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(54) **COLLECTIVE SAFETY AND MANHOLE SIGNALLING IN BUILDING AND CIVIL ENGINEERING WORKS**

(57) The present invention relates to a manhole signalling and protection device for use in building and civil engineering works against the risk of falling to a different level. It comprises means that cover the opening with a portion of laminar material including means for fitting the device to the inner walls of the manhole. Versions with

signalling elements or others with lighting means have been provided, the invention being intended for the industrial sector of both civil engineering and building works, as well as for manufacturers of occupational hazard protection equipment.

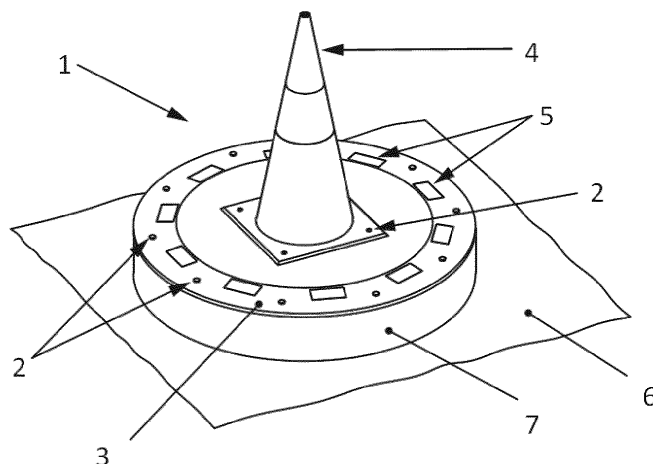


FIG.1

Description

Technical sector

[0001] Aimed at the industrial sector in civil engineering and construction, as well as manufacturers of occupational risk prevention equipment.

Background

[0002] It is well known that in both building and civil works different installations are carried out, such as electrical, communication, drinking water or sanitation networks, all of which share a distribution through a network in which there are different registration and maintenance points. Due to the natural activity of the works, many of these manholes remain unmarked and unprotected, exposing any worker, pedestrian or vehicle to a possible accident.

[0003] Although this can occur in small manholes, the greater a priori danger that the opening of a manhole represents leads to its being temporarily covered with heavy concrete or metal plate covers, wooden boards, pallets, etc.

[0004] The state of the art reveals different solutions for its definitive covering in which the cover is either articulated with respect to a frame, deposited on it or finally secured by means of screws or safety fasteners not providing a technical solution to the problem posed.

[0005] There are therefore no known inventions that advantageously solve the technical problem as the recommended invention.

Object

[0006] To provide means to guarantee collective protection and signaling against falls to different levels that may be caused by the different openings of manholes and other manholes. To provide a measure of easy installation, recoverable and including signaling means. To protect from the fall of material such as aggregates into the well or manhole. To perform the function of signaling. To protect against the entry of rainwater, avoiding accumulation in the manhole and channeling.

Detailed description of the invention

[0007] As it has been reflected in the state of the art, the measures used in general do not avoid the risk in an effective way, nor do they offer guarantees of fixation and resistance, generating in many occasions additional risks. On the other hand, the manholes, and within them the manholes, are sometimes located in roads and have poor visibility, which increases the possibility of having an accident. For all this, the collective protection and signaling of manholes in building and civil works, hereinafter the protection, has means to protect a manhole or well by having a portion of laminar material whose size and

geometry is proportionate to the opening to be protected depending on the section that presents the opening at its upper level, whether it is circular or polyhedral. Its fixing is carried out on the one hand by means of at least three elastomers that emerge from the face of the protection in contact with the manhole whose position generates a tight fit against the walls of this one, on the other hand it is possible to screw the cover to present next to its perimeter of a plurality of holes through which conventional screws are introduced fixing the protection. The visibility of the protection is achieved by means of at least one reflective surface located in a perimeter chamfer of which the laminar portion described has a signaling element such as a cone or a road marker centered on the laminar body described; this signaling element can be part of the protection or can be incorporated and removed from it by conventional means such as a screw connection.

