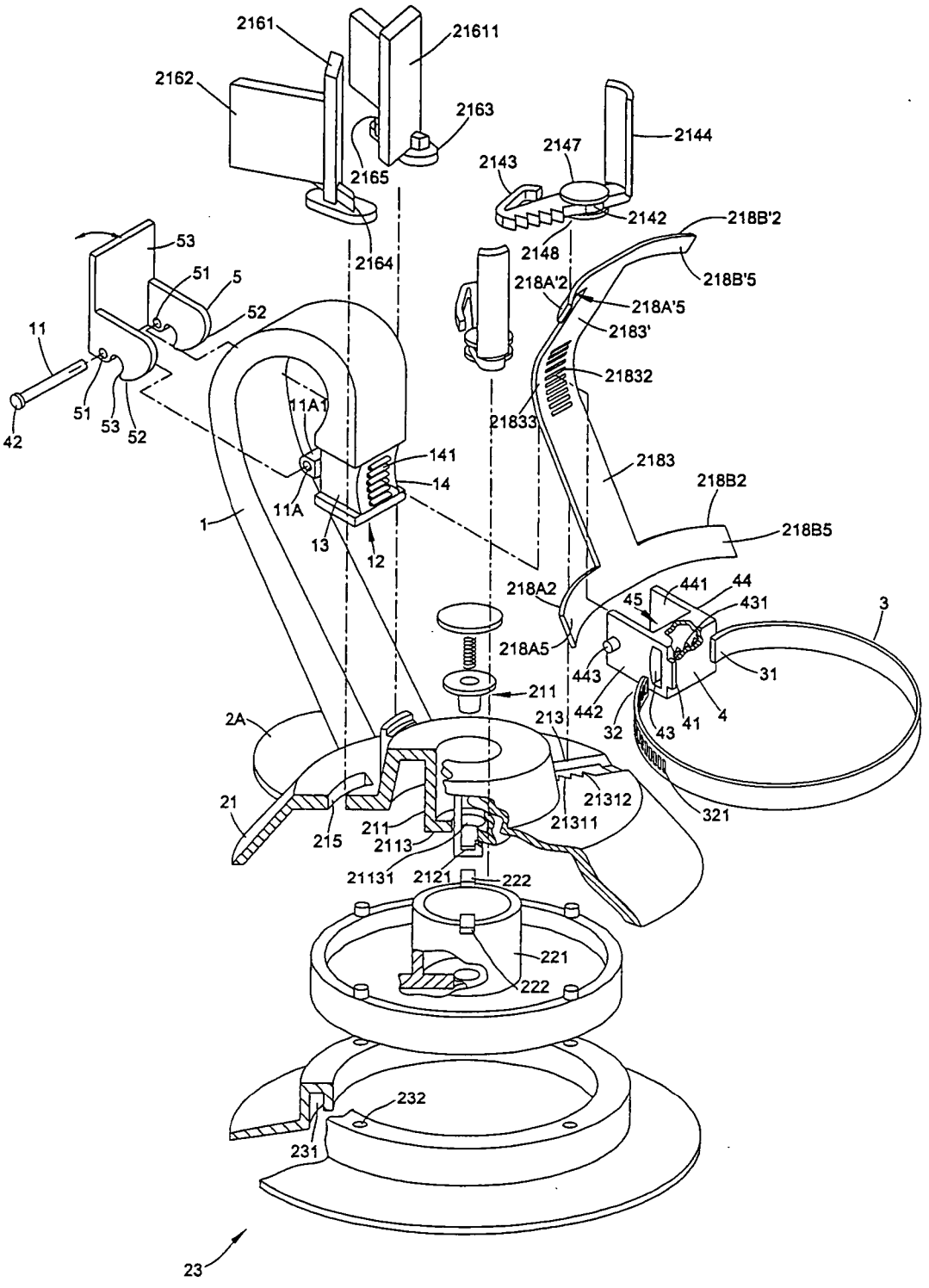


FIG.8

FIG.9

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2183'
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21833
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11A1
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431
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218A5
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211
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213
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41
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FIG.10

