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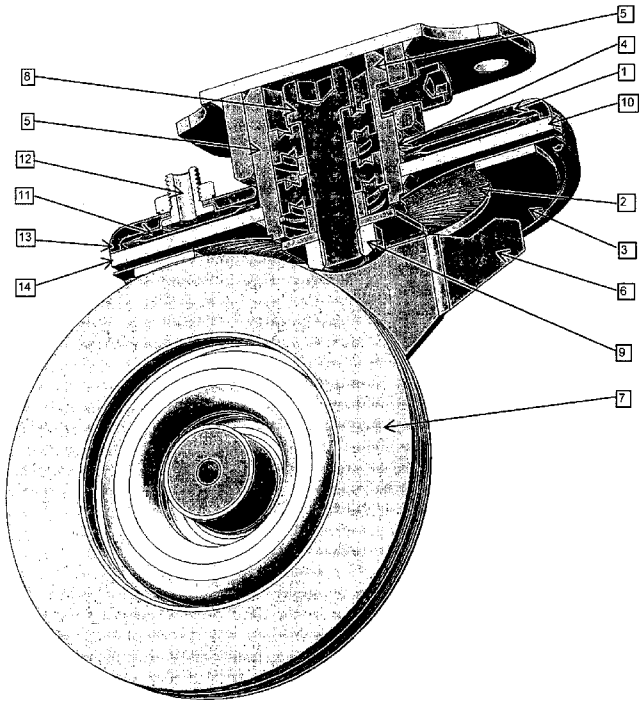
(54) Title: SWIVEL CASTOR ARRESTING ARRANGEMENT



(57) Abstract: Arresting arrangement for swivel castor's controlled motion, comprising: a cover; a spring-action element and an arresting element, the cover (1) is with an opening (4), housing a bushing (5) abutted to which is a carrying arm (6) of a swivel castor (7). A disk (10) is bonded to the bushing (5), wherein between the cover (1) and the disk (10) there is a cushion (11) with a nipple (12), feeding fluid to it; its upper end juts out above the cover (1). Below the disk (10) there is a spring-action element (2) to which an arresting element (3) is bonded, the spring-action element (2) and the arresting element (3) are bonded to the flange (13) of the cover (1); they are in an axial motion to the carrying arm (6) and the swivel castor (7).

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TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

— *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*

— *of inventorship (Rule 4.17(iv))*

Published:

— *with international search report (Art. 21(3))*

— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*

Swivel Castor Arresting Arrangement

Technical field

This invention features a swivel castor arresting arrangement for application in the assembly of various types of load-carrying structures, specifically – in the assembly of hospital beds, furniture for handicapped individuals, service tables etc.

Previous State of Art

US Patent No 3890668 features an arresting arrangement between the prongs of a castor fork, with two stages of free swiveling. It incorporates an electromagnet with mobile magnetic core, affixed to mobile arresting elements of the checking arrangement, with action countering the force of a spring, applied in the direction of the arresting elements.

US Patent No 6662404 features another such arrangement incorporating a two-arm sub-spring arresting lever, exclusively rotated around its horizontal axis, vertically to the rotation of a swivel castor. Incorporated in it are also two pressure-exerting springs, with force of action sufficient to push the two-arm checking lever aside of swivel castors.

Normally, the arrangements dealt with above are such with action of just one of the castors of, say, hospital beds, castor-stretchers or wheelchairs, with them the checking effort applied might, occasionally, result in an undesired swiveling of the bearing structure, which is particularly dangerous during their use in servicing patients with serious incapacities (handicaps). In order to do away with such risks, efforts have been put in to develop rather sophisticated lever systems, intended to provide for the application of arresting efforts to more than one swivel castor in such cases.

Technical Essence of the Invention

The invention treated herein is intended to help out in the development of a swivel castor arrangement wherewith it might be possible "to switch ON/OFF" two or more swivel castors via a central arresting arrangement – one without complexity, and easy to fabricate.

