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Device for holding drinks containers, drinking vessels or
the like

The invention relates to a device according to the
precharacterising clause of the main claim.

Many devices for holding containers especially in a motor
vehicle are known. In such cases the container stands on
a supporting surface which is either arranged immovably
or folds out, and a supporting ring or the like fixes the
container laterally. Sometimes the diameter of the
supporting ring can be adapted to the size of the
container.

From publication US 5 072 909 A1 an adjustable can-holder
is known that can be installed at an appropriate location
in a motor vehicle. The can-holder has a supporting part
that folds out and has two arms, the distance between the
arms being variable in accordance with the size of the
container. There is below the supporting part a base part
which also folds out, on which base part the can stands.
When the can-holder is not in use, the supporting part
and the base part can be folded up in such a manner that
the can-holder may be stored as a flat part unobtrusively
in the motor vehicle. As the device described is not a
device that can be housed securely in a storage compart-
ment of a motor vehicle but is rather arranged at a
location in the motor vehicle appropriate to such a

device, that device requires a relatively large amount of space as regards height on account of its overall height which is determined by the diameter of the ring-like supporting part.

From DE 40 22 193 A1 there is known a device for holding a drinks container or the like especially in a motor vehicle, that device being attached in articulated manner to a central console. The holding device consists of a ring-shaped supporting part which accommodates a drinks container and of a swivel clamp, both of which can be swivelled about a first swivel axis, the swivel clamp being swivellably mounted on a swivel arm that is itself attached in articulated manner to a mounting part. The holding device is swivellable from an in-use position outside a storage compartment to a rest position inside a storage compartment. The drinks container is supported by its underside on the edge of the storage compartment. The storage compartment serves essentially only for storage of the device.

From EP 0 447 263 A2 a pull-out device is known that, similar to a music cassette, can be ejected from a slot and opened out. For this purpose, the device consists of plates articulated to each other and having openings for the purpose of holding two containers, which plates can, when collapsed, be let into the slot again. For the purposes of supporting itself, the device has an inclined support plate, the breadth of which determines the minimum overall height of the device.

In view of the fact that in motor vehicles in the region of the central console it is desirable to provide a storage compartment for various useful articles and that it must also be possible to have a device for holding containers, it is necessary to provide a device that can

be so stored even in low storage compartments that the storage compartment is still available for other purposes. This can not be ensured by the above-discussed devices.

The problem underlying this invention is to propose a device for holding drinks containers, drinking vessels or the like, which device is integrated in a storage compartment of a motor vehicle and is housed in a space-saving manner in respect of the height and depth of the device.

This problem is solved by the device having the characteristics of the main claim.

The device for holding drinks cups, drinking vessels or the like in a storage compartment of a motor vehicle has a collapsible supporting ring having a first and a second ring half. The supporting ring can be of a sturdy plastics material having suitable wall-thickness and is essentially of circular construction. The two ring halves are coupled to each other by means of horizontally-arranged hinges, for example by means of a pin on the one ring half and a corresponding recess for the pin on the other ring half. The supporting ring is as a result collapsible to a height that corresponds to half the diameter of the supporting ring. In the collapsed position, the ring halves lie adjacent to each other in a vertical position in the storage compartment, the first ring half being swivelled about a horizontal axis and the second ring half being moved towards the first ring half during a corresponding swivel action. For this purpose, there are arranged on both sides pivot guides to secure the first ring half during the swivel movement from the vertical to the horizontal position and vice versa. These can be fixed to the walls of the storage compartment or

to an additional rear wall. For the purposes of mounting and guiding the second ring half, there are on the walls of the storage compartment horizontally-arranged guide rails in which the second ring half is guided when being folded out or up and in which it is held in its end positions.

The supporting ring constructed according to the invention serves to secure the container laterally. The container rests in the vertical direction on a supporting surface that can be formed either by the base of the storage compartment or by a base that can be folded out.

The device can additionally include clamping elements which secure the container in the supporting ring in accordance with the diameter of the container.

Since it is possible as a result of the collapsed supporting ring to have a lower overall height corresponding to half the diameter, the device constructed in such a manner can be used in a low storage compartment that is located, for example, in the central console of a motor vehicle and is therefore limited in height. Once the supporting ring has been folded away the storage compartment is available for other useful articles.

Further advantageous constructions can be found in the subsidiary claims.

According to a preferred embodiment, the device has a clamping element which is spring-mounted and presses the container against one ring half. As a result a large number of container diameters can be held securely in the device without significant to and fro movement during the journey.

