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(54) **MANHOLE COVER FRAME WITH SELF LOCKING FUNCTION OF THE COVER**

SCHACHTABDECKUNGSRAHMEN MIT SELBSTVERSCHLUSSFUNKTION DER ABDECKUNG
PLAQUE DE REGARD VERROUILLAGE AUTOMATIQUE DU COUVERCLE

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Description

[0001] The present invention concerns a manhole cover frame with self-locking function of the cover of the kind indicated in the preamble of claim 1.

[0002] Manhole cover frames and well or manhole covers are made usually of cast iron, irrespective of the size. In most cases the dead weight of the cover will be so great that under normal conditions the cover cannot be opened by unauthorised persons. In practice, however, it has appeared to be a serious problem that even very large and heavy well or manhole covers can be sucked up at the passing of large vehicles. Therefore, in practice road authorities most often make requirements regarding a kind of locking function between cover and manhole cover frame. And of consideration to improved safety, most often self-locking manhole covers are used.

[0003] Self-locking manhole covers are known in many different embodiments, such as from DK-B-154 519, CH-A-448 917, SE-B-436 050, and GB-A-2 085 946. Common to these known covers are, however, that they are cumbersome to operate and often require special tools for releasing the spring-biased lock of the cover.

[0004] US-A-5 340 232 discloses a manhole cover with a frame and a grating or cover fitting flush with the frame. In order to secure the cover in such a way that it can be easily removed and put back in place, a one-piece securing element is attached to the frame, the securing element having a locking element at the end of a tab-like retaining element extending obliquely upwards. The locking element engages against a locking surface at the bottom of a recess in the surface of the grating or cover. To unluck the manhole cover, the locking element can be pulled away from the locking surface with a special tool, by way of example a pair of pliers, the retaining element being bent elastically. The securing element is mounted on the frame, embracing shoulders so that it is secured by a snap-in connection. In other words the securing element is not an integrated part of the manhole frame and the retaining element is moveable in a vertical plane.

[0005] The invention has the purpose of indicating an improved manhole cover frame with self-locking function of cover of the kind mentioned in the introduction and which by means of simple measures makes the locking function more optimal and facilitates the operation.

[0006] The manhole cover frame according to the invention is characterised in that the said locking means are constituted by a number of approximately horizontal locking members being formed in a curved internal side wall of the manhole cover frame, said locking members having the same curvature as said internal side wall, and in that said locking members are provided at a free outer end with inwardly protruding locking projections, and further in that the frame at the outer side of said locking members and spaced apart therefrom has a curved outer wall section so that a curved cavity is formed behind the resilient locking members. By means of simple measures

is hereby achieved an improved and more operation-friendly locking function which furthermore, due to the springy locking arm members being provided in the side of the manhole cover frame instead of as previously normally in the cover, will be less exposed to being damaged by use. Furthermore, it will be regarded as an advantage that the dead weight of a cover according to the invention may be minimized, so that is easier to handle. In a simple way is hereby also ensured optimal function of the springy locking arm members as the curved cavities are only open downwardly, i.e. sand and gravel does not penetrate in behind and blocks the function of the locking arm members.

[0007] In order to achieve a more optimal distribution of the locking force, the manhole cover frame according to the invention may advantageously be thus designed that it is provided with two resilient locking members disposed mutually diametrically opposite. Hereby is also achieved a good symmetry of the locking function so that the cover does not capsize at the handling.

[0008] The invention is explained more closely in the following in connection with the drawing on which:

Fig. 1 shows a plan view from above of an embodiment of a cover with self-locking function for a manhole cover frame or manhole according to the invention,

Fig. 2 shows a side sectional view of an embodiment of a manhole cover frame with self-locking function according to the invention,

Fig. 3 shows a top view, partly in section, of the manhole cover frame shown in Fig. 2 according to the invention, and

Fig. 4 shows an enlarged part sectional view for illustrating the locking function between manhole cover frame and manhole cover according to the invention.