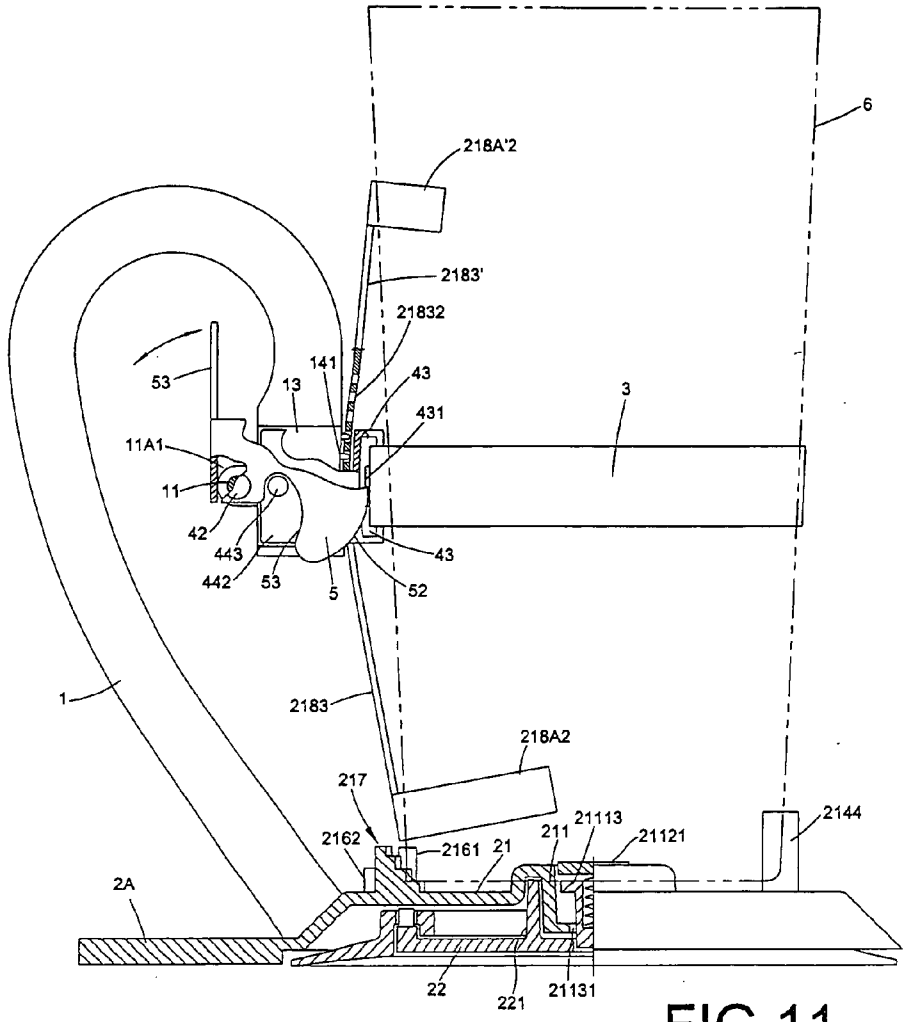


FIG.11

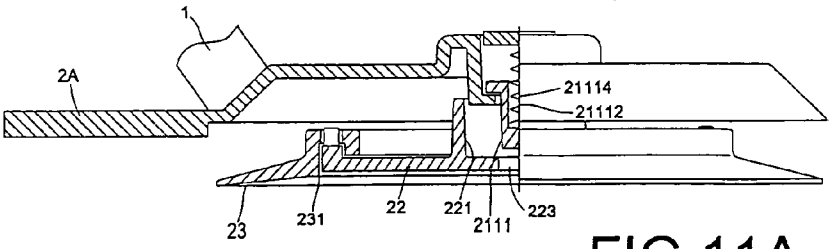
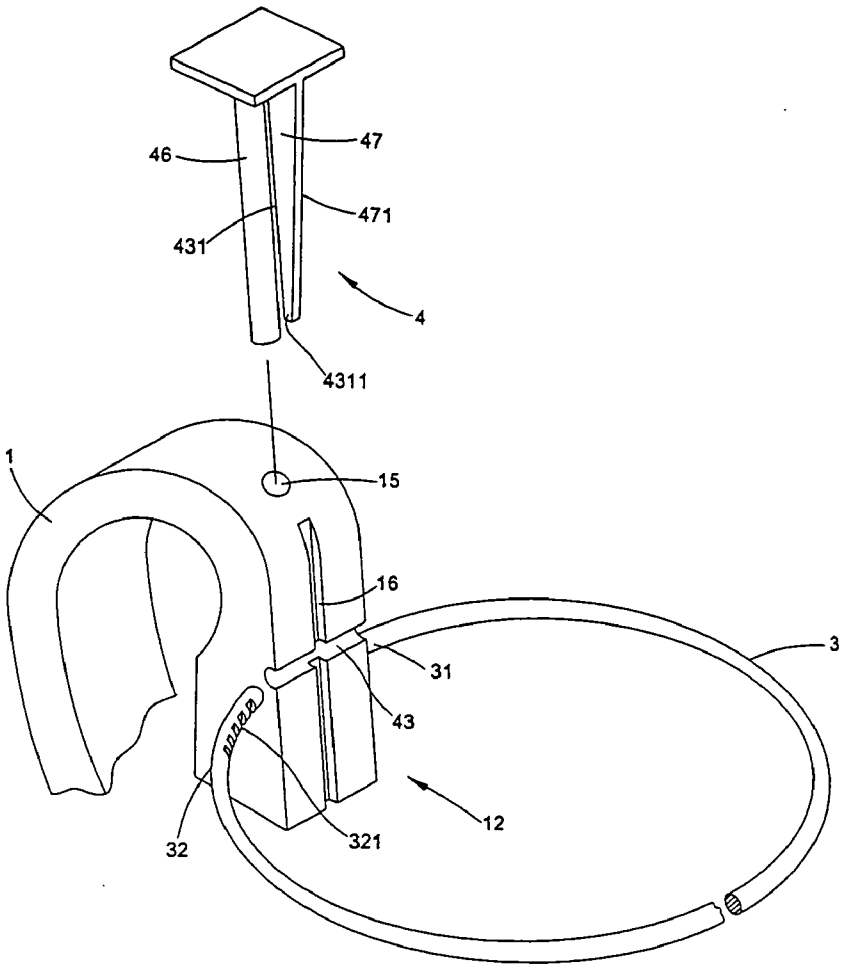


FIG.11A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4311
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12
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321

FIG.12

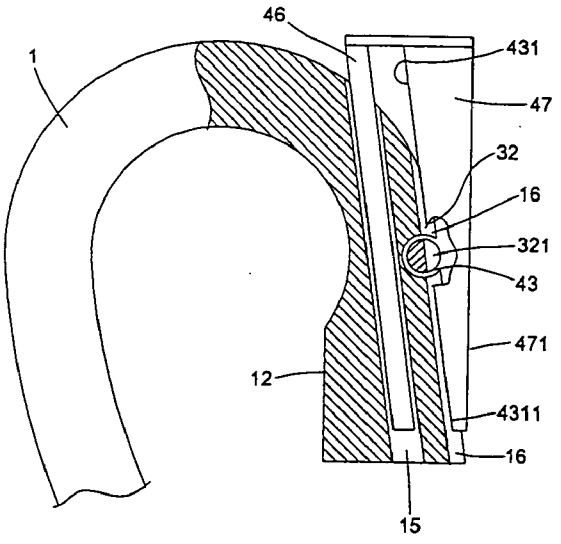
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FIG.13

ADJUSTABLE CUP HOLDER

FIELD OF THE INVENTION

[0001] The present invention is in related to an adjustable cup-holder, which is able to hold different types of cups.

BACKGROUND OF THE INVENTION

[0002] The prior cup-holders are the types of a glass cup with a handle or a two-layer cup with stainless steel material; on the other hand, a cap can be utilized to contain a cup, but the cap is installed a handle and a pad for protecting that a table surface being not damaged by hot drink in the cup; further that, a fixing structure is designed on either the table or the cup for holding. The cup-holders or the cap are not adjustable and are only for specific cups, but there are many different types of cups with for example, dimensions, figures, etc.