[0008] There are versions in which the back or face in contact of the protection against the manhole presents a plurality of holes that cooperate with pins that are inserted by tightening, these pins protrude into the cavity of the manhole in such a way that prevent the protection from moving in the horizontal plane when it is not screwed, this function allows a temporary technical solution when for example there is a broken cover in a vial or directly lacking it allowing to cover and protect the opening quickly and easily while awaiting a timely repair. Or others in which there are means of luminous indication in the chamfer and/or in its signaling element.

[0009] The collective protection and signaling of manholes in building and civil works is preferably made of plastic for its good properties and cost, it has been foreseen that its back has different ribs to provide resistance and lighten the protection, as well as at least one handle (not shown) for its transport.

Brief description of the drawings

[0010] For a better understanding of what is described in the present report, some drawings are included in which, by way of example, a list of the figures of the proposed invention is shown.

Figure 1 shows the collective protection and signaling for manholes (1), it can be seen placed on a manhole (7) in this circular representation, the holes (2) for fastening with screws, the chamfer (3), the signaling element (4), the reflectors (5) and the ground plane (6).

Figure 2 shows an exploded view showing the contribution of the screws (8).

Figure 3 illustrates the back or face in contact with the manhole, its ribs (9) and the clamping elastomers (10).

Figures 4, 5 and 6 show the collective protection and signaling for manholes in a configuration for square shaped manholes.

Figure 7 shows the reverse side of a collective protection and signaling for manholes whose face has a plurality of openings (11) for inserting stops and the stops (12). Figure 8 shows the protection over the manhole opening with the stops (12) inserted.

Preferred mode of realization

[0011] The materials used in the manufacture of the invention, as well as the methods of application and all the accessory details that may arise, provided that they do not affect the essential nature of the invention, are given as an example of a preferred embodiment of the invention. This preferred mode of realization reflects the materialization and embodiment of the invention by specifying details that help to understand it.

[0012] The collective protection and signaling (1) of manholes in building and civil works object of this realization is made of plastic material, presents a portion of material sensibly laminar and that in this version is of square plant, figure 4, destined to cover the openings of manholes with this form. It presents a chamfer that surrounds its perimeter in order to improve its visibility and contribute to minimize the risk of a tripping in front of a right-angled edge, next to its perimeter it has a plurality of holes (2) that by means of some conventional screws (8) allow the fixation to the manhole or the firm that conforms it. It presents at least a reflective surface located in the chamfer and a signaling element, in this case a cone which in this version is fixed by means of screws to the lamellar body, figure 5. It is advisable to have the standardized pictogram of fall to different level on its surface to warn of this potential danger.

[0013] Its back or face in contact with the manhole presents a plurality of holes (11) that cooperate with the insertion of at least one stop (12) by tightening, figure 7, the position of the stops and its length allows to position the protection set on a manhole avoiding the protection to move, figure 8. It presents a surface with a non-slip finish.

[0014] It has a handle (not shown) for its transport; the set is made of plastic for its good properties and preferably high visibility colors and contrast associated with the means and indications of work and road.

the manhole, this lamellar portion of material presents a chamfer (3) that has at least one reflecting element (5); centered on said laminar portion emerges a conventional signaling element such as a cone; the reverse side of the collective protection of manholes presents at least three clamping elastomers (10) that protrude from this face and come into contact with the walls of the manhole.

2. Collective protection and signaling of manholes in building and civil works according to the first claim **characterized by** presenting on the face in contact with the manhole a plurality of openings (11) that cooperate with stops (12) retained in these openings by means of a tightening adjustment.
3. Collective protection and signaling of manholes in building and civil works according to the previous claims, **characterized by** presenting on the face in contact with the manhole a plurality of reinforcing ribs (9).
4. Collective protection and signaling of manholes in building and civil works according to the previous claims, **characterized by** presenting luminous warning means in its signaling element and/or its chamfer.
5. Collective protection and signaling of manholes in building and civil works according to the previous claims, **characterized in that** the signaling element is fixed by means of screws.
6. Collective protection and signaling of manholes in building and civil works according to the previous claims, **characterized by** having at least one carrying handle.
7. Collective protection and signaling of manholes in building and civil works according to the previous claims, **characterized by** having a non-slip finish on the surface.