[0009] The manhole cover 2 shown in Fig. 1 is provided with two diametrical lateral recesses, the side profile of which comprising a lower locking surface 6 is more clearly seen in Fig. 4. An embodiment for a manhole cover frame 8 shown in Fig. 2 and 3 comprises two horizontal curved, resilient locking arm members 12 in a side wall 10, the arm members 12 being connected with the side wall 10 at 14, and which at free outer ends 16 are provided with inwardly protruding locking projections 18 which, cf. Fig. 4, interact with the lower locking surface 6 of the lateral recesses 4 of the cover 2.

[0010] In Fig. 4 is furthermore illustrated how the self-locking locking function between the manhole cover frame 8 and the cover 2 is easily released by means of an outer end of an operating lever 20 by pressing back the locking projections 18 so that the curved, resilient locking arm members 12 are pressed rearwards into a

curved cavity 22 behind the locking arm members 12. This cavity 22, which has outer walls 24 and 26 have just the purpose of providing that the function of the resilient locking arm members 12 is not disturbed by incoming material (stones and sand etc.), why the cavity 22 is only open downwards.

Claims

1. A manhole cover frame (8) with self-locking function of the cover (2), the manhole cover frame comprising a number of resilient locking means being adapted to interact with complementarily shaped locking means of the cover, **characterised in that** the said locking means are constituted by a number of approximately horizontal locking members (12) being formed in a curved internal side wall (10) of the manhole cover frame, said locking members having the same curvature as said internal side wall, and **in that** said locking members (12) are provided at a free outer end (16) with inwardly protruding locking projections (18), and further **in that** the frame at the outer side of said locking members and spaced apart therefrom has a curved outer wall section so that a curved cavity (22) is formed behind the resilient locking members (12).
2. A manhole cover frame according to claim 1, **characterised in that** it is formed with two resilient locking members (12) disposed mutually diametrically opposite.

Patentansprüche

1. Schachtdeckelrahmen (8) mit Selbstverriegelungsfunktion des Deckels (2), wobei der Schachtdeckelrahmen eine Zahl von elastischen Arretierungseinrichtungen aufweist, die für das Zusammenwirken mit komplementär gestalteten Arretierungseinrichtungen des Deckels vorgesehen sind, **dadurch gekennzeichnet, dass** die Arretierungseinrichtungen durch eine Zahl von annähernd horizontalen Arretierungselementen (12) gebildet sind, die in einer gekrümmten Innenseitenwand (10) des Schachtdeckelrahmens gebildet sind, wobei die Arretierungselemente dieselbe Krümmung wie die innere Seitenwand aufweisen, und dass die Arretierungselemente (12) an einem freien äußeren Ende (16) mit nach innen vorstehenden Arretierungsanformungen (18) versehen sind, und dass weiterhin der Rahmen an der Außenseite der Arretierungselemente und von diesen beabstandet einen gekrümmten Außenwandabschnitt derart aufweist, dass ein gekrümmter Hohlraum (22) hinter den elastischen Arretierungselementen (12) gebildet ist.

2. Schachtdeckelrahmen nach Anspruch 1, **dadurch gekennzeichnet, dass** er mit zwei elastischen Arretierungselementen (12) gebildet ist, die wechselseitig diametral gegenüber angeordnet sind.

Revendications

1. Châssis de couvercle de trou d'homme (8) à fonction de verrouillage automatique du couvercle (2), le châssis de couvercle de trou d'homme comprenant un nombre de moyens de verrouillage élastiques étant aptes à entrer en interaction avec des moyens de verrouillage de forme complémentaire du couvercle, **caractérisé en ce que** lesdits moyens de verrouillage sont constitués par un nombre d'éléments de verrouillage (12) sensiblement horizontaux étant formés dans une paroi latérale interne courbe (10) du châssis de couvercle de trou d'homme, lesdits éléments de verrouillage ayant la même courbure que ladite paroi latérale interne, et **en ce que** lesdits éléments de verrouillage (12) sont dotés à une extrémité externe libre (16) de saillies de verrouillage dépassant vers l'intérieur (18), et en outre en ce que le châssis, sur le côté externe desdits éléments de verrouillage et avec un espacement par rapport à ceux-ci, comporte une section de paroi externe courbe de manière qu'une cavité courbe (22) soit formée derrière les éléments de verrouillage élastiques (12).
2. Châssis de couvercle de trou d'homme selon la revendication 1, **caractérisé en ce qu'il** est constitué de deux éléments de verrouillage élastiques (12) qui sont diamétralement opposés.