[0003] Besides, due to the costs of materials as glass, paper, two-layer stainless steel, and cleaning, etc., and most of cups have no handles, pads, and fixing structures, therefore other suitable materials are needed to easily and efficiently produce such components on cups. Again, as aforesaid, there are sorts of cups, so the components to fit cups may not be possible. Hence an adjustable cup-holder with a handle, a pad, a fixing structure, etc. may be a need for fitting different types of cups.

SUMMARY OF THE INVENTION

[0004] The primary objective of the present invention is to provide an adjustable cup-holder for a wide range of application to versatile cups. The cup-holder has a handle and is made of plastic, alloy, metals, etc. It is then that the cup-holder is manufactured with low technology and low cost, and thus a pad, a fixing structure, etc. can be made as well. The paper cup or the glass cup contained in the cup-holder is either replaced or cleaned.

[0005] According to the present invention, the cup-holder comprises a bottom; a handle, which lower end connects the bottom; and a horizontally flexible ring; wherein, the flexible ring connects an upper end of the handle for containing different dimensions of cups.

[0006] According to the present invention, any type of cup is easily put into and taken off from the cup-holder, further that, cups are not turned over due to the features of adjustment and fixing structure, thus the present invention is capable of applying to different sorts of cups.

BRIEF DESCRIPTION OF THE DRAWINGS

[0007] **FIG. 1** is a perspective and exploded view of a first embodiment of an adjustable cup-holder of the present invention;

[0008] **FIG. 2** is a partial sectional view of the first embodiment of the adjustable cup-holder of the present invention;

[0009] **FIG. 3** is a partial sectional view of a bottom portion structure of the first embodiment of the adjustable cup-holder of the present invention, showing a state of the bottom portion structure being raised;

[0010] **FIG. 4** is a section view along a line A-A in **FIG. 3**, showing a horizontally flexible ring fixing structure of the first embodiment of the adjustable cup-holder of the present invention;

[0011] **FIG. 5** is a top view of the first embodiment of the adjustable cup-holder of the present invention;

[0012] **FIG. 5A** and **FIG. 5B** represent another embodiment of a structure fixing an outer side of a cup lower end of the present invention;

[0013] **FIG. 5C** represents a second embodiment of a structure fixing an outer side of a cup lower end of the present invention;

[0014] **FIG. 6**, **FIG. 7** and **FIG. 8** represent a third embodiment of a structure fixing an outer side of a cup lower end of the present invention;

[0015] **FIG. 9** represents a fourth embodiment of a structure fixing an outer side of a cup lower end of the present invention;

[0016] **FIG. 10** is a perspective and exploded view of a second embodiment of the adjustable cup-holder of the present invention;

[0017] **FIG. 11** is a partial sectional view of the second embodiment of the adjustable cup-holder of the present invention;

[0018] **FIG. 11A** is a partial sectional view of a bottom portion structure of the second embodiment of the adjustable cup-holder of the present invention, showing a state of the bottom portion structure being raised;

[0019] **FIG. 12** is a perspective and exploded view of a third embodiment of the adjustable cup-holder of the present invention;

[0020] **FIG. 13** is a partial sectional view of the third embodiment of the adjustable cup-holder of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0021] According to a first embodiment of **FIG. 1** to **FIG. 8**, a lower end of a handle **1** is mounted on a top cover **21** of a bottom **2**, an upper end of the handle **1** connects a flexible ring **3**. A central portion of the top cover **21** is a cylindrical body **211** protruding downward. The cylindrical body **211** is put into a socket **221** of a chassis **22** of the top cover **21** for moving up and down. A wall of the cylindrical body **211** has two stopping slots **212** (partial stopping slot **212** is viewed in **FIG. 1**, another stopping slot **212** is blocked by the cylindrical body **21** and therefore cannot be seen), the stopping slots **212** symmetrically cooperate with stopping portions **222** located on an upper portion of the socket **221** of the chassis **22**. Thus, the stopping portions **222** can move up and down in the stopping slots **212**. While the top cover **21** is raised and the stopping slots **212** is thus moved upward, a lower edge **2121** of the stopping slots **212** touches the stopping portions **222**; continuously the top cover **21** is lifted up, the stopping slots **212** hook up the stopping portions **222** to take the chassis **22** off. The stopping slots **212** and the stopping portions **222** function to prevent the disassembling of the top cover **21** and the chassis **22**.

[0022] A central portion of the cylindrical body **211** of the top cover **21** is a plug **2111** moving up and down, a lower end **21111** of the plug **2111** goes through a hole **21131** of a cylindrical body bottom portion **2113** for stopping an air through hole **223** located on a central portion of the socket **221** of the chassis **22**. A flange **224** around the chassis **22** encloses a ring slot **231** of a sucker **23**, therefore the sucker **23** and the chassis **22** are connected and sealed each other. Four small columns **2241** of the flange **224** are inserted into four holes **232** on the sucker **23** for fixing for avoiding that the sucker **23** being taken off.

[0023] A spring **21114** is above the plug **2111**, and an upper end of the spring **21114** is against a small round cover **21121** of an upper hole **2112** of the cylindrical body **211**, a lower end of the spring **21114** is located into a dent **21112** of a central portion of the plug **2111**. Therefore, the spring **21114** can push the plug **2111** downward. The diameter of a flange **21113** on the upper end of the plug **2111** is larger than the hole **21131**. While the plug **2111** is inserted into the air through hole **223**, the sucker **23** can absorb the surface of a table to fix the chassis **22**, as shown in **FIG. 2**. While the top cover **21** is raised until the cylindrical body bottom portion **2113** touches the flange **21113** of the plug **2111**, the plug **2111** is pressed by the spring **21114** and then blocks the air through hole **223**. The distance for raising the top cover **21** up is a safety design to avoid the air through hole **223** being opened due to a little movement of the sucker **23**. Continuously the top cover **21** has being raised, the cylindrical body bottom portion **2113** can then lift the flange **21113** of the plug **2111**. Hence the air through hole **223** is opened, air goes into the sucker **23** by way of the air through hole **223**, and the sucker **23** is not in vacuum to make the whole cylindrical body bottom portion be lifted very easily.

