

DEVICE FOR BLOCKING AN ARTICULATION AXIS IN THE HOUSING OF A CROWN MEMBER, SUCH AS A GRID OR A BUFFER, IN A ROAD PORTHOLE

FIELD OF INVENTION

The present invention relates to a device making it possible to hold captive at least one hinge pin in a joint housing of a cover element, such as a grate or a lid, intended for being mounted articulated on a support frame by the intermediary of this pin.

The articulation of such a cover element on the frame does not allow removal or extraction of the cover element from its frame.

BACKGROUND

According to prior art, the installation with non-removable articulated assembly of the cover element to its support frame consisted of setting, just before positioning of the cover element on the frame, at least one hinge pin in a housing produced in a side of the cover element near its edge for articulation to the frame and parallel to this edge. Once the cover element was positioned on its frame, an operator poured resin into the housing of the hinge pin in such a way as to push the hinge pin partially back, out of its housing, and introduce it into a strike plate of the frame that could consist of a blind hole. Once the resin hardened, removal of the hinge pin from the frame became impossible.

Such an assembly has the major disadvantage that the hinge pin can come out of its cover element housing when handling of the latter to position it on its support frame, at the risk of losing it.

The present invention aims to eliminate the above disadvantage by providing a device that allows the hinge pin to remain captive within its housing of the cover element.

SUMMARY OF INVENTION

To this effect, according to the invention, the device that allows at least one hinge pin to be held captive within a joint housing of a cover element such as a grate or a lid to be mounted articulated on a support frame by mean of this pin is characterized by the fact that it has a cotter pin attached in a removable manner in a hole of the cover element, transversely with respect to the housing of the hinge pin in such a way as to axially retain this pin in the housing against the restoring force of an elastic component mounted pre-stressed in the housing between the bottom of the housing and the end of the pin opposite that bearing on the transverse retaining cotter pin.

Preferably, the elastic return component is a helical compression spring mounted coaxially in the housing with respect to the hinge pin.

The hinge pin has a length such that after withdrawal of the cotter pin, the pin partially projects from the cover element under the action of the restoring force of the elastic component.

The hinge pin is advantageously cylindrical.

The cover element can have a rectangular shape, and the housing of the hinge pin is then realized in a side of the cover element, parallel to the corresponding articulation edge of the cover element and in the vicinity of this edge.

The housing of the hinge pin and the hole of the cover element are made by casting.

The invention also relates to a cover element such as a grate or a lid, for a manhole in particular, characterized by the fact that it has a device as defined in the preceding.

The invention moreover relates to a process for installation of a cover element, such as a grate or a lid, mounted articulated on a support frame, the cover element being provided with a device as defined in the preceding, characterized by the fact that it consists of positioning the cover element on the frame with the hinge pin held captive within the cover

element housing, and withdrawing the cotter pin from the cover element in such a way as to enable the elastic component to push the pin partially back out of the housing and introduce it coaxially into a blind hole forming a strike plate in the frame.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention will be better understood and other aims, characteristics, details and advantages of it will appear more clearly in the following explanatory description in reference to the appended drawings given only by way of example illustrating an embodiment of the invention, whereby:

- Figure 1 is a view in perspective of a cover element mounted articulated on a support frame;

- Figure 2 is an enlarged view in section according to line II-II of Figure 1 and representing the device of the invention that allows retention of a hinge pin in the cover element; and

- Figure 3 is a view in section similar to that of Figure 2 and representing the hinge pin released into its position for articulation of the cover element to the frame.

DETAILED DESCRIPTION

Referring to the figures, reference 1 designates a frame that has a rectangular shape and on which cover element 2 is articulated cover element 2 that in this case consists of a grate, with it well understood that cover element 2 can consist of a cover or lid.

Frame 1 is sunk into the pavement in such a way that cover element 2 allows the closing of a manhole.

Edge 3 of cover element 2 is mounted articulated to corresponding edge 4 of frame 1 according to articulation axis X1, X2 extending parallel to edges 3, 4.

The articulation of cover element 2 to frame 1 is a type that does not allow removal or extraction of element 2 from its frame.

Cover element 2, in its position for closing frame 1, is housed in recess 5 of frame 1 and can rest on peripheral joint 6 housed in the recess in order to reduce the noise of fitting element 2 in its frame.

According to the invention, before the articulated fitting of cover element 2 into its frame 1, cover element 2 is provided with at least one cylindrical hinge pin 7 that is held captive in joint housing 8 realized in cover element 2 and opening on one side of the latter.