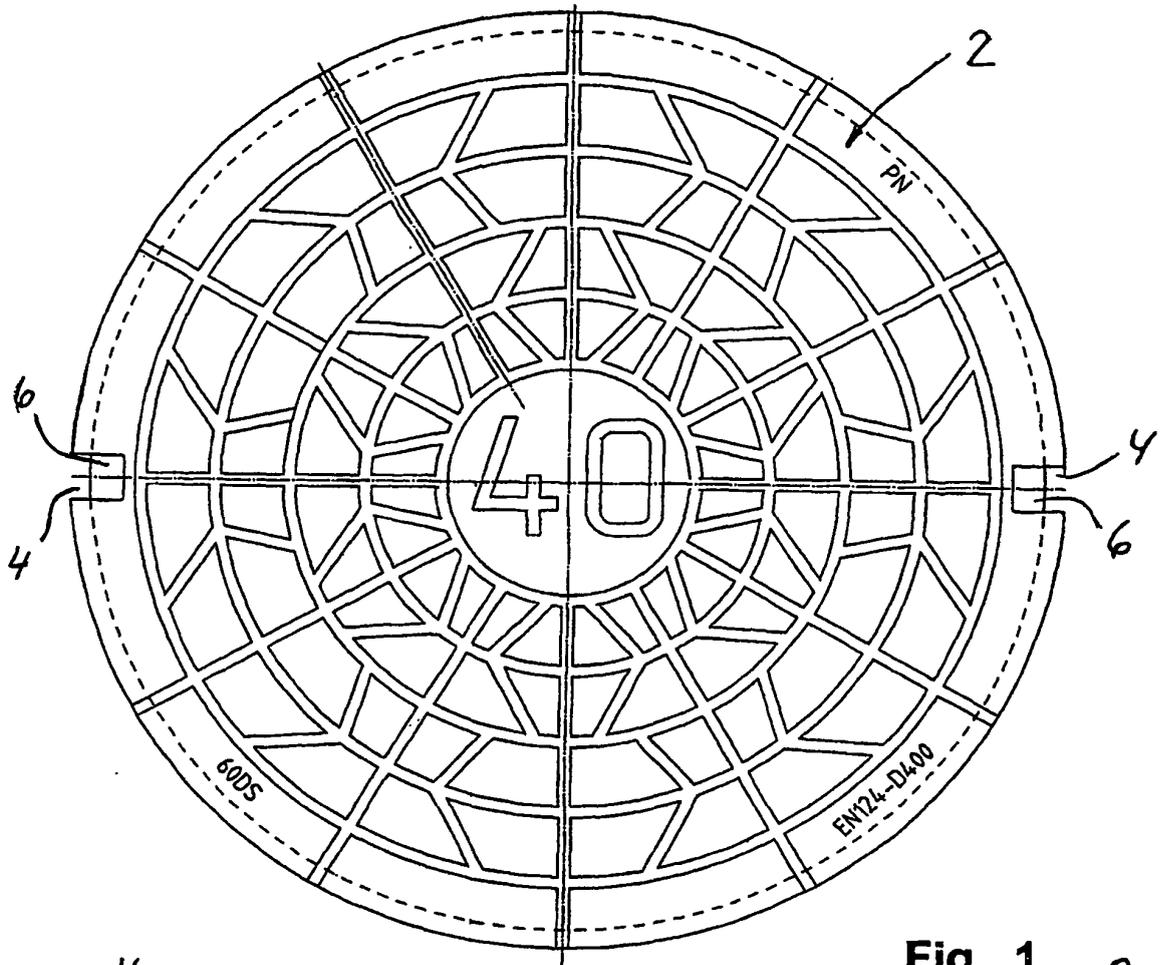


Fig. 1