[0024] Due to the handle **1** is aside of the adjustable cup-holder, it may be strong enough, therefore the materials shall be heavy enough as well. The gravity of the cup-holder focuses on the rim of the bottom of the cup-holder. If a cup or a paper cup is not contained in the cup-holder, the cup-holder is easily turned over, therefore a suitable place of the top cover **21** or the bottom **2** under the handle **1**, the chassis **22**, is extended a supporting plate **2**A for preventing that the cup-holder being turned over. Certainly the supporting plate **2**A can be extended from the handle **1** as well. It is can be any figure of the supporting plate **2**A, but the preferable one is a semicircle type.

[0025] A fixing end **31** of the flexible ring **3** above the handle I connects a buckling plate **4** protruding from the upper end of the handle **1**. A buckling cam **5** is set on the upper end of the handle **1**. An axial hole **51** of the buckling cam **5** cooperates with an axis **11** elongating from the upper end of the handle **1**. A free end **32** of the flexible ring **3** is in between the buckling plate **4** and the buckling cam **5**. The buckling cam **5** and the axial hole **51** are not concentric, the smaller diameter part of the buckling cam **5** is turned to be close to a portion **33**, shown as the active lines in **FIG. 4**, and the free end **32** is not clamped and moved freely. Hence, the flexible ring **3** is adjustable to suitably tie a cup **6** up. While a stirring rod **53** is poked along the direction of an arrow in **FIG. 4**, the smaller radius part of the buckling cam **5** is gradually departed from the portion **33**; otherwise the larger radius part of the buckling cam **5** is then close to the portion **33**, that is, the buckling cam **5** will touch the portion **33**, shown as the dot lines in **FIG. 4**. Please note that the portion **33** of the flexible ring **3** is moved by the buckling cam **5** due to the friction force between the buckling cam **5** and the portion **33** while the portion **33** being gradually tied up in between the buckling cam **5** and the buckling plate **4**. Besides, a protruding portion **41** of the buckling plate **4** is set to position the clamped cup **6**; further, a guard **42** is under the buckling plate **4** and the axis **11** to prevent the portion **33** falling downward, shown as in **FIG. 2**.

[0026] The flexible ring **3** is not continuous, therefore two ends of the flexible ring **3** may be overlaped each other while the flexible ring **3** surrounding the cup **6**. The diameter of the flexible ring **3** is smaller, the overlap may be longer; the diameter of the flexible ring **3** is larger, the overlap shall then be shorter. The flexible ring **3** can be adjustable to suitably fit the cup **6** and then fastened for fixing the cup **6**. There are two aspects for fastening the flexible ring **3**; the first is to tie up the front end and the rear end of the flexible ring **3**, but not limited to the beginning end and the tail end, otherwise, the positions may be a suitable location around the front end and another suitable location around the rear end; further, there is not only the fastening of the front end and the rear end, but also that the front end is mounted on a bracket and the rear end is mounted on somewhere of the bracket; secondly, it is to fasten the flexible ring **3** and the cup-holder together. Although the present invention discloses that the end of the flexible ring **3** connects the upper end of the handle **1** and another end is an adjustable free end, on the other hand, two ends being free ends shall be another embodiments as well. As aforesaid embodiment, the two free ends are to be clamped in between the buckling plate **4** and the buckling cam **5**. A couple of holes are punched on both the free front end and the free rear end, and a stick is through the holes for fixing different types of cups. Such way can be used as belts, braces, etc.

[0027] There are many ways to tie the cup-holder and the flexible ring **3** up, that is, a clamping mechanism mounted on a position of the flexible ring **3** is able to connect the flexible ring **3** and the cup-holder; alternatively, using a stick to go through the holes on both the flexible ring **3** and the cup-holder. The flexible ring **3** and the cup-holder are separate, thus they are convenient to clean, but many components may be careful for keeping and using.

[0028] Besides, the buckling cam **5** can be rotated by the axis **11** through the axial hole **51** and elongated upward from the handle **1**, shown as in **FIG. 2**. The structure of the first embodiment is that to draw a dot line M-M for the axis **11**, the buckling cam **5**, the buckling plate **4** and the flexible ring **3**, and the dot line M-M is a mirror, thus the mirror is reflected upward, continuously to decorate the handle **1** shall be done for structure. Otherwise, the buckling cam **5** can be rotated by the axis **11** through the axial hole **51** and elongated horizontally from the handle **1**, shown as in **FIG. 1**. The structure of the second embodiment is that to horizontally put the axis **11** and connect the axis **11** and the end of the handle **1**, continuously the buckling cam **5** and the stirring rod **53** are still on the horizontal axis **11**, therefore to stir the stirring rod **53** is either to tie the flexible ring **3** up or loose it.

[0029] There are some possibilities that the cup is still shaken even if the cup is tied up by the flexible ring **3**. Hence, there is a need to settle some fasteners under the lower portion of the cup. The adopted way is to bind the

lower portion of the cup by means of the flexible ring **3**, and the buckling plate **4** of the flexible ring **3** is suitably set on the bottom portion **2113** or the bottom **2** of the handle **1**. Due to the bottom **2** is fastened with the cup, the more convenient, reliable and economical way is to install some fasteners on the bottom **2**. Due to that the bottom **2** is under the cup originally, therefore the simple way is to set some fasteners on the bottom **2**. The fasteners have a couple of baffles protruding upward to hold the surrounding edge of the bottom **2**, and the baffles are divided into two types, one is fixing type, another one is movable type. The fixing type of the baffles are designed as ladder figure for different diameters of cups. The ladders are closer to the center of the bottom **2**, the ladders are lower. Such that, smaller cups are located into lower positions of the baffles. No matter what cups are located into lower or upper positions, cups are held tightly. Further, the organized shape of the baffles can be the type of reverse taper figure. Hence, while the cup is applied by more power into the baffles, the cup is more tied up. The bias angle of the reverse taper figure is closer to 90° , the cup is fixed more easily. More, the surface of the baffle can be covered by soft material, and the bottom **2** is hard to move while the bottom **2** being sunk into the soft material. The aforesaid two figures of the baffles may be installed some positions surrounding the bottom **2**, preferably a pair of baffles are located on two sides of the handle **1**, and they are symmetrical.