In this invention the task thus defined has been accomplished by means of the operation of an arresting arrangement (in standby position – i.e. OFF) for swivel castors, comprising: a cover; a spring-action element and an arresting

element. A central opening in the cover houses a bushing to which a castor's bearing arm is abutted.

A supporting disk is bonded to the bushing. Between the cover and the disk there is an elastic toroidal cushion, with a pipe union feeding "operational fluid"; its one end juts out above the cover's surface. Underneath the disk there is a spring-action element, with its central part abutted to the bushing. The arresting element is bonded to the nether side of the spring-action element, itself bonded to the cover, so that both the arresting element and the spring-action element, plus the cover, could be in an axial motion vis-à-vis a swivel castor's carrying arm and the swivel castor tire.

In one of the arrangement's versions, the spring action element features "a spring-profile disk". This, indeed, is a good solution, because the nether surface of the disk provides for the existence of a high-level coefficient of friction, between it and the contact surface of a swivel castor.

Advantages stemming from the operation of the arresting arrangement per the invention described: Simultaneous switching ON/OFF of two or more swivel castors via uniform checking efforts, and: simplified make of the arrangement, coupled with easy fabrication.

Attached Drawings

Fig.1. Axonometric illustration of the swivel castor with arresting arrangement (swivel castor stalled);

Fig.2. Arresting arrangement per Fig.1. ; cross section;

Fig.3. Arresting arrangement per Fig.1. ; Swivel castor, operational;

Fig.4. Arresting arrangement cover, with spring - and arresting element;

Fig.5. Toroidal cushion, axonometric view;

Fig.6. Bearing bush and supporting disk, axonometric view.

Examples for embodiment of the invention

The arrangement featured above (Figs.1,2,3,4) comprises: a cover (1); a spring (-action) element (2), and arresting element (3). The cover (1) is with an opening (4) housing a bushing (5), abutted to which (by means of a screw connection – bolt (8) and nut (9)) is the carrying arm (5) of the castor (7). Fixed to the bushing (5) is a supporting disk (10). Between the cover (1) and the disk (10) there is an elastic toroidal cushion (11) with a union nipple (12) feeding fluid to it. The nipple (12) juts out above the cover's surface. Under the disk (10), there is a spring-action element (2), with its inner side abutted to the bushing (5). The spring-action element (2) and the arresting element (3) are bonded to the lateral flange (13) of the cover; they, plus the cover (1), could be moved axially to the carrying arm (6) and the swivel castor (7). The spring-action element (2, Fig.4) features an arresting disk. Fig.3 shows the toroidal cushion (11). Fig.6 shows the bushing (5) and the supporting disk (10) bonded together. The periphery of the supporting disk (10) is with projections (cogs), locking with cuts in the flange (13) of the cover (1). Thus, any not intended swiveling of the arrangement or of one of the swivel castors is thwarted.

Use of the invention

In the version of the arrangement shown in Figs.1 and 2, the disk (3) is continuously pressed to the swivel castor (7) by the spring (2). When fluid is fed to the cushion (11) it becomes pumped up, thereby overcoming the pressure exerted by the spring (2). The cover then moves axially upward, together with the spring (2) and the arresting disk (3); the swivel castor (7) becomes released.

The arresting arrangement described here, provides for the existence of the possibility to continuously fix sick-beds, wheelchairs, castor stretchers, servicing tables etc. in a fixed, selected position. In the context of the version featured herein above, it is possible to turn out an arresting arrangement for each one of the swivel castors of, say, sick-beds. Feeding of fluid to the cushion (11) could be provided for by means of the use of elastic hose lengths, bringing fluid from the source of such.

Patent Claims

1. Arresting arrangement for swivel castor's controlled motion, comprising: a cover; a spring-action element and an arresting element, the cover (1) is with an opening (4), housing a bushing (5) abutted to which is a carrying arm (6) of a swivel castor (7), a disk (10) is bonded to the bushing (5), between the cover (1) and the disk (10) there is a cushion (11) with a nipple (12), feeding fluid to it; its upper end juts out above the cover (1), wherein below the disk (10) there is a spring-action element (2) to which an arresting element (3) is bonded, the spring-action element (2) and the arresting element (3) are bonded to the flange (13) of the cover (1); they are in an axial motion to the carrying arm (6) and the swivel castor (7).