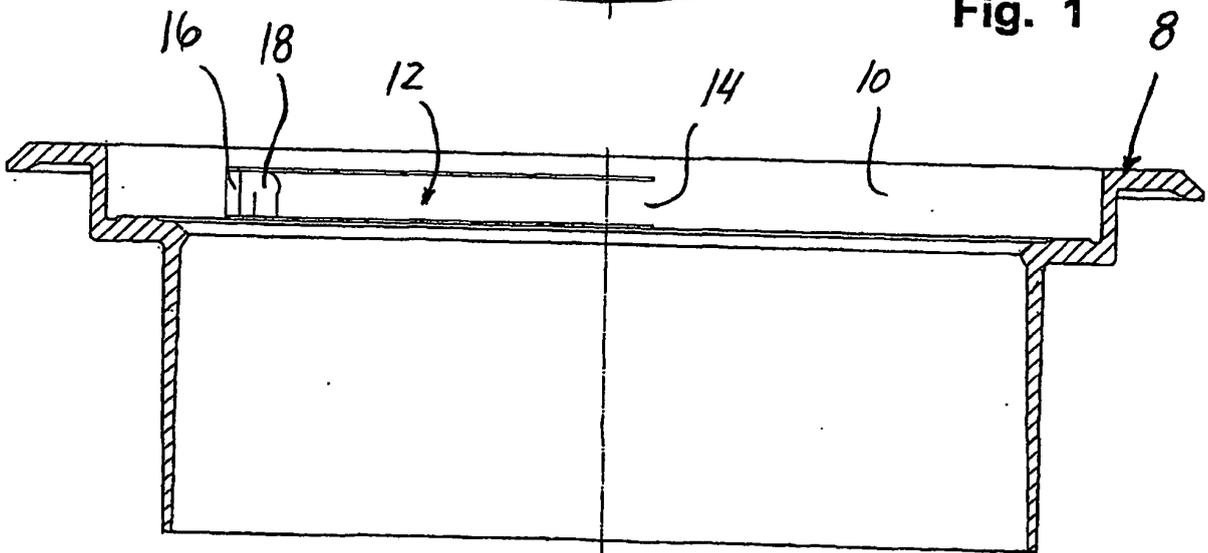


Fig. 2

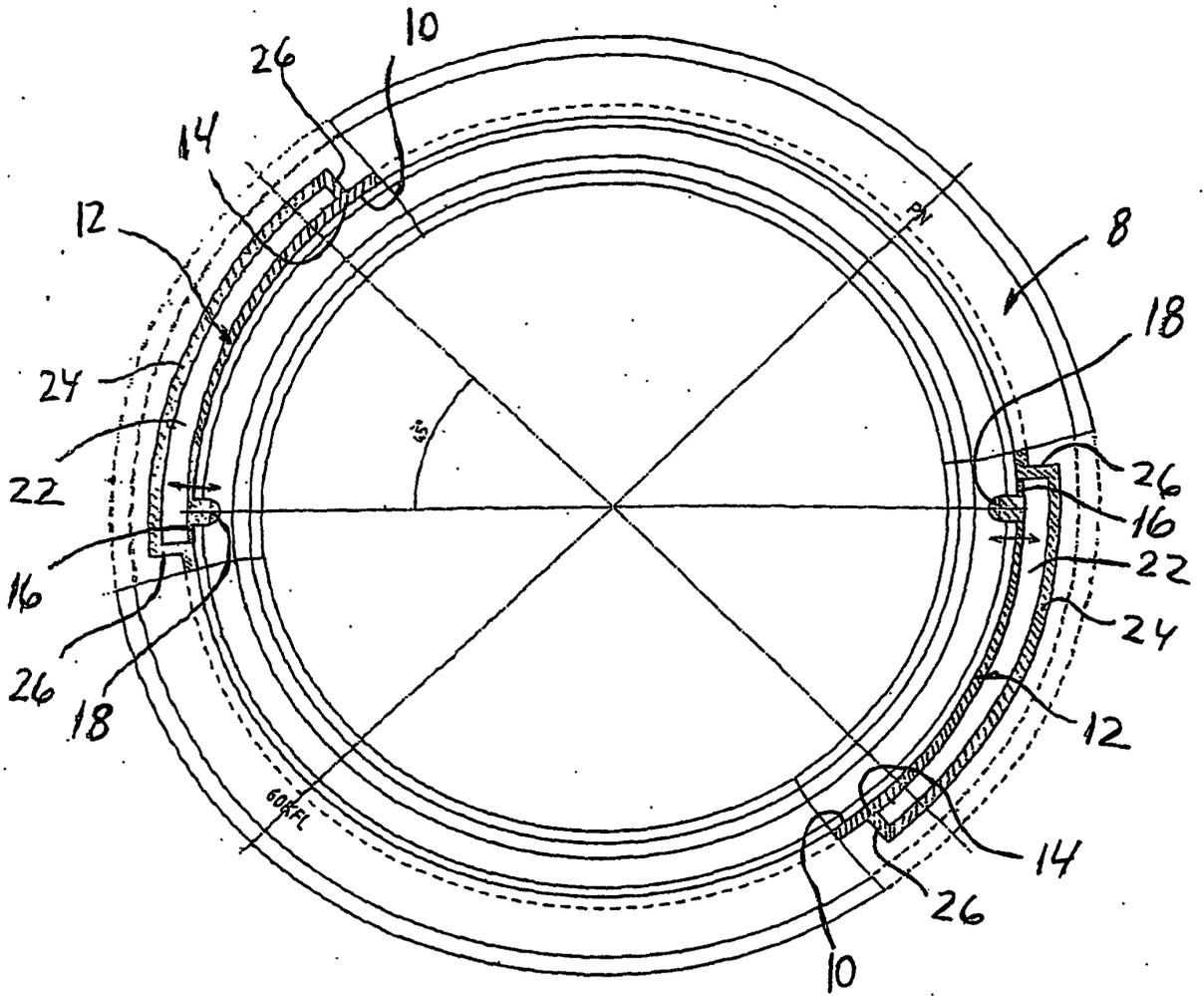