[**0030**] The movable type of the baffles are settled on the bottom **2** for holding the cup as well, a movable base is under the baffles, and a couple of tracks are on the bottom **2** for the movable base riding on. The movable base has a temporarily fixing mechanism so as to fix the movable base on the bottom **2** while the movable base moving to a certain position, continuously the baffles are capable of holding the cup.

[**0031**] Please refer to figures, and following will describe the movable type of the baffles first, and then the fixing type of the baffles. In **FIG. 5**, the movable type of the baffles **2144** are arranged on a pair of line-tooth fasteners **214** and protruding upward thereon, and the baffles **2144** are curved to fit with cups. The top cover **21** has two serrate slots **213** with the line-tooth fasteners **214**. Serrate line teeth **2141** of the line-tooth fasteners **214** buckle serrate line teeth **2131** of the serrate slots **213** up. Around a central portion of the line-tooth fastener **214** is an oscillating axis **2142**, which diameter is basically equal to the width of the serrate slot **213**. To oscillate the two ends of the line-tooth fasteners **214**, the center of the oscillating axis **2142** is a support point for the oscillation. A spring piece **2143** of the line-tooth fastener **214** touches the wall of the serrate slot **213**, therefore the serrate line teeth **2141** is pushed to match with the serrate line teeth **2131** by the spring piece **2143**. Two sets of the serrate slots **213** and the line-tooth fasteners **214** are laid out symmetrically, shown as **FIG. 5**, which are two portions, one is upper, the other is lower. The spring piece **2143** of the upper line-tooth fastener **214** spreads to push the serrate line teeth **2141** to the serrate line teeth **2131**. The right end of the lower line-tooth fastener **214** is twisted counterclockwise, the spring piece **2143** of the lower line-tooth fastener **214** is in the state of pressure, thus the serrate line teeth **2141** are completely off from the serrate line teeth **2131**. Each line-tooth has a bevel edge and a right angle edge (including almost vertical angle). While pushing the line-tooth fastener **214** along a direction of an arrow **2145**, the bevel edge **21411** of the serrate line teeth **2141** slips the bevel edge **21311** of the serrate line teeth **2131** and moves forward; while the baffle **2144** is close to the external edge of the lower end of the cup **6** (shown as a dot circle line), and therefore the serrate line teeth **2141** match with the serrate line teeth **2131**, and now the right angle edge **21312** of the serrate line tooth **2131** is against the right angle edge **21412** of the serrate line tooth **2141**, the line-tooth fastener **214** can not move along the opposite direction of the arrow **2145** so as to the baffle **2144** being capable of claming the cup **6** tightly. On the other hand, for the lower line-tooth fastener **214**, to stir the right end of the lower line-tooth fastener **214** along a direction of an arrow **2146** is to let the spring piece **2143** be pressured, the serrate line teeth **2141** take off from the serrate line teeth **2131** continuously. The lower line-tooth fastener **214** is free to move in the slot **213** for bigger cups.

[**0032**] A round upper baffle **2147** and a round lower baffle **2148** are individually set beyond and below the oscillating axis **2142**. Both the baffles are wider the slot **213** for clamping thereon, the lower line-tooth fastener **214** can then moves back and forth in the slot **213**, and not loosed as well.

[**0033**] A pair of arc slots **215** are arranged on the top cover **21**, and two arc sliding blocks **216** are in the two arc slots **215** respectively, and sliding back and forth therein. Each of the arc sliding blocks **216** extends a stopping plate **2161** upward, and a clamping surface **21611** of the stopping plate **2161** may clamp the cup **6**. In **FIG. 5B**, while the sliding block **216** moves along a direction of an arrow M, the stopping plate **2161** is close to the cup **6** gradually, and continuously the clamping surface **21611** presses on the cup **6**. Due to the angle of the arc slot **215** and the tangential of the cup **6** being very small, the pressure from the cup **6** to the stopping plate **2161** as the arrow P in **FIG. 5A** is to stop the arc sliding block **216** so as to clamping the cup **6** tightly. A stirring plate **2162** is set beside the stopping plate **2161** for pushing the arc sliding block **216**. To prevent the arc sliding block **216** being separated, a protruding block **2163** is installed under the arc sliding block **216**.

[**0034**] Shown as in **FIG. 5A** and **FIG. 5B**, the arc sliding block **216** has two sharp tips **2164** and **2165**, and therefore the arc sliding block **216** is defined as a converse clamping block. While a pushing force along the direction of the arrow M is applied, the converse clamping block is then loosed to move. Otherwise, another pushing force opposite to the arrow M or the arc sliding block **216** being applied by a force as the direction of the arrow P in **FIG. 5A**, the arc sliding block **216** is moved clockwise, and the two sharp tips **2164** and **2165** are respectively against an arc edge g and the wall of the arc slot **215**, thus the arc sliding block **216** is affixed in the arc slot **215**, and the stopping plate **2161** is capable of blocking the cup **6** off.

[**0035**] In **FIG. 6** to **FIG. 8**, the baffle **28** is applied broadly by changing its configuration, such as an eccentric cam. The top cover **21** has a narrow slot **26** with a sliding block **27**, the sliding block **27** has a flange **271** beneath for preventing to take off. A horizontal axis **272** goes through an axial hole **28**A of the baffle **28** for the rotation of the baffle **28**. The sliding block **27** moves to the outer edge of the cup **6** firstly, and a vertical shaft **281** is changed to be a horizontal shaft secondly, therefore the surface of the baffle **28** presses on the top cover **21** so as to that the top cover **21** being clamped between the baffle **28** and the flange **271**. It is then that the

sliding block **27** and the baffle **28** with the eccentric cam figure hold the cup **6** firmly. There are four such structures as aforesaid mounted on the top cover **21**, alternatively one or two such structures cooperate with other bottom structures described above for grasping the cup **6**.