The clamping element is preferably so arranged below the first ring half that when a container is introduced into the ring the clamping element is pushed downwards in accordance with the size of the container. Springs arranged on the rear side of the clamping element press the clamping element against the container. The form of the clamping element is advantageously adapted to some extent to the circular form of the containers and is therefore of sickle-like shape.

In order to assist the folding movements of the ring halves into the collapsed or extended state, there are provided in the region of the hinge between the two ring halves spring elements which snap the two ring halves into their end positions and hold them in those positions, which action can be effected by means of torsion springs or tension springs. The springs are in this case so arranged that the ring halves are subjected to a force that moves the ring halves into one or other of the end positions depending on whether the pivot point of the hinge is situated above or below the points at which the springs are attached to the ring halves. In order to effect movement from one end position to the other, the user must apply a force against that spring force until the change-over point has been reached. The arrangement of the springs is dependent upon whether the hinge is moved upwards or downwards when the ring halves are collapsed from the essentially horizontal supporting position to the vertical collapsed position.

In addition there are provided stop means which support the ring halves in position as these are folded out. The stop means are arranged according to whether the hinge is swivelled upwards or downwards during the collapsing action.

In another advantageous embodiment the ring halves have inwardly-projecting annular surfaces arranged around their circumference. These are advantageously positioned at the lower end of the walls of the ring halves in order together with the inner walls of the two ring halves to accommodate larger containers resting on the annular surfaces. In this case the height of the inner walls ensures that the container is securely held, such containers being, for example, insulating flasks that do not fit inside the inner aperture of the ring and can therefore be placed on the annular surfaces. The height of the inner walls must therefore be of adequate dimensions and lies approximately in a range of from at least 1 to 1.5 cm. Resilient gripping elements for the container are additionally advantageously arranged on the inner walls, which gripping elements are expediently formed as resilient tongues having an inwardly-projecting enlargement.

In this way the device constructed according to the invention provides an elegant solution for the accommodation of a plurality of different containers while maintaining a low overall height in a storage compartment of a motor vehicle. The device itself can be manufactured inexpensively as an injection-moulded plastics article.

The invention is explained below in further detail with the help of embodiments.

Figure 1 shows a perspective view of a device for holding containers that are rested on the base of a storage compartment, in the supporting position;

Figure 2 shows a perspective view of the device

according to Figure 1 in an intermediate position ;

- Figure 3 shows a perspective view of the device according to Figure 1 in the collapsed position ;
- Figure 4 shows a plan view and a sectional view of the clamping element ;
- Figure 5 shows the device according to Figure 1 in a perspective view and cut away so that the spring for the clamping element is visible;
- Figure 6 shows the inner views of the first and the second ring halves having gripping elements;
- Figure 7 shows a perspective view of the device having a base that folds out, in the folded-out state; and
- Figure 8 shows a perspective view of the device according to Figure 7 in collapsed state.

Figure 1 shows the supporting ring 1 in its folded-out position ready to receive a container, not shown in the drawing. Similarly, for the sake of clarity, there has not been shown the storage compartment having side walls on which are fixed the guide rails 2 and the pivot guides 3. The first ring half 4 is mounted in the pivot guide 3. The second ring half 5 is mounted in the guide rails 2 by means of pivot pins 6 so that the second ring half 5 moves in longitudinal direction in the guide rails 2 and can be swivelled into the vertical position at the same time. In this embodiment the ring halves 4, 5 are swivelled downwards as can be seen from Figure 2. The two

ring halves 4, 5 are coupled by means of the hinges 8 and are held in their two end positions by means of torsion springs 7. As the axis of rotation of the hinge 8 reaches a position above the point of application of the torsion springs 7 on the ring halves 4, 5, the torsion spring 7 exerts a force that presses the ring halves into their supporting position. The two end faces of the ring halves serve as stop means as the ring halves meet. For optimum operation, the device also has an operating key 9.

Below the first ring half 4 there is arranged a clamping element 10 which is held in the position shown in Figure 1 by means of one or more springs 11 (Figure 5). On introduction of a container into the supporting ring 1, the clamping element 10 is moved downwards in accordance with the diameter of the container in such a manner that the container is pressed against the opposite wall of the supporting ring 5 by means of the clamping element 10 and is secured in this manner. By this means, containers having different diameters can be held securely in the supporting ring 1.

The two ring halves 4, 5 have a ring wall 12 at the lower end of which there is an inwardly-projecting annular surface 13. This annular surface 13 serves as a means of accommodating larger containers, such as, for example, an insulating flask, which container is held securely laterally by means of the ring wall 12, which has a minimum height of from 1 to 1.5 cm. In addition on the ring wall 12 there can be provided gripping elements 14 (Figure 6) which compensate for any clearance.