Fig. 3

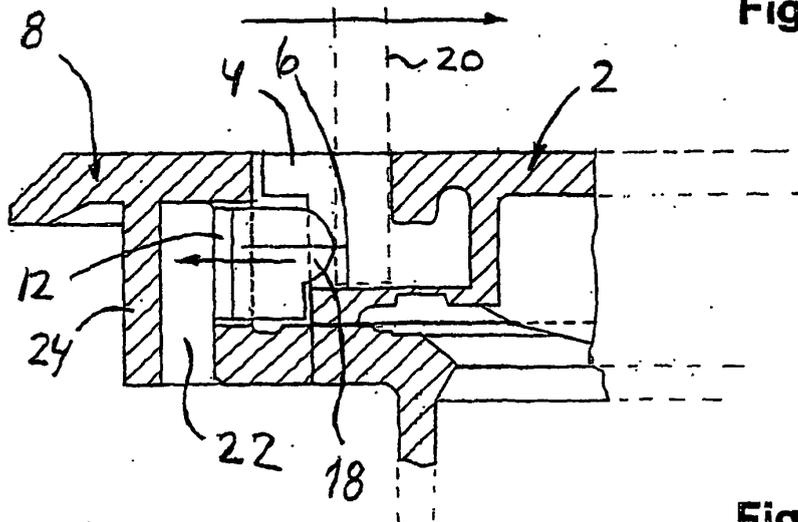


Fig. 4