[**0036**] Another embodiment shown as in **FIG. 9**, the movable base of the baffle **28** is shaped as a cylinder, the slot and the temporarily fixing mechanism are combined to be an arc seam and a rectangular hole; further that, adding a positioning device is the way to hold the cup **6**. A round adjustable plate **22** has three symmetrical involute arc seams **221** and a central hole **222**. A moving plate **23** under the adjustable plate **22** has three symmetrical radial seams **231** and a central rectangular hole **232**. A cam positioning device **233** is established between the moving plate **23** and the handle **1**, same as shown in **FIG. 7**. A T-type bonding block **234** which vertical portion is slightly turned by way of the connection of the axis **235** and the eccentric cam **236**. The horizontal portion of the bonding block **234** is through a long hole **24** of the top cover **21** for pressing onto an inner surface of the top cover **21**. Three fastening pins **25** through the involute arc seams **221** and the radial seams **231** can be moved therein. A ring **251** is on each of the fastening pins **25**, and a lower portion of the fastening pin **25** is through the involute arc seams **221** and the radial seams **231** to connect a small round plate **252**. Due to the ring **251** and the small round plate **252** being larger than the seams, so the pin **25** is not taken apart and the adjustable plate **22** and the moving plate **23** will not be dismantled. To modulate the adjustable plate **22** clockwise, the fastening pins **25** are close to the center of the adjustable plate **22** simultaneously for holding the cup **6**; otherwise the fastening pins **25** are off the center for releasing the cup **6**. The long hole **24** of the top cover **21** allows the T-type bonding block **234** moving back and forth therein, that is, the moving plate **23** can be moved as well so as to that the centers of the three fastening pins **25** being in proportion to the axial line of the cup **6**, hence the cup **6** is held correctly while moving the moving plate **23** and the adjustable plate **22**.

[**0037**] Besides, at least one ladder type of fixing block **217** is set on a suitable position of the top cover **21** adjacent to the lower end of the cup **6**, and there is only one fixing block **217** shown in **FIGS. 1, 2, 3** and **5**. As a matter of fact, the plurality of fixing blocks **217** can be mounted on a plurality of locations of the top cover **21** around the lower end of the cup **6**. A condition of a smaller bottom portion **2113** of the cup lets the cup be inserted deeper, and an inner side surface **2171** of the fixing block **217** then touches the cup; another condition of a larger bottom portion **2113** of the cup makes another inner side surface **2172** of the fixing block **217** touches the cup. Such structure can suitably stop the cup shaking within a smaller scope, and it is an auxiliary for the product due to the simple structure. Further, the organized shape of the fixing block **217** can be the type of reverse taper figure. Hence, while the cup is applied by more power into the fixing block **217**, the cup is more tied up. The bias angle of the reverse taper figure is closer to 90° , the cup is fixed more easily. More, the surface of the fixing block **217** can be covered by soft material, and the bottom **2** is hard to move while the bottom **2** being sunk into the soft material. Since the edge of the bottom **2** is similar to be wrap around when the edge being sunk into the soft material.

[**0038**] As shown in **FIG. 1**, **FIG. 2**, **FIG. 5** and **FIG. 5C**, the top cover **21** has one left clamping arm **218**A and one right clamping arm **218**B. An axis **2181** penetrates through an axial hole **218**A**1** of the left clamping arm **218**A and an axial hole **218**B**1** of the right clamping arm **218**B, then going through a hole **21821** of a clamping arm frame **2182**. A pin **21822** is through a hole **21823** of the clamping arm frame **2182** and a hole **21811** of the axis **2181**. The axis **2181** is affixed on the clamping arm frame **2182**. A spherical non-return member **219** connects a L-type non-return arm **2191**. A pin **2193** is through a hole **21941** of a U-type non-return arm frame **2194** and a hole **21911** of the non-return arm **2191** so as to that the non-return arm **2191** pivotally connecting the non-return arm frame **2194** for oscillation. The non-return arm frame **2194** is fastened on an upper end of the axis **2181**. A left clamping member **218**A**2** and a right clamping member **218**B**2** pivotally connect a left clamping arm end **218**A**4** and a right clamping arm end **218**B**4** by way of a hinge **218**A**3** and another hinge **218**B**3**. Therefore two arc surfaces **218**A**5** and **218**B**5** can be turned to fit with the figure of the cup. The non-return arm **2191** is lifted up while in use, then the spherical non-return member **219** oscillates toward right. Since two inner side surfaces **218**A**61** and **218**B**61** of a left non-return plates **218**A**6** and a right non-return plates **218**B**6** connecting the two clamping arms **218**A and **218**B are bevel surfaces, the distance between the two clamping arms **218**A and **218**B is longer while the spherical non-return member **219** being closer to right. The two clamping arms **218**A and **218**B are then opened, and the two inner side surfaces **218**A**61** and **218**B**61** continuously hold the spherical non-return member **219**. Meanwhile to put into the cup, the two clamping arms **218**A and **218**B press toward the cup, constantly the two non-return plates **218**A**6** and **218**B**6** are opened and the non-return member **219** falls down by gravity and oscillates toward left, shown as the dot lines in **FIG. 2**. The non-return plates **218**A**6** and **218**B**6** stop opening after the cup is clamped by the two clamping arms **218**A and **218**B, the non-return member **219** oscillates toward to the inner side surface **218**A**61** of the non-return plate **218**A**6** for fastening the cup. Such that, the two clamping arm **218**A and **218**B cannot be opened in reverse so as to keeping the cup being held tightly. For picking the cup up, to lift the non-return arm **2191** up is the first action, the non-return member **219** moves toward right, therefore the two non-return plates **218**A**6** and **218**B**6** are released to open the two clamping arms **218**A and **218**B. Alternatively, a plurality of springs can be set on two end portions of external sides of the two clamping arms **218**A and **218**B to replace the spherical non-return member **219**.

[**0039**] According to a second preferred embodiment of **FIG. 10** to **FIG. 11A**, the structures of lower portion and the bottom are same as the first preferred embodiment, and it will not be described further. The same and similar parts between the first and the second embodiments are marked same numbers.