Housing 8 is realized in articulation edge 3 of element 2 from the side of the element extending parallel to this edge and coaxially with respect to articulation axis X1, X2.

Hinge pin 7 is held captive in its housing 8 by cotter pin 9 attached in a removable manner in hole 10 of cover element 2 and realized perpendicularly to the longitudinal axis of housing 8, cotter pin 9 thus passing through this housing.

Cotter pin 9 exerts an axial force on an end of pin 7 such that the opposite end of pin 7 compresses helical compression spring 11 between that end and bottom 8a of housing 8.

Cotter pin 9 partially projects from the upper surface of the articulation edge of cover element 2 so that it can be grasped and manually withdrawn from this element.

Preferably, housing 8 and hole 10 of cover element 2 are made by casting.

With cotter pin 9 holding hinge pin 7 captive in housing 8 of cover element 2, the latter can be stored and/or handled without risk of losing hinge pin 7.

The end of articulation edge 3 of cover element 2 opposite that holding hinge pin 7 captive in its housing 8 is articulated in a conventional manner to frame 1 by a hinge pin connected, coaxially with respect to pin 7, either with this end of articulation edge 3 or with the corresponding edge of frame 1, so that this pin can engage freely, during fitting of cover

element 2 onto frame 1, in a strike plate on the edge of frame 1 or on the end of articulation edge 3 of element 2.

The fitting of the articulation of cover element 2 onto frame 1 already emerges from the preceding description and will now be explained.

First, an operator grasps cover element 2 in order to position it on frame 1 while introducing the hinge pin of element 2 on the opposite side from captive hinge pin 7 into the corresponding strike plate of frame 1 or of the end of articulation edge 3, and he then positions element 2, completely supported in recess 5 of frame 1, as represented in Figure 1.

Then, the operator manually, with a tool if necessary, withdraws cotter pin 9 from cover element 2 to release pin 7 in such a way that, under the action of the restoring force of spring 11, it partially comes out of housing 8 in order to automatically engage in corresponding strike plate 12 of frame 1, with strike plate 12 possibly consisting of a blind hole.

In this way, the articulation of cover element 2 to its frame 1 is rendered unremovable in order to prevent extraction of element 2 from this frame.

The device of the invention has a very simple and inexpensive design since it uses commercial components.

Claims

1. A device that allows at least one hinge pin (7) to be held captive within joint housing (8) of cover element (2), such as a grate or a lid, to be mounted articulated on support frame (1) by means of this pin, characterized by the fact that it has cotter pin (9) attached in a removable manner in hole (10) of cover element (2) transversely with respect to housing (8) of hinge pin (7) in such a way as to axially retain this pin in housing (8) against the restoring force of elastic component (11) mounted pre-stressed in housing (8) between bottom (8a) of the housing and the end of pin (7) opposite that bearing on transverse retaining cotter pin (9).

2. A device according to Claim 1, characterized by the fact that the elastic return component is helical compression spring (11) mounted in housing (8), coaxially with respect to hinge pin (7).

3. A device according to Claim 1 or 2, characterized by the fact that hinge pin (7) has a length such that, after withdrawal of cotter pin (9), pin (7) partially projects from cover element (2) under the action of the restoring force of elastic component (11).

4. A device according to one of the preceding claims, characterized by the fact that hinge pin (7) is cylindrical.

5. A device according to one of the preceding claims, characterized by the fact that cover element (2) has a rectangular shape, and housing (8) of hinge pin (7) is realized in a

side of cover element (2) parallel to corresponding articulation edge (3) of cover element (2) and in the vicinity of this edge.

6. A device according to one of the preceding claims, characterized by the fact that housing (8) of hinge pin (7) and hole (10) of cover element (2) are made by casting.

7. A cover element, such as a grate or a lid for a manhole in particular, characterized by the fact that it has a device as defined in any one of the preceding claims.

8. A process for installation of cover element (2), such as a grate or a lid, mounted articulated on support frame (1), cover element (2) being provided with a device as defined in any one of Claims 1 to 6, characterized by the fact that it consists of positioning cover element (2) on frame (1) with hinge pin (7) held captive within its housing (8) of cover element (2) and of withdrawing cotter pin (9) from cover element (2) in such a way as to enable elastic component (11) to push pin (7) partially back out of housing (8) and introduce it coaxially into blind hole (12), forming a strike plate in frame (1).