Claims

1. Collective protection and signaling of manholes in building and civil works **characterized by** having means with which to cover the opening of a manhole by means of a portion of material of lamellar form that presents next to its perimeter a plurality of holes (2) that cooperate with screws (8) in the fixation on

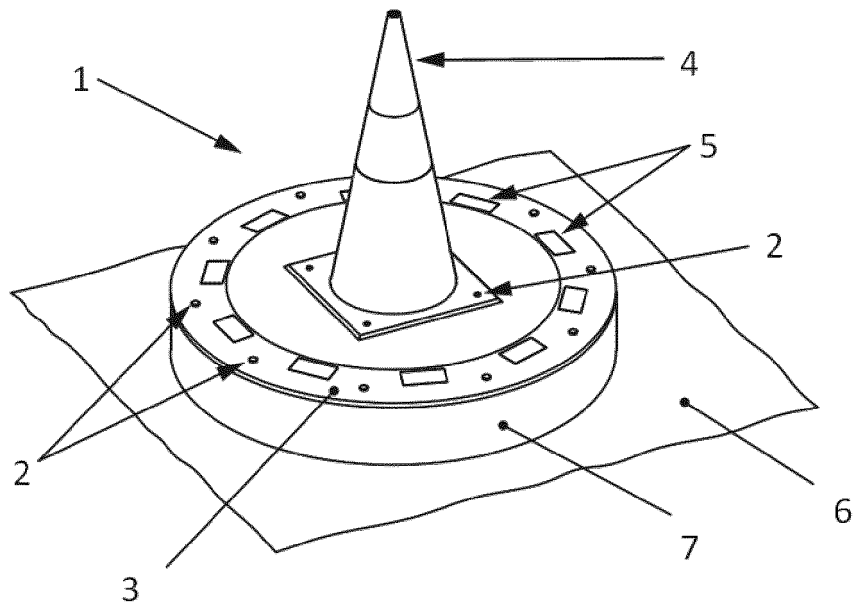


FIG.1

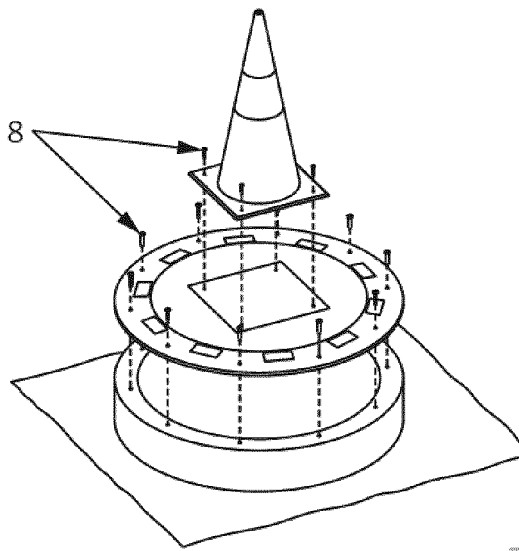


FIG.2

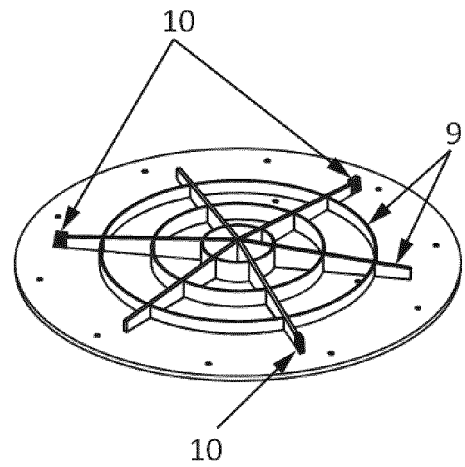
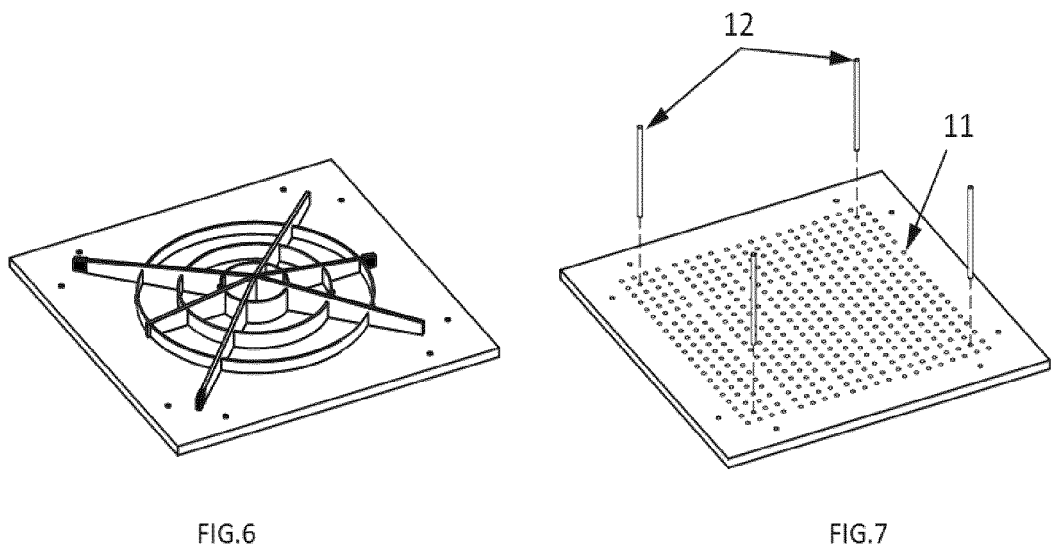
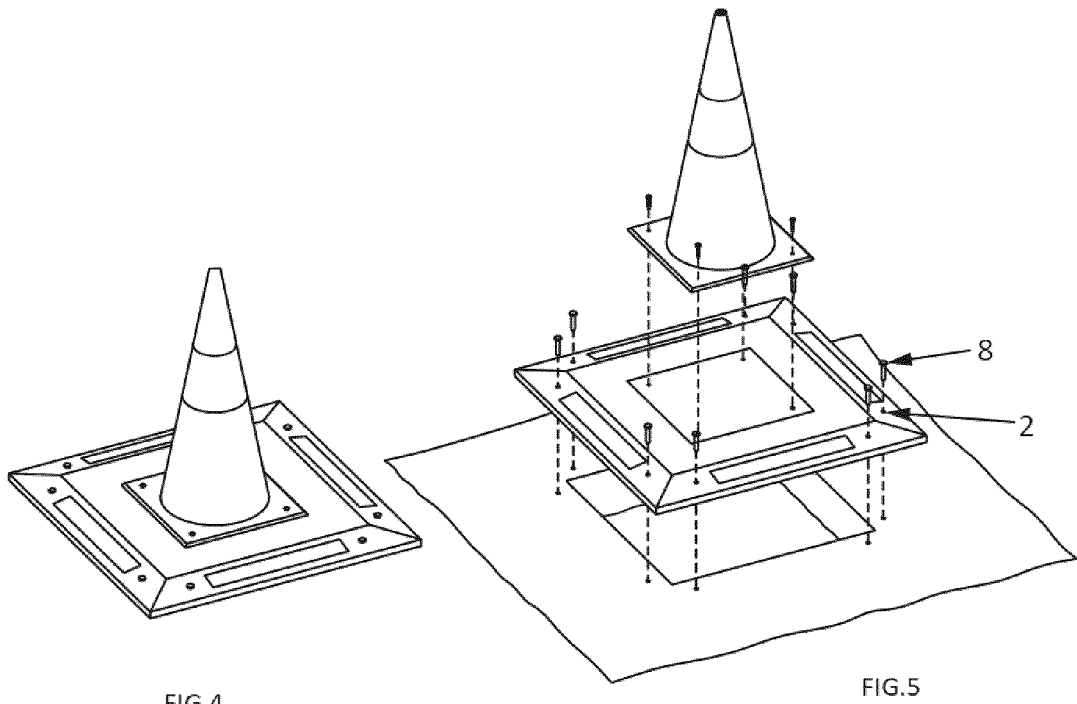