[**0040**] As shown in **FIG. 10**, a free end **32** of a flexible ring **3** has a plurality of rectangular holes **321**. The free end **32** can insert into a through hole **43** of a buckling head **4**, and a plurality of protrusions may be designed in the through hole **43**, the protrusion is as a tooth **431**, which can buckle the rectangular holes **321** for the free end **32** being not out of the buckling head **4**. Instead, the protrusions as teeth **431** can also be settled on the flexible ring **3**, and the protrusions cooperate with a concave in the buckling head **4**. Such

design may be possible to approach the example shown in **FIG. 10**. Two flexible plates **44** of the buckling head **4** are within two side surfaces **13** of a handle head **12** and moving horizontally. An axis **11** penetrates through an axial hole **51** of a buckling cam **5** and connects a hole **11**A of a protruding member **11**A**1** of the handle head **12** so as to connect a buckling cam **5** and the handle head **12**. A flange **42** of the axis **11** is to prevent the axis **11** taking off the buckling cam **5**. Two inner sides **53** of the buckling cam **5** are shaped as a hook figure respectively. As shown in **FIG. 11**, clockwise turning the buckling cam **5** may hitch two pin members **443** to pull the buckling head **4** toward left. Two outer sides **52** of the buckling cam **5** are gradually pressed to close to the free end **32** of the flexible ring **3** (the free end **32** has penetrated through the through hole **43**, and two opens of the through hole **43** has a free end respectively), the free end **32** is pressed toward right so as to make the rectangular hole **321** be put around the tooth **431** for not loosing the flexible ring **3** from the tooth **431**. An I-type binder made by elastic steel is in between the buckling head **4** and the handle head **12**, a lower portion **2183** of the binder has a left clamping member **218**A**2** and a right clamping member **218**B**2** extended from two sides of the lower portion **2183** toward the cup, and two elastic curve surfaces **218**A**5**, **218**B**5** touch the cup. An upper portion **2183'** of the binder has a structure similar to and shorter than the lower portion **2183** (the shorter length is designed for not bothering drinking water), and it will not described any further hereinafter. The figure of the binder is not limited by I-type and possible to be any other type, such as T-type.

[**0041**] The cup is put into the flexible ring **3** and tied up firmly by stirring the buckling cam **5** while in use. The cup may be shaped as cylinder-type or with different tapers, an axial central line of the cup may be deflective after the cup is tied up firmly. Hence, a structure for angle adjustment is a need. The solution is to design an arc surface **14** on the handle head **12** and other two arc surfaces **21833** and **45** in between a middle of the binder and an inner surface of the buckling head **4**. The I-type binder is able to adjust deflective angles of the cup before tying the cup up. For ensuring the adjusted angle to be stable, a plurality of teeth **141** of the arc surface **14** can buckle a plurality of long holes **21832** up. Otherwise, if the buckling head **4** is power enough, the teeth **141** and the long holes **21832** can be ignored.

[**0042**] A third preferred embodiment is shown as in **FIG. 12** and **FIG. 13**, a lower portion of the handle and a plurality of components on the lower portion may be the same as the second embodiment, so they are not drawn in **FIG. 12** and **FIG. 13**.

[**0043**] A free end **32** of a flexible ring **3** with a round profile is settled a plurality of indentations **321**. The free end **32** penetrates through a through hole **43** of a handle head **12**. A cylindrical guiding column **46** of a buckling head **4** is capable of going through a guiding hole **15** of the handle head **12**. A hook edge **431** of a wedge hook portion **43** of a wedge plate **47** inserts into one of the indentations **321** of the flexible ring **3** and a guiding slot **16** of the handle head **12**. A guiding rail is composed of the guiding column **46**, the guiding hole **15**, the wedge plate **47** and the guiding slot **16**, and downward insertion of the buckling head **4** may be with a bias angle toward right, shown as in **FIG. 13**. The free end **32** going through the through hole **43** is capable of adjusting the flexible ring **3**; more, a lower end **4311** of the hook edge **431** through the indentation **321** is to buckle the free end **32** up. Hence the cup is put around by the flexible ring **3**. While the wedge plate **47** moving further downward, a compress edge **471** of the wedge plate **47** moves toward right and presses to the cup gradually. It is then that the wedge plate **47** is as a chock to be within the handle head **12** and the cup for fixing the cup.

[**0044**] While the invention has been described by way of example and in terms of a preferred embodiment, it is to be understood that the invention is not limited thereto. To the contrary, it is intended to cover various modifications and similar arrangements and procedures, and the scope of the appended claims therefore should be accorded the broadest interpretation so as to encompass all such modifications and similar arrangements and procedures.

1. An adjustable cup-holder comprising:

a bottom;

a handle, a lower end of the handle connecting the bottom; and

a horizontally flexible ring;

wherein the flexible ring and an upper end of the handle are in an adjustable connection for different dimensions of cups.

2. The adjustable cup-holder as cited in claim 1, wherein an end of the flexible ring connects the handle to form a fixing end, another end of the flexible ring is a free end, the free end is adjustable and fixed on the handle or the fixing end of the flexible ring.

3. The adjustable cup-holder as cited in claim 2 further comprises a buckling plate protruding from the upper end of the handle and a buckling cam setting on the handle, the fixing end of the flexible ring connects the buckling plate, a space between the buckling plate and the buckling cam is provided for the free end, the free end of the flexible ring is fixed to a position by way of turning the buckling cam.

4. The adjustable cup-holder as cited in claim 3, wherein the buckling cam is mounted on an axis elongated from the handle vertically or horizontally.

5. The adjustable cup-holder as cited in claim 3 further comprises a stirring rod mounted on the buckling cam.

6. The adjustable cup-holder as cited in claim 3 further comprises a protruding portion mounted on the buckling plate for keeping the cup on a correct position.

7. The adjustable cup-holder as cited in claim 3 further comprises a buckling head mounted on the upper end of the handle, a through hole is formed in the buckling head for inserting the free end of the flexible ring.

8. The adjustable cup-holder as cited in claim 7, wherein the through hole with a protrusion is formed in the buckling head, a plurality of holes are settled on the free end of the flexible ring to match with the protrusion for fixing the free end of the flexible ring.

9. The adjustable cup-holder as cited in claim 7, wherein a plurality of dents are formed in the buckling head, and a protrusion is formed on the free end of the flexible ring to match with one of the dents for fixing the free end of the flexible ring.