Figure 2 shows an intermediate position in which the two ring halves 4, 5 have swivelled downwards and the second ring half 5 having the pivot pins 6 in the guide rails 2 has moved in the direction of the first ring half 4.

Figure 3 shows the device in the collapsed position, the second ring half 5 having assumed its end position at the other end of the guide rail 2, the two ring halves being held in that position by means of the torsion springs 7. As the pivot point of the hinge reaches a position below the point of application of the torsion springs 7 on the ring halves, the torsion springs 7 exert a force that brings the two ring halves into their collapsed final position and holds them in that position. The height of the entire device corresponds essentially to half of the diameter of the ring in its folded-out position.

Figure 4a shows the clamping element 10 which is of sickle-shaped construction to ensure as large as possible a surface of contact with the different diameters of the containers. The pins 15 engage in the pivot guide 3 shown in the preceding Figures. Figure 4b shows a sectional view of the clamping element 10.

In Figure 5 there is shown the device described in Figure 1 having the supporting ring 1 folded out, the front guide rail being omitted and the two ring halves 4 and 5 being cut away in order to show the arrangement of the clamping element 10 and its spring 11. The spring 11 bears against an additional wall of the device or against the rear wall of the storage compartment (neither shown) in order to press the clamping element 10 against containers in the supporting ring 1.

In Figure 6 there are shown the gripping elements 14 which in the embodiment are formed by incisions 16 in the ring wall 12 so that in that region the ring wall 12 is resilient. In addition in that region there are arranged inwardly-projecting enlargements 17 which increase the

wall thickness and as a result cause the resilient ring wall regions to exert a contact pressure. Figure 6a shows the first ring half 4 and Figure 6b the second ring half 5.

Figure 7 shows another embodiment which differs from the above-described embodiment in that in addition there is folded out a base 18 that in the collapsed state (Figure 8) serves as a cover. The base 18 is swivellably mounted on a rear wall 19 which is arranged in the storage compartment. The way in which the device and the above-described elements operate is identical in all other respects, the guide rails 2 being in this case also fixed to the lateral wall of the storage compartment. The pivot guides 3 are fixed to the rear wall 19. A device of such a kind is suitable for storage compartments that have a relatively large overall height as a result of which their base is not suitable as a supporting surface for containers such as especially drinking cups or drinks cans.

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Patent claims

1. Device for holding drinks containers, drinking vessels or the like in a storage compartment of a motor vehicle, wherein the container rests on a supporting surface and a supporting ring fixes the container laterally, characterised by
a collapsible supporting ring (1) having a first (4) and a second (5) ring half which are coupled to each other by means of horizontally arranged hinges (8) and are movable from a vertical collapsed position to a horizontal supporting position in which the supporting ring is completed,
pivot guides (3) arranged on both sides to secure the first ring half (4) during the swivelling movement from the vertical to the horizontal position and vice versa, and
guide rails (2) arranged horizontally on both sides on the walls of the storage compartment, in which guide rails the second ring half (5) is mounted and guided while being folded out and up.
2. Device according to claim 1, characterised by a clamping element (10) which is spring-mounted and presses the container against one ring half (5).

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3. Device according to claim 2, characterised in that the clamping element (10) is arranged below the first ring half (4) so that on introduction of a container into the supporting ring (1) the clamping element is pushed downwards in accordance with the size of the container.
4. Device according to claim 2 or 3, characterised in that the clamping element (10) is of sickle-like form.
5. Device according to one of the preceding claims, characterised in that in the region of the hinge (8) between the two ring halves (4, 5) there are provided spring elements (7) which snap the two ring halves (4, 5) into their end positions and fix them in those positions.
6. Device according to claim 5, characterised in that there are provided stop means (20) for the ring halves (4, 5) in their folded-out supporting position.
7. Device according to one of the preceding claims, characterised in that there are arranged around the circumference of the ring halves (4, 5) inwardly-projecting annular surfaces (13) that together with the inner walls (12) of the two ring halves form a seat for larger containers resting on the annular surfaces (13), the height of the inner walls (12) ensuring that the container is firmly secured laterally.
8. Device according to claim 7, characterised in

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that on the inner walls (12) there are arranged resilient gripping elements (14) for the container.

9. Device according to claim 8, characterised in that the gripping elements are formed as resilient tongues having an inwardly-projecting enlargement (17).
10. Device according to one of the preceding claims, characterised in that on the device below the supporting ring (1) there is arranged a swivellably mounted base (18) that can bear against the rear wall (19) in the horizontal position and can be folded up into a vertical position as a cover for the device.