FIG.3



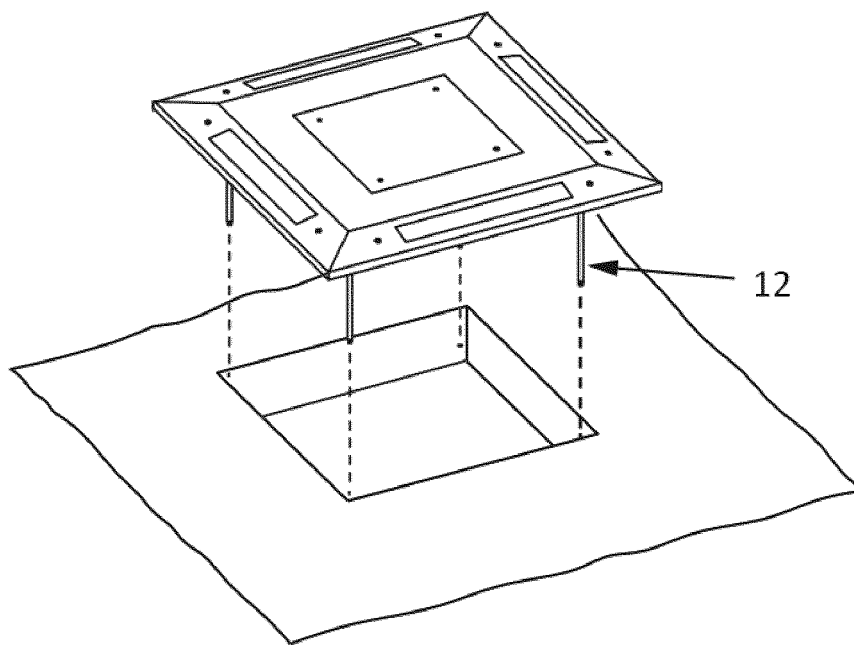


FIG.8

INTERNATIONAL SEARCH REPORT

International application No.

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5	A. CLASSIFICATION OF SUBJECT MATTER		
	See extra sheet		
	According to International Patent Classification (IPC) or to both national classification and IPC		
10	B. FIELDS SEARCHED		
	Minimum documentation searched (classification system followed by classification symbols) E01C, E01F, E03F, E02D		
	Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
15	Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) EPODOC, INVENES		
	C. DOCUMENTS CONSIDERED TO BE RELEVANT		
20	Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
	A	JP 2006037696 A (KOWA IND CO LTD) 09/02/2006, the whole document.	1-7
25	A	KR 200372751Y Y1 14/01/2005, the whole document.	1-7
	A	CN 208949925U U (UNIV XIHUA) 07/06/2019, the whole document.	1-7
30	A	CN 110552377 A (JIANGSU TOYI INTELLIGENT TECH CO LTD) 10/12/2019, the whole document.	1-7
	A	US 4266380 A (SAMOLIS ALFONSO A) 12/05/1981, the whole document.	1-7
35			
40	☐ Further documents are listed in the continuation of Box C. ☒ See patent family annex.		
45	* Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance. "E" earlier document but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure use, exhibition, or other means. "P" document published prior to the international filing date but later than the priority date claimed "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family		
50	Date of the actual completion of the international search 21/07/2022		Date of mailing of the international search report (22/07/2022)
55	Name and mailing address of the ISA/ OFICINA ESPAÑOLA DE PATENTES Y MARCAS Paseo de la Castellana, 75 - 28071 Madrid (España) Facsimile No.: 91 349 53 04		Authorized officer M. Castañón Chicharro Telephone No. 91 3493261

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E01F9/553 (2016.01)

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Information on patent family members

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