10. The adjustable cup-holder as cited in claim 8, wherein the protrusion is a tooth, a figure of the hole or the dent match with a figure of the tooth.

11. The adjustable cup-holder as cited in claim 8 further comprises the buckling cam on a handle head, the buckling cam matches with a horizontal protruding portion of the buckling head by means of a guiding structure, and then turning the buckling cam can fix the free end of the flexible ring in the through hole of the buckling head firmly.

12. The adjustable cup-holder as cited in claim 11, wherein the guiding structure is a pair of hook structure on the buckling cam, the buckling head has a pair of pin members and a pair of flexible plates, the flexible plates can move horizontally on the handle head, the hook structure hitches the two pin members of the buckling head.

13. The adjustable cup-holder as cited in claim 12 further comprises an elastic binder between the buckling head and the handle head.

14. The adjustable cup-holder as cited in claim 13, wherein the binder has a plurality of elastic curve clamping members.

15. The adjustable cup-holder as cited in claim 13, wherein the handle head, a middle of the binder and an inner surface of the buckling head have an arc surface respectively.

16. The adjustable cup-holder as cited in claim 1 further comprises a wedge plate in between the cup surrounded by the flexible ring and an upper end of the handle, the wedge plate and the upper end of the handle cooperate each other for moving up and down so as to loosing or tying the flexible ring.

17. The adjustable cup-holder as cited in claim 16 further comprises a through hole on the upper end of the handle for inserting the flexible ring, a side of the through hole is opened for appearing the flexible ring, a wedge hook portion is set on the wedge plate, the free end of the flexible ring is tied up while inserting the wedge downward.

18. The adjustable cup-holder as cited in claim 1, wherein a top cover protruding downward and out of a cylindrical body is set on a center of the bottom, a chassis protruding upward and out of a socket is below the top cover, a sucker is mounted on the chassis for sealing, the top cover and the bottom connect each other for moving up and down and not being dismantled.

19. The adjustable cup-holder as cited in claim 18, wherein a wall of the cylindrical body has two stopping slots, the stopping slots symmetrically cooperate with a plurality of stopping portions located on an upper portion of the socket of the chassis.

20. The adjustable cup-holder as cited in claim 18, wherein a supporting plate elongated from the handle or the top cover is set under the handle.

21. The adjustable cup-holder as cited in claim 18, wherein a plurality of baffles protrudes upward and are located around a lower end of the cup on the top cover for stopping movement of the cup.

22. The adjustable cup-holder as cited in claim 21, wherein the baffle is shaped as ladder figure or bevel figure and mounted on the top cover symmetrically.

23. The adjustable cup-holder as cited in claim 21, wherein a plurality of line-tooth fasteners are under the baffles, the line-tooth fasteners are set on a plurality of serrate slots with plural serrate line teeth on the top cover and match with the serrate line teeth of the serrate slots, the line-tooth fasteners are moveably mounted on the serrate slots with plural serrate line teeth by means of an oscillating axis thereon, and around a central portion of each line-tooth fastener is an oscillating axis, a center of the oscillating axis is a support point for the oscillation, plural spring pieces of the line-tooth fasteners touch plural walls of the serrate slots, therefore the serrate line teeth of the line-tooth fasteners are pushed to match with the serrate line teeth by the spring pieces, a plurality of curve baffles are elongated upward and set on the line-tooth fasteners for blocking an outer of a lower portion of the cup.

24. The adjustable cup-holder as cited in claim 21, wherein a plurality of arc sliding blocks under the baffle are in plural arc slots respectively, and sliding back and forth therein.

25. The adjustable cup-holder as cited in claim 24, wherein outer of the baffle with the sliding blocks have plural stirring plates and protruding blocks under the sliding blocks.

26. The adjustable cup-holder as cited in claim 21, wherein a plurality of converse clamping blocks are under the baffles, and plural arc slots are set on the top cover, the converse clamping blocks are in the arc slots, each of the converse clamping blocks is loosed to move while applying a force with a direction, otherwise, applying a force with an opposite direction or a stopping plate being pressed by the cup, the converse clamping block is then against the arc slot.

27. The adjustable cup-holder as cited in claim 26, wherein each of the converse clamping blocks has two sharp tips, an outer of the converse clamping block has a stirring plate, and a protruding block is set under the converse clamping block.

28. The adjustable cup-holder as cited in claim 18, wherein a clamping arm frame is moveably mounted on the top cover, a left clamping arm and a right clamping arm are pivotally connected to the clamping arm frame, a movable non-return member is in between two tip portions of outer portions of the left clamping arm and the right clamping arm, while the non-return member moves away from the left clamping arm and the right clamping arm, the left position between two tip portions of outer portions of the left clamping arm and the right clamping arm can contain or take off the cup, otherwise, the cup is clamped tightly.

29. The adjustable cup-holder as cited in claim 18, wherein the top cover has a narrow slot with a sliding block, the sliding block has a flange beneath, an rotatable eccentric cam is mounted on the sliding block, while the sliding block is pushed to touch an outer edge of a lower portion of the cup, the sliding block is fixed firmly to stop the cup by means of turning the eccentric cam.

30. The adjustable cup-holder as cited in claim 21, wherein the baffle is shaped as pin-type, a moving plate is placed above the top cover, and an adjustable plate is mounted above the moving plate, three radial seams are symmetrically distributed over the moving plate, an outer side of the moving plate relative to the handle is set a cam

positioning device, the adjustable plate has three symmetrical involute arc seams, three pin-type baffles penetrate through the involute arc seams and the radial seams and slide therein, while the baffles hold the bottom of the cup, the cam positioning device fixes the moving plate and the adjustable plate relatively to the top cover.

31. The adjustable cup-holder as cited in claim 30, wherein the cam positioning device includes a T-type bonding block and the eccentric cam, a vertical portion of the T-type bonding block is through an axis and connects the eccentric cam, a horizontal portion of the bonding block is through a long hole of the top cover for pressing onto an inner surface of the top cover, each of the pin-type baffle has a ring located on an upper side of the adjusting plate, a lower end of the baffle penetrates through the arc seam and the radial seam to connect a small round cover, which is lager than the seams.

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