2. An arresting arrangement per Claim 1, in which the spring-action element (2) features a spring-like profiled disk.

3. An arresting arrangement per Claim 1, in which the arresting element (3) features an arresting disk, the nether surface of which provides for the existence of a high level coefficient of friction between it and contact surfaces of swivel castors.

4. An arresting arrangement per Claim 1, 2 or 3, in which the periphery of the supporting disk (10) is with projections (14), locking up with cuts in the flange (13) of the cover (1).

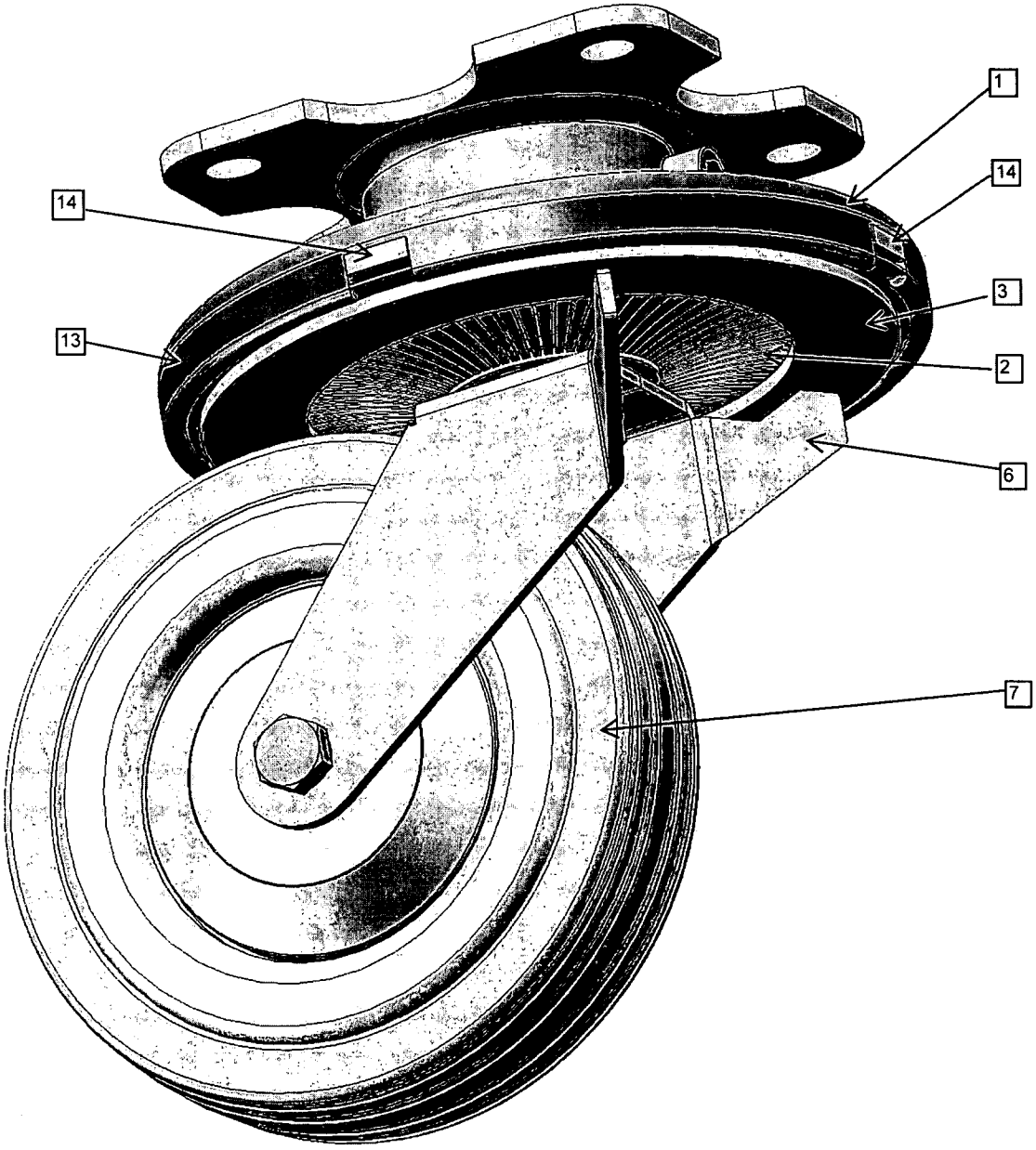

Fig. 1/6

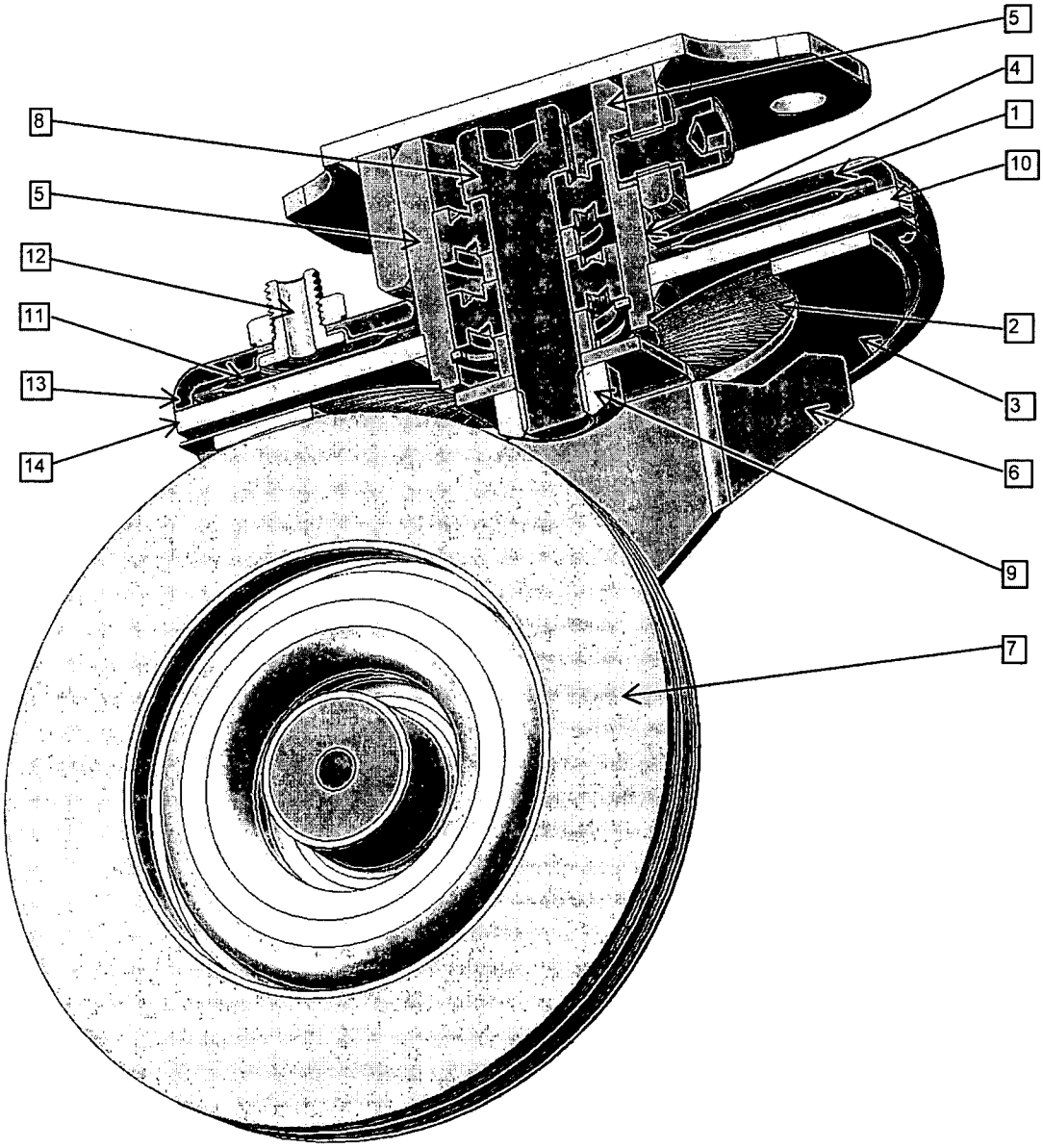

Fig. 2/6

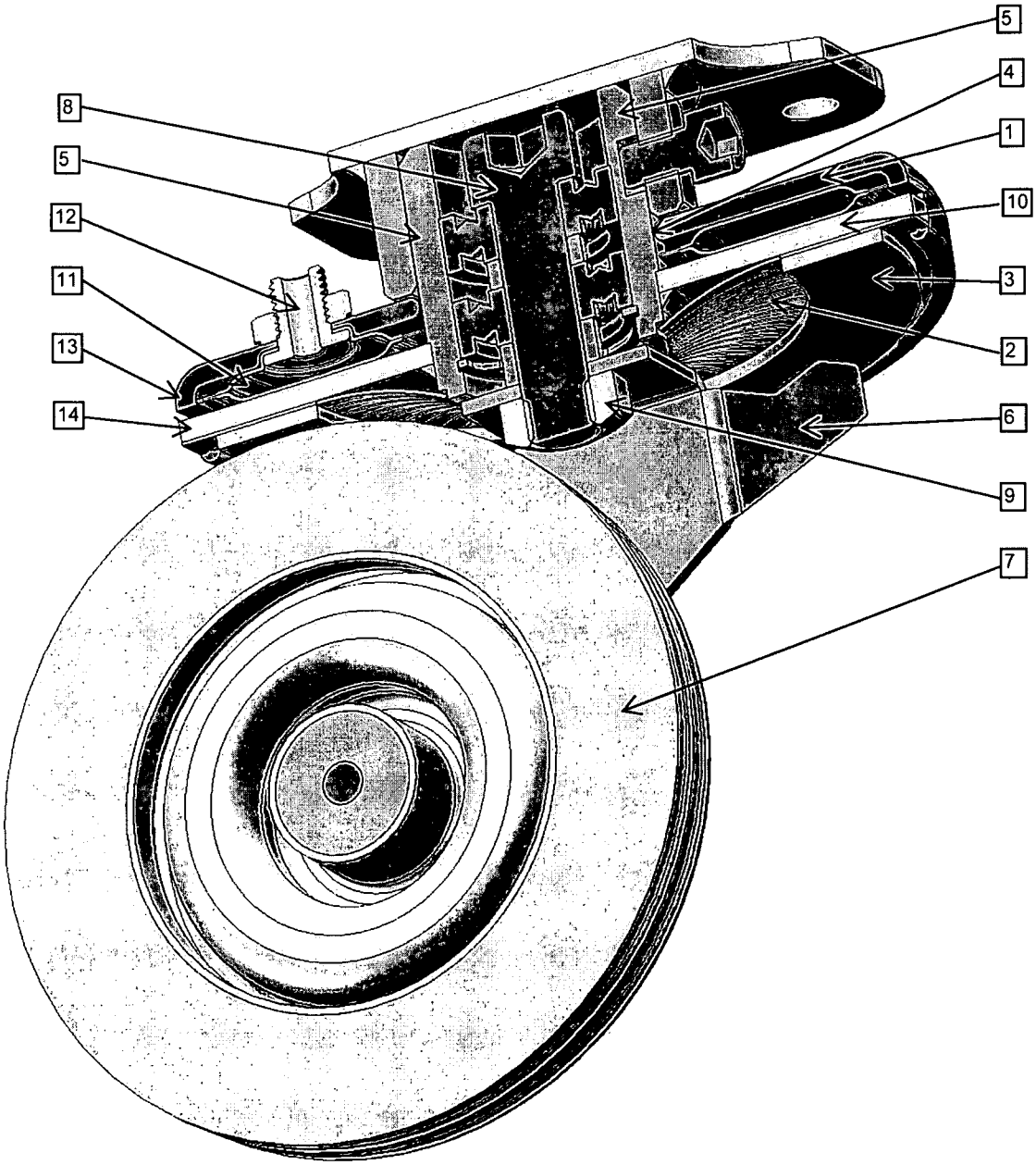

Fig. 3/6

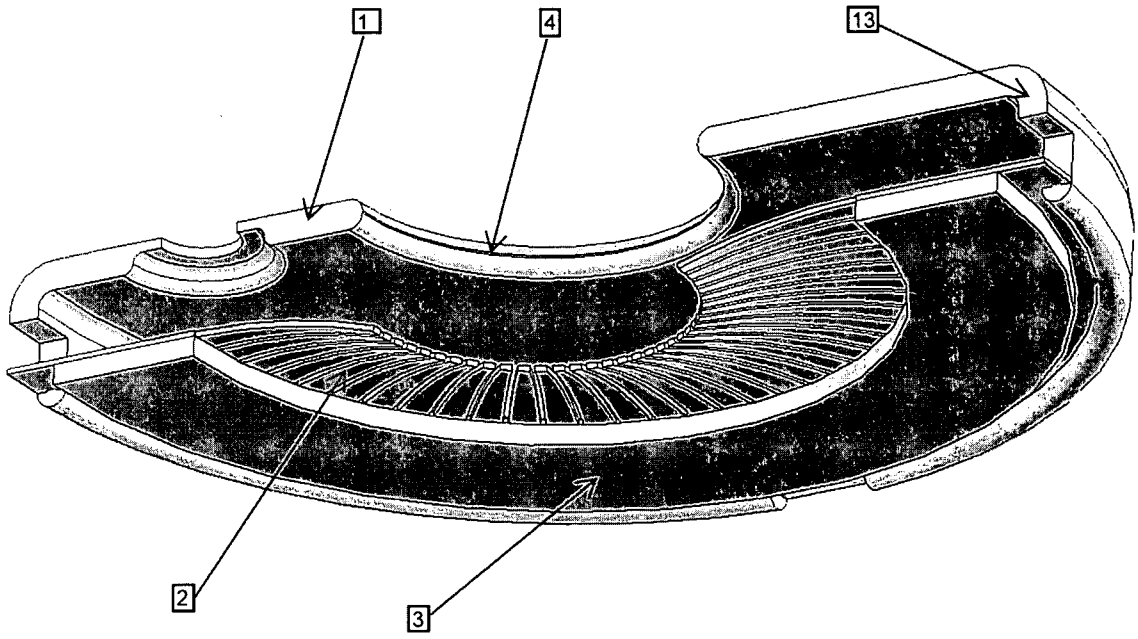

Fig. 4/6

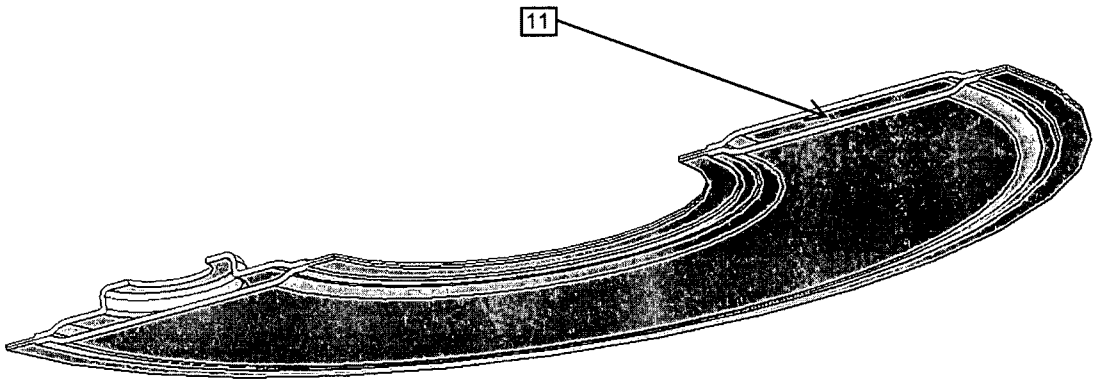

Fig. 5/6

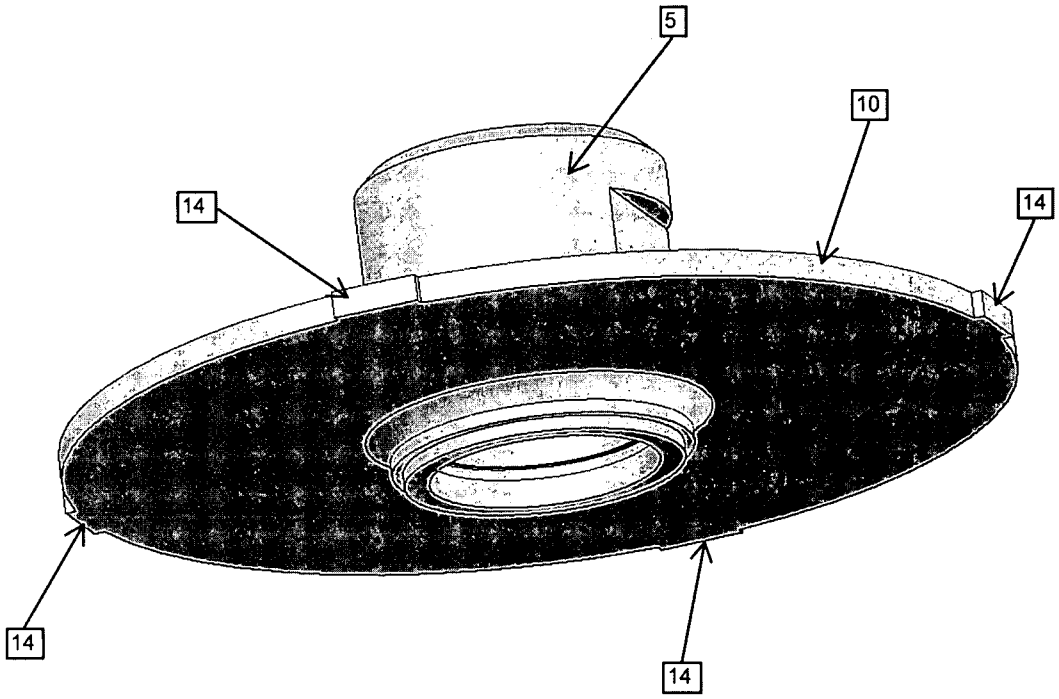

Fig. 6/6

INTERNATIONAL SEARCH REPORT

International application No
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A. CLASSIFICATION OF SUBJECT MATTER
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ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
B60B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 4 998 320 A (LANGE HANS-WILLI [DE]) 12 March 1991 (1991-03-12) abstract; figures 1-6	1-4
A	DE 196 14 626 A1 (MUENNEKEHOFF GERD DIPL ING [DE]) 31 October 1996 (1996-10-31) abstract; figures 2-5	1-4
A	US 2004/064915 A1 (SILVERSTEIN HARLAN [US] ET AL) 8 April 2004 (2004-04-08) abstract; figures 1, 2	1-4
A	DE 91 03 178 U1 (KUGELFABRIK SCHULTE GMBH & CO KG) 6 June 1991 (1991-06-06) claim 1; figures 1, 6	1-4
A	DE 15 05 786 A1 (HAPPE & CO) 26 March 1970 (1970-03-26) claim 1; figures 1-4	1-4

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents :

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Date of the actual completion of the international search	Date of mailing of the international search report
22 April 2010	07/05/2010

Name and mailing address of the ISA/	Authorized officer
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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
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